

# Compact Cylinder: Standard Type

## Single Acting, Single Rod

# Series CQ2

ø12, ø16, ø20, ø25, ø32, ø40, ø50

### How to Order

**CQ2 B 20 - 10 S -**

**With auto switch** **CDQ2 B 20 - 10 S - M9BW -**

**With auto switch**  
(Built-in magnet)

**Mounting style**

|          |                         |          |                        |
|----------|-------------------------|----------|------------------------|
| <b>B</b> | Through-hole (Standard) | <b>F</b> | Rod side flange style  |
| <b>A</b> | Both ends tapped style  | <b>G</b> | Head side flange style |
| <b>L</b> | Foot style              | <b>D</b> | Double clevis style    |

\*Mounting brackets are shipped together, (but not assembled).  
\*Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for CQ2" on pages 642 and 645.

**Bore size**

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

**Port thread type**

|            |  |            |
|------------|--|------------|
| <b>Nil</b> | M thread   | ø12 to ø25 |
|            | Rc   |            |
| <b>TN</b>  | NPT  | ø32 to ø50 |
| <b>TF</b>  | G  |            |
| <b>F</b>   | Built-in One-touch fittings <small>Note)</small> |            |

Note) Bore sizes available w/ One-touch fittings are ø32 to ø50.  
\* For the cylinders without an auto switch, M threads are compatible only for ø32 with 5 strokes.

**Made to Order**  
(Refer to page 640 for details.)

**Number of auto switches**

|            |          |
|------------|----------|
| <b>Nil</b> | 2 pcs.   |
| <b>S</b>   | 1 pc.    |
| <b>n</b>   | "n" pcs. |

**Auto switch**

|            |                     |
|------------|---------------------|
| <b>Nil</b> | Without auto switch |
|------------|---------------------|

\* Refer to the table below for the applicable auto switch model.

**Body option**

|            |                        |
|------------|------------------------|
| <b>Nil</b> | Standard               |
| <b>F</b>   | With boss in head side |
| <b>M</b>   | Rod end male thread    |

\* Combination of body option ("FM") is available.

**Action**

|          |                              |
|----------|------------------------------|
| <b>S</b> | Single acting, Spring return |
| <b>T</b> | Single acting, Spring extend |

**Cylinder stroke (mm)**  
For "Standard Stroke" and "Manufacture of intermediate of Stroke", refer to page 640.

**Built-in Magnet Cylinder Model**  
If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.  
(Example) CDQ2L32-10S

### Applicable Auto Switch/Refer to pages 1263 to 1371 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 switch |  | Grommet          | Yes             | 3-wire (NPN)            | 24V          | —  | —                 | M9NV    | M9N                  | ●     | ●     | ●     | ○        | —                   | IC circuit      |            |            |
|                    |  |                  |                 | 3-wire (PNP)            |              |    |                   | M9PV    | M9P                  | ●     | ●     | ●     | ○        | —                   |                 |            |            |
|                    |  | 2-wire           |                 | M9BV                    |              |    |                   | M9B     | ●                    | ●     | ●     | ○     | —        | —                   |                 |            |            |
|                    |  |                  |                 | J79C                    |              |    |                   | —       | ●                    | —     | ●     | ●     | —        |                     |                 |            |            |
|                    | Diagnostic indication (2-color indication) | Grommet          | Yes             | 3-wire (NPN)            | 24V          | —  | —                 | —       | M9NWV                | M9NW  | ●     | ●     | ●        | ○                   | —               | IC circuit |            |
|                    |  |                  |                 | 3-wire (PNP)            |              |    |                   |         | M9PWV                | M9PW  | ●     | ●     | ●        | ○                   | —               |            |            |
|                    |  |                  |                 | 2-wire                  |              |    |                   |         | M9BWW                | M9BW  | ●     | ●     | ●        | ○                   | —               |            | —          |
|                    |  |                  |                 | 3-wire (NPN)            |              |    |                   |         | M9NAV                | M9NA  | ○     | ○     | ●        | ○                   | —               |            |            |
|                    |  |                  |                 | 3-wire (PNP)            |              |    |                   |         | M9PAV                | M9PA  | ○     | ○     | ●        | ○                   | —               |            | IC circuit |
|                    |  |                  |                 | 2-wire                  |              |    |                   |         | M9BAV                | M9BA  | ○     | ○     | ●        | ○                   | —               |            |            |
| 4-wire             | —  | F79F             | ●               | —                       | ●            | ○  | —                 | ○       | IC circuit           |       |       |       |          |                     |                 |            |            |
| Reed switch        |  | Grommet          | Yes             | 3-wire (NPN equivalent) | 24V          | —  | —                 | A96V    | A96                  | ●     | —     | ●     | —        | —                   | IC circuit      |            |            |
|                    |  |                  |                 | Connector               |              |    |                   | —       | A72                  | A72H  | ●     | —     | ●        | —                   |                 | —          | —          |
|                    |  |                  |                 |                         |              |    |                   | 12V     | A93V                 | A93   | ●     | —     | ●        | —                   |                 | —          |            |
|                    |  | 5V, 12V          |                 |                         |              |    |                   | A90V    | A90                  | ●     | —     | ●     | —        | —                   | IC circuit      |            |            |
|                    |  | 12V              |                 |                         |              |    |                   | A73C    | —                    | ●     | —     | ●     | ●        | —                   |                 |            |            |
|                    |  | Grommet          |                 | 5V, 12V                 |              |    |                   | A80C    | —                    | ●     | —     | ●     | ●        | —                   | IC circuit      |            |            |
|                    |  |                  |                 | —                       |              |    |                   | A79W    | —                    | ●     | —     | ●     | —        | —                   |                 |            |            |

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NV  
1 m ..... M (Example) M9NWM  
3 m ..... L (Example) M9NWL  
5 m ..... Z (Example) M9NWZ  
None ..... N (Example) J79CN

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

\* There are other applicable auto switches other than the listed above. For details, refer to page 769.  
\* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.  
\* When D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types with ø32 to ø50 are mounted on a side other than the port side, order auto switch mounting brackets separately. Refer to page 768 for details.

CUJ  
CU  
CQS  
CQ2  
RQ  
CQM  
MU

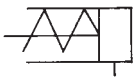
D-□  
-X□  
Individual  
-X□  
Technical data

# Series CQ2



## JIS Symbol

Single acting,  
Spring return



Single acting,  
Spring extend



**Made to Order Specifications**  
(For details, refer to pages 1373 to 1565.)

| Symbol | Specifications   |
|--------|--|
| —XA□   | Change of rod end shape spring return type only  |
| —XB10  | Intermediate stroke (Using exclusive body) spring return type only                       |
| —XC6   | Retaining ring, piston rod, rod end nut made of stainless steel                          |
| —XC26  | Double clevis pins include copper pins and a flat washer.                                |
| —XC27  | Double clevis pins and Double knuckle pins made of stainless steel (Stainless steel 304) |
| —XC36  | With boss in rod side  |
| —X144  | Change of port location, ø12, to 25 only   |
| —X202  | Same overall length dimension as Series CQ1, Except ø12, 16, 25                          |
| —X203  | Same L dimension from rod cover as Series CQ1, ø20, 32 only                              |
| —X271  | Fluororubber seals   |
| —X1876 | With concave shape end boss on the cylinder tube head side                               |

Refer to pages 760 to 769 for the specifications of cylinders with auto switches.

- Minimum auto switch mounting stroke
- Proper auto switch mounting position (detection at stroke end) and height
- Operating range
- Switch mounting bracket: Part no.

## Specifications

| Bore size                             | 12  | 16    | 20    | 25   | 32   | 40   | 50   |
|---------------------------------------|---|-------|-------|------|------|------|------|
| <b>Action</b>                         | Single acting, Single rod   |       |       |      |      |      |      |
| <b>Fluid</b>                          | Air   |       |       |      |      |      |      |
| <b>Proof pressure</b>                 | 1.5 MPa   |       |       |      |      |      |      |
| <b>Maximum operating pressure</b>     | 1.0 MPa   |       |       |      |      |      |      |
| <b>Minimum operating pressure Mpa</b> | 0.25  | 0.25  | 0.18  | 0.18 | 0.17 | 0.15 | 0.13 |
| <b>Ambient and fluid temperature</b>  | Without auto switch: -10 to 70°C (No freezing)<br>With auto switch: -10 to 60°C (No freezing) |       |       |      |      |      |      |
| <b>Lubrication</b>                    | Not required (Non-lube)   |       |       |      |      |      |      |
| <b>Piston speed</b>                   | 50 to 500 mm/s  |       |       |      |      |      |      |
| <b>Allowable kinetic energy J</b>     | 0.022   | 0.038 | 0.055 | 0.09 | 0.15 | 0.26 | 0.46 |
| <b>Stroke length tolerance</b>        | +1.0mm <sup>Note)</sup><br>0  |       |       |      |      |      |      |

Note) Stroke length tolerance dose not include the amount of bumper change.

## Standard Stroke

| Bore size (mm)           | Standard stroke (mm) |
|--------------------------|----------------------|
| 12, 16, 20<br>25, 32, 40 | 5, 10                |
| 50                       | 10, 20               |

## Manufacture of Intermediate Stroke (Single acting, Spring return type is excluded.)

|              |   |              |
|--------------|---|--------------|
| Description  | Spacer is installed in the standard stroke body.  |              |
| Part no.     | Refer to "How to Order" for the standard model no. on page 639.   |              |
| Description  | Dealing with the stroke by the 1 mm interval is available by installing spacer with standard stroke cylinder. |              |
| Stroke range | Bore size   | Stroke range |
|              | 12 to 40  | 1 to 9       |
|              | 50  | 1 to 19      |
| Example      | Part no.: CQ2B20-3T<br>CQ2B20-5T with 2 mm width spacer inside.<br>B dimension is 24.5 mm.                    |              |

## Type

|           |  | Bore size (mm)          |    | 12       | 16       | 20       | 25       | 32                                | 40      | 50      |
|-----------|--|-------------------------|----|----------|----------|----------|----------|-----------------------------------|---------|---------|
| Pneumatic | Mounting                                   | Through-hole (Standard) | ●  | ●        | ●        | ●        | ●        | ●                                 | ●       | ●       |
|           |  | Both ends tapped style  | ●  | ●        | ●        | ●        | ●        | ●                                 | ●       | ●       |
|           | Built-in magnet                            |                         | ●  | ●        | ●        | ●        | ●        | ●                                 | ●       | ●       |
|           | Piping                                     | Screw-in type           | —  | M5 × 0.8 | M5 × 0.8 | M5 × 0.8 | M5 × 0.8 | M5 × 0.8 <sup>(1)</sup><br>Rc 1/8 | Rc 1/8  | Rc 1/4  |
|           |  |                         | TN | —        | —        | —        | —        | NPT 1/8                           | NPT 1/8 | NPT 1/4 |
|           |  | TF                      | —  | —        | —        | —        | G 1/8    | G 1/8                             | G 1/4   |         |
|           | Built-in One-touch fittings <sup>(2)</sup> |                         | —  | —        | —        | —        | —        | ø6/4                              | ø6/4    | ø8/6    |
|           | Rod end male thread                        |                         | ●  | ●        | ●        | ●        | ●        | ●                                 | ●       | ●       |
|           | With boss in head side                     |                         | ●  | ●        | ●        | ●        | ●        | ●                                 | ●       | ●       |

Note 1) For a ø32 cylinder without an auto switch, M5 x 0.8 is used for 5-stroke piping dimension. Thus, do not enter a symbol for the port tread type.

Note 2) One-touch fittings cannot be replaced.

## **Precautions**

**Be sure to read before handling.**  
**Refer to front matters 54 and 55 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.**

## **Retaining Ring Installation/Removal**

### **Caution**

1. For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).

- Even if a proper plier (tool for installing type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

## **Mounting Bracket Part No.**

| Bore size (mm) | Foot (1) | Flange  | Double clevis |
|----------------|----------|---------|---------------|
| 12             | CQ-L012  | CQ-F012 | CQ-D012       |
| 16             | CQ-L016  | CQ-F016 | CQ-D016       |
| 20             | CQ-L020  | CQ-F020 | CQ-D020       |
| 25             | CQ-L025  | CQ-F025 | CQ-D025       |
| 32             | CQ-L032  | CQ-F032 | CQ-D032       |
| 40             | CQ-L040  | CQ-F040 | CQ-D040       |
| 50             | CQ-L050  | CQ-F050 | CQ-D050       |



Note 1) When ordering foot bracket, order 2 pieces per cylinder.

Note 2) Parts belonging to each bracket are as follows.  
Foot, Flange/Body mounting bolt, Double clevis/Clevis pin, Type C retaining ring for axis, Body mounting bolt

## **Theoretical Output (N)**

| Action        | Bore size (mm) | Operating pressure (Mpa) |     |      |
|---------------|----------------|--------------------------|-----|------|
|               |                | 0.3                      | 0.5 | 0.7  |
| Spring return | 12             | 21                       | 44  | 66   |
|               | 16             | 45                       | 86  | 126  |
|               | 20             | 79                       | 142 | 205  |
|               | 25             | 126                      | 224 | 323  |
|               | 32             | 211                      | 372 | 533  |
|               | 40             | 338                      | 589 | 841  |
|               | 50             | 535                      | 928 | 1316 |
| Spring extend | 12             | 14                       | 31  | 48   |
|               | 16             | 24                       | 54  | 85   |
|               | 20             | 44                       | 91  | 138  |
|               | 25             | 84                       | 160 | 235  |
|               | 32             | 152                      | 273 | 393  |
|               | 40             | 288                      | 499 | 710  |
|               | 50             | 412                      | 742 | 1072 |

Refer to page 1569 for the Spring Reaction Force.

## **Mass (g)**

| Action        | Bore size (mm) | Cylinder stroke (mm) |     |    |     |
|---------------|----------------|----------------------|-----|----|-----|
|               |                | 5                    | 10  | 15 | 20  |
| Spring return | 12             | 29                   | 35  | —  | —   |
|               | 16             | 42                   | 51  | —  | —   |
|               | 20             | 63                   | 76  | —  | —   |
|               | 25             | 87                   | 101 | —  | —   |
|               | 32             | 131                  | 152 | —  | —   |
|               | 40             | 206                  | 229 | —  | —   |
|               | 50             | —                    | 369 | —  | 441 |
| Spring extend | 12             | 29                   | 35  | —  | —   |
|               | 16             | 43                   | 50  | —  | —   |
|               | 20             | 67                   | 78  | —  | —   |
|               | 25             | 92                   | 104 | —  | —   |
|               | 32             | 141                  | 158 | —  | —   |
|               | 40             | 216                  | 235 | —  | —   |
|               | 50             | —                    | 399 | —  | 460 |

**CUJ**

**CU**

**CQS**

**CQ2**

**RQ**

**CQM**

**MU**

## **Additional Mass (g)**

| Bore size (mm)  |             | 12  | 16  | 20  | 25  | 32  | 40  | 50   |
|---|-------------|-----|-----|-----|-----|-----|-----|------|
| Both ends tapped style                                    |             | 2   | 2   | 6   | 6   | 6   | 6   | 6    |
| Rod end male thread                                       | Male thread | 1.5 | 3   | 6   | 12  | 26  | 27  | 53   |
|   | Nut         | 1   | 2   | 4   | 8   | 17  | 17  | 32   |
| With boss in head side                                    |             | 0.7 | 1.3 | 2   | 3   | 5   | 7   | 13   |
| Built-in One-touch fittings                               |             | —   | —   | —   | —   | 6   | 6   | 10.5 |
| Foot style (Including mounting bolt)                      |             | 55  | 67  | 164 | 186 | 143 | 155 | 243  |
| Rod side flange style (Including mounting bolt)           |             | 57  | 69  | 139 | 161 | 180 | 214 | 373  |
| Rear flange style (Including mounting bolt)               |             | 54  | 65  | 133 | 152 | 165 | 198 | 348  |
| Double clevis style (Including pin, retaining ring, bolt) |             | 32  | 39  | 88  | 123 | 151 | 196 | 393  |

Calculation: (Example) **CQ2D32-10SM**

- Cylinder mass: CQ2B32-10S ..... 152 g
  - Option mass: Both ends tapped style ..... 6 g
  - Rod end male thread ..... 43 g
  - Double clevis style ..... 151 g
- 352 g

**D-□**

**-X□**

Individual  
**-X□**

Technical  
data

# Series CQ2

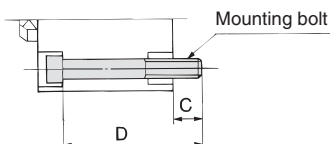
## Mounting Bolt for CQ2/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CQ2B is available as an option.

Ordering: Add the word "Bolt" in front of the bolts to be used.

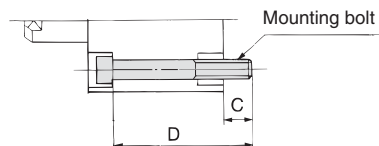
**Example) Bolt M3 x 25L 4 pcs.**

Material: Chromium molybdenum steel  
Surface treatment: Nickel plated



### Spring Return

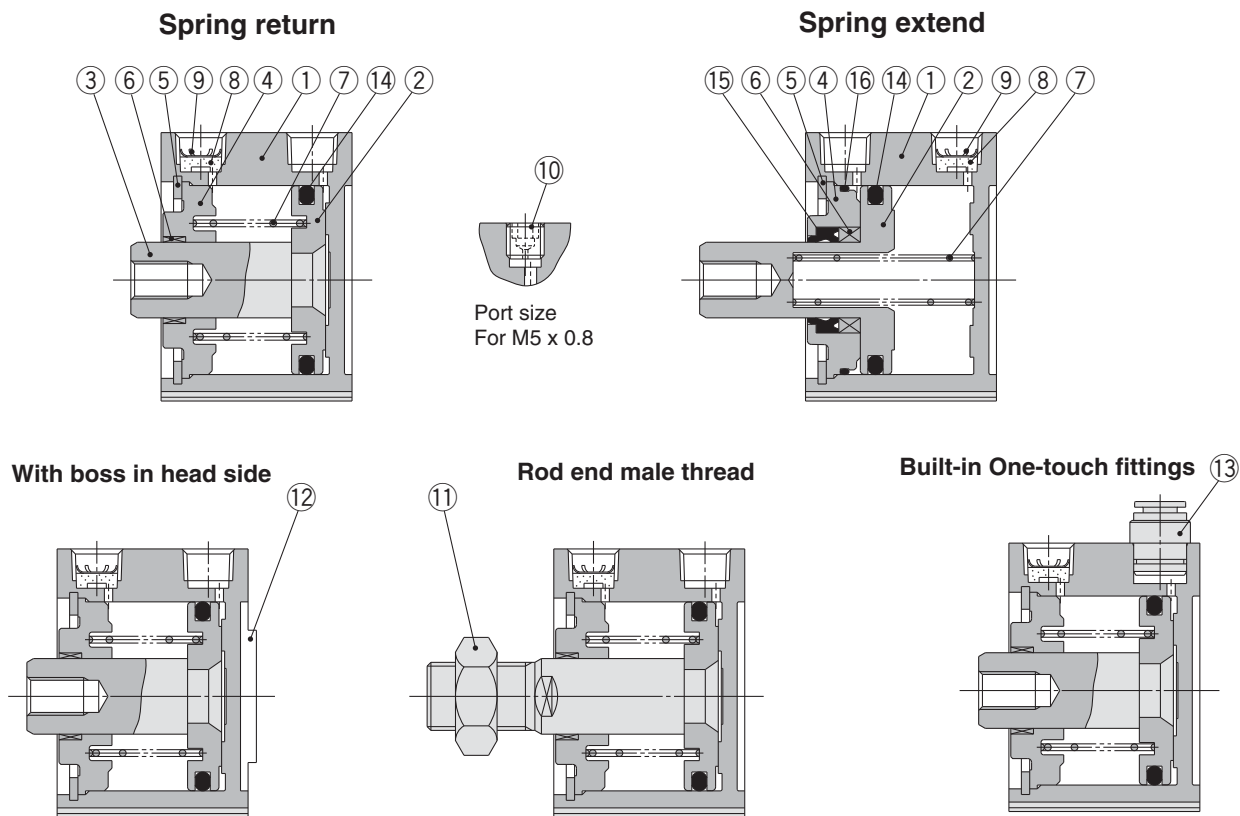
| Cylinder model    | C    | D  | Mounting bolt size |
|-------------------|------|----|--------------------|
| <b>CQ2B12-5S</b>  | 6.5  | 25 | M3 x 25L           |
| <b>-10S</b>       |      | 30 | x 30L              |
| <b>CQ2B16-5S</b>  | 5    | 25 | M3 x 25L           |
| <b>-10S</b>       |      | 30 | x 30L              |
| <b>CQ2B20-5S</b>  | 7.5  | 25 | M5 x 25L           |
| <b>-10S</b>       |      | 30 | x 30L              |
| <b>CQ2B25-5S</b>  | 9.5  | 30 | M5 x 30L           |
| <b>-10S</b>       |      | 35 | x 35L              |
| <b>CQ2B32-5S</b>  | 9    | 30 | M5 x 30L           |
| <b>-10S</b>       |      | 35 | x 35L              |
| <b>CQ2B40-5S</b>  | 7.5  | 35 | M5 x 35L           |
| <b>-10S</b>       |      | 40 | x 40L              |
| <b>CQ2B50-10S</b> | 12.5 | 45 | M6 x 45L           |
| <b>-20S</b>       |      | 55 | x 55L              |



