

# Rotary Actuator

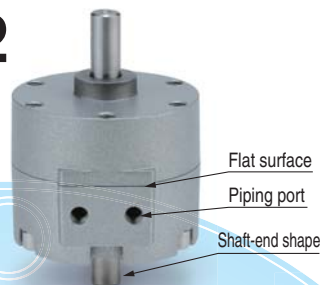
## Vane Type 10, 15, 20, 30, 40

**New**
**RoHS**
**Standard Type**
**Free Mount Type**

### Many combinations available!

## Standard type/Series CRB2

- Piping ports are located on the flat surface.  
Fittings can be secured firmly, piping is also improved.
- Many variations of shaft-end shape (6 types)


**With auto switch unit**

**Auto switch unit**
**With angle adjuster unit**

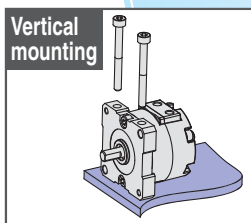
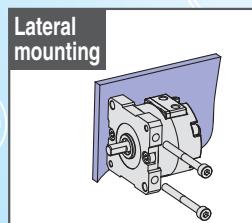
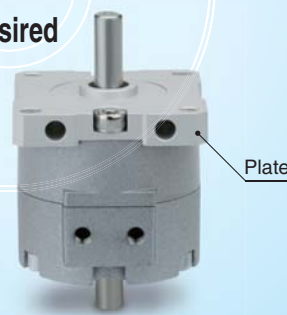
**Angle adjuster unit**
**Possible to adjust the angle as desired**

| Rotating angle | Rotating angle adjustment range |
|----------------|---------------------------------|
| 270°           | 0 to 240° (Size 30)             |
| 180°           | 0 to 175°                       |
| 90°            | 0 to 85°                        |

**With angle adjuster unit**
**+**
**With auto switch unit**


## Free mount type/Series CRBU2 is added.

- 12% weight reduction
- Possible to move the plate mounting position as desired
- Many mounting variations


**Vertical mounting**

**Lateral mounting**

**Plate**
**With auto switch unit**

**With angle adjuster unit**

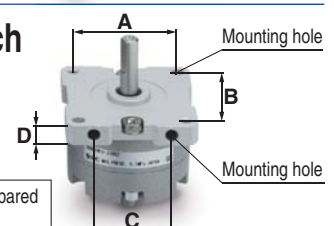
**With angle adjuster unit**
**+**
**With auto switch unit**


**Rotating angle: 90°, 180°, 270°**  
**All series can rotate up to 270°.**

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

**Interchangeable mounting pitch with the existing model**

Mounting pitches A to C shown on the right and mounting hole diameters are interchangeable with the existing model.



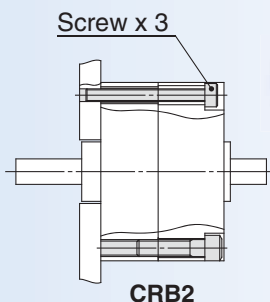
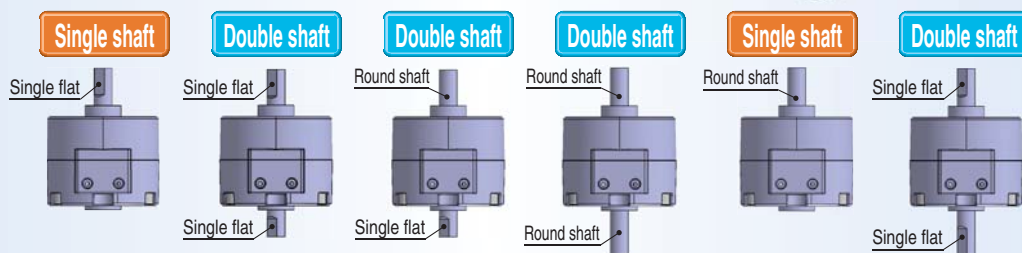
D: Height is reduced compared to the existing model.

## Series CRB□2



## ● Shaft type variations

Six shaft options available (\* The figures below show size 30 actuators.)



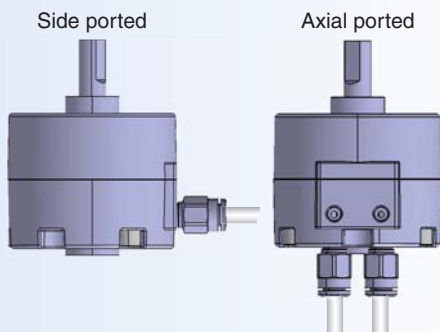
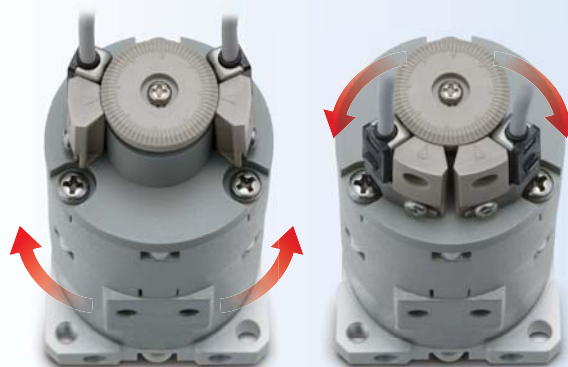
## ● Direct mounting

The rotary actuator body can be mounted directly.

\* Not possible for size 10 to 40 with unit(s)

## ● The mounting position of the auto switch can be set freely.

The switch can be fixed in the desired position in the circumferential direction.



## ● Connecting port location: Side ported or Axial ported

The port location can be selected according to the application.

(Size 10 to 40 with unit(s) are side ported only.)

## ● Double vane type is standardised for 90° and 100°.

The outside dimensions of the double vane type are equivalent to those of the single vane type (except size 10). Double vane construction can get twice the torque of the single vane type.

| Series                          | Rotating angle | Single vane | Double vane |
|---------------------------------|----------------|-------------|-------------|
| Standard type<br>Series CRB2    | 90°            | ●           | ●           |
|                                 | 100°           | ●           | ●           |
|                                 | 180°           | ●           | ●           |
|                                 | 270°           | ●           | ●           |
| Free mount type<br>Series CRBU2 | 90°            | ●           | ●           |
|                                 | 100°           | ●           | ●           |
|                                 | 180°           | ●           | ●           |
|                                 | 270°           | ●           | ●           |

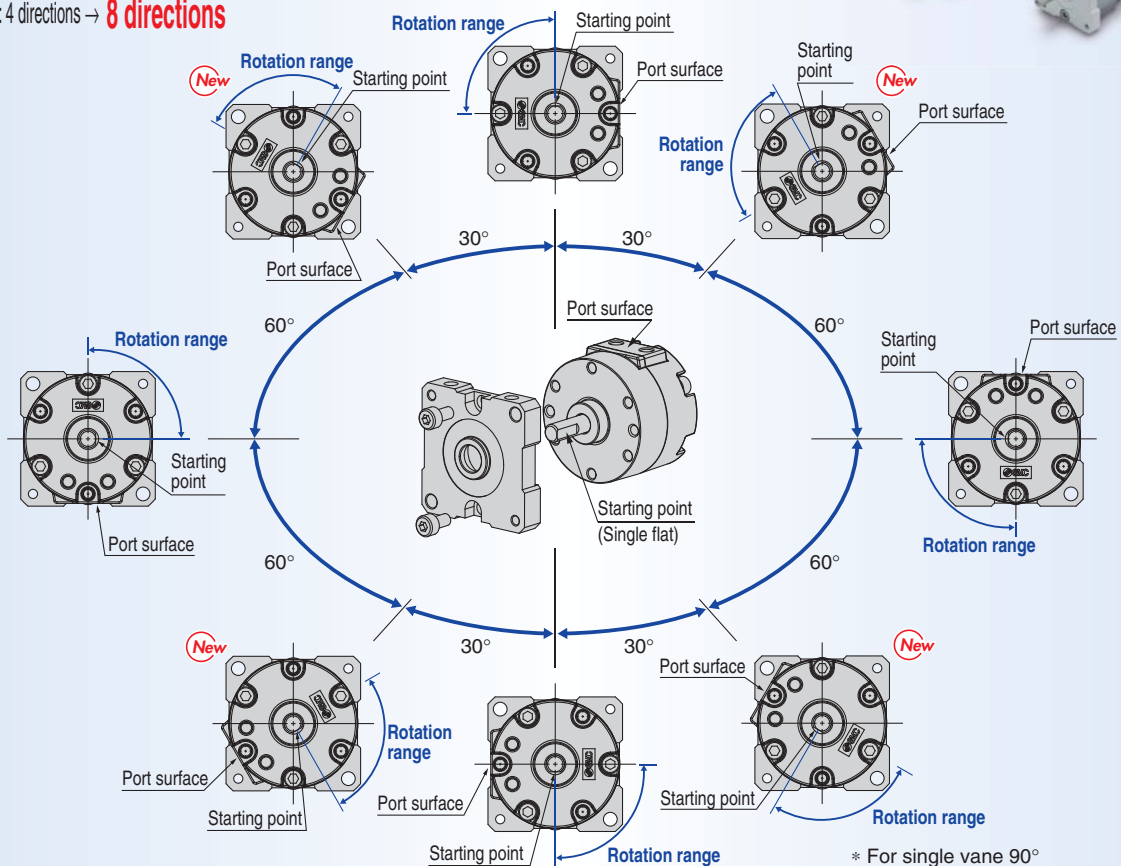
# Free Mount Type/Series CRBU2

Size: 10, 15, 20, 30, 40



Possible to change the starting position as desired to suit the installation conditions.

Conventional: 4 directions → **8 directions**



**12% weight reduction**

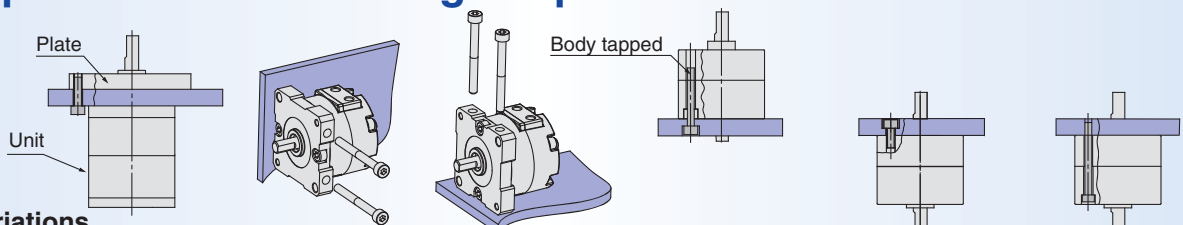
Lighter installation can be achieved.

| Size | <b>New</b> CRBU2 [g] | Reduction rate [%] | Existing model [g] |
|------|----------------------|--------------------|--------------------|
| 10   | 42                   | 12                 | 47.5               |
| 15   | 64                   | 12                 | 73                 |
| 20   | 130                  | 10                 | 143                |
| 30   | 248                  | 5                  | 263                |
| 40   | 465                  | 5                  | 491                |

\* Compared with single vane at 90°

**Interchangeable mounting with the existing model**

**Six types of direct mounting are possible.**

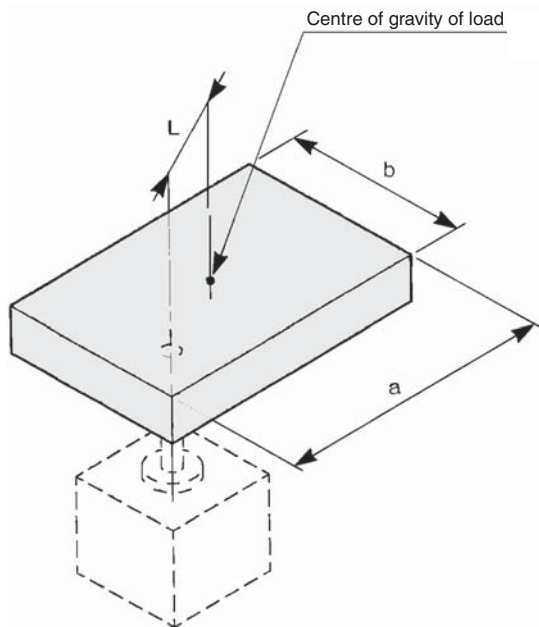


## Mounting Variations

| Applicable series                           | Free mount type | Free mount type | Free mount type | Standard type<br>Free mount type | Standard type | Standard type   |
|---|-----------------|-----------------|-----------------|----------------------------------|---------------|---|
| <b>Mounting</b>                             | Plate           | Plate           | Plate           | Body tapped                      | Body tapped   | Body through-hole<br>(Fixed with the customer's plate.) |
| <b>Mounting of each unit</b>                | Available       | Available       | Available       | Not available                    | Available     | Not available   |
| <b>Number of starting points</b>            | 8 points        | 8 points        | 8 points        | 3 points                         | 3 points      | 3 points  |
| <b>Workpiece removal during maintenance</b> | No              | No              | No              | No                               | Yes           | Yes   |

## 1-2 Calculation Example of Moment of Inertia

### 1 If the shaft is located at a desired point of the load:



Example) 1. If the load is the thin rectangular plate:  
Obtain the centre of gravity of load as  $I_1$ , a provisional shaft.

$$I_1 = m \cdot \frac{a^2 + b^2}{12}$$

2. Obtain the actual moment of inertia  $I_2$  around the shaft, with the premise that the weight of the load itself is concentrated in the load's centre of gravity point.

$$I_2 = m \cdot L^2$$

3. Obtain the actual moment of inertia  $I$ .

$$I = I_1 + I_2$$

( $m$ : Weight of load  
 $L$ : Distance from the shaft to the centre of gravity of load)

#### Calculation Example

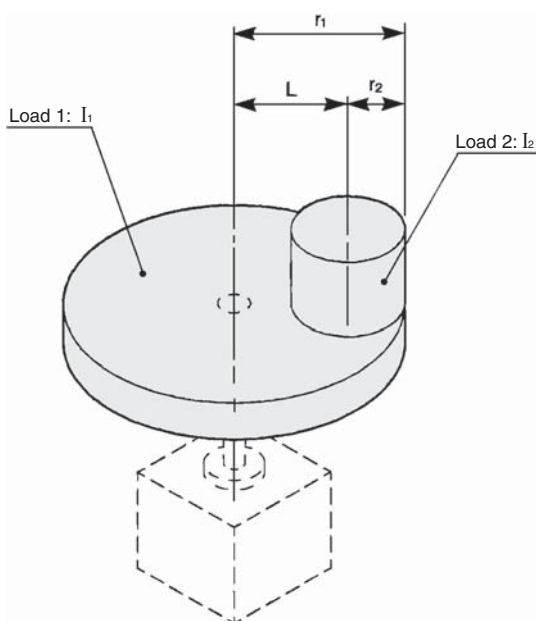
$a = 0.2 \text{ m}$ ,  $b = 0.1 \text{ m}$ ,  $L = 0.05 \text{ m}$ ,  $m = 1.5 \text{ kg}$

$$I_1 = 1.5 \times \frac{0.2^2 + 0.1^2}{12} = 6.25 \times 10^{-3} \quad \text{kg} \cdot \text{m}^2$$

$$I_2 = 1.5 \times 0.05^2 = 3.75 \times 10^{-3} \quad \text{kg} \cdot \text{m}^2$$

$$I = (6.25 + 3.75) \times 10^{-3} = 0.01 \quad \text{kg} \cdot \text{m}^2$$

### 2 If the load is divided into multiple loads:



Example) 1. If the load is divided into the 2 cylinders:

{ The centre of gravity of load 1 matches the shaft.  
The centre of gravity of load 2 differs from the shaft. }

Obtain the moment of inertia of load 1:

$$I_1 = m_1 \cdot \frac{r_1^2}{2}$$

2. Obtain the moment of inertia of load 2.

$$I_2 = m_2 \cdot \frac{r_2^2}{2} + m_2 \cdot L^2$$

3. Obtain the actual moment of inertia  $I$ .

$$I = I_1 + I_2$$

( $m_1, m_2$ : Weight of load 1 and 2  
 $r_1, r_2$ : Radius of load 1 and 2  
 $L$ : Distance from the shaft to the centre of gravity of load 2)

#### Calculation Example

$m_1 = 2.5 \text{ kg}$ ,  $m_2 = 0.5 \text{ kg}$ ,  $r_1 = 0.1 \text{ m}$ ,  $r_2 = 0.02 \text{ m}$ ,  $L = 0.08 \text{ m}$

$$I_1 = 2.5 \times \frac{0.1^2}{2} = 1.25 \times 10^{-2} \quad \text{kg} \cdot \text{m}^2$$

$$I_2 = 0.5 \times \frac{0.02^2}{2} + 0.5 \times 0.08^2 = 0.33 \times 10^{-2} \quad \text{kg} \cdot \text{m}^2$$

$$I = (1.25 + 0.33) \times 10^{-2} = 1.58 \times 10^{-2} \quad \text{kg} \cdot \text{m}^2$$



# Rotary Actuator/Vane Type

## Series **CRB2/CRBU2**

### Size: 10, 15, 20, 30, 40

Standard type  
Series **CRB2**



With auto switch

Standard type/With angle adjuster  
Series **CRB2□WU**



With auto switch

Free mount type  
Series **CRBU2**



With auto switch

Free mount type/With angle adjuster  
Series **CRBU2WU**



With auto switch

**CRB2**

**CRB2□WU**

**CRBU2**

**CRBU2WU**

Simple Specials

Made to Order

Component Unit

Angle Adjustment Setting

With Auto Switch

| Standard/Free mount type | Fluid          |  | Air         |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|--------------------------|----------------|--|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|
|                          | Size           |  | 10          |              |             |              | 15          |              |             |              | 20, 30      |              |             |              | 40          |              |             |              |
|                          | Vane type      | S: Single vane<br>D: Double vane                                 | S           |              | D           |              | S           |              | D           |              | S           |              | D           |              | S           |              | D           |              |
|                          | Port location  | Side ported (Nil)<br>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     | Single shaft   | S           |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          |                | Double shaft   | W           |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          |                | Long shaft with round shaft &<br>Short shaft with single flat    | J           |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          |                | Same length double long shaft<br>with single flat on both shafts | Y           |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          |                | Double shaft key   |             |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          |                | Double round shaft   | K           |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          |                | Single round shaft   | T           |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          | Cushion        | Rubber buffer  |             |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          | Variations     | With auto switch (WJ shaft)                                      |             |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          |                | With angle adjuster (WJ shaft)                                   |             |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          |                | With auto switch and angle adjuster (WJ shaft)                   |             |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
| Option                   | Mounting       | With flange*   | F           |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
| Made to Order            | Pattern        | Shaft pattern  |             |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |
|                          |                | Rotating angle pattern   |             |              |             |              |             |              |             |              |             |              |             |              |             |              |             |              |

\* Series CRB2 only

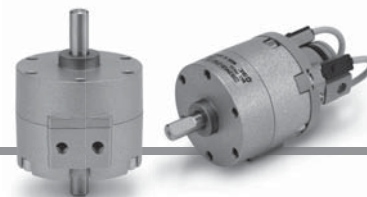
# Rotary Actuator Vane Type

## Series *CRB2*

Size: 10, 15, 20, 30, 40

RoHS

### How to Order



Without auto switch

CRB2 **B** **S** **20** - **180** **S** **E** **Z** — **7** — **8** — **9** — **10** — **11**

With auto switch

CDRB2 **B** **W** **20** - **180** **S** **Z** — **7** — **T79** **L** — **8** — **9** — **10** — **11**

#### 1 With auto switch

(With auto switch unit and built-in magnet)  
\* Refer to page 49 when the auto switch unit is needed separately.

#### 2 Mounting

| Symbol    | Mounting    |
|-----------|-------------|
| <b>B</b>  | Basic type  |
| <b>F*</b> | Flange type |

\* F: Except size 40

#### 3 Shaft type

| Symbol     | Shaft type   | Shaft-end shape |                              |
|------------|--------------|-----------------|------------------------------|
|            |              | Long shaft      | Short shaft                  |
| <b>S</b>   | Single shaft | Single flat*    | —                            |
| <b>W</b>   | Double shaft | Single flat*    | Single flat                  |
| <b>J**</b> | Double shaft | Round shaft     | Single flat                  |
| <b>K**</b> | Double shaft | Round shaft     | Round shaft                  |
| <b>T**</b> | Single shaft | Round shaft     | —                            |
| <b>Y**</b> | Double shaft | Single flat*    | Long shaft with single flat* |

\* A key is used for size 40. \*\* J, K, T and Y are made to order.

\*\*\* When an auto switch is mounted to the rotary actuator, only shaft types W and J are available.

#### 4 Size

|           |
|-----------|
| <b>10</b> |
| <b>15</b> |
| <b>20</b> |
| <b>30</b> |
| <b>40</b> |

#### 9 Electrical entry/Lead wire length

|           |                             |
|-----------|-----------------------------|
| —         | Grommet/Lead wire: 0.5 m    |
| <b>L</b>  | Grommet/Lead wire: 3 m      |
| <b>C</b>  | Connector/Lead wire: 0.5 m  |
| <b>CL</b> | Connector/Lead wire: 3 m    |
| <b>CN</b> | Connector/Without lead wire |

\* 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

#### 5 Rotating angle

|             |            |      |
|-------------|------------|------|
| Single vane | <b>90</b>  | 90°  |
|             | <b>180</b> | 180° |
|             | <b>270</b> | 270° |
| Double vane | <b>90</b>  | 90°  |
|             | <b>100</b> | 100° |

#### 6 Vane type

|          |             |
|----------|-------------|
| <b>S</b> | Single vane |
| <b>D</b> | Double vane |

#### 8 Auto switch

|   |  |
|---|--|
| — | Without auto switch<br>(Built-in magnet) |
|---|--|

\* For applicable auto switch model, refer to the table below.

#### 7 Connecting port location

|          |              |
|----------|--------------|
| —        | Side ported  |
| <b>E</b> | Axial ported |

#### 11 Made to Order

For details, refer to the table in the next page.

#### 10 Number of auto switches

|          |          |
|----------|----------|
| <b>S</b> | 1 pc.*   |
| —        | 2 pcs.** |

\* S: A right-hand auto switch is shipped.

\*\* —: A right-hand switch and a left-hand switch are shipped.

### Applicable Auto Switches/Refer to Auto Switch Guide 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 (—)               | 3 (L) | 5 (Z) | None [N] |                     |                 |            |
| For 10, 15      | Solid state auto switch | —                | Grommet          | Yes             | 3-wire (NPN)    | 5 V, 12 V        | —                      | <b>S99V</b>       | <b>S99</b>  | Oilproof heavy-duty cord | ●                     | ●     | ○     | —        | ○                   | IC circuit      | Relay, PLC |
|                 |                         |                  |                  |                 | 3-wire (PNP)    | 12 V             | —                      | <b>S9PV</b>       | <b>S9P</b>  |                          | ●                     | ●     | ○     | —        | ○                   | —               |            |
|                 |                         |                  |                  |                 | 2-wire          | 5 V, 12 V        | 5 V, 12 V, 24 V        | —                 | <b>T99V</b> |                          | ●                     | ●     | ○     | —        | ○                   | —               |            |
|                 | Reed auto switch        | —                | Grommet          | No              | 2-wire          | 5 V, 12 V, 100 V | 5 V, 12 V, 24 V, 100 V | —                 | <b>90A</b>  | Vinyl parallel cord      | ●                     | ●     | ●     | —        | —                   | IC circuit      | Relay, PLC |
|                 |                         |                  |                  |                 |                 | —                | —                      | —                 | <b>97</b>   | Oilproof heavy-duty cord | ●                     | ●     | ●     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                 | —                | —                      | —                 | <b>93A</b>  | Vinyl parallel cord      | ●                     | ●     | ●     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                 | —                | 100 V                  | —                 | <b>93A</b>  | Oilproof heavy-duty cord | ●                     | ●     | ●     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                 | 5 V, 12 V        | —                      | —                 | <b>S79</b>  | Oilproof heavy-duty cord | ●                     | ●     | ○     | —        | ○                   | IC circuit      |            |
|                 |                         |                  |                  |                 |                 | 12 V             | —                      | —                 | <b>S7P</b>  |                          | ●                     | ●     | ○     | —        | ○                   | —               |            |
|                 |                         |                  |                  |                 |                 | —                | 100 V                  | —                 | <b>T79C</b> |                          | ●                     | ●     | ○     | —        | ○                   | —               |            |
|                 |                         |                  |                  |                 |                 | —                | —                      | —                 | <b>R73</b>  |                          | ●                     | ●     | ○     | —        | —                   | —               |            |
| For 20, 30, 40  | Solid state auto switch | —                | Grommet          | Yes             | 3-wire (NPN)    | 5 V, 12 V        | —                      | —                 | <b>S79</b>  | Oilproof heavy-duty cord | ●                     | ●     | ○     | —        | ○                   | IC circuit      | Relay, PLC |
|                 |                         |                  |                  |                 | 3-wire (PNP)    | 12 V             | —                      | —                 | <b>S7P</b>  |                          | ●                     | ●     | ○     | —        | ○                   | —               |            |
|                 |                         |                  |                  |                 | 2-wire          | —                | 100 V                  | —                 | <b>T79C</b> |                          | ●                     | ●     | ○     | —        | ○                   | —               |            |
|                 | Reed auto switch        | —                | Grommet          | No              | 2-wire          | —                | —                      | —                 | <b>R73</b>  |                          | ●                     | ●     | ○     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                 | —                | —                      | —                 | <b>R73C</b> |                          | ●                     | ●     | ○     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                 | 48 V, 100 V      | 100 V                  | —                 | <b>R80</b>  |                          | ●                     | ●     | ○     | —        | —                   | IC circuit      |            |
|                 |                         |                  |                  |                 |                 | —                | 24 V or less           | —                 | <b>R80C</b> |                          | ●                     | ●     | ○     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                 | —                | —                      | —                 | <b>R80C</b> |                          | ●                     | ●     | ○     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                 | —                | —                      | —                 | <b>R80C</b> |                          | ●                     | ●     | ○     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                 | —                | —                      | —                 | <b>R80C</b> |                          | ●                     | ●     | ○     | —        | —                   | —               |            |

\* Lead wire length symbols: 0.5 m..... (Example) R73C

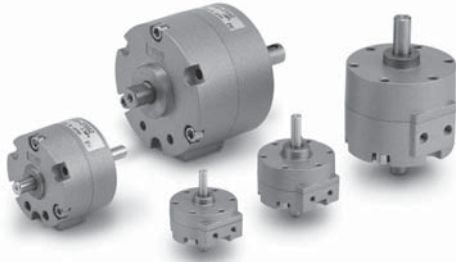
3 m..... L (Example) R73CL

5 m..... Z (Example) R73CZ

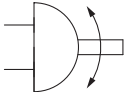
None..... N (Example) R73CN

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

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



Symbol



## Flange Assembly Part No.

(For details, refer to page 12.)

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



## Made to Order

(For details, refer to pages 34 to 48.)

| Symbol       | Description                             | Applicable shaft type |
|--------------|---|-----------------------|
| XA1 to XA24  | Shaft type pattern I                    | W                     |
| XA31 to XA58 | Shaft type pattern II                   | S, J, K, T, Y         |
| XC1          | Add connecting ports                    | W, S, J, K, T, Y      |
| XC2          | Change threaded hole to through-hole    | W, S, J, K, T, Y      |
| XC3          | Change the screw position               | W, S, J, K, T, Y      |
| XC4          | Change the rotation range               | W, S, J, K, T, Y      |
| XC5          | Change rotation range between 0 to 200° | W, S, J, K, T, Y      |
| XC6          | Change rotation range between 0 to 110° | W, S, J, K, T, Y      |
| XC7          | Reversed shaft                          | W, J                  |
| XC30         | Fluorine grease                         | W, S, J, K, T, Y      |

The above may not be selected when the product comes with an auto switch or angle adjustment unit. For details, refer to pages 34, 35, 40, 41, 46.

## Volume

[cm<sup>3</sup>]

| Vane type | Single vane |      |      |              |      |      |              |      |      |               |      |      |              |      |      | Double vane |      |     |      |     |      |      |      |     |      |
|-----------|-------------|------|------|--------------|------|------|--------------|------|------|---------------|------|------|--------------|------|------|-------------|------|-----|------|-----|------|------|------|-----|------|
| Size      | 10          |      |      | 15           |      |      | 20           |      |      | 30            |      |      | 40           |      |      | 10          |      | 15  |      | 20  |      | 30   |      | 40  |      |
| 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° |
| Volume    | 1<br>(0.6)  | 1.2  | 1.5  | 1.5<br>(1.0) | 2.9  | 3.7  | 4.8<br>(3.6) | 6.1  | 7.9  | 11.3<br>(8.5) | 15   | 20.2 | 25<br>(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 pressurised.

## Weight

[g]

| Vane type            | Single vane |      |      |     |      |      |     |      |      |     |      |      |     |      |      | Double vane |      |     |      |     |      |     |      |     |      |
|----------------------|-------------|------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-------------|------|-----|------|-----|------|-----|------|-----|------|
| Size                 | 10          |      |      | 15  |      |      | 20  |      |      | 30  |      |      | 40  |      |      | 10          |      | 15  |      | 20  |      | 30  |      | 40  |      |
| 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° |
| Rotary actuator body | 27          | 26   | 26   | 48  | 47   | 46   | 104 | 103  | 101  | 199 | 194  | 189  | 385 | 374  | 363  | 42          | 43   | 55  | 58   | 119 | 142  | 219 | 239  | 398 | 444  |
| Flange assembly      | 9           |      |      | 10  |      |      | 19  |      |      | 25  |      |      | —   |      |      | 9           |      | 10  |      | 19  |      | 25  |      | —   |      |
| Auto switch unit     | 15          |      |      | 20  |      |      | 28  |      |      | 38  |      |      | 43  |      |      | 15          |      | 20  |      | 28  |      | 38  |      | 43  |      |
| Angle adjuster unit  | 30          |      |      | 47  |      |      | 90  |      |      | 150 |      |      | 203 |      |      | 30          |      | 47  |      | 90  |      | 150 |      | 203 |      |

## Single Vane Specifications

| Size  | 10                          | 15        | 20     | 30          | 40          |
|---|-----------------------------|-----------|--------|-------------|-------------|
| 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      |        |             |             |
| Rotation time adjustment range s/90° <sup>Note 1)</sup> | 0.03 to 0.3                 |           |        | 0.04 to 0.3 | 0.07 to 0.5 |
| Allowable kinetic energy [J] <sup>Note 2)</sup>         | 0.00015                     | 0.001     | 0.003  | 0.02        | 0.04        |
|   |                             | 0.00025   | 0.0004 | 0.015       | 0.03        |
| Shaft load  | Allowable radial load       | 15        | 15     | 25          | 30          |
| [N]   | Allowable thrust load       | 10        | 10     | 20          | 25          |
| Port location   | Side ported or Axial ported |           |        |             |             |
| Port size (Side ported, Axial ported)                   | M3 x 0.5                    |           |        | M5 x 0.8    |             |
| Angle adjustable range <sup>Note 3)</sup>               | 0 to 230°                   | 0 to 240° |        |             | 0 to 230°   |

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

Note 2) The upper numbers in this section in the table indicate the energy factor when the rubber buffer is used (at the end of the rotation), and the lower numbers indicate the energy factor when the rubber buffer is not used.

Note 3) Adjustment range in the table is for 270°. For 90° and 180°, refer to page 14.

## Double Vane Specifications

| Size  | 10                          | 15     | 20     | 30          | 40          |
|---|-----------------------------|--------|--------|-------------|-------------|
| 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° <sup>Note 1)</sup> | 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       | 15     | 15     | 25          | 30          |
| [N]   | Allowable thrust load       | 10     | 10     | 20          | 25          |
| Port location   | Side ported or Axial ported |        |        |             |             |
| Port size (Side ported, Axial ported)                   | M3 x 0.5                    |        |        | M5 x 0.8    |             |
| Angle adjustable range <sup>Note 2)</sup>               | 0 to 90°                    |        |        |             |             |

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

Note 2) Adjustment range in the table is for 100°. For 90°, refer to page 14.

CRB2

CRB2□WU

CRBU2

CRBU2WU

Simple Specials

Made to Order

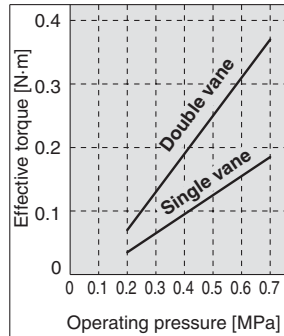
Component Unit

Angle Adjustment Setting

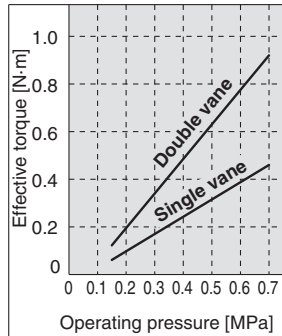
With Auto Switch

## Effective Output

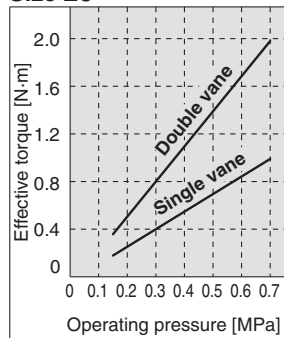
**Size 10**



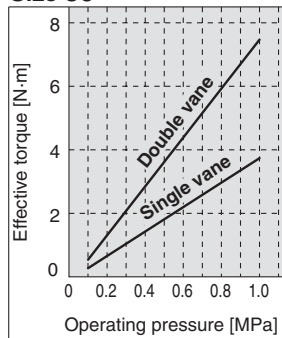
**Size 15**



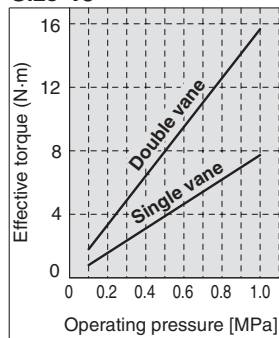
**Size 20**



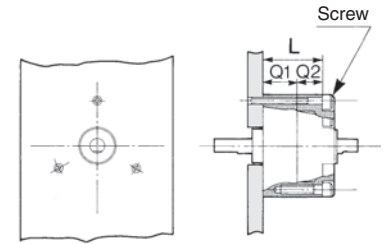
**Size 30**



**Size 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

| Size | L     | Screw |
|------|-------|-------|
| 10   | 11.5* | M2.5  |
| 15   | 16    | M2.5  |
| 20   | 24.5  | M3    |
| 30   | 34.5  | M4    |
| 40   | 39.5  | M4    |

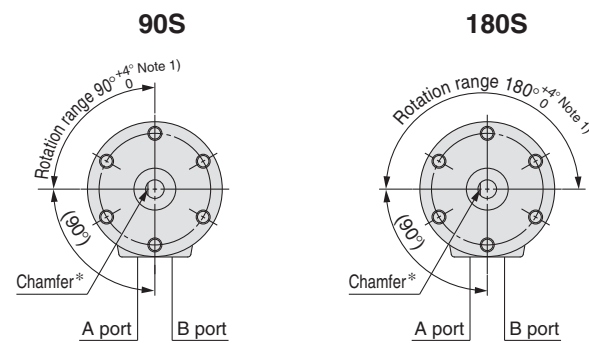
\* Only the size 10 actuators have different L dimensions for single and double vane.  
Double vane: L = 20.5

\* Refer to page 7 for Q1 and Q2 dimensions.

