

# Compact Cylinder: Standard Double Acting, Double Rod

## CQ2W Series

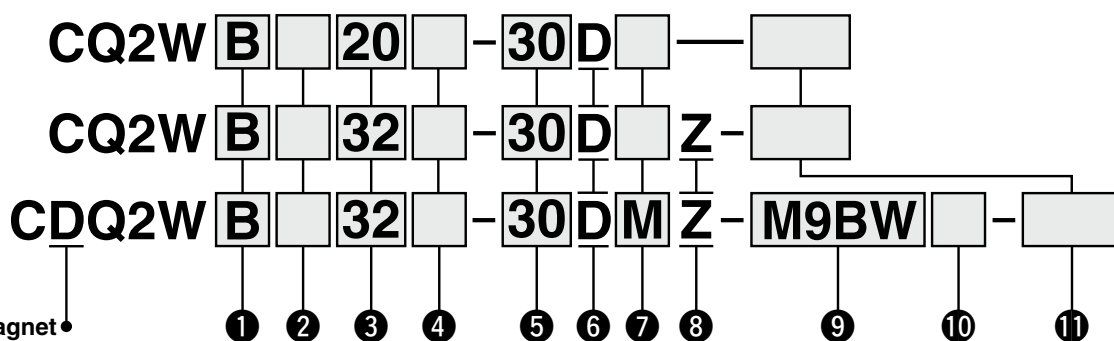
ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

### How to Order

Without auto switch  
ø12 to ø25

Without auto switch  
ø32 to ø100

With auto switch



#### With auto switch magnet

The overall length of the cylinder with an auto switch magnet is longer than that of the cylinder without an auto switch magnet by the length of the built-in magnet. For details, refer to the dimensions of each size.

#### 1 Mounting

|           |                  |
|-----------|------------------|
| <b>B</b>  | Through-hole     |
| <b>A</b>  | Both ends tapped |
| <b>L</b>  | Foot             |
| <b>LC</b> | Compact foot     |
| <b>F</b>  | Flange           |

\* Mounting brackets are shipped together with the product but do not come assembled.

\* A through-hole type mounting bolt is available as an option. For details ⇨ p. 34

#### 2 Type

|            |             |
|------------|-------------|
| <b>Nil</b> | Pneumatic   |
| <b>H</b>   | Air-hydro*1 |

\*1 The bore sizes available for the air-hydro type are ø20 to ø100.

#### 3 Bore size

|            |        |
|------------|--------|
| <b>12</b>  | 12 mm  |
| <b>16</b>  | 16 mm  |
| <b>20</b>  | 20 mm  |
| <b>25</b>  | 25 mm  |
| <b>32</b>  | 32 mm  |
| <b>40</b>  | 40 mm  |
| <b>50</b>  | 50 mm  |
| <b>63</b>  | 63 mm  |
| <b>80</b>  | 80 mm  |
| <b>100</b> | 100 mm |

#### 4 Port thread type

|     |                               |                               |
|-----|-------------------------------|-------------------------------|
| Nil | M thread                      | ø12 to ø25<br><br>ø32 to ø100 |
|     | Rc                            |                               |
| TN  | NPT                           |                               |
| TF  | G                             |                               |
| F   | Built-in One-touch fittings*1 |                               |

\*1 The bore sizes available with One-touch fittings are ø32 to ø63. However, they cannot be selected for the air-hydro type.

\* "TF" is not selectable for the air-hydro type.

\* For cylinders without an auto switch magnet, M threads are compatible only with ø32-5 mm stroke.

#### 5 Cylinder stroke (For details on the minimum stroke for auto switch mounting ⇨ p. 145)

##### Pneumatic type (Non-lube)

| Bore size              | Standard stroke [mm]                           |
|------------------------|------------------------------------------------|
| <b>12, 16</b>          | 5, 10, 15, 20, 25, 30                          |
| <b>20, 25</b>          | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50          |
| <b>32, 40</b>          | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100 |
| <b>50, 63, 80, 100</b> | 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100    |

\* For the manufacturing of intermediate strokes ⇨ p. 31

##### Air-hydro type

| Bore size              | Standard stroke [mm]                           |
|------------------------|------------------------------------------------|
| <b>20, 25</b>          | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50          |
| <b>32, 40</b>          | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100 |
| <b>50, 63, 80, 100</b> | 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100    |

#### 6 Action

|          |               |
|----------|---------------|
| <b>D</b> | Double acting |
|----------|---------------|

#### 7 Body option

|            |                       |
|------------|-----------------------|
| <b>Nil</b> | Rod end female thread |
| <b>C</b>   | With rubber bumper*1  |
| <b>M</b>   | Rod end male thread   |

\*1 The type with a rubber bumper is not selectable for the air-hydro type.