### Spring Extend

| Cylinder model    | C    | D  | Mounting bolt size |
|-------------------|------|----|--------------------|
| <b>CQ2B12-5T</b>  | 6.5  | 25 | M3 x 25L           |
| <b>-10T</b>       |      | 30 | x 30L              |
| <b>CQ2B16-5T</b>  | 5    | 25 | M3 x 25L           |
| <b>-10T</b>       |      | 30 | x 30L              |
| <b>CQ2B20-5T</b>  | 7.5  | 25 | M5 x 25L           |
| <b>-10T</b>       |      | 30 | x 30L              |
| <b>CQ2B25-5T</b>  | 9.5  | 30 | M5 x 30L           |
| <b>-10T</b>       |      | 35 | x 35L              |
| <b>CQ2B32-5T</b>  | 9    | 30 | M5 x 30L           |
| <b>-10T</b>       |      | 35 | x 35L              |
| <b>CQ2B40-5T</b>  | 7.5  | 35 | M5 x 35L           |
| <b>-10T</b>       |      | 40 | x 40L              |
| <b>CQ2B50-10T</b> | 12.5 | 45 | M6 x 45L           |
| <b>-20T</b>       |      | 55 | x 55L              |

## Construction



### Component Parts

| No. | Description             | Material              | Note                           |
|-----|-------------------------|-----------------------|--------------------------------|
| 1   | Cylinder tube           | Aluminum alloy        | Hard anodized                  |
| 2*  | Piston                  | Aluminum alloy        | Chromated                      |
| 3   | Piston rod              | Stainless steel       | ø12 to ø25                     |
|     |                         | Carbon steel          | ø32 to ø50, Hard chrome plated |
| 4   | Collar                  | Aluminum alloy        | ø12 to ø40, Anodized           |
|     |                         | Aluminum alloy casted | ø50, Chromate, Painted         |
| 5   | Retaining ring          | Carbon tool steel     | Phosphate coated               |
| 6   | Bushing                 | Bearing alloy         | ø50                            |
| 7   | Return spring           | Piano wire            | Zinc chromated                 |
| 8   | Bronze element          | Sintered metallic BC  | Port size Rc 1/8, 1/4          |
| 9   | Retaining ring          | Carbon tool steel     |                                |
| 10  | Plug with fixed orifice | Alloy steel           | Port size M5 x 0.8             |
| 11  | Rod end nut             | Carbon steel          | Nickel plated                  |
| 12  | Centering location ring | Aluminum alloy        | ø20 to ø50, Anodized           |
| 13  | One-touch fitting       | —                     | ø32 to ø50                     |

\* On spring extend (type T), piston and piston rod are integrated (stainless steel).  
(Excluding ø12 and 16 of built-in magnet type)

### Replacement Parts

| No. | Description | Material | Note |
|-----|-------------|----------|------|
| 14  | Piston seal | NBR      |      |
| 15  | Rod seal    | NBR      |      |
| 16  | Gasket      | NBR      |      |

### Replacement Part: Seal Kit

| Bore size (mm) | Single acting/Spring return   | Single acting/Spring extend   |
|----------------|---|---|
| 12             | CQ2B12-S-PS   | CQ2B12-T-PS   |
| 16             | CQ2B16-S-PS   | CQ2B16-T-PS   |
| 20             | CQ2B20-S-PS   | CQ2B20-T-PS   |
| 25             | CQ2B25-S-PS   | CQ2B25-T-PS   |
| 32             | CQ2B32-S-PS   | CQ2B32-T-PS   |
| 40             | CQ2B40-S-PS   | CQ2B40-T-PS   |
| 50             | CQ2B50-S-PS   | CQ2B50-T-PS   |
| Note           | A set includes (14).  | Kits include items (14), (15), (16) from the table above                              |
| How to order   | * Seal kit includes (14).<br>Order the seal kit, based on each bore size. | * Seal kit includes (14), (15), (16).<br>Order the seal kit, based on each bore size. |

\* Since the grease kit does not include a grease pack, order it separately.  
Grease pack part no.: GR-S-010 (10 g)

## Copper and Fluorine-free Series (For CRT manufacturing process)

20 — C□Q2B Bore size — Stroke  $S_T(M)$   
Copper and fluorine-free series ø12, ø16, ø20, ø25, ø32, ø40, ø50

To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used in the component parts.

### Specifications

|                            |                                   |
|----------------------------|-----------------------------------|
| Action                     | Single acting, Single rod         |
| Bore size (mm)             | ø12, ø16, ø20, ø25, ø32, ø40, ø50 |
| Proof pressure             | 1.5 MPa                           |
| Maximum operating pressure | 1.0 MPa                           |
| Rubber bumper              | None                              |
| Piping                     | Screw-in piping                   |
| Piston speed               | 50 to 500 mm/s                    |
| Mounting                   | Through-hole                      |
| Auto switch                | Mountable                         |

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

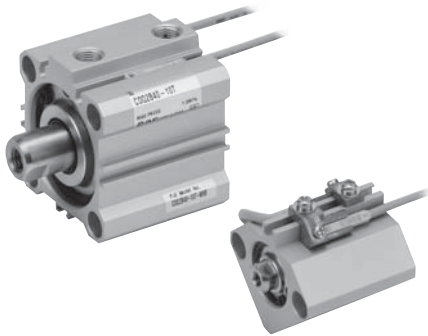
-X□

Individual

-X□

Technical data

# Compact Cylinder: Standard Type Single Acting, Single Rod Series **CDQ2** With Auto Switch



Refer to page below for further information on auto switches.

|   |                 |
|---|-----------------|
| Auto switch specifications                      | P. 1263 to 1371 |
| Proper auto switch mounting position and height | P. 760 to 769   |
| Minimum stroke for auto switch mounting         |                 |
| Operating range                                 |                 |
| Switch mounting bracket: Part no.               |                 |

## Mass

(g)

| Action        | Bore size (mm) | Cylinder stroke (mm) |     |    |     |
|---------------|----------------|----------------------|-----|----|-----|
|               |                | 5                    | 10  | 15 | 20  |
| Spring return | 12             | 48                   | 54  | —  | —   |
|               | 16             | 74                   | 83  | —  | —   |
|               | 20             | 109                  | 123 | —  | —   |
|               | 25             | 146                  | 162 | —  | —   |
|               | 32             | 190                  | 211 | —  | —   |
|               | 40             | 282                  | 305 | —  | —   |
|               | 50             | —                    | 487 | —  | 559 |
| Spring extend | 12             | 53                   | 70  | —  | —   |
|               | 16             | 73                   | 82  | —  | —   |
|               | 20             | 122                  | 133 | —  | —   |
|               | 25             | 160                  | 175 | —  | —   |
|               | 32             | 200                  | 217 | —  | —   |
|               | 40             | 292                  | 311 | —  | —   |
|               | 50             | —                    | 517 | —  | 578 |

## Additional Mass

(g)

| Bore size (mm)  |             | 12  | 16  | 20  | 25  | 32  | 40  | 50   |
|---|-------------|-----|-----|-----|-----|-----|-----|------|
| Both ends tapped style                                    |             | 1   | 1   | 3   | 3   | 6   | 6   | 6    |
| Rod end   | Male thread | 1.5 | 3   | 6   | 12  | 26  | 27  | 53   |
|   | Nut         | 1   | 2   | 4   | 8   | 17  | 17  | 32   |
| With boss in head side                                    |             | 0.7 | 1.3 | 2   | 3   | 5   | 7   | 13   |
| Built-in One-touch fittings                               |             | —   | —   | —   | —   | 6   | 6   | 10.5 |
| Foot style (Including mounting bolt)                      |             | 49  | 62  | 147 | 169 | 143 | 155 | 243  |
| Rod side flange style (Including mounting bolt)           |             | 54  | 67  | 131 | 153 | 180 | 214 | 373  |
| Head side flange style (Including mounting bolt)          |             | 52  | 63  | 124 | 144 | 165 | 198 | 348  |
| Double clevis style (Including pin, retaining ring, bolt) |             | 29  | 35  | 78  | 114 | 151 | 196 | 393  |

Calculation: (Example) **CDQ2D32-10SM**

- Cylinder mass: CDQ2B32-10S ..... 211 g
  - Option mass: Both ends tapped style ... 6 g
  - Rod end male thread .... 43 g
  - Double clevis style ..... 151 g
- 411 g

If auto switches are to be installed, the mass that corresponds to the number of auto switches and mounting brackets to be used must be added.

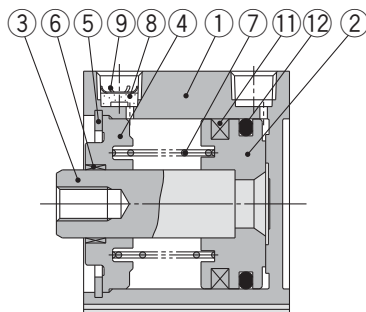
## Switch Mounting Bracket Mass

| Bracket | Stroke      | Mass (g) |
|---------|-------------|----------|
| BQ-1    | ø20, ø25    | 1.5      |
| BQ-2    | ø32 to ø100 | 1.5      |
| BQ2-012 | ø12 to ø25  | 5        |

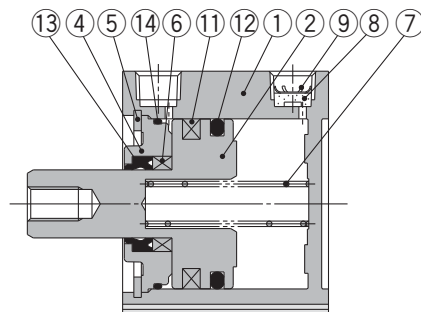
\* For the auto switch mass, refer to page 1263 to 1371.

## Construction

### Spring return



### Spring extend



Port size  
For M5 x 0.8

## Component Parts

| No. | Description             | Material              | Note                           |
|-----|-------------------------|-----------------------|--------------------------------|
| 1   | Cylinder tube           | Aluminum alloy        | Hard anodized                  |
| 2   | Piston                  | Aluminum alloy        | Chromated                      |
| 3   | Piston rod              | Stainless steel       | ø12 to ø25                     |
|     |                         | Carbon steel          | ø32 to ø50, Hard chrome plated |
| 4   | Collar                  | Aluminum alloy        | ø12 to ø40, Anodized           |
|     |                         | Aluminum alloy casted | ø50, Chromate, Painted         |
| 5   | Retaining ring          | Carbon tool steel     | Phosphate coated               |
| 6   | Bushing                 | Bearing alloy         | ø50                            |
| 7   | Return spring           | Piano wire            | Zinc chromated                 |
| 8   | Bronze element          | Sintered metallic BC  | Port size Rc 1/8, 1/4.         |
| 9   | Retaining ring          | Carbon tool steel     |                                |
| 10  | Plug with fixed orifice | Alloy steel           | Port size M5 x 0.8             |
| 11  | Magnet                  | —                     |                                |

\* On spring extend (type T), piston with ø20 or more and piston rod are integrated (Stainless steel).

| No. | Description | Material | Note |
|-----|-------------|----------|------|
| 12  | Piston seal | NBR      |      |
| 13  | Rod seal    | NBR      |      |
| 14  | Gasket      | NBR      |      |



## Replacement Parts: Seal Kit

Since the same as standard type, single acting, single rod, refer to page 643.

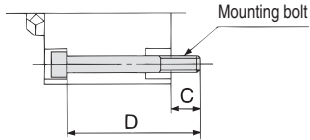
## Mounting Bolt for CDQ2/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CDQ2B is available as an option.

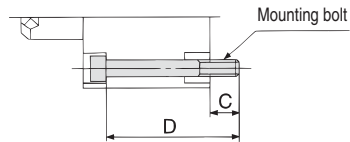
Ordering: Add the word "Bolt" in front of the bolts to be used.

**Example) Bolt M3 x 35L 2 pcs.**

### Spring return



### Spring extend



### Spring Return

| Cylinder model | C    | D  | Mounting bolt size |
|----------------|------|----|--------------------|
| CDQ2B12-5S     | 5.5  | 35 | M3 x 35L           |
| -10S           |      | 40 | x 40L              |
| CDQ2B16-5S     | 8    | 40 | M3 x 40L           |
| -10S           |      | 45 | x 45L              |
| CDQ2B20-5S     | 10.5 | 40 | M5 x 40L           |
| -10S           |      | 45 | x 45L              |
| CDQ2B25-5S     | 9.5  | 40 | M5 x 40L           |
| -10S           |      | 45 | x 45L              |
| CDQ2B32-5S     | 9    | 40 | M5 x 40L           |
| -10S           |      | 45 | x 45L              |
| CDQ2B40-5S     | 7.5  | 45 | M5 x 45L           |
| -10S           |      | 50 | x 50L              |
| CDQ2B50-10S    | 12.5 | 55 | M6 x 55L           |
| -20S           |      | 65 | x 65L              |

### Spring Extend

| Cylinder model | C    | D  | Mounting bolt size |
|----------------|------|----|--------------------|
| CDQ2B12-5T     | 6.1  | 40 | M3 x 40L           |
| -10T           |      | 45 | x 45L              |
| CDQ2B16-5T     | 8    | 40 | M3 x 40L           |
| -10T           |      | 45 | x 45L              |
| CDQ2B20-5T     | 10.5 | 40 | M5 x 40L           |
| -10T           |      | 45 | x 45L              |
| CDQ2B25-5T     | 9.5  | 40 | M5 x 40L           |
| -10T           |      | 45 | x 45L              |
| CDQ2B32-5T     | 9    | 40 | M5 x 40L           |
| -10T           |      | 45 | x 45L              |
| CDQ2B40-5T     | 7.5  | 45 | M5 x 45L           |
| -10T           |      | 50 | x 50L              |
| CDQ2B50-10T    | 12.5 | 55 | M6 x 55L           |
| -20T           |      | 65 | x 65L              |

Material: Chromium molybdenum steel  
Surface treatment: Nickel plated

CUJ

CU

CQS

**CQ2**

RQ

CQM

MU

D-□

-X□

Individual  
-X□

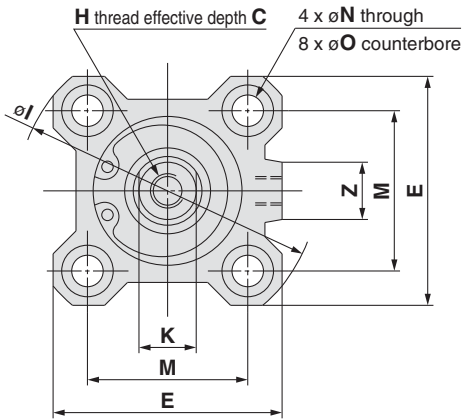
Technical  
data

# Series CQ2

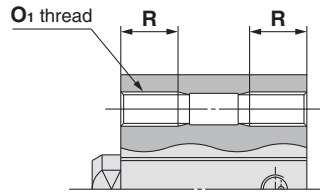
## Dimensions

### Ø12 to Ø25 / Spring Return without Auto Switch

#### Basic style (Through-hole): CQ2B

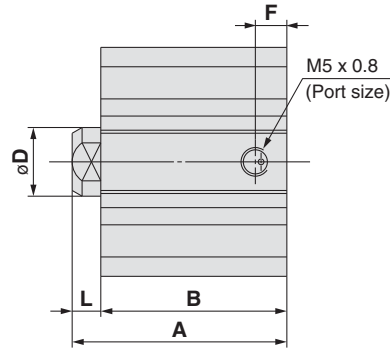


#### Both ends tapped style: CQ2A

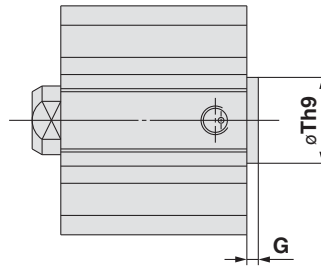


#### Both Ends Tapped Style (mm)

| Bore size (mm) | O1       | 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 |



#### With boss in head side

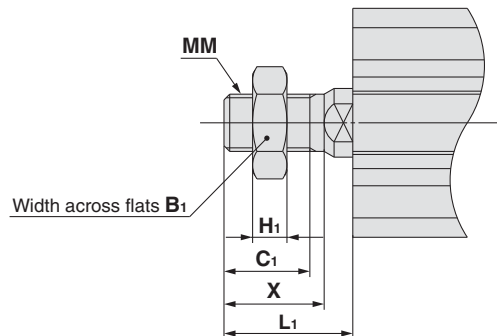


#### With Boss in Head Side (mm)

| Bore size (mm) | G   | Th9                               |
|----------------|-----|-----------------------------------|
| 12             | 1.5 | 15 <sup>0</sup> <sub>-0.043</sub> |
| 16             | 1.5 | 20 <sup>0</sup> <sub>-0.052</sub> |
| 20             | 2   | 13 <sup>0</sup> <sub>-0.043</sub> |
| 25             | 2   | 15 <sup>0</sup> <sub>-0.043</sub> |

Note) With boss in rod side :  
Option  
(Suffix "-XC36" to the end of part number.)

#### Rod end male thread



#### Rod End Male Thread (mm)

| Bore size (mm) | B1 | C1 | H1 | L1   | MM         | X    |
|----------------|----|----|----|------|------------|------|
| 12             | 8  | 9  | 4  | 14   | M5 x 0.8   | 10.5 |
| 16             | 10 | 10 | 5  | 15.5 | M6 x 1.0   | 12   |
| 20             | 13 | 12 | 5  | 18.5 | M8 x 1.25  | 14   |
| 25             | 17 | 15 | 6  | 22.5 | M10 x 1.25 | 17.5 |

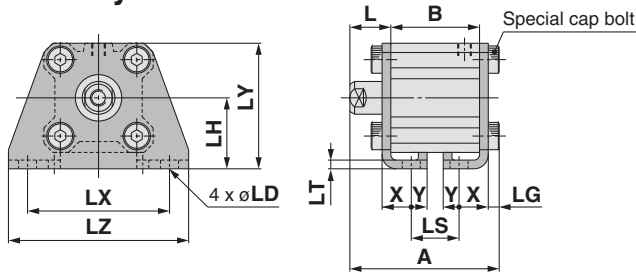
#### Basic Style

| Bore size (mm) | A    |      | B    |      | C  | D  | E  | F   | H        | I  | K  | L   | M    | N   | O             | Z  |
|----------------|------|------|------|------|----|----|----|-----|----------|----|----|-----|------|-----|---------------|----|
|                | 5st  | 10st | 5st  | 10st |    |    |    |     |          |    |    |     |      |     |               |    |
| 12             | 25.5 | 30.5 | 22   | 27   | 6  | 6  | 25 | 5   | M3 x 0.5 | 32 | 5  | 3.5 | 15.5 | 3.5 | 6.5 depth 3.5 | —  |
| 16             | 27   | 32   | 23.5 | 28.5 | 8  | 8  | 29 | 5.5 | M4 x 0.7 | 38 | 6  | 3.5 | 20   | 3.5 | 6.5 depth 3.5 | 10 |
| 20             | 29   | 34   | 24.5 | 29.5 | 7  | 10 | 36 | 5.5 | M5 x 0.8 | 47 | 8  | 4.5 | 25.5 | 5.5 | 9 depth 7     | 10 |
| 25             | 32.5 | 37.5 | 27.5 | 32.5 | 12 | 12 | 40 | 5.5 | M6 x 1.0 | 52 | 10 | 5   | 28   | 5.5 | 9 depth 7     | 10 |

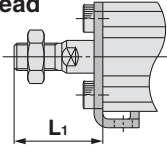
\* For details about the rod end nut and accessory brackets, refer to page 620.



**Foot style: CQ2L**



Rod end male thread

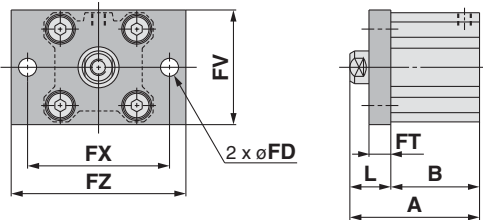


**Foot Style**

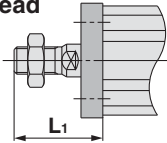
| Bore size (mm) | A    |      | B    |      | L    | L <sub>1</sub> | LD  | LG  | LH | LS   |      | LT  | LX | LY   | LZ | X    | Y   |
|----------------|------|------|------|------|------|----------------|-----|-----|----|------|------|-----|----|------|----|------|-----|
|                | 5st  | 10st | 5st  | 10st |      |                |     |     |    | 5st  | 10st |     |    |      |    |      |     |
|                | 12   | 40.3 | 45.3 | 22   |      |                |     |     |    | 27   | 13.5 |     |    |      |    |      |     |
| 16             | 41.8 | 46.8 | 23.5 | 28.5 | 13.5 | 25.5           | 4.5 | 2.8 | 19 | 11.5 | 16.5 | 2   | 38 | 33.5 | 48 | 8    | 5   |
| 20             | 46.2 | 51.2 | 24.5 | 29.5 | 14.5 | 28.5           | 6.6 | 4   | 24 | 12.5 | 17.5 | 3.2 | 48 | 42   | 62 | 9.2  | 5.8 |
| 25             | 49.7 | 54.7 | 27.5 | 32.5 | 15   | 32.5           | 6.6 | 4   | 26 | 12.5 | 17.5 | 3.2 | 52 | 46   | 66 | 10.7 | 5.8 |

Foot bracket material: Carbon steel  
Surface treatment: Nickel plated

**Rod side flange style: CQ2F**



Rod end male thread

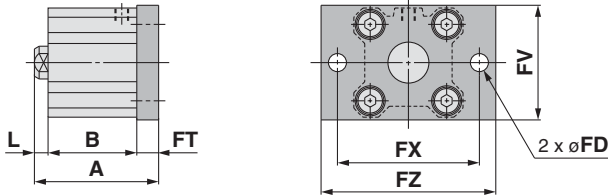


**Rod Side Flange Style**

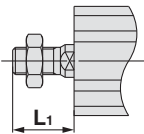
| Bore size (mm) | A    |      | B    |      | FD  | FT  | FV | FX | FZ | L    | L <sub>1</sub> |
|----------------|------|------|------|------|-----|-----|----|----|----|------|----------------|
|                | 5st  | 10st | 5st  | 10st |     |     |    |    |    |      |                |
|                | 12   | 35.5 | 40.5 | 22   |     |     |    |    |    |      |                |
| 16             | 37   | 42   | 23.5 | 28.5 | 4.5 | 5.5 | 30 | 45 | 55 | 13.5 | 25.5           |
| 20             | 39   | 44   | 24.5 | 29.5 | 6.6 | 8   | 39 | 48 | 60 | 14.5 | 28.5           |
| 25             | 42.5 | 47.5 | 27.5 | 32.5 | 6.6 | 8   | 42 | 52 | 64 | 15   | 32.5           |

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Head side flange style: CQ2G**



Rod end male thread



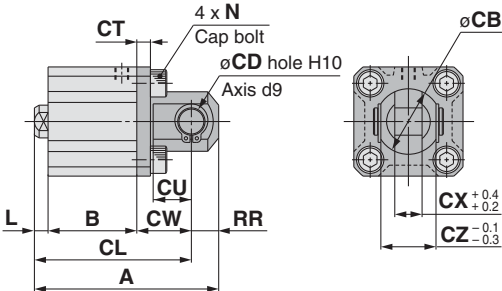
**Head Side Flange Style**

| Bore size (mm) | A    |      | L   | L <sub>1</sub> |
|----------------|------|------|-----|----------------|
|                | 5st  | 10st |     |                |
|                | 12   | 31   |     |                |
| 16             | 32.5 | 37.5 | 3.5 | 15.5           |
| 20             | 37   | 42   | 4.5 | 18.5           |
| 25             | 40.5 | 45.5 | 5   | 22.5           |

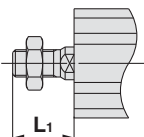
(\* Dimensions except A, L and L<sub>1</sub> are the same as rod side flange style.)