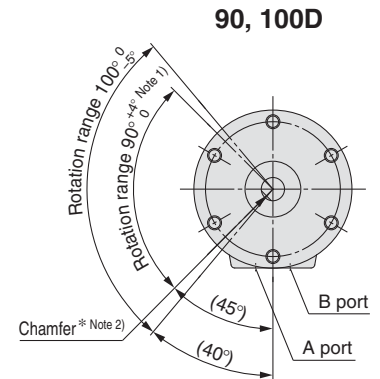
## Chamfered Position and Rotation Range: Top View from Long Shaft Side

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

### 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  $\begin{smallmatrix} +5^{\circ} \\ -0 \end{smallmatrix}$  for size 10 only.

For double vane type, the tolerance of rotating angle of 90° will be  $\begin{smallmatrix} +5^{\circ} \\ -0 \end{smallmatrix}$  for size 10 only.

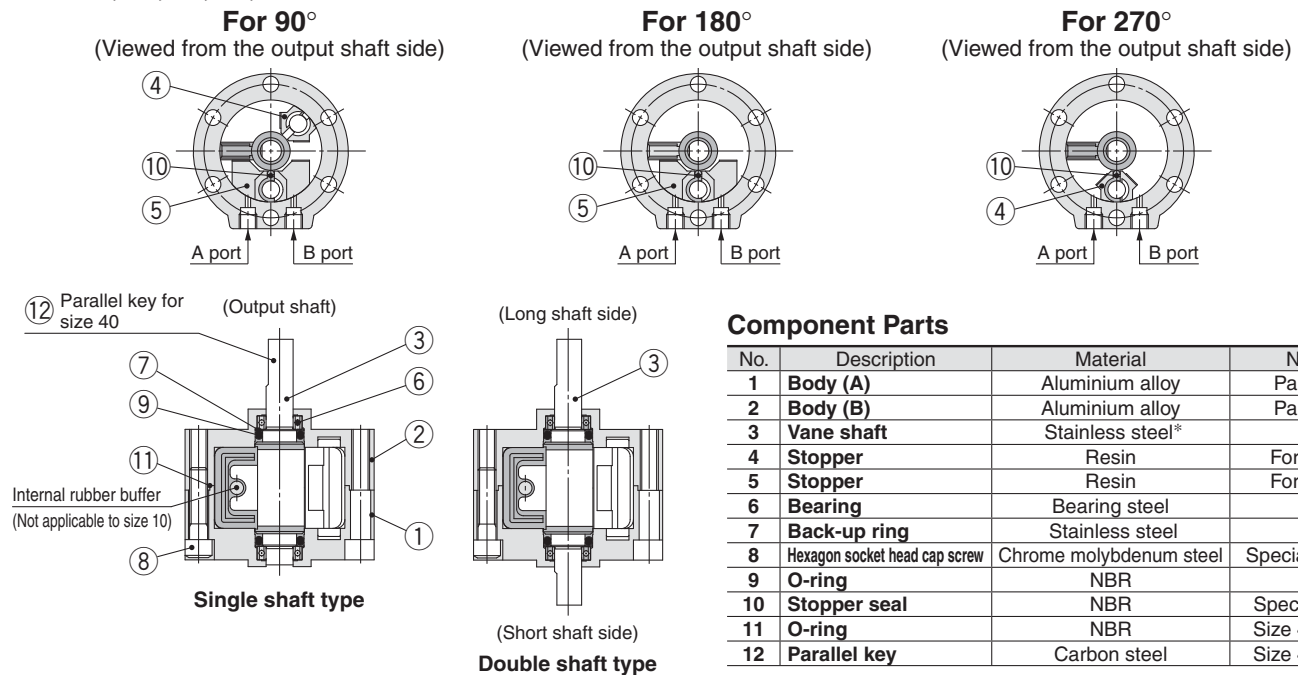
Note 2) The chamfered position of the double vane type shows the 90° specification position.



## Construction (Without Auto Switch)

**Single vane** • Figures for 90° and 180° show the condition of the actuators when B port is pressurised, and the figure for 270° shows the position of the ports during rotation.

**Size: 10, 15, 20, 30, 40**



### Component Parts

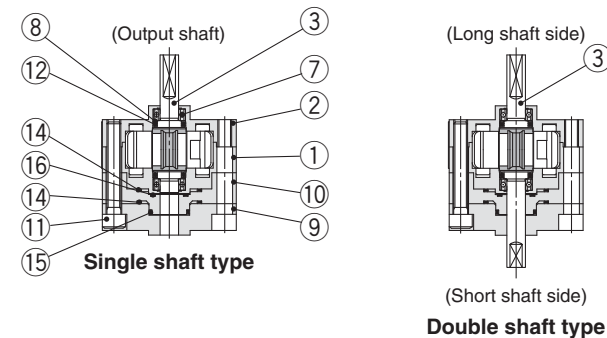
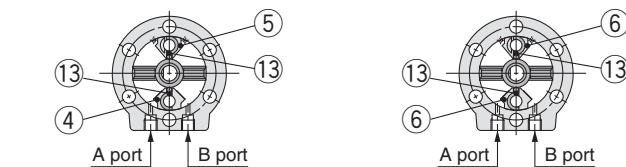
| No. | Description                   | Material                | Note          |
|-----|-------------------------------|-------------------------|---------------|
| 1   | Body (A)                      | Aluminium alloy         | Painted       |
| 2   | Body (B)                      | Aluminium alloy         | Painted       |
| 3   | Vane shaft                    | Stainless steel*        |               |
| 4   | Stopper                       | Resin                   | For 270°      |
| 5   | Stopper                       | Resin                   | For 180°      |
| 6   | Bearing                       | Bearing steel           |               |
| 7   | Back-up ring                  | Stainless steel         |               |
| 8   | Hexagon socket head cap screw | Chrome molybdenum steel | 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 chrome molybdenum steel for size 30 and 40.

**Double vane** • Figures below show the intermediate rotation position when A or B port is pressurised.

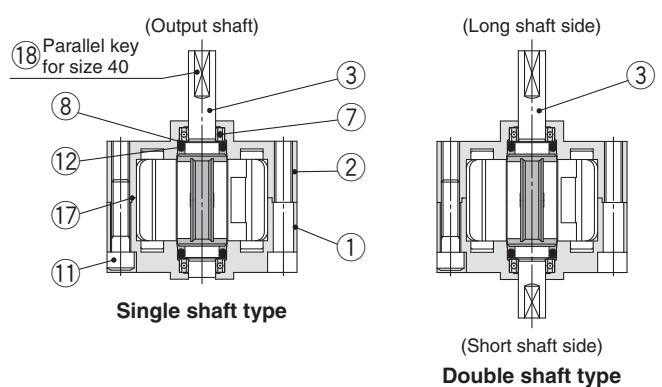
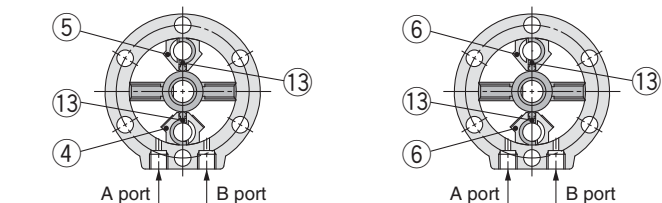
**Size: 10**

**For 90°** (Viewed from the output shaft side) **For 100°** (Viewed from the output shaft side)



**Size: 15, 20, 30, 40**

**For 90°** (Viewed from the output shaft side) **For 100°** (Viewed from the output shaft side)



### Component Parts

| No. | Description  | Material                | Note    |
|-----|--------------|-------------------------|---------|
| 1   | Body (A)     | Aluminium alloy         | Painted |
| 2   | Body (B)     | Aluminium alloy         | Painted |
| 3   | Vane shaft   | Chrome molybdenum steel |         |
| 4   | Stopper      | Stainless steel*        |         |
| 5   | Stopper      | Resin                   |         |
| 6   | Stopper      | Stainless steel*        |         |
| 7   | Bearing      | Bearing steel           |         |
| 8   | Back-up ring | Stainless steel         |         |
| 9   | Cover        | Aluminium alloy         |         |

\* For size 40, material for (4), (6) is Aluminium alloy.

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

## Construction (With Auto Switch)

### Single vane

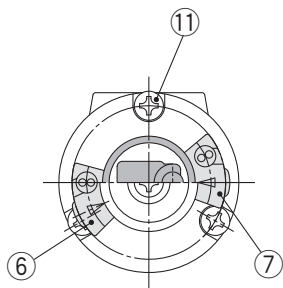
- Following figures show actuators for 90° and 180° when B port is pressurised.

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

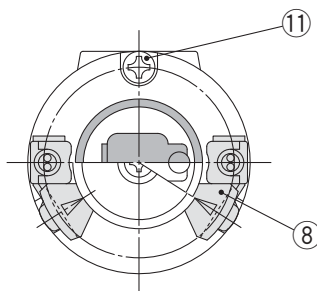
### Double vane

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

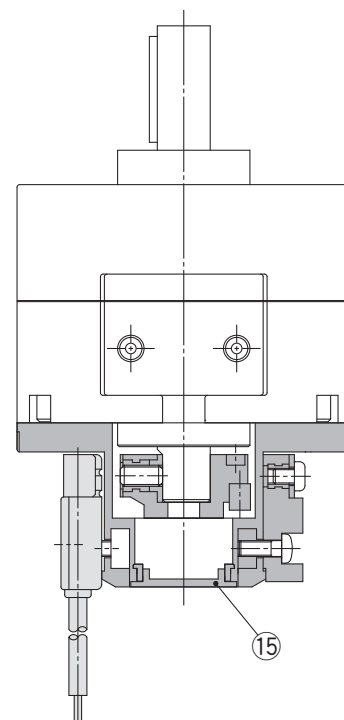
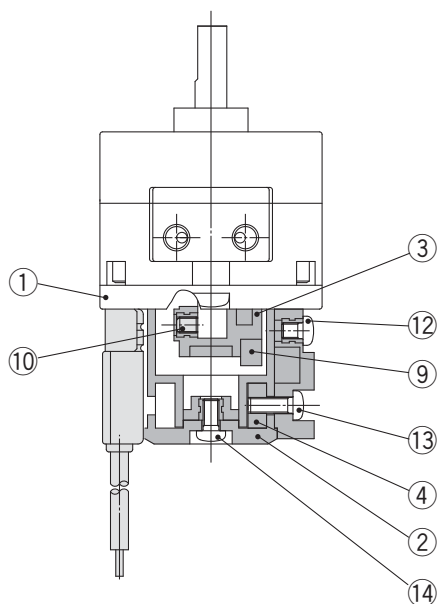
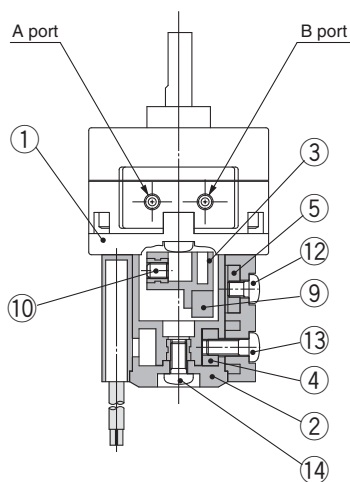
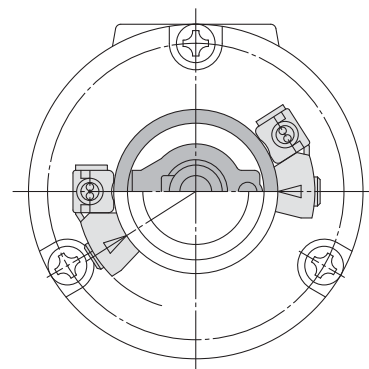
Size: 10, 15



Size: 20, 30



Size: 40



### 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) | Aluminium 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 size 10, 2 cross recessed round head screws ⑪ are required.

## Dimensions: Standard Type (Without Auto Switch) 10, 15, 20, 30, 40

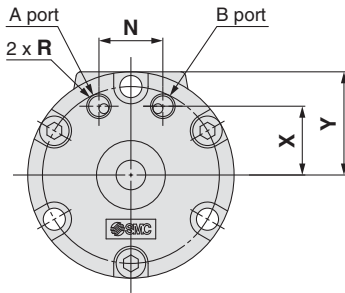
- For single vane type, the figures below show actuators for 90° and 180° when B port is pressurised.
- For double vane type, the figures below show the intermediate rotation position when the A or B port is pressurised.

### Single shaft/Port location: Side ported

(The size 10 double vane type is indicated on page 8.)

Size: 10, 15, 20, 30, 40

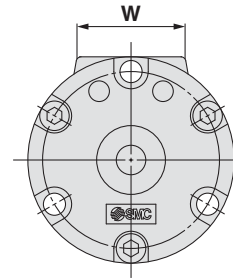
<Port location: Axial ported>



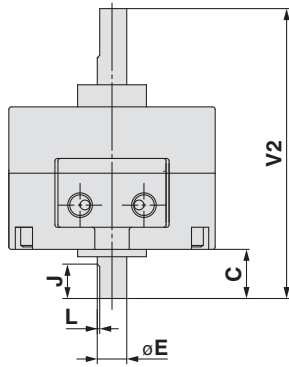
2 x M3 x 0.5 depth 4  
Size 10 only  
(For unit mounting)

Size: 10

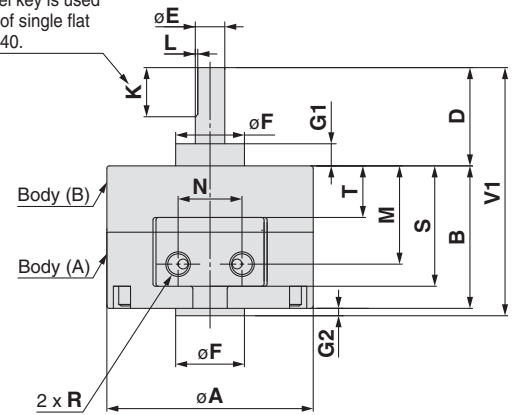
<Port location: Side ported>



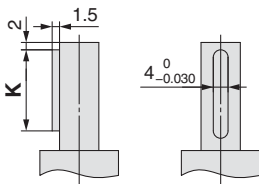
### Double shaft/Port location: Side ported



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

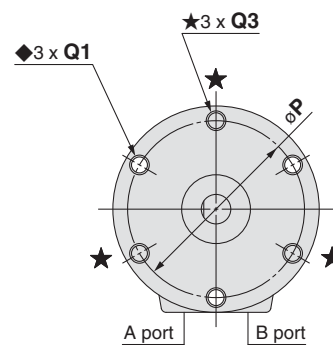
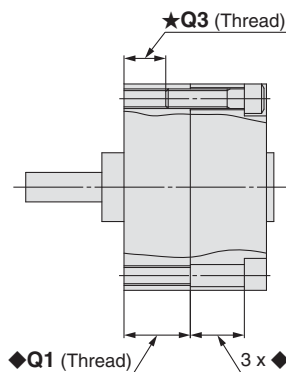


### Shaft-end shape of size 40



### Parallel key dimensions

| b (h9)                           | h (h9)                           | L1 |
|----------------------------------|----------------------------------|----|
| 4 <sup>0</sup> <sub>-0.030</sub> | 4 <sup>0</sup> <sub>-0.030</sub> | 20 |



Refer to page 11 for details of shaft types J, K, T and Y.

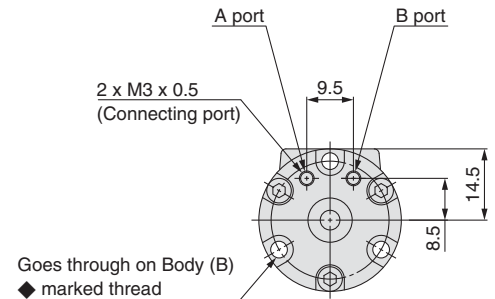
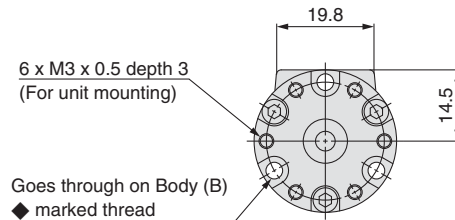
| Size | A  | B  | C  | D  | E (g7)                                 | F (h9)                            | G1  | G2  | J | K  | L   | M   | N   | P  | Q                   |      |                    | R        | S    | T    | V1   | V2 | W    | X    | Y    |
|------|----|----|----|----|--|-----------------------------------|-----|-----|---|----|-----|-----|-----|----|---------------------|------|--------------------|----------|------|------|------|----|------|------|------|
|      |    |    |    |    |  |                                   |     |     |   |    |     |     |     |    | ◆Q1                 | ◆Q2  | ★Q3                |          |      |      |      |    |      |      |      |
| 10   | 29 | 15 | 8  | 14 | 4 <sup>-0.004</sup> <sub>-0.016</sub>  | 9 <sup>0</sup> <sub>-0.036</sub>  | 3   | 1   | 5 | 9  | 0.5 | 9.5 | 9.5 | 24 | M3 x 0.5 depth 6    | 6    | —                  | M3 x 0.5 | 14   | 3.6  | 30   | 37 | 19.8 | 8.5  | 14.5 |
| 15   | 34 | 20 | 9  | 18 | 5 <sup>-0.004</sup> <sub>-0.016</sub>  | 12 <sup>0</sup> <sub>-0.043</sub> | 4   | 1.5 | 6 | 10 | 0.5 | 14  | 10  | 29 | M3 x 0.5 depth 10   | 6    | M3 x 0.5 depth 5   | M3 x 0.5 | 19   | 7.6  | 39.5 | 47 | 21   | 11   | 17   |
| 20   | 42 | 29 | 10 | 20 | 6 <sup>-0.004</sup> <sub>-0.016</sub>  | 14 <sup>0</sup> <sub>-0.043</sub> | 4.5 | 1.5 | 7 | 10 | 0.5 | 20  | 13  | 36 | M4 x 0.7 depth 13.5 | 11   | M4 x 0.7 depth 7.5 | M5 x 0.8 | 24.5 | 10.5 | 50.5 | 59 | 22   | 14   | 21   |
| 30   | 50 | 40 | 13 | 22 | 8 <sup>-0.005</sup> <sub>-0.020</sub>  | 16 <sup>0</sup> <sub>-0.043</sub> | 5   | 2   | 8 | 12 | 1.0 | 26  | 14  | 43 | M5 x 0.8 depth 18   | 16.5 | M5 x 0.8 depth 10  | M5 x 0.8 | 34.5 | 14   | 64   | 75 | 24   | 15.5 | 25   |
| 40   | 63 | 45 | 15 | 30 | 10 <sup>-0.005</sup> <sub>-0.020</sub> | 25 <sup>0</sup> <sub>-0.052</sub> | 6.5 | 4.5 | 9 | 20 | 1.0 | 31  | 20  | 56 | M5 x 0.8 depth 16   | 17.5 | M5 x 0.8 depth 10  | M5 x 0.8 | 39.8 | 17   | 79.5 | 90 | 30   | 21   | 31.6 |

## Dimensions: Standard Type (Without Auto Switch) 10

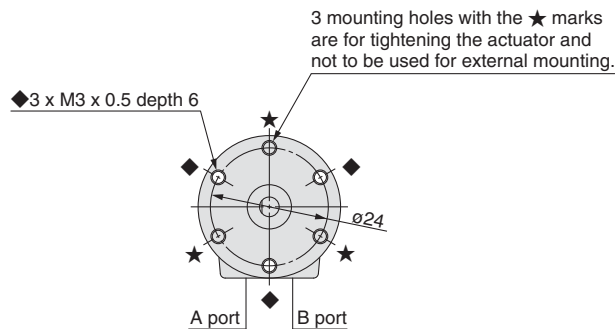
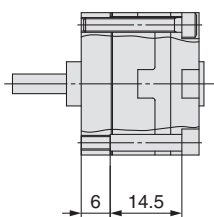
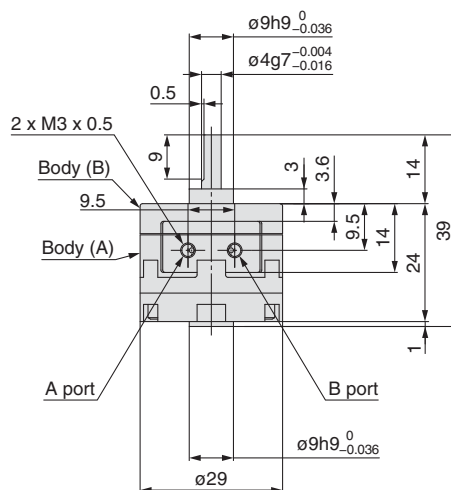
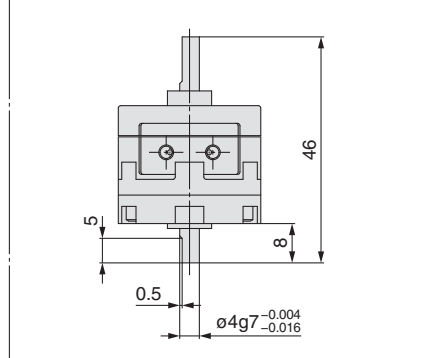
**Double vane** • Following figures show the intermediate rotation position when A or B port is pressurised.

### Single shaft/Port location: Side ported

### <Port location: Axial ported>



### Double shaft/Port location: Side ported



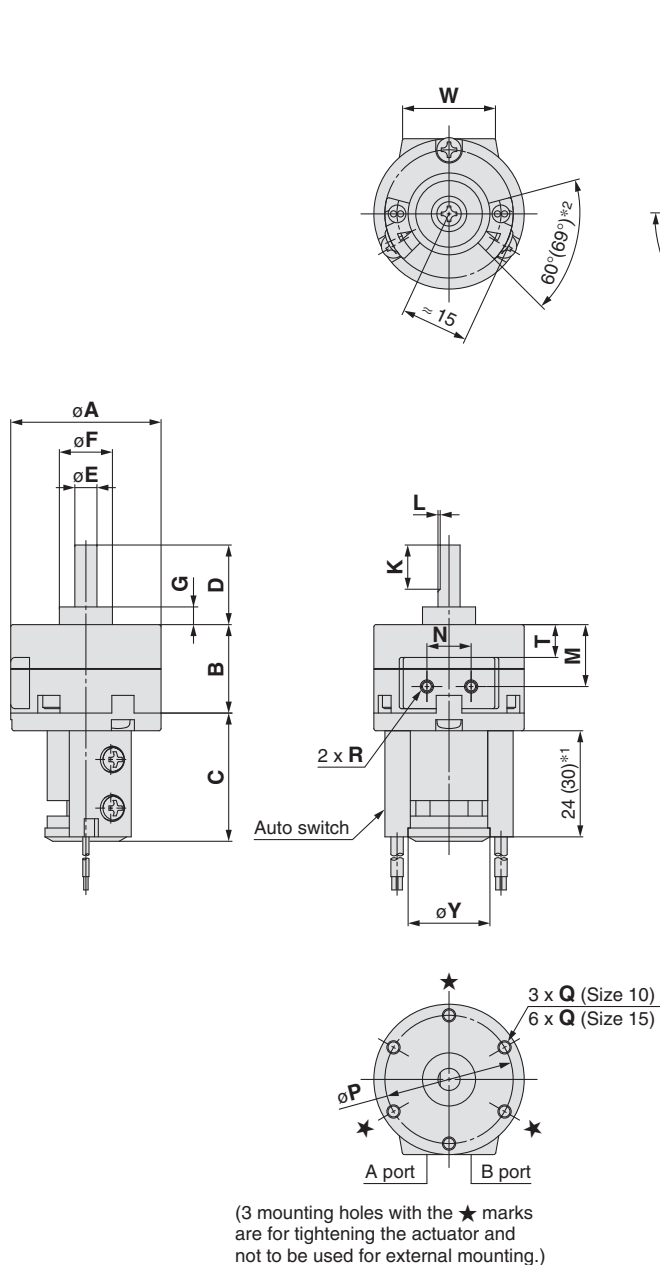
Refer to page 11 for details of shaft types J, K, T and Y.

## Dimensions: Standard Type (With Auto Switch) 10, 15, 20, 30, 40

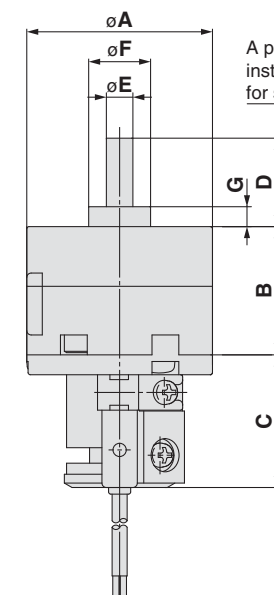
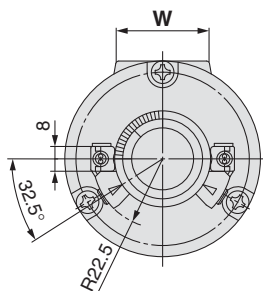
- For single vane type, the figures below show actuators for 90° and 180° when B port is pressurised.  
For double vane type, the figures below show the intermediate rotation position when the A or B port is pressurised.

### Size: 10, 15

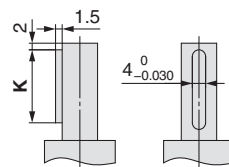
(The size 10 double vane type is indicated on page 10.)



### Size: 40



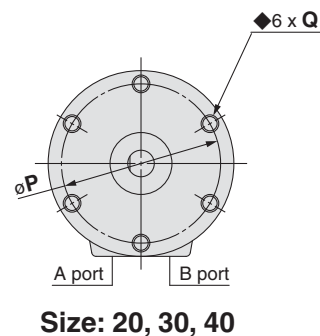
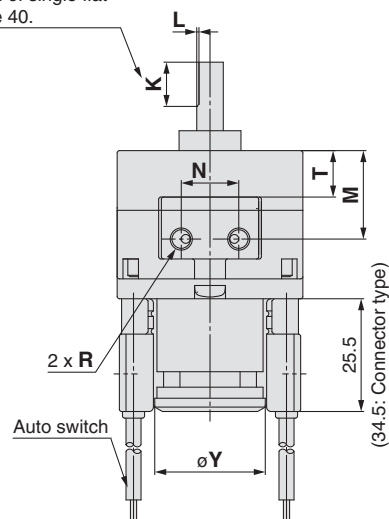
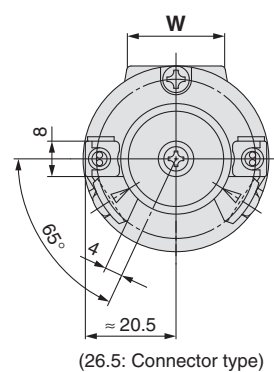
### Shaft-end shape of size 40



### Parallel key dimensions

| b (h9)                           | h (h9)                           | L1 |
|----------------------------------|----------------------------------|----|
| 4 <sup>0</sup> <sub>-0.030</sub> | 4 <sup>0</sup> <sub>-0.030</sub> | 20 |

### Size: 20, 30



### Size: 20, 30, 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)

Refer to page 11 for details of shaft types J, K, T and Y.

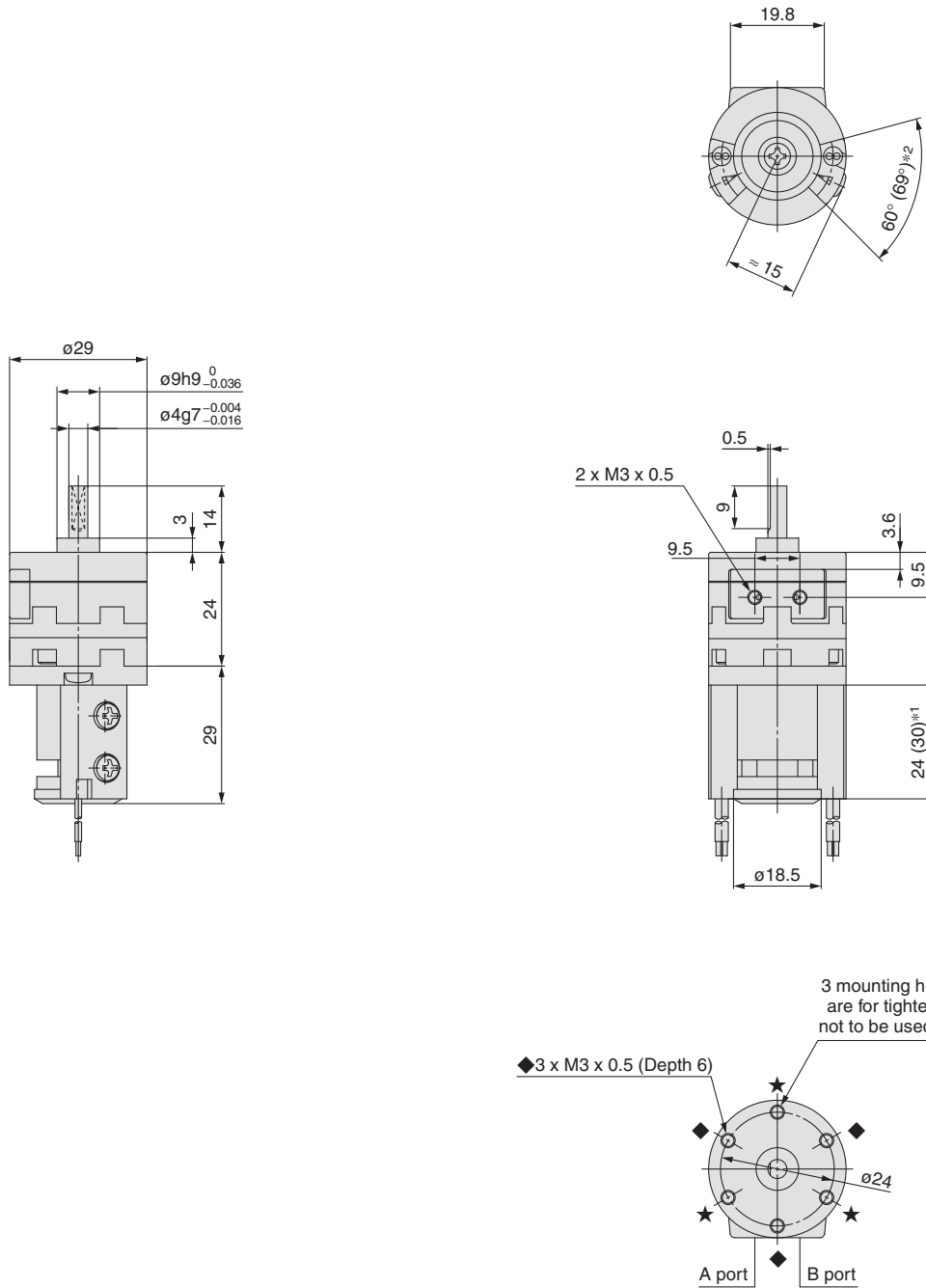
| Size | A  | B  | C  | D  | E (g7)                                 | F (h9)                            | G   | K  | L   | M   | N   | P  | Q                 | R        | T    | W    | Y    |
|------|----|----|----|----|--|-----------------------------------|-----|----|-----|-----|-----|----|-------------------|----------|------|------|------|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



## Dimensions: Standard Type (With Auto Switch) 10

**Double vane** • Following figures show the intermediate rotation position when A or B port is pressurised.

**Size: 10**



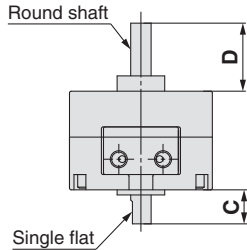
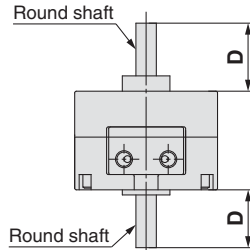
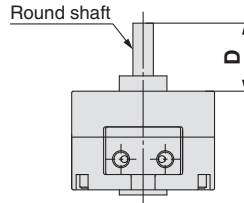
\*1. The length is 24 when any of the following auto switches are used: D-90/90A/S99(V)/T99(V)/S9P(V)  
The length is 30 when any of the following auto switches are used: D-97/93A

\*2. The angle is  $60^\circ$  when any of the following auto switches are used: D-90/90A/97/93A  
The angle is  $69^\circ$  when any of the following auto switches are used: D-S99(V)/T99(V)/S9P(V)

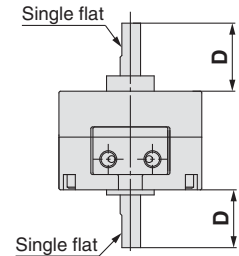
Refer to page 11 for details of shaft types J, K, T and Y.

