

# Compact Cylinder/Guide Rod Type

## Series CQM



Lateral load  
resisting  
**2 to 4** times

\* Compared to compact  
cylinder Series CQ

Non-rotating  
accuracy  
**±0.2°** or less

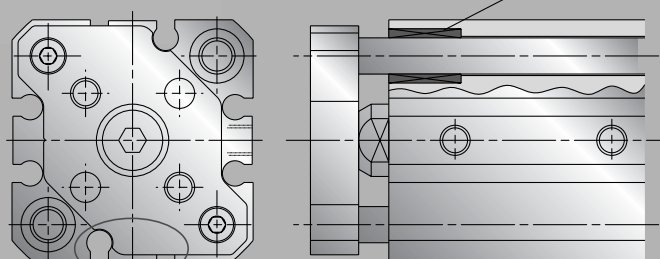
Refer to page 794  
for details.

**Guide Rod**

**Load can be directly  
mounted.**

**Mounting dimensions  
compatible with  
Series CQS, CQ2.**

External dimensions



Auto switch is mountable/removable even when  
the plate is retracted.

CUJ

CU

CQS

CQ2

RQ

**CQM**

MU

### Series Variations

| Series | Bore size<br>(mm) | Standard stroke (mm) |    |    |    |    |    |    |    |    |    |    |     | Cushion          |
|--------|-------------------|----------------------|----|----|----|----|----|----|----|----|----|----|-----|------------------|
|        |                   | 5                    | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 75 | 100 |                  |
| CQM    | 12, 16            | ●                    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●   | Rubber<br>bumper |
|        | 20, 25            | ●                    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●   |                  |
|        | 32, 40            | ●                    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●   |                  |
|        | 50, 63, 80, 100   | ●                    | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●   |                  |

D-☐

-X☐

Individual  
-X☐

Technical  
data

# Compact Cylinder: Guide Rod Type

## Series CQM

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

### How to Order

**CQM** B 20   - 15

**With auto switch** CDQM B 20   - 15 - M9BW

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

**Mounting bracket** •

|          |                                |
|----------|--------------------------------|
| <b>B</b> | Through-hole (Standard)        |
| <b>A</b> | Both ends tapped (ø32 to ø100) |

Note 1) Cylinder bodies of ø12 to ø25 are common for both B (through hole) and A (both ends tapped) types. Symbol to order is unified to "B" for those sizes.

Note 2) Cylinder mounting bolts are not included. Order them separately referring to Mounting Bolts for CQM on pages 796 and 797.

Note 3) Contact SMC for the other mounting types.

**Number of auto switches**

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

**Auto switch type**

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

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

**Cylinder stroke (mm)**  
Refer to the next page for standard and intermediate strokes.

**Thread type**

|     |          |             |
|-----|----------|-------------|
| Nil | M thread | ø12 to ø25  |
| TN  | Rc       | ø32 to ø100 |
| TF  | NPT      |             |
| TF  | G        |             |

Note) M thread to be used for without auto switch type of ø32, 5 stroke exceptionally. There is no need to enter the symbol when ordering.

**Bore size** •

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

### 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) CDQMB32-10

| 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)   |                     |                 |            |   |            |
|                    |                                               |                    |                 |                     |              |                                             | ø12 to ø25        | ø32 to ø100 | ø12 to ø25 | ø32 to ø100 |                      |       |       |       |            |                     |                 |            |   |            |
| Solid state switch | —                                             | Grommet            | Yes             | 3-wire (NPN)        | 24 V         | —                                           | M9NV              |             | M9N        |             | ●                    | ●     | ●     | ○     | —          | ○                   | IC circuit      | Relay, PLC |   |            |
|                    |                                               | 3-wire (PNP)       |                 | M9PV                |              |                                             | M9P               |             | ●          | ●           | ●                    | ○     | —     | ○     |            |                     |                 |            |   |            |
|                    | Connector                                     | 2-wire             |                 | M9BV                |              |                                             | M9B               |             | ●          | ●           | ●                    | ○     | —     | ○     | —          |                     |                 |            |   |            |
|                    | Diagnostic indication (2-color indication)    | —                  |                 | J79C                |              |                                             | —                 |             | ●          | —           | ●                    | ●     | ●     | —     |            | IC circuit          |                 |            |   |            |
|                    |                                               | 3-wire (NPN)       |                 | M9NVV               |              |                                             | M9NW              |             | ●          | ●           | ●                    | ○     | —     | ○     |            |                     |                 |            |   |            |
|                    |                                               | 3-wire (PNP)       |                 | M9PWV               |              |                                             | M9PW              |             | ●          | ●           | ●                    | ○     | —     | ○     |            |                     |                 |            |   |            |
|                    | Water resistance (2-color indication)         | Grommet            |                 | 2-wire              |              |                                             | M9BWV             |             | M9BW       |             | ●                    | ●     | ●     | ○     | —          | ○                   | —               |            |   |            |
|                    |                                               |                    |                 | 3-wire (NPN)        |              |                                             | M9NAV ***         |             | M9NA ***   |             | ○                    | ○     | ●     | ○     | —          | ○                   |                 |            |   |            |
|                    |                                               |                    |                 | 3-wire (PNP)        |              |                                             | M9PAV ***         |             | M9PA ***   |             | ○                    | ○     | ●     | ○     | —          | ○                   |                 |            |   |            |
|                    | With diagnostic output (2-color indication)   | 2-wire             |                 | M9BAV ***           |              |                                             | M9BA ***          |             | ○          | ○           | ●                    | ○     | —     | ○     | IC circuit |                     |                 |            |   |            |
|                    | Magnetic field resistant (2-color indication) | 4-wire             |                 | 5 V,12 V            |              |                                             | —                 |             | F79F       |             | ●                    | —     | ●     | ○     |            | —                   | ○               |            |   |            |
|                    |                                               | 2-wire (Non-polar) |                 | —                   |              |                                             | —                 |             | P4DW**     |             | —                    | —     | ●     | ●     |            | —                   | ○               |            |   |            |
| Reed switch        | —                                             | Grommet            | Yes             | 3-wire (NPN equiv.) | —            | 5 V                                         | —                 | A96V        |            | A96         |                      | ●     | —     | ●     | —          | —                   | —               | IC circuit | — |            |
|                    |                                               |                    |                 |                     |              | —                                           | 200 V             | —           | A72        | —           | A72H                 | ●     | —     | ●     | —          | —                   | —               | —          |   |            |
|                    |                                               |                    |                 |                     |              | 12 V                                        | 100 V             | A93V        |            | A93         |                      | ●     | —     | ●     | ●          | —                   | —               | —          |   |            |
|                    |                                               |                    |                 |                     |              | 5 V,12 V                                    | 100 V or less     | A90V        |            | A90         |                      | ●     | —     | ●     | —          | —                   | —               | —          |   |            |
|                    |                                               | Connector          | No              | 2-wire              | 24 V         | 12 V                                        | —                 | —           |            | A73C        |                      | —     |       | ●     | —          | ●                   | ●               | ●          | — | —          |
|                    |                                               |                    |                 |                     |              | 5 V,12 V                                    | 24 V or less      | —           |            | A80C        |                      | —     |       | ●     | —          | ●                   | ●               | ●          | — | IC circuit |
|                    |                                               |                    |                 |                     |              | —                                           | —                 | —           |            | A79W        |                      | —     |       | ●     | —          | ●                   | —               | —          | — |            |
|                    |                                               |                    |                 |                     |              | With diagnostic output (2-color indication) | Grommet           | Yes         | —          | —           | —                    |       | —     |       | ●          | —                   | ●               | —          | — | —          |

\*\*\* 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) 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 a "O" are produced upon receipt of order.  
\*\* D-P4DWL type is compatible with bore sizes ø40 to ø100.  
\* Only D-P4DW type is assembled when shipped.

\* Besides the models in the above catalog, there are some other auto switches that are applicable. For more information, refer to page 803.

\* Refer to pages 1328 and 1329 for the details of auto switches with a pre-wired connector.

\* When mounting D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types on a side other than the port side with ø32 to ø50 cylinders, order auto switch mounting brackets separately. Refer to page 803 for details.



## Caution

- ① Do not use the product as a stopper.
- ② Do not disassemble and modify the product.

## Specifications

| Bore size (mm)                | 12                                                                                                | 16 | 20      | 25 | 32 | 40 | 50             | 63 | 80 | 100 |
|-------------------------------|---------------------------------------------------------------------------------------------------|----|---------|----|----|----|----------------|----|----|-----|
| Model                         | Pneumatic (non-lube) type                                                                         |    |         |    |    |    |                |    |    |     |
| Action                        | Double acting, Single rod                                                                         |    |         |    |    |    |                |    |    |     |
| Fluid                         | Air                                                                                               |    |         |    |    |    |                |    |    |     |
| Proof pressure                | 1.5 MPa                                                                                           |    |         |    |    |    |                |    |    |     |
| Maximum operating pressure    | 1.0 MPa                                                                                           |    |         |    |    |    |                |    |    |     |
| Minimum operating pressure    | 0.12 MPa                                                                                          |    | 0.1 MPa |    |    |    |                |    |    |     |
| Ambient and fluid temperature | Without auto switch: -10°C to 70°C (No freezing)<br>With auto switch: -10°C to 60°C (No freezing) |    |         |    |    |    |                |    |    |     |
| Cushion                       | Rubber bumper on both ends                                                                        |    |         |    |    |    |                |    |    |     |
| Stroke length tolerance       | +1.0 mm*<br>0                                                                                     |    |         |    |    |    |                |    |    |     |
| Mounting                      | Through-holes                                                                                     |    |         |    |    |    |                |    |    |     |
| Piston speed                  | 50 to 500 mm/s                                                                                    |    |         |    |    |    | 50 to 300 mm/s |    |    |     |

\* Stroke length tolerance does not include the amount of dumper change.

## Standard Stroke

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

## Manufacture of Intermediate Stroke

| Description                                               |                                     | Intermediate stroke range |                                |
|-----------------------------------------------------------|-------------------------------------|---------------------------|--------------------------------|
| Spacers are installed in a cylinder with standard stroke. |                                     | Bore size (mm)            | Intermediate stroke range (mm) |
| Bore size (mm)                                            | Description                         | <b>12, 16</b>             | 1 to 29                        |
| <b>12 to 32</b>                                           | Available in 1 mm stroke increments | <b>20, 25</b>             | 1 to 49                        |
| <b>40 to 100</b>                                          | Available in 5 mm stroke increments | <b>32</b>                 | 1 to 99                        |
|                                                           |                                     | <b>40 to 100</b>          | 5 to 95                        |

Example) Part number: CQMB32-57

Constructed by installing an 18 mm spacer in the standard stroke cylinder CQMB32-75. B dimension: 108 mm.