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Double clevis style: CQ2D**



Rod end male thread



**Double Clevis Style**

| Bore size (mm) | A    |      | B    |      | CB | CD | CL   |      | CT | CU | CW | CX  | CZ | L   | L <sub>1</sub> | N        | RR |
|----------------|------|------|------|------|----|----|------|------|----|----|----|-----|----|-----|----------------|----------|----|
|                | 5st  | 10st | 5st  | 10st |    |    | 5st  | 10st |    |    |    |     |    |     |                |          |    |
|                | 12   | 45.5 | 50.5 | 22   |    |    | 27   | 12   |    |    |    |     |    |     |                |          |    |
| 16             | 48   | 53   | 23.5 | 28.5 | 14 | 5  | 42   | 47   | 4  | 10 | 15 | 6.5 | 12 | 3.5 | 15.5           | M4 x 0.7 | 6  |
| 20             | 56   | 61   | 24.5 | 29.5 | 20 | 8  | 47   | 52   | 5  | 12 | 18 | 8   | 16 | 4.5 | 18.5           | M6 x 1.0 | 9  |
| 25             | 62.5 | 67.5 | 27.5 | 32.5 | 24 | 10 | 52.5 | 57.5 | 5  | 14 | 20 | 10  | 20 | 5   | 22.5           | M6 x 1.0 | 10 |

Double clevis bracket material: Carbon steel  
Surface treatment: Nickel plated

\* For details about the rod end nut and accessory brackets, refer to page 620.  
\*\* Double clevis pins and retaining rings are included.

CUJ

CU

CQS

**CQ2**

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical data

# Series CQ2

## Dimensions

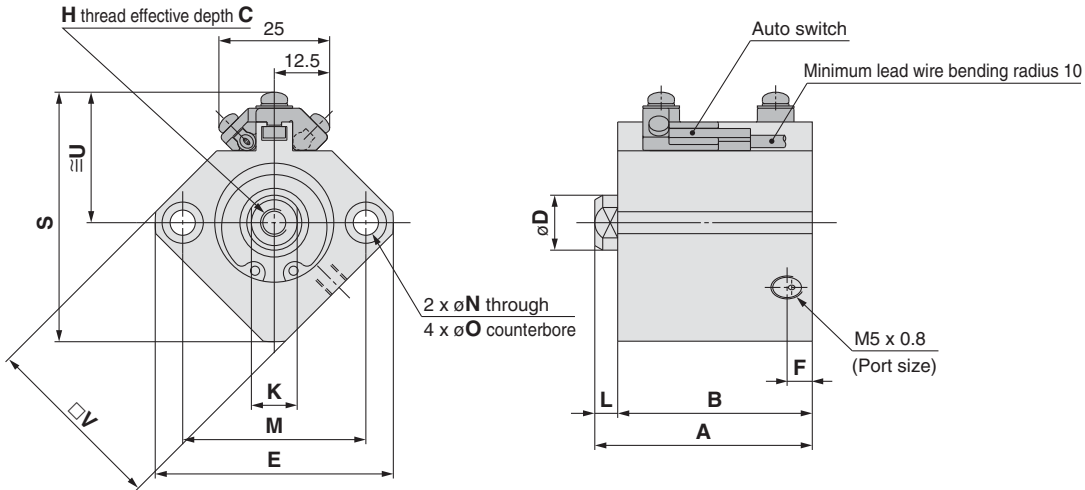
### Ø12 to Ø25 / Spring Return with Auto Switch

#### Basic style (Through-hole): CDQ2B

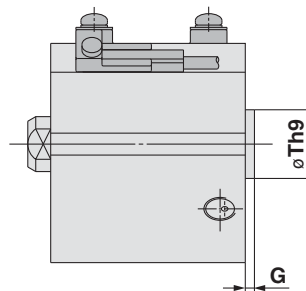
#### Both ends tapped style: CDQ2A

#### Both Ends Tapped Style (mm)

| 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 |



#### With boss in head side

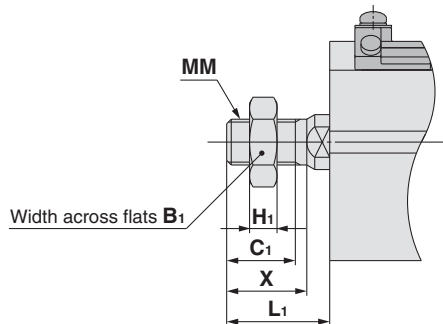


#### With Boss in Head Side (mm)

| Bore size (mm) | G   | Th9                               |
|----------------|-----|-----------------------------------|
| 12             | 1.5 | 15 <sup>0</sup> <sub>-0.043</sub> |
| 16             | 1.5 | 20 <sup>0</sup> <sub>-0.052</sub> |
| 20             | 2   | 13 <sup>0</sup> <sub>-0.043</sub> |
| 25             | 2   | 15 <sup>0</sup> <sub>-0.043</sub> |

Note) With boss in rod side : Option  
(Suffix "-XC36" to the end of part number.)

#### Rod end male thread



#### Rod End Male Thread (mm)

| Bore size (mm) | B <sub>1</sub> | C <sub>1</sub> | H <sub>1</sub> | L <sub>1</sub> | MM         | X    |
|----------------|----------------|----------------|----------------|----------------|------------|------|
| 12             | 8              | 9              | 4              | 14             | M5 x 0.8   | 10.5 |
| 16             | 10             | 10             | 5              | 15.5           | M6 x 1.0   | 12   |
| 20             | 13             | 12             | 5              | 18.5           | M8 x 1.25  | 14   |
| 25             | 17             | 15             | 6              | 22.5           | M10 x 1.25 | 17.5 |

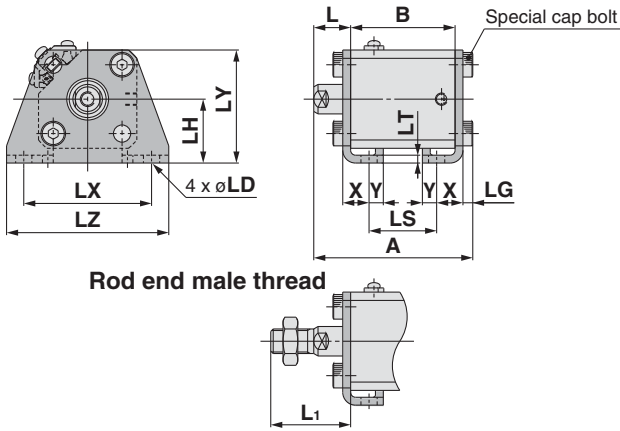
For the auto switch mounting position and its mounting height, refer to pages 760 to 766.

#### Basic Style

| Bore size (mm) | A    |      | B    |      | C  | D  | E  | F   | H        | K  | L   | M  | N   | O             | S    | U    | V  |
|----------------|------|------|------|------|----|----|----|-----|----------|----|-----|----|-----|---------------|------|------|----|
|                | 5st  | 10st | 5st  | 10st |    |    |    |     |          |    |     |    |     |               |      |      |    |
| 12             | 36.5 | 41.5 | 33   | 38   | 6  | 6  | 32 | 6.5 | M3 x 0.5 | 5  | 3.5 | 22 | 3.5 | 6.5 depth 3.5 | 36.5 | 20.5 | 25 |
| 16             | 39   | 44   | 35.5 | 40.5 | 8  | 8  | 38 | 5.5 | M4 x 0.7 | 6  | 3.5 | 28 | 3.5 | 6.5 depth 3.5 | 42.5 | 23.5 | 29 |
| 20             | 41   | 46   | 36.5 | 41.5 | 7  | 10 | 47 | 5.5 | M5 x 0.8 | 8  | 4.5 | 36 | 5.5 | 9 depth 7     | 49   | 25.5 | 36 |
| 25             | 42.5 | 47.5 | 37.5 | 42.5 | 12 | 12 | 52 | 5.5 | M6 x 1.0 | 10 | 5   | 40 | 5.5 | 9 depth 7     | 54.5 | 28.5 | 40 |

\* For details about the rod end nut and accessory brackets, refer to page 620.

**Foot style: CDQ2L**



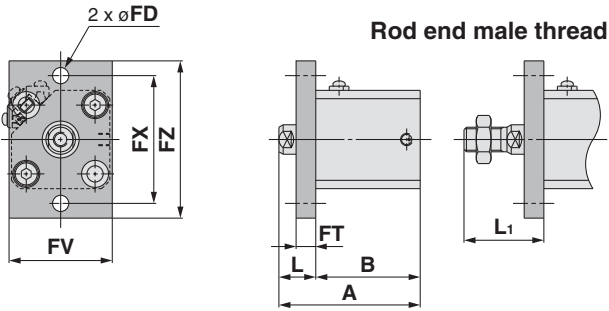
**Foot Style**

| Bore size (mm) | A    |      | B    |      | L    | L <sub>1</sub> | LD  | LG  | LH | LS   |      |
|----------------|------|------|------|------|------|----------------|-----|-----|----|------|------|
|                | 5st  | 10st | 5st  | 10st |      |                |     |     |    | 5st  | 10st |
| 12             | 51.3 | 56.3 | 33   | 38   | 13.5 | 24             | 4.5 | 2.8 | 17 | 21   | 26   |
| 16             | 53.8 | 58.8 | 35.5 | 40.5 | 13.5 | 25.5           | 4.5 | 2.8 | 19 | 23.5 | 28.5 |
| 20             | 58.2 | 63.2 | 36.5 | 41.5 | 14.5 | 28.5           | 6.6 | 4   | 24 | 24.5 | 29.5 |
| 25             | 59.7 | 64.7 | 37.5 | 42.5 | 15   | 32.5           | 6.6 | 4   | 26 | 22.5 | 27.5 |

| Bore size (mm) | LT  | LX | LY   | LZ | X    | Y   |
|----------------|-----|----|------|----|------|-----|
| 12             | 2   | 34 | 29.5 | 44 | 8    | 4.5 |
| 16             | 2   | 38 | 33.5 | 48 | 8    | 5   |
| 20             | 3.2 | 48 | 42   | 62 | 9.2  | 5.8 |
| 25             | 3.2 | 52 | 46   | 66 | 10.7 | 5.8 |

Foot bracket material: Carbon steel  
Surface treatment: Nickel plated

**Rod side flange style: CDQ2F**

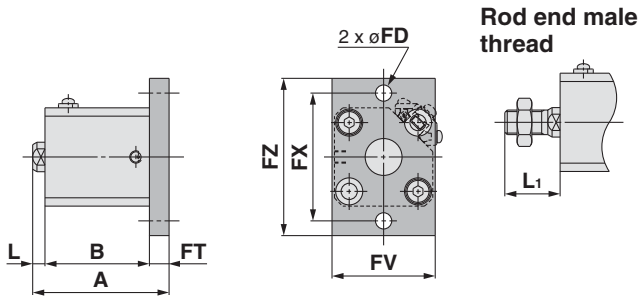


**Rod Side Flange Style**

| Bore size (mm) | A    |      | B    |      | FD  | FT  | FV | FX | FZ | L    | L <sub>1</sub> |
|----------------|------|------|------|------|-----|-----|----|----|----|------|----------------|
|                | 5st  | 10st | 5st  | 10st |     |     |    |    |    |      |                |
| 12             | 46.5 | 51.5 | 33   | 38   | 4.5 | 5.5 | 25 | 45 | 55 | 13.5 | 24             |
| 16             | 49   | 54   | 35.5 | 40.5 | 4.5 | 5.5 | 30 | 45 | 55 | 13.5 | 25.5           |
| 20             | 51   | 56   | 36.5 | 41.5 | 6.6 | 8   | 39 | 48 | 60 | 14.5 | 28.5           |
| 25             | 52.5 | 57.5 | 37.5 | 42.5 | 6.6 | 8   | 42 | 52 | 64 | 15   | 32.5           |

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Head side flange style: CDQ2G**



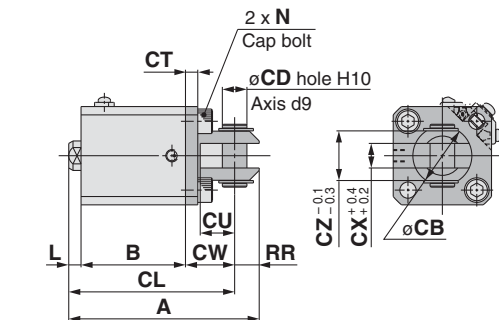
**Head Side Flange Style**

| Bore size (mm) | A    |      | L   | L <sub>1</sub> |
|----------------|------|------|-----|----------------|
|                | 5st  | 10st |     |                |
| 12             | 46.4 | 51.4 | 3.5 | 14             |
| 16             | 44.5 | 49.5 | 3.5 | 15.5           |
| 20             | 49   | 54   | 4.5 | 18.5           |
| 25             | 50.5 | 55.5 | 5   | 22.5           |

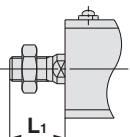
(\* Dimensions except A, L and L<sub>1</sub> are the same as rod side flange style.)

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Double clevis style: CDQ2D**



**Rod end male thread**



**Double Clevis Style**

| Bore size (mm) | A    |      | B    |      | CB | CD | CL   |      | CT | CU | CW |
|----------------|------|------|------|------|----|----|------|------|----|----|----|
|                | 5st  | 10st | 5st  | 10st |    |    | 5st  | 10st |    |    |    |
| 12             | 56.5 | 61.5 | 33   | 38   | 12 | 5  | 50.5 | 55.5 | 4  | 7  | 14 |
| 16             | 60   | 65   | 35.5 | 40.5 | 14 | 5  | 54   | 59   | 4  | 10 | 15 |
| 20             | 68   | 73   | 36.5 | 41.5 | 20 | 8  | 59   | 64   | 5  | 12 | 18 |
| 25             | 72.5 | 77.5 | 37.5 | 42.5 | 24 | 10 | 62.5 | 67.5 | 5  | 14 | 20 |

| Bore size (mm) | CX  | CZ | L   | L <sub>1</sub> | N        | RR |
|----------------|-----|----|-----|----------------|----------|----|
| 12             | 5   | 10 | 3.5 | 14             | M4 x 0.7 | 6  |
| 16             | 6.5 | 12 | 3.5 | 15.5           | M4 x 0.7 | 6  |
| 20             | 8   | 16 | 4.5 | 18.5           | M6 x 1.0 | 9  |
| 25             | 10  | 20 | 5   | 22.5           | M6 x 1.0 | 10 |

Double clevis bracket material: Carbon steel  
Surface treatment: Nickel plated

\* For details about the rod end nut and accessory brackets, refer to page 620.  
\*\* Double clevis pins and retaining rings are included.

CUJ

CU

CQS

**CQ2**

RQ

CQM

MU

D-□

-X□

Individual  
-X□

Technical  
data

# Series CQ2

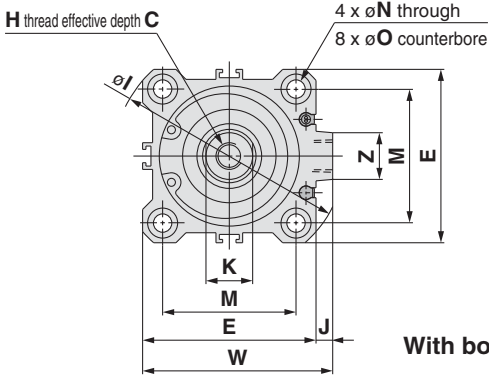
## Dimensions

### Ø32 to Ø50/Spring Return with Auto Switch

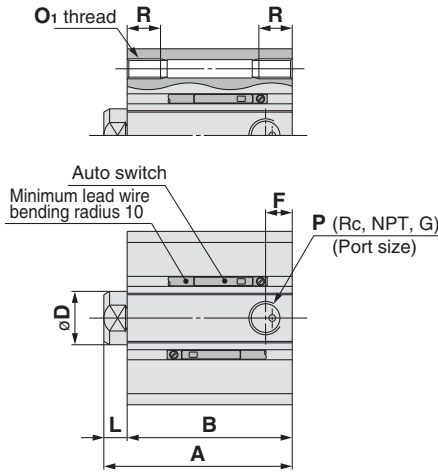


(In the case of without auto switches, A, B, F and P dimensions will be only changed. Refer to the dimension chart.)

#### Basic style (Through-hole): CQ2B/CDQ2B



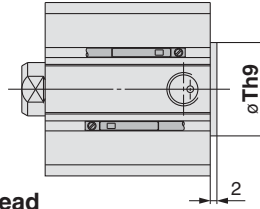
#### Both ends tapped style: CQ2A/CDQ2A



#### Both Ends Tapped Style (mm)

| Bore size (mm) | O <sub>1</sub> | R  |
|----------------|----------------|----|
| 32             | M6 x 1.0       | 10 |
| 40             | M6 x 1.0       | 10 |
| 50             | M8 x 1.25      | 14 |

#### With boss in head side

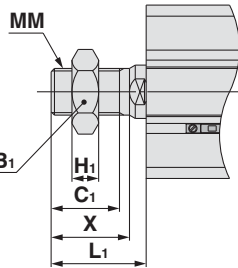


#### With Boss in Head Side (mm)

| Bore size (mm) | Th9                               |
|----------------|-----------------------------------|
| 32             | 21 <sup>0</sup> <sub>-0.052</sub> |
| 40             | 28 <sup>0</sup> <sub>-0.052</sub> |
| 50             | 35 <sup>0</sup> <sub>-0.052</sub> |

Note) With boss in rod side : Option (Suffix "-XC36" to the end of part number.)

#### Rod end male thread



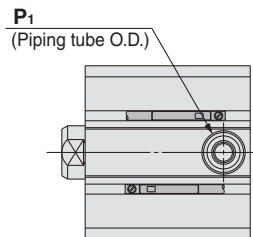
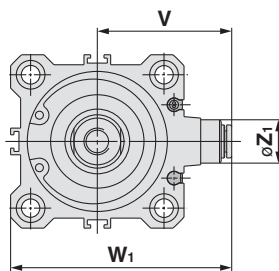
#### Rod End Male Thread (mm)

| Bore size (mm) | B <sub>1</sub> | C <sub>1</sub> | H <sub>1</sub> | L <sub>1</sub> | MM        | X    |
|----------------|----------------|----------------|----------------|----------------|-----------|------|
| 32             | 22             | 20.5           | 8              | 28.5           | M14 x 1.5 | 23.5 |
| 40             | 22             | 20.5           | 8              | 28.5           | M14 x 1.5 | 23.5 |
| 50             | 27             | 26             | 11             | 33.5           | M18 x 1.5 | 28.5 |



For the auto switch mounting position and its mounting height, refer to pages 760 to 766.