**Shaft Type Dimensions** (Dimensions other than specified below are the same as the standard type.)

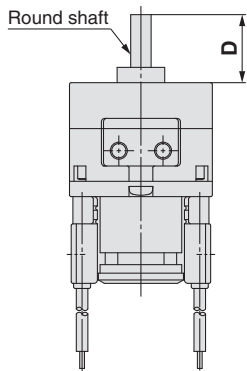
Size: 10, 15, 20, 30, 40

**Double shaft/CRB2□J****Double shaft/CRB2□K****Single shaft/CRB2□T****Single shaft/CRB2□Y**

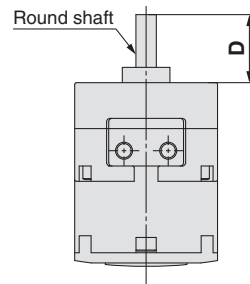
A parallel key is used instead of single flat for size 40.

**Double shaft/CDRB2□J**

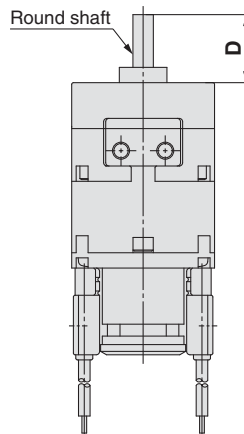
With auto switch

**Double shaft/CRB2□JU**

With angle adjuster unit

**Double shaft/CDRB2□JU**

With auto switch and angle adjuster unit



[mm]

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

Note 1) Dimensions and tolerance of the shaft and single flat (a parallel key for size 40) are the same as the standard.

Note 2) For rotary actuators with auto switch and angle adjuster unit, connection ports are side ports.

CRB2

CRB2□WU

CRBU2

CRBU2WU

Simple Specials

Made to Order

Component Unit

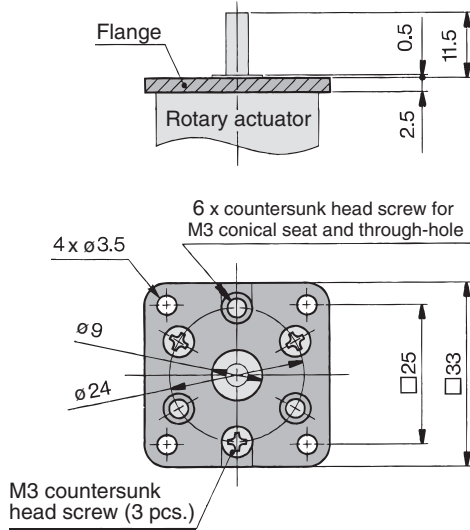
Angle Adjustment  
Setting

With Auto Switch

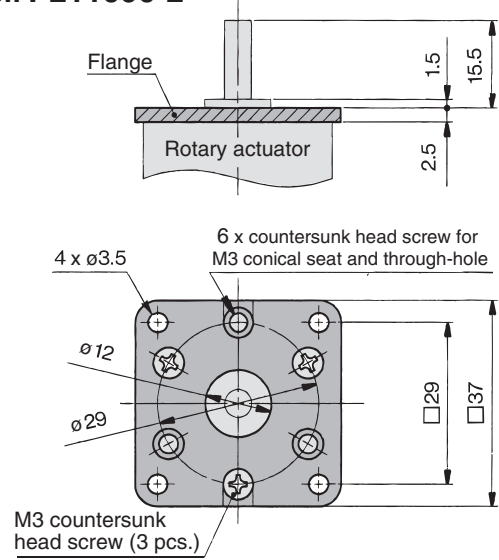
**Optional Specifications: Flange (Size: 10, 15, 20, 30)**



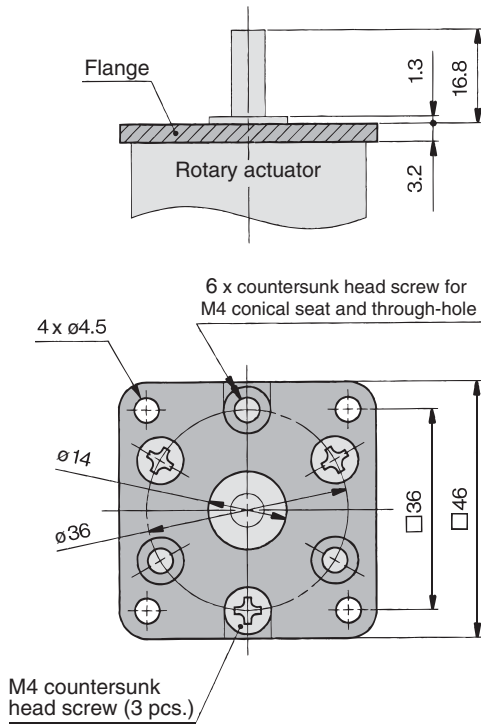
**Flange assembly for C□RB2F□□10**  
**Part no.: P211070-2**



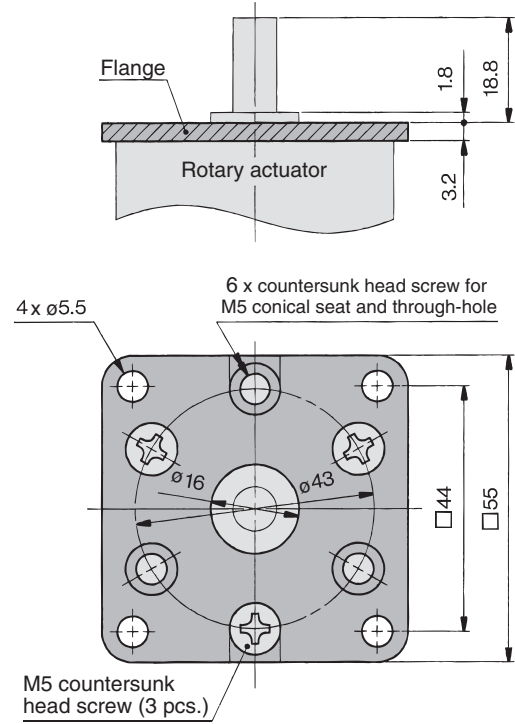
**Flange assembly for C□RB2F□□15**  
**Part no.: P211090-2**



**Flange assembly for C□RB2F□□20**  
**Part no.: P211060-2**



**Flange assembly for C□RB2F□□30**  
**Part no.: P211080-2**



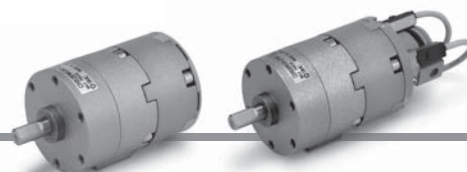
# Rotary Actuator with Angle Adjuster Vane Type

RoHS

## Series **CRB2**   **WU**

Size: 10, 15, 20, 30, 40

### How to Order



Without auto switch

**CRB2** B W U 20 - 180 S Z —  

With auto switch

**CDRB2** B W U 20 - 180 S Z - T79 L   -  

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

#### ① With auto switch

(With auto switch unit and built-in magnet)  
\* Refer to page 49 when the auto switch unit is needed separately.

#### ④ With angle adjuster unit

\* Refer to page 49 when the angle adjuster unit is needed separately.

#### ⑤ Size

|    |
|----|
| 10 |
| 15 |
| 20 |
| 30 |
| 40 |

#### ⑥ Rotating angle

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

#### ② Mounting

| Symbol    | Mounting    |
|-----------|-------------|
| <b>B</b>  | Basic type  |
| <b>F*</b> | Flange type |

\* F: Except size 40

#### ③ Shaft type

| Symbol     | Shaft-end shape |
|------------|-----------------|
| <b>W</b>   | Single flat*    |
| <b>J**</b> | Round shaft     |

\* A key is used for size 40.  
\*\* J is made to order.

#### ⑨ Electrical entry/Lead wire length

|           |                             |
|-----------|-----------------------------|
| —         | Grommet/Lead wire: 0.5 m    |
| <b>L</b>  | Grommet/Lead wire: 3 m      |
| <b>C</b>  | Connector/Lead wire: 0.5 m  |
| <b>CL</b> | Connector/Lead wire: 3 m    |
| <b>CN</b> | Connector/Without lead wire |

\* 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

#### ⑦ Vane type

|          |             |
|----------|-------------|
| <b>S</b> | Single vane |
| <b>D</b> | Double vane |

#### ⑧ Auto switch

|   |                                       |
|---|---------------------------------------|
| — | Without auto switch (Built-in magnet) |
|---|---------------------------------------|

\* For applicable auto switch model, refer to the table below.

#### ⑩ Number of auto switches

|          |          |
|----------|----------|
| <b>S</b> | 1 pc.*   |
| —        | 2 pcs.** |

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

#### ⑪ Made to Order

For details, refer to the table below.

### Applicable Auto Switches/Refer to Auto Switch Guide 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 (—)               | 3 (L) | 5 (Z) | None [N] |                     |                 |            |
| For 10, 15      | Solid state auto switch | —                | Grommet          | Yes             | 3-wire (NPN)<br>3-wire (PNP) | 5 V, 12 V        | —                      | <b>S99V</b>       | <b>S99</b>  | Oilproof heavy-duty cord | ●                     | ●     | ○     | —        | ○                   | IC circuit      | Relay, PLC |
|                 |                         |                  |                  |                 |                              | 12 V             | —                      | <b>S9PV</b>       | <b>S9P</b>  |                          | ●                     | ●     | ○     | —        | ○                   | —               |            |
|                 |                         |                  |                  |                 |                              | —                | —                      | <b>T99V</b>       | <b>T99</b>  |                          | ●                     | ●     | ○     | —        | ○                   | —               |            |
|                 | Reed auto switch        | —                | Grommet          | No              | 2-wire                       | 5 V, 12 V        | 5 V, 12 V, 24 V        | —                 | <b>90</b>   | Vinyl parallel cord      | ●                     | ●     | ●     | —        | —                   | IC circuit      |            |
|                 |                         |                  |                  |                 |                              | 5 V, 12 V, 100 V | 5 V, 12 V, 24 V, 100 V | —                 | <b>90A</b>  |                          | ●                     | ●     | ●     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                              | —                | —                      | —                 | <b>97</b>   |                          | ●                     | ●     | ●     | —        | —                   | —               |            |
| For 20, 30, 40  | Solid state auto switch | —                | Grommet          | Yes             | 3-wire (NPN)<br>3-wire (PNP) | 5 V, 12 V        | —                      | —                 | <b>S79</b>  | Oilproof heavy-duty cord | ●                     | ●     | ○     | —        | ○                   | IC circuit      | Relay, PLC |
|                 |                         |                  |                  |                 |                              | 12 V             | —                      | —                 | <b>S7P</b>  |                          | ●                     | ●     | ○     | —        | ○                   | —               |            |
|                 |                         |                  |                  |                 |                              | —                | —                      | —                 | <b>T79</b>  |                          | ●                     | ●     | ○     | —        | ○                   | —               |            |
|                 | Reed auto switch        | —                | Connector        | No              | 2-wire                       | —                | 100 V                  | —                 | <b>T79C</b> | Oilproof heavy-duty cord | ●                     | ●     | ●     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                              | —                | —                      | —                 | <b>R73</b>  |                          | ●                     | ●     | ○     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                              | —                | —                      | —                 | <b>R73C</b> |                          | ●                     | ●     | ●     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                              | 48 V, 100 V      | 100 V                  | —                 | <b>R80</b>  |                          | ●                     | ●     | ○     | —        | —                   | IC circuit      |            |
|                 |                         |                  |                  |                 |                              | —                | 24 V or less           | —                 | <b>R80C</b> |                          | ●                     | ●     | ●     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                              | —                | —                      | —                 | —           |                          | ●                     | ●     | ●     | —        | —                   | —               |            |
|                 |                         |                  |                  |                 |                              | —                | —                      | —                 | —           |                          | ●                     | ●     | ●     | —        | —                   | —               |            |

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

\* Auto switches are shipped together, (but not assembled).  
\* Solid state auto switches marked with "○" are produced upon receipt of order.



**Made to Order**  
(For details, refer to pages 34 to 48.)

| Symbol              | Description                              | Applicable shaft type |
|---------------------|--|-----------------------|
| <b>XA1 to XA24</b>  | Shaft type pattern I                     | W                     |
| <b>XA31 to XA58</b> | Shaft type pattern II                    | J                     |
| <b>XC1</b>          | Add connecting ports                     | W, J                  |
| <b>XC2</b>          | Change threaded hole to through-hole     | W, J                  |
| <b>XC3</b>          | Change the screw position                | W, J                  |
| <b>XC4</b>          | Change the rotation range                | W, J                  |
| <b>XC5</b>          | Change rotation range between 0 and 200° | W, J                  |
| <b>XC6</b>          | Change rotation range between 0 and 110° | W, J                  |
| <b>XC7</b>          | Reversed shaft                           | W, J                  |
| <b>XC30</b>         | Fluorine grease                          | W, J                  |

The above may not be selected when the product comes with an auto switch or angle adjuster unit. For details, refer to pages 34, 35, 40, 41, 46.

## Construction: 10, 15, 20, 30, 40

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

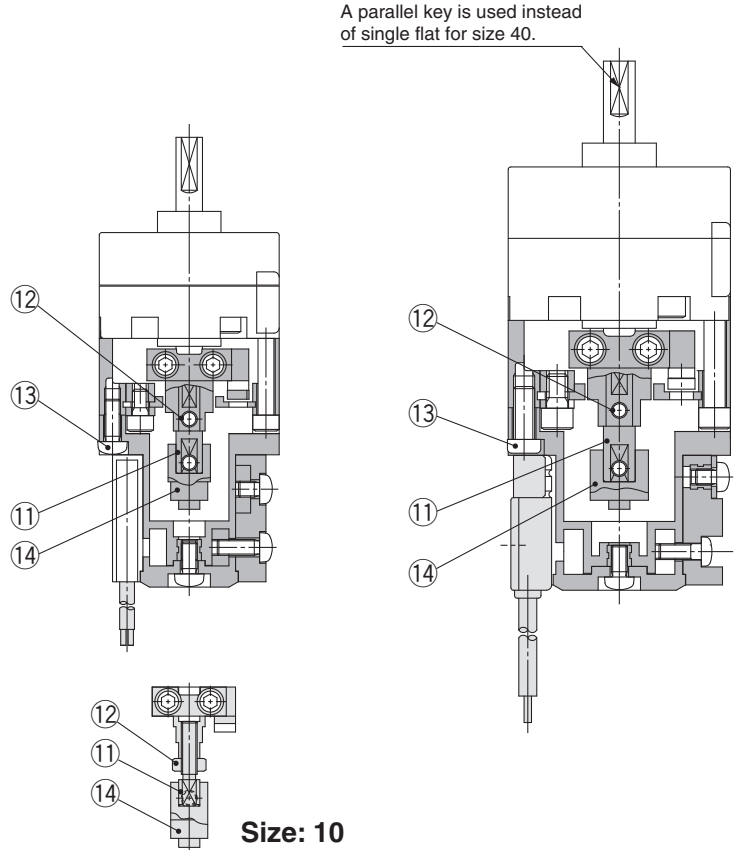
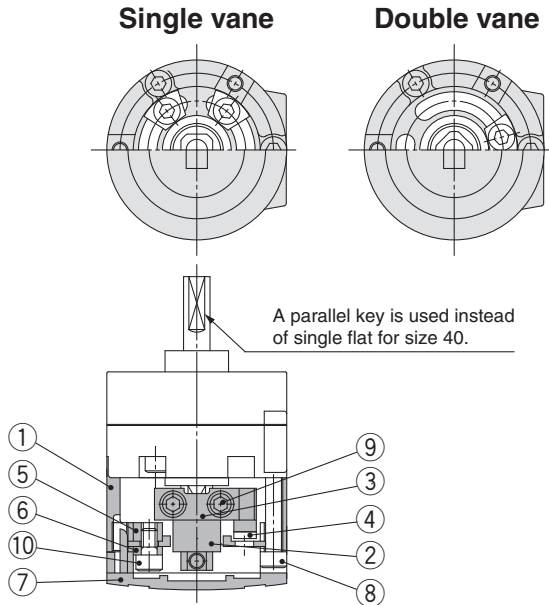
### With angle adjuster

Size: 10, 15, 20, 30, 40

### With auto switch and angle adjuster

Size: 10, 15

Size: 20, 30, 40



### Component Parts

| No. | Description                     | Material                | Note                                       |
|-----|---------------------------------|-------------------------|--|
| 1   | Stopper ring                    | Aluminium alloy         |  |
| 2   | Stopper lever                   | Chrome molybdenum steel |  |
| 3   | Lever retainer                  | Rolled steel            | Zinc chromated                             |
| 4   | Rubber buffer                   | NBR                     |  |
| 5   | Stopper block                   | Chrome molybdenum steel | Zinc chromated                             |
| 6   | Block retainer                  | Rolled 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                           |                         |  |
| 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 back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for Rotary Actuator Precautions and Auto Switch Precautions.

### Angle Adjuster Unit

### ⚠ Caution

1. 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) *     |
|                                   | 0° to 240° (Size: 15, 20, 30)   |
| $180^{+4}_{-0}$                   | 0° to 175°                      |
| $90^{+4}_{-0}$                    | 0° to 85°                       |

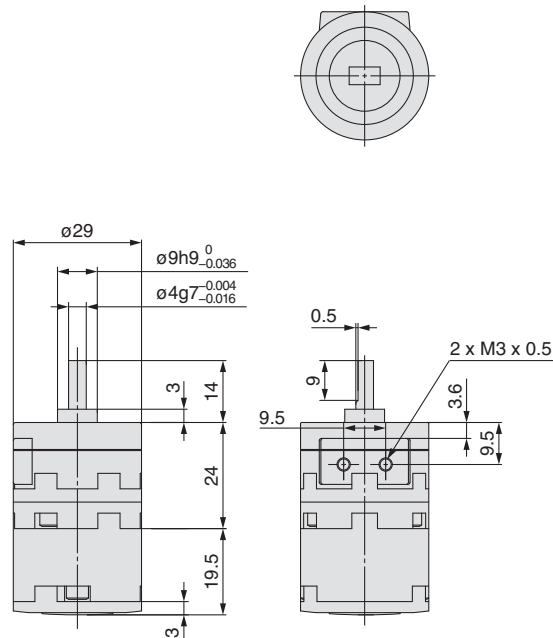
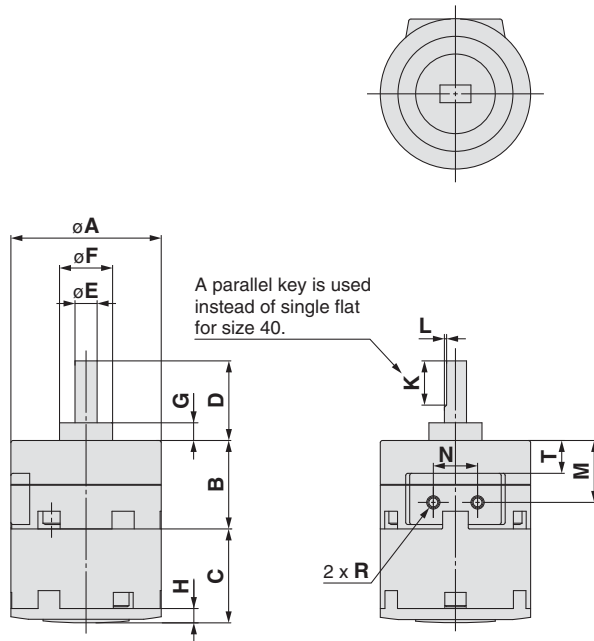
\* The maximum adjustment angle of the angle adjuster unit for size 10 and 40 is 230°

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

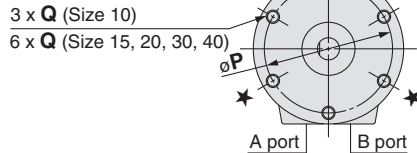


**Dimensions: Standard Type (Without Auto Switch and With Angle Adjuster) 10, 15, 20, 30, 40**

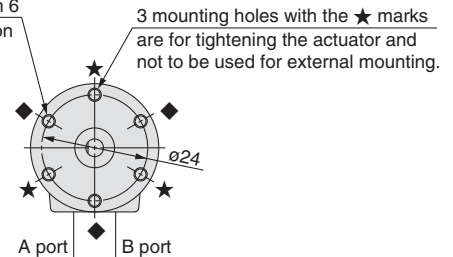
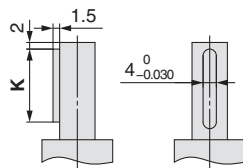
- For single vane type, the figures below show actuators for 90° (without unit) when the B port is pressurised.  
 For double vane type, the figures below show the intermediate rotation position when the A or B port is pressurised.

**Size: 10, 15, 20, 30, 40**
**Size: 10 (Double vane)**


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



◆ 3 x M3 x 0.5 depth 6  
 Goes through ø3.4 on Body A


**Shaft-end shape of size 40**

**Parallel key dimensions**

| b (h9)                           | h (h9)                           | L1 |
|----------------------------------|----------------------------------|----|
| 4 <sup>0</sup> <sub>-0.030</sub> | 4 <sup>0</sup> <sub>-0.030</sub> | 20 |

Refer to page 11 for details of shaft type J.

| Size | A  | B  | C    | D  | E (g7)                                 | F (h9)                            | G   | H   | K  | L   | M   | N   | P  | Q                 | R        | T    |
|------|----|----|------|----|--|-----------------------------------|-----|-----|----|-----|-----|-----|----|-------------------|----------|------|
| 10   | 29 | 15 | 19.5 | 14 | 4 <sup>-0.004</sup> <sub>-0.016</sub>  | 9 <sup>0</sup> <sub>-0.036</sub>  | 3   | 3   | 9  | 0.5 | 9.5 | 9.5 | 24 | M3 x 0.5 depth 6  | M3 x 0.5 | 3.6  |
| 15   | 34 | 20 | 21.2 | 18 | 5 <sup>-0.004</sup> <sub>-0.016</sub>  | 12 <sup>0</sup> <sub>-0.043</sub> | 4   | 3.2 | 10 | 0.5 | 14  | 10  | 29 | M3 x 0.5 depth 5  | M3 x 0.5 | 7.6  |
| 20   | 42 | 29 | 25   | 20 | 6 <sup>-0.004</sup> <sub>-0.016</sub>  | 14 <sup>0</sup> <sub>-0.043</sub> | 4.5 | 4   | 10 | 0.5 | 20  | 13  | 36 | M4 x 0.7 depth 7  | M5 x 0.8 | 10.5 |
| 30   | 50 | 40 | 29   | 22 | 8 <sup>-0.005</sup> <sub>-0.020</sub>  | 16 <sup>0</sup> <sub>-0.043</sub> | 5   | 4.5 | 12 | 1.0 | 26  | 14  | 43 | M5 x 0.8 depth 10 | M5 x 0.8 | 14   |
| 40   | 63 | 45 | 36.3 | 30 | 10 <sup>-0.005</sup> <sub>-0.020</sub> | 25 <sup>0</sup> <sub>-0.052</sub> | 6.5 | 5   | 20 | —   | 31  | 20  | 56 | M5 x 0.8 depth 10 | M5 x 0.8 | 17   |

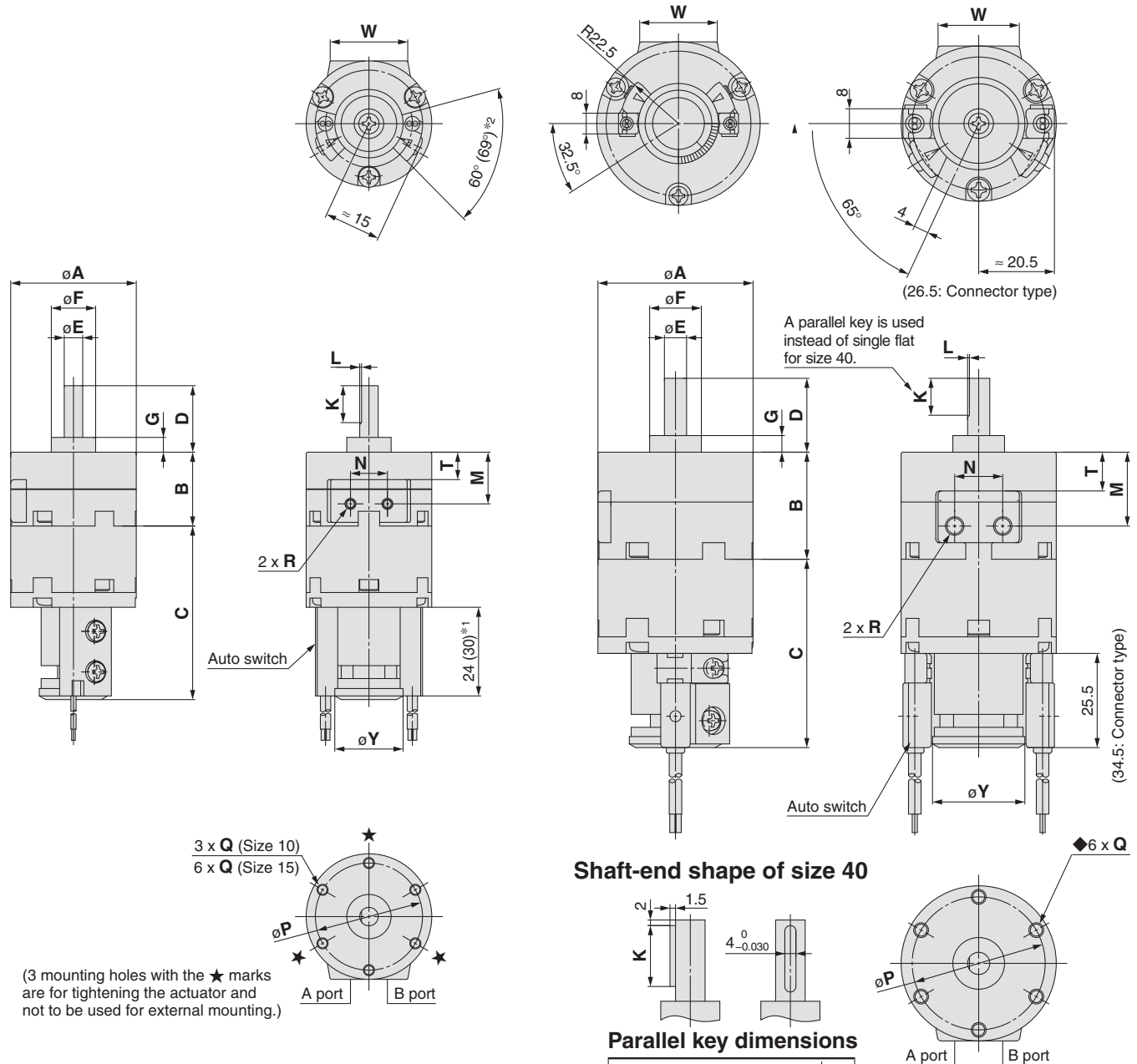
## Dimensions: Standard Type (With Auto Switch and Angle Adjuster) 10, 15, 20, 30, 40

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

### Size: 10, 15

(The size 10 double vane type is indicated on page 17.)

### Size: 20, 30, 40



Refer to page 11 for details of shaft type J.

- \*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)

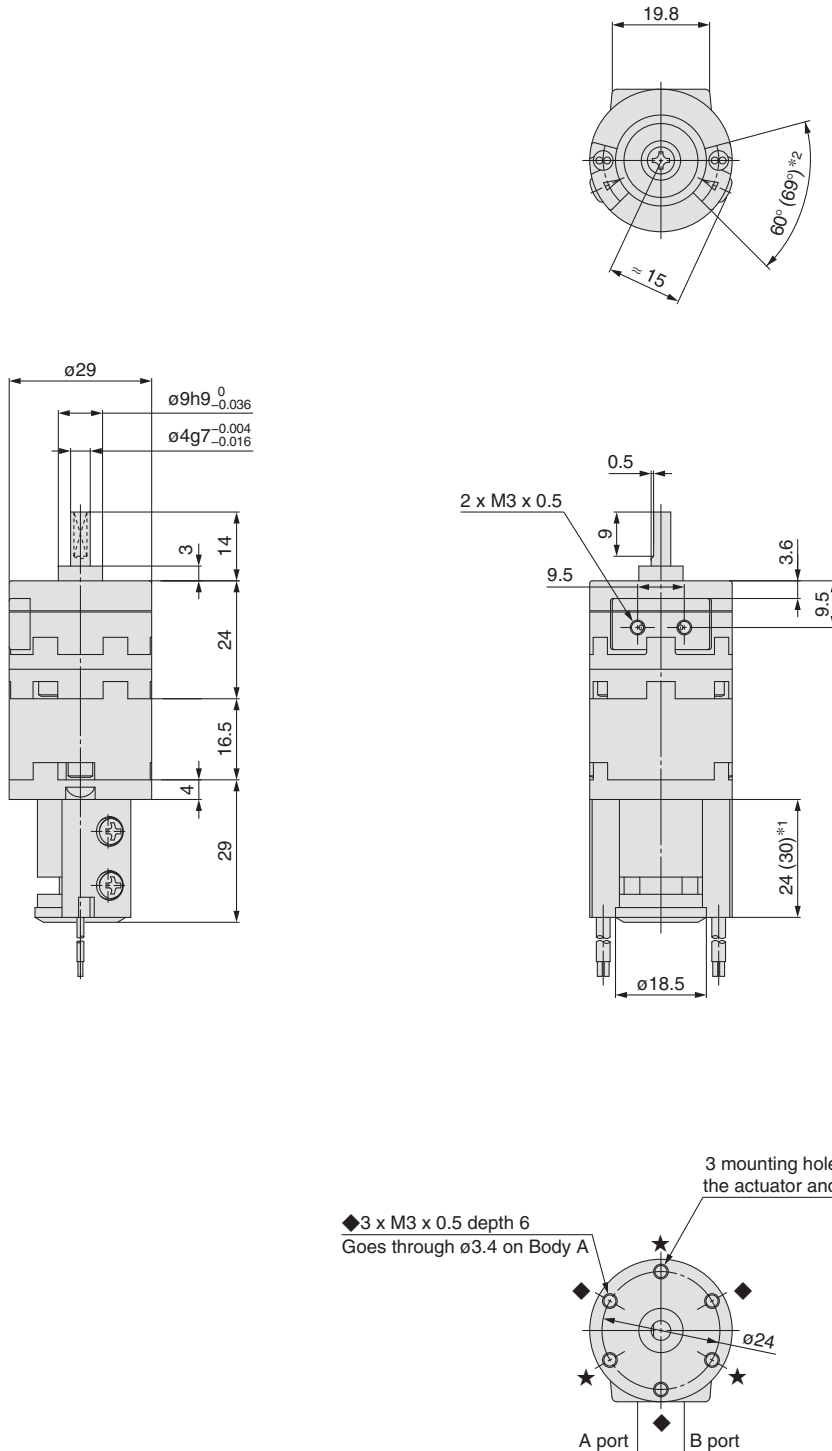
| Size | A  | B  | C    | D  | E (g7)                                 | F (h9)                            | G   | K  | L   | M   | N   | P  | Q                 | R        | T    | W    | Y    |
|------|----|----|------|----|--|-----------------------------------|-----|----|-----|-----|-----|----|-------------------|----------|------|------|------|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

[mm]

## Dimensions: Standard Type (With Auto Switch and Angle Adjuster) 10

**Double vane** • Following figures show the intermediate rotation position when A or B port is pressurised.

**Size: 10**



Refer to page 11 for details of shaft type J.

- \*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).

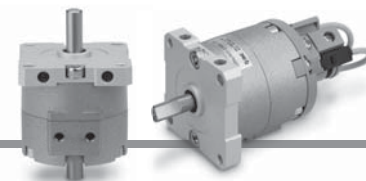
# Free Mount Type Rotary Actuator Vane Type

## Series *CRBU2*

Size: 10, 15, 20, 30, 40

RoHS

### How to Order



Without auto switch

CRBU2 **W** **20** - **180** **S** **E** **Z** ————

With auto switch

CDRBU2 **W** **20** - **180** **S** **Z** ———— **T79** **L** ————

Free mount type

#### 1 With auto switch

(With auto switch unit and built-in magnet)

\* Refer to page 49 when the auto switch unit is needed separately.

#### 2 Shaft type

| Symbol     | Shaft type   | Shaft-end shape |                              |
|------------|--------------|-----------------|------------------------------|
|            |              | Long shaft      | Short shaft                  |
| <b>S</b>   | Single shaft | Single flat*    | —                            |
| <b>W</b>   | Double shaft | Single flat*    | Single flat                  |
| <b>J**</b> | Double shaft | Round shaft     | Single flat                  |
| <b>K**</b> | Double shaft | Round shaft     | Round shaft                  |
| <b>T**</b> | Single shaft | Round shaft     | —                            |
| <b>Y**</b> | Double shaft | Single flat*    | Long shaft with single flat† |

\* A key is used for size 40. \*\* J, K, T and Y are made to order.

\*\*\* When an auto switch is mounted to the rotary actuator, only shaft types W and J are available.