## Theoretical Output

| Unit: N        |                     |                          |      |      |
|----------------|---------------------|--------------------------|------|------|
| Bore size (mm) | Operating direction | Operating pressure (MPa) |      |      |
|                |                     | 0.3                      | 0.5  | 0.7  |
| <b>12</b>      | IN                  | 25                       | 42   | 59   |
|                | OUT                 | 34                       | 57   | 79   |
| <b>16</b>      | IN                  | 45                       | 75   | 106  |
|                | OUT                 | 60                       | 101  | 141  |
| <b>20</b>      | IN                  | 71                       | 118  | 165  |
|                | OUT                 | 94                       | 157  | 220  |
| <b>25</b>      | IN                  | 113                      | 189  | 264  |
|                | OUT                 | 147                      | 245  | 344  |
| <b>32</b>      | IN                  | 181                      | 302  | 422  |
|                | OUT                 | 241                      | 402  | 563  |
| <b>40</b>      | IN                  | 317                      | 528  | 739  |
|                | OUT                 | 377                      | 628  | 880  |
| <b>50</b>      | IN                  | 495                      | 825  | 1150 |
|                | OUT                 | 589                      | 982  | 1370 |
| <b>63</b>      | IN                  | 840                      | 1400 | 1960 |
|                | OUT                 | 936                      | 1560 | 2184 |
| <b>80</b>      | IN                  | 1362                     | 2270 | 3178 |
|                | OUT                 | 1509                     | 2515 | 3521 |
| <b>100</b>     | IN                  | 2145                     | 3575 | 5005 |
|                | OUT                 | 2355                     | 3925 | 5495 |

## Auto Switch Mounting Bracket Mass

| Mounting bracket part no. | Applicable cylinder bore size | Mass (g) |
|---------------------------|-------------------------------|----------|
| BQ-2                      | ø32 to ø100                   | 1.5      |
| BQP1-050                  | ø40 to ø100                   | 16       |

## Mass

### Without Auto Switch

| Unit: g        |                      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|
| Bore size (mm) | Cylinder stroke (mm) |      |      |      |      |      |      |      |      |      |      |      |
|                | 5                    | 10   | 15   | 20   | 25   | 30   | 35   | 40   | 45   | 50   | 75   | 100  |
| <b>12</b>      | 44                   | 52   | 60   | 69   | 77   | 86   | —    | —    | —    | —    | —    | —    |
| <b>16</b>      | 56                   | 67   | 77   | 87   | 97   | 108  | —    | —    | —    | —    | —    | —    |
| <b>20</b>      | 92                   | 107  | 122  | 137  | 152  | 167  | 183  | 198  | 213  | 227  | —    | —    |
| <b>25</b>      | 125                  | 143  | 162  | 180  | 198  | 216  | 234  | 252  | 270  | 288  | —    | —    |
| <b>32</b>      | 182                  | 205  | 228  | 250  | 274  | 297  | 320  | 343  | 366  | 389  | 553  | 669  |
| <b>40</b>      | 269                  | 295  | 320  | 345  | 370  | 396  | 421  | 446  | 471  | 497  | 692  | 823  |
| <b>50</b>      | —                    | 500  | 540  | 580  | 620  | 661  | 701  | 740  | 780  | 821  | 1133 | 1341 |
| <b>63</b>      | —                    | 745  | 795  | 845  | 894  | 944  | 993  | 1043 | 1093 | 1143 | 1535 | 1791 |
| <b>80</b>      | —                    | 1400 | 1479 | 1559 | 1639 | 1719 | 1800 | 1880 | 1959 | 2039 | 2671 | 3067 |
| <b>100</b>     | —                    | 2365 | 2468 | 2571 | 2674 | 2776 | 2880 | 2983 | 3086 | 3188 | 4053 | 4574 |

### With Auto Switch (Built-in magnet)

| Unit: g        |                      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|
| Bore size (mm) | Cylinder stroke (mm) |      |      |      |      |      |      |      |      |      |      |      |
|                | 5                    | 10   | 15   | 20   | 25   | 30   | 35   | 40   | 45   | 50   | 75   | 100  |
| <b>12</b>      | 52                   | 59   | 68   | 77   | 84   | 93   | —    | —    | —    | —    | —    | —    |
| <b>16</b>      | 66                   | 77   | 87   | 97   | 107  | 118  | —    | —    | —    | —    | —    | —    |
| <b>20</b>      | 122                  | 138  | 153  | 168  | 182  | 197  | 213  | 227  | 242  | 257  | —    | —    |
| <b>25</b>      | 168                  | 186  | 205  | 223  | 240  | 258  | 277  | 295  | 313  | 331  | —    | —    |
| <b>32</b>      | 241                  | 264  | 287  | 309  | 333  | 356  | 379  | 401  | 425  | 448  | 564  | 680  |
| <b>40</b>      | 345                  | 371  | 396  | 421  | 447  | 473  | 498  | 523  | 548  | 574  | 705  | 836  |
| <b>50</b>      | —                    | 618  | 658  | 698  | 738  | 779  | 819  | 858  | 898  | 939  | 1147 | 1355 |
| <b>63</b>      | —                    | 903  | 953  | 1003 | 1052 | 1102 | 1152 | 1201 | 1251 | 1301 | 1557 | 1813 |
| <b>80</b>      | —                    | 1661 | 1740 | 1820 | 1900 | 1980 | 2061 | 2141 | 2220 | 2300 | 2695 | 3090 |
| <b>100</b>     | —                    | 2745 | 2848 | 2950 | 3053 | 3156 | 3260 | 3362 | 3465 | 3568 | 4088 | 4609 |

Add each mass of auto switches and mounting brackets.  
Refer to pages 1263 to 1371 for auto switch mass.

Plate Non-rotating Accuracy

Non-rotating accuracy without load is designed to be same or less than the figures shown in the table below at the retracted cylinder end (plate).

| Bore size (mm) | Non-rotating accuracy |
|----------------|-----------------------|
| 12, 16         | ±0.2°                 |
| 20 to 100      | ±0.1°                 |

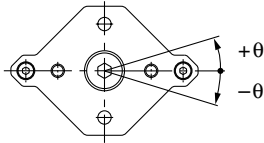
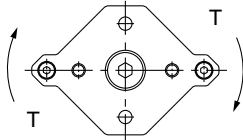


Plate Allowable Rotational Torque

Make sure to operate strictly within the allowable rotation torque range to the plate.

Operation outside of this range may result in shorter service life or damage to the devise.



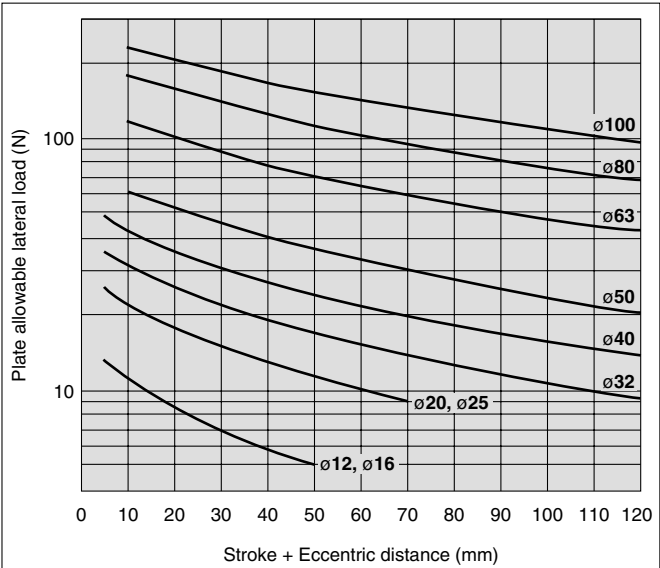
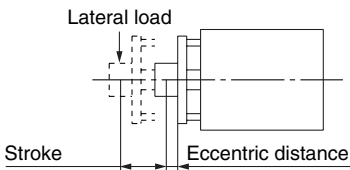
Unit: N·m

| Bore size (mm) | Cylinder stroke (mm) |       |       |       |       |      |      |      |      |      |      |      |
|----------------|----------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|
|                | 5                    | 10    | 15    | 20    | 25    | 30   | 35   | 40   | 45   | 50   | 75   | 100  |
| 12             | 0.11                 | 0.10  | 0.08  | 0.07  | 0.07  | 0.06 | —    | —    | —    | —    | —    | —    |
| 16             | 0.15                 | 0.12  | 0.11  | 0.10  | 0.09  | 0.08 | —    | —    | —    | —    | —    | —    |
| 20             | 0.37                 | 0.32  | 0.28  | 0.25  | 0.23  | 0.21 | 0.19 | 0.18 | 0.17 | 0.16 | —    | —    |
| 25             | 0.40                 | 0.35  | 0.31  | 0.28  | 0.25  | 0.23 | 0.21 | 0.20 | 0.18 | 0.17 | —    | —    |
| 32             | 0.66                 | 0.59  | 0.53  | 0.49  | 0.45  | 0.42 | 0.39 | 0.36 | 0.34 | 0.32 | 0.25 | 0.20 |
| 40             | 1.06                 | 0.96  | 0.88  | 0.81  | 0.75  | 0.70 | 0.65 | 0.61 | 0.58 | 0.55 | 0.43 | 0.36 |
| 50             | —                    | 1.70  | 1.56  | 1.45  | 1.35  | 1.26 | 1.19 | 1.12 | 1.06 | 1.01 | 0.80 | 0.67 |
| 63             | —                    | 3.90  | 3.62  | 3.37  | 3.15  | 2.96 | 2.80 | 2.65 | 2.51 | 2.39 | 1.92 | 1.61 |
| 80             | —                    | 7.44  | 6.98  | 6.56  | 6.20  | 5.87 | 5.57 | 5.31 | 5.07 | 4.84 | 3.98 | 3.37 |
| 100            | —                    | 11.85 | 11.19 | 10.61 | 10.08 | 9.60 | 9.17 | 8.77 | 8.41 | 8.07 | 6.73 | 5.77 |

Plate Allowable Lateral Load

Make sure to operate strictly within the allowable lateral load range to the plate.