#### Built-in One-touch fittings: Ø32 to Ø50



#### Built-in One-touch Fittings (mm)

| Bore size (mm) | Z <sub>1</sub> | P <sub>1</sub> | V    | W <sub>1</sub> |
|----------------|----------------|----------------|------|----------------|
| 32             | 13             | 6              | 36.5 | 59             |
| 40             | 13             | 6              | 40.5 | 66.5           |
| 50             | 16             | 8              | 50   | 82             |

#### Basic Style

| Bore size (mm) | Without auto switch |      |      |      |      |      |     |      |      |          | With auto switch |      |      |      |      |      |      |      |      |     |
|----------------|---------------------|------|------|------|------|------|-----|------|------|----------|------------------|------|------|------|------|------|------|------|------|-----|
|                | A                   |      |      | B    |      |      | F   |      |      | P        |                  |      | A    |      |      | B    |      |      | F    | P   |
|                | 5st                 | 10st | 20st | 5st  | 10st | 20st | 5st | 10st | 20st | 5st      | 10st             | 20st | 5st  | 10st | 20st | 5st  | 10st | 20st |      |     |
| 32             | 35                  | 40   | —    | 28   | 33   | —    | 5.5 | 7.5  | —    | M5 x 0.8 | 1/8              | —    | 45   | 50   | —    | 38   | 43   | —    | 7.5  | 1/8 |
| 40             | 41.5                | 46.5 | —    | 34.5 | 39.5 | —    | 8   | 8    | —    | —        | 1/8              | —    | 51.5 | 56.5 | —    | 44.5 | 49.5 | —    | 8    | 1/8 |
| 50             | —                   | 48.5 | 58.5 | —    | 40.5 | 50.5 | —   | 10.5 | 10.5 | —        | —                | 1/4  | —    | 58.5 | 68.5 | —    | 50.5 | 60.5 | 10.5 | 1/4 |

| Bore size (mm) | C  | D  | E  | H         | I  | J   | K  | L | M  | N   | O          | S    | U    | W    | Z  |
|----------------|----|----|----|-----------|----|-----|----|---|----|-----|------------|------|------|------|----|
| 32             | 13 | 16 | 45 | M8 x 1.25 | 60 | 4.5 | 14 | 7 | 34 | 5.5 | 9 depth 7  | 58.5 | 31.5 | 49.5 | 14 |
| 40             | 13 | 16 | 52 | M8 x 1.25 | 69 | 5   | 14 | 7 | 40 | 5.5 | 9 depth 7  | 66   | 35   | 57   | 14 |
| 50             | 15 | 20 | 64 | M10 x 1.5 | 86 | 7   | 17 | 8 | 50 | 6.6 | 11 depth 8 | 80   | 41   | 71   | 19 |

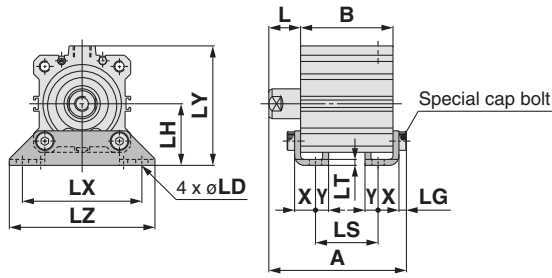


\* For details about the rod end nut and accessory brackets, refer to page 620.

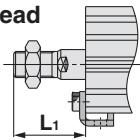


Note) A, B dimensions of Ø32-5 stroke with One-touch fitting without auto switch are the same dimensions as the stroke Ø32-10 without auto switch.

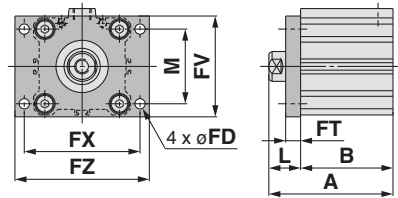
**Foot style: CQ2L/CDQ2L**



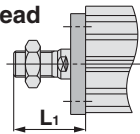
Rod end male thread



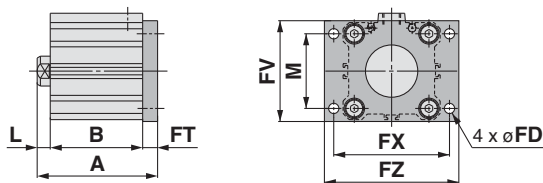
**Rod side flange style: CQ2F/CDQ2F**



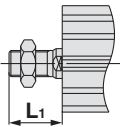
Rod end male thread



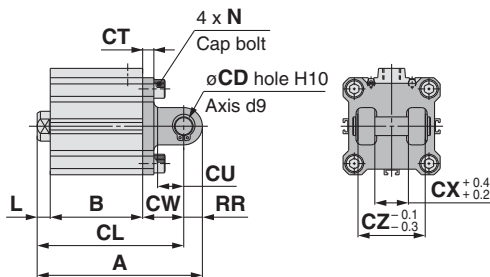
**Head side flange style: CQ2G/CDQ2G**



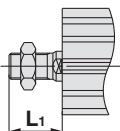
Rod end male thread



**Double clevis style: CQ2D/CDQ2D**



Rod end male thread



**Foot Style**

(mm)

| Bore size (mm) | Without auto switch |      |      |      |      |      |      |      |      | With auto switch |      |      |      |      |      |      |      |      |
|----------------|---------------------|------|------|------|------|------|------|------|------|------------------|------|------|------|------|------|------|------|------|
|                | A                   |      |      | B    |      |      | LS   |      |      | A                |      |      | B    |      |      | LS   |      |      |
|                | 5st                 | 10st | 20st | 5st  | 10st | 20st | 5st  | 10st | 20st | 5st              | 10st | 20st | 5st  | 10st | 20st | 5st  | 10st | 20st |
| 32             | 52.5                | 57.2 | —    | 28   | 33   | —    | 12   | 17   | —    | 62.2             | 67.2 | —    | 38   | 43   | —    | 22   | 27   | —    |
| 40             | 58.7                | 63.7 | —    | 34.5 | 39.5 | —    | 18.5 | 23.5 | —    | 68.7             | 73.7 | —    | 44.5 | 49.5 | —    | 28.5 | 33.5 | —    |
| 50             | —                   | 66.7 | 76.7 | —    | 40.5 | 50.5 | —    | 17.5 | 27.5 | —                | 76.7 | 86.7 | —    | 50.5 | 60.5 | —    | 27.5 | 37.5 |

| Bore size (mm) | L  | L <sub>1</sub> | LD  | LG | LH | LX | LY | LZ | X    | Y   |
|----------------|----|----------------|-----|----|----|----|----|----|------|-----|
| 32             | 17 | 38.5           | 6.6 | 4  | 30 | 57 | 57 | 71 | 11.2 | 5.8 |
| 40             | 17 | 38.5           | 6.6 | 4  | 33 | 64 | 64 | 78 | 11.2 | 7   |
| 50             | 18 | 43.5           | 9   | 5  | 39 | 79 | 78 | 95 | 14.7 | 8   |

Foot bracket material: Carbon steel  
Surface treatment: Nickel plated

**Rod Side Flange Style**

(mm)

| Bore size (mm) | Without auto switch |      |      |      |      |      | With auto switch |      |      |      |      |      |
|----------------|---------------------|------|------|------|------|------|------------------|------|------|------|------|------|
|                | A                   |      |      | B    |      |      | A                |      |      | B    |      |      |
|                | 5st                 | 10st | 20st | 5st  | 10st | 20st | 5st              | 10st | 20st | 5st  | 10st | 20st |
| 32             | 45                  | 50   | —    | 28   | 33   | —    | 55               | 60   | —    | 38   | 43   | —    |
| 40             | 51.5                | 56.5 | —    | 34.5 | 39.5 | —    | 61.5             | 66.5 | —    | 44.5 | 49.5 | —    |
| 50             | —                   | 58.5 | 68.5 | —    | 40.5 | 50.5 | —                | 68.5 | 78.5 | —    | 50.5 | 60.5 |

| Bore size (mm) | FD  | FT | FV | FX | FZ | L  | L <sub>1</sub> | M  |
|----------------|-----|----|----|----|----|----|----------------|----|
| 32             | 5.5 | 8  | 48 | 56 | 65 | 17 | 38.5           | 34 |
| 40             | 5.5 | 8  | 54 | 62 | 72 | 17 | 38.5           | 40 |
| 50             | 6.6 | 9  | 67 | 76 | 89 | 18 | 43.5           | 50 |

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Head Side Flange Style**

(mm) (\* Dimensions except A, L and L<sub>1</sub> are the same as rod side flange style.)

| Bore size (mm) | Without auto switch |      |      |      |      |      | With auto switch |                |
|----------------|---------------------|------|------|------|------|------|------------------|----------------|
|                | A                   |      |      | B    |      |      | L                | L <sub>1</sub> |
|                | 5st                 | 10st | 20st | 5st  | 10st | 20st |                  |                |
| 32             | 43                  | 48   | —    | 53   | 58   | —    | 7                | 28.5           |
| 40             | 49.5                | 54.5 | —    | 59.5 | 64.5 | —    | 7                | 28.5           |
| 50             | —                   | 57.5 | 67.5 | —    | 67.5 | 77.5 | 8                | 33.5           |

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Double Clevis Style**

(mm)

| Bore size (mm) | Without auto switch |      |       |      |      |      |      |      |      | With auto switch |       |       |      |      |      |      |      |      |
|----------------|---------------------|------|-------|------|------|------|------|------|------|------------------|-------|-------|------|------|------|------|------|------|
|                | A                   |      |       | B    |      |      | CL   |      |      | A                |       |       | B    |      |      | CL   |      |      |
|                | 5st                 | 10st | 20st  | 5st  | 10st | 20st | 5st  | 10st | 20st | 5st              | 10st  | 20st  | 5st  | 10st | 20st | 5st  | 10st | 20st |
| 32             | 65                  | 70   | —     | 28   | 33   | —    | 55   | 60   | —    | 75               | 80    | —     | 38   | 43   | —    | 65   | 70   | —    |
| 40             | 73.5                | 78.5 | —     | 39.5 | 39.5 | —    | 63.5 | 68.5 | —    | 83.5             | 88.5  | —     | 44.5 | 49.5 | —    | 73.5 | 78.5 | —    |
| 50             | —                   | 90.5 | 100.5 | —    | 40.5 | 50.5 | —    | 76.5 | 86.5 | —                | 100.5 | 110.5 | 50.5 | 50.5 | 60.5 | —    | 86.5 | 96.5 |

| Bore size (mm) | CD | CT | CUC | WC | CZ | L  | L <sub>1</sub> | N    | RR        |
|----------------|----|----|-----|----|----|----|----------------|------|-----------|
| 32             | 10 | 5  | 14  | 20 | 18 | 36 | 7              | 28.5 | M6 x 1.0  |
| 40             | 10 | 6  | 14  | 22 | 18 | 36 | 7              | 28.5 | M6 x 1.0  |
| 50             | 14 | 7  | 20  | 28 | 22 | 44 | 8              | 33.5 | M8 x 1.25 |

Double clevis bracket material: Cast iron  
Surface treatment: Painted



\* For details about the rod end nut and accessory brackets, refer to page 620.  
\*\* Double clevis pins and retaining rings are included.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

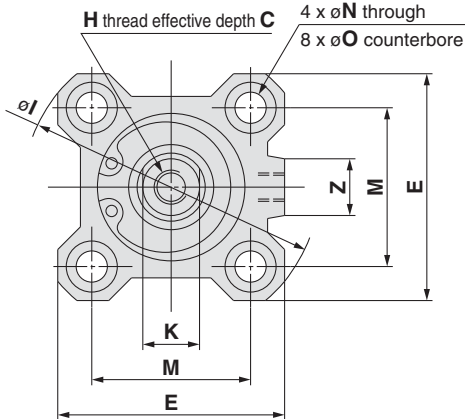
Technical data

# Series CQ2

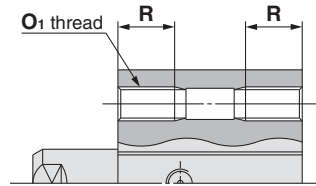
## Dimensions

### Ø12 to Ø25 / Spring Extend without Auto Switch

#### Basic style (Through-hole): CQ2B



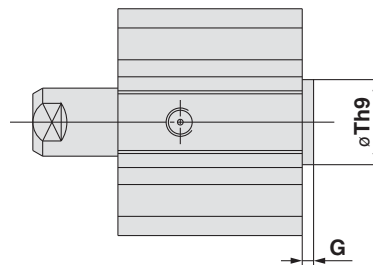
#### Both ends tapped style: CQ2A



#### Both Ends Tapped Style (mm)

| Bore size (mm) | Ø1       | 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 |

#### With boss in head side

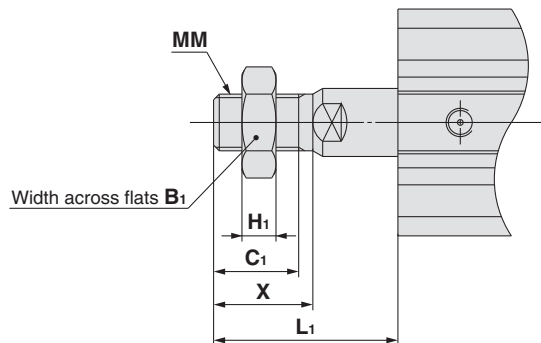


#### With Boss in Head Side (mm)

| Bore size (mm) | G   | Th9                               |
|----------------|-----|-----------------------------------|
| 12             | 1.5 | 15 <sup>0</sup> <sub>-0.043</sub> |
| 16             | 1.5 | 20 <sup>0</sup> <sub>-0.052</sub> |
| 20             | 2   | 13 <sup>0</sup> <sub>-0.043</sub> |
| 25             | 2   | 15 <sup>0</sup> <sub>-0.043</sub> |

Note) With boss in rod side : Option (Suffix "-XC36" to the end of part number.)

#### Rod end male thread



#### Rod End Male Thread (mm)

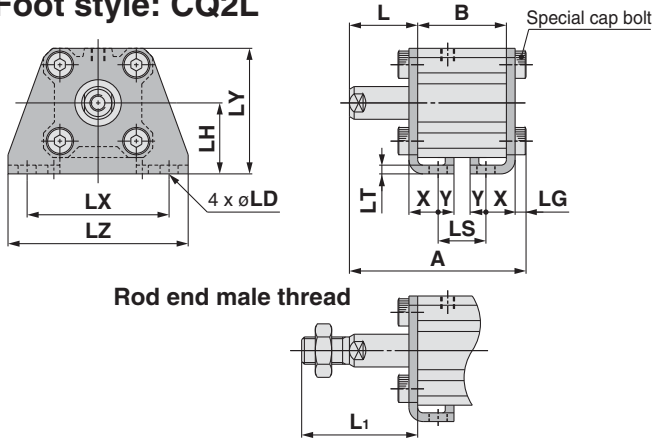
| Bore size (mm) | B1 | C1 | H1 | L1   |      | MM         | X    |
|----------------|----|----|----|------|------|------------|------|
|                |    |    |    | 5st  | 10st |            |      |
| 12             | 8  | 9  | 4  | 19   | 24   | M5 x 0.8   | 10.5 |
| 16             | 10 | 10 | 5  | 20.5 | 25.5 | M6 x 1.0   | 12   |
| 20             | 13 | 12 | 5  | 23.5 | 28.5 | M8 x 1.25  | 14   |
| 25             | 17 | 15 | 6  | 27.5 | 32.5 | M10 x 1.25 | 17.5 |

#### Basic Style

| Bore size (mm) | A    |      | B    |      | C  | D  | E  | H        | I  | K  | L   |      | M    | N   | O             | Q   | Z  |
|----------------|------|------|------|------|----|----|----|----------|----|----|-----|------|------|-----|---------------|-----|----|
|                | 5st  | 10st | 5st  | 10st |    |    |    |          |    |    | 5st | 10st |      |     |               |     |    |
| 12             | 30.5 | 40.5 | 22   | 27   | 6  | 6  | 25 | M3 x 0.5 | 32 | 5  | 8.5 | 13.5 | 15.5 | 3.5 | 6.5 depth 3.5 | 7.5 | —  |
| 16             | 32   | 42   | 23.5 | 28.5 | 8  | 8  | 29 | M4 x 0.7 | 38 | 6  | 8.5 | 13.5 | 20   | 3.5 | 6.5 depth 3.5 | 8   | 10 |
| 20             | 34   | 44   | 24.5 | 29.5 | 7  | 10 | 36 | M5 x 0.8 | 47 | 8  | 9.5 | 14.5 | 25.5 | 5.5 | 9 depth 7     | 9   | 10 |
| 25             | 37.5 | 47.5 | 27.5 | 32.5 | 12 | 12 | 40 | M6 x 1.0 | 52 | 10 | 10  | 15   | 28   | 5.5 | 9 depth 7     | 11  | 10 |

\* For details about the rod end nut and accessory brackets, refer to page 620.

**Foot style: CQ2L**



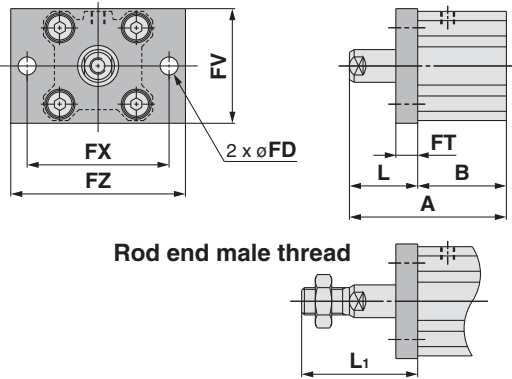
**Foot Style**

| Bore size (mm) | A    |      | B    |      | L    |      | L <sub>1</sub> |      | LD  | LG  | LH | LS   |      |
|----------------|------|------|------|------|------|------|----------------|------|-----|-----|----|------|------|
|                | 5st  | 10st | 5st  | 10st | 5st  | 10st | 5st            | 10st |     |     |    | 5st  | 10st |
| 12             | 45.3 | 55.3 | 22   | 27   | 18.5 | 23.5 | 29             | 34   | 4.5 | 2.8 | 17 | 10   | 15   |
| 16             | 46.8 | 56.8 | 23.5 | 28.5 | 18.5 | 23.5 | 30.5           | 35.5 | 4.5 | 2.8 | 19 | 11.5 | 16.5 |
| 20             | 51.2 | 61.2 | 24.5 | 29.5 | 19.5 | 24.5 | 33.5           | 38.5 | 6.6 | 4   | 24 | 12.5 | 17.5 |
| 25             | 54.7 | 64.7 | 27.5 | 32.5 | 20   | 25   | 37.5           | 42.5 | 6.6 | 4   | 26 | 12.5 | 17.5 |

| Bore size (mm) | LT  | LX | LY   | LZ | X    | Y   |
|----------------|-----|----|------|----|------|-----|
| 12             | 2   | 34 | 29.5 | 44 | 8    | 4.5 |
| 16             | 2   | 38 | 33.5 | 48 | 8    | 5   |
| 20             | 3.2 | 48 | 42   | 62 | 9.2  | 5.8 |
| 25             | 3.2 | 52 | 46   | 66 | 10.7 | 5.8 |

Foot bracket material: Carbon steel  
Surface treatment: Nickel plated

**Rod side flange style: CQ2F**

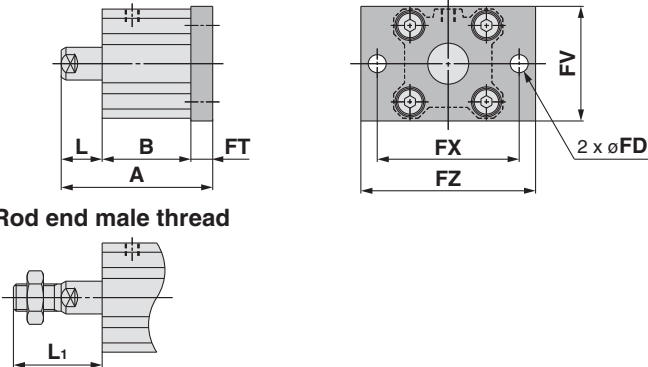


**Rod Side Flange Style**

| Bore size (mm) | A    |      | B    |      | FD  | FT  | FV | FX | FZ | L    |      | L <sub>1</sub> |      |
|----------------|------|------|------|------|-----|-----|----|----|----|------|------|----------------|------|
|                | 5st  | 10st | 5st  | 10st |     |     |    |    |    | 5st  | 10st | 5st            | 10st |
| 12             | 40.5 | 50.5 | 22   | 27   | 4.5 | 5.5 | 25 | 45 | 55 | 18.5 | 23.5 | 29             | 34   |
| 16             | 42   | 52   | 23.5 | 28.5 | 4.5 | 5.5 | 30 | 45 | 55 | 18.5 | 23.5 | 30.5           | 35.5 |
| 20             | 44   | 54   | 24.5 | 29.5 | 6.6 | 8   | 39 | 48 | 60 | 19.5 | 24.5 | 33.5           | 38.5 |
| 25             | 47.5 | 57.5 | 27.5 | 32.5 | 6.6 | 8   | 42 | 52 | 64 | 20   | 25   | 37.5           | 42.5 |

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Head side flange style: CQ2G**



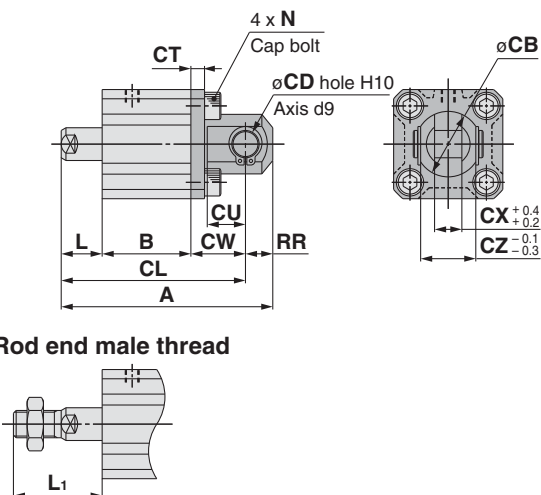
**Head Side Flange Style** (mm)

| Bore size (mm) | A    |      | L   |      | L <sub>1</sub> |      |
|----------------|------|------|-----|------|----------------|------|
|                | 5st  | 10st | 5st | 10st | 5st            | 10st |
| 12             | 36   | 46   | 8.5 | 13.5 | 19             | 24   |
| 16             | 37.5 | 47.5 | 8.5 | 13.5 | 20.5           | 25.5 |
| 20             | 42   | 52   | 9.5 | 14.5 | 23.5           | 28.5 |
| 25             | 45.5 | 55.5 | 10  | 15   | 27.5           | 32.5 |

(\* Dimensions except A, L and L<sub>1</sub> are the same as rod side flange style.)