#### 3 Size

|           |
|-----------|
| <b>10</b> |
| <b>15</b> |
| <b>20</b> |
| <b>30</b> |
| <b>40</b> |

#### 4 Rotating angle

|             |            |      |
|-------------|------------|------|
| Single vane | <b>90</b>  | 90°  |
|             | <b>180</b> | 180° |
|             | <b>270</b> | 270° |
| Double vane | <b>90</b>  | 90°  |
|             | <b>100</b> | 100° |

#### 5 Vane type

|          |             |
|----------|-------------|
| <b>S</b> | Single vane |
| <b>D</b> | Double vane |

#### 6 Connecting port location

|          |              |
|----------|--------------|
| —        | Side ported  |
| <b>E</b> | Axial ported |

#### 7 Auto switch

|   |  |
|---|--|
| — | Without auto switch<br>(Built-in magnet) |
|---|--|

\* For applicable auto switch model, refer to the table below.

#### 8 Electrical entry/Lead wire length

|           |                             |
|-----------|-----------------------------|
| —         | Grommet/Lead wire: 0.5 m    |
| <b>L</b>  | Grommet/Lead wire: 3 m      |
| <b>C</b>  | Connector/Lead wire: 0.5 m  |
| <b>CL</b> | Connector/Lead wire: 3 m    |
| <b>CN</b> | Connector/Without lead wire |

\* 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

#### 9 Number of auto switches

|          |          |
|----------|----------|
| <b>S</b> | 1 pc.*   |
| —        | 2 pcs.** |

\* S: A right-hand auto switch is shipped.

\*\* —: A right-hand switch and a left-hand switch are shipped.

#### 10 Made to Order

For details, refer to the table below.

### Applicable Auto Switches/Refer to Auto Switch Guide 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 (—)                  | 3 (L) | 5 (Z)               | None [N] |                     |                 |            |           |           |   |            |
| For 10, 15       | Solid state auto switch | —                      | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V, 12 V | —                 | S99V                     | S99            | Oilproof heavy-duty cord | ●     | ●                   | ○        | —                   | ○               | IC circuit | Relay PLC |           |   |            |
|                  |                         |                        |                  |                 | 3-wire (PNP)    |              | 12 V      |                   | S9PV                     | S9P            |                          | ●     | ●                   | ○        | —                   | ○               |            |           |           |   |            |
|                  |                         |                        |                  | No              | 2-wire          |              | 5 V, 12 V |                   | 5 V, 12 V, 24 V          | —              |                          | 90    | Vinyl parallel cord | ●        | ●                   | ●               |            |           | —         | — | IC circuit |
|                  | 5 V, 12 V, 100 V        | 5 V, 12 V, 24 V, 100 V |                  |                 |                 |              | —         | 90A               | Oilproof heavy-duty cord | ●              | ●                        | ●     | —                   |          |                     |                 |            |           |           |   |            |
|                  | —                       | —                      |                  |                 |                 |              | —         | 97                | Vinyl parallel cord      | ●              | ●                        | ●     | —                   | —        |                     |                 |            |           |           |   |            |
|                  | —                       | 100 V                  |                  |                 |                 |              | —         | 93A               | Oilproof heavy-duty cord | ●              | ●                        | ●     | —                   |          |                     |                 |            |           |           |   |            |
| Reed auto switch | —                       | Yes                    | 2-wire           | 3-wire (NPN)    | 5 V, 12 V       | —            | —         | S79               | Oilproof heavy-duty cord | ●              | ●                        | ○     | —                   | ○        | IC circuit          | Relay PLC       |            |           |           |   |            |
|                  |                         |                        |                  |                 | 3-wire (PNP)    |              | 12 V      | —                 |                          | S7P            | ●                        | ●     | ○                   | —        |                     |                 | ○          |           |           |   |            |
| For 10, 15       | Solid state auto switch | —                      | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 12 V      | —                 | —                        | T79            | Oilproof heavy-duty cord | ●     | ●                   | ○        | —                   |                 | ○          | —         | Relay PLC |   |            |
|                  |                         |                        |                  |                 |                 |              |           |                   | 3-wire (PNP)             | —              |                          | T79C  | ●                   | ●        | ●                   |                 | ●          |           |           | — | —          |
|                  | Reed auto switch        | —                      | Connector        | Grommet         | No              |              | 2-wire    | —                 | 100 V                    | —              |                          | R73   | ●                   | ●        | ○                   |                 | —          | —         |           | — |            |
|                  |                         |                        |                  |                 |                 |              |           | —                 | —                        | —              |                          | R73C  | ●                   | ●        | ○                   |                 | —          |           |           |   |            |
|                  |                         |                        |                  |                 |                 |              |           | 48 V, 100 V       | 100 V                    | —              |                          | R80   | ●                   | ●        | ○                   | —               | IC circuit |           |           |   |            |
|                  |                         |                        |                  |                 |                 |              |           | —                 | 24 V or less             | —              |                          | R80C  | ●                   | ●        | ●                   | ●               |            |           |           |   | —          |
|                  |                         |                        |                  |                 |                 |              |           |                   |                          |                |                          |       |                     |          |                     |                 |            |           |           |   |            |
|                  |                         |                        |                  |                 |                 |              |           |                   |                          |                |                          |       |                     |          |                     |                 |            |           |           |   |            |

\* Lead wire length symbols: 0.5 m..... (Example) R73C

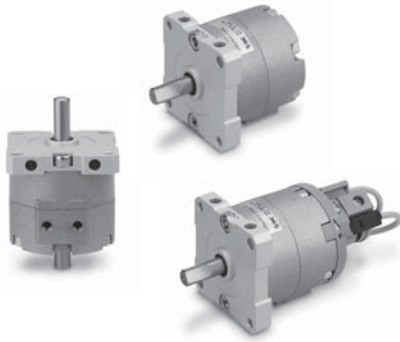
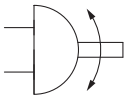
3 m..... L (Example) R73CL

5 m..... Z (Example) R73CZ

None..... N (Example) R73CN

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

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


**Symbol**

**Made to Order**

(For details, refer to pages 34 to 48.)

| Symbol              | Description                             | Applicable shaft type |
|---------------------|---|-----------------------|
| <b>XA1 to XA24</b>  | Shaft type pattern I                    | W                     |
| <b>XA31 to XA58</b> | Shaft type pattern II                   | S, J, K, T, Y         |
| <b>XC1</b>          | Add connecting ports                    | W, S, J, K, T, Y      |
| <b>XC2</b>          | Change threaded hole to through-hole    | W, S, J, K, T, Y      |
| <b>XC3</b>          | Change the screw position               | W, S, J, K, T, Y      |
| <b>XC4</b>          | Change the rotation range               | W, S, J, K, T, Y      |
| <b>XC5</b>          | Change rotation range between 0 to 200° | W, S, J, K, T, Y      |
| <b>XC6</b>          | Change rotation range between 0 to 110° | W, S, J, K, T, Y      |
| <b>XC7</b>          | Reversed shaft                          | W, J                  |
| <b>XC30</b>         | Fluorine grease                         | W, S, J, K, T, Y      |

The above may not be selected when the product comes with an auto switch or angle adjustment unit. For details, refer to pages 34, 35, 40, 41, 46.

**Volume**

 [cm<sup>3</sup>]

| Vane type | Single vane |      |      |              |      |      |              |      |      |               |      |      |              |      |      | Double vane |      |     |      |     |      |      |      |     |      |
|-----------|-------------|------|------|--------------|------|------|--------------|------|------|---------------|------|------|--------------|------|------|-------------|------|-----|------|-----|------|------|------|-----|------|
| Size      | 10          |      |      | 15           |      |      | 20           |      |      | 30            |      |      | 40           |      |      | 10          |      | 15  |      | 20  |      | 30   |      | 40  |      |
| 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° |
| Volume    | 1<br>(0.6)  | 1.2  | 1.5  | 1.5<br>(1.0) | 2.9  | 3.7  | 4.8<br>(3.6) | 6.1  | 7.9  | 11.3<br>(8.5) | 15   | 20.2 | 25<br>(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 pressurised.

**Weight**

[g]

| Vane type            | Single vane |      |      |     |      |      |     |      |      |     |      |      |     |      |      | Double vane |      |     |      |     |      |     |      |     |      |
|----------------------|-------------|------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-------------|------|-----|------|-----|------|-----|------|-----|------|
| Size                 | 10          |      |      | 15  |      |      | 20  |      |      | 30  |      |      | 40  |      |      | 10          |      | 15  |      | 20  |      | 30  |      | 40  |      |
| 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° |
| Rotary actuator body | 42          | 42   | 42   | 64  | 63   | 62   | 130 | 129  | 127  | 248 | 243  | 238  | 465 | 454  | 443  | 58          | 59   | 71  | 74   | 145 | 168  | 268 | 288  | 478 | 524  |
| Auto switch unit     | 15          |      |      | 20  |      |      | 28  |      |      | 38  |      |      | 43  |      |      | 15          |      | 20  |      | 28  |      | 38  |      | 43  |      |
| Angle adjuster unit  | 30          |      |      | 47  |      |      | 90  |      |      | 150 |      |      | 203 |      |      | 30          |      | 47  |      | 90  |      | 150 |      | 203 |      |

\* The weight includes a plate and two hexagon socket head cap screws (shipped together). It does not include hexagon socket head cap screws (M3 × 12) for mounting size 10.

**Single Vane Specifications**

| Size  | 10                    | 15                          | 20        | 30          | 40          |
|---|-----------------------|-----------------------------|-----------|-------------|-------------|
| 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                        |           |             |             |
| Rotation time adjustment range s/90° <sup>Note 1)</sup> | 0.03 to 0.3           |                             |           | 0.04 to 0.3 | 0.07 to 0.5 |
| Allowable kinetic energy [J] <sup>Note 2)</sup>         | 0.00015               | 0.001                       | 0.003     | 0.02        | 0.04        |
|   |                       | 0.00025                     | 0.0004    | 0.015       | 0.03        |
| Shaft load  | Allowable radial load | 15                          | 15        | 25          | 30          |
| [N]   | Allowable thrust load | 10                          | 10        | 20          | 25          |
| Port location   |                       | Side ported or Axial ported |           |             |             |
| Port size (Side ported, Axial ported)                   |                       | M3 x 0.5                    |           | M5 x 0.8    |             |
| Angle adjustable range <sup>Note 3)</sup>               |                       | 0 to 230°                   | 0 to 240° |             | 0 to 230°   |

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

Note 2) The upper numbers in this section in the table indicate the energy factor when the rubber buffer is used (at the end of the rotation), and the lower numbers indicate the energy factor when the rubber buffer is not used.

Note 3) Adjustment range in the table is for 270°. For 90° and 180°, refer to page 29.

**Double Vane Specifications**

| Size  | 10                    | 15                          | 20     | 30          | 40          |
|---|-----------------------|-----------------------------|--------|-------------|-------------|
| 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° <sup>Note 1)</sup> | 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 | 15                          | 15     | 25          | 30          |
|   | [N]                   | Allowable thrust load       | 10     | 10          | 20          |
| Port location   |                       | Side ported or Axial ported |        |             |             |
| Port size (Side ported, Axial ported)                   |                       | M3 x 0.5                    |        | M5 x 0.8    |             |
| Angle adjustable range <sup>Note 2)</sup>               |                       | 0 to 90°                    |        |             |             |

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

Note 2) Adjustment range in the table is for 100°. For 90°, refer to page 29.

CRB2

CRB2□WU

CRBU2

CRBU2WU

Simple Specials

Made to Order

Component Unit

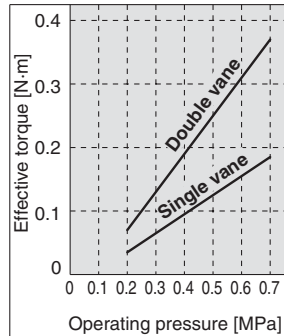
Angle Adjustment Setting

With Auto Switch

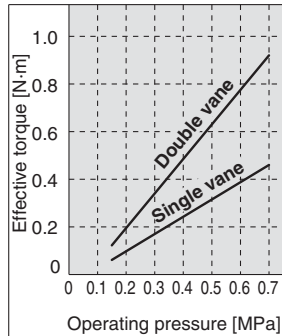


## Effective Output

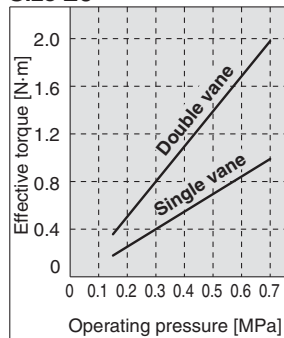
**Size 10**



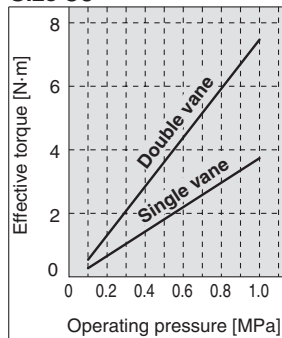
**Size 15**



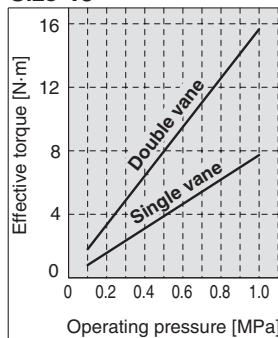
**Size 20**



**Size 30**



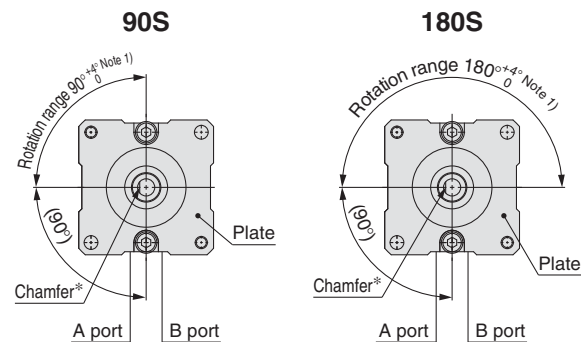
**Size 40**



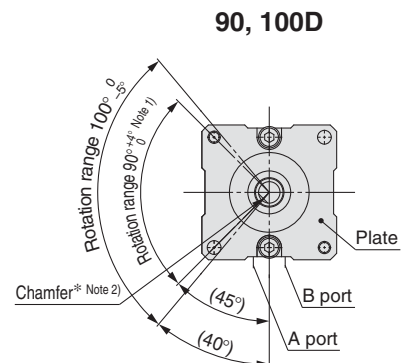
## Chamfered Position and Rotation Range: Top View from Long Shaft Side

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

### 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  $90^{\circ}$ ,  $180^{\circ}$ ,  $270^{\circ}$  will be  $\pm 5^{\circ}$  for size 10 only.

For double vane type, the tolerance of rotating angle of  $90^{\circ}$  will be  $\pm 5^{\circ}$  for size 10 only.

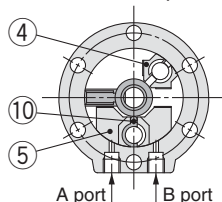
Note 2) The chamfered position of the double vane type shows the  $90^{\circ}$  specification position.

Note 3) Only size 10 has a different plate shape.

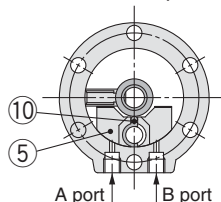
## Construction

**Single vane** • Figures for 90° and 180° show the condition of the actuators when B port is pressurised, and the figure for 270° shows the position of the ports during rotation.  
**Size: 10, 15, 20, 30, 40**

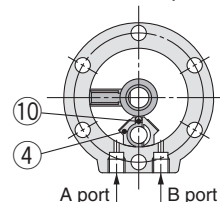
**For 90°**  
 (Viewed from the output shaft side)



**For 180°**  
 (Viewed from the output shaft side)

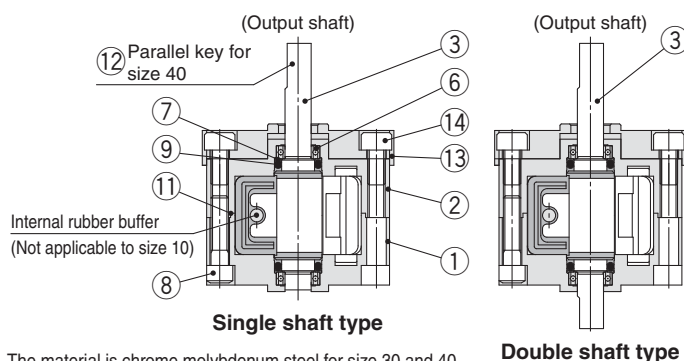


**For 270°**  
 (Viewed from the output shaft side)



## Component Parts

| No. | Description                     | Material                | Note                      |
|-----|---------------------------------|-------------------------|---------------------------|
| 1   | Body (A)                        | Aluminium alloy         | Painted                   |
| 2   | Body (B)                        | Aluminium alloy         | Painted                   |
| 3   | Vane shaft                      | Stainless steel*1       |                           |
| 4   | Stopper                         | Resin                   | For 270°                  |
| 5   | Stopper                         | Resin                   | For 180°                  |
| 6   | Bearing                         | Bearing steel           |                           |
| 7   | Back-up ring                    | Stainless steel         |                           |
| 8   | Hexagon socket head cap screw   | Chrome molybdenum steel | 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              |
| 13  | Plate                           | Aluminium alloy         | Anodised                  |
| 14  | Hexagon socket head cap screw*2 | Chrome molybdenum steel | Special screw for size 40 |



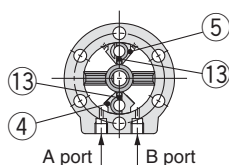
- \*1. The material is chrome molybdenum steel for size 30 and 40.  
 \*2. Hexagon socket flat countersunk head cap screw is used for size 10.  
 13 and 14 are shipped with the product for all sizes, and special mounting screws (M3 x 12) are attached for size 10.

**Double vane** • Figures below show the intermediate rotation position when A or B port is pressurised.

**Size: 10**

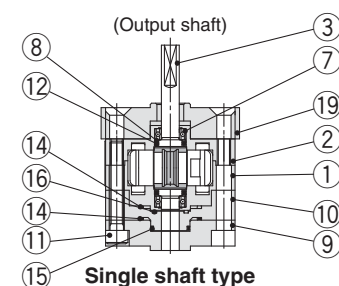
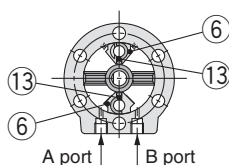
**For 90°**

(Viewed from the output shaft side)

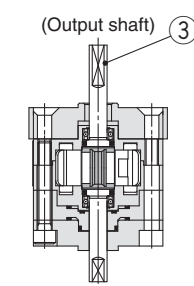


**For 100°**

(Viewed from the output shaft side)



**Single shaft type**

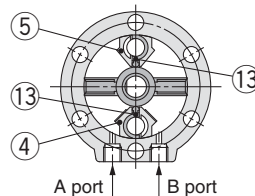


**Double shaft type**

**Size: 15, 20, 30, 40**

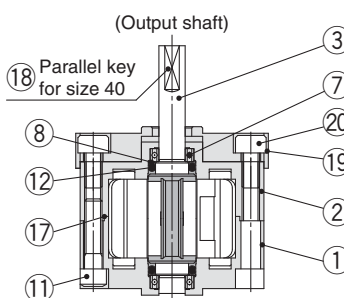
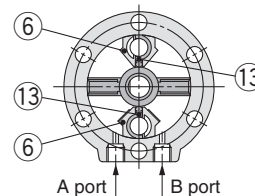
**For 90°**

(Viewed from the output shaft side)

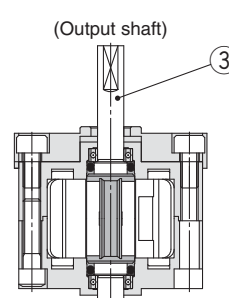


**For 100°**

(Viewed from the output shaft side)



**Single shaft type**



**Double shaft type**

## Component Parts

| No. | Description  | Material                | Note    |
|-----|--------------|-------------------------|---------|
| 1   | Body (A)     | Aluminium alloy         | Painted |
| 2   | Body (B)     | Aluminium alloy         | Painted |
| 3   | Vane shaft   | Chrome molybdenum steel |         |
| 4   | Stopper      | Stainless steel*1       |         |
| 5   | Stopper      | Resin                   |         |
| 6   | Stopper      | Stainless steel*1       |         |
| 7   | Bearing      | Bearing steel           |         |
| 8   | Back-up ring | Stainless steel         |         |
| 9   | Cover        | Aluminium alloy         |         |
| 10  | Plate        | Resin                   |         |

\*1. For size 40, material for 4, 6 is aluminium alloy.

\*2. Hexagon socket flat countersunk head cap screw is used for size 10. 19 and 20 are shipped with the product for all sizes, and special mounting screws (M3 x 12) are attached for size 10.

| No. | Description                     | Material                | Note                      |
|-----|---------------------------------|-------------------------|---------------------------|
| 11  | Hexagon socket head cap screw   | Chrome molybdenum steel | Special screw             |
| 12  | O-ring                          | NBR                     |                           |
| 13  | Stopper seal                    | NBR                     | Special seal              |
| 14  | Gasket                          | NBR                     | Special seal              |
| 15  | O-ring                          | NBR                     |                           |
| 16  | O-ring                          | NBR                     |                           |
| 17  | O-ring                          | NBR                     | Size 40 only              |
| 18  | Parallel key                    | Carbon steel            | Size 40 only              |
| 19  | Plate                           | Aluminium alloy         | Anodised                  |
| 20  | Hexagon socket head cap screw*2 | Chrome molybdenum steel | Special screw for size 40 |

### Construction (With Auto Switch)

**Single vane**

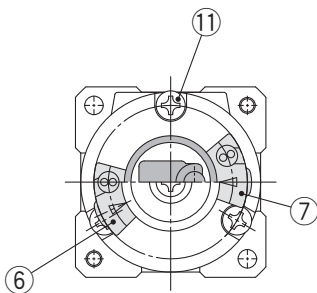
- Following figures show actuators for 90° and 180° when B port is pressurised.

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

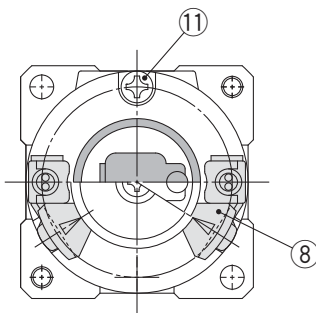
**Double vane**

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

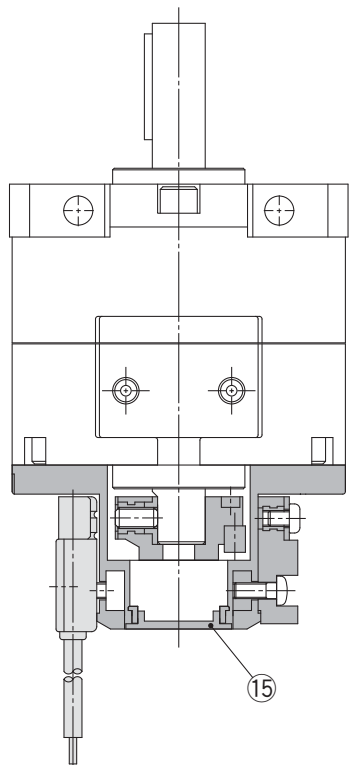
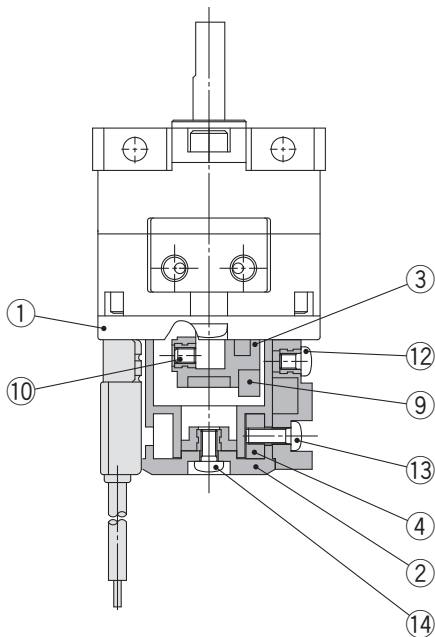
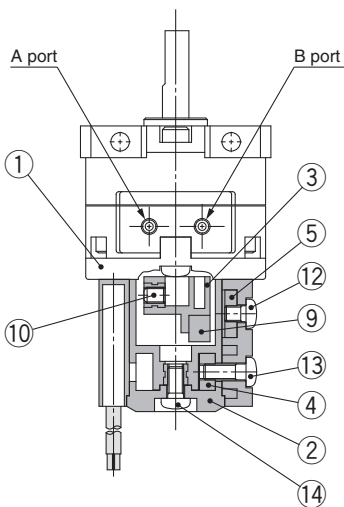
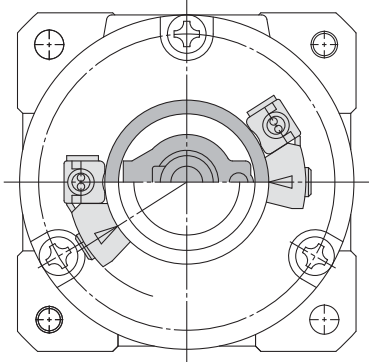
**Size: 10, 15**



**Size: 20, 30**



**Size: 40**



### 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) | Aluminium alloy |
| 6   | Switch block (A)  | Resin           |
| 7   | Switch block (B)  | Resin           |
| 8   | Switch block      | Resin           |

| No. | Description                     | Material        |
|-----|---------------------------------|-----------------|
| 9   | Magnet                          |                 |
| 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             |

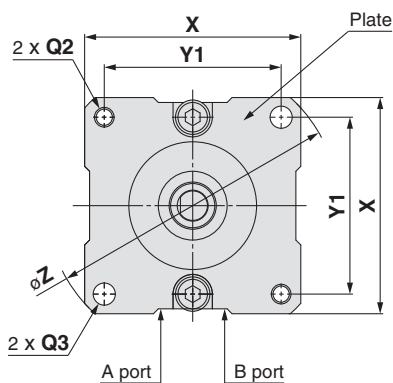
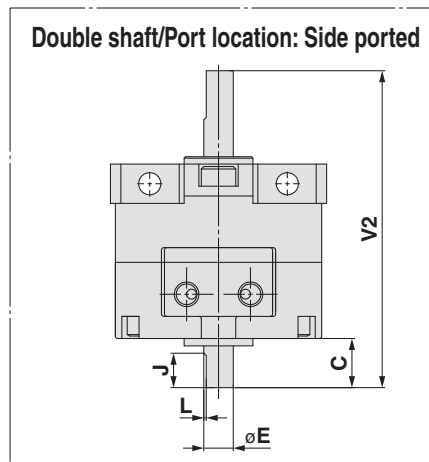
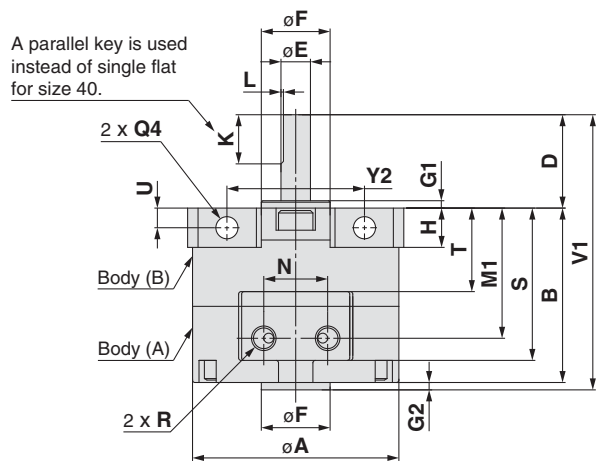
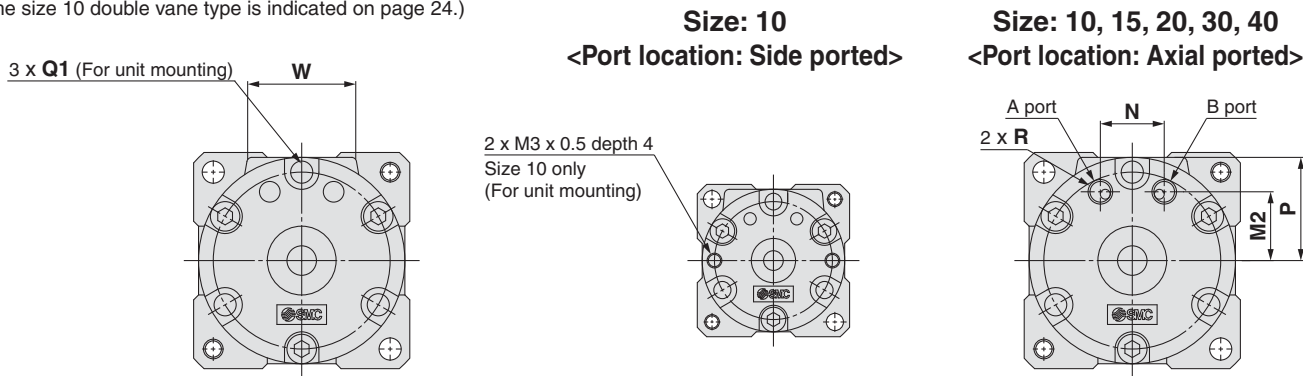
\* For size 10, 2 cross recessed round head screws ⑪ are required.

## Dimensions: Free Mount Type 10, 15, 20, 30, 40

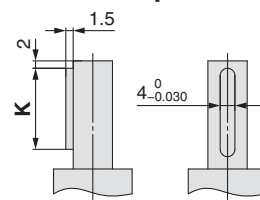
- For single vane type, the figures below show actuators for 90° and 180° when B port is pressurised.
- For double vane type, the figures below show the intermediate rotation position when the A or B port is pressurised.
- Only size 10 has a different plate shape. (Refer to page 24.)

### Single shaft/Port location: Side ported

(The size 10 double vane type is indicated on page 24.)



### Shaft-end shape of size 40



### Parallel key dimensions

| b (h9)                           | h (h9)                           | L1 |
|----------------------------------|----------------------------------|----|
| 4 <sup>0</sup> <sub>-0.030</sub> | 4 <sup>0</sup> <sub>-0.030</sub> | 20 |

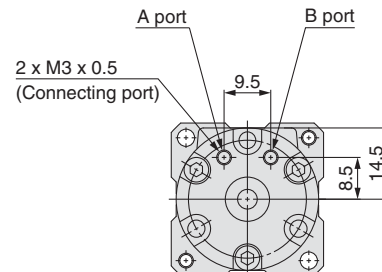
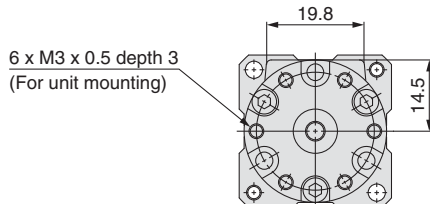
Refer to page 27 for details of shaft types J, K, T and Y.

|      |    |      |    |    |  |                                   |     |     |    |   |    |     |      |      |     |      | Q        |          |     |     | R        | S    | T    | U   | V1   | V2   | W    | X  | Y1 | Y2 | Z  |
|------|----|------|----|----|--|-----------------------------------|-----|-----|----|---|----|-----|------|------|-----|------|----------|----------|-----|-----|----------|------|------|-----|------|------|------|----|----|----|----|
| Size | A  | B    | C  | D  | E (g7)                                 | F (h9)                            | G1  | G2  | H  | J | K  | L   | M1   | M2   | N   | P    | Q1       | Q2       | Q3  | Q4  |          |      |      |     |      |      |      |    |    |    |    |
| 10   | 29 | 22   | 8  | 14 | 4 <sup>-0.004</sup> <sub>-0.016</sub>  | 9 <sup>0</sup> <sub>-0.036</sub>  | 1   | 1   | 7  | 5 | 9  | 0.5 | 16.5 | 8.5  | 9.5 | 14.5 | —        | M3 x 0.5 | 3.5 | 3.5 | M3 x 0.5 | 21   | 10.6 | 3   | 37   | 44   | 19.8 | 31 | 25 | 17 | 41 |
| 15   | 34 | 25   | 9  | 18 | 5 <sup>-0.004</sup> <sub>-0.016</sub>  | 12 <sup>0</sup> <sub>-0.043</sub> | 1.5 | 1.5 | 6  | 6 | 10 | 0.5 | 19   | 11   | 10  | 17   | M3 x 0.5 | M3 x 0.5 | 3.5 | 3.5 | M3 x 0.5 | 24   | 12.6 | 3   | 44.5 | 52   | 21   | 36 | 29 | 21 | 48 |
| 20   | 42 | 34.5 | 10 | 20 | 6 <sup>-0.004</sup> <sub>-0.016</sub>  | 14 <sup>0</sup> <sub>-0.043</sub> | 1.5 | 1.5 | 8  | 7 | 10 | 0.5 | 25.5 | 14   | 13  | 21   | M4 x 0.7 | M4 x 0.7 | 4.5 | 4.5 | M5 x 0.8 | 30   | 16   | 4   | 56   | 64.5 | 22   | 44 | 36 | 26 | 59 |
| 30   | 50 | 47.5 | 13 | 22 | 8 <sup>-0.005</sup> <sub>-0.020</sub>  | 16 <sup>0</sup> <sub>-0.043</sub> | 2   | 2   | 9  | 8 | 12 | 1.0 | 33.5 | 15.5 | 14  | 25   | M5 x 0.8 | M5 x 0.8 | 5.5 | 5.5 | M5 x 0.8 | 42   | 21.5 | 4.5 | 71.5 | 82.5 | 24   | 52 | 42 | 29 | 69 |
| 40   | 63 | 53   | 15 | 30 | 10 <sup>-0.005</sup> <sub>-0.020</sub> | 25 <sup>0</sup> <sub>-0.052</sub> | 3   | 4.5 | 10 | 9 | 20 | 1.0 | 39   | 21   | 20  | 31.6 | M5 x 0.8 | M5 x 0.8 | 5.5 | 5.5 | M5 x 0.8 | 47.8 | 25   | 5   | 87.5 | 98   | 30   | 64 | 52 | 38 | 85 |

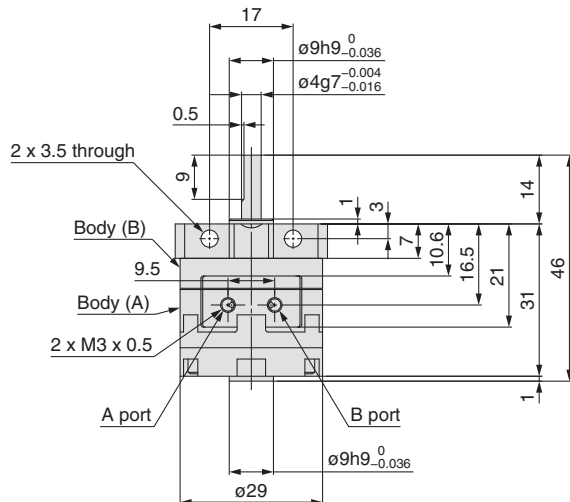
## Dimensions: Free Mount Type 10

**Double vane** • Following figures show the intermediate rotation position when A or B port is pressurised.

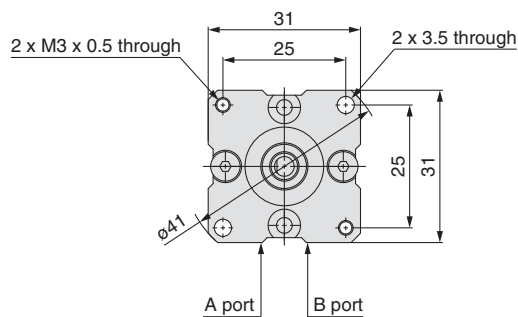
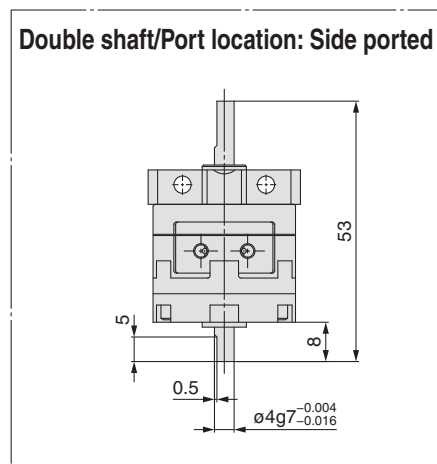
### Single shaft/Port location: Side ported



**Size: 10**  
**<Port location: Axial ported>**



### Double shaft/Port location: Side ported



Refer to page 27 for details of shaft types J, K, T and Y.