Operation outside of this range may result in shorter service life or damage to the devise.

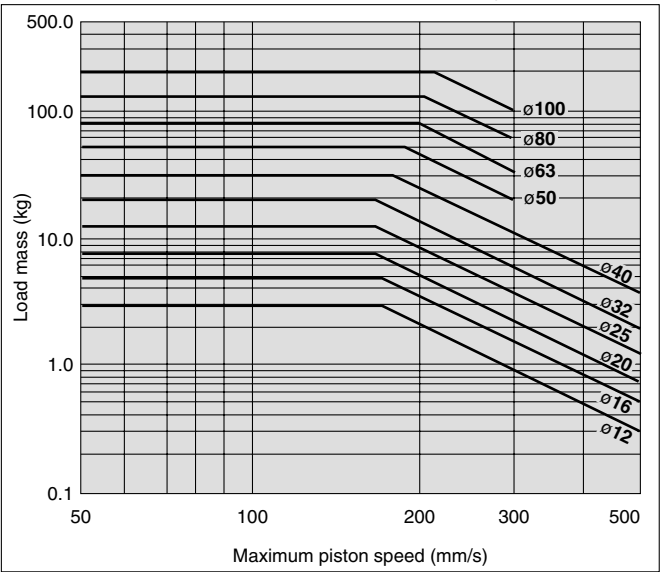


Allowable Kinetic Energy

Make sure to operate strictly within the allowable range of the load mass and maximum speed.

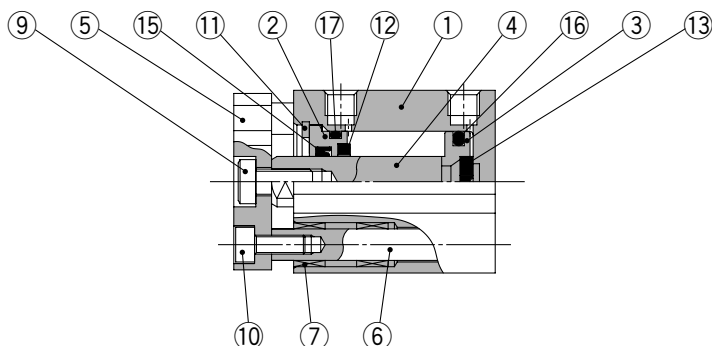
Operation outside of this range may cause excessive impact, which may result in the damage to the devise.

Operating pressure: 0.5 MPa

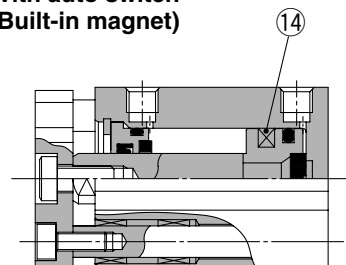


## Construction

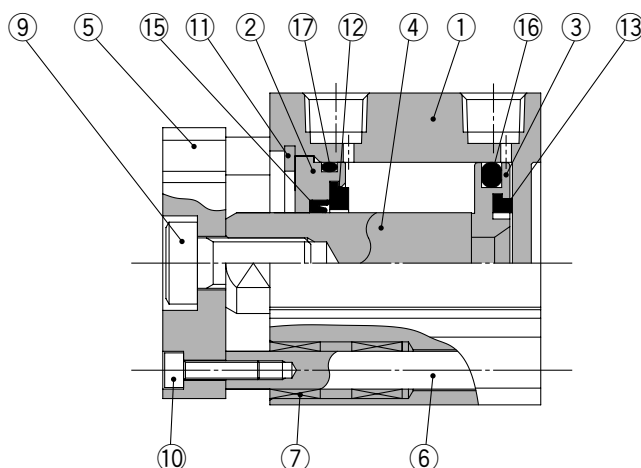
ø12 to ø25



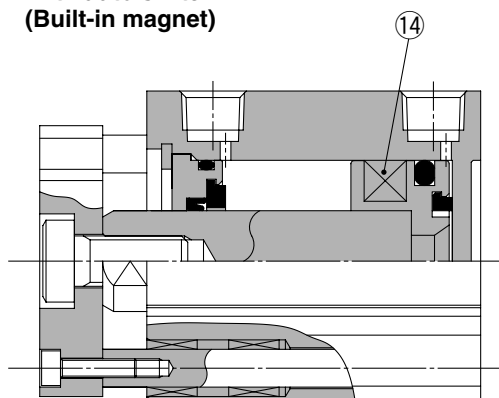
With auto switch  
(Built-in magnet)



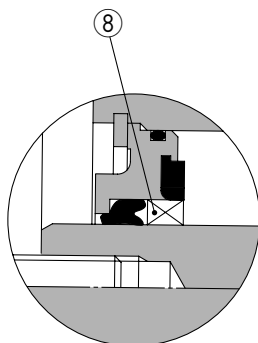
ø32 to ø100



With auto switch  
(Built-in magnet)



ø50 to ø100



### Component Parts

| No. | Description                   | Material                       | Note                           |
|-----|-------------------------------|--------------------------------|--------------------------------|
| 1   | Cylinder tube                 | Aluminum alloy                 | Hard anodized                  |
| 2   | Collar                        | Aluminum alloy                 | ø12 to ø40 Anodized            |
|     |                               | Aluminum alloy casted          | ø50 to ø100 Chromated, Coated  |
| 3   | Piston                        | Aluminum alloy                 | Chromated                      |
| 4   | Piston rod                    | Stainless steel                | ø12 to ø25                     |
|     |                               | Carbon steel                   | ø32 to ø100 Hard chrome plated |
| 5   | Plate                         | Aluminum alloy                 | Anodized                       |
| 6   | Guide rod                     | Stainless steel                |                                |
| 7   | Bushing                       | Oil-impregnated sintered alloy |                                |
| 8   | Bushing                       | Bearing alloy                  | ø50 to ø100                    |
| 9   | Hexagon socket head cap screw | Carbon steel                   | Zmc chromated                  |
| 10  | Hexagon socket head cap screw | Carbon steel                   | Zmc chromated                  |
| 11  | Retaining ring                | Carbon tool steel              | Phosphate coated               |
| 12  | Bumper A                      | Urethan                        |                                |
| 13  | Bumper B                      | Urethan                        |                                |
| 14  | Magnet                        | —                              |                                |
| 15  | Rod seal                      | NBR                            |                                |
| 16  | Piston seal                   | NBR                            |                                |
| 17  | Gasket                        | NBR                            |                                |

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual  
-X□

Technical  
data

# Series CQM

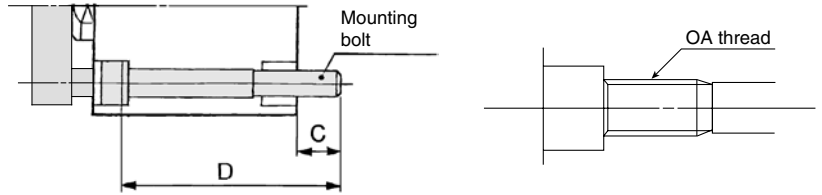
## Mounting Bolt

Mounting method: Mounting bolt for through-hole style of C(D)MB is available as an option.

Refer to the following for ordering procedures.  
Order the actual number of bolts that will be used.

**Example) CQ-M3x25L 2 pcs.**

Material: Chromium molybdenum steel  
Surface treatment: Zinc chromated



Note) To install a cylinder with bore size 12 to 25 mm with through-hole, be sure to use the attached flat washer.

## Mounting Bolt for CQM/Without Auto Switch

| Cylinder model   | C   | D  | Mounting bolt part no. |
|------------------|-----|----|------------------------|
| <b>CQMB12- 5</b> | 6.5 | 25 | CQ-M3 x 25L            |
| <b>-10</b>       |     | 30 | x 30L                  |
| <b>-15</b>       |     | 35 | x 35L                  |
| <b>-20</b>       |     | 40 | x 40L                  |
| <b>-25</b>       |     | 45 | x 45L                  |
| <b>-30</b>       |     | 50 | x 50L                  |
| <b>CQMB16- 5</b> | 6.5 | 25 | CQ-M3 x 25L            |
| <b>-10</b>       |     | 30 | x 30L                  |
| <b>-15</b>       |     | 35 | x 35L                  |
| <b>-20</b>       |     | 40 | x 40L                  |
| <b>-25</b>       |     | 45 | x 45L                  |
| <b>-30</b>       |     | 50 | x 50L                  |
| <b>CQMB20- 5</b> | 6.5 | 25 | CQ-M5 x 25L            |
| <b>-10</b>       |     | 30 | x 30L                  |
| <b>-15</b>       |     | 35 | x 35L                  |
| <b>-20</b>       |     | 40 | x 40L                  |
| <b>-25</b>       |     | 45 | x 45L                  |
| <b>-30</b>       |     | 50 | x 50L                  |
| <b>-35</b>       |     | 55 | x 55L                  |
| <b>-40</b>       |     | 60 | x 60L                  |
| <b>-45</b>       |     | 65 | x 65L                  |
| <b>-50</b>       |     | 70 | x 70L                  |
| <b>CQMB25- 5</b> | 8.5 | 30 | CQ-M5 x 30L            |
| <b>-10</b>       |     | 35 | x 35L                  |
| <b>-15</b>       |     | 40 | x 40L                  |
| <b>-20</b>       |     | 45 | x 45L                  |
| <b>-25</b>       |     | 50 | x 50L                  |
| <b>-30</b>       |     | 55 | x 55L                  |
| <b>-35</b>       |     | 60 | x 60L                  |
| <b>-40</b>       |     | 65 | x 65L                  |
| <b>-45</b>       |     | 70 | x 70L                  |
| <b>-50</b>       |     | 75 | x 75L                  |