\* Combined body options "CM" can be selected.

#### 8 Auto switch mounting groove

|          |             |            |
|----------|-------------|------------|
| <b>Z</b> | ø12 to ø25  | 2 surfaces |
|          | ø32 to ø100 | 4 surfaces |

# CQ2 Series

## Simple Joint (CQ2): $\phi 32$ to $\phi 100$

### Joint/Mounting Bracket (Type A/B) Part Nos.

| Bore size [mm] | Joint | Type A mounting bracket | Type B mounting bracket |
|----------------|-------|-------------------------|-------------------------|
| 32, 40         | YU-03 | YA-03                   | YB-03                   |
| 50, 63         | YU-05 | YA-05                   | YB-05                   |
| 80             | YU-08 | YA-08                   | YB-08                   |
| 100            | YU-10 | YA-10                   | YB-10                   |

<Ordering>

Joints are not included with type A or B mounting brackets.  
Order them separately.

(Example)

Bore size  $\phi 40$

Part no.

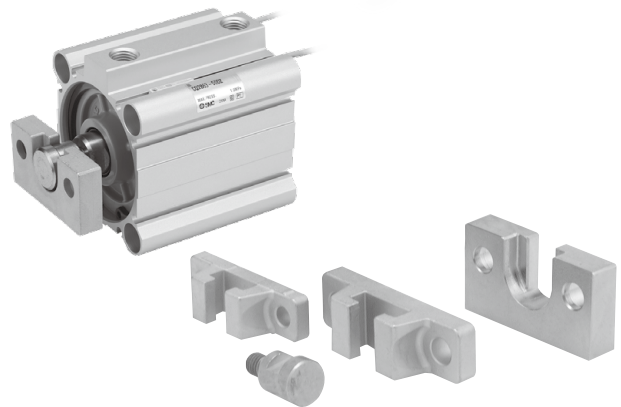
• Type A mounting bracket .....YA-03

• Joint.....YU-03

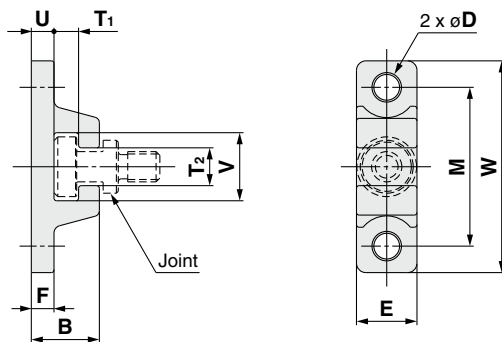
### Allowable Eccentricity

[mm]

| Bore size [mm]         | 32      | 40 | 50 | 63 | 80        | 100     |
|------------------------|---------|----|----|----|-----------|---------|
| Eccentricity tolerance | $\pm 1$ |    |    |    | $\pm 1.5$ | $\pm 2$ |
| Backlash               | 0.5     |    |    |    |           |         |



### Type A Mounting Bracket



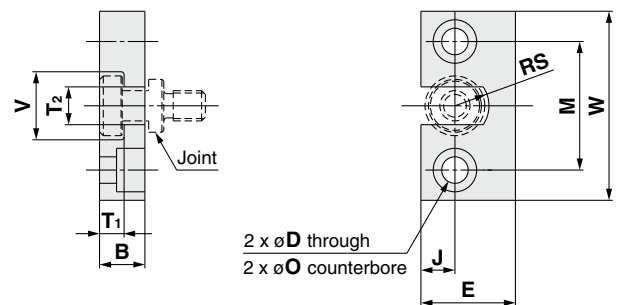
Material: Chromium molybdenum steel (Nickel plating)  
[mm]