## Dimensions: Free Mount Type (With Auto Switch) 10, 15, 20, 30, 40

- For single vane type, the figures below show actuators for 90° and 180° when B port is pressurised.  
 For double vane type, the figures below show the intermediate rotation position when the A or B port is pressurised.  
 Only size 10 has a different plate shape. (Refer to page 26.)

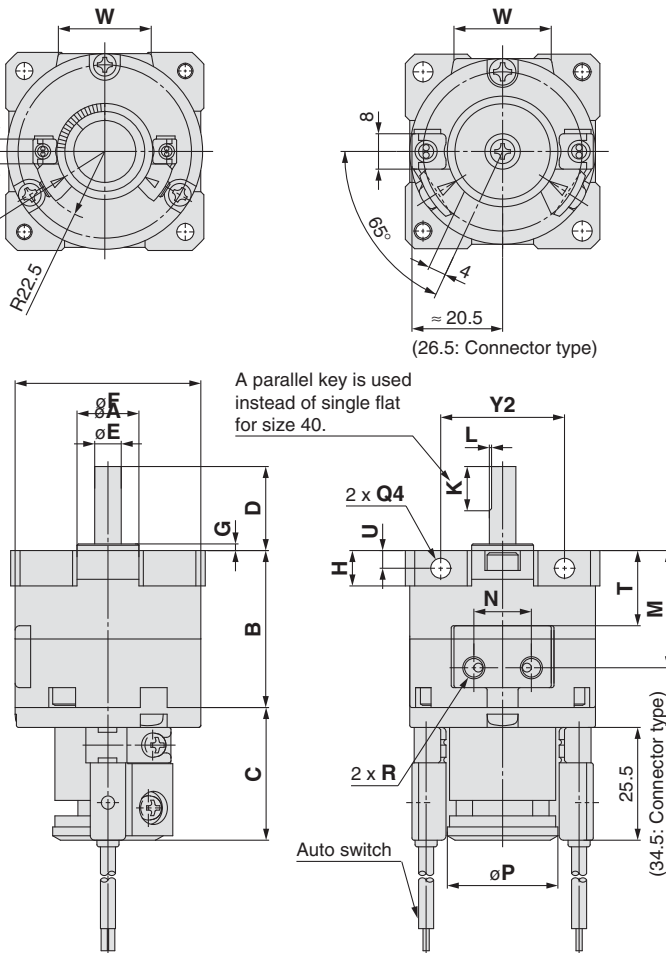
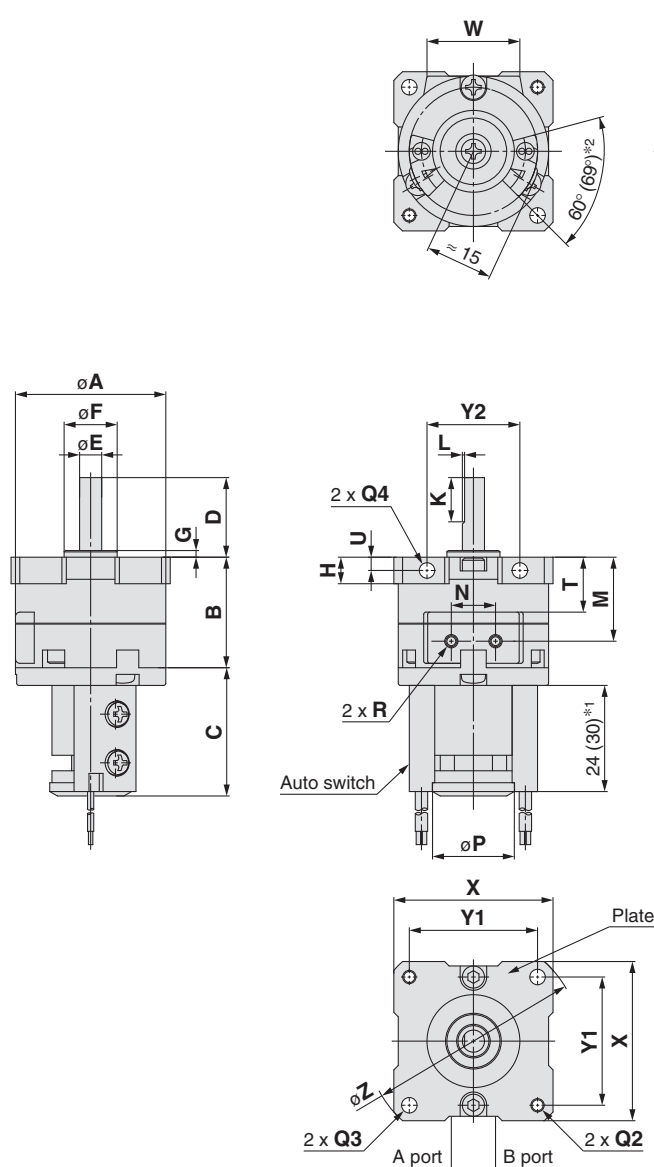
### Size: 10, 15

(The size 10 double vane type is indicated on page 26.)

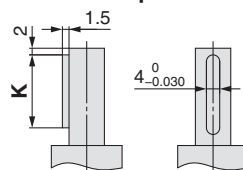
### Size: 20, 30, 40

#### Size: 40

#### Size: 20, 30



#### Shaft-end shape of size 40



#### Parallel key dimensions

| b (h9)                           | h (h9)                           | L1 |
|----------------------------------|----------------------------------|----|
| 4 <sup>0</sup> <sub>-0.030</sub> | 4 <sup>0</sup> <sub>-0.030</sub> | 20 |

- \*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)

Refer to page 27 for details of shaft type J.

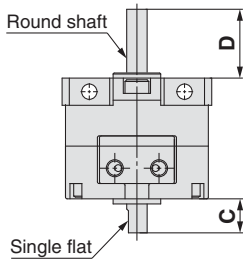
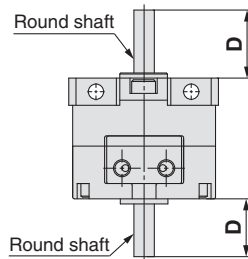
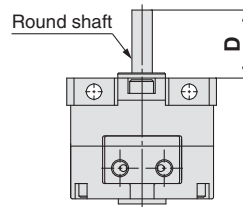
| Size | A  | B    | C  | D  | E (g7)                                 | F (h9)                            | G   | H  | K  | L   | M    | N   | P    | Q        |     |     | R        | T    | W    | X  | Y1 | Y2 | Z  |
|------|----|------|----|----|--|-----------------------------------|-----|----|----|-----|------|-----|------|----------|-----|-----|----------|------|------|----|----|----|----|
|      |    |      |    |    |  |                                   |     |    |    |     |      |     |      | Q2       | Q3  | Q4  |          |      |      |    |    |    |    |
| 10   | 29 | 22   | 29 | 14 | 4 <sup>-0.004</sup> <sub>-0.016</sub>  | 9 <sup>0</sup> <sub>-0.036</sub>  | 1   | 7  | 9  | 0.5 | 16.5 | 9.5 | 18.5 | M3 x 0.5 | 3.5 | 3.5 | M3 x 0.5 | 10.6 | 19.8 | 31 | 25 | 17 | 41 |
| 15   | 34 | 25   | 29 | 18 | 5 <sup>-0.004</sup> <sub>-0.016</sub>  | 12 <sup>0</sup> <sub>-0.043</sub> | 1.5 | 6  | 10 | 0.5 | 19   | 10  | 18.5 | M3 x 0.5 | 3.5 | 3.5 | M3 x 0.5 | 12.6 | 21   | 36 | 29 | 21 | 48 |
| 20   | 42 | 34.5 | 30 | 20 | 6 <sup>-0.004</sup> <sub>-0.016</sub>  | 14 <sup>0</sup> <sub>-0.043</sub> | 1.5 | 8  | 10 | 0.5 | 25.5 | 13  | 25   | M4 x 0.7 | 4.5 | 4.5 | M5 x 0.8 | 16   | 22   | 44 | 36 | 26 | 59 |
| 30   | 50 | 47.5 | 31 | 22 | 8 <sup>-0.005</sup> <sub>-0.020</sub>  | 16 <sup>0</sup> <sub>-0.043</sub> | 2   | 9  | 12 | 1.0 | 33.5 | 14  | 25   | M5 x 0.8 | 5.5 | 5.5 | M5 x 0.8 | 21.5 | 24   | 52 | 42 | 29 | 69 |
| 40   | 63 | 53   | 31 | 30 | 10 <sup>-0.005</sup> <sub>-0.020</sub> | 25 <sup>0</sup> <sub>-0.052</sub> | 3   | 10 | 20 | —   | 39   | 20  | 31   | M5 x 0.8 | 5.5 | 5.5 | M5 x 0.8 | 25   | 30   | 64 | 52 | 38 | 85 |



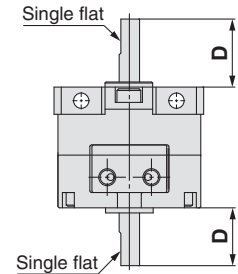
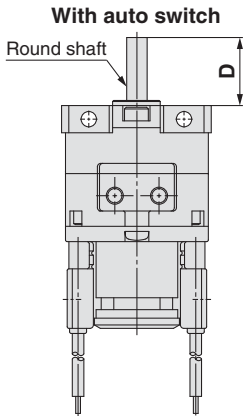
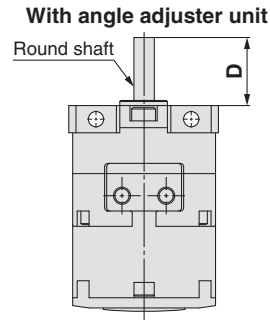
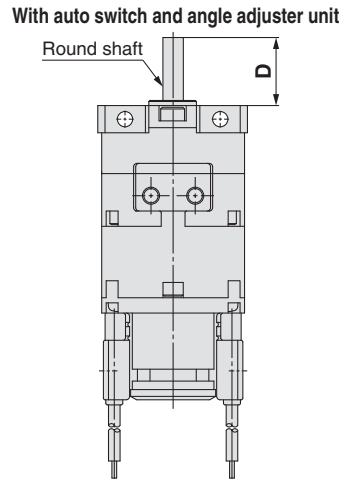


**Shaft Type Dimensions** (Dimensions other than specified below are the same as the standard type.)

Size: 10, 15, 20, 30, 40

**Double shaft/CRBU2J****Double shaft/CRBU2K****Single shaft/CRBU2T****Single shaft/CRBU2Y**

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

**Double shaft/CDRBU2J****Double shaft/CRBU2JU****Double shaft/CDRBU2JU**

[mm]

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

Note 1) Dimensions and tolerance of the shaft and single flat (a parallel key for size 40) are the same as the standard.

Note 2) For rotary actuators with auto switch and angle adjuster unit, connection ports are side ports.

CRB2

CRB2□WU

CRBU2

CRBU2WU

Simple Specials

Made to Order

Component Unit

Angle Adjustment Setting

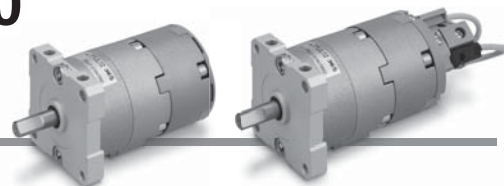
With Auto Switch

# Free Mount Type Rotary Actuator With Angle Adjuster/Vane Type

**RoHS**

## Series *CRBU2WU*

### Size: 10, 15, 20, 30, 40



#### How to Order

**Without auto switch**
**CRBU2 W U 20 - 180 S Z**
**With auto switch**
**CDRBU2 W U 20 - 180 S Z - T79 L**
**Free mount type**

#### 1 With auto switch

(With auto switch unit and built-in magnet)

\* Refer to page 49 when the auto switch unit is needed separately.

#### 2 Shaft type

| Symbol     | Shaft-end shape |
|------------|-----------------|
| <b>W</b>   | Single flat*    |
| <b>J**</b> | Round shaft     |

\* A key is used for size 40.

\*\* J is made to order.

#### 3 With angle adjuster unit

\* Refer to page 49 when the angle adjuster unit is needed separately.

#### 4 Size

|           |
|-----------|
| <b>10</b> |
| <b>15</b> |
| <b>20</b> |
| <b>30</b> |
| <b>40</b> |

#### 5 Rotating angle

|             |            |      |
|-------------|------------|------|
| Single vane | <b>90</b>  | 90°  |
|             | <b>180</b> | 180° |
|             | <b>270</b> | 270° |
| Double vane | <b>90</b>  | 90°  |
|             | <b>100</b> | 100° |

#### 6 Vane type

|          |             |
|----------|-------------|
| <b>S</b> | Single vane |
| <b>D</b> | Double vane |

#### 7 Auto switch

|          |                                       |
|----------|---------------------------------------|
| <b>—</b> | Without auto switch (Built-in magnet) |
|----------|---------------------------------------|

\* For applicable auto switch model, refer to the table below.

#### 8 Electrical entry/Lead wire length

|           |                             |
|-----------|-----------------------------|
| <b>—</b>  | Grommet/Lead wire: 0.5 m    |
| <b>L</b>  | Grommet/Lead wire: 3 m      |
| <b>C</b>  | Connector/Lead wire: 0.5 m  |
| <b>CL</b> | Connector/Lead wire: 3 m    |
| <b>CN</b> | Connector/Without lead wire |

\* 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

#### 9 Number of auto switches

|          |          |
|----------|----------|
| <b>S</b> | 1 pc.*   |
| <b>—</b> | 2 pcs.** |

\* S: A right-hand auto switch is shipped.

\*\* —: A right-hand switch and a left-hand switch are shipped.

#### 10 Made to Order

For details, refer to the table below.

#### Applicable Auto Switches/Refer to Auto Switch Guide 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 (—)                  | 3 (L) | 5 (Z) | None (N) |                     |                 |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  |                          |       |       |          |                     |                 |            |           |
| For 10, 15      | Solid state auto switch | —                | Grommet          | Yes             | 3-wire (NPN)<br>3-wire (PNP)<br><br>2-wire | 24 V         | 5 V, 12 V<br><br>12 V<br>5 V, 12 V<br>5 V, 12 V, 24 V<br>5 V, 12 V, 100 V<br>—<br>— | —  | S99V S99<br>S9PV S9P<br>T99V T99<br><br>— 90<br>— 90A<br>— 97<br>— 93A | Oilproof heavy-duty cord   | ●                        | ●     | ○     | —        | ○                   | IC circuit      | Relay PLC  |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  | ●                        | ●     | ○     | —        | ○                   |                 |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  | ●                        | ●     | ○     | —        | ○                   |                 |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  | ●                        | ●     | ○     | —        | ○                   |                 |            |           |
|                 | Reed auto switch        | —                | Grommet          | No              | 2-wire                                     | 24 V         | 5 V, 12 V<br>5 V, 12 V, 24 V<br>5 V, 12 V, 100 V<br>—<br>—                          | —  | 90<br>90A<br>97<br>93A   | Vinyl parallel cord<br>Oilproof heavy-duty cord<br>Vinyl parallel cord<br>Oilproof heavy-duty cord | ●                        | ●     | ●     | —        | —                   | IC circuit      | Relay PLC  |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  | ●                        | ●     | ●     | —        | —                   |                 |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  | ●                        | ●     | ●     | —        | —                   |                 |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  | ●                        | ●     | ●     | —        | —                   |                 |            |           |
| For 20, 30, 40  | Solid state auto switch | —                | Grommet          | Yes             | 3-wire (NPN)<br>3-wire (PNP)<br><br>2-wire | 24 V         | 5 V, 12 V<br><br>12 V<br>—<br>—<br>48 V, 100 V<br>—                                 | —  | S79<br>S7P<br>T79<br>T79C<br>R73<br>R73C<br>R80<br>R80C                | Oilproof heavy-duty cord   | ●                        | ●     | ○     | —        | ○                   | IC circuit      | Relay PLC  |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  | ●                        | ●     | ○     | —        | ○                   |                 |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  | ●                        | ●     | ○     | —        | ○                   |                 |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  | ●                        | ●     | ○     | —        | ○                   |                 |            |           |
|                 | Reed auto switch        | —                | Connector        | Yes             | 2-wire                                     | 24 V         | —<br>—<br>—<br>—  | 100 V<br>—<br>—<br>100 V<br>24 V or less | —  | R73<br>R73C<br>R80<br>R80C   | Oilproof heavy-duty cord | ●     | ●     | ●        | —                   | —               | IC circuit | Relay PLC |
|                 |                         |                  |                  |                 |  |              |   |  |  |  |                          | ●     | ●     | ●        | —                   | —               |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  |                          | ●     | ●     | ●        | —                   | —               |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  |                          | ●     | ●     | ●        | —                   | —               |            |           |
|                 |                         |                  | Grommet          | No              | 2-wire                                     | 24 V         | —<br>—<br>—<br>—  | 100 V<br>—<br>—<br>100 V<br>24 V or less | —  | R73<br>R73C<br>R80<br>R80C   | Oilproof heavy-duty cord | ●     | ●     | ○        | —                   | —               | IC circuit | Relay PLC |
|                 |                         |                  |                  |                 |  |              |   |  |  |  |                          | ●     | ●     | ○        | —                   | —               |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  |                          | ●     | ●     | ○        | —                   | —               |            |           |
|                 |                         |                  |                  |                 |  |              |   |  |  |  |                          | ●     | ●     | ○        | —                   | —               |            |           |

\* Lead wire length symbols: 0.5 m ..... (Example) R73CL

3 m ..... L (Example) R73CL

5 m ..... Z (Example) R73CZ

None ..... N (Example) R73CN

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

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



#### Made to Order

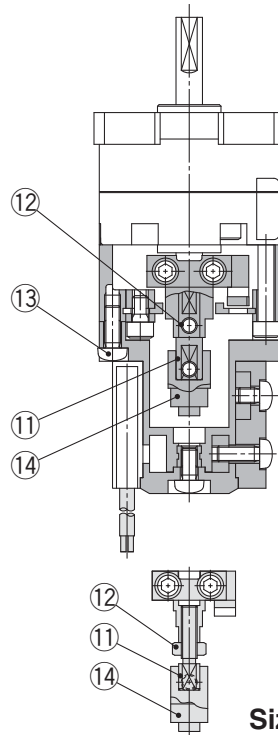
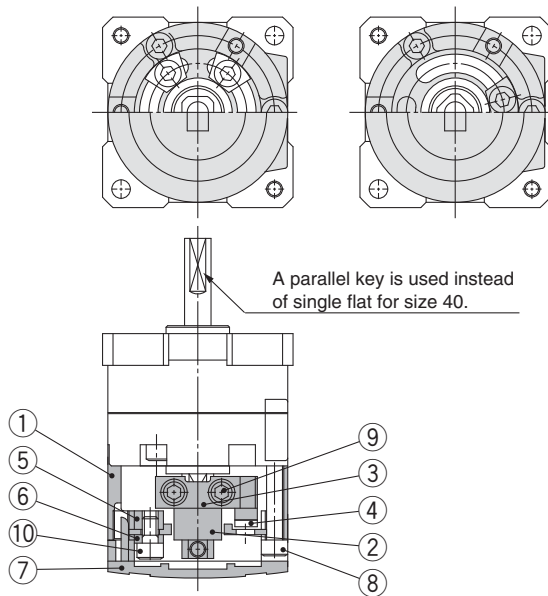
(For details, refer to pages 34 to 48.)

| Symbol              | Description                              | Applicable shaft type |
|---------------------|--|-----------------------|
| <b>XA1 to XA24</b>  | Shaft type pattern I                     | W                     |
| <b>XA31 to XA58</b> | Shaft type pattern II                    | J                     |
| <b>XC1</b>          | Add connecting ports                     | W, J                  |
| <b>XC2</b>          | Change threaded hole to through-hole     | W, J                  |
| <b>XC3</b>          | Change the screw position                | W, J                  |
| <b>XC4</b>          | Change the rotation range                | W, J                  |
| <b>XC5</b>          | Change rotation range between 0 and 200° | W, J                  |
| <b>XC6</b>          | Change rotation range between 0 and 110° | W, J                  |
| <b>XC7</b>          | Reversed shaft                           | W, J                  |
| <b>XC30</b>         | Fluorine grease                          | W, J                  |

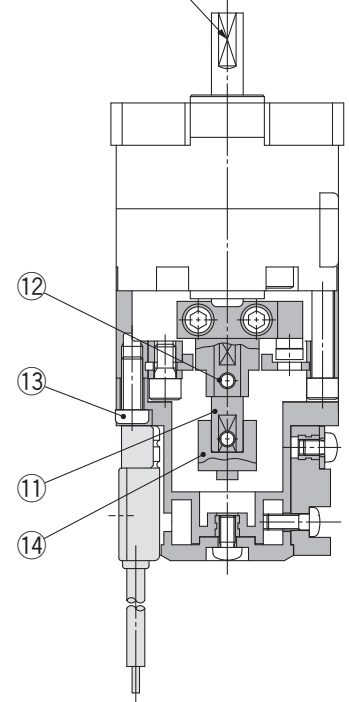
The above may not be selected when the product comes with an auto switch or angle adjuster unit. For details, refer to pages 34, 35, 40, 41, 46.

**Construction: 10, 15, 20, 30, 40**

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

**With angle adjuster**
**Size: 10, 15, 20, 30, 40**
**With auto switch and angle adjuster**
**Size: 10, 15**
**Size: 20, 30, 40**
**Single vane**
**Double vane**


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


**Component Parts**

| No. | Description                     | Material                | Note                                       |
|-----|---------------------------------|-------------------------|--|
| 1   | Stopper ring                    | Aluminium alloy         |  |
| 2   | Stopper lever                   | Chrome molybdenum steel |  |
| 3   | Lever retainer                  | Rolled steel            | Zinc chromated                             |
| 4   | Rubber buffer                   | NBR                     |  |
| 5   | Stopper block                   | Chrome molybdenum steel | Zinc chromated                             |
| 6   | Block retainer                  | Rolled 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                           |                         |  |
| 12  | Hexagon socket head cap screw   | Stainless steel         | Hexagon nut will be used for size 10 only. |
| 13  | Cross recessed round head screw | Stainless steel         |  |
| 14  | Magnet lever                    | —                       |  |

**⚠ Specific Product Precautions**

Be sure to read before handling. Refer to back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) 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° <sup>+4</sup> / <sub>0</sub> | 0° to 230° (Size: 10, 40) *     |
|                                   | 0° to 240° (Size: 15, 20, 30)   |
| 180° <sup>+4</sup> / <sub>0</sub> | 0° to 175°                      |
| 90° <sup>+4</sup> / <sub>0</sub>  | 0° to 85°                       |

\* 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.

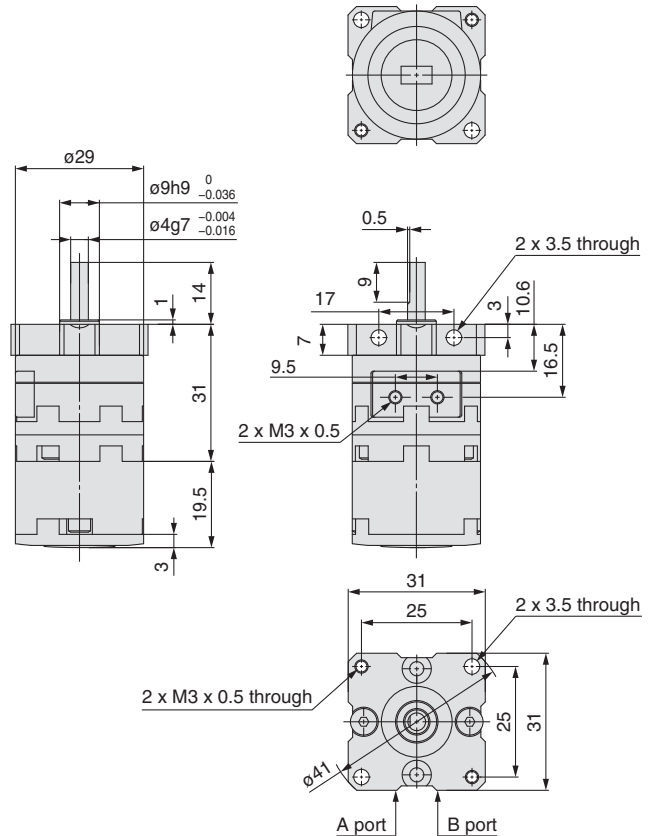
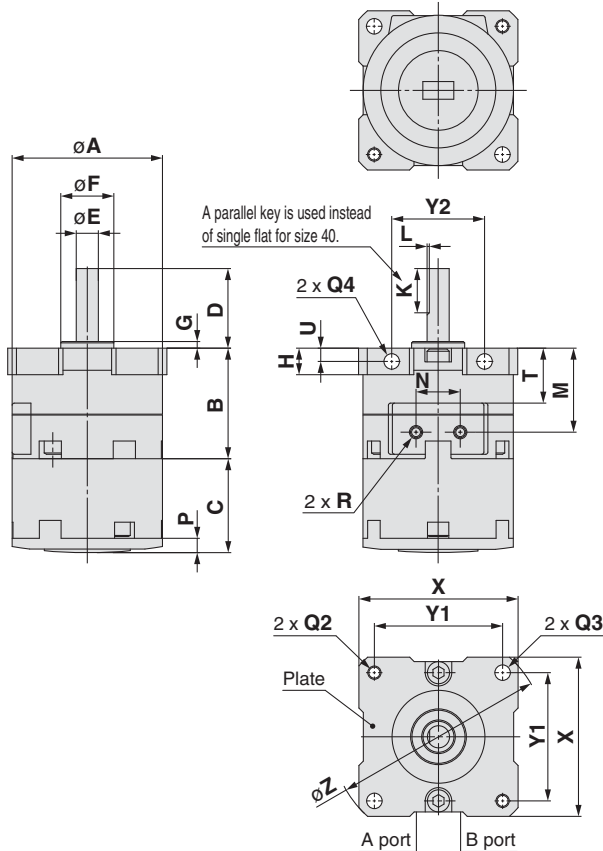
## Dimensions: Free Mount Type (With Angle Adjuster) 10, 15, 20, 30, 40

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

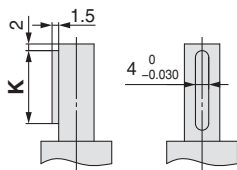
### Size: 10, 15, 20, 30, 40

(Only size 10 has a different plate shape.)

### Size: 10 (Double vane)



### Shaft-end shape of size 40



### Parallel key dimensions

| b (h9)                           | h (h9)                           | L1 |
|----------------------------------|----------------------------------|----|
| 4 <sup>0</sup> <sub>-0.030</sub> | 4 <sup>0</sup> <sub>-0.030</sub> | 20 |

Refer to page 27 for details of shaft type J.

[mm]

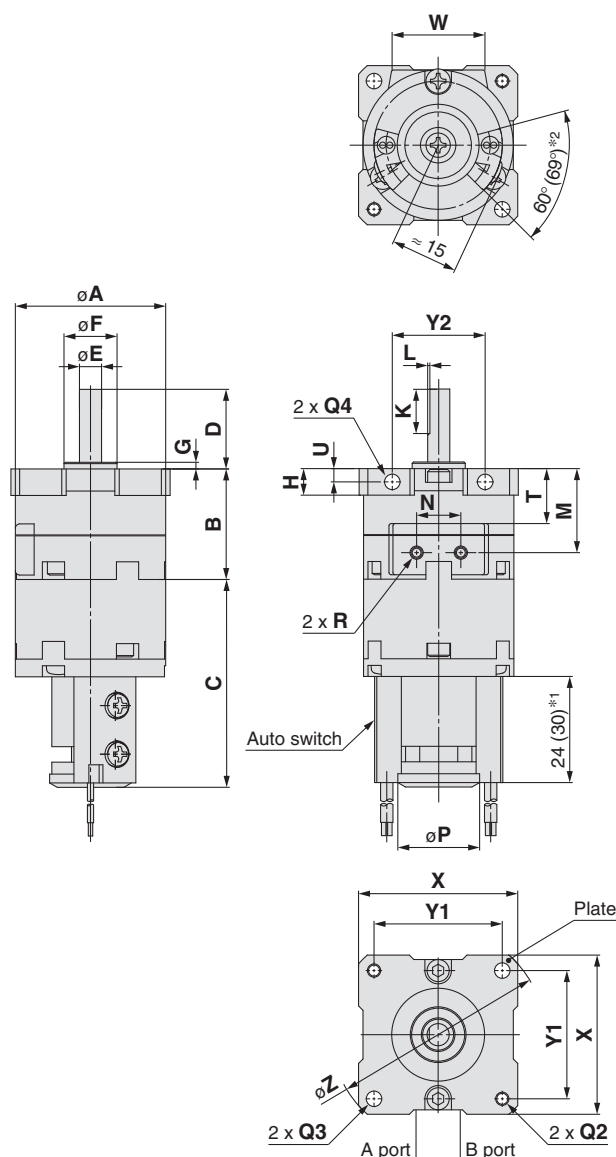
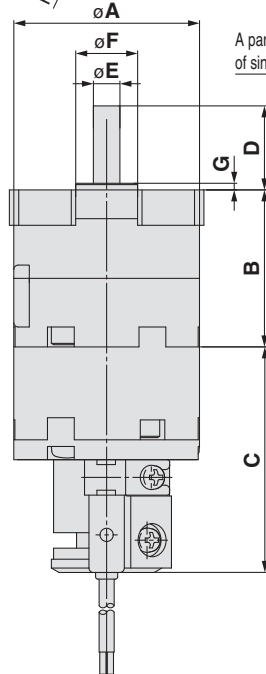
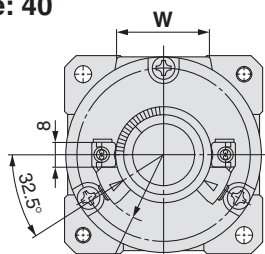
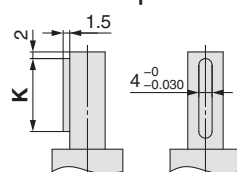
| Size | A  | B    | C    | D  | E (g7)                            | F (h9)                            | G   | H  | K  | L   | M    | N   | P   | Q        |     |     | R        | T    | U   | X  | Y1 | Y2 | Z  |
|------|----|------|------|----|-----------------------------------|-----------------------------------|-----|----|----|-----|------|-----|-----|----------|-----|-----|----------|------|-----|----|----|----|----|
|      |    |      |      |    |                                   |                                   |     |    |    |     |      |     |     | Q2       | Q3  | Q4  |          |      |     |    |    |    |    |
| 10   | 29 | 22   | 19.5 | 14 | 4 <sup>0</sup> <sub>-0.016</sub>  | 9 <sup>0</sup> <sub>-0.036</sub>  | 1   | 7  | 9  | 0.5 | 16.5 | 9.5 | 3   | M3 x 0.5 | 3.5 | 3.5 | M3 x 0.5 | 10.6 | 3   | 31 | 25 | 17 | 41 |
| 15   | 34 | 25   | 21.2 | 18 | 5 <sup>0</sup> <sub>-0.016</sub>  | 12 <sup>0</sup> <sub>-0.043</sub> | 1.5 | 6  | 10 | 0.5 | 19   | 10  | 3.2 | M3 x 0.5 | 3.5 | 3.5 | M3 x 0.5 | 12.6 | 3   | 36 | 29 | 21 | 48 |
| 20   | 42 | 34.5 | 25   | 20 | 6 <sup>0</sup> <sub>-0.016</sub>  | 14 <sup>0</sup> <sub>-0.043</sub> | 1.5 | 8  | 10 | 0.5 | 25.5 | 13  | 4   | M4 x 0.7 | 4.5 | 4.5 | M5 x 0.8 | 16   | 4   | 44 | 36 | 26 | 59 |
| 30   | 50 | 47.5 | 29   | 22 | 8 <sup>0</sup> <sub>-0.020</sub>  | 16 <sup>0</sup> <sub>-0.043</sub> | 2   | 9  | 12 | 1.0 | 33.5 | 14  | 4.5 | M5 x 0.8 | 5.5 | 5.5 | M5 x 0.8 | 21.5 | 4.5 | 52 | 42 | 29 | 69 |
| 40   | 63 | 53   | 36.3 | 30 | 10 <sup>0</sup> <sub>-0.020</sub> | 25 <sup>0</sup> <sub>-0.052</sub> | 3   | 10 | 20 | —   | 39   | 20  | 5   | M5 x 0.8 | 5.5 | 5.5 | M5 x 0.8 | 25   | 5   | 64 | 52 | 38 | 85 |

**Dimensions: Free Mount Type (With Auto Switch and Angle Adjuster) 10, 15, 20, 30, 40**

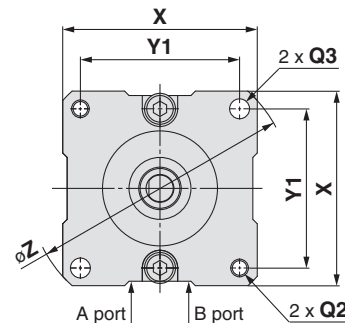
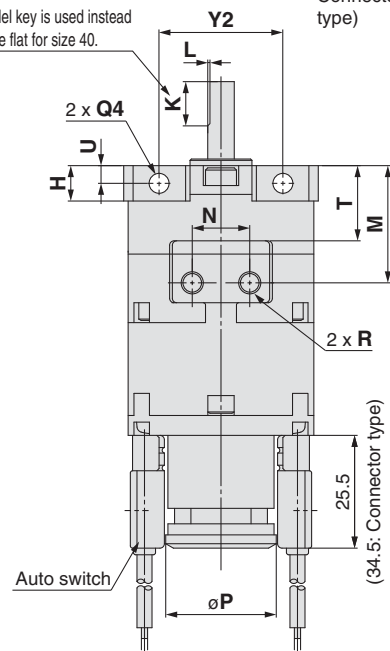
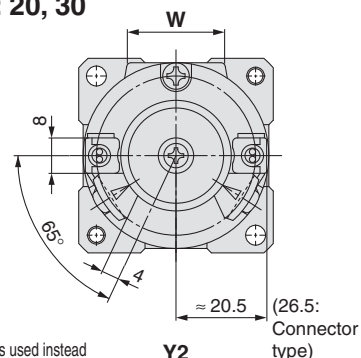
- For single vane type, the figures below show actuators for 90° (without unit) when the B port is pressurised.  
 For double vane type, the figures below show the intermediate rotation position when the A or B port is pressurised.  
 Only size 10 has a different plate shape. (Refer to page 32.)