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Double clevis style: CQ2D**



**Double Clevis Style**

| Bore size (mm) | A    |      | B    |      | CB | CD | CL   |      | CT | CU | CW | CX  | CZ |
|----------------|------|------|------|------|----|----|------|------|----|----|----|-----|----|
|                | 5st  | 10st | 5st  | 10st |    |    | 5st  | 10st |    |    |    |     |    |
| 12             | 50.5 | 60.5 | 22   | 27   | 12 | 5  | 44.5 | 54.5 | 4  | 7  | 14 | 5   | 10 |
| 16             | 53   | 63   | 23.5 | 28.5 | 14 | 5  | 47   | 57   | 4  | 10 | 15 | 6.5 | 12 |
| 20             | 61   | 71   | 24.5 | 29.5 | 20 | 8  | 52   | 62   | 5  | 12 | 18 | 8   | 16 |
| 25             | 67.5 | 77.5 | 27.5 | 32.5 | 24 | 10 | 57.5 | 67.5 | 5  | 14 | 20 | 10  | 20 |

Double clevis bracket material: Carbon steel  
Surface treatment: Nickel plated

| Bore size (mm) | L   |      | L <sub>1</sub> |      | N        | RR |
|----------------|-----|------|----------------|------|----------|----|
|                | 5st | 10st | 5st            | 10st |          |    |
| 12             | 8.5 | 13.5 | 19             | 24   | M4 x 0.7 | 6  |
| 16             | 8.5 | 13.5 | 20.5           | 25.5 | M4 x 0.7 | 6  |
| 20             | 9.5 | 14.5 | 23.5           | 28.5 | M6 x 1.0 | 9  |
| 25             | 10  | 15   | 27.5           | 32.5 | M6 x 1.0 | 10 |

\* For details about the rod end nut and accessory brackets, refer to page 620.  
\*\* Double clevis pins and retaining rings are included.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

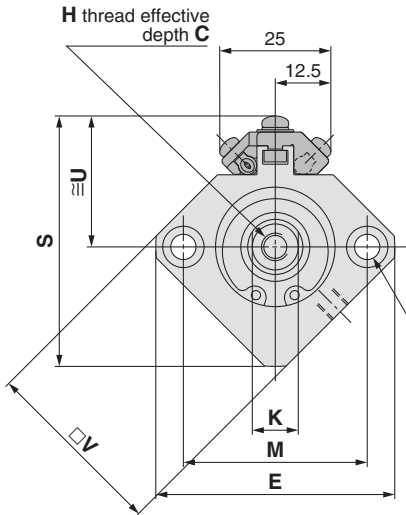
Technical data

# Series CQ2

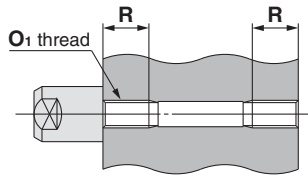
## Dimensions

### Ø12 to Ø25 / Spring Extend with Auto Switch

#### Basic style (Through-hole): CDQ2B

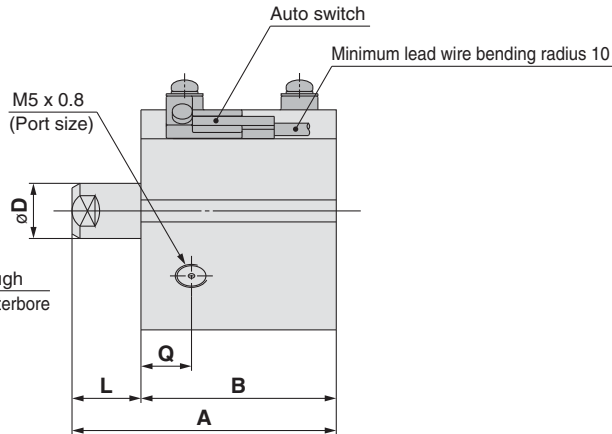


#### Both ends tapped style: CDQ2A

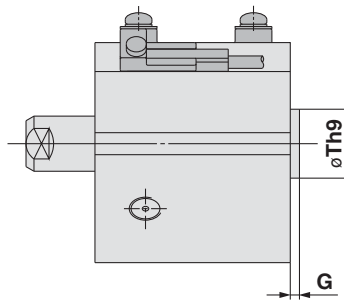


#### Both Ends Tapped Style (mm)

| 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 |



#### With boss in head side

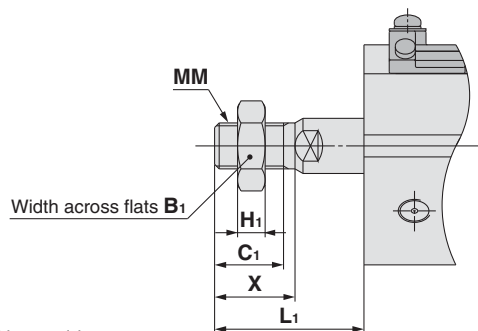


#### With Boss in Head Side (mm)

| Bore size (mm) | G   | Th9                               |
|----------------|-----|-----------------------------------|
| 12             | 1.5 | 15 <sup>0</sup> <sub>-0.043</sub> |
| 16             | 1.5 | 20 <sup>0</sup> <sub>-0.052</sub> |
| 20             | 2   | 13 <sup>0</sup> <sub>-0.043</sub> |
| 25             | 2   | 15 <sup>0</sup> <sub>-0.043</sub> |

Note) With boss in rod side : Option  
(Suffix "-XC36" to the end of part number.)

#### Rod end male thread



#### Rod End Male Thread (mm)

| Bore size (mm) | B <sub>1</sub> | C <sub>1</sub> | H <sub>1</sub> | L <sub>1</sub> |      | MM         | X    |
|----------------|----------------|----------------|----------------|----------------|------|------------|------|
|                |                |                |                | 5st            | 10st |            |      |
| 12             | 8              | 9              | 4              | 19             | 24   | M5 x 0.8   | 10.5 |
| 16             | 10             | 10             | 5              | 20.5           | 25.5 | M6 x 1.0   | 12   |
| 20             | 13             | 12             | 5              | 23.5           | 28.5 | M8 x 1.25  | 14   |
| 25             | 17             | 15             | 6              | 27.5           | 32.5 | M10 x 1.25 | 17.5 |



For the auto switch mounting position and its mounting height, refer to pages 760 to 766.

#### Basic Style

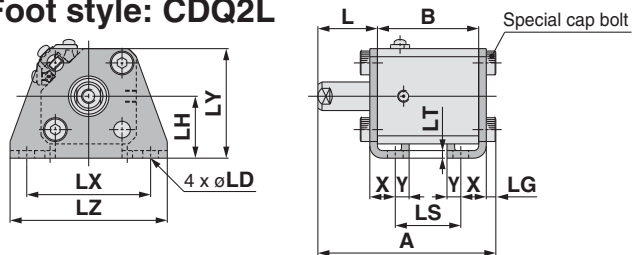
| Bore size (mm) | (mm) |      |      |      |    |    |    |          |    |     |      |    |     |               |      |      |      |    |
|----------------|------|------|------|------|----|----|----|----------|----|-----|------|----|-----|---------------|------|------|------|----|
|                | A    |      | B    |      | C  | D  | E  | H        | K  | L   |      | M  | N   | O             | Q    | S    | U    | V  |
|                | 5st  | 10st | 5st  | 10st |    |    |    |          |    | 5st | 10st |    |     |               |      |      |      |    |
| 12             | 45.9 | 55.9 | 37.4 | 42.4 | 6  | 6  | 32 | M3 x 0.5 | 5  | 8.5 | 13.5 | 22 | 3.5 | 6.5 depth 3.5 | 11   | 35.5 | 19.5 | 25 |
| 16             | 44   | 54   | 35.5 | 40.5 | 8  | 8  | 38 | M4 x 0.7 | 6  | 8.5 | 13.5 | 28 | 3.5 | 6.5 depth 3.5 | 10   | 41.5 | 22.5 | 29 |
| 20             | 46   | 56   | 36.5 | 41.5 | 7  | 10 | 47 | M5 x 0.8 | 8  | 9.5 | 14.5 | 36 | 5.5 | 9 depth 7     | 10.5 | 48   | 24.5 | 36 |
| 25             | 47.5 | 57.5 | 37.5 | 42.5 | 12 | 12 | 52 | M6 x 1.0 | 10 | 10  | 15   | 40 | 5.5 | 9 depth 7     | 11   | 53.5 | 27.5 | 40 |



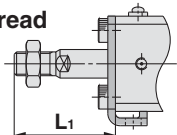
\* For details about the rod end nut and accessory brackets, refer to page 620.



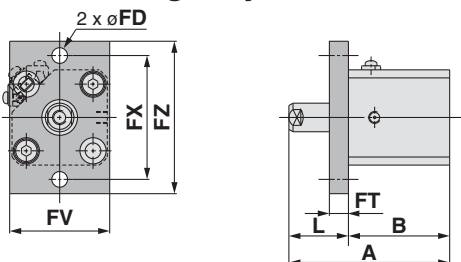
**Foot style: CDQ2L**



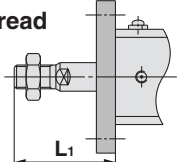
Rod end male thread



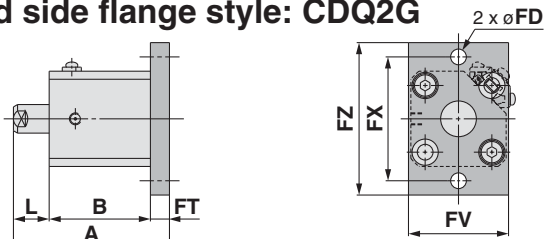
**Rod side flange style: CDQ2F**



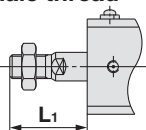
Rod end male thread



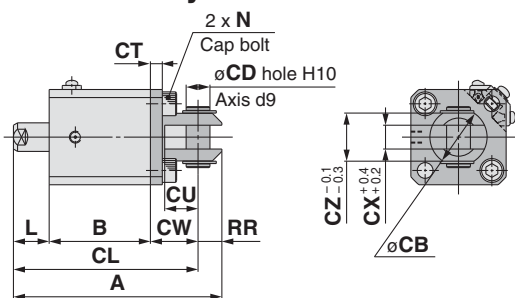
**Head side flange style: CDQ2G**



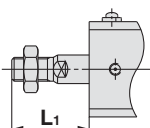
Rod end male thread



**Double clevis style: CDQ2D**



Rod end male thread



**Foot Style**

| Bore size (mm) | A    |      | B    |      | L    |      | L <sub>1</sub> |      | LD  | LG  | LH | LS   |      |
|----------------|------|------|------|------|------|------|----------------|------|-----|-----|----|------|------|
|                | 5st  | 10st | 5st  | 10st | 5st  | 10st | 5st            | 10st |     |     |    | 5st  | 10st |
| 12             | 60.7 | 70.7 | 37.4 | 42.4 | 18.5 | 23.5 | 29             | 34   | 4.5 | 2.8 | 17 | 25.4 | 30.4 |
| 16             | 58.8 | 68.8 | 35.5 | 40.5 | 18.5 | 23.5 | 30.5           | 35.5 | 4.5 | 2.8 | 19 | 23.5 | 28.5 |
| 20             | 63.2 | 73.2 | 36.5 | 41.5 | 19.5 | 24.5 | 33.5           | 38.5 | 6.6 | 4   | 24 | 24.5 | 29.5 |
| 25             | 64.7 | 74.7 | 37.5 | 42.5 | 20   | 25   | 37.5           | 42.5 | 6.6 | 4   | 26 | 22.5 | 27.5 |

| Bore size (mm) | LT  | LX | LY   | LZ | X    | Y   |
|----------------|-----|----|------|----|------|-----|
| 12             | 2   | 34 | 29.5 | 44 | 8    | 4.5 |
| 16             | 2   | 38 | 33.5 | 48 | 8    | 5   |
| 20             | 3.2 | 48 | 42   | 62 | 9.2  | 5.8 |
| 25             | 3.2 | 52 | 46   | 66 | 10.7 | 5.8 |

Foot bracket material: Carbon steel  
Surface treatment: Nickel plated

**Rod Side Flange Style**

| Bore size (mm) | A    |      | B    |      | FD  | FT  | FV | FX | FZ | L    |      | L <sub>1</sub> |      |
|----------------|------|------|------|------|-----|-----|----|----|----|------|------|----------------|------|
|                | 5st  | 10st | 5st  | 10st |     |     |    |    |    | 5st  | 10st | 5st            | 10st |
| 12             | 55.9 | 65.9 | 37.4 | 42.4 | 4.5 | 5.5 | 25 | 45 | 55 | 18.5 | 23.5 | 29             | 34   |
| 16             | 54   | 64   | 35.5 | 40.5 | 4.5 | 5.5 | 30 | 45 | 55 | 18.5 | 23.5 | 30.5           | 35.5 |
| 20             | 56   | 66   | 36.5 | 41.5 | 6.6 | 8   | 39 | 48 | 60 | 19.5 | 24.5 | 33.5           | 38.5 |
| 25             | 57.5 | 67.5 | 37.5 | 42.5 | 6.6 | 8   | 42 | 52 | 64 | 20   | 25   | 37.5           | 42.5 |

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Head Side Flange Style** (mm)

| Bore size (mm) | A    |      | L   |      | L <sub>1</sub> |      |
|----------------|------|------|-----|------|----------------|------|
|                | 5st  | 10st | 5st | 10st | 5st            | 10st |
| 12             | 51.4 | 61.4 | 8.5 | 13.5 | 19             | 24   |
| 16             | 49.5 | 59.5 | 8.5 | 13.5 | 20.5           | 25.5 |
| 20             | 54   | 64   | 9.5 | 14.5 | 23.5           | 28.5 |
| 25             | 55.5 | 65.5 | 10  | 15   | 27.5           | 32.5 |

(\* Dimensions except A, L and L<sub>1</sub> are the same as rod side flange style.)

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Double Clevis Style**

| Bore size (mm) | A    |      | B    |      | CB | CD | CL   |      | CT | CU | CW | CX  | CZ |
|----------------|------|------|------|------|----|----|------|------|----|----|----|-----|----|
|                | 5st  | 10st | 5st  | 10st |    |    | 5st  | 10st |    |    |    |     |    |
| 12             | 65.9 | 75.9 | 37.4 | 42.4 | 12 | 5  | 59.9 | 69.9 | 4  | 7  | 14 | 5   | 10 |
| 16             | 65   | 75   | 35.5 | 40.5 | 14 | 5  | 59   | 69   | 4  | 10 | 15 | 6.5 | 12 |
| 20             | 73   | 83   | 36.5 | 41.5 | 20 | 8  | 64   | 74   | 5  | 12 | 18 | 8   | 16 |
| 25             | 77.5 | 87.5 | 37.5 | 42.5 | 24 | 10 | 67.5 | 77.5 | 5  | 14 | 20 | 10  | 20 |

Double clevis bracket material: Carbon steel  
Surface treatment: Nickel plated

| Bore size (mm) | L   |      | L <sub>1</sub> |      | N        | RR |
|----------------|-----|------|----------------|------|----------|----|
|                | 5st | 10st | 5st            | 10st |          |    |
| 12             | 8.5 | 13.5 | 19             | 24   | M4 x 0.7 | 6  |
| 16             | 8.5 | 13.5 | 20.5           | 25.5 | M4 x 0.7 | 6  |
| 20             | 9.5 | 14.5 | 23.5           | 28.5 | M6 x 1.0 | 9  |
| 25             | 10  | 15   | 27.5           | 32.5 | M6 x 1.0 | 10 |

\* For details about the rod end nut and accessory brackets, refer to page 620.  
\*\* Double clevis pins and retaining rings are included.

CUJ

CU

CQS

**CQ2**

RQ

CQM

MU

D-□

-X□

Individual  
-X□

Technical  
data

# Series CQ2

## Dimensions

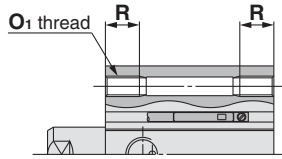
### Ø32 to Ø50/Spring Extend with Auto Switch



(In the case of without auto switches, A, B, P and Q dimensions will be only changed. Refer to the dimension chart.)

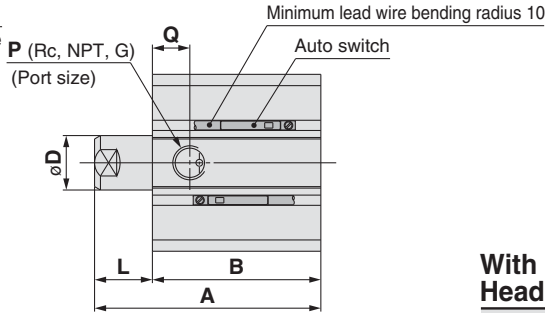
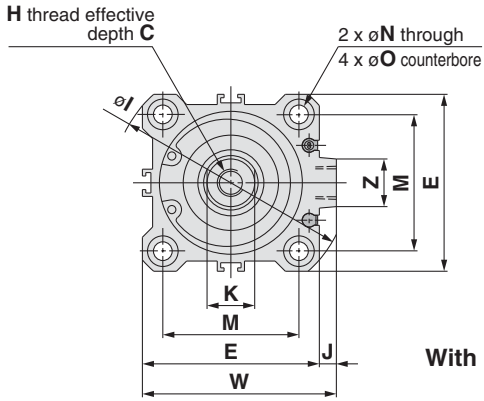
#### Both ends tapped style: CQ2A/CDQ2A

#### Basic style (Through-hole): CQ2B/CDQ2B

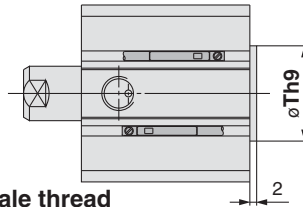


#### Both Ends Tapped Style (mm)

| Bore size (mm) | O1        | R  |
|----------------|-----------|----|
| 32             | M6 x 1.0  | 10 |
| 40             | M6 x 1.0  | 10 |
| 50             | M8 x 1.25 | 14 |



#### With boss in head side

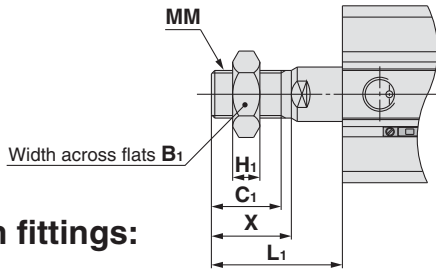


#### With Boss in Head Side (mm)

| Bore size (mm) | Th9                               |
|----------------|-----------------------------------|
| 32             | 21 <sup>0</sup> <sub>-0.052</sub> |
| 40             | 28 <sup>0</sup> <sub>-0.052</sub> |
| 50             | 35 <sup>0</sup> <sub>-0.052</sub> |

Note) With boss in rod side : Option (Suffix "-XC36" to the end of part number.)

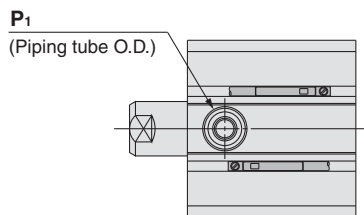
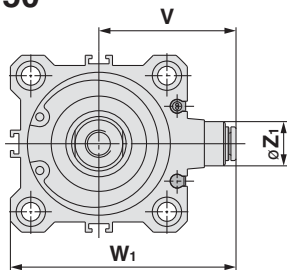
#### Rod end male thread



#### Rod End Male Thread (mm)

| Bore size (mm) | B1 | C1   | H1 | L1   |      |      | MM        | X    |
|----------------|----|------|----|------|------|------|-----------|------|
|                |    |      |    | 5st  | 10st | 20st |           |      |
| 32             | 22 | 20.5 | 8  | 33.5 | 38.5 | —    | M14 x 1.5 | 23.5 |
| 40             | 22 | 20.5 | 8  | 33.5 | 38.5 | —    | M14 x 1.5 | 23.5 |
| 50             | 27 | 26   | 11 | —    | 43.5 | 53.5 | M18 x 1.5 | 28.5 |

#### Built-in One-touch fittings: Ø32 to Ø50



#### Built-in One-touch Fittings (mm)

| Bore size (mm) | Z1 | P1 | V    | W1   |
|----------------|----|----|------|------|
| 32             | 13 | 6  | 36.5 | 59   |
| 40             | 13 | 6  | 40.5 | 66.5 |
| 50             | 16 | 8  | 50   | 82   |



For the auto switch mounting position and its mounting height, refer to pages 760 to 766.

#### Basic Style

(mm)

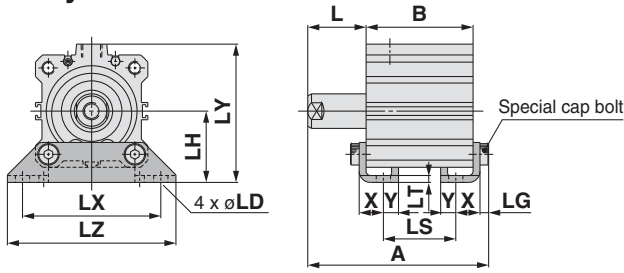
| Bore size (mm) | Without auto switch |      |      |      |      |      |          |      |     |      |      |     | With auto switch |      |     |      |      |   |     |      |
|----------------|---------------------|------|------|------|------|------|----------|------|-----|------|------|-----|------------------|------|-----|------|------|---|-----|------|
|                | A                   |      |      | B    |      |      | P        |      |     | Q    |      |     | A                |      |     | B    |      |   | P   | Q    |
| 5st            | 10st                | 20st | 5st  | 10st | 20st | 5st  | 10st     | 20st | 5st | 10st | 20st | 5st | 10st             | 20st | 5st | 10st | 20st |   |     |      |
| 32             | 40                  | 50   | —    | 28   | 33   | —    | M5 x 0.8 | 1/8  | —   | 11.5 | 10.5 | —   | 50               | 60   | —   | 38   | 43   | — | 1/8 | 10.5 |
| 40             | 46.5                | 56.5 | —    | 34.5 | 39.5 | —    | 1/8      | —    | —   | 11   | 11   | —   | 56.5             | 66.5 | —   | 44.5 | 49.5 | — | 1/8 | 11   |
| 50             | —                   | 68.5 | 78.5 | —    | 40.5 | 50.5 | —        | 1/4  | —   | 10.5 | 10.5 | —   | 68.5             | 88.5 | —   | 50.5 | 60.5 | — | 1/4 | 10.5 |

| Bore size (mm) | C  | D  | E  | H         | I  | J   | K  | L   |      |      | M  | N   | O          | S    | U    | W    | Z  |
|----------------|----|----|----|-----------|----|-----|----|-----|------|------|----|-----|------------|------|------|------|----|
|                |    |    |    |           |    |     |    | 5st | 10st | 20st |    |     |            |      |      |      |    |
| 32             | 13 | 16 | 45 | M8 x 1.25 | 60 | 4.5 | 14 | 12  | 17   | —    | 34 | 5.5 | 9 depth 7  | 58.5 | 31.5 | 49.5 | 14 |
| 40             | 13 | 16 | 52 | M8 x 1.25 | 69 | 5   | 14 | 12  | 17   | —    | 40 | 5.5 | 9 depth 7  | 66   | 35   | 57   | 14 |
| 50             | 15 | 20 | 64 | M10 x 1.5 | 86 | 7   | 17 | —   | 18   | 28   | 50 | 6.6 | 11 depth 8 | 80   | 41   | 71   | 19 |

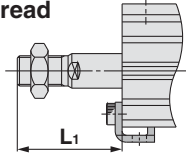


\* For details about the rod end nut and accessory brackets, refer to page 620.

