

# Compact Cylinder: Non-rotating Rod Double Acting, Double Rod Series **CQ2KW**

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

## How to Order

Without auto switch  
ø12 to ø25

**CQ2KW** **B** **20** **□** - **30D** **□**

Without auto switch  
ø32 to ø63

**CQ2KW** **B** **32** **□** - **30D** **□** **Z**

With auto switch

**CDQ2KW** **B** **32** **□** - **30D** **□** **Z** - **M9BW** **□**

With auto switch  
(Built-in magnet)

Number of auto switches

|     |          |
|-----|----------|
| Nil | 2 pcs.   |
| S   | 1 pc.    |
| n   | "n" pcs. |

Mounting

|          |                         |            |
|----------|-------------------------|------------|
| <b>B</b> | Through-hole (Standard) | ø12 to ø63 |
| <b>A</b> | Both ends tapped        | ø40 to ø63 |
| <b>L</b> | Foot                    |            |
| <b>F</b> | Flange                  |            |

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 | <b>63</b> | 63 mm |

Port thread type

|     |   |            |
|-----|---|------------|
| Nil | M thread  | ø12 to ø25 |
|     | Rc  |            |
| TN  | NPT   | ø32 to ø63 |
|     | G   |            |
| TF  | G   |            |
| F   | Built-in one-touch fittings <small>Note</small> |            |

Note) Bore sizes available with one-touch fittings are ø32 to ø63.

\* For cylinders without auto switch, M threads are compatible only for ø32-5 mm stroke model.

Auto switch

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

\* Refer to the below table for applicable auto switches.

Auto switch mounting groove

|   |            |            |
|---|------------|------------|
| Z | ø12 to ø25 | 2 surfaces |
|   | ø32 to ø63 | 4 surfaces |

Body option

|     |  |
|-----|--|
| Nil | Standard (Rod end female thread)               |
| C   | With rubber bumper (ø12 with auto switch only) |
| M   | Rod end male thread                            |

\* Mounting brackets are shipped together (but not assembled).  
\* Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for C(D)Q2KWB" on pages 96 and 98.

### 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) CDQ2KWB32-30DZ

Cylinder stroke (mm)

Refer to the next page for standard strokes.

Action

|   |               |
|---|---------------|
| D | Double acting |
|---|---------------|

### Applicable Auto Switches

Refer to pages 1263 to 1371 in Best Pneumatics No. 2 for further information on auto switches.

Refer to the individual catalog (ES20-201) for the D-P3DW type.

| Type                    | Special function                              | Electrical entry | Indicator light | Wiring (Output)                      | Load voltage |           | Auto switch model |         | Lead wire length (m) |       |       |       |          | Pre-wired connector | Applicable load |            |            |   |            |   |   |
|-------------------------|---|------------------|-----------------|--------------------------------------|--------------|-----------|-------------------|---------|----------------------|-------|-------|-------|----------|---------------------|-----------------|------------|------------|---|------------|---|---|
|                         |   |                  |                 |                                      | DC           | AC        | Perpendicular     | In-line | 0.5 (Nil)            | 1 (M) | 3 (L) | 5 (Z) | None (N) |                     |                 |            |            |   |            |   |   |
| Solid state auto switch | —   | Grommet          | Yes             | 3-wire (NPN)                         | 24 V         | 5 V, 12 V | —                 | M9NV    | M9N                  | ●     | ●     | ●     | ○        | —                   | ○               | IC circuit |            |   |            |   |   |
|                         |   |                  |                 | 3-wire (PNP)                         |              |           |                   | M9PV    | M9P                  | ●     | ●     | ●     | ○        | —                   | ○               |            |            |   |            |   |   |
|                         |   |                  |                 | 2-wire                               |              |           |                   | M9BV    | M9B                  | ●     | ●     | ●     | ○        | —                   | ○               |            | —          |   |            |   |   |
|                         |   |                  |                 | 3-wire (NPN)                         |              |           |                   | M9NWV   | M9NW                 | ●     | ●     | ●     | ○        | —                   | ○               |            | IC circuit |   |            |   |   |
|                         | 3-wire (PNP)                                  |                  |                 | M9PWV                                |              |           |                   | M9PW    | ●                    | ●     | ●     | ○     | —        | ○                   |                 |            |            |   |            |   |   |
|                         | Diagnostic indication (2-color indication)    |                  |                 | M9B WV                               |              |           |                   | M9B W   | ●                    | ●     | ●     | ○     | —        | ○                   | —               |            | ○          | — | —          | — | — |
|                         |   |                  |                 | Water resistant (2-color indication) |              |           |                   | M9NAV** | M9NA**               | ○     | ○     | ●     | ○        | —                   | ○               |            | IC circuit |   |            |   |   |
|                         |   |                  |                 |                                      |              |           |                   | M9PAV** | M9PA**               | ○     | ○     | ●     | ○        | —                   | ○               |            |            |   |            |   |   |
|                         |   |                  |                 | M9BAV**                              |              |           |                   | M9BA**  | ○                    | ○     | ●     | ○     | —        | ○                   | —               |            | ○          | — | —          |   |   |
|                         | Magnetic field resistant (2-color indication) |                  |                 | 2-wire (Non-polar)                   |              |           |                   | —       | —                    | —     | —     | —     | —        | P3DW                | ●               |            | —          | ● | ●          | — | ○ |
| Reed auto switch        |   | Grommet          | Yes             | 3-wire (NPN equivalent)              | 24 V         | 5 V       | —                 | A96V    | A96                  | ●     | —     | ●     | —        | —                   | —               | IC circuit | —          |   |            |   |   |
|                         |   |                  |                 | 2-wire                               |              |           |                   | A93V    | A93                  | ●     | —     | ●     | —        | —                   | —               | —          | —          | — | Relay, PLC |   |   |
| No                      | 5 V, 12 V                                     | 100 V            | 100 V or less   | A90V                                 | A90          | ●         | —                 |         |                      | ●     | —     | —     | —        | —                   | —               | IC circuit | Relay, PLC |   |            |   |   |

\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Consult with SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NW  
1 m ..... M (Example) M9NWM  
3 m ..... L (Example) M9NWL  
5 m ..... Z (Example) M9NWX

\* Solid state auto switches marked with "○" are produced upon receipt of order.  
\* The D-P3DW□ type is available from ø32 to ø63 only.