**Size: 10, 15**

(The size 10 double vane type is indicated on page 32.)

**Size: 20, 30, 40**

**Size: 40**

**Shaft-end shape of size 40**

**Parallel key dimensions**

| b (h9)                           | h (h9)                           | L1 |
|----------------------------------|----------------------------------|----|
| 4 <sup>0</sup> <sub>-0.030</sub> | 4 <sup>0</sup> <sub>-0.030</sub> | 20 |

**Size: 20, 30**


Refer to page 27 for details of shaft type J.

- \*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)

| Size | A  | B    | C    | D  | E (g7)                                 | F (h9)                            | G   | H  | K  | L   | M    | N   | P    | Q        |     |     | R        | T    | U   | W    | X  | Y1 | Y2 | Z  |
|------|----|------|------|----|--|-----------------------------------|-----|----|----|-----|------|-----|------|----------|-----|-----|----------|------|-----|------|----|----|----|----|
|      |    |      |      |    |  |                                   |     |    |    |     |      |     |      | Q2       | Q3  | Q4  |          |      |     |      |    |    |    |    |
| 10   | 29 | 22   | 45.5 | 14 | 4 <sup>-0.004</sup> <sub>-0.016</sub>  | 9 <sup>0</sup> <sub>-0.036</sub>  | 1   | 7  | 9  | 0.5 | 16.5 | 9.5 | 18.5 | —        | 3.5 | 3.5 | M3 x 0.5 | 10.6 | 3   | 19.8 | 31 | 25 | 17 | 41 |
| 15   | 34 | 25   | 47   | 18 | 5 <sup>-0.004</sup> <sub>-0.016</sub>  | 12 <sup>0</sup> <sub>-0.043</sub> | 1.5 | 6  | 10 | 0.5 | 19   | 10  | 18.5 | M3 x 0.5 | 3.5 | 3.5 | M3 x 0.5 | 12.6 | 3   | 21   | 36 | 29 | 21 | 48 |
| 20   | 42 | 34.5 | 51   | 20 | 6 <sup>-0.004</sup> <sub>-0.016</sub>  | 14 <sup>0</sup> <sub>-0.043</sub> | 1.5 | 8  | 10 | 0.5 | 25.5 | 13  | 25   | M4 x 0.7 | 4.5 | 4.5 | M5 x 0.8 | 16   | 4   | 22   | 44 | 36 | 26 | 59 |
| 30   | 50 | 47.5 | 55.5 | 22 | 8 <sup>-0.005</sup> <sub>-0.020</sub>  | 16 <sup>0</sup> <sub>-0.043</sub> | 2   | 9  | 12 | 1.0 | 33.5 | 14  | 25   | M5 x 0.8 | 5.5 | 5.5 | M5 x 0.8 | 21.5 | 4.5 | 24   | 52 | 42 | 29 | 69 |
| 40   | 63 | 53   | 62.2 | 30 | 10 <sup>-0.005</sup> <sub>-0.020</sub> | 25 <sup>0</sup> <sub>-0.052</sub> | 3   | 10 | 20 | —   | 39   | 20  | 31   | M5 x 0.8 | 5.5 | 5.5 | M5 x 0.8 | 25   | 5   | 30   | 64 | 52 | 38 | 85 |

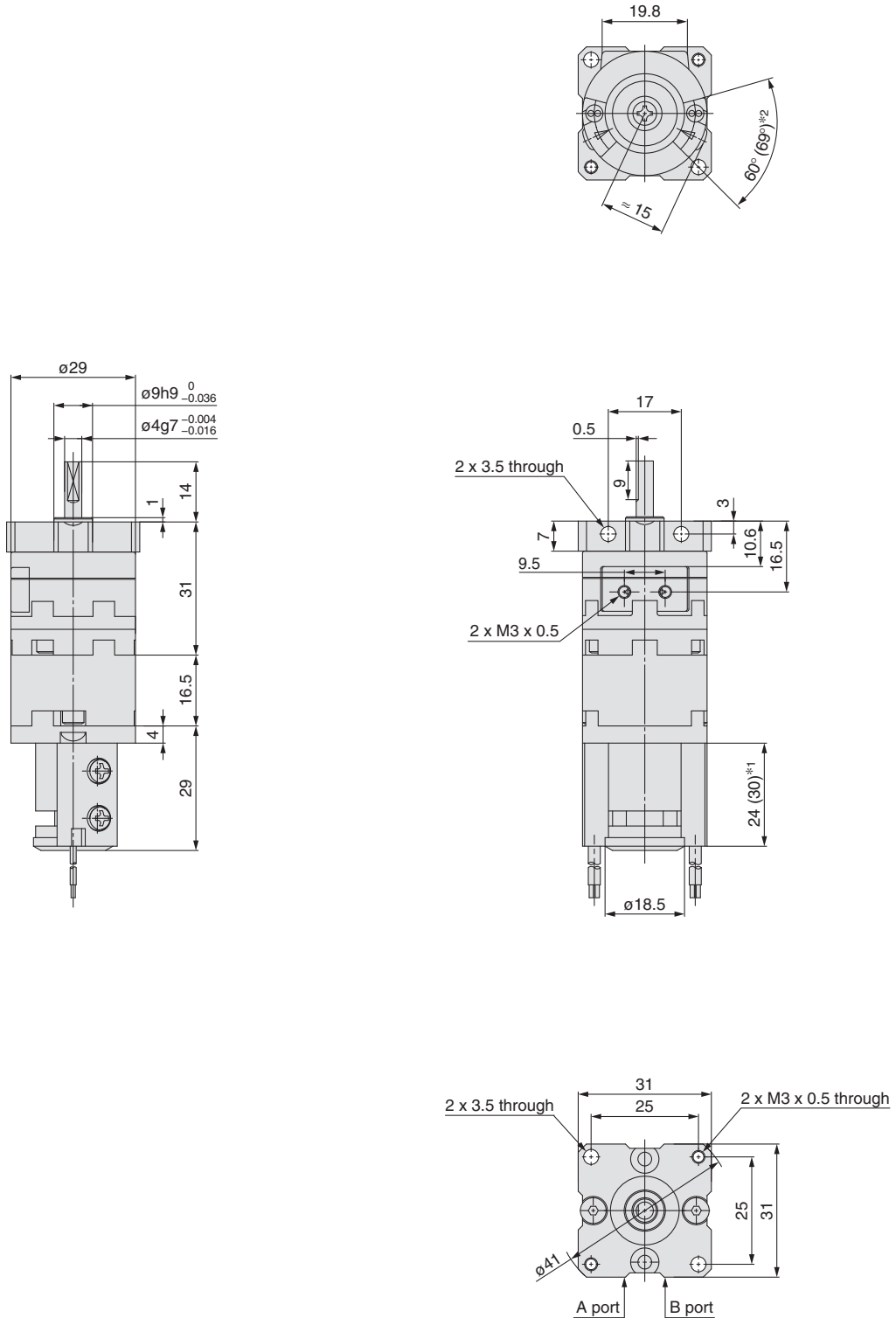
[mm]



## Dimensions: Free Mount Type (With Auto Switch and Angle Adjuster) 10

**Double vane** • Following figures show the intermediate rotation position when A or B port is pressurised.

**Size: 10**



Refer to page 27 for details of shaft type J.

\*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)

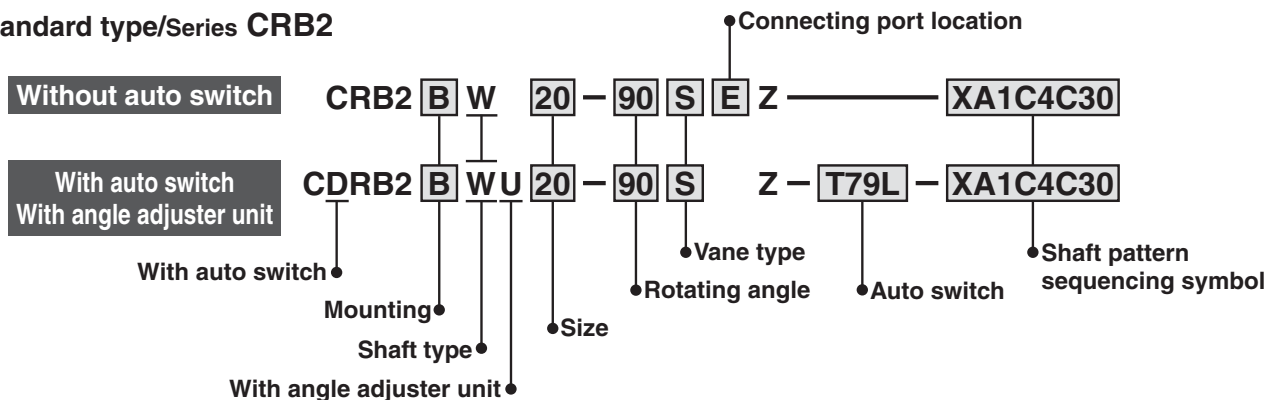
|                  |                          |                |               |                 |         |       |         |      |
|------------------|--------------------------|----------------|---------------|-----------------|---------|-------|---------|------|
| With Auto Switch | Angle Adjustment Setting | Component Unit | Made to Order | Simple Specials | CRBU2WU | CRBU2 | CRB2□WU | CRB2 |
|------------------|--------------------------|----------------|---------------|-----------------|---------|-------|---------|------|

**Shaft Pattern Sequencing I**

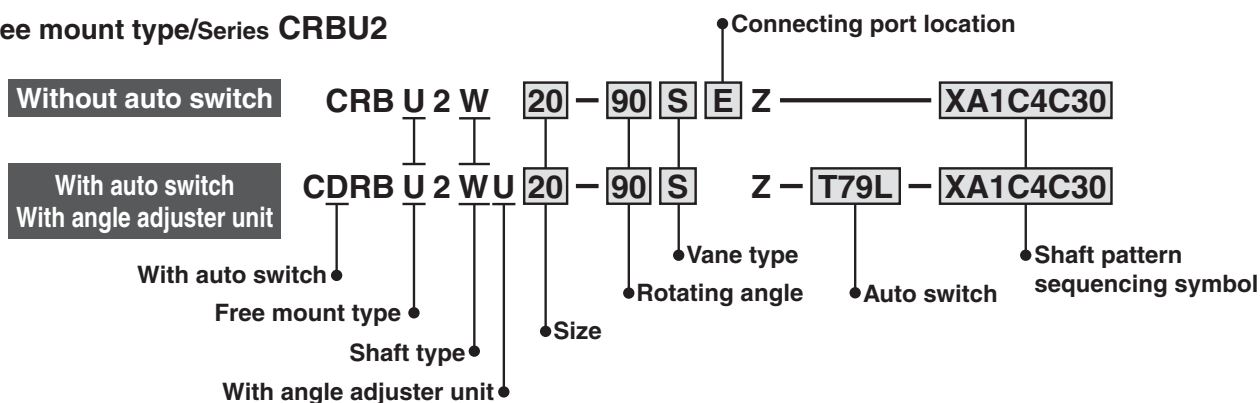
**-XA1 to -XA24**

Applicable shaft type: **W** (Standard)

**Standard type/Series CRB2**



**Free mount type/Series CRBU2**



**Shaft Pattern Sequencing Symbol**

● **Axial: Top (Long shaft side)**

| Symbol       | Description                                   | Applicable size |    |    |    |    |
|--------------|---|-----------------|----|----|----|----|
|              |   | 10              | 15 | 20 | 30 | 40 |
| <b>XA1</b>   | Shaft-end female thread                       |                 | ●  | ●  | ●  |    |
| <b>XA3</b>   | Shaft-end male thread                         | ●               | ●  | ●  | ●  |    |
| <b>XA5</b>   | Stepped round shaft                           | ●               | ●  | ●  | ●  |    |
| <b>XA7</b>   | Stepped round shaft with male thread          | ●               | ●  | ●  | ●  |    |
| <b>XA9</b>   | Modified length of standard chamfer           | ●               | ●  | ●  | ●  |    |
| <b>XA11</b>  | Double-sided chamfer                          | ●               | ●  | ●  | ●  |    |
| <b>XA14*</b> | Shaft through-hole + Shaft-end female thread  |                 | ●  | ●  | ●  | ●  |
| <b>XA17</b>  | Shortened shaft                               | ●               | ●  | ●  | ●  | ●  |
| <b>XA21</b>  | Stepped round shaft with double-sided chamfer | ●               | ●  | ●  | ●  |    |
| <b>XA23</b>  | Right-angle chamfer                           | ●               | ●  | ●  | ●  |    |
| <b>XA24</b>  | 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 |
| <b>XA2*</b>  | Shaft-end female thread                       |                 | ●  | ●  | ●  | ●  |
| <b>XA4*</b>  | Shaft-end male thread                         | ●               | ●  | ●  | ●  | ●  |
| <b>XA6*</b>  | Stepped round shaft                           | ●               | ●  | ●  | ●  | ●  |
| <b>XA8*</b>  | Stepped round shaft with male thread          | ●               | ●  | ●  | ●  | ●  |
| <b>XA10*</b> | Modified length of standard chamfer           | ●               | ●  | ●  | ●  | ●  |
| <b>XA12*</b> | Double-sided chamfer                          | ●               | ●  | ●  | ●  | ●  |
| <b>XA15*</b> | Shaft through-hole + Shaft-end female thread  |                 | ●  | ●  | ●  | ●  |
| <b>XA18*</b> | Shortened shaft                               | ●               | ●  | ●  | ●  | ●  |
| <b>XA22*</b> | Stepped round shaft with double-sided chamfer | ●               | ●  | ●  | ●  | ●  |

● **Double Shaft**

| Symbol       | Description   | Applicable size |    |    |    |    |
|--------------|---|-----------------|----|----|----|----|
|              |   | 10              | 15 | 20 | 30 | 40 |
| <b>XA13*</b> | Shaft through-hole                                  |                 | ●  | ●  | ●  | ●  |
| <b>XA16*</b> | Shaft through-hole + Double shaft-end female thread |                 | ●  | ●  | ●  | ●  |
| <b>XA19*</b> | Shortened shaft                                     | ●               | ●  | ●  | ●  |    |
| <b>XA20*</b> | Reversed shaft                                      | ●               | ●  | ●  | ●  | ●  |

## Combination

### XA□Combination

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

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

### XA□, XC□Combination

Combination other than -XA□, such as Made to Order (-XC□), is also available.  
Refer to pages 46 to 48 for details on the Made-to-Order specifications.

| Symbol | Description                             | Applicable size    | Combination |
|--------|---|--------------------|-------------|
|        |   |                    | XA1 to XA24 |
| XC1*   | Add connecting ports                    | 10, 15, 20, 30, 40 | ●           |
| XC2*   | Change threaded hole to through-hole    | 10, 20, 30, 40     | ●           |
| XC3*   | Change the screw position               | 10, 15, 20, 30, 40 | ●           |
| 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                         |                    | ●           |

\* 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

CRB2

CRB2□WU

CRBU2

CRBU2WU

Simple Specials

Made to Order

Component Unit

Angle Adjustment Setting

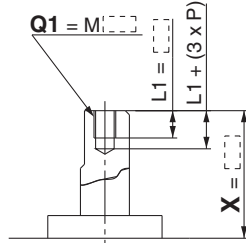
With Auto Switch

### 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



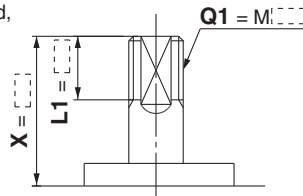
[mm]

| Size | CRB2      |            | CRBU2     |            |
|------|-----------|------------|-----------|------------|
|      | X         | Q1         | X         | Q1         |
| 15   | 4 to 18   | M3         | 1.5 to 18 | M3         |
| 20   | 4.5 to 20 | M3, M4     | 1.5 to 20 | M3, M4     |
| 30   | 5 to 22   | M3, M4, M5 | 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



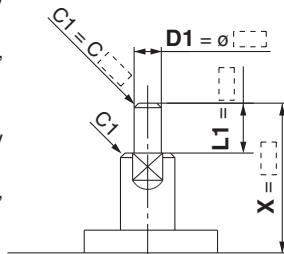
[mm]

| Size | CRB2     |        |    | CRBU2     |        |    |
|------|----------|--------|----|-----------|--------|----|
|      | X        | L1 max | Q1 | X         | L1 max | Q1 |
| 10   | 9 to 14  | X-5    | M4 | 7 to 14   | X-3    | M4 |
| 15   | 11 to 18 | X-6    | M5 | 8.5 to 18 | X-3.5  | M5 |
| 20   | 13 to 20 | X-7    | M6 | 10 to 20  | X-4    | M6 |
| 30   | 16 to 22 | X-8    | M8 | 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]

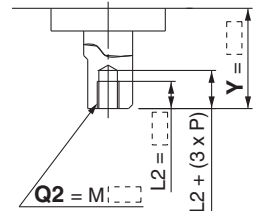
| Size | CRB2    |        |          | CRBU2   |        |          |
|------|---------|--------|----------|---------|--------|----------|
|      | X       | L1 max | D1       | X       | L1 max | D1       |
| 10   | 4 to 14 | X-3    | ø3       | 2 to 14 | X-1    | ø3       |
| 15   | 5 to 18 | X-4    | ø3 to ø4 | 3 to 18 | X-1.5  | ø3 to ø4 |
| 20   | 6 to 20 | X-4.5  | ø3 to ø5 | 3 to 20 | X-1.5  | ø3 to ø5 |
| 30   | 6 to 22 | X-5    | ø3 to ø6 | 3 to 22 | X-2    | ø3 to ø6 |

### 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



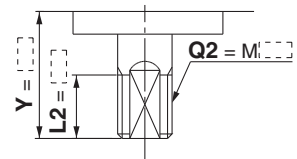
[mm]

| Size | CRB2, CRBU2 |            |
|------|-------------|------------|
|      | 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



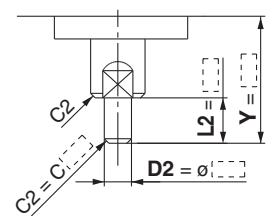
[mm]

| Size | CRB2, CRBU2 |        |     |
|------|-------------|--------|-----|
|      | Y           | L2 max | Q2  |
| 10   | 7 to 8      | Y-3    | M 4 |
| 15   | 8.5 to 9    | Y-3.5  | M 5 |
| 20   | 10          | Y-4    | M 6 |
| 30   | 13          | Y-5    | M 8 |
| 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.)



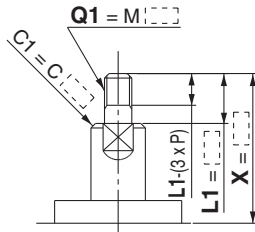
[mm]

| Size | CRB2, CRBU2 |        |          |
|------|-------------|--------|----------|
|      | Y           | L2 max | D2       |
| 10   | 2 to 8      | Y-1    | ø3       |
| 15   | 3 to 9      | Y-1.5  | ø3 to ø4 |
| 20   | 3 to 10     | Y-1.5  | ø3 to ø5 |
| 30   | 3 to 13     | Y-2    | ø3 to ø6 |
| 40   | 6 to 15     | Y-4.5  | ø3 to ø8 |

**Axial: Top (Long shaft side)**
**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.)



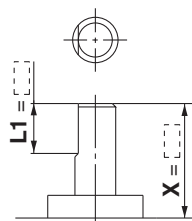
[mm]

| Size | CRB2      |        |            | CRBU2     |        |            |
|------|-----------|--------|------------|-----------|--------|------------|
|      | X         | L1 max | Q1         | X         | L1 max | Q1         |
| 10   | 7.5 to 14 | X-3    | 3          | 5.5 to 14 | X-1    | 3          |
| 15   | 10 to 18  | X-4    | 3, 4       | 7.5 to 18 | X-1.5  | 3          |
| 20   | 12 to 20  | X-4.5  | 3, 4, 5    | 9 to 20   | X-1.5  | 3, 4       |
| 30   | 14 to 22  | X-5    | 3, 4, 5, 6 | 11 to 22  | X-2    | 3, 4, 5, 6 |

**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



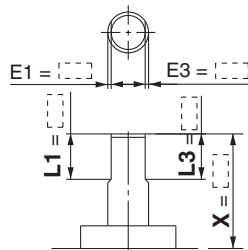
[mm]

| Size | CRB2     |                      | CRBU2     |                      |
|------|----------|----------------------|-----------|----------------------|
|      | X        | L1                   | X         | L1                   |
| 10   | 5 to 14  | 9-(14-X) to (X-3)    | 3 to 14   | 9-(14-X) to (X-1)    |
| 15   | 8 to 18  | 10-(18-X) to (X-4)   | 5.5 to 18 | 10-(18-X) to (X-1.5) |
| 20   | 10 to 20 | 10-(20-X) to (X-4.5) | 7 to 20   | 10-(20-X) to (X-1.5) |
| 30   | 10 to 22 | 12-(22-X) to (X-5)   | 7 to 22   | 10-(22-X) to (X-2)   |

**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



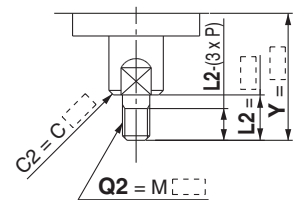
[mm]

| Size | CRB2     |                      |        | CRBU2   |                      |        |
|------|----------|----------------------|--------|---------|----------------------|--------|
|      | X        | L1                   | L3 max | X       | L1                   | L3 max |
| 10   | 5 to 14  | 9-(14-X) to (X-3)    | X-3    | 3 to 14 | 9-(14-X) to (X-1)    | X-1    |
| 15   | 8 to 18  | 10-(18-X) to (X-4)   | X-4    | 3 to 18 | 10-(18-X) to (X-1.5) | X-1.5  |
| 20   | 10 to 20 | 10-(20-X) to (X-4.5) | X-4.5  | 3 to 20 | 10-(20-X) to (X-1.5) | X-1.5  |
| 30   | 10 to 22 | 12-(22-X) to (X-5)   | X-5    | 5 to 22 | 12-(22-X) to (X-2)   | X-2    |

**Axial: Bottom (Short shaft side)**
**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.)



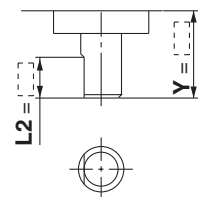
[mm]

| Size | CRB2, CRBU2 |        |               |
|------|-------------|--------|---------------|
|      | Y           | L2 max | Q2            |
| 10   | 5.5 to 8    | Y-1    | 3             |
| 15   | 7.5 to 9    | Y-1.5  | 3, 4          |
| 20   | 9 to 10     | Y-1.5  | 3, 4, 5       |
| 30   | 11 to 13    | Y-2    | 3, 4, 5, 6    |
| 40   | 14 to 15    | Y-4.5  | 3, 4, 5, 6, 8 |

**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



[mm]

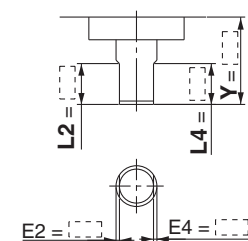
| Size | CRB2, CRBU2 |   |
|------|-------------|---|
|      | Y           | L2  |
| 10   | 3 to 8      | 5-(8-Y) to (Y-1)                                  |
| 15   | 3 to 9      | 6-(9-Y) to (Y-1.5)                                |
| 20   | 3 to 10     | 7-(10-Y) to (Y-1.5)                               |
| 30   | 5 to 13     | 8-(13-Y) to (Y-2)                                 |
| 40   | 7 to 15     | 9-(15-Y) to (Y-2)<br>[9-(15-Y) to (Y-4.5)] (Note) |

Note) Values inside [ ] are for the CRBU2.

**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



[mm]

| Size | CRB2, CRBU2 |                     |        |
|------|-------------|---------------------|--------|
|      | Y           | L2                  | L4 max |
| 10   | 3 to 8      | 5-(8-Y) to (Y-1)    | Y-1    |
| 15   | 3 to 9      | 6-(2-Y) to (Y-1.5)  | Y-1.5  |
| 20   | 3 to 10     | 7-(10-Y) to (Y-1.5) | Y-1.5  |
| 30   | 5 to 13     | 8-(13-Y) to (Y-2)   | Y-2    |
| 40   | 7 to 15     | 9-(15-Y) to (Y-4.5) | Y-4.5  |

CRB2

CRB2□WU

CRBU2

CRBU2WU

Simple Specials

Made to Order

Component Unit

Angle Adjustment Setting

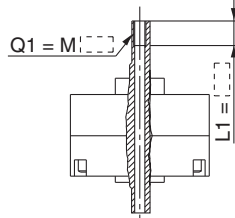
With Auto Switch



## Axial: Top (Long shaft side)

### 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

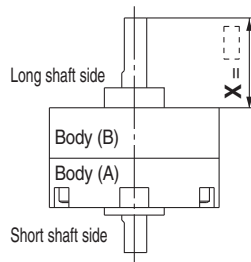
The above figure shows the CRB2 series.

| Size<br>Thread | CRB2, CRBU2 |      |      |      |
|----------------|-------------|------|------|------|
|                | 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

The long shaft is shortened.

- Applicable shaft type: W



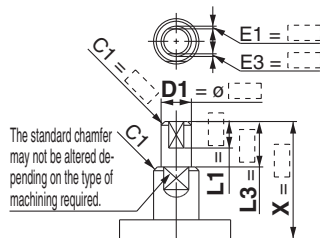
The above figure shows the CRB2 series.

| Size | CRB2, CRBU2 |           |
|------|-------------|-----------|
|      | X           | X         |
| 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: 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.)



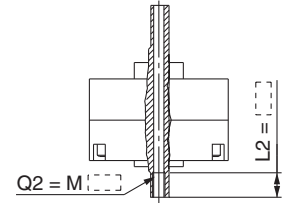
The standard chamfer may not be altered depending on the type of machining required.

| Size | CRB2     |        |        |          | CRBU2     |        |        |          |
|------|----------|--------|--------|----------|-----------|--------|--------|----------|
|      | X        | L1 max | L3     | D1       | X         | L1 max | L3     | D1       |
| 10   | 6 to 14  | X-4.5  | L1+1.5 | ø3       | 4 to 14   | X-2.5  | L1+1.5 | ø3       |
| 15   | 7 to 18  | X-5.5  | L1+1.5 | ø3 to ø4 | 4.5 to 18 | X-3    | L1+1.5 | ø3 to ø4 |
| 20   | 8 to 20  | X-6.5  | L1+2   | ø3 to ø5 | 5 to 20   | X-3.5  | L1+2   | ø3 to ø5 |
| 30   | 10 to 22 | X-8    | L1+3   | ø3 to ø6 | 7 to 22   | X-5    | L1+3   | ø3 to ø6 |

## Axial: Bottom (Short shaft side)

### 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

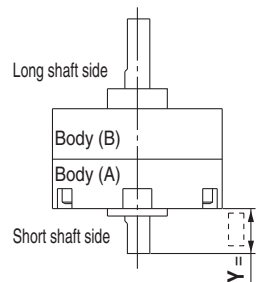
The above figure shows the CRB2 series.

| Size<br>Thread | CRB2, CRBU2 |      |      |      |
|----------------|-------------|------|------|------|
|                | 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

The short shaft is shortened.

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



The above figure shows the CRB2 series.

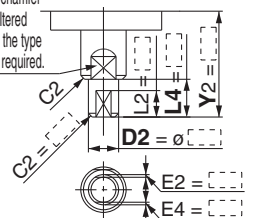
| Size | CRB2, CRBU2 |   |
|------|-------------|---|
|      | Y           | Y |
| 10   | 1 to 8      |   |
| 15   | 1.5 to 9    |   |
| 20   | 1.5 to 10   |   |
| 30   | 2 to 13     |   |
| 40   | 4.5 to 15   |   |

### 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.)

The standard chamfer may not be altered depending on the type of machining required.

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



| Size | CRB2, CRBU2 |        |                       |          |
|------|-------------|--------|-----------------------|----------|
|      | Y           | L1 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+5<br>[L2+3] (Note) | ø3 to ø6 |

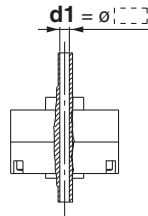
Note) Values inside [ ] are for the CRBU2.

## 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



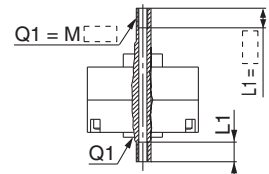
The above figure shows the CRB2 series.

| Size | CRB2, CRBU2  |
|------|--------------|
|      | 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.



The above figure shows the CRB2 series.

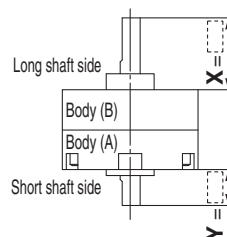
- Not available for size 10
- The maximum dimension L1 is, as a rule, twice the thread size.  
(Example) For M5: L1 max. = 10 mm
- A parallel key is used on the long shaft for size 40.
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.

| Thread   | CRB2, CRBU2 |      |      |      |
|----------|-------------|------|------|------|
|          | 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 key is used on the long shaft for size 40.
- Applicable shaft type: W



The above figure shows the CRB2 series.

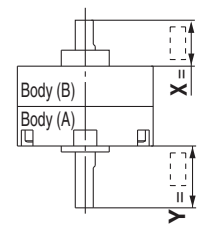
| Size | CRB2      |           | CRBU2     |           |
|------|-----------|-----------|-----------|-----------|
|      | X         | Y         | X         | Y         |
| 10   | 3 to 14   | 1 to 8    | 1 to 14   | 1 to 8    |
| 15   | 4 to 18   | 1.5 to 9  | 1.5 to 18 | 1.5 to 9  |
| 20   | 4.5 to 20 | 1.5 to 10 | 1.5 to 20 | 1.5 to 10 |
| 30   | 5 to 22   | 2 to 13   | 2 to 22   | 2 to 13   |
| 40   | 18 to 30  | 4.5 to 15 | 18 to 30  | 4.5 to 15 |

### 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



The above figure shows the CRB2 series.