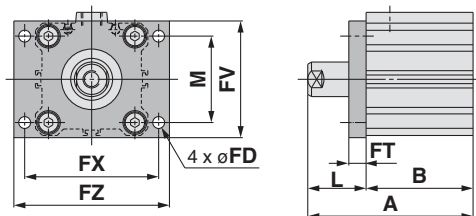
**Foot style: CQ2L/CDQ2L**



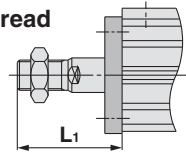
Rod end male thread



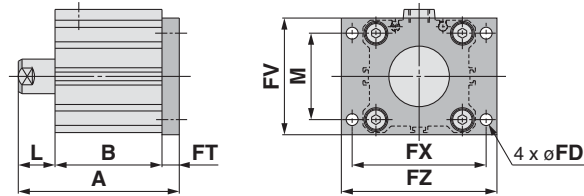
**Rod side flange style: CQ2F/CDQ2F**



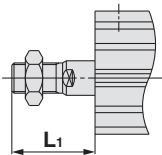
Rod end male thread



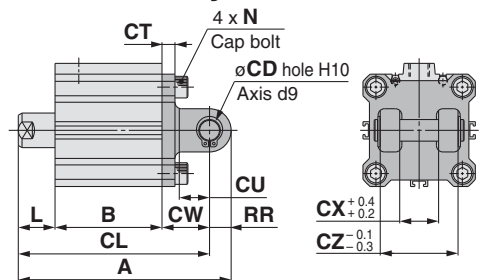
**Head side flange style: CQ2G/CDQ2G**



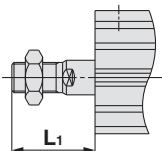
Rod end male thread



**Double clevis style: CQ2D/CDQ2D**



Rod end male thread



**Foot Style**

(mm)

| Bore size (mm) | Without auto switch |      |      |      |      |      |      |      |      | With auto switch |      |       |      |      |      |      |      |      |
|----------------|---------------------|------|------|------|------|------|------|------|------|------------------|------|-------|------|------|------|------|------|------|
|                | A                   |      |      | B    |      |      | LS   |      |      | A                |      |       | B    |      |      | LS   |      |      |
|                | 5st                 | 10st | 20st | 5st  | 10st | 20st | 5st  | 10st | 20st | 5st              | 10st | 20st  | 5st  | 10st | 20st | 5st  | 10st | 20st |
| 32             | 57.2                | 67.2 | —    | 28   | 33   | —    | 12   | 17   | —    | 67.2             | 77.2 | —     | 38   | 43   | —    | 22   | 27   | —    |
| 40             | 63.7                | 73.7 | —    | 34.5 | 39.5 | —    | 18.5 | 23.5 | —    | 73.7             | 83.7 | —     | 44.5 | 49.5 | —    | 28.5 | 33.5 | —    |
| 50             | —                   | 76.7 | 96.7 | —    | 40.5 | 50.5 | —    | 17.5 | 27.5 | —                | 86.7 | 106.7 | —    | 50.5 | 60.5 | —    | 27.5 | 37.5 |

| Bore size (mm) | L   |      |      | L1   |      |      | LD  | LG | LH | LX | LY | LZ | X    | Y   |
|----------------|-----|------|------|------|------|------|-----|----|----|----|----|----|------|-----|
|                | 5st | 10st | 20st | 5st  | 10st | 20st |     |    |    |    |    |    |      |     |
| 32             | 22  | 27   | —    | 43.5 | 48.5 | —    | 6.6 | 4  | 30 | 57 | 57 | 71 | 11.2 | 5.8 |
| 40             | 22  | 27   | —    | 43.5 | 48.5 | —    | 6.6 | 4  | 33 | 64 | 64 | 78 | 11.2 | 7   |
| 50             | —   | 28   | 38   | —    | 53.5 | 63.5 | 9   | 5  | 39 | 79 | 78 | 95 | 14.7 | 8   |

Foot bracket material: Carbon steel  
Surface treatment: Nickel plated

**Rod Side Flange Style**

(mm)

| Bore size (mm) | Without auto switch |      |      |      |      |      | With auto switch |      |      |      |      |      | FD  | FT   | FV   | FX  | FZ   |      |
|----------------|---------------------|------|------|------|------|------|------------------|------|------|------|------|------|-----|------|------|-----|------|------|
|                | A                   |      |      | B    |      |      | A                |      |      | B    |      |      |     |      |      |     |      |      |
|                | 5st                 | 10st | 20st | 5st  | 10st | 20st | 5st              | 10st | 20st | 5st  | 10st | 20st | 5st | 10st | 20st | 5st | 10st | 20st |
| 32             | 50                  | 60   | —    | 28   | 33   | —    | 60               | 70   | —    | 38   | 43   | —    | 5.5 | 8    | 45   | 56  | 65   | —    |
| 40             | 56.5                | 66.5 | —    | 34.5 | 39.5 | —    | 66.5             | 76.5 | —    | 44.5 | 49.5 | —    | 5.5 | 8    | 54   | 62  | 72   | —    |
| 50             | —                   | 68.5 | 88.5 | —    | 40.5 | 50.5 | —                | 78.5 | 98.5 | —    | 50.5 | 60.5 | 6.6 | 9    | 67   | 76  | 89   | —    |

| Bore size (mm) | L   |      |      | L1   |      |      | M  |
|----------------|-----|------|------|------|------|------|----|
|                | 5st | 10st | 20st | 5st  | 10st | 20st |    |
| 32             | 22  | 27   | —    | 43.5 | 48.5 | —    | 34 |
| 40             | 22  | 27   | —    | 43.5 | 48.5 | —    | 40 |
| 50             | —   | 28   | 38   | —    | 53.5 | 63.5 | 50 |

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Head Side Flange Style**

(mm)

| Bore size (mm) | Without auto switch |      |      | With auto switch |      |      | L   |      |      | L1   |      |      |
|----------------|---------------------|------|------|------------------|------|------|-----|------|------|------|------|------|
|                | A                   |      |      | B                |      |      | 5st | 10st | 20st | 5st  | 10st | 20st |
| 32             | 48                  | 58   | —    | 58               | 68   | —    | 12  | 17   | —    | 33.5 | 38.5 | —    |
| 40             | 45.5                | 64.5 | —    | 64.5             | 74.5 | —    | 12  | 17   | —    | 33.5 | 38.5 | —    |
| 50             | —                   | 67.5 | 87.5 | —                | 77.5 | 97.5 | —   | 18   | 28   | —    | 43.5 | 53.5 |

(\* Dimensions except A, L and L1 are the same as rod side flange style.)

Flange bracket material: Carbon steel  
Surface treatment: Nickel plated

**Double Clevis Style**

(mm)

| Bore size (mm) | Without auto switch |       |       |      |      |      |      |      |       | With auto switch |       |       |      |      |      |      |      |       |
|----------------|---------------------|-------|-------|------|------|------|------|------|-------|------------------|-------|-------|------|------|------|------|------|-------|
|                | A                   |       |       | B    |      |      | CL   |      |       | A                |       |       | B    |      |      | CL   |      |       |
|                | 5st                 | 10st  | 20st  | 5st  | 10st | 20st | 5st  | 10st | 20st  | 5st              | 10st  | 20st  | 5st  | 10st | 20st | 5st  | 10st | 20st  |
| 32             | 70                  | 80    | —     | 28   | 33   | —    | 60   | 70   | —     | 80               | 90    | —     | 38   | 43   | —    | 70   | 80   | —     |
| 40             | 78.5                | 88.5  | —     | 34.5 | 39.5 | —    | 68.5 | 78.5 | —     | 88.5             | 98.5  | —     | 44.5 | 49.5 | —    | 78.5 | 88.5 | —     |
| 50             | —                   | 100.5 | 120.5 | —    | 40.5 | 50.5 | —    | 86.5 | 106.5 | —                | 110.5 | 130.5 | —    | 50.5 | 60.5 | —    | 96.5 | 116.5 |

| Bore size (mm) | CD | CT | CU | CW | CX | CZ | L   |      |      | L1   |      |      |
|----------------|----|----|----|----|----|----|-----|------|------|------|------|------|
|                |    |    |    |    |    |    | 5st | 10st | 20st | 5st  | 10st | 20st |
| 32             | 10 | 5  | 14 | 20 | 18 | 36 | 12  | 17   | —    | 33.5 | 38.5 | —    |
| 40             | 10 | 6  | 14 | 22 | 18 | 36 | 12  | 17   | —    | 33.5 | 38.5 | —    |
| 50             | 14 | 7  | 20 | 28 | 22 | 44 | —   | 18   | 28   | —    | 43.5 | 53.5 |

Double clevis bracket material: Cast iron  
Surface treatment: Painted



\* For details about the rod end nut and accessory brackets, refer to page 620.  
\*\* Double clevis pins and retaining rings are included.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual -X□

Technical data

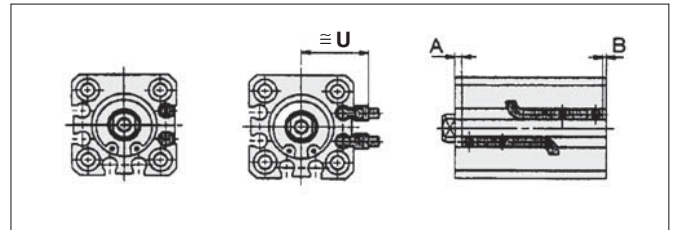
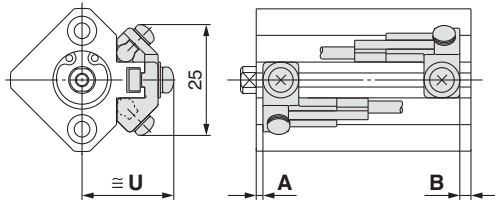
# Compact Cylinder/*Series CQ2* With Auto Switch 1

## 1 Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

Applicable cylinder series: CDQ2, CDQ2W, CDQ2□□□-□S/□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQP2, CDQP2□□□-□S/□T (Axial piping), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDBQ2 (End lock), CDQ2□R/□V (Water resistant)

D-A9□  
D-M9□  
D-M9□W  
D-M9□AL  
D-A9□V  
D-M9□V  
D-M9□WV  
D-M9□AVL

∅12 to ∅25

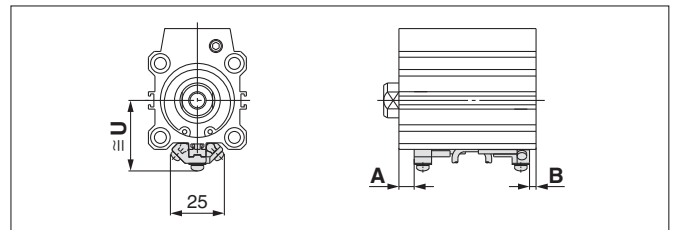
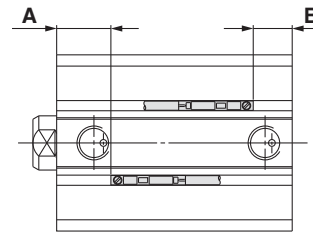
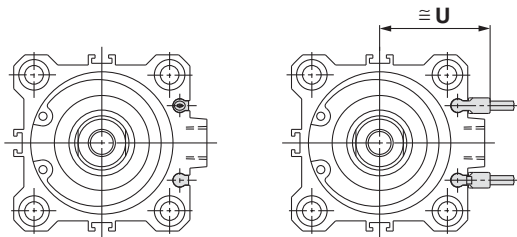


CDBQ2 (End lock, ∅20, ∅25)

∅32 to ∅100

D-A9□  
D-M9□  
D-M9□W  
D-M9□AL

D-A9□V  
D-M9□V  
D-M9□WV  
D-M9□AVL



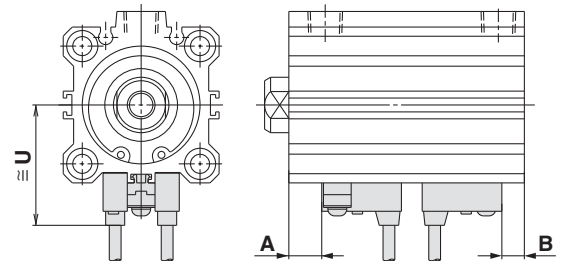
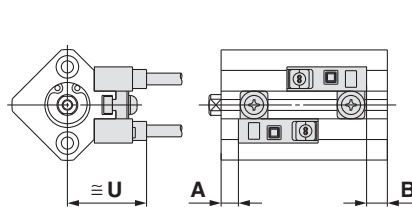
CDQP2, CDQP2□□□-□S/□T (∅32 to ∅100)

D-A7□  
D-A80  
D-A7□H  
D-A80H  
D-F7□  
D-J79  
D-F7□W  
D-J79W  
D-F79F

D-F7NTL  
D-F7BAL  
D-A73C  
D-A80C  
D-J79C  
D-A79W  
D-F7□WV  
D-J7□V  
D-F7BAVL

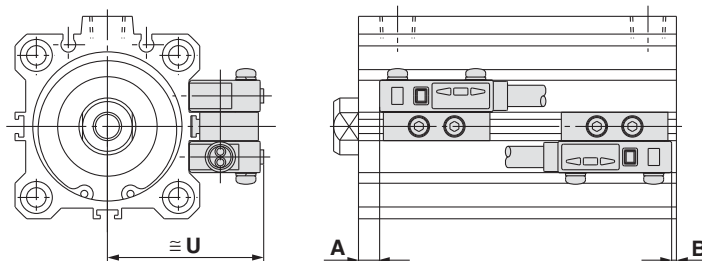
∅12 to ∅25

∅32 to ∅100



D-P4DWL

∅40 to ∅100



**Proper Auto Switch Mounting Position**

**Applicable Cylinder Series: CDQ2 (Double acting, Single rod)**

(mm)

| Auto switch model<br>Bore size | D-A9□<br>D-A9□V |      | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL |      | D-A73<br>D-A80 |      | D-A72/A7□H/A80H<br>D-A73C/A80C/F7□<br>D-F79F/J79/F7□V<br>D-J79C/F7□W<br>D-J79W/F7□WV<br>D-F7BAVL/F7BAL |      | D-F7NTL |      | D-A79W |      | D-P4DWL |      |
|--------------------------------|-----------------|------|---|------|----------------|------|--|------|---------|------|--------|------|---------|------|
|                                | A               | B    | A   | B    | A              | B    | A  | B    | A       | B    | A      | B    | A       | B    |
| 12                             | 2               | 3    | 6   | 7    | 4.5            | 5.5  | 5  | 6    | 10      | 11   | 2      | 3    | —       | —    |
| 16                             | 5               | 2.5  | 9   | 6.5  | 7.5            | 5    | 8  | 5.5  | 13      | 10.5 | 5      | 2.5  | —       | —    |
| 20                             | 5               | 3.5  | 9   | 7.5  | 7.5            | 6.5  | 8  | 7    | 13      | 12   | 5      | 4    | —       | —    |
| 25                             | 5.5             | 4    | 9.5   | 8    | 7.5            | 7    | 8  | 7.5  | 13      | 12.5 | 5      | 4.5  | —       | —    |
| 32                             | 8               | 5    | 12  | 9    | 9              | 6    | 9.5  | 6.5  | 14.5    | 11.5 | 6.5    | 3.5  | —       | —    |
| 40                             | 12              | 7.5  | 16  | 11.5 | 13             | 8.5  | 13.5   | 9    | 18.5    | 14   | 10.5   | 6    | 9       | 4.5  |
| 50                             | 10              | 10.5 | 14  | 14.5 | 11             | 11.5 | 11.5   | 12   | 16.5    | 17   | 8.5    | 9    | 7       | 7.5  |
| 63                             | 12.5            | 13.5 | 16.5  | 17.5 | 13.5           | 14.5 | 14   | 15   | 19      | 20   | 11     | 12   | 9.5     | 10.5 |
| 80                             | 16.5            | 17   | 20.5  | 21   | 17.5           | 18   | 18   | 18.5 | 23      | 23.5 | 15     | 15.5 | 13.5    | 14   |
| 100                            | 20              | 23   | 24  | 27   | 21             | 24   | 21.5   | 24.5 | 26.5    | 29.5 | 18.5   | 21.5 | 17      | 20   |

**Applicable Cylinder Series: CDQ2W (Double acting, Double rod)**

(mm)

| Auto switch model<br>Bore size | D-A9□<br>D-A9□V |      | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL |      | D-A73<br>D-A80 |      | D-A72/A7□H/A80H<br>D-A73C/A80C/F7□<br>D-F79F/J79/F7□V<br>D-J79C/F7□W<br>D-J79W/F7□WV<br>D-F7BAVL/F7BAL |      | D-F7NTL |      | D-A79W |      | D-P4DWL |      |
|--------------------------------|-----------------|------|---|------|----------------|------|--|------|---------|------|--------|------|---------|------|
|                                | A               | B    | A   | B    | A              | B    | A  | B    | A       | B    | A      | B    | A       | B    |
| 12                             | 2               | 7    | 6   | 11   | 4.5            | 10   | 5  | 10.5 | 10      | 15.5 | 2      | 7.5  | —       | —    |
| 16                             | 5               | 8    | 9   | 12   | 7.5            | 10.5 | 8  | 11   | 13      | 16   | 5      | 8    | —       | —    |
| 20                             | 5               | 10   | 9   | 14   | 7.5            | 13   | 8  | 13.5 | 13      | 18.5 | 5      | 10.5 | —       | —    |
| 25                             | 5.5             | 10.5 | 9.5   | 14.5 | 7.5            | 13   | 8  | 13.5 | 13      | 18.5 | 5      | 10.5 | —       | —    |
| 32                             | 8               | 12.5 | 12  | 16.5 | 9              | 13.5 | 9.5  | 14   | 14.5    | 19   | 6.5    | 11   | —       | —    |
| 40                             | 12              | 18   | 16  | 22   | 13             | 19   | 13.5   | 19.5 | 18.5    | 24.5 | 10.5   | 16.5 | 9       | 15   |
| 50                             | 10              | 20.5 | 14  | 24.5 | 11             | 21.5 | 11.5   | 22   | 16.5    | 27   | 8.5    | 19   | 7       | 17.5 |
| 63                             | 12.5            | 19.5 | 16.5  | 23.5 | 13.5           | 20.5 | 14   | 21   | 19      | 26   | 11     | 18   | 9.5     | 16.5 |
| 80                             | 16.5            | 28   | 20.5  | 32   | 17.5           | 29   | 18   | 29.5 | 23      | 34.5 | 15     | 26.5 | 13.5    | 25   |
| 100                            | 20              | 30.5 | 24  | 34.5 | 21             | 31.5 | 21.5   | 32   | 26.5    | 37   | 18.5   | 29   | 17      | 27.5 |

CUJ

CU

CQS

CQ2

RQ

CQM

MU

**Applicable Cylinder Series: CDQ2□□□□□S/□T (Single acting)**

(mm)

| Auto switch model<br>Bore size | D-A9□<br>D-A9□V |              | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL |              | D-A73<br>D-A80 |             | D-A72/A7□H/A80H<br>D-A73C/A80C/F7□<br>D-F79F/J79/F7□V<br>D-J79C/F7□W<br>D-J79W/F7□WV<br>D-F7BAVL/F7BAL |              | D-F7NTL    |                | D-A79W   |              |
|--------------------------------|-----------------|--------------|---|--------------|----------------|-------------|--|--------------|------------|----------------|----------|--------------|
|                                | A               | B            | A   | B            | A              | B           | A  | B            | A          | B              | A        | B            |
| 12                             | 2               | 3<br>(7.5)   | 6   | 7<br>(11.5)  | 4.5            | 5.5<br>(10) | 5  | 6<br>(10.5)  | 10         | 11<br>(15.5)   | 2        | 3<br>(7.5)   |
| 16                             | 5<br>(3)        | 2.5<br>(4.5) | 9<br>(7)  | 6.5<br>(8.5) | 7.5<br>(5.5)   | 5<br>(7)    | 8<br>(6)   | 5.5<br>(7.5) | 13<br>(11) | 10.5<br>(12.5) | 5<br>(3) | 2.5<br>(4.5) |
| 20                             | 5               | 3.5          | 9   | 7.5          | 7.5            | 6.5         | 8  | 7            | 13         | 12             | 5        | 4            |
| 25                             | 5.5             | 4            | 9.5   | 8            | 7.5            | 7           | 8  | 7.5          | 13         | 12.5           | 5        | 4.5          |
| 32                             | 8               | 5            | 12  | 9            | 9              | 6           | 9.5  | 6.5          | 14.5       | 11.5           | 6.5      | 3.5          |
| 40                             | 12              | 7.5          | 16  | 11.5         | 13             | 8.5         | 13.5   | 9            | 18.5       | 14             | 10.5     | 6            |
| 50                             | 10              | 10.5         | 14  | 14.5         | 11             | 11.5        | 11.5   | 12           | 16.5       | 17             | 8.5      | 9            |