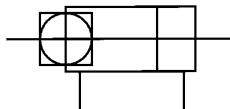
\* There are other applicable auto switches other than the listed above. For details, refer to page 175.

\* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329 in Best Pneumatics No. 2.

# Series CQ2KW



**Symbol**  
Non-rotating rod,  
Double acting



**Made to Order**  
(For details, refer to pages 177 to 207.)

| Symbol | Specifications  |
|--------|---|
| -XB10  | Intermediate stroke (Exclusive body type)                                 |
| -X633  | Intermediate stroke of double rod cylinder, $\phi 125$ to $\phi 160$ only |

\* -X633: Intermediate stroke in 5 mm intervals only

## Specifications

| Bore size (mm)                       | 12  | 16    | 20            | 25   | 32   | 40              | 50   | 63   |
|--------------------------------------|---|-------|---------------|------|------|-----------------|------|------|
| <b>Action</b>                        | Double acting, Double rod   |       |               |      |      |                 |      |      |
| <b>Fluid</b>                         | Air   |       |               |      |      |                 |      |      |
| <b>Proof pressure</b>                | 1.5 MPa   |       |               |      |      |                 |      |      |
| <b>Maximum operating pressure</b>    | 1.0 MPa   |       |               |      |      |                 |      |      |
| <b>Minimum operating pressure</b>    | 0.07 MPa  |       | 0.05 MPa      |      |      |                 |      |      |
| <b>Ambient and fluid temperature</b> | Without auto switch: $-10$ to $70^\circ\text{C}$ (No freezing)<br>With auto switch: $-10$ to $60^\circ\text{C}$ (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<br>0.043 (Note 1)   | 0.038 | 0.055         | 0.09 | 0.15 | 0.26            | 0.46 | 0.77 |
| <b>Stroke length tolerance</b>       | $+1.0$ mm (Note 2)<br>0   |       |               |      |      |                 |      |      |
| <b>Rod non-rotating accuracy</b>     | $\pm 2^\circ$   |       | $\pm 1^\circ$ |      |      | $\pm 0.8^\circ$ |      |      |

\*  $\phi 12$  with auto switch: With rubber bumper (Standard)

Note 1) For cylinders with rubber bumper ( $\phi 12$  with auto switch only)

Note 2) Stroke length tolerance does not include the amount of bumper change.

## Standard Strokes

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

## Manufacture of Intermediate Strokes

| Type         | A spacer is installed in the standard stroke body.  |
|--------------|---|
| Part no.     | Refer to "How to Order" for the standard model number. (P. 92)  |
| Description  | Strokes in 5 mm intervals are available by installing a spacer in the standard stroke cylinder.         |
| Stroke range | Bore size   |
|              | Stroke range  |
|              | 32 to 63  |
|              | 55 to 95  |
| Example      | Part no.: CQ2KWB50-65DZ<br>CQ2KWB50-75DZ with 10 mm width spacer inside<br>The B dimension is 125.5 mm. |

## Type

| Bore size (mm)              |                 | 12                      | 16        | 20       | 25       | 32                 | 40         | 50                           | 63         |        |
|-----------------------------|-----------------|-------------------------|-----------|----------|----------|--------------------|------------|------------------------------|------------|--------|
| Pneumatic                   | Mounting        | Through-hole (Standard) | ●         | ●        | ●        | ●                  | ●          | ●                            | ●          |        |
|                             |                 | Both ends tapped        | —         | —        | —        | —                  | —          | ●                            | ●          |        |
|                             | Built-in magnet |                         | ●         | ●        | ●        | ●                  | ●          | ●                            | ●          |        |
|                             | Piping          | Pipe thread             | —         | M5 x 0.8 | M5 x 0.8 | M5 x 0.8           | M5 x 0.8   | M5 x 0.8<br>Note 1)<br>Rc1/8 | Rc1/8      | Rc1/4  |
|                             |                 |                         | <b>TN</b> | —        | —        | —                  | —          | NPT1/8                       | NPT1/8     | NPT1/4 |
|                             |                 | <b>TF</b>               | —         | —        | —        | —                  | G1/8       | G1/8                         | G1/4       | G1/4   |
| Built-in one-touch fittings |                 | —                       | —         | —        | —        | $\phi 6/4$ Note 2) | $\phi 6/4$ | $\phi 8/6$                   | $\phi 8/6$ |        |
| Rod end male thread         |                 | ●                       | ●         | ●        | ●        | ●                  | ●          | ●                            | ●          |        |

Note 1)  $\phi 32$  without auto switch: M5 x 0.8 is used for 5 mm stroke piping dimension.

Thus, do not enter a symbol for the port thread type.

Note 2) The dimensions of the  $\phi 32$ -5 mm stroke with built-in one-touch fittings are the same as those of the 10 mm stroke cylinder tube.

Refer to pages 169 to 175 for the specifications of cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.