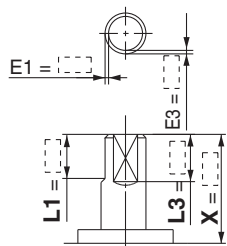
| Size | CRB2      |             | CRBU2      |             |
|------|-----------|-------------|------------|-------------|
|      | X         | Y           | X          | Y           |
| 10   | 3 to 10   | 1 to 12     | 1 to 3     | 1 to 12     |
| 15   | 4 to 11.5 | 1.5 to 15.5 | 1.5 to 6.5 | 1.5 to 15.5 |
| 20   | 4.5 to 13 | 1.5 to 17   | 1.5 to 7.5 | 1.5 to 17   |
| 30   | 5 to 16   | 2 to 19     | 2 to 8.5   | 2 to 19     |
| 40   | 6.5 to 17 | —           | 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 size of ø30 and ø40.
- Applicable shaft type: W



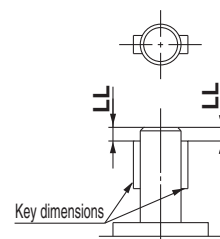
| Size | CRB2     |                      |        | CRBU2   |                      |        |
|------|----------|----------------------|--------|---------|----------------------|--------|
|      | X        | L1                   | L3 max | X       | L1                   | L3 max |
| 10   | 5 to 14  | 9-(14-X) to (X-3)    | X-3    | 3 to 14 | 9-(14-X) to (X-1)    | X-1    |
| 15   | 8 to 18  | 10-(18-X) to (X-4)   | X-4    | 3 to 18 | 10-(18-X) to (X-1.5) | X-1.5  |
| 20   | 10 to 20 | 10-(20-X) to (X-4.5) | X-4.5  | 3 to 20 | 10-(20-X) to (X-1.5) | X-1.5  |
| 30   | 10 to 22 | 12-(22-X) to (X-5)   | X-5    | 5 to 22 | 12-(22-X) to (X-2)   | X-2    |

### 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.

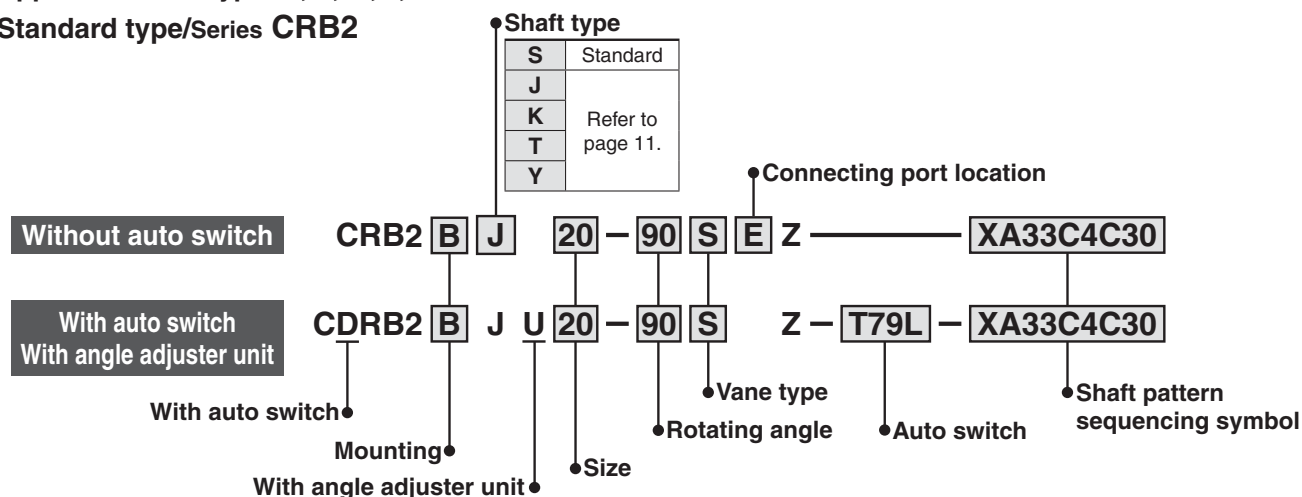


| Size | CRB2, CRBU2    |    |
|------|----------------|----|
|      | Key dimensions | LL |
| 40   | 4 x 4 x 20     | 2  |

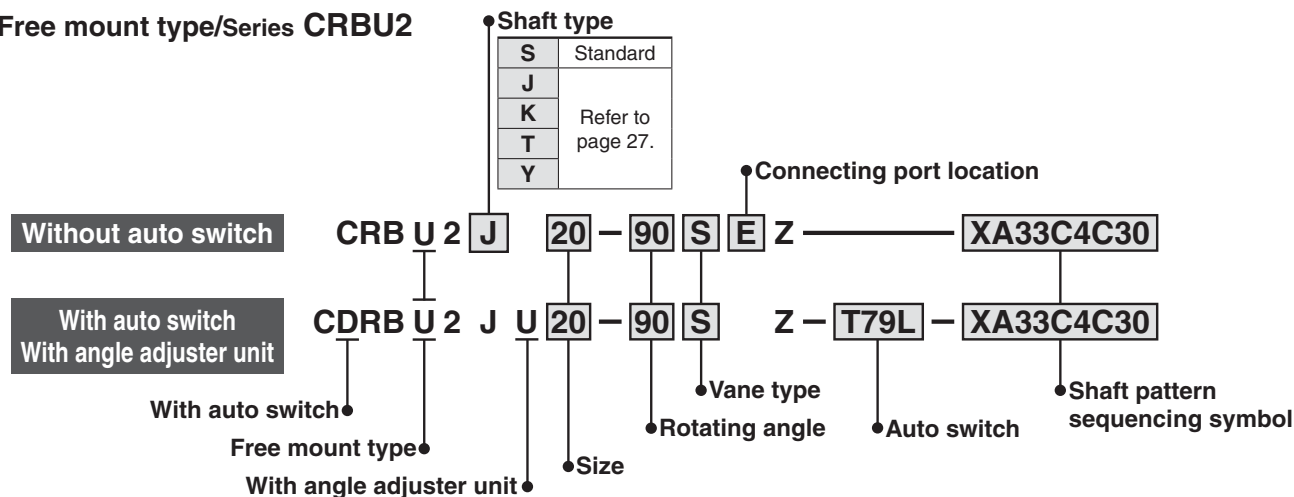
**Shaft Pattern Sequencing II**
**-XA31 to -XA58**

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

Standard type/Series CRB2



Free mount type/Series CRBU2


**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.

## Combination

### XA□Combination

| Symbol | Description                                   | Axial direction |        | Applicable shaft type |   |   |   |      | Combination                            |      |      |      |      |      |      |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
|--------|---|-----------------|--------|-----------------------|---|---|---|------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|----|----|------|------|------|--|--|
|        |   | Top             | Bottom | J                     | K | S | T | Y    |  |      |      |      |      |      |      |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA31   | Shaft-end female thread                       | ●               |        |                       |   | ● | ● | XA31 | * Shaft type available for combination |      |      |      |      |      |      |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA32   | Shaft-end female thread                       |                 | ●      |                       |   | ● | ● | XA32 |  |      |      |      |      |      |      |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA33   | Shaft-end female thread                       | ●               |        | ●                     | ● |   | ● |      |  | XA33 |      |      |      |      |      |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA34   | Shaft-end female thread                       |                 | ●      | ●                     | ● |   | ● |      |  | ●    | XA34 |      |      |      |      |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA37   | Stepped round shaft                           | ●               |        | ●                     | ● |   | ● |      |  | ●    | XA37 |      |      |      |      |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA38   | Stepped round shaft                           |                 | ●      |                       | ● |   |   |      | K*                                     |      | K*   | XA38 |      |      |      |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA39   | Shaft through-hole                            | ●               | ●      |                       |   | ● | ● |      |  |      |      |      | XA39 |      |      |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA40   | Shaft through-hole                            | ●               | ●      |                       | ● |   | ● |      |  |      |      |      |      | XA40 |      |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA41   | Shaft through-hole                            | ●               | ●      | ●                     |   |   |   |      |  |      |      |      |      |      | XA41 |      |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA42   | Shaft through-hole + Shaft-end female thread  | ●               | ●      |                       |   | ● | ● |      |  |      |      |      |      |      |      | XA42 |      |      |      |      |      |      |    |    |      |      |      |  |  |
| XA43   | Shaft through-hole + Shaft-end female thread  | ●               | ●      |                       | ● |   | ● |      |  |      |      |      |      |      |      |      | XA43 |      |      |      |      |      |    |    |      |      |      |  |  |
| XA44   | Shaft through-hole + Shaft-end female thread  | ●               | ●      | ●                     |   |   |   |      |  |      |      |      |      |      |      |      |      | XA44 |      |      |      |      |    |    |      |      |      |  |  |
| XA45   | Middle-cut chamfer                            | ●               |        | ●                     | ● |   | ● |      |  |      |      |      |      |      |      |      |      |      | XA45 |      |      |      |    |    |      |      |      |  |  |
| XA46   | Middle-cut chamfer                            |                 | ●      |                       | ● |   |   |      |  |      |      |      |      |      |      |      |      |      |      | XA46 |      |      |    |    |      |      |      |  |  |
| XA47   | Machined keyway                               | ●               |        | ●                     | ● |   | ● |      |  |      |      |      |      |      |      |      |      |      |      |      | XA47 |      |    |    |      |      |      |  |  |
| XA48   | Change of long shaft length                   | ●               |        |                       |   | ● |   | ●    |  | ●    |      |      |      |      | ●    |      |      |      |      |      |      | XA48 |    |    |      |      |      |  |  |
| XA49   | Change of short shaft length                  |                 | ●      |                       |   |   |   | ●    | Y*                                     |      |      |      |      |      | Y*   |      |      |      |      | Y*   | XA49 |      |    |    |      |      |      |  |  |
| XA50   | Change of double shaft length                 | ●               | ●      |                       |   |   |   | ●    |  |      |      |      |      |      | Y*   |      |      |      | Y*   | ●    | XA50 |      |    |    |      |      |      |  |  |
| XA51   | Change of long shaft length                   | ●               |        | ●                     | ● |   | ● |      |  |      | ●    |      |      | K,T* | J*   |      | K,T* | J*   | ●    | K*   | ●    |      |    |    | XA51 |      |      |  |  |
| XA52   | Change of short shaft length                  |                 | ●      |                       | ● |   |   |      |  | K*   |      |      | K*   | K*   |      |      | K*   |      | K*   | K*   | K*   |      |    | K* | XA52 |      |      |  |  |
| XA53   | Change of double shaft length                 | ●               | ●      |                       | ● |   |   |      |  |      |      |      |      | K*   |      |      | K*   |      | K*   | K*   | K*   |      |    | K* | ●    | XA53 |      |  |  |
| XA55   | Change of short shaft length                  |                 | ●      | ●                     |   |   |   |      |  |      | J*   |      |      |      | J*   |      | J*   | J*   |      | J*   |      |      | J* |    |      | XA55 |      |  |  |
| XA57   | Change of double shaft length                 | ●               | ●      | ●                     |   |   |   |      |  | J*   |      |      |      | J*   |      |      | J*   | J*   |      | J*   |      |      | J* |    |      | ●    | XA57 |  |  |
| XA58   | Reversed shaft, Change of double shaft length | ●               | ●      | ●                     |   |   |   |      |  |      |      |      |      | J*   |      |      | J*   | J*   |      | J*   |      |      | J* |    |      | J*   | J*   |  |  |

A combination of up to two XA□s are available.

Example: XA31A32

### XA□, XC□ Combination

Combination other than XA□, such as Made to Order (XC□), is also available.

Refer to pages 46 to 48 for details on the Made-to-Order specifications.

| Symbol | Description                             | Applicable size    | Combination  |
|--------|---|--------------------|--------------|
|        |   |                    | XA31 to XA58 |
| XC1*   | Add connecting ports                    | 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 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                         |                    | ●            |

\* 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: XA33A34C5C30

CRB2

CRB2□WU

CRBU2

CRBU2WU

Simple Specials

Made to Order

Component Unit

Angle Adjustment Setting

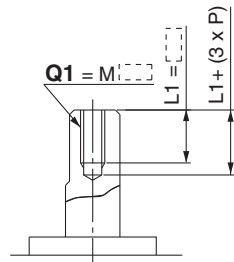
With Auto Switch

### 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



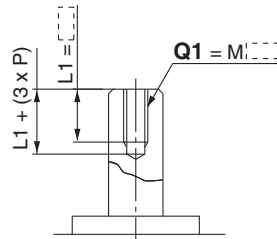
[mm]

| Size       | CRB2, CRBU2   |   |
|------------|---------------|---|
|            | Q1            |   |
| Shaft type | 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



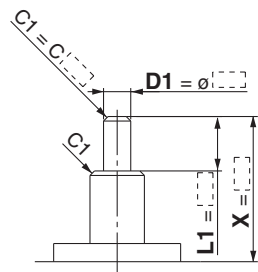
[mm]

| Size       | CRB2, CRBU2   |   |   |
|------------|---------------|---|---|
|            | Q1            |   |   |
| 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 types: J, K, T
- Equal dimensions are indicated by the same marker.  
(If not specifying dimension C1, indicate "\*" instead.)



[mm]

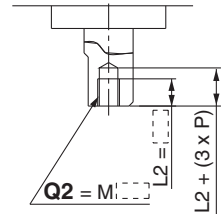
| Size | CRB2    |        |            | CRBU2   |        |            |
|------|---------|--------|------------|---------|--------|------------|
|      | X       | L1 max | D1         | X       | L1 max | D1         |
| 10   | 4 to 14 | X-3    | ø3 to ø3.9 | 2 to 14 | X-1    | ø3 to ø3.9 |
| 15   | 5 to 18 | X-4    | ø3 to ø4.9 | 3 to 18 | X-1.5  | ø3 to ø4.9 |
| 20   | 6 to 20 | X-4.5  | ø3 to ø5.9 | 3 to 20 | X-1.5  | ø3 to ø5.9 |
| 30   | 6 to 22 | X-5    | ø3 to ø7.9 | 3 to 22 | X-2    | ø3 to ø7.9 |
| 40   | 8 to 30 | X-6.5  | ø3 to ø9.9 | 4 to 30 | X-3    | ø3 to ø9.9 |

### 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



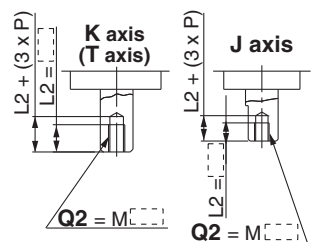
[mm]

| Size       | CRB2, CRBU2   |   |
|------------|---------------|---|
|            | Q2            |   |
| Shaft type | 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



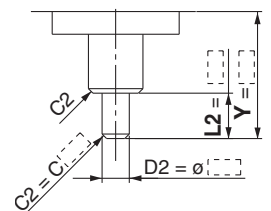
[mm]

| Size       | CRB2, CRBU2   |   |   |
|------------|---------------|---|---|
|            | Q2            |   |   |
| 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.)



[mm]

| Size | CRB2, CRBU2 |        |            |
|------|-------------|--------|------------|
|      | 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   | 3 to 22     | Y-2    | ø3 to ø7.9 |
| 40   | 6 to 30     | Y-4.5  | ø5 to ø9.9 |

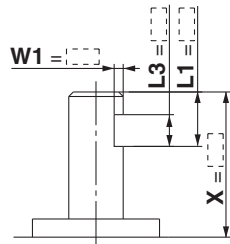
**Axial: Top (Long shaft side)**
**Symbol: A45**

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]

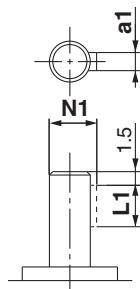
| Size | CRB2, CRBU2 |       |   |     |        |   |        |   |   |        |   |   |
|------|-------------|-------|---|-----|--------|---|--------|---|---|--------|---|---|
|      | X           |       |   | W1  |        |   | L1 max |   |   | L3 max |   |   |
|      | J           | K     | T | J   | 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   |   |   |

**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



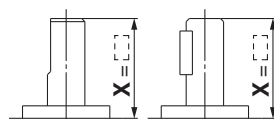
[mm]

| Size | CRB2, CRBU2                        |    |     |
|------|------------------------------------|----|-----|
|      | a1                                 | L1 | N1  |
| 20   | 2h9 <sub>-0.025</sub> <sup>0</sup> | 10 | 6.8 |
| 30   | 3h9 <sub>-0.025</sub> <sup>0</sup> | 14 | 9.2 |

**Symbol: A48**

The long shaft is shortened.

- Applicable shaft type: S, Y



Size: 10 to 30    Size: 40

[mm]

| Size | CRB2      | CRBU2     |
|------|-----------|-----------|
|      | X         | X         |
| 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  |

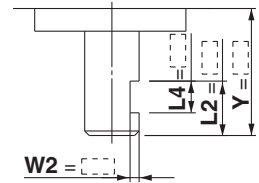
**Axial: Bottom (Short shaft side)**
**Symbol: A46**

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



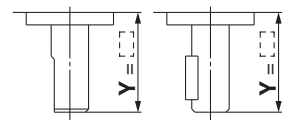
[mm]

| Size | CRB2, CRBU2 |            |        |        |
|------|-------------|------------|--------|--------|
|      | 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   |

**Symbol: A49**

The short shaft is shortened.

- Applicable shaft type: Y



Size: 10 to 30    Size: 40

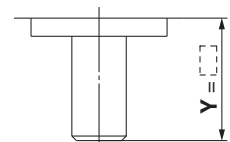
[mm]

| Size | CRB2, CRBU2 |
|------|-------------|
|      | 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



[mm]

| Size | CRB2, CRBU2 |
|------|-------------|
|      | Y           |
| 10   | 1 to 14     |
| 15   | 1.5 to 18   |
| 20   | 1.5 to 20   |
| 30   | 2 to 22     |
| 40   | 4.5 to 30   |

CRB2

CRB2□WU

CRBU2

CRBU2WU

Simple Specials

Made to Order

Component Unit

Angle Adjustment Setting

With Auto Switch

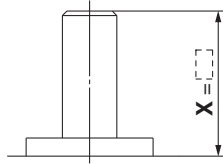


### Axial: Top (Long shaft side)

#### Symbol: A51

The long shaft is shortened.

- Applicable shaft type: J, K, T



| Size | CRB2      | CRBU2     |
|------|-----------|-----------|
|      | X         | X         |
| 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 | 3 to 30   |

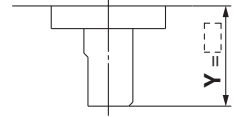
[mm]

### Axial: Bottom (Short shaft side)

#### Symbol: A55

The short shaft is shortened.

- Applicable shaft type: J



| Size | CRB2, CRBU2 |
|------|-------------|
|      | Y           |
| 10   | 1 to 8      |
| 15   | 1.5 to 9    |
| 20   | 1.5 to 10   |
| 30   | 2 to 13     |
| 40   | 4.5 to 15   |

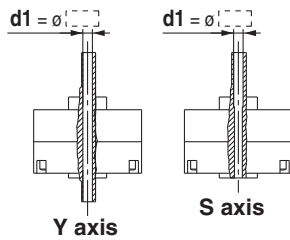
[mm]

## 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
- Equal dimensions are indicated by the same marker.
- Not available for size 10
- A parallel key is used on the long shaft for size 40.
- Minimum machining diameter for d1 is 0.1 mm.



The above figure shows the CRB2 series.

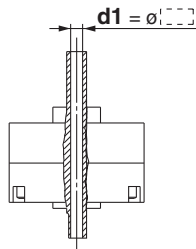
[mm]

| Size | CRB2         |   | CRBU2        |   |
|------|--------------|---|--------------|---|
|      | S            | Y | S            | Y |
|      | d1           |   | d1           |   |
| 15   | ø2.5         |   | ø2.5         |   |
| 20   | ø2.5 to ø3.5 |   | ø2.5 to ø3.5 |   |
| 30   | ø2.5 to ø4   |   | ø2.5 to ø4   |   |
| 40   | ø2.5 to ø3   |   | 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.



The above figure shows the CRB2 series.

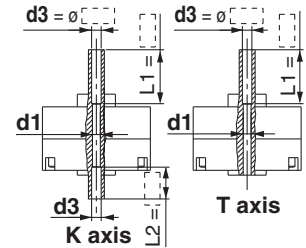
[mm]

| Size | CRB2, CRBU2  |
|------|--------------|
|      | d1           |
| 15   | ø2.5         |
| 20   | ø2.5 to ø3.5 |
| 30   | ø2.5 to ø4   |
| 40   | ø2.5 to ø4.5 |

#### 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 = ø2.5, L1 = 18 (max.) for size 15; minimum machining diameter for d1 is 0.1 mm.
- d1 = d3 for size 20 to 40



The above figure shows the CRB2 series.

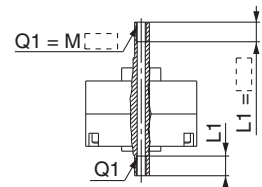
[mm]

| Size | CRB2, CRBU2 |   |              |   |
|------|-------------|---|--------------|---|
|      | 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: 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.



The above figure shows the CRB2 series.

[mm]

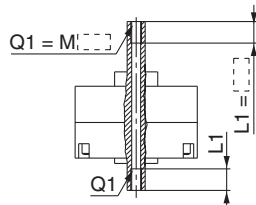
| Thread   | CRB2, CRBU2 |      |      |      |      |      |      |      |
|----------|-------------|------|------|------|------|------|------|------|
|          | 15          | 20   | 30   | 40   | 15   | 20   | 30   | 40   |
|          | S           |      | Y    |      | S    |      | Y    |      |
| M3 x 0.5 | ø2.5        | ø2.5 | ø2.5 | ø2.5 | ø2.5 | ø2.5 | ø2.5 | ø2.5 |
| M4 x 0.7 | —           | ø3.3 | ø3.3 | —    | —    | —    | —    | —    |
| M5 x 0.8 | —           | —    | ø4.2 | —    | —    | —    | —    | —    |

## Double Shaft

### 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.



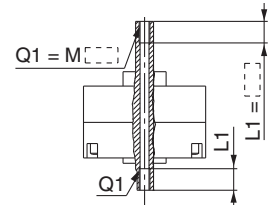
The above figure shows the CRB2 series.

| Size<br>Shaft type | CRB2, CRBU2 |      |      |      |      |      |      |      |
|--------------------|-------------|------|------|------|------|------|------|------|
|                    | 15          | 20   | 30   | 40   | 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 | ø2.5 | ø2.5 | ø2.5 | ø2.5 |
| M4 x 0.7           | —           | ø3.3 | ø3.3 | ø3.3 | ø3.3 | ø3.3 | ø3.3 | ø3.3 |
| M5 x 0.8           | —           | —    | ø4.2 | ø4.2 | ø4.2 | ø4.2 | 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.



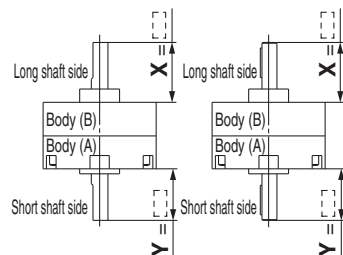
The above figure shows the CRB2 series.

| Size<br>Shaft type | CRB2, CRBU2 |      |      |      |      |      |      |      |
|--------------------|-------------|------|------|------|------|------|------|------|
|                    | 15          | 20   | 30   | 40   | 15   | 20   | 30   | 40   |
| Thread             | 15          | 20   | 30   | 40   | 15   | 20   | 30   | 40   |
| M3 x 0.5           | ø2.5        | ø2.5 | ø2.5 | ø2.5 | ø2.5 | ø2.5 | ø2.5 | ø2.5 |
| M4 x 0.7           | —           | ø3.3 | ø3.3 | ø3.3 | ø3.3 | ø3.3 | ø3.3 | ø3.3 |
| M5 x 0.8           | —           | —    | ø4.2 | ø4.2 | ø4.2 | ø4.2 | ø4.2 | ø4.2 |

### Symbol: A50

Both the long shaft and the short shaft are shortened.

- Applicable shaft type: Y



Size: 10 to 30      Size: 40

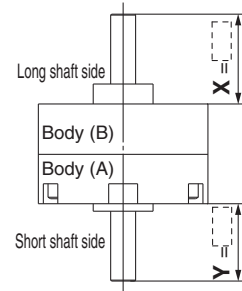
The above figure shows the CRB2 series.

| Size | CRB2      |           | CRBU2     |           |
|------|-----------|-----------|-----------|-----------|
|      | X         | Y         | X         | Y         |
| 10   | 3 to 14   | 1 to 14   | 1 to 14   | 1 to 14   |
| 15   | 4 to 18   | 1.5 to 18 | 1.5 to 18 | 1.5 to 18 |
| 20   | 4.5 to 20 | 1.5 to 20 | 1.5 to 20 | 1.5 to 20 |
| 30   | 5 to 22   | 2 to 22   | 2 to 22   | 2 to 22   |
| 40   | 18 to 30  | 18 to 30  | 18 to 30  | 18 to 30  |

### Symbol: A53

Both the long shaft and the short shaft are shortened.

- Applicable shaft type: K



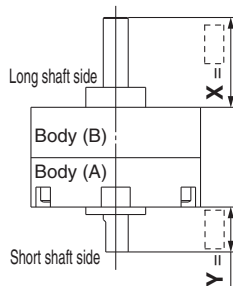
The above figure shows the CRB2 series.

| Size | CRB2      |           | CRBU2     |           |
|------|-----------|-----------|-----------|-----------|
|      | X         | Y         | X         | Y         |
| 10   | 3 to 14   | 1 to 14   | 1 to 14   | 1 to 14   |
| 15   | 4 to 18   | 1.5 to 18 | 1.5 to 18 | 1.5 to 18 |
| 20   | 4.5 to 20 | 1.5 to 20 | 1.5 to 20 | 1.5 to 20 |
| 30   | 5 to 22   | 2 to 22   | 2 to 22   | 2 to 22   |
| 40   | 6.5 to 30 | 4.5 to 30 | 3 to 30   | 4.5 to 30 |

### Symbol: A57

Both the long shaft and the short shaft are shortened.

- Applicable shaft type: J



The above figure shows the CRB2 series.

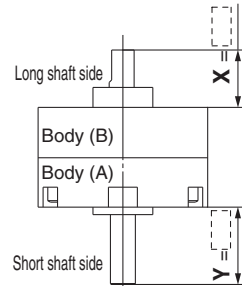
| Size | CRB2      |           | CRBU2     |           |
|------|-----------|-----------|-----------|-----------|
|      | X         | Y         | X         | Y         |
| 10   | 3 to 14   | 1 to 14   | 1 to 14   | 1 to 14   |
| 15   | 4 to 18   | 1.5 to 18 | 1.5 to 18 | 1.5 to 18 |
| 20   | 4.5 to 20 | 1.5 to 20 | 1.5 to 20 | 1.5 to 20 |
| 30   | 5 to 22   | 2 to 22   | 2 to 22   | 2 to 22   |
| 40   | 6.5 to 30 | 4.5 to 30 | 3 to 30   | 3 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



The above figure shows the CRB2 series.

| Size | CRB2      |             | CRBU2       |             |
|------|-----------|-------------|-------------|-------------|
|      | X         | Y           | X           | Y           |
| 10   | 3 to 10   | 1 to 12     | 1 to 10     | 1 to 12     |
| 15   | 4 to 11.5 | 1.5 to 15.5 | 1.5 to 11.5 | 1.5 to 15.5 |
| 20   | 4.5 to 13 | 1.5 to 17   | 1.5 to 13   | 1.5 to 17   |
| 30   | 5 to 16   | 2 to 19     | 2 to 16     | 2 to 19     |
| 40   | 6.5 to 17 | 4.5 to 28   | 3 to 17     | 4.5 to 28   |

CRB2

CRB2□WU

CRBU2

CRBU2WU

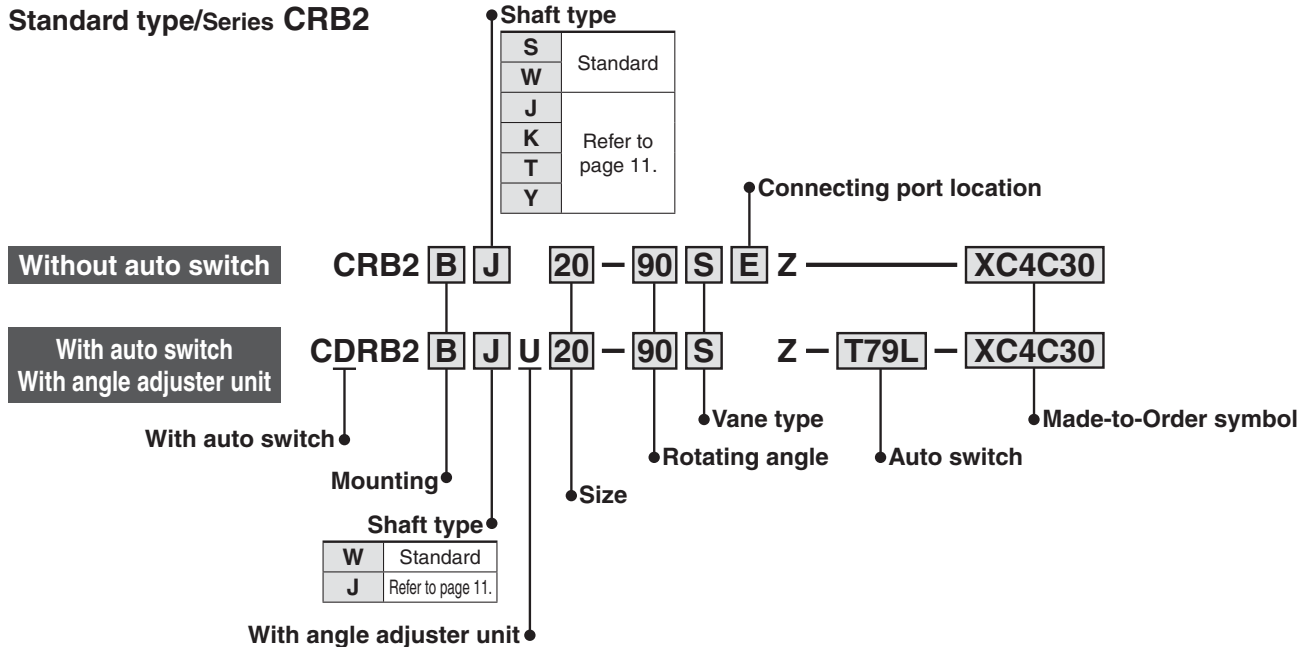
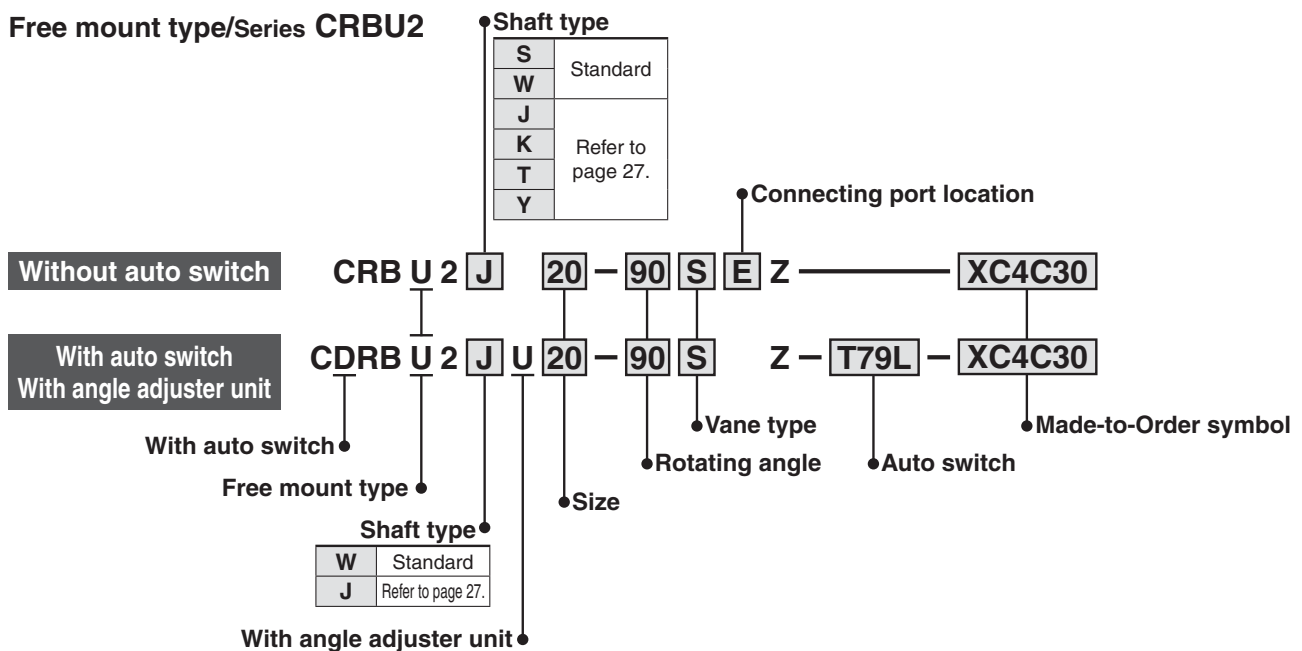
Simple Specials

Made to Order

Component Unit

Angle Adjustment Setting

With Auto Switch

**Symbol**
**-XC1 to -XC7, -XC30**
**Standard type/Series CRB2**

**Free mount type/Series CRBU2**

**Made to Order Symbol**

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

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

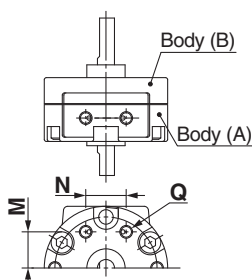
**Combination**

| Symbol      | Combination |            |            |            |            |            |            |  |
|-------------|-------------|------------|------------|------------|------------|------------|------------|--|
| <b>XC1</b>  | <b>XC1</b>  |            |            |            |            |            |            |  |
| <b>XC2</b>  | ●           | <b>XC2</b> |            |            |            |            |            |  |
| <b>XC3</b>  | ●           | —          | <b>XC3</b> |            |            |            |            |  |
| <b>XC4</b>  | ●           | ●          | ●          | <b>XC4</b> |            |            |            |  |
| <b>XC5</b>  | ●           | ●          | ●          | —          | <b>XC5</b> |            |            |  |
| <b>XC6</b>  | ●           | ●          | ●          | —          | —          | <b>XC6</b> |            |  |
| <b>XC7</b>  | ●           | ●          | ●          | ●          | ●          | —          | <b>XC7</b> |  |
| <b>XC30</b> | ●           | ●          | ●          | ●          | ●          | ●          | ●          |  |

**Symbol: C1**

The connecting ports are added on the Body (A) end surface.  
(It will have an aluminium 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

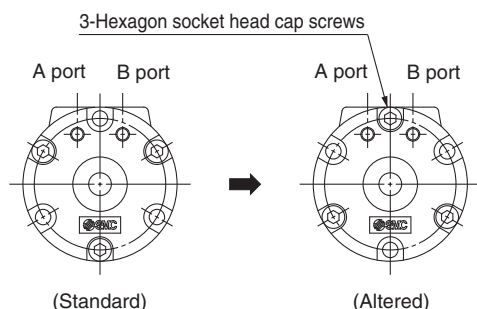


The above figure shows the CRB2 series.

| Size | CRB2, CRBU2 |      |     |
|------|-------------|------|-----|
|      | 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: C3**

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

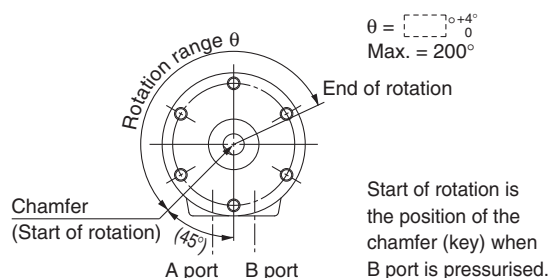


The above figure shows the CRB2 series. (Viewed from the short shaft side)

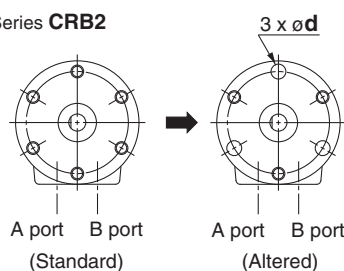
**Symbol: C5**

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

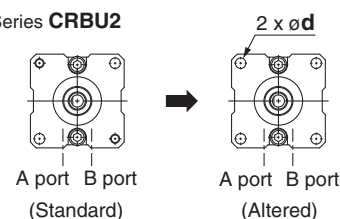


The above figure shows the CRB2 series. (Viewed from the long shaft side)

**Symbol: C2**
**Series CRB2**


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

- Not available for the rotary actuator with auto switch

**Series CRBU2**


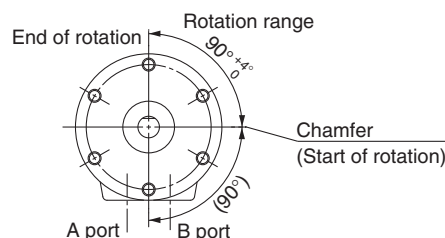
| Size | CRB2, CRBU2 |      |
|------|-------------|------|
|      | d           | [mm] |
| 15   | 3.4         |      |
| 20   | 4.5         |      |
| 30   | 5.5         |      |
| 40   | 5.5         |      |

(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  $^{+5}_{0}$ °
- A parallel key is used instead of chamfer on the long shaft for size 40.