| Bore size [mm] | Part no. | B  | D   | E  | F  | M  | T <sub>1</sub> | T <sub>2</sub> |
|----------------|----------|----|-----|----|----|----|----------------|----------------|
| 32, 40         | YA-03    | 18 | 6.8 | 16 | 6  | 42 | 6.5            | 10             |
| 50, 63         | YA-05    | 20 | 9   | 20 | 8  | 50 | 6.5            | 12             |
| 80             | YA-08    | 26 | 11  | 25 | 10 | 62 | 8.5            | 16             |
| 100            | YA-10    | 31 | 14  | 30 | 12 | 76 | 10.5           | 18             |

| Bore size [mm] | Part no. | U  | V  | W   | Weight [g] |
|----------------|----------|----|----|-----|------------|
| 32, 40         | YA-03    | 6  | 18 | 56  | 55         |
| 50, 63         | YA-05    | 8  | 22 | 67  | 100        |
| 80             | YA-08    | 10 | 28 | 83  | 195        |
| 100            | YA-10    | 12 | 36 | 100 | 340        |

### Type B Mounting Bracket



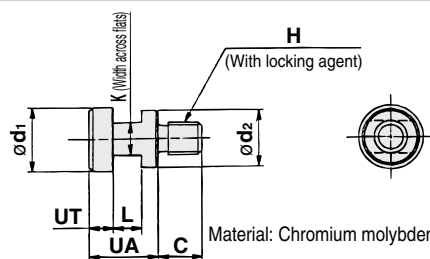
Material: Stainless steel  
[mm]

| Bore size [mm] | Part no. | B  | D  | E  | J  | M  | O              |
|----------------|----------|----|----|----|----|----|----------------|
| 32, 40         | YB-03    | 12 | 7  | 25 | 9  | 34 | 11.5 depth 7.5 |
| 50, 63         | YB-05    | 12 | 9  | 32 | 11 | 42 | 14.5 depth 8.5 |
| 80             | YB-08    | 16 | 11 | 38 | 13 | 52 | 18 depth 12    |
| 100            | YB-10    | 19 | 14 | 50 | 17 | 62 | 21 depth 14    |

| Bore size [mm] | Part no. | T <sub>1</sub> | T <sub>2</sub> | V  | W  | RS | Weight [g] |
|----------------|----------|----------------|----------------|----|----|----|------------|
| 32, 40         | YB-03    | 6.5            | 10             | 18 | 50 | 9  | 80         |
| 50, 63         | YB-05    | 6.5            | 12             | 22 | 60 | 11 | 120        |
| 80             | YB-08    | 8.5            | 16             | 28 | 75 | 14 | 230        |
| 100            | YB-10    | 10.5           | 18             | 36 | 90 | 18 | 455        |

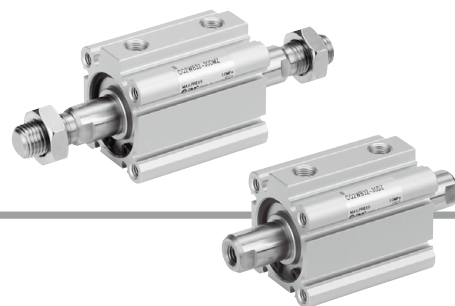
### Joint



Material: Chromium molybdenum steel (Nickel plating)  
[mm]

| Bore size [mm] | Part no. | UA | C  | d <sub>1</sub> | d <sub>2</sub> | H         | K  | L  | UT | Weight [g] |
|----------------|----------|----|----|----------------|----------------|-----------|----|----|----|------------|
| 32, 40         | YU-03    | 17 | 11 | 15.8           | 14             | M8 x 1.25 | 8  | 7  | 6  | 25         |
| 50, 63         | YU-05    | 17 | 13 | 19.8           | 18             | M10 x 1.5 | 10 | 7  | 6  | 40         |
| 80             | YU-08    | 22 | 20 | 24.8           | 23             | M16 x 2   | 13 | 9  | 8  | 90         |
| 100            | YU-10    | 26 | 26 | 29.8           | 28             | M20 x 2.5 | 14 | 11 | 10 | 160        |

# Compact Cylinder: Standard Double Acting, Double Rod **CQ2W Series**



## 9 Auto switch

|     |                            |
|-----|----------------------------|
| Nil | Without auto switch magnet |
|-----|----------------------------|

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

## 10 Number of auto switches

|     |   |
|-----|---|
| Nil | 2 |
| S   | 1 |
| n   | n |

## 11 Made to order common specifications

For details ⇨ p. 31

## Cylinder Model with Auto Switch Magnet

If a cylinder with an auto switch magnet and without an auto switch is required, there is no need to enter the symbol for the auto switch.