| Cylinder model    | C    | D   | Mounting bolt part no. |
|-------------------|------|-----|------------------------|
| <b>CQMB32- 5</b>  | 9    | 30  | CQ-M5 x 30L            |
| <b>-10</b>        |      | 35  | x 35L                  |
| <b>-15</b>        |      | 40  | x 40L                  |
| <b>-20</b>        |      | 45  | x 45L                  |
| <b>-25</b>        |      | 50  | x 50L                  |
| <b>-30</b>        |      | 55  | x 55L                  |
| <b>-35</b>        |      | 60  | x 60L                  |
| <b>-40</b>        |      | 65  | x 65L                  |
| <b>-45</b>        |      | 70  | x 70L                  |
| <b>-50</b>        |      | 75  | x 75L                  |
| <b>-75</b>        | 7.5  | 110 | x 110L                 |
| <b>-100</b>       |      | 135 | x 135L                 |
| <b>CQMB40- 5</b>  |      | 35  | CQ-M5 x 35L            |
| <b>-10</b>        |      | 40  | x 40L                  |
| <b>-15</b>        |      | 45  | x 45L                  |
| <b>-20</b>        |      | 50  | x 50L                  |
| <b>-25</b>        |      | 55  | x 55L                  |
| <b>-30</b>        |      | 60  | x 60L                  |
| <b>-35</b>        |      | 65  | x 65L                  |
| <b>-40</b>        |      | 70  | x 70L                  |
| <b>-45</b>        |      | 75  | x 75L                  |
| <b>-50</b>        |      | 80  | x 80L                  |
| <b>-75</b>        | 12.5 | 115 | x 115L                 |
| <b>-100</b>       |      | 140 | x 140L                 |
| <b>CQMB50- 10</b> |      | 45  | CQ-M6 x 45L            |
| <b>-15</b>        |      | 50  | x 50L                  |
| <b>-20</b>        |      | 55  | x 55L                  |
| <b>-25</b>        |      | 60  | x 60L                  |
| <b>-30</b>        |      | 65  | x 65L                  |
| <b>-35</b>        |      | 70  | x 70L                  |
| <b>-40</b>        |      | 75  | x 75L                  |
| <b>-45</b>        |      | 80  | x 80L                  |
| <b>-50</b>        |      | 85  | x 85L                  |
| <b>-75</b>        |      | 120 | x 120L                 |
| <b>-100</b>       |      | 145 | x 145L                 |

| Cylinder model     | C    | D   | Mounting bolt part no. |
|--------------------|------|-----|------------------------|
| <b>CQMB63- 10</b>  | 14.5 | 50  | CQ-M8 x 50L            |
| <b>-15</b>         |      | 55  | x 55L                  |
| <b>-20</b>         |      | 60  | x 60L                  |
| <b>-25</b>         |      | 65  | x 65L                  |
| <b>-30</b>         |      | 70  | x 70L                  |
| <b>-35</b>         |      | 75  | x 75L                  |
| <b>-40</b>         |      | 80  | x 80L                  |
| <b>-45</b>         |      | 85  | x 85L                  |
| <b>-50</b>         |      | 90  | x 90L                  |
| <b>-75</b>         |      | 125 | x 125L                 |
| <b>-100</b>        | 15   | 150 | x 150L                 |
| <b>CQMB80- 10</b>  |      | 55  | CQ-M10 x 55L           |
| <b>-15</b>         |      | 60  | x 60L                  |
| <b>-20</b>         |      | 65  | x 65L                  |
| <b>-25</b>         |      | 70  | x 70L                  |
| <b>-30</b>         |      | 75  | x 75L                  |
| <b>-35</b>         |      | 80  | x 80L                  |
| <b>-40</b>         |      | 85  | x 85L                  |
| <b>-45</b>         |      | 90  | x 90L                  |
| <b>-50</b>         |      | 95  | x 95L                  |
| <b>-75</b>         | 15.5 | 130 | x 130L                 |
| <b>-100</b>        |      | 155 | x 155L                 |
| <b>CQMB100- 10</b> |      | 65  | CQ-M10 x 65L           |
| <b>-15</b>         |      | 70  | x 70L                  |
| <b>-20</b>         |      | 75  | x 75L                  |
| <b>-25</b>         |      | 80  | x 80L                  |
| <b>-30</b>         |      | 85  | x 85L                  |
| <b>-35</b>         |      | 90  | x 90L                  |
| <b>-40</b>         |      | 95  | x 95L                  |
| <b>-45</b>         |      | 100 | x 100L                 |
| <b>-50</b>         |      | 105 | x 105L                 |
| <b>-75</b>         |      | 140 | x 140L                 |
| <b>-100</b>        |      | 165 | x 165L                 |

## Mounting Bolt for CDQM/With Auto Switch (Built-in magnet)

| Cylinder model    | C   | D  | Mounting bolt part no. |
|-------------------|-----|----|------------------------|
| <b>CDQMB12- 5</b> | 6.5 | 30 | CQ-M3 x 30L            |
| <b>-10</b>        |     | 35 | x 35L                  |
| <b>-15</b>        |     | 40 | x 40L                  |
| <b>-20</b>        |     | 45 | x 45L                  |
| <b>-25</b>        |     | 50 | x 50L                  |
| <b>-30</b>        |     | 55 | x 55L                  |
| <b>CDQMB16- 5</b> | 6.5 | 30 | CQ-M3 x 30L            |
| <b>-10</b>        |     | 35 | x 35L                  |
| <b>-15</b>        |     | 40 | x 40L                  |
| <b>-20</b>        |     | 45 | x 45L                  |
| <b>-25</b>        |     | 50 | x 50L                  |
| <b>-30</b>        |     | 55 | x 55L                  |
| <b>CDQMB20- 5</b> | 6.5 | 35 | CQ-M5 x 35L            |
| <b>-10</b>        |     | 40 | x 40L                  |
| <b>-15</b>        |     | 45 | x 45L                  |
| <b>-20</b>        |     | 50 | x 50L                  |
| <b>-25</b>        |     | 55 | x 55L                  |
| <b>-30</b>        |     | 60 | x 60L                  |
| <b>-35</b>        |     | 65 | x 65L                  |
| <b>-40</b>        |     | 70 | x 70L                  |
| <b>-45</b>        |     | 75 | x 75L                  |
| <b>-50</b>        |     | 80 | x 80L                  |
| <b>CDQMB25- 5</b> | 8.5 | 40 | CQ-M5 x 40L            |
| <b>-10</b>        |     | 45 | x 45L                  |
| <b>-15</b>        |     | 50 | x 50L                  |
| <b>-20</b>        |     | 55 | x 55L                  |
| <b>-25</b>        |     | 60 | x 60L                  |
| <b>-30</b>        |     | 65 | x 65L                  |
| <b>-35</b>        |     | 70 | x 70L                  |
| <b>-40</b>        |     | 75 | x 75L                  |
| <b>-45</b>        |     | 80 | x 80L                  |
| <b>-50</b>        |     | 85 | x 85L                  |

| Cylinder model     | C    | D   | Mounting bolt part no. |
|--------------------|------|-----|------------------------|
| <b>CDQMB32- 5</b>  | 9    | 40  | CQ-M5 x 40L            |
| <b>- 10</b>        |      | 45  | x 45L                  |
| <b>- 15</b>        |      | 50  | x 50L                  |
| <b>- 20</b>        |      | 55  | x 55L                  |
| <b>- 25</b>        |      | 60  | x 60L                  |
| <b>- 30</b>        |      | 65  | x 65L                  |
| <b>- 35</b>        |      | 70  | x 70L                  |
| <b>- 40</b>        |      | 75  | x 75L                  |
| <b>- 45</b>        |      | 80  | x 80L                  |
| <b>- 50</b>        |      | 85  | x 85L                  |
| <b>- 75</b>        | 7.5  | 110 | x 110L                 |
| <b>-100</b>        |      | 135 | x 135L                 |
| <b>CDQMB40- 5</b>  |      | 45  | CQ-M5 x 45L            |
| <b>- 10</b>        |      | 50  | x 50L                  |
| <b>- 15</b>        |      | 55  | x 55L                  |
| <b>- 20</b>        |      | 60  | x 60L                  |
| <b>- 25</b>        |      | 65  | x 65L                  |
| <b>- 30</b>        |      | 70  | x 70L                  |
| <b>- 35</b>        |      | 75  | x 75L                  |
| <b>- 40</b>        |      | 80  | x 80L                  |
| <b>- 45</b>        |      | 85  | x 85L                  |
| <b>- 50</b>        |      | 90  | x 90L                  |
| <b>- 75</b>        | 12.5 | 115 | x 115L                 |
| <b>-100</b>        |      | 140 | x 140L                 |
| <b>CDQMB50- 10</b> |      | 55  | CQ-M6 x 55L            |
| <b>- 15</b>        |      | 60  | x 60L                  |
| <b>- 20</b>        |      | 65  | x 65L                  |
| <b>- 25</b>        |      | 70  | x 70L                  |
| <b>- 30</b>        |      | 75  | x 75L                  |
| <b>- 35</b>        |      | 80  | x 80L                  |
| <b>- 40</b>        |      | 85  | x 85L                  |
| <b>- 45</b>        |      | 90  | x 90L                  |
| <b>- 50</b>        |      | 95  | x 95L                  |
| <b>- 75</b>        |      | 120 | x 120L                 |
| <b>-100</b>        |      | 145 | x 145L                 |

| Cylinder model      | C    | D   | Mounting bolt part no. |
|---------------------|------|-----|------------------------|
| <b>CDQMB63- 10</b>  | 14.5 | 60  | CQ-M8 x 60L            |
| <b>- 15</b>         |      | 65  | x 65L                  |
| <b>- 20</b>         |      | 70  | x 70L                  |
| <b>- 25</b>         |      | 75  | x 75L                  |
| <b>- 30</b>         |      | 80  | x 80L                  |
| <b>- 35</b>         |      | 85  | x 85L                  |
| <b>- 40</b>         |      | 90  | x 90L                  |
| <b>- 45</b>         |      | 95  | x 95L                  |
| <b>- 50</b>         |      | 100 | x 100L                 |
| <b>- 75</b>         |      | 125 | x 125L                 |
| <b>-100</b>         | 15   | 150 | x 150L                 |
| <b>CDQMB80- 10</b>  |      | 65  | CQ-M10 x 65L           |
| <b>- 15</b>         |      | 70  | x 70L                  |
| <b>- 20</b>         |      | 75  | x 75L                  |
| <b>- 25</b>         |      | 80  | x 80L                  |
| <b>- 30</b>         |      | 85  | x 85L                  |
| <b>- 35</b>         |      | 90  | x 90L                  |
| <b>- 40</b>         |      | 95  | x 95L                  |
| <b>- 45</b>         |      | 100 | x 100L                 |
| <b>- 50</b>         |      | 105 | x 105L                 |
| <b>- 75</b>         | 15.5 | 130 | x 130L                 |
| <b>-100</b>         |      | 155 | x 155L                 |
| <b>CDQMB100- 10</b> |      | 75  | CQ-M10 x 75L           |
| <b>- 15</b>         |      | 80  | x 80L                  |
| <b>- 20</b>         |      | 85  | x 85L                  |
| <b>- 25</b>         |      | 90  | x 90L                  |
| <b>- 30</b>         |      | 95  | x 95L                  |
| <b>- 35</b>         |      | 100 | x 100L                 |
| <b>- 40</b>         |      | 105 | x 105L                 |
| <b>- 45</b>         |      | 110 | x 110L                 |
| <b>- 50</b>         |      | 115 | x 115L                 |
| <b>- 75</b>         |      | 140 | x 140L                 |
| <b>-100</b>         |      | 165 | x 165L                 |

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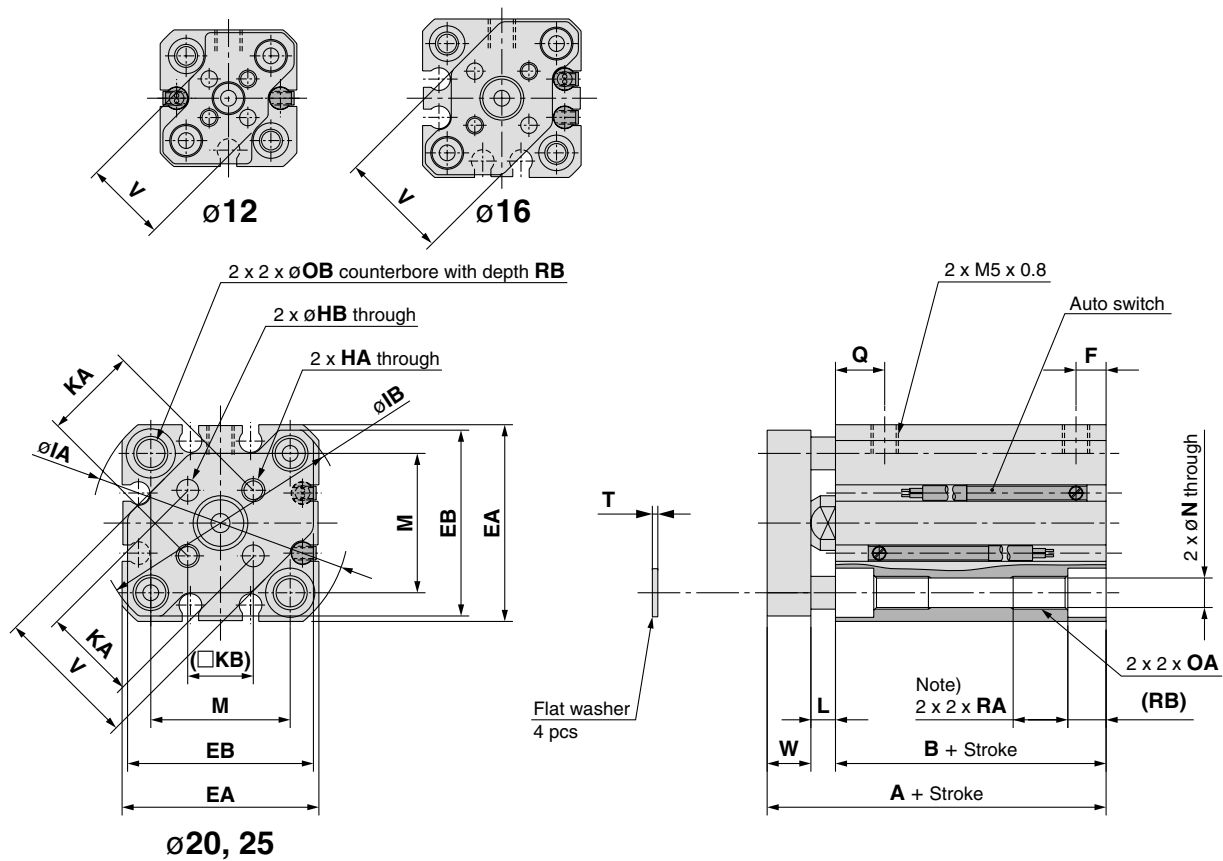
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# Series CQM

## Dimensions

ø12 to ø25



(mm)

| Bore size<br>(mm) | Stroke range<br>(mm) | Without auto switch |      | With auto switch |      | EA | EB | F   | HA       | OA       | HB                             | IA | IB   |
|-------------------|----------------------|---------------------|------|------------------|------|----|----|-----|----------|----------|--------------------------------|----|------|
|                   |                      | A                   | B    | A                | B    |    |    |     |          |          |                                |    |      |
| 12                | 5 to 30              | 26.5                | 17   | 31.5             | 22   | 25 | 24 | 5   | M3 x 0.5 | M4 x 0.7 | 3 <sup>+0.2</sup> <sub>0</sub> | 32 | 31.5 |
| 16                | 5 to 30              | 26.5                | 17   | 31.5             | 22   | 29 | 28 | 5   | M3 x 0.5 | M4 x 0.7 | 3 <sup>+0.2</sup> <sub>0</sub> | 38 | 37   |
| 20                | 5 to 50              | 32                  | 19.5 | 42               | 29.5 | 36 | 34 | 5.5 | M4 x 0.7 | M6 x 1.0 | 4 <sup>+0.2</sup> <sub>0</sub> | 47 | 45.5 |
| 25                | 5 to 50              | 35.5                | 22.5 | 45.5             | 32.5 | 40 | 38 | 5.5 | M5 x 0.8 | M6 x 1.0 | 5 <sup>+0.2</sup> <sub>0</sub> | 52 | 50.5 |

| Bore size<br>(mm) | KA       | KB   | L   | M    | N   | OB  | Q   | RA | RB | T   | V    | W |
|-------------------|----------|------|-----|------|-----|-----|-----|----|----|-----|------|---|
| 12                | 10 ± 0.1 | 7.1  | 3.5 | 15.5 | 3.5 | 6.5 | 7.5 | 7  | 4  | 0.5 | 14.9 | 6 |
| 16                | 14 ± 0.1 | 9.9  | 3.5 | 20   | 3.5 | 6.5 | 7.5 | 7  | 4  | 0.5 | 20   | 6 |
| 20                | 17 ± 0.1 | 12   | 4.5 | 25.5 | 5.4 | 9   | 9   | 10 | 7  | 1   | 26   | 8 |
| 25                | 22 ± 0.1 | 15.6 | 5   | 28   | 5.4 | 9   | 11  | 10 | 7  | 1   | 30   | 8 |

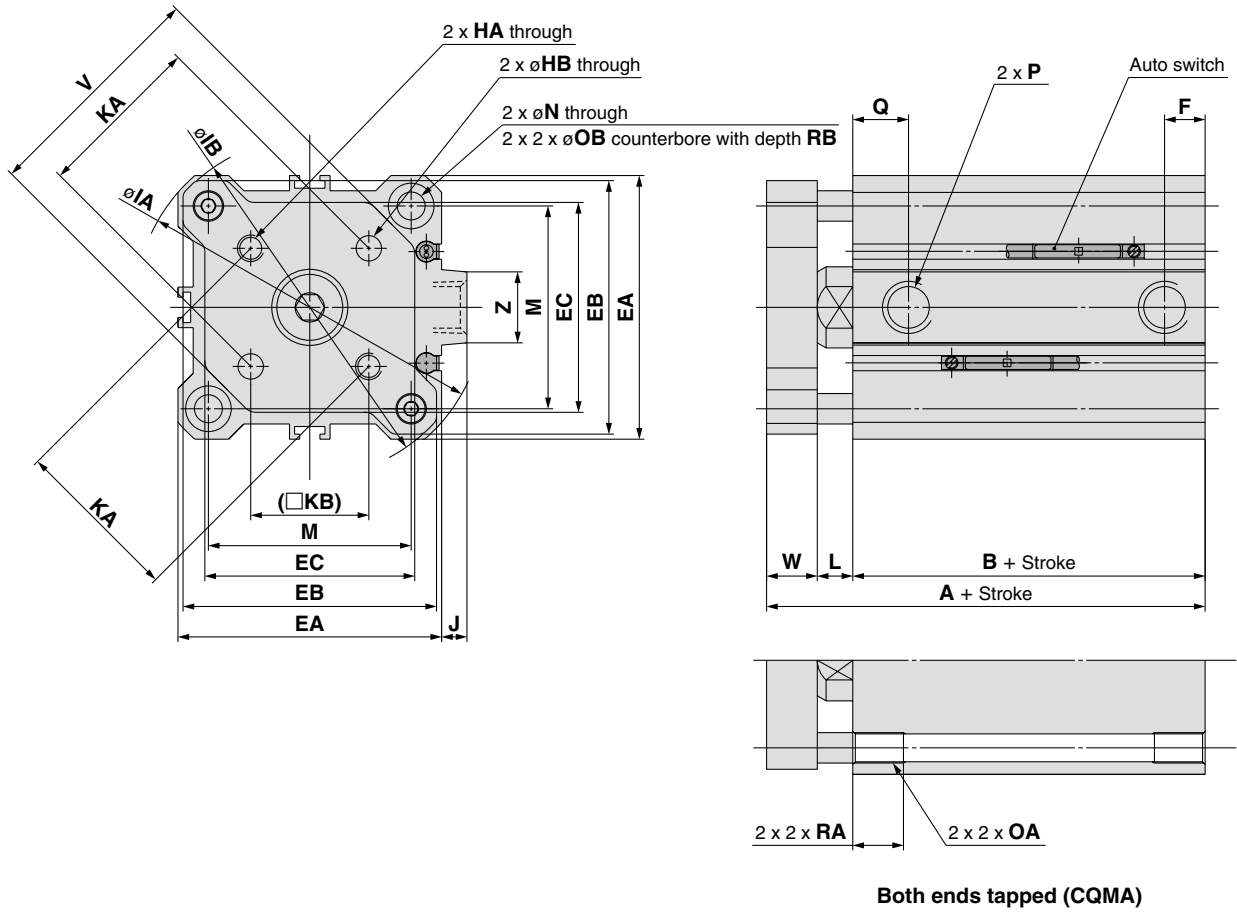
Note) For the following bore/stroke sizes, the through-hole is threaded.

Standard without auto switch: ø12 and ø16; 5 stroke, ø20; 5 to 15 stroke, ø25; 5 and 10 stroke,  
Built-in magnet with auto switch: ø20; 5 stroke



## Dimensions

ø32 to ø50



| (mm)              |                      |                     |      |      |      |          |         |       |                  |      |      |      |        |         |       |    |    |      |
|-------------------|----------------------|---------------------|------|------|------|----------|---------|-------|------------------|------|------|------|--------|---------|-------|----|----|------|
| Bore size<br>(mm) | Stroke range<br>(mm) | Without auto switch |      |      |      |          |         |       | With auto switch |      |      |      |        |         |       | EA | EB | EC   |
|                   |                      | A                   | B    | F    | Q    | P        |         |       | A                | B    | F    | Q    | P      |         |       |    |    |      |
|                   |                      |                     |      |      |      | —        | TN      | TF    |                  |      |      |      | —      | TN      | TF    |    |    |      |
| 32                | 5                    | 40                  | 23   | 5.5  | 11.5 | M5 x 0.8 | —       | —     | 50               | 33   | 7.5  | 10.5 | Rc 1/8 | NPT 1/8 | G 1/8 | 45 | 43 | 34.4 |
|                   | 10 to 50             |                     |      | 7.5  | 10.5 | Rc 1/8   | NPT 1/8 | G 1/8 |                  |      |      |      |        |         |       |    |    |      |
|                   | 75, 100              | 50                  | 33   |      |      |          |         |       |                  |      |      |      |        |         |       |    |    |      |
| 40                | 5 to 50              | 46.5                | 29.5 | 8    | 11   | Rc 1/8   | NPT 1/8 | G 1/8 | 56.5             | 39.5 | 8    | 11   | Rc 1/8 | NPT 1/8 | G 1/8 | 52 | 50 | 41.4 |
|                   | 75, 100              | 56.5                | 39.5 |      |      |          |         |       |                  |      |      |      |        |         |       |    |    |      |
| 50                | 10 to 50             | 50.5                | 30.5 | 10.5 | 10.5 | Rc 1/4   | NPT 1/4 | G 1/4 | 60.5             | 40.5 | 10.5 | 10.5 | Rc 1/4 | NPT 1/4 | G 1/4 | 64 | 62 | 53.4 |
|                   | 75, 100              | 60.5                | 40.5 |      |      |          |         |       |                  |      |      |      |        |         |       |    |    |      |

| Bore size<br>(mm) | HA       | OA        | HB                             | IA | IB   | J   | KA       | KB   | L | M  | N   | OB | RA | RB | V  | W  | Z  |
|-------------------|----------|-----------|--------------------------------|----|------|-----|----------|------|---|----|-----|----|----|----|----|----|----|
| 32                | M5 x 0.8 | M6 x 1.0  | 5 <sup>+0.2</sup> <sub>0</sub> | 60 | 58.5 | 4.5 | 28 ± 0.2 | 19.8 | 7 | 34 | 5.5 | 9  | 10 | 7  | 38 | 10 | 14 |
| 40                | M5 x 0.8 | M6 x 1.0  | 5 <sup>+0.2</sup> <sub>0</sub> | 69 | 67.5 | 5   | 33 ± 0.2 | 23.3 | 7 | 40 | 5.5 | 9  | 10 | 7  | 46 | 10 | 14 |
| 50                | M6 x 1.0 | M8 x 1.25 | 6 <sup>+0.2</sup> <sub>0</sub> | 86 | 84.5 | 7   | 42 ± 0.2 | 29.7 | 8 | 50 | 6.6 | 11 | 14 | 8  | 58 | 12 | 19 |

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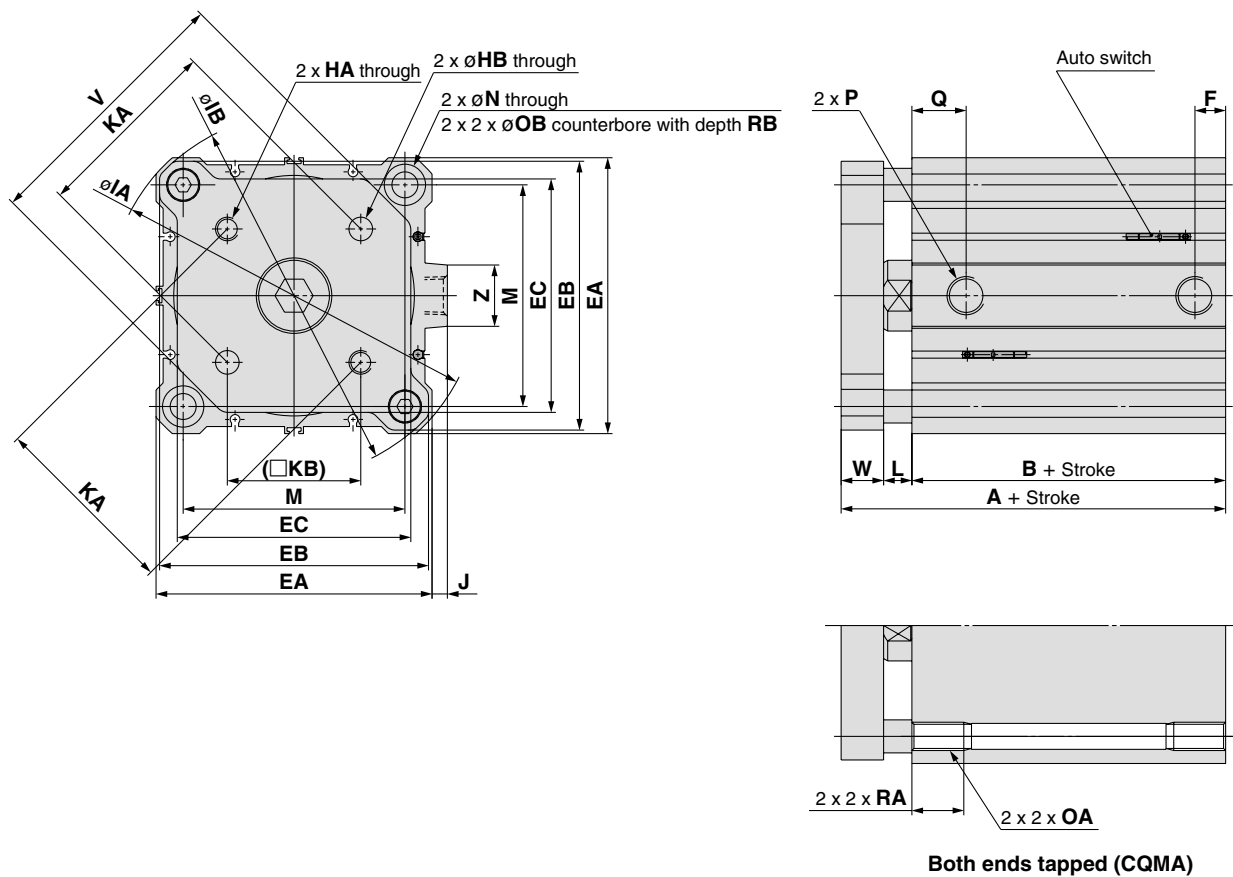
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Individual  
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Technical  
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## Dimensions

## Ø63 to Ø100



### Both ends tapped (CQMA)

(mm)

| Bore size<br>(mm) | Stroke range<br>(mm) | Without auto switch |      | With auto switch |      | EA  | EB  | EC   | F    | HA        | HB                              | IA  | IB  | J   | KA       | KB   | L  | M  |
|-------------------|----------------------|---------------------|------|------------------|------|-----|-----|------|------|-----------|---------------------------------|-----|-----|-----|----------|------|----|----|
|                   |                      | A                   | B    | A                | B    |     |     |      |      |           |                                 |     |     |     |          |      |    |    |
| 63                | 10 to 50             | 56                  | 36   | 66               | 46   | 77  | 74  | 59.6 | 10.5 | M6 x 1    | 6 <sup>+0.2</sup> <sub>0</sub>  | 103 | 100 | 7   | 50 ± 0.2 | 35.4 | 8  | 60 |
|                   | 75, 100              | 66                  | 46   |                  |      |     |     |      |      |           |                                 |     |     |     |          |      |    |    |
| 80                | 10 to 50             | 67.5                | 43.5 | 77.5             | 53.5 | 98  | 95  | 79.5 | 12.5 | M8 x 1.25 | 8 <sup>+0.2</sup> <sub>0</sub>  | 132 | 129 | 6   | 65 ± 0.2 | 46   | 10 | 77 |
|                   | 75, 100              | 77.5                | 53.5 |                  |      |     |     |      |      |           |                                 |     |     |     |          |      |    |    |
| 100               | 10 to 50             | 79                  | 53   | 89               | 63   | 117 | 114 | 99   | 13   | M10 x 1.5 | 10 <sup>+0.2</sup> <sub>0</sub> | 156 | 153 | 6.5 | 80 ± 0.2 | 56.6 | 10 | 94 |
|                   | 75, 100              | 89                  | 63   |                  |      |     |     |      |      |           |                                 |     |     |     |          |      |    |    |

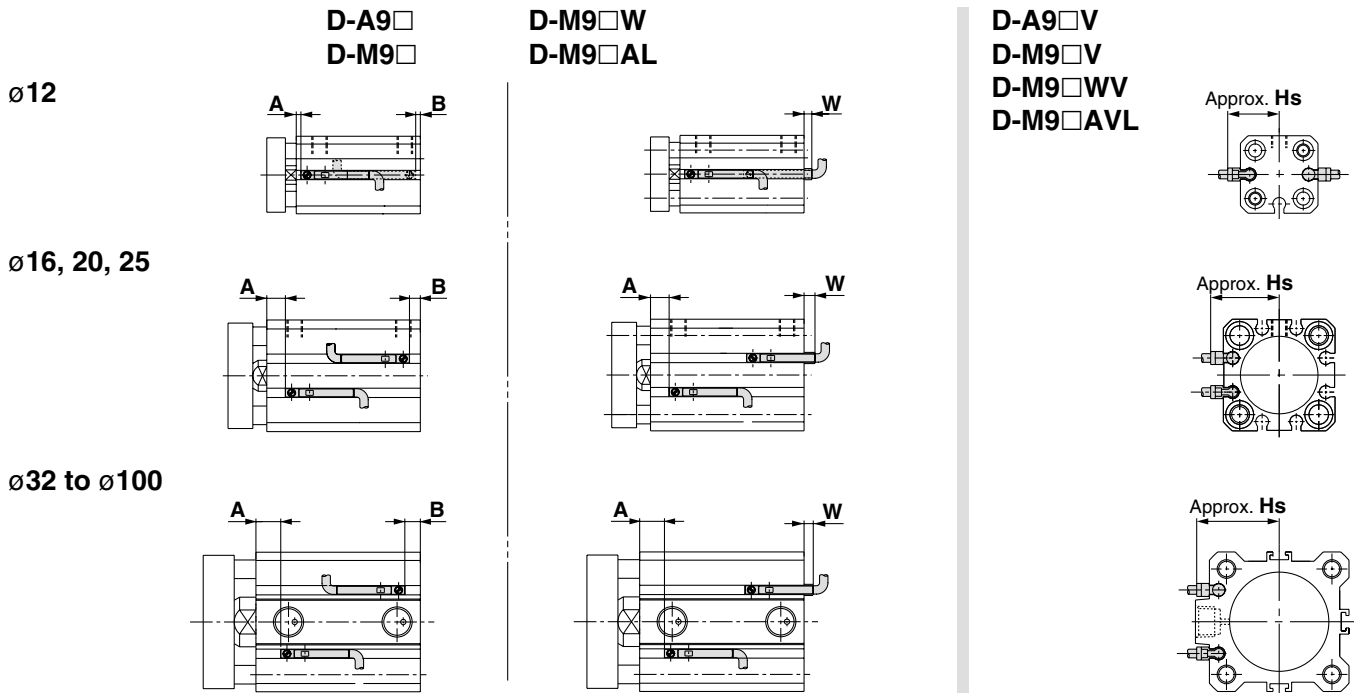
| Bore size<br>(mm) | N  | OA         | OB   | P      |         |       | Q  | RA | RB   | V   | W  | Z  |
|-------------------|----|------------|------|--------|---------|-------|----|----|------|-----|----|----|
|                   |    |            |      | —      | TN      | TF    |    |    |      |     |    |    |
| <b>63</b>         | 9  | M10 x 1.5  | 14   | Rc 1/4 | NPT 1/4 | G 1/4 | 15 | 18 | 10.5 | 69  | 12 | 19 |
| <b>80</b>         | 11 | M12 x 1.75 | 17.5 | Rc 3/8 | NPT 3/8 | G 3/8 | 16 | 22 | 13.5 | 89  | 14 | 26 |
| <b>100</b>        | 11 | M12 x 1.75 | 17.5 | Rc 3/8 | NPT 3/8 | G 3/8 | 23 | 22 | 13.5 | 113 | 16 | 26 |

## Minimum Auto Switch Mounting Stroke

| Bore size<br>(mm)          | Auto switch<br>No.<br>of auto<br>switch<br>mounted | (mm)   |        |       |                     |       |                   |                  |                                    |                     |                                    |        |                                                  |          |
|----------------------------|----------------------------------------------------|--------|--------|-------|---------------------|-------|-------------------|------------------|------------------------------------|---------------------|------------------------------------|--------|--------------------------------------------------|----------|
|                            |                                                    | D-M9□V | D-A9□V | D-A9□ | D-M9□WV<br>D-M9□AVL | D-M9□ | D-M9□W<br>D-M9□AL | D-F7□V<br>D-J79C | D-A7□<br>D-A8□<br>D-A73C<br>D-A80C | D-F7□WV<br>D-F7BAVL | 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-F7NTL<br>D-F79F | D-P4DW * |
| 12, 16,<br>20, 25          | 1 pc.                                              | 5      | 5      | 10    | 10                  | 15    | 15                | —                | —                                  | —                   | —                                  | —      | —                                                | —        |
|                            | 2 pcs.                                             | 5      | 10     | 10    | 10                  | 15    | 15                | —                | —                                  | —                   | —                                  | —      | —                                                | —        |
| 32, 40, 50,<br>63, 80, 100 | 1 pc.                                              | 5      | 5      | 10    | 10                  | 10    | 15                | 5                | 5                                  | 10                  | 15                                 | 15     | 20                                               | 15       |
|                            | 2 pcs.                                             | 5      | 10     | 10    | 15                  | 10    | 15                | 5                | 10                                 | 15                  | 15                                 | 20     | 20                                               | 15       |

\* D-P4DWL type is compatible with bore sizes ø40 to ø100.

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



## Proper Auto Switch Mounting Positions

| Auto switch<br>model<br>Bore<br>size | D-A9□<br>D-A9□V |      |             | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV |      |      | D-M9□AL<br>D-M9□AVL |      |      |
|--------------------------------------|-----------------|------|-------------|--------------------------------------|------|------|---------------------|------|------|
|                                      | A               | B    | W           | A                                    | B    | W    | A                   | B    | W    |
| 12                                   | 1.5             | 0.5  | 1.5 (4)     | 5.5                                  | 4.5  | 5.5  | 5.5                 | 4.5  | 7.5  |
| 16                                   | 2               | 0    | 2 (4.5)     | 6                                    | 4    | 6    | 6                   | 4    | 8    |
| 20                                   | 6               | 3.5  | -1.5 (1)    | 10                                   | 7.5  | 2.5  | 10                  | 7.5  | 4.5  |
| 25                                   | 7               | 5.5  | -3.5 (-1)   | 11                                   | 9.5  | 0.5  | 11                  | 9.5  | 2.5  |
| 32                                   | 8               | 5    | -3 (-0.5)   | 12                                   | 9    | 1    | 12                  | 9    | 3    |
| 40                                   | 12              | 7.5  | -5.5 (-3)   | 16                                   | 11.5 | -1.5 | 16                  | 11.5 | 0.5  |
| 50                                   | 10              | 10.5 | -8.5 (-6)   | 14                                   | 14.5 | -4.5 | 14                  | 14.5 | -2.5 |
| 63                                   | 12.5            | 13.5 | -11.5 (-9)  | 16.5                                 | 17.5 | -7.5 | 16.5                | 17.5 | -5.5 |
| 80                                   | 15.5            | 18   | -16 (-13.5) | 19.5                                 | 22   | -12  | 19.5                | 22   | -10  |
| 100                                  | 20              | 23   | -21 (-18.5) | 24                                   | 27   | -17  | 24                  | 27   | -15  |

Note 1) ( ): For D-A93 type

Note 2) W is used for mounting D-A9□, D-M9□, D-M9□W and D-M9□AL types.

Note 3) Negative figures for W in the table indicate that an auto switch is mounted inward from the edge of the cylinder body.

Note 4) Adjust the auto switch after confirming the operating condition in the actual setting.

## Auto Switch Mounting Height

| Auto switch<br>model<br>Bore<br>size | D-A9□V<br>D-M9□V<br>D-M9□WV<br>D-M9□AVL |      |
|--------------------------------------|-----------------------------------------|------|
|                                      | Hs                                      | Hs   |
| 12                                   | 17                                      | 19   |
| 16                                   | 19                                      | 21   |
| 20                                   | 22.5                                    | 24   |
| 25                                   | 24.5                                    | 26   |
| 32                                   | 27                                      | 29   |
| 40                                   | 30.5                                    | 32.5 |
| 50                                   | 36.5                                    | 42   |
| 63                                   | 40                                      | 42   |
| 80                                   | 50                                      | 52   |
| 100                                  | 60                                      | 62   |

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical

data

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

D-A7□  
D-A80  
D-A73C  
D-A80C  
D-A79W

D-F7□V  
D-J79C  
D-F7□WV  
D-F7BAVL

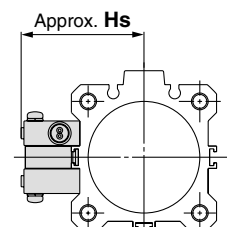
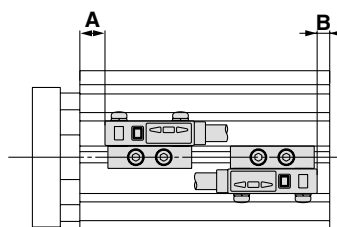
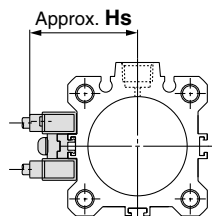
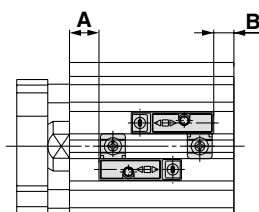
D-A7□H  
D-A80H

D-F7□  
D-J79  
D-F7□W  
D-J79W  
D-F7BAL  
D-F79F  
D-F7NTL

D-P4DW

ø40 to ø100

ø32 to ø100



## Proper Auto Switch Mounting Position

(mm)

| Auto switch model | D-A73<br>D-A80 |      | D-A72/A7□H/A80H<br>D-A73C/A80C/F7□<br>D-J79/F7□W/J79W<br>D-F7□V/F7□WV<br>D-F79F/J79C<br>D-F7BAL/F7BAVL |      | D-F7NTL |      | D-A79W |      | D-P4DWL |      |
|-------------------|----------------|------|--------------------------------------------------------------------------------------------------------|------|---------|------|--------|------|---------|------|
|                   | A              | B    | A                                                                                                      | B    | A       | B    | A      | B    | A       | B    |
| Bore size 32      | 9              | 6    | 9.5                                                                                                    | 6.5  | 14.5    | 11.5 | 6.5    | 3.5  | —       | —    |
| 40                | 13             | 8.5  | 13.5                                                                                                   | 9    | 18.5    | 14   | 10.5   | 6    | 9       | 4.5  |
| 50                | 11             | 11.5 | 11.5                                                                                                   | 12   | 16.5    | 17   | 12     | 8.5  | 7       | 7.5  |
| 63                | 13             | 14.5 | 14                                                                                                     | 15   | 15      | 16   | 11     | 12   | 9.5     | 10.5 |
| 80                | 17             | 18   | 18                                                                                                     | 18.5 | 19      | 19.5 | 15     | 15.5 | 13.5    | 14   |
| 100               | 21             | 24   | 21.5                                                                                                   | 24.5 | 22.5    | 25.5 | 18.5   | 21.5 | 17      | 20   |

\* D-P4DWL type is compatible with bore sizes ø40 to ø100.

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

## Auto Switch Mounting Height

(mm)

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

\* D-P4DWL type is compatible with bore sizes ø40 to ø100.

## Operating Range

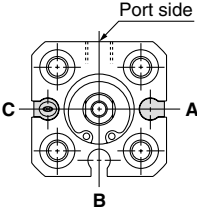
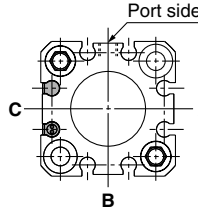
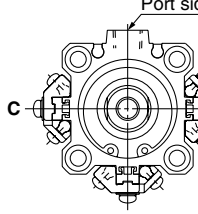
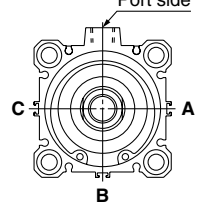
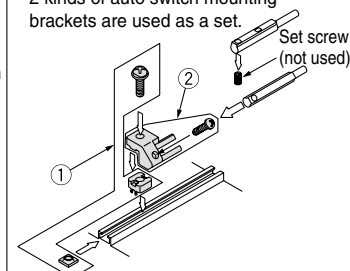
(mm)

| Auto switch model                                                                    | Bore size |     |     |     |     |     |     |      |     |      |
|--------------------------------------------------------------------------------------|-----------|-----|-----|-----|-----|-----|-----|------|-----|------|
|                                                                                      | 12        | 16  | 20  | 25  | 32  | 40  | 50  | 63   | 80  | 100  |
| D-A9□/A9□V                                                                           | 6         | 7.5 | 10  | 10  | 9.5 | 9.5 | 9.5 | 11.5 | 9   | 11.5 |
| D-M9□/M9□V<br>D-M9□W/M9□WV<br>D-M9□AL/M9□AVL                                         | 3         | 4   | 5.5 | 5.5 | 6   | 6   | 7   | 7.5  | 8   | 8.5  |
| D-A7□/A80                                                                            | —         | —   | —   | —   | 12  | 11  | 10  | 12   | 12  | 13   |
| D-A79W                                                                               | —         | —   | —   | —   | 13  | 14  | 14  | 16   | 15  | 17   |
| D-F7□/F7□V<br>D-J79/J79C<br>D-F7□W/F7□WV<br>D-J79W<br>D-F7BAL/F7BAVL<br>D-F7NTL/F79F | —         | —   | —   | —   | 6   | 6   | 6   | 6.5  | 6.5 | 7    |
| 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.

\* Auto switch mounting brackets BQ2-012 are not used for sizes over ø32 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types. The above values indicate the operating range when mounted with the conventional auto switch installation groove.

## Auto Switch Mounting Bracket: Part No.

| 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 surface                                                        |
|                                                                                                                                        | A, B, C sides                                                                     | Port, A, B, C sides                                                               | Port side                                                                                                                             | Port, A, B, C sides                                                                 |
| <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 bracket not required.                                        | Auto switch mounting bracket not required.                                        | Auto switch mounting bracket not required.<br><br> | Auto switch mounting bracket not required.                                          |

Note 1) For each cylinder series, when a compact auto switch is mounted on the three sides (A, B and C above) other than the port side of bore sizes ø32 to ø50, the auto switch mounting brackets above are required. Order them separately from cylinders.

Order example

CDQMB32-50-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.

| Auto switch model                                                                                                                                                                                                           | Bore size (mm) |    |    |    |    |          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----|----|----|----|----------|
|                                                                                                                                                                                                                             | 32             | 40 | 50 | 63 | 80 | 100      |
| <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-2     |
| <b>D-P4DWL</b>                                                                                                                                                                                                              | —              |    |    |    |    | BQP1-050 |

Note 3) Auto switch mounting brackets and auto switches are included when the cylinder is shipped. For only ø40 to ø100 with D-P4DWL, they are assembled at the time of shipment.

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

The following set of mounting screws made of stainless steel (including nuts) 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

D-F7BAL/F7BAVL auto switches are mounted on the cylinder with the stainless steel screws above when shipped. When an auto switch is shipped independently, BBA2 is attached.

Note 4) Refer to page 1361 for the details of BBA2 screws.

Note 5) When D-M9□A(V)L type is mounted on a side other than ø32, ø40 and ø50 port sides, order auto switch mounting brackets BQ2-012S and BQ-2, and a stainless steel screw set BBA2.

### Auto Switch Mounting Bracket Mass

| Mounting bracket part no. | Mass (g) |
|---------------------------|----------|
| BQ-2                      | 1.5      |
| BQ2-012                   | 5        |
| BQP1-050                  | 16       |

### Other Applicable Auto Switches

Refer to pages 1263 to 1371 for further information on auto switches.

| Type                    | Model              | Electrical entry (Fetching direction) | Features                                      |
|-------------------------|--------------------|---------------------------------------|-----------------------------------------------|
| Reed auto switch        | D-A73              | Grommet (perpendicular)               | —                                             |
|                         | D-A80              |                                       | Without indicator light                       |
|                         | D-A73H, A76H       | Grommet (in-line)                     | —                                             |
|                         | D-A80H             |                                       | Without indicator light                       |
| Solid state auto switch | D-F7NV, F7PV, F7BV | Grommet (perpendicular)               | —                                             |
|                         | D-F7NWV, F7BWV     |                                       | Diagnostic indication (2-color indication)    |
|                         | D-F7BAVL           |                                       | Water resistance (2-color indication)         |
|                         | D-F79, F7P, J79    |                                       | —                                             |
|                         | D-F79W, F7PW, J79W | Grommet (in-line)                     | Diagnostic indication (2-color indication)    |
|                         | D-F7BAL            |                                       | Water resistance (2-color indication)         |
|                         | D-F7NTL            |                                       | With timer                                    |
|                         | D-P5DWL            |                                       | Magnetic field resistant (2-color indication) |

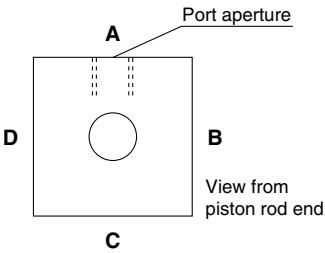
\* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1328 and 1329 for details.

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

\* D-A7/A8/F7/J7 types cannot be mounted on ø12 to ø25.

The number of surfaces and grooves where an auto switch can be mounted (as direct mounting).

The number of the surfaces and grooves where the auto switch can be mounted, by switch type, are shown in the table below.



| Switch type    | D-A9□(V), M9□(V), M9□W(V), M9□A(V)L |                            |                            |                            | D-A7□, A8□, F7□, J7□       |                            |                            |                            |
|----------------|-------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Bore size (mm) | A<br>(Mounting groove no.)          | B<br>(Mounting groove no.) | C<br>(Mounting groove no.) | D<br>(Mounting groove no.) | A<br>(Mounting groove no.) | B<br>(Mounting groove no.) | C<br>(Mounting groove no.) | D<br>(Mounting groove no.) |
| 12             | —                                   | ○<br>(1)                   | ○<br>(1)                   | ○<br>(1)                   | —                          | —                          | —                          | —                          |
| 16             | —                                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | —                          | —                          | —                          | —                          |
| 20             | ○<br>(2)                            | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | —                          | —                          | —                          | —                          |
| 25             | ○<br>(2)                            | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | —                          | —                          | —                          | —                          |
| 32             | ○<br>(2)                            | —                          | —                          | —                          | —                          | ○                          | ○                          | ○                          |
| 40             | ○<br>(2)                            | —                          | —                          | —                          | —                          | ○                          | ○                          | ○                          |
| 50             | ○<br>(2)                            | —                          | —                          | —                          | —                          | ○                          | ○                          | ○                          |
| 63             | ○<br>(2)                            | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | —                          | ○                          | ○                          | ○                          |
| 80             | ○<br>(2)                            | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | —                          | ○                          | ○                          | ○                          |
| 100            | ○<br>(2)                            | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | —                          | ○                          | ○                          | ○                          |



## Series CQM

# Specific Product Precautions

Be sure to read before handling.

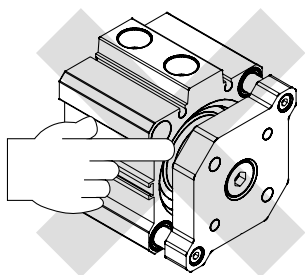
Refer to front matters 54 and 55 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

### Mounting

#### ⚠ Warning

1. Do not put hands or fingers between the plate and cylinder tubing.

Never put hands or fingers in the gap between the plate and cylinder tubing when the piston rods are retracted. Due to the heavy power output of the cylinder, failure to comply with this directive may result in trapping and subsequent injury to the human body.



#### ⚠ Caution

1. Do not scratch or dent the sliding parts of the piston rod and guide rods.

Damage to seals may cause air leakage or faulty operation.

2. Mounting of work piece

When screwing a bolt onto the threaded portion of the plate surface, be certain that the guide rods are fully extended to the end.

Also, be careful that the tightening torque is not applied to the guide rods.

3. Make sure that the cylinder mounting surface has a flatness of 0.02 mm or less.

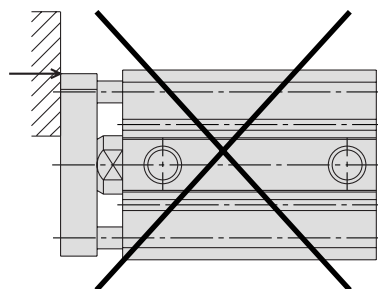
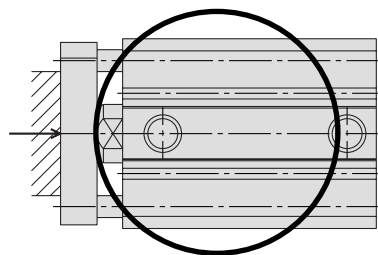
When mounting the cylinder body or workpieces on the plate, improper flatness of the mounting surface may cause malfunctions.

When the flatness of a workpiece is not sufficient, attaching a shim such as a flat washer, etc., at the place of a mounting bolt between the workpiece and the plate may reduce the affect on the operation.

### Others

#### ⚠ Caution

1. This product should not be used as a stopper.
2. Do not disassemble and modify the product.
3. For example, in a pressing application, the cylinder thrust is directly applied to the plate, therefore, make sure that the pressing force is applied to the plate directly on the extended axial line of a rod. (Below figures.)



CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual  
-X□

Technical  
data