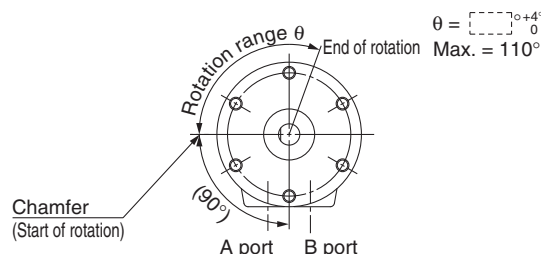


Start of rotation is the position of the chamfer (key) when A port is pressurised.  
The above figure shows the CRB2 series. (Viewed from the long shaft side)

**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  $^{+5}_{0}$ °
- A parallel key is used instead of chamfer on the long shaft for size 40.



Start of rotation is the position of the chamfer (key) when B port is pressurised.  
The above figure shows the CRB2 series. (Viewed from the long shaft side)

CRB2

CRB2□WU

CRBU2

CRBU2WU

Simple Specials

Made to Order

Component Unit

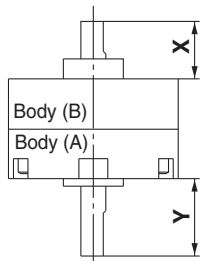
Angle Adjustment Setting

With Auto Switch

**Symbol: C7**

The shafts are reversed.

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



The above figure shows the CRB2 series.

[mm]

| Size | CRB2 |      | CRBU2 |     |
|------|------|------|-------|-----|
|      | Y    | X    | Y     | X   |
| 10   | 12   | 10   | 19    | 3   |
| 15   | 15.5 | 11.5 | 20.5  | 6.5 |
| 20   | 17   | 13   | 22.5  | 7.5 |
| 30   | 19   | 16   | 26.5  | 8.5 |
| 40   | 28   | 17   | 36    | 9   |

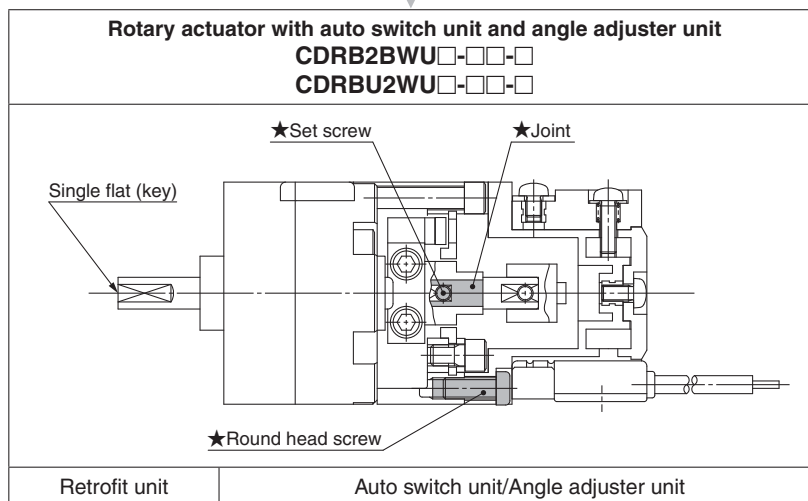
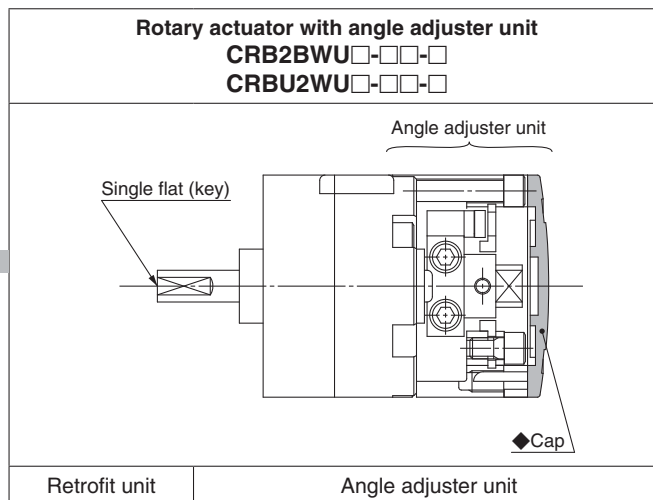
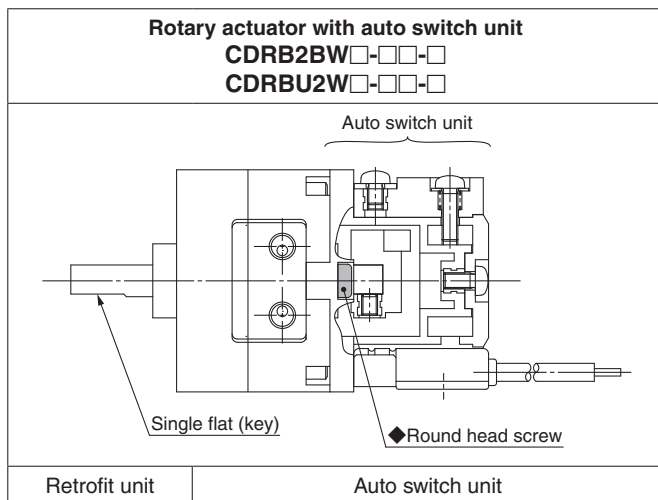
**Symbol: C30**

The standard grease is changed to fluorine grease. (Not the low-speed specification)

## Auto Switch Unit and Angle Adjuster Unit

### Series CRB2/CRBU2

Auto switch unit and/or angle adjuster unit can be mounted on the rotary actuator vane type.



\* The rotary actuator with auto switch and angle adjuster is basically a combination of the auto switch unit and angle adjuster unit.  
 The items marked with ★ are additional parts required for connection (joint unit parts), and the items marked with ◆ are unnecessary.  
 Note) The figures show the CRB2 series.

### Unit Part No. (Common to Series CRB2/CRBU2)

| Size | Auto switch unit<br>part no.*1 | Switch block unit part no.*2 |           | Angle adjuster unit part no. | Auto switch angle<br>adjuster unit part no. | Joint unit part no.*3 |
|------|--------------------------------|------------------------------|-----------|------------------------------|---|-----------------------|
|      |                                | Right-hand                   | Left-hand |                              |   |                       |
| 10   | P611070-1                      | P611070-8                    | P611070-9 | P811010-3                    | P811010-4                                   | P211070-10            |
| 15   | P611090-1                      |                              |           | P811020-3                    | P811020-4                                   | P211090-10            |
| 20   | P611060-1                      | P611060-8                    |           | P811030-3                    | P811030-4                                   | P211060-10            |
| 30   | P611080-1                      |                              |           | P811040-3                    | P811040-4                                   | P211080-10            |
| 40   | P611010-1                      | P611010-8                    | P611010-9 | P811050-5                    | P811050-4                                   | P211010-10            |

\*1. An auto switch will not be included, please order it separately.

\*2. Auto switch unit comes with one right-hand and one left-hand switch blocks that are used for addition or when the switch block is damaged.  
 Since the solid state switch for size 10 and 15 requires no switch block, the unit part number will be the P211070-13.

\*3. Joint unit is required to retrofit the angle adjuster unit to a rotary actuator with auto switch or to retrofit the auto switch unit to a rotary actuator with angle adjuster.



# Angle Adjustment Setting

## Specifications

### Single Vane

| Size | Rotating angle adjustment range | Rubber buffer |
|------|---------------------------------|---------------|
| 10   | 0 to 230°                       | Yes           |
| 15   | 0 to 240°                       |               |
| 20   |                                 |               |
| 30   |                                 |               |
| 40   | 0 to 230°                       |               |

Note 1) Use rotary actuator for 270°.

Note 2) Connecting ports are side ported only.

Note 3) The allowable kinetic energy is the same as the specifications of the rotary actuator.

### Double Vane

| Size | Rotating angle adjustment range | Rubber buffer |
|------|---------------------------------|---------------|
| 10   | 0 to 90°                        | Yes           |
| 15   |                                 |               |
| 20   |                                 |               |
| 30   |                                 |               |
| 40   |                                 |               |

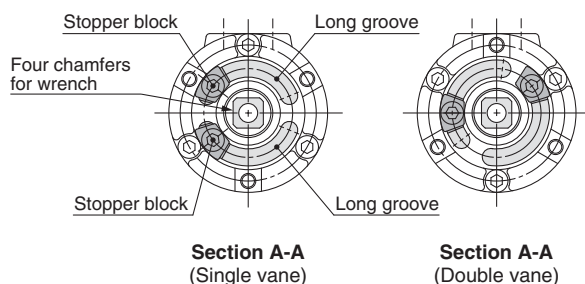
Note 1) Since the maximum angle of the rotating angle adjustment range will be limited by the rotation when using a rotary actuator for 90°, make sure to take this into consideration when ordering. Rotary actuator for 90° should be used to adjust the angle of 85° or less as a guide.

Note 2) Connecting ports are side ported only.

Note 3) The allowable kinetic energy is the same as the specifications of the rotary actuator.

## Rotating Angle Adjustment Method

Remove the resin cap in the illustrations below, slide the stopper block on the long groove and lock it into the appropriate position to adjust the rotating angle and rotating position. Protruding four chamfers for wrench on the output shaft that rotates allows manual operation and convenient positioning. (Refer to the rotating angle setting examples shown in the next page for details.)

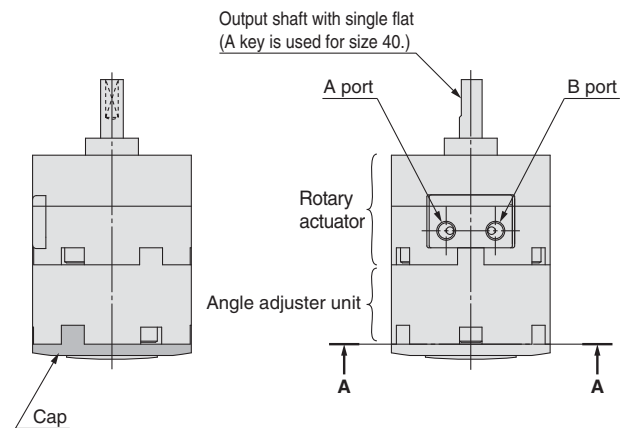


Note) For size 40, each stopper block comes with 2 holding screws.

## Recommended Tightening Torque for Holding Stopper Block

| Size | Tightening torque [N·m] |
|------|-------------------------|
| 10   | 1.0 to 1.2              |
| 15   |                         |
| 20   | 2.5 to 2.9              |
| 30   | 3.4 to 3.9              |
| 40   |                         |

Note) Stopper block is tightened temporarily at the time of shipment. Angle is not adjusted before shipment.



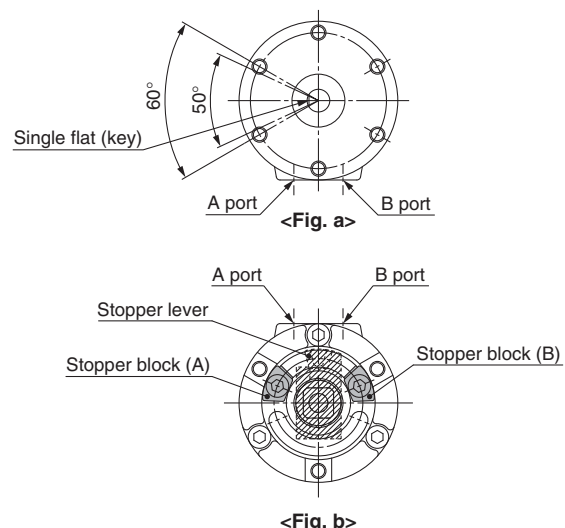
## Other Operating Method

Although one stopper block is mounted on each long groove for standard specifications as shown in the illustrations below, 2 stopper blocks can be mounted on one long groove.

| Angle adjustment range when 2 stopper blocks are mounted on one long groove |     |
|---|-----|
| Size: 10, 40  | 50° |
| Size: 15, 20, 30  | 60° |

As shown in <Fig. b>, when mounting 2 stopper blocks on one long groove, by revolving each stopper block (A)(B), the rotation range of the output shaft with single flat (key) is adjustable, as described in <Fig. a>, within either left 50° or 60° against port A and B.

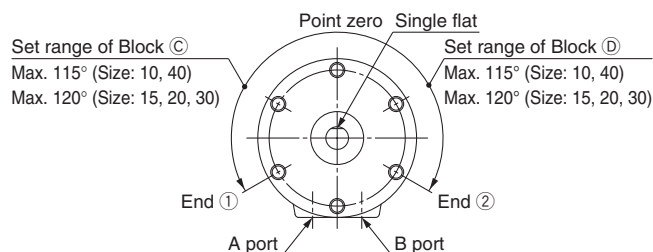
(Rotation range of single flat (key) when mounting 2 stopper blocks on the other side's groove is the opposite side from <Fig. a> and the setting range is within either right 50° or 60° against port A and B.)



\* These figures show the CRB2 series.

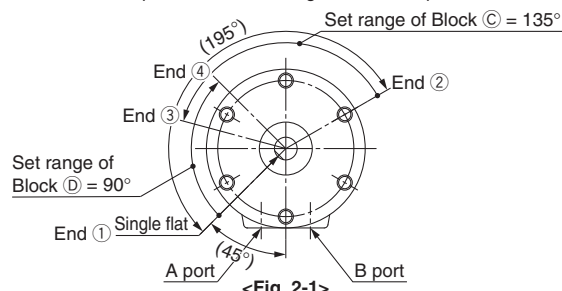
# Rotating Angle Setting Examples

**Example 1** The stopper ring is mounted on the standard position.  
(Rotary actuator with a rotating angle of 270° is used.)



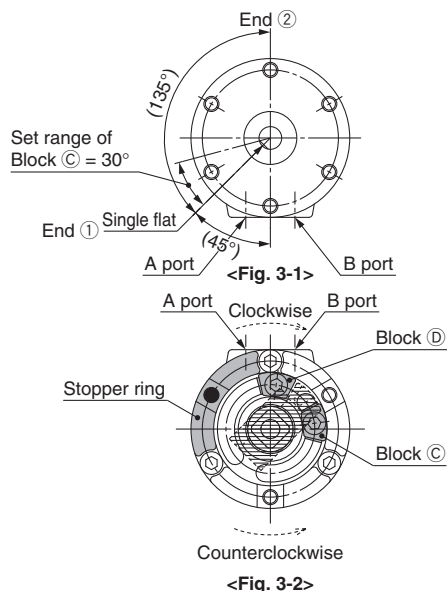
Lock Block ① in Fig. 1-2, and move Block ② clockwise to allow the rotation of the shaft with single flat in Fig. 1-1 from point zero to End ①. When Block ② is locked and Block ① is moved counterclockwise, the shaft with single flat in Fig. 1-1 rotates from point zero to End ②. The maximum rotation range of the shaft with single flat is as follows: Sizes 10, 40: up to 230°; Sizes 15, 20, 30: up to 240° (Fig. 1-2 shows when the rotating angle is 0°.)

**Example 2** The stopper ring is mounted on 120° counterclockwise from the standard position shown in Fig. 1-2 of Example 1.



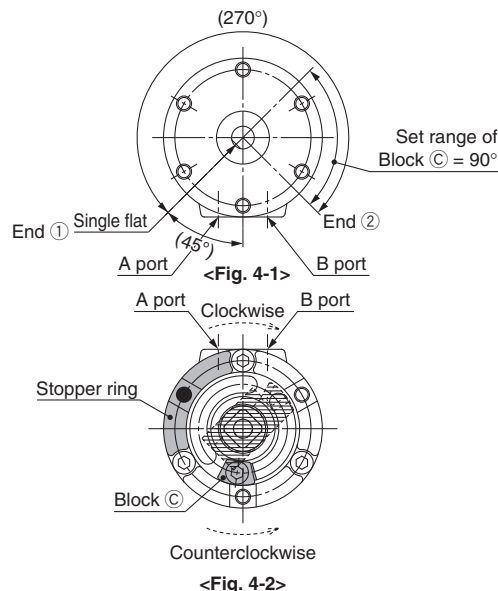
The maximum rotation range of the shaft with single flat in Fig. 2-2 is 195°, from End ① to End ②. The rotation range of the shaft with single flat in Fig. 2-1 decreases to the range between End ② and ③ when moving Block ② in Fig. 2-2 clockwise, and similarly when moving Block ② counterclockwise, the rotation range decreases to the range between End ① and ④. However, since the internal stopper will come into contact with the vane at End ① position of the shaft with single flat in Fig. 2-1, make sure that the stopper lever stops at Block ① when adjusting.

**Example 3** The stopper ring is mounted on 120° clockwise from the standard position shown in Fig. 1-2 of Example 1 as in Fig. 4-2 of Example 4.



Lock Block ① in Fig. 3-2 and move Block ② counterclockwise to allow the rotation of the shaft with single flat in Fig. 3-1 from End ① to End ②. However, since the internal stopper will come into contact with the vane at End ① position of the shaft with single flat make sure that the stopper lever stops at Block ② when adjusting. End ① side can be adjusted within 30° by moving Block ② counterclockwise.

**Example 4** The stopper ring is mounted on 120° clockwise from the standard position shown in Fig. 1-2 of Example 1 as in Fig. 3-2 of Example 3.



The maximum rotation range of the shaft with single flat is 270°, from End ① to End ②, when using the actuator for 270° and End ① side in Fig. 4-1 is stopped using the internal stopper and End ② side is adjusted using Block ②. The rotation range can be adjusted within 90° in End ② side. Note that Block ② cannot be moved and set 90° or more counterclockwise from its position in Fig. 4-2 since the internal stopper will come into contact with the vane.

Note 1) Mounting of the stopper ring shown in Examples 2, 3, 4 are not applicable for size 10.

Note 2) ● marks in the illustrations above indicate the mounting position of the stopper ring.

Note 3) Select the appropriate rotation of the rotary actuator after careful consideration of the content of "Angle Adjustment Setting".

Note 4) For size 40, each block comes with 2 holding screws.

Note 5) These figures show the CRB2 series.

# Series **CDRB□2** With Auto Switch

## Applicable Auto Switches

| Size   | Auto switch model |             | Electrical entry                   |
|--------|-------------------|-------------|------------------------------------|
| 10, 15 | Reed              | D-90/90A    | Grommet, 2-wire                    |
|        |                   | D-97/93A    |                                    |
|        | Solid state       | D-S99/S99V* | Grommet, 3-wire (NPN)              |
|        |                   | D-S9P/S9PV* | Grommet, 3-wire (PNP)              |
|        |                   | D-T99/T99V  | Grommet, 2-wire                    |
| 30, 40 | Reed              | D-R73       | Grommet, 2-wire                    |
|        |                   | D-R80       | Connector, 2-wire                  |
|        | Solid state       | D-S79*      | Grommet, 3-wire (NPN)              |
|        |                   | D-S7P*      | Grommet, 3-wire (PNP)              |
|        |                   | D-T79       | Grommet, 2-wire; Connector, 2-wire |

\* Solid state switch with 3-wire type has no connector type.

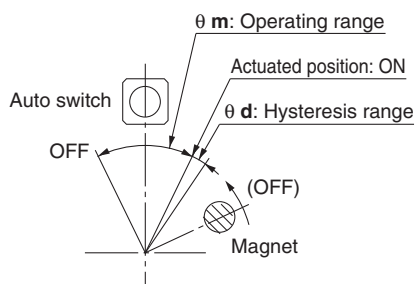
## Operating Range and Hysteresis

### \* Operating range: $\theta m$

The range between the position where the auto switch turns ON as the magnet inside the auto switch unit moves and the position where the switch turns OFF as the magnet travels the same direction.

### \* Hysteresis range: $\theta d$

The range between the position where the auto switch turns ON as the magnet inside the auto switch unit moves and the position where the auto switch turns OFF as the magnet travels the opposite direction.

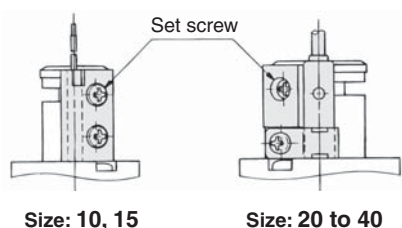


| Size   | $\theta m$ : Operating range | $\theta d$ : Hysteresis range |
|--------|------------------------------|-------------------------------|
| 10, 15 | 110°                         | 10°                           |
| 20, 30 | 90°                          |                               |
| 40     | 52°                          | 8°                            |

Note) Since the figures in the above table are provided as a guideline only, they cannot be guaranteed.  
Adjust the auto switch after confirming the operating conditions in the actual setting.

## How to Change the Auto Switch Detecting Position

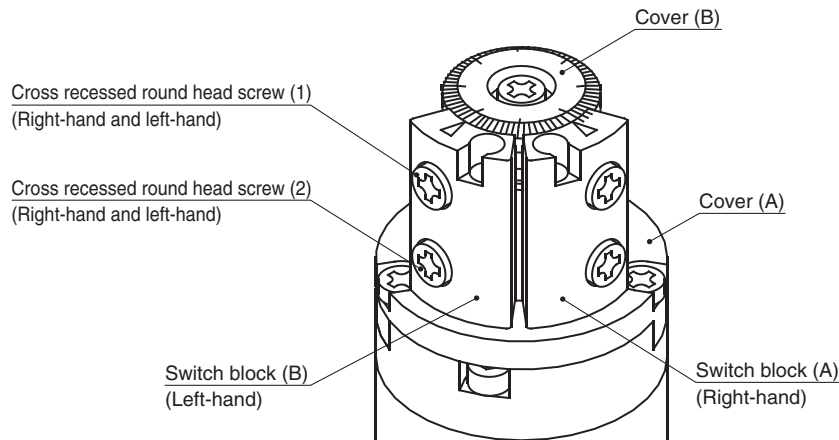
\* When setting the detecting position, loosen the tightening screw a bit and move the auto switch to the preferred position and then tighten again and fix it. At this time, if tightened too much, screw can become damaged and unable to fix position. Be sure to set the tightening torque around 0.49 N·m.



## Auto Switch Mounting

### External view and descriptions of auto switch unit

This following shows the external view and typical descriptions of the auto switch unit.



### Solid state auto switch

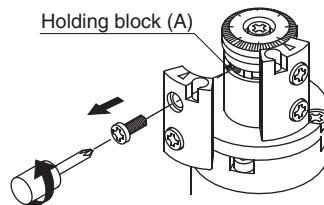
#### <Applicable auto switch>

3-wire type.....D-S99(V)□/S9P(V)□

2-wire type.....D-T99(V)□

#### 1. Switch block detaching

Remove the cross recessed round head screw (1) to detach the switch block.



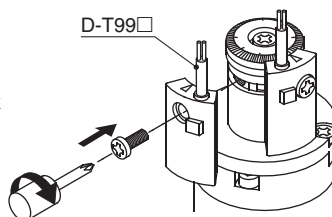
#### 2. Solid state auto switch mounting

Secure the solid state auto switch with the cross recessed round head screw (1) and holding block (A).

Proper tightening torque: 0.4 to 0.6 [N·m]

\* Since the holding block (A) moves inside the groove, move it to the mounting position beforehand.

· After the actuated position has been adjusted with the cross recessed round head screw (1), use the auto switch.



### Reed auto switch

#### <Applicable auto switch>

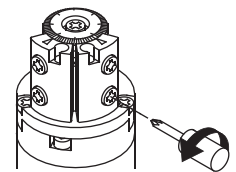
D-97/93A (With indicator light)

D-90/90A (Without indicator light)

#### 1. Preparations

Loosen the cross recessed round head screw (2) (About 2 to 3 turns).

\* This screw has been secured temporarily at shipment.

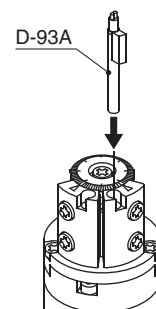


#### 2. Reed auto switch mounting

Insert the reed auto switch until it is in contact with the switch block hole.

\* For the D-97/93A model, insert the auto switch in the direction shown in the Fig. on the right.

\* Since the D-90/90A model is a round type, it has no directionality.

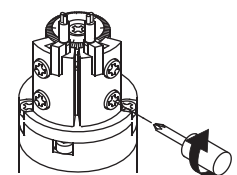


#### 3. Reed auto switch securing

Tighten the cross recessed round head screw (2) to secure the reed auto switch.

Proper tightening torque: 0.4 to 0.6 [N·m]

· After the actuated position has been adjusted with the cross recessed round head screw (1), use the auto switch.



CRB2

CRB2□WU

CRBU2

CRBU2WU

Simple Specials

Made to Order

Component Unit

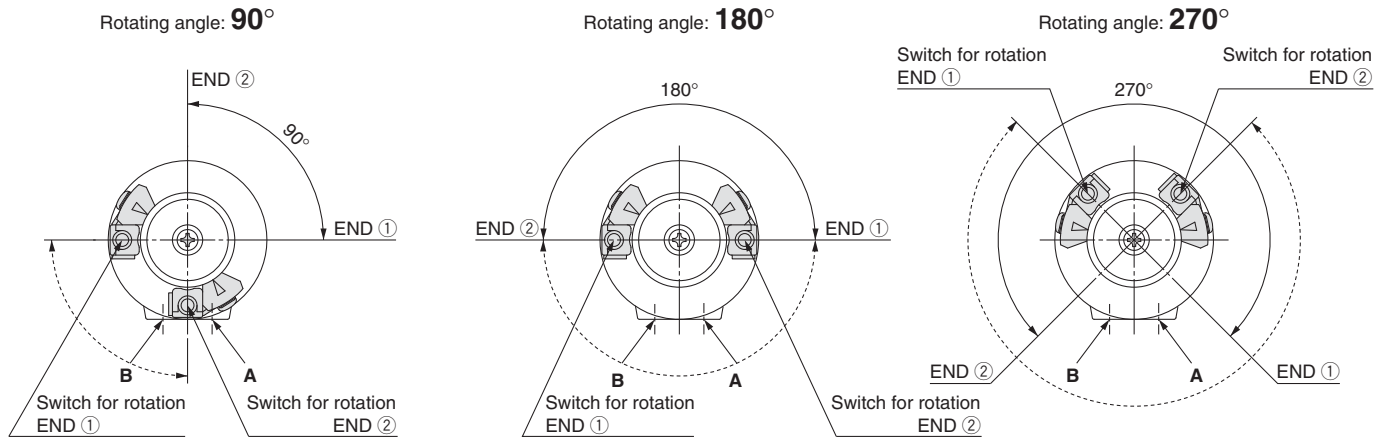
Angle Adjustment Setting

With Auto Switch

## Auto Switch Adjustment

Rotation range of the output shaft with single flat (key for size 40 only) and auto switch mounting position  
<Applicable models/Size: 10, 15, 20, 30, 40>

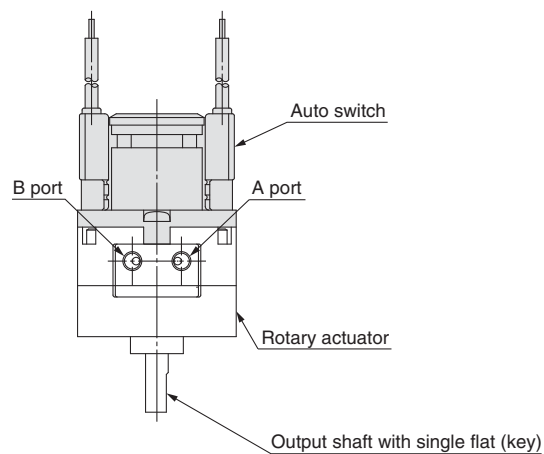
### <Single vane>



\* Solid-lined curves indicate the rotation range of the output shaft with single flat (key). When the single flat (key) is pointing to the END ① direction, the switch for rotation END ① will operate, and when the single flat (key) is pointing to the END ② direction, the switch for rotation END ② will operate.

\* Broken-lined curves indicate the rotation range of the built-in magnet. Operating angle of the switch can be decreased by either moving the switch for rotation END ① clockwise or moving the switch for rotation END ② counterclockwise. Auto switch in the figures above is at the most sensitive position.

\* Each auto switch unit comes with one right-hand and one left-hand switch.



**Size: 10 to 40**

\* The above figure shows the CRB2 series.





## ⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)\*1), and other safety regulations.

- ⚠ Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
- ⚠ Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
- ⚠ Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- \*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.  
 ISO 4413: Hydraulic fluid power – General rules relating to systems.  
 IEC 60204-1: Safety of machinery – Electrical equipment of machines.  
 (Part 1: General requirements)  
 ISO 10218-1: Manipulating industrial robots - Safety.  
 etc.

### ⚠ Warning

- The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**  
 Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- Only personnel with appropriate training should operate machinery and equipment.**  
 The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
- Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
  - The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
  - When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
  - Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
- Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
  - Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
  - Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
  - An application which could have negative effects on people, property, or animals requiring special safety analysis.
  - Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

### ⚠ Caution

- The product is provided for use in manufacturing industries.**  
 The product herein described is basically provided for peaceful use in manufacturing industries.  
 If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.  
 If anything is unclear, contact your nearest sales branch.

## Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

### Limited warranty and Disclaimer

- The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.\*2)  
 Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
- For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.  
 This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
- Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

\*2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

### Compliance Requirements

- The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
- The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

## ⚠ Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

### SMC Corporation (Europe)

|                |                    |                       |                         |
|----------------|--------------------|-----------------------|-------------------------|
| Austria        | ☎+43 (0)2262622800 | www.smc.at            | office@smc.at           |
| Belgium        | ☎+32 (0)33551464   | www.smc-pneumatics.be | info@smc-pneumatics.be  |
| Bulgaria       | ☎+359 (0)2807670   | www.smc.bg            | office@smc.bg           |
| Croatia        | ☎+385 (0)13707288  | www.smc.hr            | office@smc.hr           |
| Czech Republic | ☎+420 541424611    | www.smc.cz            | office@smc.cz           |
| Denmark        | ☎+45 70252900      | www.smc.dk.com        | smc@smcdk.com           |
| Estonia        | ☎+372 6510370      | www.smc-pneumatics.ee | smc@smc-pneumatics.ee   |
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| France         | ☎+33 (0)164761000  | www.smc-france.fr     | promotion@smc-france.fr |
| Germany        | ☎+49 (0)61034020   | www.smc-pneumatik.de  | info@smc-pneumatik.de   |
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| Italy          | ☎+39 0292711       | www.smc-italia.it     | mailbox@smc-italia.it   |
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| Romania     | ☎+40 213205111       | www.smc-romania.ro       | smcromania@smcromania.ro   |
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