(Example) CDQ2WL32-25DZ

For details on **auto switch mounting** ⇨ p. 139 to 152

- Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height
- Minimum Stroke for Auto Switch Mounting
- Operating Range
- Auto Switch Mounting Brackets/Part Nos.

## Applicable Auto Switches / Refer to the **Web Catalog** for further information on auto switches.

| Type                    | Special function                          | Electrical entry | Indicator light | Wiring (Output)         | Load voltage |               | Auto switch model |                 | Lead wire length [m] |       |       |       |          | Pre-wired connector | Applicable load |            |
|-------------------------|-------------------------------------------|------------------|-----------------|-------------------------|--------------|---------------|-------------------|-----------------|----------------------|-------|-------|-------|----------|---------------------|-----------------|------------|
|                         |                                           |                  |                 |                         | DC           | AC            | Perpendicular     | In-line         | 0.5 (Nil)            | 1 (M) | 3 (L) | 5 (Z) | None (N) |                     |                 |            |
| Solid state auto switch | Diagnostic indication (2-color indicator) | Grommet          | Yes             | 3-wire (NPN)            | 24 V         | 5 V,          | —                 | <b>M9NV</b>     | <b>M9N</b>           | ●     | ●     | ●     | ○        | —                   | ○               | IC circuit |
|                         |                                           |                  |                 | 3-wire (PNP)            | 12 V         | 12 V          |                   | <b>M9PV</b>     | <b>M9P</b>           | ●     | ●     | ●     | ○        | —                   | ○               |            |
|                         |                                           |                  |                 | 2-wire                  | 12 V         | 12 V          |                   | <b>M9BV</b>     | <b>M9B</b>           | ●     | ●     | ●     | ○        | —                   | ○               |            |
|                         |                                           |                  |                 | 3-wire (NPN)            | 5 V,         | 12 V          |                   | <b>M9NVV</b>    | <b>M9NW</b>          | ●     | ●     | ●     | ○        | —                   | ○               |            |
|                         | Water resistant (2-color indicator)       | Grommet          | Yes             | 3-wire (PNP)            | 12 V         | 12 V          | —                 | <b>M9PWV</b>    | <b>M9PW</b>          | ●     | ●     | ●     | ○        | —                   | ○               | IC circuit |
|                         |                                           |                  |                 | 2-wire                  | 12 V         | 12 V          |                   | <b>M9BWV</b>    | <b>M9BW</b>          | ●     | ●     | ●     | ○        | —                   | ○               |            |
|                         |                                           |                  |                 | 3-wire (NPN)            | 5 V,         | 12 V          |                   | <b>M9NAV</b> *1 | <b>M9NA</b> *1       | ○     | ○     | ●     | ○        | —                   | ○               |            |
|                         |                                           |                  |                 | 3-wire (PNP)            | 12 V         | 12 V          |                   | <b>M9PAV</b> *1 | <b>M9PA</b> *1       | ○     | ○     | ●     | ○        | —                   | ○               |            |
| Reed auto switch        | —                                         | Grommet          | No              | 2-wire                  | 12 V         | 100 V         | —                 | <b>M9BAV</b> *1 | <b>M9BA</b> *1       | ○     | ○     | ●     | ○        | —                   | ○               | —          |
|                         |                                           |                  |                 | 2-wire (Non-polar)      | —            | —             |                   | —               | <b>P3DWA</b>         | ●     | —     | ●     | ●        | —                   | ○               |            |
|                         |                                           |                  |                 | 3-wire (NPN equivalent) | —            | 5 V           |                   | <b>A96V</b>     | <b>A96</b>           | ●     | —     | ●     | —        | —                   | —               |            |
|                         |                                           |                  |                 | 2-wire                  | 12 V         | 100 V         | —                 | <b>A93V</b> *2  | <b>A93</b>           | ●     | ●     | ●     | ●        | —                   | —               | Relay, PLC |
|                         |                                           |                  |                 |                         | 5 V, 12 V    | 100 V or less |                   | <b>A90V</b>     | <b>A90</b>           | ●     | —     | ●     | —        | —                   | —               |            |

\*1 Water-resistant type auto switches can be mounted on the models on page 29, but SMC cannot guarantee water resistance.

Please contact SMC regarding water-resistant types with the model numbers on page 29.

\*2 The 1 m lead wire is only applicable to the D-A93.

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NW  
1 m ..... M (Example) M9NWM  
3 m ..... L (Example) M9NWL  
5 m ..... Z (Example) M9NWZ

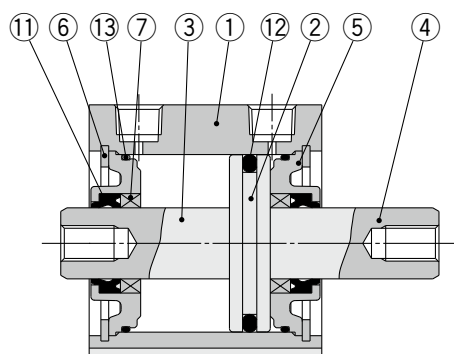
\* Solid state auto switches marked with "○" are produced upon receipt of order.  
\* The D-P3DWA□ type is only available in sizes ø25 to ø100.

\* There are applicable auto switches other than those listed above. For details ⇨ p. 152

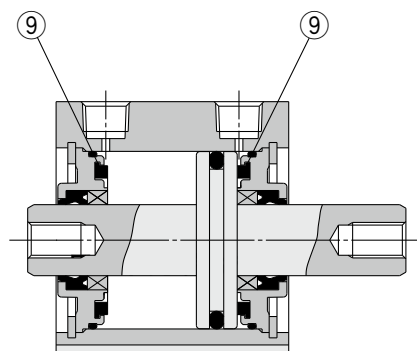
# CQ2W Series

## Construction

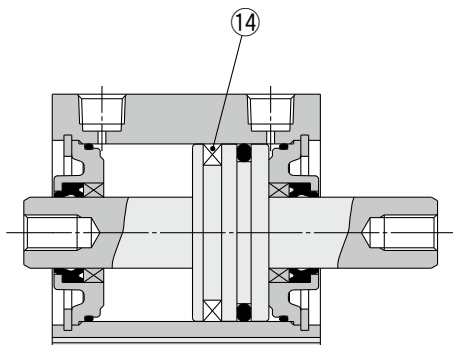
Without auto switch magnet



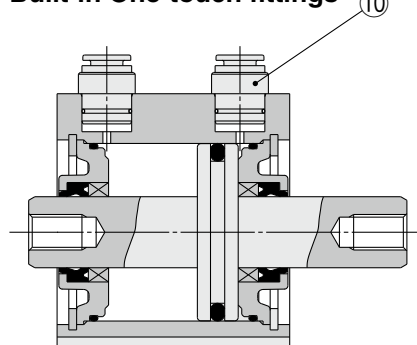
With rubber bumper



With auto switch magnet



Built-in One-touch fittings



## Component Parts

| No. | Description       | Material              | Note                             |
|-----|-------------------|-----------------------|----------------------------------|
| 1   | Cylinder tube     | Aluminum alloy        | Hard anodized                    |
| 2   | Piston            | Aluminum alloy        |                                  |
| 3   | Piston rod A      | Stainless steel       | ø12 to ø25                       |
|     |                   | Carbon steel          | ø32 to ø100, Hard chrome plating |
| 4   | Piston rod B      | Stainless steel       | ø12 to ø25                       |
|     |                   | Carbon steel          | ø32 to ø100, Hard chrome plating |
| 5   | Collar            | Aluminum alloy        | ø12 to ø40, Anodized             |
|     |                   | Aluminum alloy casted | ø50 to ø100, Chromated, Painted  |
| 6   | Retaining ring    | Carbon tool steel     | Phosphate coated                 |
| 7   | Bushing           | Bearing alloy         | For ø50 or more only             |
| 8   | Rod end nut       | Carbon steel          | Zinc chromated                   |
| 9   | Bumper            | Urethane              | Pneumatic type only              |
| 10  | One-touch fitting | —                     | ø32 to ø63                       |
| 11  | Rod seal          | NBR                   |                                  |
| 12  | Piston seal       | NBR                   |                                  |
| 13  | Tube gasket       | NBR                   |                                  |
| 14  | Magnet            | —                     |                                  |

## Replacement Parts/Seal Kit

### Pneumatic Type

| Bore size [mm] | Kit no.     | Contents               |
|----------------|-------------|------------------------|
| 12             | CQ2WB12-PS  | Set of nos. 11, 12, 13 |
| 16             | CQ2WB16-PS  |                        |
| 20             | CQ2WB20-PS  |                        |
| 25             | CQ2WB25-PS  |                        |
| 32             | CQ2WB32-PS  |                        |
| 40             | CQ2WB40-PS  |                        |
| 50             | CQ2WB50-PS  |                        |
| 63             | CQ2WB63-PS  |                        |
| 80             | CQ2WB80-PS  |                        |
| 100            | CQ2WB100-PS |                        |

\* Seal kit includes 11, 12, 13. Order the seal kit based on each bore size.

\* The seal kit does not include a grease pack. Order it separately.

Grease pack part no.: GR-S-010 (10 g)

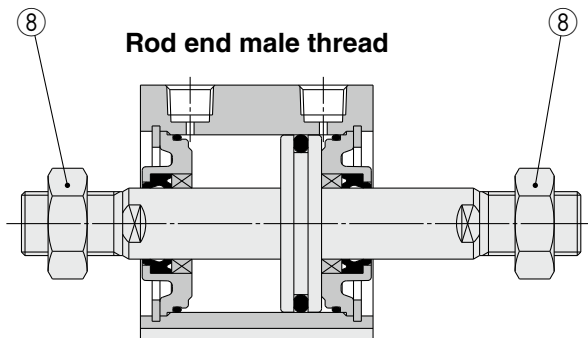
### Air-hydro Type

| Bore size [mm] | Kit no.      | Contents               |
|----------------|--------------|------------------------|
| 20             | CQ2WBH20-PS  | Set of nos. 11, 12, 13 |
| 25             | CQ2WBH25-PS  |                        |
| 32             | CQ2WBH32-PS  |                        |
| 40             | CQ2WBH40-PS  |                        |
| 50             | CQ2WBH50-PS  |                        |
| 63             | CQ2WBH63-PS  |                        |
| 80             | CQ2WBH80-PS  |                        |
| 100            | CQ2WBH100-PS |                        |

\* Seal kit includes 11, 12, 13. Order the seal kit based on each bore size.

\* The seal kit does not include a grease pack. Order it separately.

Grease pack part no.: GR-S-010 (10 g)

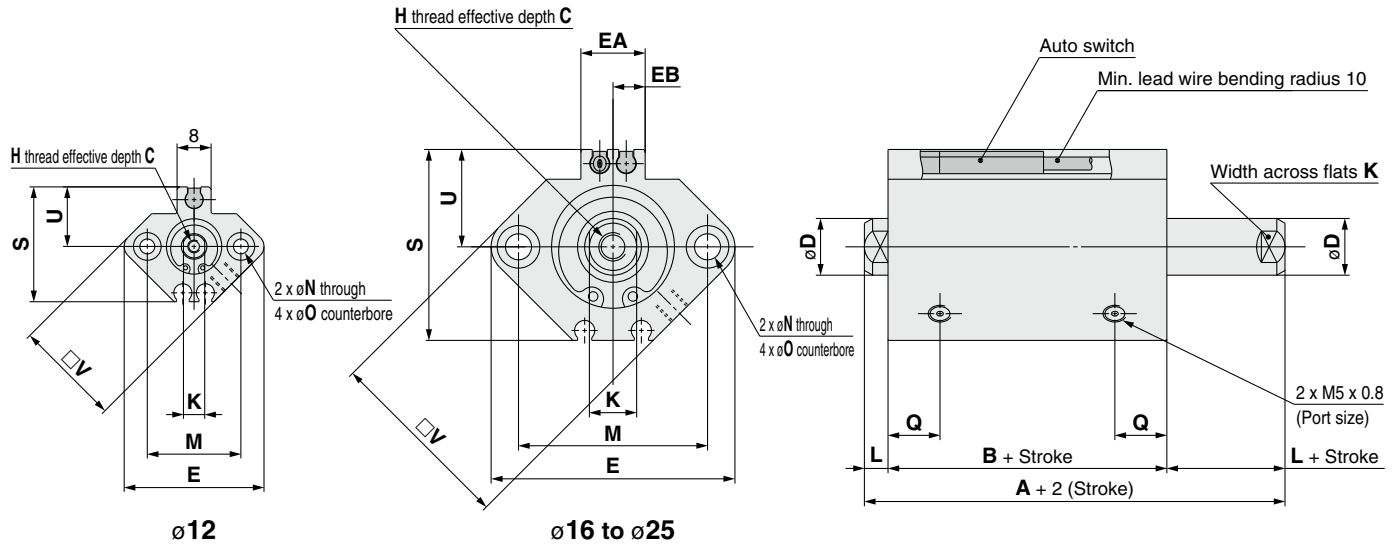


# CQ2W Series

Bore Size

**ø12 to ø25** With Auto Switch Magnet

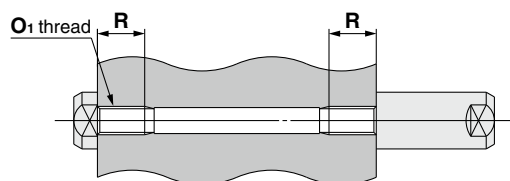
Through-hole: CDQ2WB



| Bore Size [mm] | Stroke range [mm] | A    | B    | C  | D  | E  | EA   | EB  | H        | K  | L   | M  | N   | O             | Q    | S    | U  | V  |
|----------------|-------------------|------|------|----|----|----|------|-----|----------|----|-----|----|-----|---------------|------|------|----|----|
| 12             | 5 to 30           | 39.4 | 32.4 | 6  | 6  | 33 | —    | —   | M3 x 0.5 | 5  | 3.5 | 22 | 3.5 | 6.5 depth 3.5 | 10.5 | 27.5 | 14 | 25 |
| 16             | 5 to 30           | 43   | 36   | 8  | 8  | 37 | 13.2 | 6.6 | M4 x 0.7 | 6  | 3.5 | 28 | 3.5 | 6.5 depth 3.5 | 10   | 29.5 | 15 | 29 |
| 20             | 5 to 50           | 47   | 38   | 7  | 10 | 47 | 13.6 | 6.8 | M5 x 0.8 | 8  | 4.5 | 36 | 5.5 | 9 depth 7     | 8    | 35.5 | 18 | 36 |
| 25             | 5 to 50           | 49   | 39   | 12 | 12 | 52 | 13.6 | 6.8 | M6 x 1.0 | 10 | 5   | 40 | 5.5 | 9 depth 7     | 9    | 40.5 | 21 | 40 |

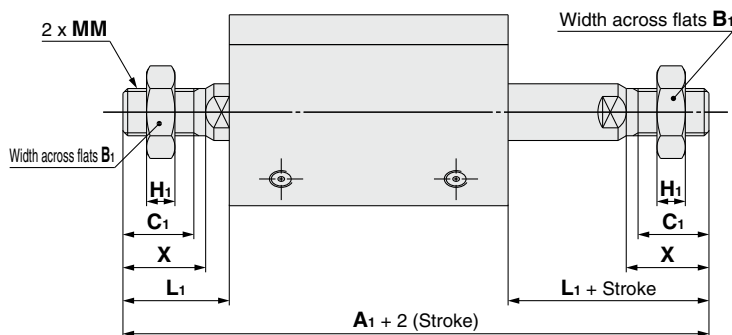
- \* For details on the rod end nut and accessory brackets ⇨ p. 26, 27
- \* The positions of left and right width across flats are not constant.
- \* The external dimensions with rubber bumper are same as those of the standard, as shown above.
- \* For the auto switch proper mounting position and mounting height ⇨ p. 139 to 145

## Both ends tapped



| Bore Size [mm] | O <sub>1</sub> | R  |
|----------------|----------------|----|
| 12             | M4 x 0.7       | 7  |
| 16             | M4 x 0.7       | 7  |
| 20             | M6 x 1.0       | 10 |
| 25             | M6 x 1.0       | 10 |

## Rod end male thread



| Bore Size [mm] | A <sub>1</sub> | B <sub>1</sub> | C <sub>1</sub> | H <sub>1</sub> | L <sub>1</sub> | MM         | X    |
|----------------|----------------|----------------|----------------|----------------|----------------|------------|------|
| 12             | 60.4           | 8              | 9              | 4              | 14             | M5 x 0.8   | 10.5 |
| 16             | 67             | 10             | 10             | 5              | 15.5           | M6 x 1.0   | 12   |
| 20             | 75             | 13             | 12             | 5              | 18.5           | M8 x 1.25  | 14   |
| 25             | 84             | 17             | 15             | 6              | 22.5           | M10 x 1.25 | 17.5 |