( ) : For the spring extend type

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

D-□

-X□

Individual  
-X□

Technical  
data

# Compact Cylinder/*Series CQ2* With Auto Switch 2

## 1 Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

### Proper Auto Switch Mounting Position

#### Applicable Cylinder Series: CDQ2K (Non-rotating)

(mm)

| Auto switch model<br>Bore size | D-A9□<br>D-A9□V |      | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL |      | D-A73<br>D-A80 |      | D-A72/A7□H/A80H<br>D-A73C/A80C/F7□<br>D-F79F/J79/F7□V<br>D-J79C/F7□W<br>D-J79W/F7□WV<br>D-F7BAVL/F7BAL |     | D-F7NTL |      | D-A79W |     | D-P4DWL |      |
|--------------------------------|-----------------|------|---|------|----------------|------|--|-----|---------|------|--------|-----|---------|------|
|                                | A               | B    | A   | B    | A              | B    | A  | B   | A       | B    | A      | B   | A       | B    |
| 12                             | 7               | 3    | 11  | 7    | 9.5            | 5.5  | 10   | 6   | 15      | 11   | 7      | 3   | —       | —    |
| 16                             | 10              | 2.5  | 14  | 6.5  | 12.5           | 5    | 13   | 5.5 | 18      | 10.5 | 10     | 2.5 | —       | —    |
| 20                             | 13              | 3.5  | 17  | 7.5  | 15.5           | 6.5  | 16   | 7   | 21      | 12   | 13     | 4   | —       | —    |
| 25                             | 13.5            | 4    | 17.5  | 8    | 15.5           | 7    | 16   | 7.5 | 21      | 12.5 | 13     | 4.5 | —       | —    |
| 32                             | 17              | 5    | 21  | 9    | 18             | 6    | 18.5   | 6.5 | 23.5    | 11.5 | 15.5   | 3.5 | —       | —    |
| 40                             | 12              | 7.5  | 16  | 11.5 | 13             | 8.5  | 13.5   | 9   | 18.5    | 14   | 10.5   | 6   | 9       | 4.5  |
| 50                             | 10              | 10.5 | 14  | 14.5 | 11             | 11.5 | 11.5   | 12  | 16.5    | 17   | 8.5    | 9   | 7       | 7.5  |
| 63                             | 12.5            | 13.5 | 16.5  | 17.5 | 13.5           | 14.5 | 14   | 15  | 19      | 20   | 11     | 12  | 9.5     | 10.5 |

#### Applicable Cylinder Series: CDQ2KW

(mm)

| Auto switch model<br>Bore size | D-A9□<br>D-A9□V |      | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL |      | D-A73<br>D-A80 |      | D-A72/A7□H/A80H<br>D-A73C/A80C/F7□<br>D-F79F/J79/F7□V<br>D-J79C/F7□W<br>D-J79W/F7□WV<br>D-F7BAVL/F7BAL |      | D-F7NTL |      | D-A79W |      | D-P4DWL |      |
|--------------------------------|-----------------|------|---|------|----------------|------|--|------|---------|------|--------|------|---------|------|
|                                | A               | B    | A   | B    | A              | B    | A  | B    | A       | B    | A      | B    | A       | B    |
| 12                             | 7.5             | 7    | 11.5  | 11   | 9.5            | 10   | 10   | 10.5 | 15      | 15.5 | 7      | 7.5  | —       | —    |
| 16                             | 10              | 8    | 14  | 12   | 12.5           | 10.5 | 13   | 11   | 18      | 16   | 10     | 8    | —       | —    |
| 20                             | 13              | 10   | 17  | 14   | 15.5           | 13   | 16   | 13.5 | 21      | 18.5 | 13     | 10.5 | —       | —    |
| 25                             | 13.5            | 10.5 | 17.5  | 14.5 | 15.5           | 13   | 16   | 13.5 | 21      | 18.5 | 13     | 10.5 | —       | —    |
| 32                             | 17              | 12.5 | 21  | 16.5 | 18             | 13.5 | 18.5   | 14   | 23.5    | 19   | 15.5   | 11   | —       | —    |
| 40                             | 12              | 18   | 16  | 22   | 13             | 19   | 13.5   | 19.5 | 18.5    | 24.5 | 10.5   | 16.5 | 9       | 15   |
| 50                             | 10              | 20.5 | 14  | 24.5 | 11             | 21.5 | 11.5   | 22   | 16.5    | 27   | 8.5    | 19   | 7       | 17.5 |
| 63                             | 12.5            | 19.5 | 16.5  | 23.5 | 13.5           | 20.5 | 14   | 21   | 19      | 26   | 11     | 18   | 9.5     | 16.5 |

#### Applicable Cylinder Series: CDQP2 (Axial piping)

(mm)

| Auto switch model<br>Bore size | D-A9□<br>D-A9□V |      | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL |      | D-A73<br>D-A80 |      | D-A72/A7□H/A80H<br>D-A73C/A80C/F7□<br>D-F79F/J79/F7□V<br>D-J79C/F7□W<br>D-J79W/F7□WV<br>D-F7BAVL/F7BAL |      | D-F7NTL |      | D-A79W |      | D-P4DWL |      |
|--------------------------------|-----------------|------|---|------|----------------|------|--|------|---------|------|--------|------|---------|------|
|                                | A               | B    | A   | B    | A              | B    | A  | B    | A       | B    | A      | B    | A       | B    |
| 12                             | 2               | 3    | 6   | 7    | 4.5            | 5.5  | 5  | 6    | 10      | 11   | 2      | 3    | —       | —    |
| 16                             | 5               | 2.5  | 9   | 6.5  | 7.5            | 5    | 8  | 5.5  | 13      | 10.5 | 5      | 2.5  | —       | —    |
| 20                             | 5               | 3.5  | 9   | 7.5  | 7.5            | 6.5  | 8  | 7    | 13      | 12   | 5      | 4    | —       | —    |
| 25                             | 5.5             | 4    | 9.5   | 8    | 7.5            | 7    | 8  | 7.5  | 13      | 12.5 | 5      | 4.5  | —       | —    |
| 32                             | 6.5             | 3.5  | 10.5  | 7.5  | 9              | 6    | 9.5  | 6.5  | 14.5    | 11.5 | 6.5    | 3.5  | —       | —    |
| 40                             | 10.5            | 6    | 14.5  | 10   | 13             | 8.5  | 13.5   | 9    | 18.5    | 14   | 10.5   | 6    | 9       | 4.5  |
| 50                             | 8.5             | 9    | 12.5  | 13   | 11             | 11.5 | 11.5   | 12   | 16.5    | 17   | 8.5    | 9    | 7       | 7.5  |
| 63                             | 11              | 12   | 15  | 16   | 13.5           | 14.5 | 14   | 15   | 19      | 20   | 11     | 12   | 9.5     | 10.5 |
| 80                             | 14              | 16.5 | 18  | 20.5 | 17.5           | 18   | 18   | 18.5 | 23      | 23.5 | 15     | 15.5 | 13.5    | 14   |
| 100                            | 18.5            | 21.5 | 22.5  | 25.5 | 21             | 24   | 21.5   | 24.5 | 26.5    | 29.5 | 18.5   | 21.5 | 17      | 20   |

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

**Applicable Cylinder Series: CDQP2□□□-□S/□T (Axial piping, Single acting)** (mm)

| Auto switch model<br>Bore size | D-A9□<br>D-A9□V |              | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL |              | D-A73<br>D-A80 |             | D-A72/A7□H/A80H<br>D-A73C/A80C/F7□<br>D-F79F/J79/F7□V<br>D-J79C/F7□W<br>D-J79W/F7□WV<br>D-F7BAVL/F7BAL |              | D-F7NTL    |                | D-A79W   |              |
|--------------------------------|-----------------|--------------|---|--------------|----------------|-------------|--|--------------|------------|----------------|----------|--------------|
|                                | A               | B            | A   | B            | A              | B           | A  | B            | A          | B              | A        | B            |
| 12                             | 2               | 3<br>(7)     | 6   | 7<br>(11)    | 4.5            | 5.5<br>(10) | 5  | 6<br>(10.5)  | 10         | 11<br>(15.5)   | 2        | 3<br>(7.5)   |
| 16                             | 5<br>(3)        | 2.5<br>(4.5) | 9<br>(7)  | 6.5<br>(8.5) | 7.5<br>(5.5)   | 5<br>(7)    | 8<br>(6)   | 5.5<br>(7.5) | 13<br>(11) | 10.5<br>(12.5) | 5<br>(3) | 2.5<br>(4.5) |
| 20                             | 5               | 3.5          | 9   | 7.5          | 7.5            | 6.5         | 8  | 7            | 13         | 12             | 5        | 4            |
| 25                             | 5.5             | 4            | 9.5   | 8            | 7.5            | 7           | 8  | 7.5          | 13         | 12.5           | 5        | 4.5          |
| 32                             | 6.5             | 3.5          | 10.5  | 7.5          | 9              | 6           | 9.5  | 6.5          | 14.5       | 11.5           | 6.5      | 3.5          |
| 40                             | 10.5            | 6            | 14.5  | 10           | 13             | 8.5         | 13.5   | 9            | 18.5       | 14             | 10.5     | 6            |
| 50                             | 8.5             | 9            | 12.5  | 13           | 11             | 11.5        | 11.5   | 12           | 16.5       | 17             | 8.5      | 9            |

( ) : For the spring extend type

**Applicable Cylinder Series: CDQ2 (Long stroke)** (mm)

| Auto switch model<br>Bore size | D-A9□<br>D-A9□V |      | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL |      | D-A73<br>D-A80 |      | D-A72/A7□H/A80H<br>D-A73C/A80C/F7□<br>D-F79F/J79/F7□V<br>D-J79C/F7□W<br>D-J79W/F7□WV<br>D-F7BAVL/F7BAL |      | D-F7NTL |      | D-A79W |      | D-P4DWL |      |
|--------------------------------|-----------------|------|---|------|----------------|------|--|------|---------|------|--------|------|---------|------|
|                                | A               | B    | A   | B    | A              | B    | A  | B    | A       | B    | A      | B    | A       | B    |
| 32                             | 8.5             | 16.5 | 12.5  | 20.5 | 9.5            | 17.5 | 10   | 18   | 15      | 23   | 7      | 15   | —       | —    |
| 40                             | 12              | 22.5 | 16  | 26.5 | 13             | 23.5 | 13.5   | 24   | 18.5    | 29   | 10.5   | 21   | 9       | 19.5 |
| 50                             | 10              | 23   | 14  | 27   | 11             | 24   | 11.5   | 24.5 | 16.5    | 29.5 | 8.5    | 21.5 | 7       | 20   |
| 63                             | 12.5            | 24.5 | 16.5  | 28.5 | 13.5           | 25.5 | 14   | 26   | 19      | 31   | 11     | 23   | 9.5     | 21.5 |
| 80                             | 15.5            | 30.5 | 19.5  | 34.5 | 16.5           | 31.5 | 17   | 32   | 22      | 37   | 14     | 29   | 12.5    | 29.5 |
| 100                            | 18.5            | 37   | 22.5  | 41   | 19.5           | 38   | 20   | 38.5 | 25      | 43.5 | 17     | 35.5 | 15.5    | 34   |

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**Applicable Cylinder Series: CDQ2□S (Anti-lateral load)** (mm)

| Auto switch model<br>Bore size | D-A9□<br>D-A9□V |      | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL |      | D-A73<br>D-A80 |      | D-A72/A7□H/A80H<br>D-A73C/A80C/F7□<br>D-F79F/J79/F7□V<br>D-J79C/F7□W<br>D-J79W/F7□WV<br>D-F7BAVL/F7BAL |      | D-F7NTL |      | D-A79W |      | D-P4DWL |      |
|--------------------------------|-----------------|------|---|------|----------------|------|--|------|---------|------|--------|------|---------|------|
|                                | A               | B    | A   | B    | A              | B    | A  | B    | A       | B    | A      | B    | A       | B    |
| 32                             | 14              | 9    | 18  | 13   | 15             | 10   | 15.5   | 10.5 | 20.5    | 15.5 | 12.5   | 7.5  | —       | —    |
| 40                             | 17.5            | 12   | 21.5  | 16   | 18.5           | 13   | 19   | 13.5 | 24      | 18.5 | 16     | 10.5 | 14.5    | 9    |
| 50                             | 15              | 15.5 | 19  | 19.5 | 16             | 16.5 | 16.5   | 17   | 21.5    | 22   | 13.5   | 14   | 12      | 12.5 |
| 63                             | 17.5            | 18.5 | 21.5  | 22.5 | 18.5           | 19.5 | 19   | 20   | 24      | 25   | 16     | 17   | 14.5    | 15.5 |
| 80                             | 20.5            | 23   | 24.5  | 27   | 21.5           | 24   | 22   | 24.5 | 27      | 29.5 | 19     | 21.5 | 17.5    | 20   |
| 100                            | 23.5            | 29.5 | 27.5  | 33.5 | 24.5           | 30.5 | 25   | 31   | 30      | 36   | 22     | 28   | 20.5    | 26.5 |

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

D-□

-X□

Individual  
-X□

Technical  
data

# Compact Cylinder/*series CQ2* With Auto Switch 3

## 1 Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

### Auto Switch Mounting Height

#### Applicable Cylinder Series: CDBQ2 (End lock)

(mm)

| Auto switch model<br>Bore size | D-A7□<br>D-A80 |                | D-A7□H/A80H<br>D-A73C/A80C<br>D-F7□/J79/J79W<br>D-F7□V/J79C<br>D-F7□W/F7□WV<br>D-F7BAL/F7BAVL<br>D-F79F |                | D-A79W         |                | D-A9□<br>D-A9□V |                | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL |                | D-P4DWL        |                |
|--------------------------------|----------------|----------------|---|----------------|----------------|----------------|-----------------|----------------|---|----------------|----------------|----------------|
|                                | A              | B              | A   | B              | A              | B              | A               | B              | A   | B              | A              | B              |
| 20 (Head end lock)             | —              | —              | —   | —              | —              | —              | 6<br>(11)       | 35<br>(35)     | 10<br>(15)  | 39<br>(39)     | —              | —              |
| 20 (Rod end lock)              | —              | —              | —   | —              | —              | —              | 31.5<br>(34)    | 3<br>(12)      | 35.5<br>(38)  | 7<br>(16)      | —              | —              |
| 25 (Head end lock)             | —              | —              | —   | —              | —              | —              | 8<br>(10)       | 37<br>(39)     | 12<br>(14)  | 41<br>(43)     | —              | —              |
| 25 (Rod end lock)              | —              | —              | —   | —              | —              | —              | 32<br>(35)      | 5.5<br>(14)    | 36<br>(39)  | 9.5<br>(18)    | —              | —              |
| 32 (Head end lock)             | 9              | 38.5           | 9.5   | 39             | 6.5            | 36             | 8               | 37.5           | 12  | 41.5           | —              | —              |
| 32 (Rod end lock)              | 36             | 4              | 36.5  | 4.5            | 33.5           | 1.5            | 35              | 3              | 39  | 7              | —              | —              |
| 40 (Head end lock)             | 13             | 44             | 13.5  | 44.5           | 10.5           | 41.5           | 12              | 43             | 16  | 47             | 9              | 40             |
| 40 (Rod end lock)              | 42             | 4.5            | 42.5  | 5              | 39.5           | 2              | 41              | 3.5            | 45  | 7.5            | 38             | 0.5            |
| 50 (Head end lock)             | 11             | 46.5           | 11.5  | 47             | 8.5            | 44             | 10              | 45.5           | 14  | 49.5           | 7              | 42.5           |
| 50 (Rod end lock)              | 41.5           | 6              | 42  | 6.5            | 39             | 3.5            | 40.5            | 5              | 44.5  | 9              | 37.5           | 2              |
| 63 (Head end lock)             | 13.5           | 45.5           | 14  | 46             | 11             | 43             | 12.5            | 44.5           | 16.5  | 48.5           | 9.5            | 41.5           |
| 63 (Rod end lock)              | 45.5           | 7.5            | 46  | 8              | 43             | 5              | 44.5            | 6.5            | 48.5  | 10.5           | 41.5           | 3.5            |
| 80 (Head end lock)             | 16.5<br>(21.5) | 76.5<br>(76.5) | 17<br>(22)  | 77<br>(77)     | 14<br>(19)     | 74<br>(74)     | 15.5<br>(20.5)  | 75.5<br>(75.5) | 19.5<br>(24.5)  | 79.5<br>(79.5) | 12.5<br>(17.5) | 72.5<br>(72.5) |
| 80 (Rod end lock)              | 66.5<br>(66.5) | 19<br>(31.5)   | 67<br>(67)  | 19.5<br>(32)   | 64<br>(64)     | 16.5<br>(29)   | 65.5<br>(65.5)  | 18<br>(30.5)   | 69.5<br>(69.5)  | 22<br>(34.5)   | 62.5<br>(62.5) | 15<br>(27.5)   |
| 100 (Head end lock)            | 21<br>(26)     | 81.5<br>(81.5) | 21.5<br>(26.5)  | 82<br>(82)     | 18.5<br>(23.5) | 79<br>(79)     | 20<br>(25)      | 80.5<br>(80.5) | 24<br>(29)  | 84.5<br>(84.5) | 17<br>(22)     | 77.5<br>(77.5) |
| 100 (Rod end lock)             | 71<br>(69.5)   | 24<br>(38)     | 71.5<br>(70)  | 24.5<br>(38.5) | 68.5<br>(67)   | 21.5<br>(35.5) | 70<br>(68.5)    | 23<br>(37)     | 74<br>(72.5)  | 27<br>(41)     | 67<br>(65.5)   | 20<br>(34)     |

Note) Dimensions in parentheses for ø20 and ø25 are for 50, 75 and 100 strokes, and dimensions in parentheses for ø80 and ø100 are for 75 and 100 strokes.

#### Applicable Cylinder Series: CDQ2□R/□V (Water resistant) (mm)

| Auto switch model<br>Bore size | D-M9□AL<br>D-M9□AVL |      | D-F7BAL<br>D-F7BAVL |      |
|--------------------------------|---------------------|------|---------------------|------|
|                                | A                   | B    | A                   | B    |
| 20                             | 19                  | 7.5  | 18                  | 7    |
| 25                             | 19.5                | 8    | 18                  | 7.5  |
| 32                             | 22                  | 9    | 19.5                | 6.5  |
| 40                             | 16                  | 11.5 | 13.5                | 9    |
| 50                             | 14                  | 14.5 | 11.5                | 12   |
| 63                             | 16.5                | 17.5 | 14                  | 15   |
| 80                             | 20.5                | 21   | 18                  | 18.5 |
| 100                            | 24                  | 27   | 21.5                | 24.5 |

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.



**Applicable Cylinder Series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDQ2□R/□V (Water resistant)** (mm)

| Auto switch model | D-A9□V | D-M9□V<br>D-M9□WV<br>D-M9□AVL | D-A7□<br>D-A80 | D-A7□H<br>A80H<br>D-F7□<br>D-J79<br>D-F7□W<br>D-J79W<br>D-F7BAL<br>D-F79F<br>D-F7NTL | D-A73C<br>D-A80C | D-F7□V<br>D-F7□WV<br>D-F7BAVL | D-J79C | D-A79W | D-P4DWL |
|-------------------|--------|-------------------------------|----------------|--|------------------|-------------------------------|--------|--------|---------|
|                   | U      | U                             | U              | U  | U                | U                             | U      | U      | U       |
| 12                | 20.5   | 20.5                          | 19.5           | 20.5   | 26.5             | 23                            | 26     | 22     | —       |
| 16                | 23.5   | 23.5                          | 22.5           | 23.5   | 29.5             | 26                            | 29     | 25     | —       |
| 20                | 25.5   | 25.5                          | 24.5           | 25.5   | 31.5             | 28                            | 31     | 27     | —       |
| 25                | 28.5   | 28.5                          | 27.5           | 28.5   | 34.5             | 31                            | 34     | 30     | —       |
| 32                | 27     | 29                            | 31.5           | 32.5   | 38.5             | 35                            | 38     | 34     | —       |
| 40                | 30.5   | 32.5                          | 35             | 36   | 42               | 38.5                          | 41.5   | 37.5   | 44      |
| 50                | 36.5   | 38.5                          | 41             | 42   | 48               | 44.5                          | 47.5   | 43.5   | 50      |
| 63                | 40     | 42                            | 47.5           | 48.5   | 54.5             | 51                            | 54     | 50     | 56.5    |
| 80                | 50     | 52                            | 57.5           | 58.5   | 64.5             | 61                            | 64     | 60     | 66.5    |
| 100               | 60     | 62                            | 67.5           | 68.5   | 74.5             | 71                            | 74     | 70     | 76.5    |

\* Except for a bore size over ø32 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types, the values above are measured when the conventional switch installation groove is attached without using the auto switch mounting bracket BQ2-012.

\* The auto switch mounting height when BQ2-012 is used is the same as CDQP2 (axial piping) shown below.

\* The applicable auto switches for CDQ2□R/□V (water resistant) are D-M9□A(V)L and F7BA(V)L.

**Applicable Cylinder Series: CDQP2, CDQP2□□□-□S/-□T (Axial piping)** (mm)

| Auto switch model | D-A9□<br>D-A9□V<br>D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL | D-A7□<br>D-A80 | D-A7□H<br>D-A80H<br>D-F7□<br>D-J79<br>D-F7□W<br>D-J79W<br>D-F7BAL<br>D-F79F<br>D-F7NTL | D-A73C<br>D-A80C | D-F7□V<br>D-F7□WV<br>D-F7BAVL | D-J79C | D-A79W | D-P4DWL |
|-------------------|--|----------------|--|------------------|-------------------------------|--------|--------|---------|
|                   | U  | U              | U  | U                | U                             | U      | U      | U       |
| 12                | 20.5   | 19.5           | 20.5   | 26.5             | 23                            | 26     | 22     | —       |
| 16                | 23.5   | 22.5           | 23.5   | 29.5             | 26                            | 29     | 25     | —       |
| 20                | 25.5   | 24.5           | 25.5   | 31.5             | 28                            | 31     | 27     | —       |
| 25                | 28.5   | 27.5           | 28.5   | 34.5             | 31                            | 34     | 30     | —       |
| 32                | 32.5   | 31.5           | 32.5   | 38.5             | 35                            | 38     | 34     | —       |
| 40                | 36   | 35             | 36   | 42               | 38.5                          | 41.5   | 37.5   | 44      |
| 50                | 42   | 41             | 42   | 48               | 44.5                          | 47.5   | 43.5   | 50      |
| 63                | 48.5   | 47.5           | 48.5   | 54.5             | 51                            | 54     | 50     | 56.5    |
| 80                | 58.5   | 57.5           | 58.5   | 64.5             | 61                            | 64     | 60     | 66.5    |
| 100               | 68.5   | 67.5           | 68.5   | 74.5             | 71                            | 74     | 70     | 76.5    |

**Applicable Cylinder Series: CDBQ2 (End lock)** (mm)

| Auto switch model | D-A7□<br>D-A80 | D-A7□H<br>D-A80H/J79W<br>D-F7□/F7BAL<br>D-J79/F79F<br>D-F7□W/F7NTL | D-A73C<br>D-A80C | D-F7□V<br>D-F7□WV<br>D-F7BAVL | D-J79C | D-A79W | D-A9□V | D-M9□V<br>D-M9□WV<br>D-M9□AVL | D-P4DWL |
|-------------------|----------------|--|------------------|-------------------------------|--------|--------|--------|-------------------------------|---------|
|                   | U              | U  | U                | U                             | U      | U      | U      | U                             | U       |
| 20                | —              | —  | —                | —                             | —      | —      | 22.5   | 24.5                          | —       |
| 25                | —              | —  | —                | —                             | —      | —      | 24.5   | 26.5                          | —       |
| 32                | 31.5           | 32.5   | 38.5             | 35                            | 38     | 34     | 27     | 29                            | —       |
| 40                | 35             | 36   | 42               | 38.5                          | 41.5   | 37.5   | 30.5   | 32.5                          | 44      |
| 50                | 41             | 42   | 48               | 44.5                          | 47.5   | 43.5   | 36.5   | 38.5                          | 50      |
| 63                | 47.5           | 48.5   | 54.5             | 51                            | 54     | 50     | 40     | 42                            | 56.5    |
| 80                | 57.5           | 58.5   | 64.5             | 61                            | 64     | 60     | 50     | 52                            | 66.5    |
| 100               | 67.5           | 68.5   | 74.5             | 71                            | 74     | 70     | 60     | 62                            | 76.5    |

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual  
-X□

Technical  
data

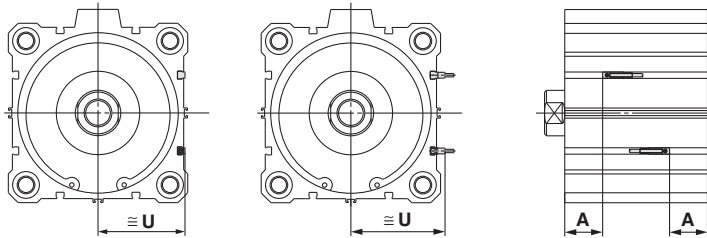
# Compact Cylinder/*Series CQ2* With Auto Switch 4

## 1 Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

Applicable cylinder series: CDQ2, CDQ2W (Large bore size)

D-A9□  
D-M9□  
D-M9□W  
D-M9□AL

D-A9□V  
D-M9□V  
D-M9□WV  
D-M9□AVL



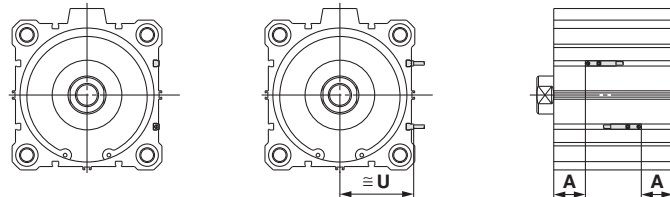
D-A7□  
D-A80  
D-A7□H  
D-A80H  
D-F7□  
D-J79  
D-F7□W  
D-J79W  
D-F79F

D-F7NTL  
D-F7BAL  
D-A73C  
D-A80C  
D-J79C  
D-A79W  
D-F7□WV  
D-F7□V  
D-F7BAVL



D-Z7□  
D-Z80  
D-Y59□  
D-Y7P  
D-Y7□W  
D-Y7BAL

D-Y69□  
D-Y7PV  
D-Y7□WV



### Proper Auto Switch Mounting Position

| Auto switch model | Bore size       |   |                |  |        |         |   |
|-------------------|-----------------|---|----------------|--|--------|---------|---|
|                   | D-A9□<br>D-A9□V | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL | D-A73<br>D-A80 | D-A727□H/A80H<br>D-A73C/A80C<br>D-F7□/F7□V<br>D-F79F/F7□W<br>D-F7□WV/J79<br>D-J79W/J79C<br>D-F7BAL<br>D-F7BAVL | D-A79W | D-F7NTL | D-Z7□/Z80<br>D-Y59□/Y69□<br>D-Y7P/Y7PV<br>D-Y7□W/Y7□WV<br>D-Y7BAL |
| Bore size         | A               | A   | A              | A  | A      | A       | A   |
| 125               | 30              | 34  | 32.5           | 33   | 30     | 38      | 29  |
| 140               | 30              | 34  | 32.5           | 33   | 30     | 38      | 29  |
| 160               | 34              | 38  | 36.5           | 37   | 34     | 42      | 33  |
| 180               | 40.5            | 44.5  | —              | —  | —      | —       | 38.5  |
| 200               | 43.5            | 47.5  | —              | —  | —      | —       | 42  |

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

### Auto Switch Mounting Height

| Auto switch model | Bore size                           |                               |                                       |                |   |                  |                               |        |        |  |
|-------------------|-------------------------------------|-------------------------------|---------------------------------------|----------------|---|------------------|-------------------------------|--------|--------|--|
|                   | D-A9□<br>D-M9□<br>D-M9□W<br>D-M9□AL | D-M9□V<br>D-M9□WV<br>D-M9□AVL | D-A9□V<br>D-Y69□<br>D-Y7PV<br>D-Y7□WV | D-A7□<br>D-A80 | D-A7□H<br>D-A80H<br>D-F7□/J79<br>D-F7□W<br>D-J79W<br>D-F7BAL<br>D-F79F<br>D-F7NTL | D-A73C<br>D-A80C | D-F7□V<br>D-F7□WV<br>D-F7BAVL | D-J79C | D-A79W |  |
| Bore size         | U                                   | U                             | U                                     | U              | U   | U                | U                             | U      | U      |  |
| 125               | 69.5                                | 74                            | 72                                    | 80             | 81  | 87               | 83.5                          | 85.5   | 82.5   |  |
| 140               | 77.5                                | 82                            | 80                                    | 88             | 89  | 95               | 91.5                          | 93.5   | 90.5   |  |
| 160               | 87.5                                | 92                            | 90                                    | 98             | 99  | 105              | 101.5                         | 103.5  | 100.5  |  |
| 180               | 99.5                                | 104                           | 102                                   | —              | —   | —                | —                             | —      | —      |  |
| 200               | 109.5                               | 114                           | 112                                   | —              | —   | —                | —                             | —      | —      |  |

## 2 Minimum Auto Switch Mounting Stroke

Applicable cylinder series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQP2, CDQP2□□□-□S/-□T (Axial piping), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDBQ2 (End lock), CDQ2□R/□V (Water resistant) (mm)

| No. of auto switch mounted | D-M9□V<br>D-F7□V<br>D-J79C | D-A9□V<br>D-A7□<br>D-A80<br>D-A73C<br>D-A80C | D-A9□ | D-M9□WV<br>D-M9□AVL*<br>D-F7□WV<br>D-F7BAVL* | D-M9□<br>D-M9□W<br>D-M9□AL*<br>D-A7□H<br>D-A80H<br>D-F7□<br>D-J79 | D-A79W | D-F7□W<br>D-J79W<br>D-F7BAL*<br>D-F79F<br>D-F7NTL | D-P4DWL |
|----------------------------|----------------------------|--|-------|--|---|--------|---|---------|
| 1 pc.                      | 5                          | 5  | 10    | 10   | 15  | 15     | 20  | 15      |
| 2 pcs.                     | 5                          | 10   | 10    | 15   | 15  | 20     | 20  | 15      |

\* The applicable auto switches for CDQ2□R/□V (water resistant) are D-M9□A(V)L and D-F7BA(V)L.

Applicable cylinder series: CDQ2, CDQ2W (Large bore size) (mm)

| No. of auto switch mounted | D-M9□<br>D-M9□V<br>D-F7□/F7□V | D-J79/J79C<br>D-Y59□/Y69□<br>D-Y7P/Y7PV | D-A9□<br>D-A9□V<br>D-A7□/A80 | D-A73C/A80C<br>D-A7□H/Z7□<br>D-Z80/A80H | D-M9□W<br>D-M9□WV<br>D-M9□AL<br>D-M9□AVL<br>D-F7□W/F7□WV | D-J79W<br>D-F7BAL/F7BAVL<br>D-F7NTL/F79F<br>D-F7□W/Y7□WV<br>D-Y7BAL | D-A79W |
|----------------------------|-------------------------------|---|------------------------------|---|--|---|--------|
| 1 pc.                      |                               | 5                                       |                              | 5                                       |  | 10  | 15     |
| 2 pcs.                     |                               | 5                                       |                              | 10                                      |  | 15  | 20     |

## 3 Operating Range

Applicable cylinder series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQP2, CDQP2□□□-□S/-□T (Axial piping), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDBQ2 (End lock), CDQ2, CDQ2W (Large bore size), CDQ2□R/□V (Water resistant) (mm)

| Auto switch model  | Bore size |     |            |            |              |              |              |              |           |                |      |      |      |      |      |
|--|-----------|-----|------------|------------|--------------|--------------|--------------|--------------|-----------|----------------|------|------|------|------|------|
|  | 12        | 16  | 20         | 25         | 32           | 40           | 50           | 63           | 80        | 100            | 125  | 140  | 160  | 180  | 200  |
| D-A9□(V)   | 7.5       | 9.5 | 9<br>[10]  | 9<br>[10]  | 9.5<br>(9.5) | 9.5<br>(9.5) | 9.5<br>(8.5) | 11.5<br>(11) | 9<br>(10) | 11.5<br>(10.5) | 12   | 12.5 | 12   | 10.5 | 9.5  |
| D-M9□(V)<br>D-M9□W(V)<br>D-M9□A(V)L                                  | 3.5       | 5   | 5<br>[5.5] | 5<br>[5.5] | 6<br>(5.5)   | 6<br>(5.5)   | 7<br>(6)     | 7.5<br>(6.5) | 8<br>(7)  | 8.5<br>(7)     | 8.5  | 8.5  | 9    | 10   | 10   |
| D-A7□(H)(C)<br>D-A80□(H)(C)  | 10        | 12  | 12         | 12         | 12           | 11           | 10           | 12           | 12        | 13             | 13   | 13   | 13   | —    | —    |
| D-A79W   | 13        | 13  | 13         | 13         | 13           | 14           | 14           | 16           | 15        | 17             | 17   | 17   | 17   | —    | —    |
| D-Z7□<br>D-Z80   | —         | —   | —          | —          | —            | —            | —            | —            | —         | —              | 14   | 14   | 14   | 15   | 15.5 |
| D-F7□(V)<br>D-J79(C)<br>D-F7□W(V)<br>D-F7BA(V)L<br>D-F7NTL<br>D-F79F | 5.5       | 6   | 5.5        | 5          | 6            | 6            | 6            | 6.5          | 6.5       | 7              | 9    | 9    | 8.5  | —    | —    |
| D-Y59□<br>D-Y69□<br>D-Y7P(V)<br>D-Y7□W(V)<br>D-Y7BAL                 | —         | —   | —          | —          | —            | —            | —            | —            | —         | —              | 11.5 | 11.5 | 11.5 | 12   | 12   |
| D-P4DWL  | —         | —   | —          | —          | —            | 5            | 5            | 5            | 5         | 5.5            | —    | —    | —    | —    | —    |

\* Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately ±30% dispersion). It may vary substantially depending on an ambient environment.

\* Except for a bore size over ø32 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types, the values above are measured when the conventional switch installation groove is attached without using the auto switch mounting bracket BQ2-012.

\* The values in parentheses for a bore size over ø32 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types indicate the operating range of the CDQP2 and CDQP2□□□-□S/-□T series when the auto switch mounting bracket BQ2-012 is used.

\* The values in [ ] for ø20 and ø25 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L Types are applicable for Series CDBQ2 (end lock).

\* The applicable auto switches for CDQ2□R/□V (water resistant) are D-M9□A(V)L and F7BA(V)L.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual  
-X□

Technical  
data

# Compact Cylinder/*Series CQ2* With Auto Switch 5

## 4 Auto Switch Mounting Bracket: Part No.

Applicable cylinder series: CDQ2, CDQ2W, CDQ2□□□-□S/□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQP2, CDQP2□□□-□S/□T (Axial piping), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDBQ2 (End lock), CDQ2□R/□V (Water resistant)

| Auto switch mounting surface | Bore size (mm)   |   |  |
|------------------------------|--|---|--|
|                              | ø12, ø16, ø20, ø25   | ø32, ø40, ø50   | ø63, ø80, ø100   |
|                              |  |   |  |
| Auto switch model            | Auto switch mounting surface   | Auto switch mounting surface                            | Auto switch mounting surface                                   |
|                              | Auto switch mounting rail only   | Port side   | A, B, C  |
|                              | ① BQ-1<br>② BQ2-012<br>Two kinds of auto switch bracket are used as a set.<br><br><br><b>D-A9□</b><br><b>D-A9□V</b><br><b>D-M9□</b><br><b>D-M9□V</b><br><b>D-M9□W</b><br><b>D-M9□WV</b><br><b>D-M9□AL</b><br><b>D-M9□AVL</b> | Auto switch mounting brackets are not required.<br><br> | Auto switch mounting brackets are not required. <sup>(3)</sup> |

Note 1) When a compact auto switch is mounted on the three sides (A, B and C above) other than the port side of CDQ2□32 to 50, auto switch mounting brackets shown above are required. Order them separately from cylinders.  
(The above is also applicable when a compact auto switch is mounted using an auto switch mounting rail, but not using a compact auto switch installation groove for CDQ2□63 to 100.)

Order example  
 CDQ2B32-100DM-M9BW.....1  
 BQ-2.....2 pcs.  
 BQ2-012.....2 pcs.

Note 2) When shipping cylinders, auto switch mounting brackets and auto switches are shipped together.

Note 3) Be sure to use BQ-2 or BQ2-012 when mounting ø63, ø80 or ø100 of the CDQP2 series.

| Auto switch model   | Bore size (mm) |     |             |
|---|----------------|-----|-------------|
|   | ø12 to ø25     | ø32 | ø40 to ø100 |
| <b>D-A7□/A80</b><br><b>D-A73C/A80C</b><br><b>D-A7□H/A80H</b><br><b>D-A79W</b><br><b>D-F7□/J79</b><br><b>D-F7□V</b><br><b>D-J79C</b><br><b>D-F7□W/J79W</b><br><b>D-F7□WV</b><br><b>D-F7BAL/F7BAVL</b><br><b>D-F79F/F7NTL</b> | BQ-1           |     | BQ-2        |
| <b>D-P4DWL</b>  | —              |     | BQP1-050    |

Note 4) When shipping cylinders, auto switch mounting brackets and auto switches are shipped together.  
 However, when ø40 to ø100 of D-P4DWL type are mounted, the auto switch is assembled at the time of shipment.

### [Mounting screw set made of stainless steel]

The following set of mounting screws made of stainless steel is available. Use it in accordance with the operating environment. (Please order BQ-2 separately, since auto switch spacers (for BQ-2) are not included.)

BBA2: For D-A7/A8/F7/J7 types

The above stainless steel screws are used when a cylinder is shipped with D-F7BAL, F7BAVL-type auto switches.

When only an auto switch is shipped independently, BBA2 is attached.

Note 5) Refer to page 1361 for the details of BBA2.

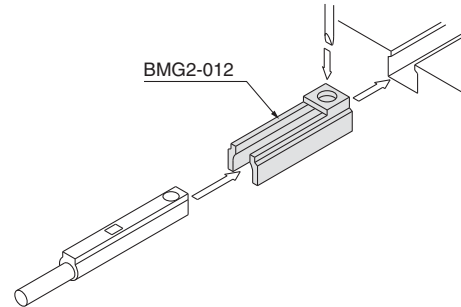
Note 6) When D-M9□A(V)L is mounted on a port side other than ø32, ø40 or ø50, order auto switch mounting brackets BQ2-012S, BQ-2 or the stainless steel screw set BBA2 separately.

### Auto Switch Mounting Bracket Mass

| Mounting bracket part No. | Applicable bore size | Mass (g) |
|---------------------------|----------------------|----------|
| BQ-1                      | ø12 to ø25           | 1.5      |
| BQ-2                      | ø32 to ø100          | 1.5      |
| BQ2-012                   | ø12 to ø25           | 5        |
| BQP1-050                  | ø40 to ø100          | 16       |

## Applicable cylinder series: CDQ2, CDQ2W (Large bore size)

| Auto switch model  | Bore size (mm) |      |      |      |      |
|--|----------------|------|------|------|------|
|  | ø125           | ø140 | ø160 | ø180 | ø200 |
| D-A9□/A9□V<br>D-M9□/M9□V<br>D-M9□W/M9□WV<br>D-M9□AL/M9□AVL   | BMG2-012       |      |      |      |      |
| D-A7□/A80<br>D-A73C/A80C<br>D-A7□H/A80H<br>D-A79W<br>D-F7□/J79<br>D-F7□V<br>D-J79C<br>D-F7□W/J79W<br>D-F7□WV<br>D-F7BAL/F7BAVL<br>D-F79F/F7NTL | BQ-2           |      | —    |      |      |



• The above figure shows how to mount D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types on CDQ2 or CDQ2W (large bore size).

## Auto Switch Mounting Bracket Mass

| Mounting bracket part no. | Applicable cylinder size | Mass (g) |
|---------------------------|--------------------------|----------|
| BQ-2                      | ø125 to ø160             | 1.5      |
| BMG2-012                  | ø125 to ø200             | 3        |

Besides the models listed in How to Order, the following auto switches are applicable.

Refer to pages 1263 to 1371 for details.

Applicable cylinder series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQP2, CDQP2□□□-□S/-□T (Axial piping), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDBQ2 (End lock), CDQ2, CDQ2W (Large bore size), CDQ2□R/□V (Water resistant)

| Auto switch type | Part no.              | Electrical entry        | Features                                      | Applicable bore size |             |
|------------------|-----------------------|-------------------------|---|----------------------|-------------|
| Reed             | D-A73                 | Grommet (Perpendicular) | —   | ø12 to ø160          |             |
|                  | D-A80                 |                         | Without indicator light                       |                      |             |
|                  | D-A73H, A76H          |                         | —   |                      |             |
|                  | D-A80H                | Grommet (In-line)       | Without indicator light                       | ø125 to ø200         |             |
|                  | D-Z73, Z76            |                         | —   |                      |             |
|                  | D-Z80                 |                         | Without indicator light                       |                      |             |
| Solid state      | D-F7NV, F7PV, F7BV    | Grommet (Perpendicular) | —   | ø12 to ø160          |             |
|                  | D-F7NWV, F7BWW        |                         | Diagnostic indication (2-color indication)    |                      |             |
|                  | D-F7BAVL              |                         | Water resistant (2-color indication)          |                      |             |
|                  | D-F79, F7P, J79       | Grommet (In-line)       | —   |                      |             |
|                  | D-F79W, F7PW, J79W    |                         | Diagnostic indication (2-color indication)    |                      |             |
|                  | D-F7BAL**             |                         | Water resistant (2-color indication)          |                      |             |
|                  | D-F7NTL               | With timer              |   |                      |             |
|                  | D-Y69A, Y69B, Y7PV    | Grommet (Perpendicular) | —   | ø125 to ø200         |             |
|                  | D-Y7NWV, Y7PWW, Y7BWW |                         | Diagnostic indication (2-color indication)    |                      |             |
|                  | D-Y59A, Y69B, Y7P     |                         | —   |                      |             |
|                  | D-Y7NW, Y7PW, Y7BW    | Grommet (In-line)       | Diagnostic indication (2-color indication)    |                      | ø40 to ø100 |
|                  | D-Y7BAL               |                         | Water resistant (2-color indication)          |                      |             |
|                  | D-P5DWL               |                         | Magnetic field resistant (2-color indication) |                      |             |

\* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1328 and 1329 for details.

\*\* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H/Y7G/Y7H types) are also available. Refer to pages 1290 and 1292 for details.

\* The applicable auto switch for CDQ2□R/□V (water resistant) is D-F7BA(V)L.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical data