

# Air Cylinder Series CM2

ø20, ø25, ø32, ø40

## Longer life, over 1.5 times longer:

The cylinder's mounting and the machining accuracy of the parts have been improved. Furthermore, the shapes and the materials of the seals have been improved to enhance their wear resistance. As a result, the cylinder's life has been dramatically increased to 1.5 times that of Series CM.

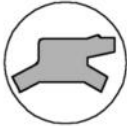
## Compact and light weight:

The tube is made of stainless steel and the cover and the piston are made of aluminum. Through a compact design, it weighs 30 to 40% less than Series CM. The lateral width of the cover has been reduced approximately 10%, requiring less installation space.



## Excellent dust resistance:

A special shaped rod seal with a composite formed dust lip has been adopted. It prevents the intrusion of external dust, enabling the cylinder to be operated in unfavorable environments containing large amounts of cutting chips.



## Reduced piston rod deflection:

The clearance between the bushing and the piston rod, and between the tube and the wear ring have been decreased to achieve higher accuracy. Thus, the deflection of the piston rod has been decreased to 1/2 of Series CM.

## A tube that is resistant against external impacts:

To prevent deformation or damage caused by external impacts, a stainless tube with a thicker wall has been adopted to increase its strength. Furthermore, the strength of the support bracket has been increased.

## Easy installation:

Because the rod cover and the head cover have wide surfaces, a wrench can be placed over the cover during installation, thus facilitating installation.

## Improved installation accuracy:

The cylinder body and the mounting support bracket have been made with an even higher level of accuracy. Improving the installation accuracy simplifies the installation work and prolongs the life of the cylinder.

## High speed drive possible:

The cushion function can be selected in accordance with the drive speed condition to be used. Therefore, it can support a high-speed drive.

- Rubber bumper ..... 50 to 750mm/s (Standard equipment)

## Replaceable rod seal:







The rod seal, which is the first to wear out in a cylinder, can be replaced. This extends the life of the cylinder, and is economical. The seal can be replaced with the cylinder mounting, thus requiring less manpower.



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## Variations

| Series   | Action        | Rod                                       | Cushion | Basic | Variation              |          |                      |                      |                      | Bore size (mm) | Page |
|--|---------------|---|---------|-------|------------------------|----------|----------------------|----------------------|----------------------|----------------|------|
|  |               |   |         |       | With One-touch fitting | Rod boot | Air hydro            | Clean series         | Copper free          |                |      |
| <b>Standard Series CM2</b><br>                          | Double acting | Single rod                                | Rubber  | ●     | ●                      | ●        | ●                    | ●                    | 20<br>25<br>32<br>40 | 1.4-3          |      |
|  |               | Air                                       | ●       | ●     | ●                      | ●        | ●                    | 1.4-22               |                      |                |      |
|  | Double rod    | Rubber                                    | ●       | ●     | ●                      | ●        | ●                    | 1.4-33               |                      |                |      |
| <b>Non-rotating rod Series CM2K</b><br>                | Double acting | Single rod                                | Rubber  | ●     | ●                      | ●        | ●                    | 20<br>25<br>32<br>40 | 1.4-50               |                |      |
|  |               | Air                                       | ●       | ●     | ●                      | ●        | 1.4-56               |                      |                      |                |      |
|  | Double rod    | Rubber                                    | ●       | ●     | ●                      | ●        | 1.4-61               |                      |                      |                |      |
| <b>Direct mount style Series CM2R</b><br>             | Double acting | Single rod                                | Rubber  | ●     | ●                      | ●        | 20<br>25<br>32<br>40 | 1.4-66               |                      |                |      |
|  |               |   | Air     | ●     | ●                      | ●        |                      |                      |                      |                |      |
|  | Single acting | Single rod (Spring return/ Spring extend) | Rubber  | ●     | ●                      | ●        | 1.4-73               |                      |                      |                |      |
| <b>Direct mount/Non-rotating rod Series CM2RK</b><br> | Double acting | Single rod                                | Rubber  | ●     | ●                      | ●        | 20<br>25<br>32<br>40 | 1.4-78               |                      |                |      |
|  |               |   | Air     | ●     | ●                      | ●        |                      |                      |                      |                |      |
| <b>Low friction Series CM2Q</b><br>                   | Double acting | Single rod                                | Rubber  | ●     | ●                      | ●        | 20<br>25<br>32<br>40 | 1.4-83               |                      |                |      |
|  |               |   | Air     | ●     | ●                      | ●        |                      |                      |                      |                |      |
| <b>Centralized piping Series CM2□□P</b><br>           | Double acting | Single rod                                | Rubber  | ●     | ●                      | ●        | 20<br>25<br>32<br>40 | 1.4-83               |                      |                |      |
|  |               |   | Air     | ●     | ●                      | ●        |                      |                      |                      |                |      |

- CJ1
- CJP
- CJ2
- CM2**
- C85
- CG1
- MB
- C95
- CA1
- CS1

### Applicable auto switch

| Auto switch model         | Band mounting   |
|---------------------------|---|
| <b>Reed switch</b>        | D-C7/C8, D-C73C/C80C, D-B5/B6<br>D-B59W, D-A3□A, D-A44A |
| <b>Solid state switch</b> | D-H7□, D-H7□W, D-H7□F<br>D-H7BAL, D-G5NTL, D-G39A/K39A  |

### Made to Order

Refer to p.5.4-1 for made to order specifications for series CM2.

# Standard: Double Acting Single Rod

# Series CM2



ø20, ø25, ø32, ø40

## How to Order

| Mounting                |                                   | Piping                              |  |
|-------------------------|-----------------------------------|-------------------------------------|--|
| <b>B</b> Basic          | <b>T</b> Rear trunnion            | — Screw-in                          |  |
| <b>L</b> Axial foot     | <b>E</b> Integrated clevis        | <b>F</b> Built-in one-touch fitting |  |
| <b>F</b> Front flange   | <b>BZ</b> Boss-cut basic          |                                     |  |
| <b>G</b> Rear flange    | <b>FZ</b> Boss-cut front flange   |                                     |  |
| <b>C</b> Single clevis  |                                   |                                     |  |
| <b>D</b> Double clevis  | <b>UZ</b> Boss-cut front trunnion |                                     |  |
| <b>U</b> Front trunnion |                                   |                                     |  |

| Style                       |  |
|-----------------------------|--|
| — Air cylinder              |  |
| <b>H</b> Air-hydro cylinder |  |

| Cushion              |  |
|----------------------|--|
| — Rubber bumper      |  |
| <b>A</b> Air cushion |  |

\* Air-hydro cylinder: rubber bumper only.

**Standard** CM2 **H** **L** **40** **F** — **150** **A** **J**

**With auto switch** CDM2 **H** **L** **40** **F** — **150** **A** **J** — **C73** □

| Bore size |      |
|-----------|------|
| <b>20</b> | 20mm |
| <b>25</b> | 25mm |
| <b>32</b> | 32mm |
| <b>40</b> | 40mm |

| Rod boot |                          |
|----------|--------------------------|
| —        | Without rod boot         |
| <b>J</b> | Nylon tarpaulin          |
| <b>K</b> | Heat resistant tarpaulin |

| Number of auto switches |   |
|-------------------------|---|
| —                       | 2 |
| <b>S</b>                | 1 |
| <b>n</b>                | n |

### Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

| Style                                  | Special function | Electrical entry | Indicator    | Wiring (Output) | Load voltage |         | Auto switch model | Lead wire* (m) |       |       |          | Applicable load |    |           |           |
|--|------------------|------------------|--------------|-----------------|--------------|---------|-------------------|----------------|-------|-------|----------|-----------------|----|-----------|-----------|
|  |                  |                  |              |                 | DC           | AC      |                   | 0.5 (—)        | 3 (L) | 5 (Z) | None (N) |                 |    |           |           |
| Reed switch                            | —                | Grommet          | Yes          | 3 wire (NPN)    | 24V          | 5V      | —                 | <b>C76</b>     | ●     | ●     | —        | —               | IC |           |           |
|  |                  |                  |              |                 |              | 12V     | 100V              | <b>C73</b>     | ●     | ●     | ●        | —               | —  | Relay PLC |           |
|  |                  |                  |              |                 |              | 5V, 12V | 100V or less      | <b>C80</b>     | ●     | ●     | —        | —               | —  | IC        |           |
|  |                  |                  |              |                 |              | 12V     | —                 | <b>B53</b>     | ●     | ●     | ●        | —               | —  | PLC       |           |
|  |                  |                  |              |                 |              | 12V     | 100V, 200V        | <b>B54</b>     | ●     | ●     | ●        | —               | —  | —         |           |
|  |                  |                  |              |                 |              | 12V     | 200V or less      | <b>B64</b>     | ●     | ●     | —        | —               | —  | Relay PLC |           |
|  |                  |                  |              |                 |              | 12V     | —                 | <b>C73C</b>    | ●     | ●     | ●        | ●               | —  | —         |           |
|  |                  |                  |              |                 |              | 5V, 12V | 24V or less       | <b>C80C</b>    | ●     | ●     | ●        | ●               | —  | IC        |           |
|  |                  |                  |              |                 |              | 12V     | —                 | <b>A33A</b>    | —     | —     | —        | ●               | —  | —         | PLC       |
|  |                  |                  |              |                 |              | 12V     | 100V, 200V        | <b>A34A</b>    | —     | —     | —        | ●               | —  | —         | Relay PLC |
| Solid state switch                     | —                | Grommet          | Yes          | 3 wire (NPN)    | 24V          | 5V, 12V | —                 | <b>H7A1</b>    | ●     | ●     | ○        | —               | IC |           |           |
|  |                  |                  |              |                 |              | 12V     | —                 | <b>H7A2</b>    | ●     | ●     | ○        | —               | —  |           |           |
|  |                  |                  |              |                 |              | 12V     | —                 | <b>H7B</b>     | ●     | ●     | ○        | —               | —  |           |           |
|  |                  |                  |              |                 |              | 12V     | —                 | <b>H7C</b>     | ●     | ●     | ●        | ●               | —  | —         |           |
|  |                  |                  |              |                 |              | 5V, 12V | —                 | <b>G39A</b>    | —     | —     | —        | ●               | —  | IC        |           |
|  |                  |                  |              |                 |              | 12V     | —                 | <b>K39A</b>    | —     | —     | —        | ●               | —  | —         |           |
|  |                  |                  |              |                 |              | 5V, 12V | —                 | <b>H7NW</b>    | ●     | ●     | ○        | —               | —  | Relay PLC |           |
|  |                  |                  |              |                 |              | 12V     | —                 | <b>H7PW</b>    | ●     | ●     | ○        | —               | —  | IC        |           |
|  |                  |                  |              |                 |              | 12V     | —                 | <b>H7BW</b>    | ●     | ●     | ○        | —               | —  | —         |           |
|  |                  |                  |              |                 |              | 12V     | —                 | <b>H7BA</b>    | —     | ●     | ○        | —               | —  | —         |           |
| Diagnostic indicator (2 color)         | Grommet          | Yes              | 3 wire (NPN) | 24V             | 5V, 12V      | —       | <b>G5NT</b>       | —              | ●     | ○     | —        | —               |    |           |           |
|  |                  |                  |              |                 | 12V          | —       | <b>H7NF</b>       | ●              | ●     | ○     | —        | IC              |    |           |           |
|  |                  |                  |              |                 | 12V          | —       | <b>H7LF</b>       | ●              | ●     | ○     | —        | —               |    |           |           |
|  |                  |                  |              |                 | —            | —       |                   | ●              | ●     | ○     | —        | —               |    |           |           |
| Water resistant (2 color)              | Grommet          | Yes              | 3 wire (NPN) | 24V             | 5V, 12V      | —       |                   | —              | ●     | ○     | —        | —               |    |           |           |
|  |                  |                  |              |                 | 12V          | —       |                   | —              | ●     | ○     | —        | —               |    |           |           |
| With timer                             | Grommet          | Yes              | 4 wire (NPN) | 24V             | 5V, 12V      | —       |                   | —              | ●     | ○     | —        | —               |    |           |           |
| 12V                                    |                  |                  |              |                 | —            |         | —                 | ●              | ○     | —     | —        |                 |    |           |           |
| Diagnostic output (2 color)            | Grommet          | Yes              | 3 wire (NPN) | 24V             | 5V, 12V      | —       |                   | —              | ●     | ○     | —        | —               |    |           |           |
| 12V                                    |                  |                  |              |                 | —            |         | —                 | ●              | ○     | —     | —        |                 |    |           |           |
| Latch with diagnostic output (2 color) | Grommet          | Yes              | 4 wire (NPN) | 24V             | 5V, 12V      | —       |                   | —              | ●     | ○     | —        | —               |    |           |           |
| 12V                                    |                  |                  |              |                 | —            |         | —                 | ●              | ○     | —     | —        |                 |    |           |           |

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

\* Refer to the left table for selecting applicable auto switches.



\* Lead wire length

0.5m : —

3m : L

5m : Z

None: N

e.g.) C80CZ, C80CN

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

\* Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A".

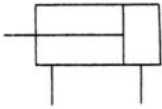
# Standard: Double Acting Single Rod *Series CM2*



Integrated clevis style

## JIS symbol

Double acting/Single rod



**Made to Order**

Refer to p.5.4-1 for made to order specifications for series CM2.

## Specifications

|                               |   |      |       |      |
|-------------------------------|---|------|-------|------|
| Bore size (mm)                | 20  | 25   | 32    | 40   |
| Style                         | Air cylinder  |      |       |      |
| Action                        | Double acting/Single rod  |      |       |      |
| Fluid                         | Air   |      |       |      |
| Proof pressure                | 1.5MPa  |      |       |      |
| Max. operating pressure       | 1.0MPa  |      |       |      |
| Min. operating pressure       | 0.05MPa   |      |       |      |
| Ambient and fluid temperature | Without auto switch: -10 to +70°C (No freezing)<br>With auto switch: -10 to +60°C (No freezing) |      |       |      |
| Lubrication                   | Non-lube  |      |       |      |
| Thread tolerance              | JIS class 2   |      |       |      |
| Stroke tolerance              | $+1.4$<br>0   |      |       |      |
| Piston speed                  | 50 to 750mm/s   |      |       |      |
| Cushion                       | Rubber bumper   |      |       |      |
| Allowable kinetic energy      | 0.27J   | 0.4J | 0.65J | 1.2J |

**CJ1**

**CJP**

**CJ2**

**CM2**

**C85**

**CG1**

**MB**

**C95**

**CA1**

**CS1**

## Standard Stroke

| Bore size (mm) | Standard stroke(mm) (1)                    | Long stroke (2) (mm) | Max. stroke (mm) |
|----------------|--|----------------------|------------------|
| 20             | 25, 50, 75, 100, 125, 150<br>200, 250, 300 | 400                  | 1000             |
| 25             |  | 450                  | 1500             |
| 32             |  | 450                  | 2000             |
| 40             |  | 500                  | 2000             |



Note 1) Other intermediate strokes can be manufactured upon receipt of order.

Note 2) Long stroke applies to the axial foot style and the front flange style. If other mounting brackets are used or the length exceeds the long stroke limit, the stroke should be selected based on the stroke selection table. (Refer to Data on p.0-21.)

## Minimum Strokes for Auto Switches Mounting

(mm)

| Auto switch model                    | Number of switches    |                     |   |                     | 1  |
|--------------------------------------|-----------------------|---------------------|---|---------------------|----|
|                                      | 2                     |                     | n   |                     |    |
|                                      | On different surfaces | On the same surface | On different surfaces                       | On the same surface |    |
| D-C7<br>D-C8                         | 15                    | 50                  | 15+45 ( $\frac{n-2}{2}$ )<br>(n=2, 4, 6...) | 50+45(n-2)          | 10 |
| D-H7□<br>D-H7□W<br>D-H7BAL<br>D-H7NF | 15                    | 60                  |   | 60+45(n-2)          | 10 |
| D-C73C<br>D-C80C<br>D-H7C            | 15                    | 65                  | 15+50 ( $\frac{n-2}{2}$ )<br>(n=2, 4, 6...) | 65+50(n-2)          | 10 |
| D-H7LF                               | 20                    | 65                  | 20+50 ( $\frac{n-2}{2}$ )<br>(n=2, 4, 6...) |                     | 10 |
| D-B5<br>D-B6                         | 15                    | 75                  | 15+50 ( $\frac{n-2}{2}$ )<br>(n=2, 4, 6...) | 75+55(n-2)          | 10 |
| D-B59W                               | 20                    | 75                  | 20+50 ( $\frac{n-2}{2}$ )<br>(n=2, 4, 6...) |                     | 15 |
| D-A3□A<br>D-G39A<br>D-K39A<br>D-A44A | 35                    | 100                 | 35+30 (n-2)                                 | 100+100(n-2)        | 10 |

# Series CM2

## Boss-cut Style

Boss for the head cover bracket is eliminated and the total length of cylinder is shortened.



### Comparison of total cylinder length with standard style (mm)

| ø20 | ø25 | ø32 | ø40 |
|-----|-----|-----|-----|
| ▲13 | ▲13 | ▲13 | ▲16 |

### Mounting

- Boss-cut basic (BZ)
- Boss-cut flange (FZ)
- Boss-cut trunnion (UZ)

## Rod Boot Materials

| Symbol | Material        | Max. ambient temp. |
|--------|-----------------|--------------------|
| J      | Nylon tarpaulin | 70°C               |
| K      | Neoprene cloth  | 110°C*             |

\* Maximum ambient temperature for the rod boot only.

## Mounting Bracket Part No.

| Bore size mm                | 20       | 25       | 32       | 40       |
|-----------------------------|----------|----------|----------|----------|
| Axial foot*                 | CM-L020B | CM-L032B | CM-L040B | CM-L040B |
| Flange                      | CM-F020B | CM-F032B | CM-F040B | CM-F040B |
| Single clevis               | CM-C020B | CM-C032B | CM-C040B | CM-C040B |
| Double clevis (with pins)** | CM-D020B | CM-D032B | CM-D040B | CM-D040B |
| Trunnion (with nuts)        | CM-T020B | CM-T032B | CM-T040B | CM-T040B |

\* Two foot brackets and a mounting nut are attached.

\*\* Clevis pins and snap rings (cotter pins for bore size 40) are attached.

## Auto Switch Mounting Bracket Part No.

| Auto switch model          | Bore size (mm) |         |         |         |
|----------------------------|----------------|---------|---------|---------|
|                            | 20             | 25      | 32      | 40      |
| D-C7/C8<br>D-H7□           | BM2-020        | BM2-025 | BM2-032 | BM2-040 |
| D-B5/B6<br>D-G5NTL         | BA2-020        | BA2-025 | BA2-032 | BA2-040 |
| D-A3□A/A44A<br>D-G39A/K39A | BM3-020        | BM3-025 | BM3-032 | BM3-040 |



Note) A set of following stainless steel mounting screws is attached.  
(A switch mounting band is not attached. Please order the band separately.)

BBA3: D-B5/B6/G5  
BBA4: D-C7/C8/H7

· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.

When a switch only is shipped, "BBA4" screws are attached



## Precautions

Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instructions and common precautions.

### Precautions on Handling

#### Warning

- ① Do not rotate the cover.
  - When installing the cylinder or screwing a pipe fitting into the port, the coupling portion of the cover could break if the cover is rotated.

#### Caution

- ① Be careful with the snap ring that could fly out.
  - When replacing the rod seal, be careful with the removal of the snap ring, as the snap ring could fly out.
- ② Do not touch the cylinder during operation.
  - If the cylinder is operating at a high frequency, be aware that the cylinder tube surface could become very hot, creating the risk of burns.

# Standard: Double Acting Single Rod *Series CM2*

## Mounting Accessories

| Mounting          | Standard     |             |            | Option               |                          |               |          |
|-------------------|--------------|-------------|------------|----------------------|--------------------------|---------------|----------|
|                   | Mounting nut | Rod end nut | Clevis pin | Single knuckle joint | Double knuckle joint (3) | Pivot bracket | Rod boot |
| Basic             | ● (1 pc.)    | ●           | —          | ●                    | ●                        | —             | ●        |
| Axial foot        | ● (2)        | ●           | —          | ●                    | ●                        | —             | ●        |
| Front flange      | ● (1)        | ●           | —          | ●                    | ●                        | —             | ●        |
| Rear flange       | ● (1)        | ●           | —          | ●                    | ●                        | —             | ●        |
| Integrated clevis | —(1)         | ●           | —          | ●                    | ●                        | ●             | ●        |
| Single clevis     | —(1)         | ●           | —          | ●                    | ●                        | —             | ●        |
| Double clevis (3) | —(1)         | ●           | ●          | ●                    | ●                        | —             | ●        |
| Front trunnion    | ● (1) (2)    | ●           | —          | ●                    | ●                        | —             | ●        |
| Rear trunnion     | ● (1) (2)    | ●           | —          | ●                    | ●                        | —             | ●        |
| Boss-cut basic    | ● (1)        | ●           | —          | ●                    | ●                        | —             | ●        |
| Boss-cut flange   | ● (1)        | ●           | —          | ●                    | ●                        | —             | ●        |
| Boss-cut trunnion | ● (1)        | ●           | —          | ●                    | ●                        | —             | ●        |
| Note              |              |             |            |                      | With pins                | With pins     |          |



- Note 1) Mounting nuts are not attached for the integrated clevis, the single clevis, and the double clevis styles.
- Note 2) Trunnion nuts are attached for the front trunnion and the rear trunnion styles.
- Note 3) Pins and snap rings (cotter pins for bore size 40) are attached for double clevis and the double knuckle joint.

CJ1

CJP

CJ2

**CM2**

C85

CG1

MB

C95

CA1

CS1

## Weight

| Bore size (mm)                      |                                  | 20   | 25   | 32   | 40   |
|-------------------------------------|----------------------------------|------|------|------|------|
| Basic weight                        | Basic                            | 0.14 | 0.21 | 0.28 | 0.56 |
|                                     | Axial foot                       | 0.29 | 0.37 | 0.44 | 0.83 |
|                                     | Flange                           | 0.20 | 0.30 | 0.37 | 0.68 |
|                                     | Integrated clevis                | 0.12 | 0.19 | 0.27 | 0.52 |
|                                     | Single clevis                    | 0.18 | 0.25 | 0.32 | 0.65 |
|                                     | Double clevis                    | 0.19 | 0.27 | 0.33 | 0.69 |
|                                     | Trunnion                         | 0.18 | 0.28 | 0.34 | 0.66 |
|                                     | Boss-cut basic                   | 0.13 | 0.19 | 0.26 | 0.53 |
|                                     | Boss-cut flange                  | 0.19 | 0.28 | 0.35 | 0.65 |
| Boss-cut trunnion                   | 0.17                             | 0.26 | 0.32 | 0.63 |      |
| Additional weight by each 50 stroke |                                  | 0.04 | 0.06 | 0.08 | 0.13 |
| Accessory                           | Pivot bracket (with pins)        | 0.07 | 0.07 | 0.14 | 0.14 |
|                                     | Single knuckle joint             | 0.06 | 0.06 | 0.06 | 0.23 |
|                                     | Double knuckle joint (with pins) | 0.07 | 0.07 | 0.07 | 0.20 |

Calculation example: CM2L32-100

- Basic weight:..... 0.44 (Foot, ø32)
  - Additional weight:... 0.08/50 stroke
  - Cylinder stroke:..... 100 stroke
- 0.44+0.08 X 100/50=0.60kg

## Water Resistant

CM2 **Mounting** **Bore size** **R** **Stroke** **-XC6**

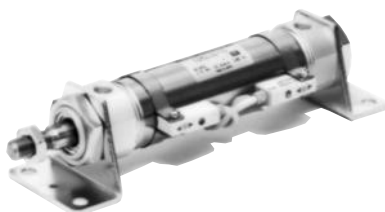
● Material of piston rod and rod end nut

|      |                 |
|------|-----------------|
| —    | Carbon steel    |
| -XC6 | Stainless steel |

● Water resistant

|   |                             |
|---|-----------------------------|
| R | Seal: NBR (Nitrile rubber)  |
| V | Seal: FKM (Fluorine rubber) |

Ideal for use in a machine tool environment exposed to coolant mist. Also suited for use in areas in which water splashes, such as food processing equipment or car washers.

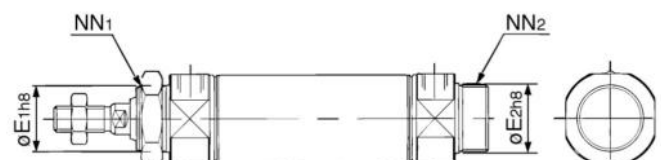


## Specifications

| Action                  | Double acting/Single rod |
|-------------------------|--------------------------|
| Bore size               | ø20, ø25, ø32, ø40       |
| Max. operating pressure | 1.0MPa                   |
| Min. operating pressure | 0.05MPa                  |
| Cushion                 | Rubber bumper            |
| Piping                  | Screw-in                 |
| Piston speed            | 50 to 750mm/s            |

\* Auto switch can be mounted.

## Dimensions



| Bore size (mm) | E1                                | E2*                               | NN1       | NN2*      |
|----------------|-----------------------------------|-----------------------------------|-----------|-----------|
| 20             | 22 <sup>0</sup> <sub>-0.033</sub> | 20 <sup>0</sup> <sub>-0.033</sub> | M22 X 1.5 | M20 X 1.5 |

\* These dimensions and other dimensions are the same as standard style. Contact SMC for part numbers of the foot, the flange and the mounting nut for ø20.

# Series CM2

## Air-hydro

CM2H **Mounting** **Bore size** **Stroke** **Rod boot**

↓ Air-hydro style

A low hydraulic pressure cylinder used at a pressure of 1.0MPa or below.

Through the concurrent use of a CC series air-hydro unit, it is possible to operate at a constant or low speeds or to effect an intermediate stop, just like a hydraulic unit, while using pneumatic equipment such as a valve.



### Specifications

|                               |  |
|-------------------------------|--|
| Style                         | Air-hydro  |
| Fluid                         | Turbine oil  |
| Action                        | Double acting/Single rod   |
| Bore size                     | ø20, ø25, ø32, ø40   |
| Proof pressure                | 1.5MPa   |
| Max. operating pressure       | 1.0MPa   |
| Min. operating pressure       | 0.18MPa  |
| Piston speed                  | 15 to 300mm/s  |
| Ambient and fluid temperature | +5 to +60°C  |
| Thread tolerance              | JIS class 2  |
| Stroke tolerance              | +1.4<br>0  |
| Cushion                       | Rubber bumper (Standard equipment)   |
| Mounting                      | Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut |

\* Auto switch can be mounted.

\* Dimensions are the same as the standard model.

- Construction: Refer to p.1.4-9
- Dimensions: Refer to p.1.4-10 to 1.4-18

## Built-in One-touch Fitting

CM2 **Mounting** **Bore size** **F** **Stroke**

↓ Built-in One-touch fitting

A style in which One-touch fittings are built in the cylinder. It dramatically reduces the piping labor and installation space.



- Construction: Refer to p.1.4-9
- Dimensions: Refer to p.1.4-10 to 1.4-18
- Refer to p1.4-4 for other specifications.

## With Air Cushion

CM2 **Mounting** **Bore size** **Stroke** **A** **Rod boot**

↓ With air cushion

A cushion mechanism is provided on the cover at both ends to absorb the impact that is created during high speed operations. Thus, it does not transmit vibrations to the surroundings and prolongs the life of the cylinder.



### Specifications

|                         |  |
|-------------------------|--|
| Action                  | Double acting/Single rod   |
| Bore size               | ø20, ø25, ø32, ø40   |
| Max. operating pressure | 1.0MPa   |
| Min. operating pressure | 0.05MPa  |
| Cushion                 | Air cushion  |
| Piston speed            | 50 to 1000mm/s   |
| Mounting                | Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut |

\*Auto switches can be mounted.

### Allowable Kinetic Energy

| Bore size (mm) | Effective cushion length (mm) | Kinetic energy absorption |
|----------------|-------------------------------|---------------------------|
| 20             | 11.0                          | 0.54J                     |
| 25             | 11.0                          | 0.78J                     |
| 32             | 11.0                          | 1.27J                     |
| 40             | 11.8                          | 2.35J                     |

- Construction: Refer to p.1.4-9
- Dimensions: Refer to p.1.4-10 to 1.4-18
- Refer to p.1.4-4 for other specifications.

### Specifications

|                         |  |
|-------------------------|--|
| Action                  | Double acting/Single rod   |
| Bore size               | ø20, ø25, ø32, ø40   |
| Max. operating pressure | 1.0MPa   |
| Min. operating pressure | 0.05MPa  |
| Cushion                 | Rubber bumper  |
| Piping                  | Built-in One-touch fitting   |
| Piston speed            | 50 to 750mm/s  |
| Mounting                | Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut |

\* Auto switches can be mounted.

### Applicable Tube O.D./I.D.

| Bore size (mm)           | ø20                             | ø25  | ø32  | ø40  |
|--------------------------|---------------------------------|------|------|------|
| Applicable tube (mm)     | ø6/4                            | ø6/4 | ø6/4 | ø8/6 |
| Applicable tube material | Nylon, Soft nylon, Polyurethane |      |      |      |

### Caution

The One-touch fitting cannot be replaced.

- The One-touch fitting is press-fit into the cover and cannot be replaced.

# Standard: Double Acting Single Rod *Series CM2*

## Clean Series

**10-CM2** Mounting Bore size Stroke

Clean series

The rod portion of the actuator has a double seal construction, and a relief port is provided to discharge the exhaust air directly outside of the clean room. Thus, it can be used in a Class 100 clean room.

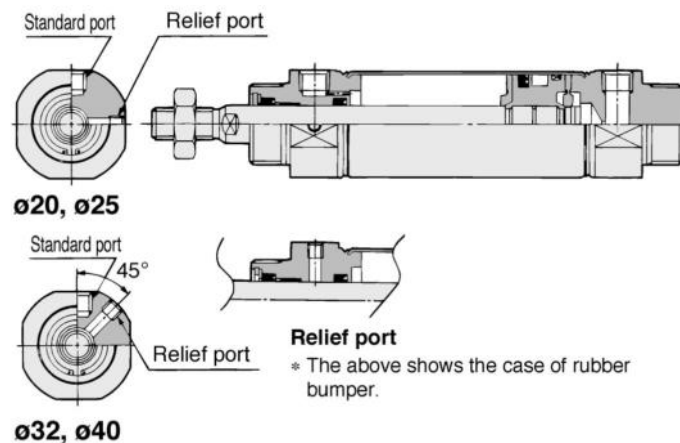


### Specifications

|                         |  |
|-------------------------|--|
| Action                  | Double acting/Single rod                               |
| Bore size               | ø20, ø25, ø32, ø40                                     |
| Max. operating pressure | 1.0MPa   |
| Min. operating pressure | 0.05MPa  |
| Cushion                 | Rubber bumper/Air cushion                              |
| Relief port size        | M5 X 0.8   |
| Piston speed            | 30 to 400mm/s  |
| Mounting                | Basic, Axial foot, Front flange, Rear flange, Boss-cut |

\* Auto switches can be mounted.

### Construction



## Copper Free

**20-CM2** Mounting Bore size Stroke

Copper free

This cylinder eliminates any influences of copper ions or fluororesins on color CRTs. Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.

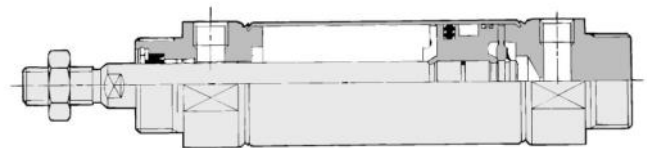


### Specifications

|                         |  |                |
|-------------------------|--|----------------|
| Action                  | Double acting/Single rod   |                |
| Bore size               | ø20, ø25, ø32, ø40   |                |
| Max. operating pressure | 1.0MPa   |                |
| Min. operating pressure | 0.05MPa  |                |
| Cushion                 | Rubber bumper  | Air cushion    |
| Piston speed            | 50 to 750mm/s  | 50 to 1000mm/s |
| Mounting                | Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut |                |

\* Auto switches can be mounted.

### Construction



CJ1

CJP

CJ2

CM2

C85

CG1

MB

C95

CA1

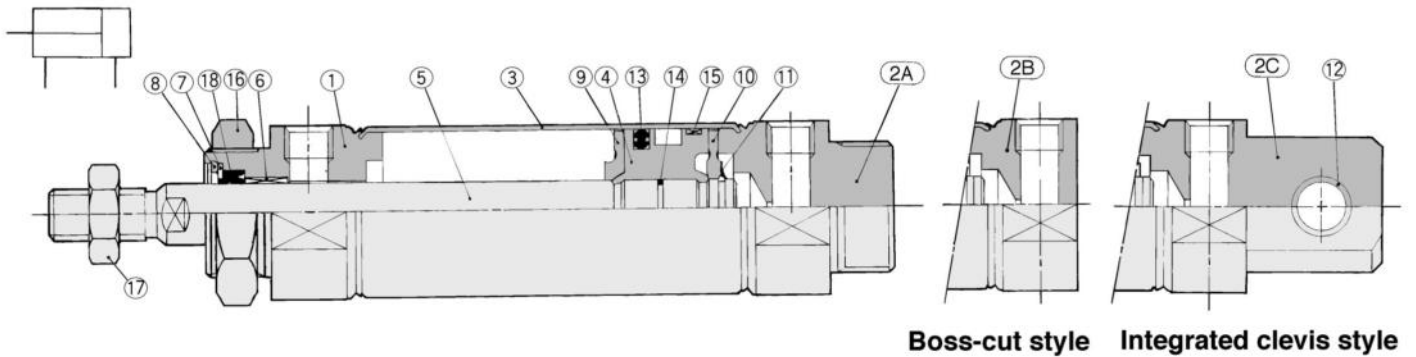
CS1



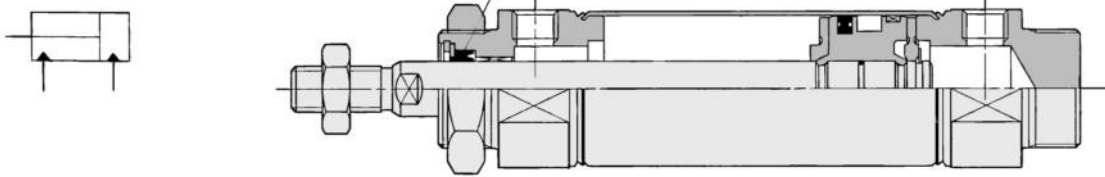
# Series CM2

## Construction

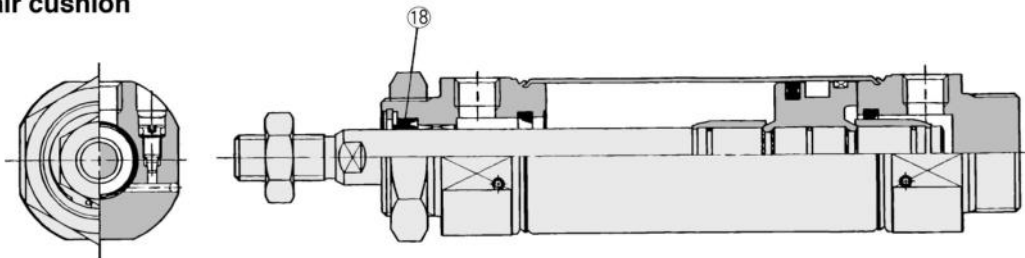
### Rubber bumper



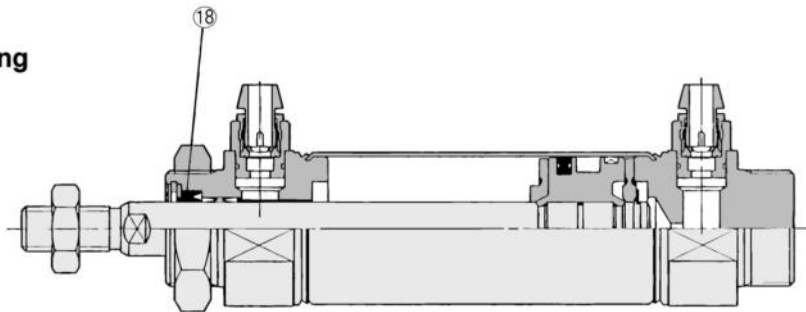
### Air-hydro



### With air cushion



### Built-in One-touch fitting



### Component Parts

| No. | Description   | Material                       | Note                                     |
|-----|---------------|--------------------------------|--|
| ①   | Rod cover     | Aluminum alloy                 | White anodized                           |
| ②A  | Head cover A  | Aluminum alloy                 | White anodized (Standard style)          |
| ②B  | Head cover B  | Aluminum alloy                 | White anodized (boss-cut style)          |
| ②C  | Head cover C  | Aluminum alloy                 | White anodized (Integrated clevis style) |
| ③   | Cylinder tube | Stainless steel                |  |
| ④   | Piston        | Aluminum alloy                 | Chromated                                |
| ⑤   | Piston rod    | Carbon steel                   | Hard chrome plated                       |
| ⑥   | Bushing       | Oil impregnated sintered alloy |  |
| ⑦   | Seal retainer | Rolled steel                   | Nickel plated                            |
| ⑧   | Snap ring     | Carbon steel                   | Nickel plated                            |
| ⑨   | Bumper A      | Urethane                       |  |
| ⑩   | Bumper B      | Urethane                       |  |
| ⑪   | Snap ring     | Stainless                      |  |

| No. | Description        | Material                       | Note          |
|-----|--------------------|--------------------------------|---------------|
| ⑫   | Bushing for clevis | Oil impregnated sintered alloy |               |
| ⑬   | Piston seal        | NBR                            |               |
| ⑭   | Piston gasket      | NBR                            |               |
| ⑮   | Wearing            | Resin                          |               |
| ⑯   | Mounting nut       | Carbon steel                   | Nickel plated |
| ⑰   | Rod end nut        | Carbon steel                   | Nickel plated |

### Replacement Parts

#### ●With rubber bumper/With air cushion/Built-in One-touch fitting

| No. | Description | Material | Bore size (mm)/Part No. |         |          |          |
|-----|-------------|----------|-------------------------|---------|----------|----------|
|     |             |          | 20                      | 25      | 32       | 40       |
| ⑱   | Rod seal    | NBR      | PDU-8Z                  | PDU-10Z | PDU-12LZ | PDU-14LZ |

#### ●Air-hydro style

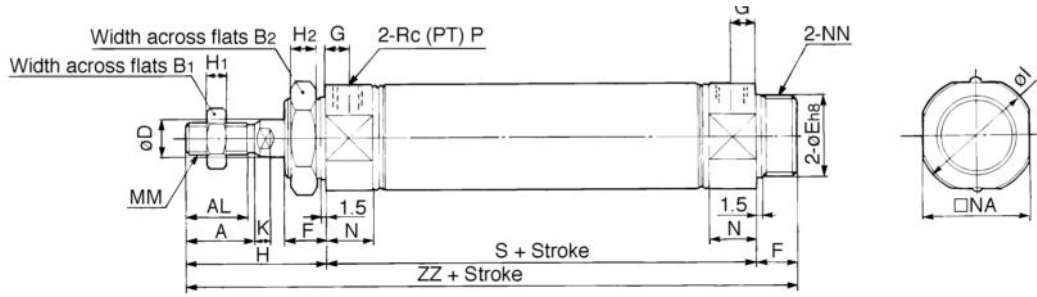
|   |          |     |       |        |         |        |
|---|----------|-----|-------|--------|---------|--------|
| ⑱ | Rod seal | NBR | HDU-8 | HDU-10 | HDU-12L | HDU-14 |
|---|----------|-----|-------|--------|---------|--------|

# Standard: Double Acting Single Rod *Series CM2*

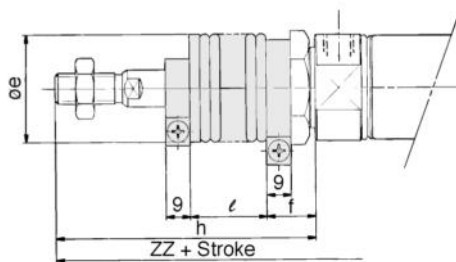
Basic (B)



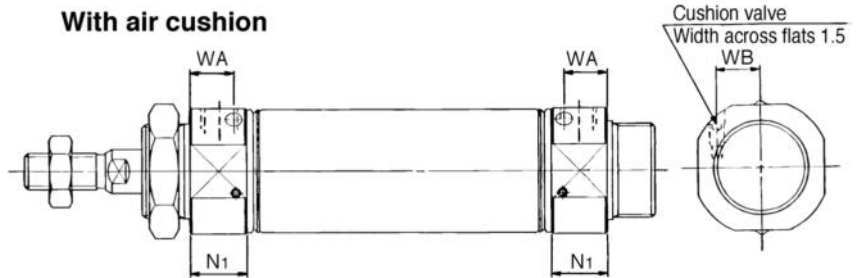
CM2B



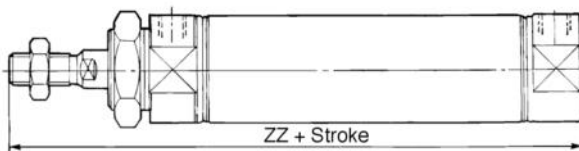
### With rod boot



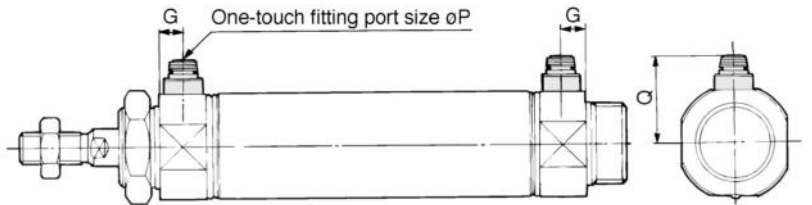
### With air cushion



### Boss-cut



### Built-in One-touch fitting



- CM2
- CJ1
- CJP
- CJ2
- C85
- CG1
- MB
- C95
- CA1
- CS1

| Bore | Stroke range | A  | AL   | B1 | B2 | D  | E                                 | F  | G  | H  | H1 | H2 | I    | K   | MM         | N    | NA   | NN        | P   | S  | ZZ  |
|------|--------------|----|------|----|----|----|-----------------------------------|----|----|----|----|----|------|-----|------------|------|------|-----------|-----|----|-----|
| 20   | 1 to 300     | 18 | 15.5 | 13 | 26 | 8  | 20 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 41 | 5  | 8  | 28   | 5   | M8 X 1.25  | 15   | 24   | M20 X 1.5 | 1/8 | 62 | 116 |
| 25   | 1 to 300     | 22 | 19.5 | 17 | 32 | 10 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 8  | 33.5 | 5.5 | M10 X 1.25 | 15   | 30   | M26 X 1.5 | 1/8 | 62 | 120 |
| 32   | 1 to 300     | 22 | 19.5 | 17 | 32 | 12 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 8  | 37.5 | 5.5 | M10 X 1.25 | 15   | 34.5 | M26 X 1.5 | 1/8 | 64 | 122 |
| 40   | 1 to 300     | 24 | 21   | 22 | 41 | 14 | 32 <sup>0</sup> <sub>-0.039</sub> | 16 | 11 | 50 | 8  | 10 | 46.5 | 7   | M14 X 1.5  | 21.5 | 42.5 | M32 X 2   | 1/4 | 88 | 154 |

### With rod boot

| Symbol<br>Stroke | e  | f  | ZZ (mm) |           |            |            |            |         |           |            |            |            |         |           |            |            |            |  |  |  |  |  |
|------------------|----|----|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|--|--|--|--|--|
|                  |    |    | h       |           |            |            |            | l       |           |            |            |            | ZZ      |           |            |            |            |  |  |  |  |  |
|                  |    |    | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |  |  |  |  |  |
| 20               | 36 | 17 | 68      | 81        | 93         | 106        | 131        | 12.5    | 25        | 37.5       | 50         | 75         | 143     | 156       | 168        | 181        | 206        |  |  |  |  |  |
| 25               | 36 | 17 | 72      | 85        | 97         | 110        | 135        | 12.5    | 25        | 37.5       | 50         | 75         | 147     | 160       | 172        | 185        | 210        |  |  |  |  |  |
| 32               | 36 | 17 | 72      | 85        | 97         | 110        | 135        | 12.5    | 25        | 37.5       | 50         | 75         | 149     | 162       | 174        | 187        | 212        |  |  |  |  |  |
| 40               | 46 | 19 | 77      | 90        | 102        | 115        | 140        | 12.5    | 25        | 37.5       | 50         | 75         | 181     | 194       | 206        | 219        | 244        |  |  |  |  |  |

### Boss-cut

| Bore | ZZ (mm)        |             |           |            |            |            |
|------|----------------|-------------|-----------|------------|------------|------------|
|      | Without gaiter | With gaiter |           |            |            |            |
|      |                | 1 to 50     | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |
| 20   | 103            | 130         | 143       | 155        | 168        | 193        |
| 25   | 107            | 134         | 147       | 159        | 172        | 197        |
| 32   | 109            | 136         | 149       | 161        | 174        | 199        |
| 40   | 138            | 165         | 178       | 190        | 203        | 228        |

### With air cushion

| Bore | N <sub>1</sub> | WA | WB   |
|------|----------------|----|------|
| 20   | 17.5           | 13 | 8.5  |
| 25   | 17.5           | 13 | 10.5 |
| 32   | 17.5           | 13 | 11.5 |
| 40   | 21.5           | 16 | 15   |

### Built-in One-touch fitting

| Bore | G  | P | Q    |
|------|----|---|------|
| 20   | 8  | 6 | 23   |
| 25   | 8  | 6 | 26   |
| 32   | 8  | 6 | 28.5 |
| 40   | 11 | 8 | 32.5 |

Basic Built-in One-touch fitting

- CM2B20.....SCM220A, #1 SCM220A, #1, #19
- CM2B25.....SCM225A, #1 SCM225A, #1, #19
- CM2B32.....SCM232A, #1 SCM232A, #1, #19
- CM2B40.....SCM240A, #1 SCM240A, #1, #19

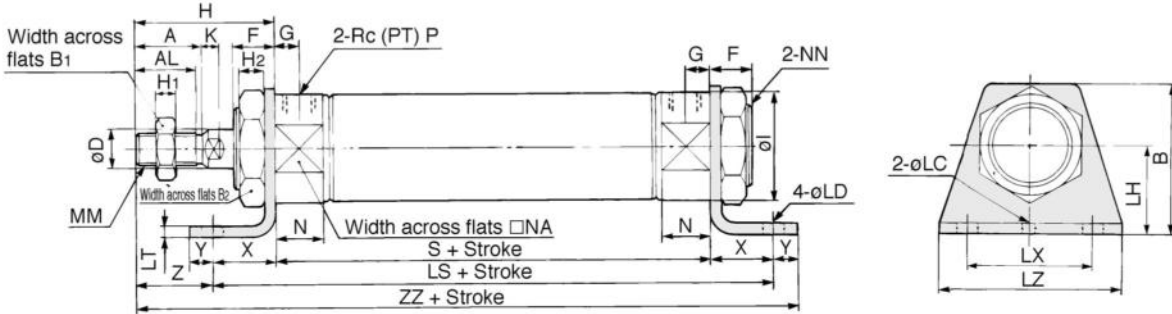
\* The data shows auto switch equipped styles.  
Please delete the unnecessary part.

# Series CM2

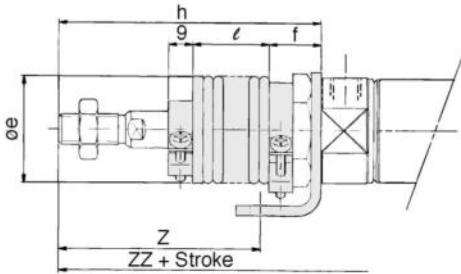
## Axial Foot (L)



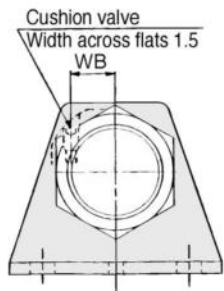
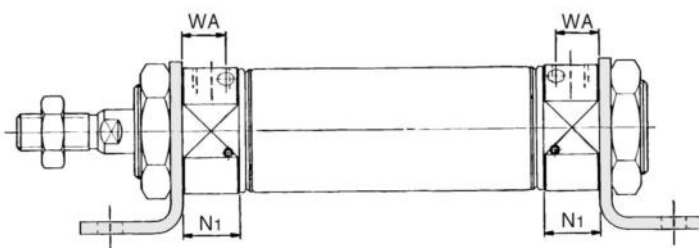
CM2L



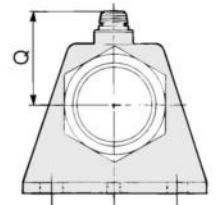
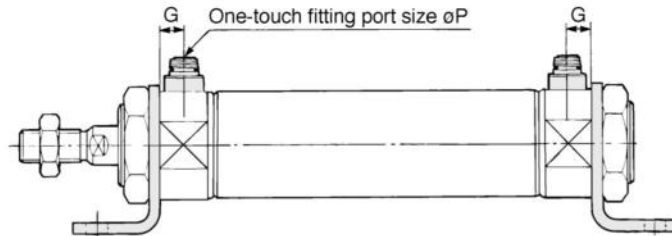
### With rod boot



### With air cushion



### Built-in One-touch fitting



| Bore | Stroke range | A  | AL   | B  | B1 | B2 | D  | F  | G  | H  | H1 | H2 | I    | K   | LC | LD  | LH | LS  | LT  | LX | LZ | MM         | N    | NA   | NN        | P   | S  | X  | Y  | Z  | ZZ  |
|------|--------------|----|------|----|----|----|----|----|----|----|----|----|------|-----|----|-----|----|-----|-----|----|----|------------|------|------|-----------|-----|----|----|----|----|-----|
| 20   | 1to400       | 18 | 15.5 | 40 | 13 | 26 | 8  | 13 | 8  | 41 | 5  | 8  | 28   | 5   | 4  | 6.8 | 25 | 102 | 3.2 | 40 | 55 | M8 X 1.25  | 15   | 24   | M20 X 1.5 | 1/8 | 62 | 20 | 8  | 21 | 131 |
| 25   | 1to450       | 22 | 19.5 | 47 | 17 | 32 | 10 | 13 | 8  | 45 | 6  | 8  | 33.5 | 5.5 | 4  | 6.8 | 28 | 102 | 3.2 | 40 | 55 | M10 X 1.25 | 15   | 30   | M26 X 1.5 | 1/8 | 62 | 20 | 8  | 25 | 135 |
| 32   | 1to450       | 22 | 19.5 | 47 | 17 | 32 | 12 | 13 | 8  | 45 | 6  | 8  | 37.5 | 5.5 | 4  | 6.8 | 28 | 104 | 3.2 | 40 | 55 | M10 X 1.25 | 15   | 34.5 | M26 X 1.5 | 1/8 | 64 | 20 | 8  | 25 | 137 |
| 40   | 1to500       | 24 | 21   | 54 | 22 | 41 | 14 | 16 | 11 | 50 | 8  | 10 | 46.5 | 7   | 4  | 7   | 30 | 134 | 3.2 | 55 | 75 | M14 X 1.5  | 21.5 | 42.5 | M32 X 2   | 1/4 | 88 | 23 | 10 | 27 | 171 |

### With rod boot

| Symbol<br>Stroke | Bore | e    | f  | h       |           |            |            |            |            |            | l       |           |            |            |            |            |            | Z       |           |            |            |            |            |            |
|------------------|------|------|----|---------|-----------|------------|------------|------------|------------|------------|---------|-----------|------------|------------|------------|------------|------------|---------|-----------|------------|------------|------------|------------|------------|
|                  |      |      |    | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 301 to 400 | 401 to 500 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 301 to 400 | 401 to 500 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 301 to 400 | 401 to 500 |
| 20               | 36   | 18.2 | 68 | 81      | 93        | 106        | 131        | 156        | —          | 12.5       | 25      | 37.5      | 50         | 75         | 100        | —          | 48         | 61      | 73        | 86         | 111        | 136        | —          |            |
| 25               | 36   | 18.2 | 72 | 85      | 97        | 110        | 135        | 160        | 185        | 12.5       | 25      | 37.5      | 50         | 75         | 100        | 125        | 52         | 65      | 77        | 90         | 115        | 140        | 165        |            |
| 32               | 36   | 18.2 | 72 | 85      | 97        | 110        | 135        | 160        | 185        | 12.5       | 25      | 37.5      | 50         | 75         | 100        | 125        | 52         | 65      | 77        | 90         | 115        | 140        | 165        |            |
| 40               | 46   | 20.2 | 77 | 90      | 102       | 115        | 140        | 165        | 190        | 12.5       | 25      | 37.5      | 50         | 75         | 100        | 125        | 54         | 67      | 79        | 92         | 117        | 142        | 167        |            |

### With rod boot

| Symbol<br>Stroke | ZZ      |           |            |            |            |            |            |
|------------------|---------|-----------|------------|------------|------------|------------|------------|
| Bore             | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 301 to 400 | 401 to 500 |
| 20               | 158     | 171       | 183        | 196        | 221        | 246        | —          |
| 25               | 162     | 175       | 187        | 200        | 225        | 250        | 275        |
| 32               | 164     | 177       | 189        | 202        | 227        | 252        | 277        |
| 40               | 198     | 211       | 223        | 236        | 261        | 286        | 311        |

### With air cushion

| Bore | N1   | WA | WB   |
|------|------|----|------|
| 20   | 17.5 | 13 | 8.5  |
| 25   | 17.5 | 13 | 10.5 |
| 32   | 17.5 | 13 | 11.5 |
| 40   | 21.5 | 16 | 15   |

### Built-in One-touch fitting

| Bore | G  | P | Q    |
|------|----|---|------|
| 20   | 8  | 6 | 23   |
| 25   | 8  | 6 | 26   |
| 32   | 8  | 6 | 28.5 |
| 40   | 11 | 8 | 32.5 |



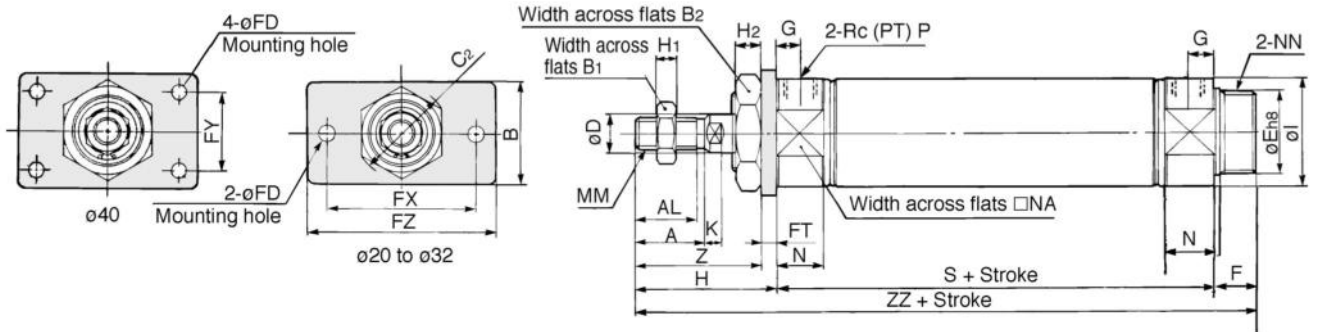
CM2L20.....SCM220A, #3 SCM220A, #3, #19  
 CM2L25.....SCM225A, #3 SCM225A, #3, #19  
 CM2L32.....SCM232A, #3 SCM232A, #3, #19  
 CM2L40.....SCM240A, #3 SCM240A, #3, #19

\* The data shows auto switch equipped styles.  
 Please delete the unnecessary part.

# Standard: Double Acting Single Rod *Series CM2*

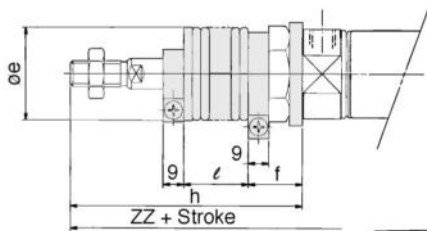
## Front Flange (F)

CM2F

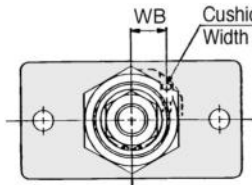


- CJ1
- CJP
- CJ2
- CM2
- C85
- CG1
- MB
- C95
- CA1
- CS1

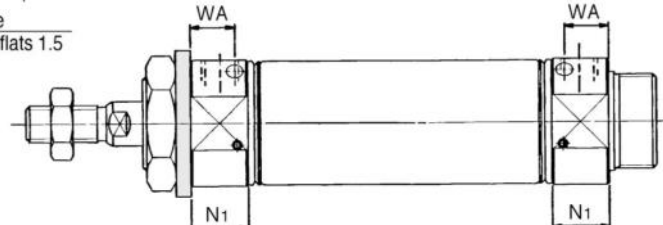
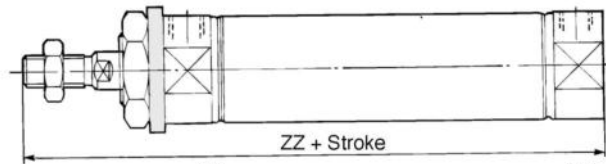
### With rod boot



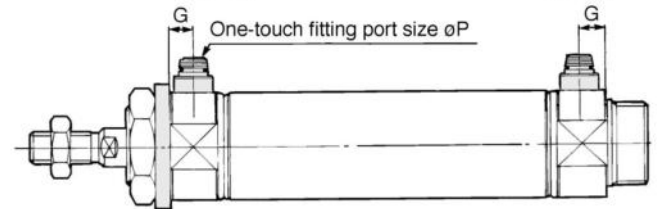
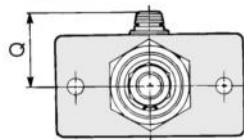
### With air cushion



### Boss-cut



### Built-in One-touch fitting



| Bore | Stroke range | A  | AL   | B  | B1 | B2 | C2   | D  | E                    | F  | FD | FT | FX | FY | FZ | G  | H  | H1 | H2 | I    | K   | MM         | N    | NA   | NN        | P   | S  | Z  | ZZ  |
|------|--------------|----|------|----|----|----|------|----|----------------------|----|----|----|----|----|----|----|----|----|----|------|-----|------------|------|------|-----------|-----|----|----|-----|
| 20   | 1to400       | 18 | 15.5 | 34 | 13 | 26 | 30   | 8  | 20 <sup>-0.033</sup> | 13 | 7  | 4  | 60 | —  | 75 | 8  | 41 | 5  | 8  | 28   | 5   | M8 X 1.25  | 15   | 24   | M20 X 1.5 | 1/8 | 62 | 37 | 116 |
| 25   | 1to450       | 22 | 19.5 | 40 | 17 | 32 | 37   | 10 | 26 <sup>-0.033</sup> | 13 | 7  | 4  | 60 | —  | 75 | 8  | 45 | 6  | 8  | 33.5 | 5.5 | M10 X 1.25 | 15   | 30   | M26 X 1.5 | 1/8 | 62 | 41 | 120 |
| 32   | 1to450       | 22 | 19.5 | 40 | 17 | 32 | 37   | 12 | 26 <sup>-0.033</sup> | 13 | 7  | 4  | 60 | —  | 75 | 8  | 45 | 6  | 8  | 37.5 | 5.5 | M10 X 1.25 | 15   | 34.5 | M26 X 1.5 | 1/8 | 64 | 41 | 122 |
| 40   | 1to500       | 24 | 21   | 52 | 22 | 41 | 47.3 | 14 | 32 <sup>-0.039</sup> | 16 | 7  | 5  | 66 | 36 | 82 | 11 | 50 | 8  | 10 | 46.5 | 7   | M14 X 1.5  | 21.5 | 42.5 | M32 X 2   | 1/4 | 88 | 45 | 154 |

### With rod boot

| Bore | Symbol Stroke | e  | f  | h       |           |            |            |            |            |            |         | l         |            |            |            |            |            |         |           | ZZ         |            |            |            |            |  |  |  |
|------|---------------|----|----|---------|-----------|------------|------------|------------|------------|------------|---------|-----------|------------|------------|------------|------------|------------|---------|-----------|------------|------------|------------|------------|------------|--|--|--|
|      |               |    |    | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 301 to 400 | 401 to 500 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 301 to 400 | 401 to 500 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 301 to 400 | 401 to 500 |  |  |  |
| 20   |               | 36 | 19 | 68      | 81        | 93         | 106        | 131        | 156        | —          | 12.5    | 25        | 37.5       | 50         | 75         | 100        | —          | 143     | 156       | 168        | 181        | 206        | 231        | —          |  |  |  |
| 25   |               | 36 | 19 | 72      | 85        | 97         | 110        | 135        | 160        | 185        | 12.5    | 25        | 37.5       | 50         | 75         | 100        | 125        | 147     | 160       | 172        | 185        | 210        | 235        | 260        |  |  |  |
| 32   |               | 36 | 19 | 72      | 85        | 97         | 110        | 135        | 160        | 185        | 12.5    | 25        | 37.5       | 50         | 75         | 100        | 125        | 149     | 162       | 174        | 187        | 212        | 237        | 262        |  |  |  |
| 40   |               | 46 | 22 | 77      | 90        | 102        | 115        | 140        | 165        | 190        | 12.5    | 25        | 37.5       | 50         | 75         | 100        | 125        | 181     | 194       | 206        | 219        | 244        | 269        | 294        |  |  |  |

### Boss-cut

| Bore | ZZ             |             |           |            |            |            |            |            |
|------|----------------|-------------|-----------|------------|------------|------------|------------|------------|
|      | Without gaiter | With gaiter |           |            |            |            |            |            |
|      |                | 1 to 50     | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 301 to 400 | 401 to 500 |
| 20   | 103            | 130         | 143       | 155        | 168        | 193        | 218        | —          |
| 25   | 107            | 134         | 147       | 159        | 172        | 197        | 222        | 247        |
| 32   | 109            | 136         | 149       | 161        | 174        | 199        | 224        | 249        |
| 40   | 138            | 165         | 178       | 190        | 203        | 228        | 253        | 278        |

### With air cushion

| Bore | N1   | WA | WB   |
|------|------|----|------|
| 20   | 17.5 | 13 | 8.5  |
| 25   | 17.5 | 13 | 10.5 |
| 32   | 17.5 | 13 | 11.5 |
| 40   | 21.5 | 16 | 15   |

### Built-in One-touch fitting

| Bore | G  | P | Q    |
|------|----|---|------|
| 20   | 8  | 6 | 23   |
| 25   | 8  | 6 | 26   |
| 32   | 8  | 6 | 28.5 |
| 40   | 11 | 8 | 32.5 |



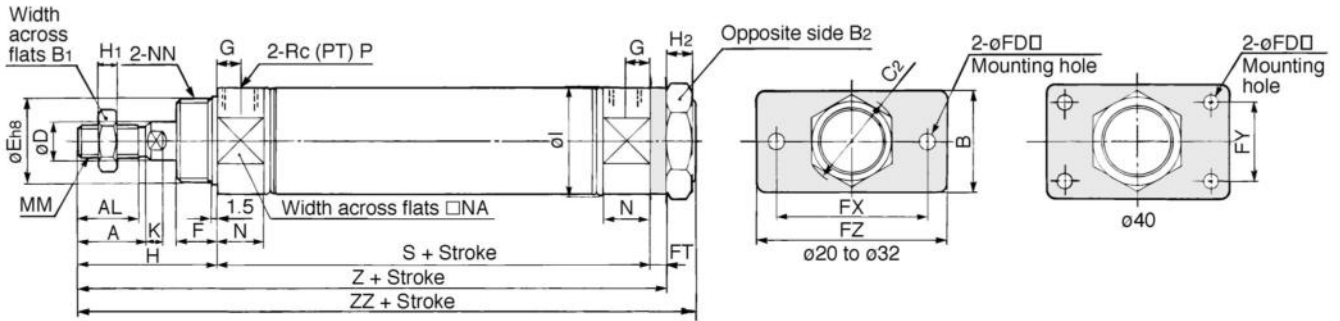
Front flange style Built-in One-touch fitting  
 CM2F20.....SCM220A, #4 SCM220A, #4, #19  
 CM2F25.....SCM225A, #4 SCM225A, #4, #19  
 CM2F32.....SCM232A, #4 SCM232A, #4, #19  
 CM2F40.....SCM240A, #4 SCM240A, #4, #19  
 \* The data shows auto switch equipped styles.  
 Please delete the unnecessary part.

# Series CM2

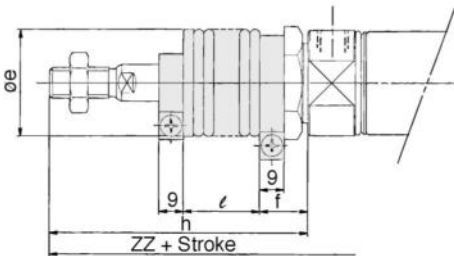
## Rear Flange (G)



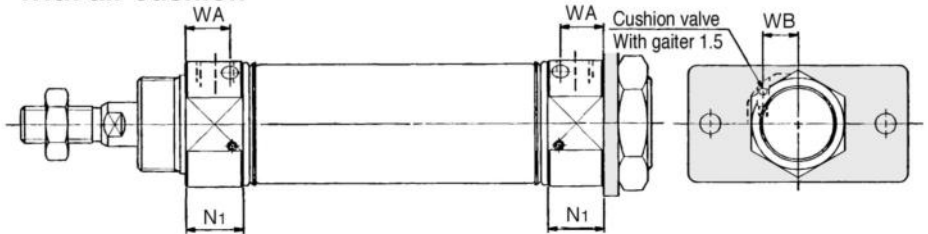
CM2G



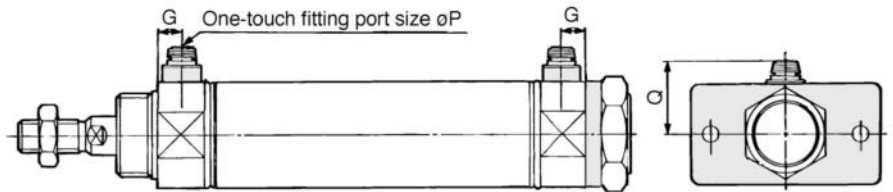
### With rod boot



### With air cushion



### Built-in One-touch fitting



| Bore | Stroke range | A  | AL   | B  | B1 | B2 | C2   | D  | E                                 | F  | FD | FT | FX | FY | FZ | G  | H  | H1 | H2 | I    |
|------|--------------|----|------|----|----|----|------|----|-----------------------------------|----|----|----|----|----|----|----|----|----|----|------|
| 20   | 1 to 300     | 18 | 15.5 | 34 | 13 | 26 | 30   | 8  | 20 <sup>0</sup> <sub>-0.033</sub> | 13 | 7  | 4  | 60 | —  | 75 | 8  | 41 | 5  | 8  | 28   |
| 25   | 1 to 300     | 22 | 19.5 | 40 | 17 | 32 | 37   | 10 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 7  | 4  | 60 | —  | 75 | 8  | 45 | 6  | 8  | 33.5 |
| 32   | 1 to 300     | 22 | 19.5 | 40 | 17 | 32 | 37   | 12 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 7  | 4  | 60 | —  | 75 | 8  | 45 | 6  | 8  | 37.5 |
| 40   | 1 to 300     | 24 | 21   | 52 | 22 | 41 | 47.3 | 14 | 32 <sup>0</sup> <sub>-0.039</sub> | 16 | 7  | 5  | 66 | 36 | 82 | 11 | 50 | 8  | 10 | 46.5 |

| Bore | K   | MM         | N    | NA   | NN        | P   | S  | Z   | ZZ  |
|------|-----|------------|------|------|-----------|-----|----|-----|-----|
| 20   | 5   | M8 X 1.25  | 15   | 24   | M20 X 1.5 | 1/8 | 62 | 107 | 116 |
| 25   | 5.5 | M10 X 1.25 | 15   | 30   | M26 X 1.5 | 1/8 | 62 | 111 | 120 |
| 32   | 5.5 | M10 X 1.25 | 15   | 34.5 | M26 X 1.5 | 1/8 | 64 | 113 | 122 |
| 40   | 7   | M14 X 1.5  | 21.5 | 42.5 | M32 X 2   | 1/4 | 88 | 143 | 154 |

### With air cushion

| Bore | N1   | WA | WB   |
|------|------|----|------|
| 20   | 17.5 | 13 | 8.5  |
| 25   | 17.5 | 13 | 10.5 |
| 32   | 17.5 | 13 | 11.5 |
| 40   | 21.5 | 16 | 15   |

### Built-in One-touch fitting

| Bore | G  | P | Q    |
|------|----|---|------|
| 20   | 8  | 6 | 23   |
| 25   | 8  | 6 | 26   |
| 32   | 8  | 6 | 28.5 |
| 40   | 11 | 8 | 32.5 |

### With rod boot

| Symbol<br>Stroke | e  | f  | h       |           |            |            |            | l       |           |            |            |            | ZZ      |           |            |            |            |
|------------------|----|----|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|
|                  |    |    | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |
| 20               | 35 | 17 | 68      | 81        | 93         | 106        | 131        | 12.5    | 25        | 37.5       | 50         | 75         | 143     | 156       | 168        | 181        | 206        |
| 25               | 35 | 17 | 72      | 85        | 97         | 110        | 135        | 12.5    | 25        | 37.5       | 50         | 75         | 147     | 160       | 172        | 185        | 210        |
| 32               | 35 | 17 | 72      | 85        | 97         | 110        | 135        | 12.5    | 25        | 37.5       | 50         | 75         | 149     | 162       | 174        | 187        | 212        |
| 40               | 46 | 19 | 77      | 90        | 102        | 115        | 140        | 12.5    | 25        | 37.5       | 50         | 75         | 181     | 194       | 206        | 219        | 244        |



Rear flange Built-in One-touch fitting

CM2G20.....SCM220A, #5 SCM220A, #5, #19  
 CM2G25.....SCM225A, #5 SCM225A, #5, #19  
 CM2G32.....SCM232A, #5 SCM232A, #5, #19  
 CM2G40.....SCM240A, #5 SCM240A, #5, #19

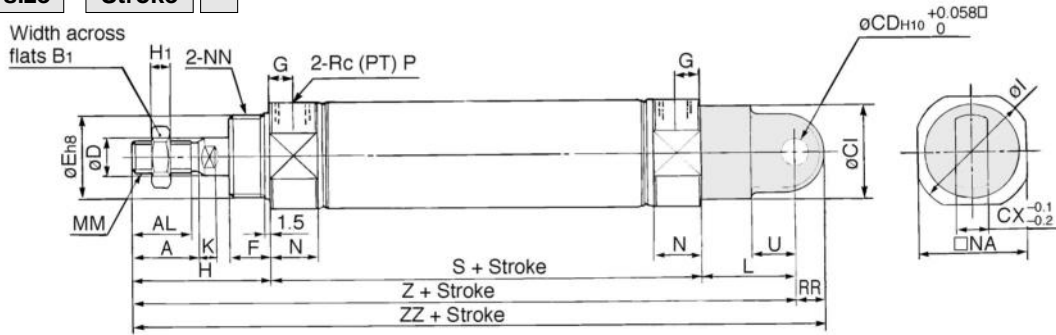
\* The data shows auto switch equipped styles.  
 Please delete the unnecessary part.

# Standard: Double Acting Single Rod *Series CM2*

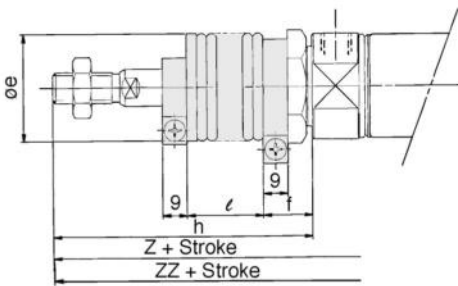
## Single Clevis (C)



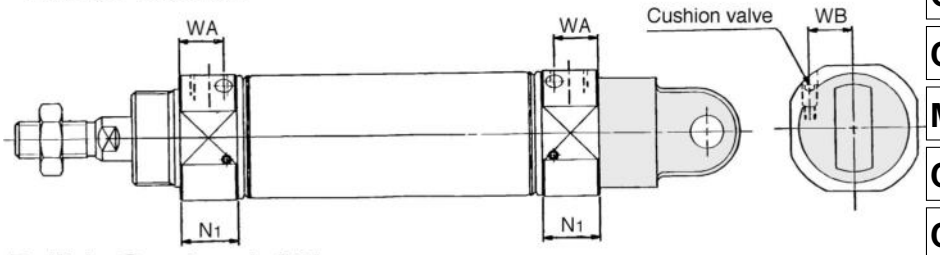
CM2C Bore size Stroke



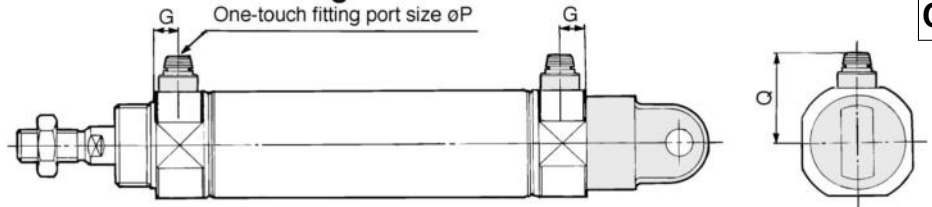
### With rod boot



### With air cushion



### Built-in One-touch fitting



- CJ1
- CJP
- CJ2
- CM2**
- C85
- CG1
- MB
- C95
- CA1
- CS1

| Bore | Stroke range | A  | AL   | B1 | CI | CD | CX | D  | E                                 | F  | G  | H  | H1 | I    | K   | L  | MM         | N    | NA   | NN        | P   | RR | S  | U  | Z   | ZZ  |
|------|--------------|----|------|----|----|----|----|----|-----------------------------------|----|----|----|----|------|-----|----|------------|------|------|-----------|-----|----|----|----|-----|-----|
| 20   | 1 to 300     | 18 | 15.5 | 13 | 24 | 9  | 10 | 8  | 20 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 41 | 5  | 28   | 5   | 30 | M8 X 1.25  | 15   | 24   | M20 X 1.5 | 1/8 | 9  | 62 | 14 | 133 | 142 |
| 25   | 1 to 300     | 22 | 19.5 | 17 | 30 | 9  | 10 | 10 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 33.5 | 5.5 | 30 | M10 X 1.25 | 15   | 30   | M26 X 1.5 | 1/8 | 9  | 62 | 14 | 137 | 146 |
| 32   | 1 to 300     | 22 | 19.5 | 17 | 30 | 9  | 10 | 12 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 37.5 | 5.5 | 30 | M10 X 1.25 | 15   | 34.5 | M26 X 1.5 | 1/8 | 9  | 64 | 14 | 139 | 148 |
| 40   | 1 to 300     | 24 | 21   | 22 | 38 | 10 | 15 | 14 | 32 <sup>0</sup> <sub>-0.039</sub> | 16 | 11 | 50 | 8  | 46.5 | 7   | 39 | M14 X 1.5  | 21.5 | 42.5 | M32 X 2   | 1/4 | 11 | 88 | 18 | 177 | 188 |

### With rod boot

| Symbol<br>Stroke<br>Bore | e  | f  | h       |           |            |            |            | ℓ       |           |            |            |            | Z       |           |            |            |            |
|--------------------------|----|----|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|
|                          |    |    | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |
| 20                       | 36 | 17 | 68      | 81        | 93         | 106        | 131        | 12.5    | 25        | 37.5       | 50         | 75         | 160     | 173       | 185        | 198        | 223        |
| 25                       | 36 | 17 | 72      | 85        | 97         | 110        | 135        | 12.5    | 25        | 37.5       | 50         | 75         | 164     | 177       | 189        | 202        | 227        |
| 32                       | 36 | 17 | 72      | 85        | 97         | 110        | 135        | 12.5    | 25        | 37.5       | 50         | 75         | 166     | 179       | 191        | 204        | 229        |
| 40                       | 46 | 19 | 77      | 90        | 102        | 115        | 140        | 12.5    | 25        | 37.5       | 50         | 75         | 204     | 217       | 229        | 242        | 267        |

| Symbol<br>Stroke<br>Bore | ZZ      |           |            |            |            |
|--------------------------|---------|-----------|------------|------------|------------|
|                          | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |
| 20                       | 169     | 182       | 194        | 207        | 232        |
| 25                       | 173     | 186       | 198        | 211        | 236        |
| 32                       | 175     | 188       | 200        | 213        | 238        |
| 40                       | 215     | 228       | 240        | 253        | 278        |

### With air cushion

| Bore | N1   | WA | WB   |
|------|------|----|------|
| 20   | 17.5 | 13 | 8.5  |
| 25   | 17.5 | 13 | 10.5 |
| 32   | 17.5 | 13 | 11.5 |
| 40   | 21.5 | 16 | 15   |

### Built-in One-touch fitting

| Bore | G  | P | Q    |
|------|----|---|------|
| 20   | 8  | 6 | 23   |
| 25   | 8  | 6 | 26   |
| 32   | 8  | 6 | 28.5 |
| 40   | 11 | 8 | 32.5 |



Single clevis

Built-in One-touch fitting

- CM2C20.....SCM220A, #6    SCM220A, #6, #19
- CM2C25.....SCM225A, #6    SCM225A, #6, #19
- CM2C32.....SCM232A, #6    SCM232A, #6, #19
- CM2C40.....SCM240A, #6    SCM240A, #6, #19

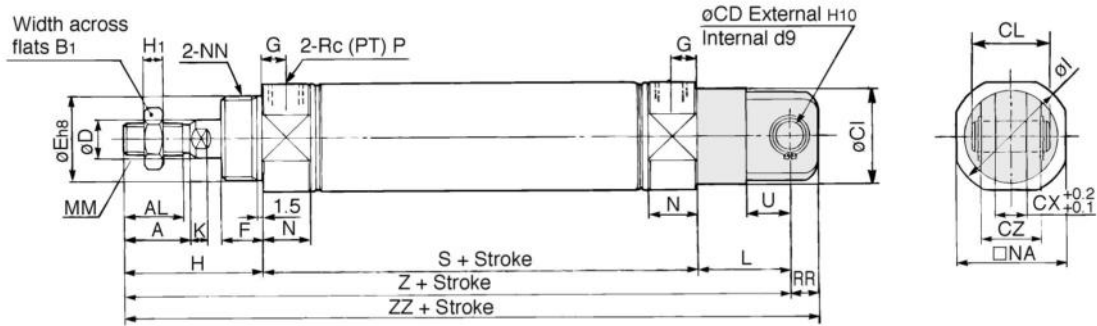
\* The data shows auto switch equipped styles.  
Please delete the unnecessary part.

# Series CM2

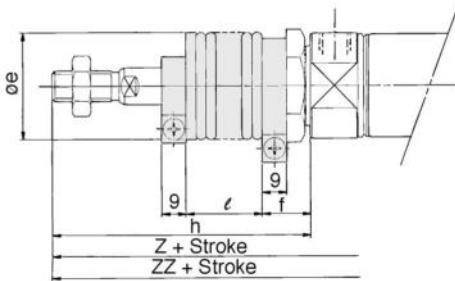
## Double Clevis (D)



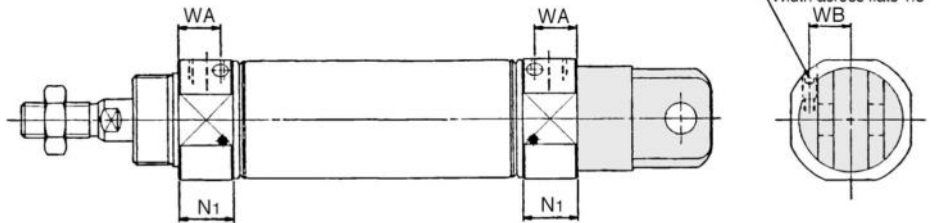
CM2D Bore size Stroke



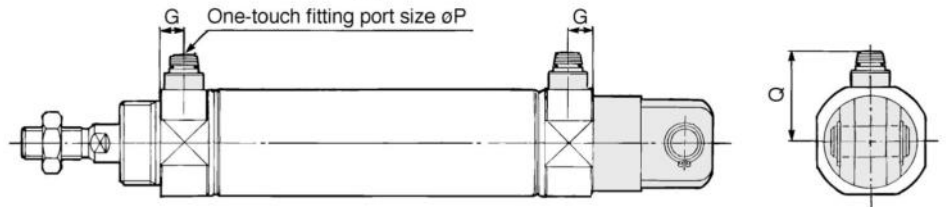
### With rod boot



### With air cushion



### Built-in One-touch fitting



| Bore | Stroke range | A  | AL   | B1 | CD | CI | CL   | CX | CZ | D  | E                                 | F  | G  | H  | H1 | I    | K   | L  | MM         | N    | NA   | NN        | P   | RR | S  | U  | Z   | ZZ  |
|------|--------------|----|------|----|----|----|------|----|----|----|-----------------------------------|----|----|----|----|------|-----|----|------------|------|------|-----------|-----|----|----|----|-----|-----|
| 20   | 1 to 300     | 18 | 15.5 | 13 | 9  | 24 | 25   | 10 | 19 | 8  | 20 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 41 | 5  | 28   | 5   | 30 | M8 X 1.25  | 15   | 24   | M20 X 1.5 | 1/8 | 9  | 62 | 14 | 133 | 142 |
| 25   | 1 to 300     | 22 | 19.5 | 17 | 9  | 30 | 25   | 10 | 19 | 10 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 33.5 | 5.5 | 30 | M10 X 1.25 | 15   | 30   | M26 X 1.5 | 1/8 | 9  | 62 | 14 | 137 | 146 |
| 32   | 1 to 300     | 22 | 19.5 | 17 | 9  | 30 | 25   | 10 | 19 | 12 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 37.5 | 5.5 | 30 | M10 X 1.25 | 15   | 34.5 | M26 X 1.5 | 1/8 | 9  | 64 | 14 | 139 | 148 |
| 40   | 1 to 300     | 24 | 21   | 22 | 10 | 38 | 41.2 | 15 | 30 | 14 | 32 <sup>0</sup> <sub>-0.039</sub> | 16 | 11 | 50 | 8  | 46.5 | 7   | 39 | M14 X 1.5  | 21.5 | 42.5 | M32 X 2   | 1/4 | 11 | 88 | 18 | 177 | 188 |

\* Clevis pins and snap rings (cotter pins for ø40) are attached. (mm)

### With rod boot

| Symbol<br>Stroke | e  | f  | h       |           |            |            |            | l       |           |            |            |            | Z       |           |            |            |            |
|------------------|----|----|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|
|                  |    |    | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |
| 20               | 36 | 17 | 68      | 81        | 93         | 106        | 131        | 12.5    | 25        | 37.5       | 50         | 75         | 160     | 173       | 185        | 198        | 223        |
| 25               | 36 | 17 | 72      | 85        | 97         | 110        | 135        | 12.5    | 25        | 37.5       | 50         | 75         | 164     | 177       | 189        | 202        | 227        |
| 32               | 36 | 17 | 72      | 85        | 97         | 110        | 135        | 12.5    | 25        | 37.5       | 50         | 75         | 166     | 179       | 191        | 204        | 229        |
| 40               | 46 | 19 | 77      | 90        | 102        | 115        | 140        | 12.5    | 25        | 37.5       | 50         | 75         | 204     | 217       | 229        | 242        | 267        |

### With rod boot

| Symbol<br>Stroke | ZZ      |           |            |            |            |
|------------------|---------|-----------|------------|------------|------------|
|                  | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |
| 20               | 169     | 182       | 194        | 207        | 232        |
| 25               | 173     | 186       | 198        | 211        | 236        |
| 32               | 175     | 188       | 200        | 213        | 238        |
| 40               | 215     | 228       | 240        | 253        | 278        |

### With air cushion

| Bore | N1   | WA | WB   |
|------|------|----|------|
| 20   | 17.5 | 13 | 8.5  |
| 25   | 17.5 | 13 | 10.5 |
| 32   | 17.5 | 13 | 11.5 |
| 40   | 21.5 | 16 | 15   |

### Built-in One-touch fitting

| Bore | G  | P | Q    |
|------|----|---|------|
| 20   | 8  | 6 | 23   |
| 25   | 8  | 6 | 26   |
| 32   | 8  | 6 | 28.5 |
| 40   | 11 | 8 | 32.5 |



Double clevis Built-in One-touch fitting

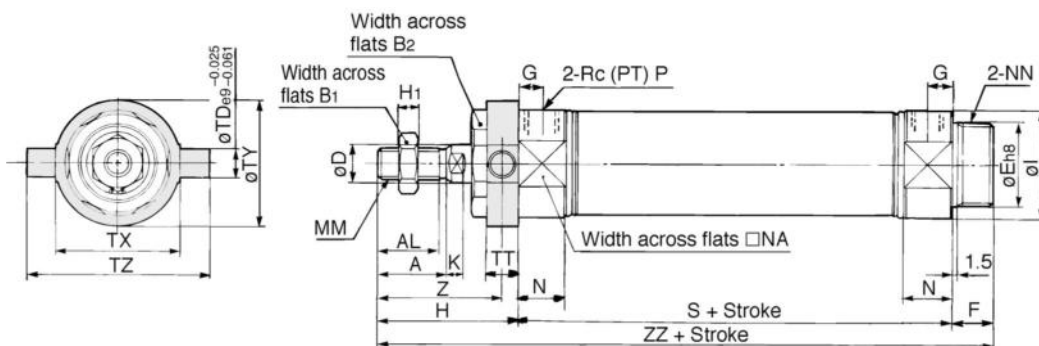
CM2D20.....SCM220A, #7 SCM220A, #7, #19  
 CM2D25.....SCM225A, #7 SCM225A, #7, #19  
 CM2D32.....SCM232A, #7 SCM232A, #7, #19  
 CM2D40.....SCM240A, #7 SCM240A, #7, #19

\* The data shows auto switch equipped styles.  
 Please delete the unnecessary part.

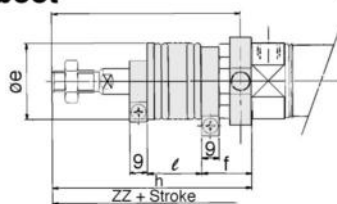
# Standard: Double Acting Single Rod *Series CM2*

## Front Trunnion (U)

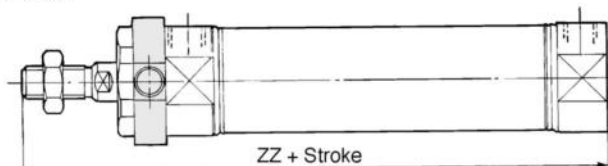
CM2U



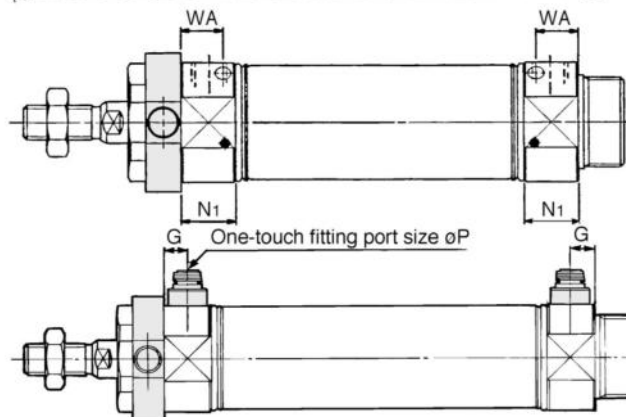
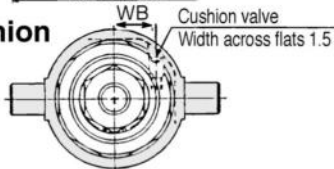
### With rod boot



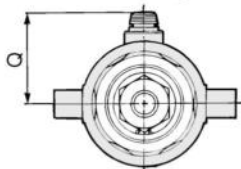
### Boss-cut



### With air cushion



### Built-in One-touch fitting



| Bore size | Stroke range | A  | AL   | B1 | B2 | D  | E                                 | F  | G  | H  | H1 | I    | K   | MM         | N    | NA   | NN        | P   |
|-----------|--------------|----|------|----|----|----|-----------------------------------|----|----|----|----|------|-----|------------|------|------|-----------|-----|
| 20        | 1 to 300     | 18 | 15.5 | 13 | 26 | 8  | 20 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 41 | 5  | 28   | 5   | M8 X 1.25  | 15   | 24   | M20 X 1.5 | 1/8 |
| 25        | 1 to 300     | 22 | 19.5 | 17 | 32 | 10 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 33.5 | 5.5 | M10 X 1.25 | 15   | 30   | M26 X 1.5 | 1/8 |
| 32        | 1 to 300     | 22 | 19.5 | 17 | 32 | 12 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 37.5 | 5.5 | M10 X 1.25 | 15   | 34.5 | M26 X 1.5 | 1/8 |
| 40        | 1 to 300     | 24 | 21   | 22 | 41 | 14 | 32 <sup>0</sup> <sub>-0.039</sub> | 16 | 11 | 50 | 8  | 46.5 | 7   | M14 X 1.5  | 21.5 | 42.5 | M32 X 2   | 1/4 |

| Bore | S  | TD | TT | TX | TY | TZ | Z    | ZZ  |
|------|----|----|----|----|----|----|------|-----|
| 20   | 62 | 8  | 10 | 32 | 32 | 52 | 36   | 116 |
| 25   | 62 | 9  | 10 | 40 | 40 | 60 | 40   | 120 |
| 32   | 64 | 9  | 10 | 40 | 40 | 60 | 40   | 122 |
| 40   | 88 | 10 | 11 | 53 | 53 | 77 | 44.5 | 154 |

### With rod boot

| Symbol | Stroke | e  | f  | h       |           |            |            |            |            |
|--------|--------|----|----|---------|-----------|------------|------------|------------|------------|
|        |        |    |    | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 301 to 400 |
| 20     | 36     | 24 | 68 | 81      | 93        | 106        | 131        | 156        | —          |
| 25     | 36     | 24 | 72 | 85      | 97        | 110        | 135        | 160        | 185        |
| 32     | 36     | 24 | 72 | 85      | 97        | 110        | 135        | 160        | 185        |
| 40     | 46     | 25 | 77 | 90      | 102       | 115        | 140        | 165        | 190        |

### With rod boot

| Symbol | Stroke | e       |           |            |            |            | Z       |           |            |            |            | ZZ      |           |            |            |            |
|--------|--------|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|
|        |        | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |
| 20     | 12.5   | 25      | 37.5      | 50         | 75         | 63         | 76      | 88        | 101        | 126        | 143        | 156     | 168       | 181        | 206        |            |
| 25     | 12.5   | 25      | 37.5      | 50         | 75         | 67         | 80      | 92        | 105        | 130        | 147        | 160     | 172       | 185        | 210        |            |
| 32     | 12.5   | 25      | 37.5      | 50         | 75         | 67         | 80      | 92        | 105        | 130        | 149        | 162     | 174       | 187        | 212        |            |
| 40     | 12.5   | 25      | 37.5      | 50         | 75         | 71.5       | 84.5    | 96.5      | 109.5      | 134.5      | 181        | 194     | 206       | 219        | 244        |            |

### Boss-cut style

| Bore | ZZ             |             |            |            |            |     |
|------|----------------|-------------|------------|------------|------------|-----|
|      | Without gaiter | With gaiter |            |            |            |     |
|      | 1 to 50        | 51 to 100   | 101 to 150 | 151 to 200 | 201 to 300 |     |
| 20   | 103            | 130         | 143        | 155        | 168        | 193 |
| 25   | 107            | 134         | 147        | 159        | 172        | 197 |
| 32   | 109            | 136         | 149        | 161        | 174        | 199 |
| 40   | 138            | 165         | 178        | 190        | 203        | 228 |

### With air cushion

| Bore | N1   | WA | WB   |
|------|------|----|------|
| 20   | 17.5 | 13 | 8.5  |
| 25   | 17.5 | 13 | 10.5 |
| 32   | 17.5 | 13 | 11.5 |
| 40   | 21.5 | 16 | 15   |

### Built-in One-touch fitting

| Bore | G  | P | Q    |
|------|----|---|------|
| 20   | 8  | 6 | 23   |
| 25   | 8  | 6 | 26   |
| 32   | 8  | 6 | 28.5 |
| 40   | 11 | 8 | 32.5 |



CM2U20.....SCM220A, #8    SCM220A, #8, #19  
 CM2U25.....SCM225A, #8    SCM225A, #8, #19  
 CM2U32.....SCM232A, #8    SCM232A, #8, #19  
 CM2U40.....SCM240A, #8    SCM240A, #8, #19

\* The data shows auto switch equipped styles.  
 Please delete the unnecessary part.

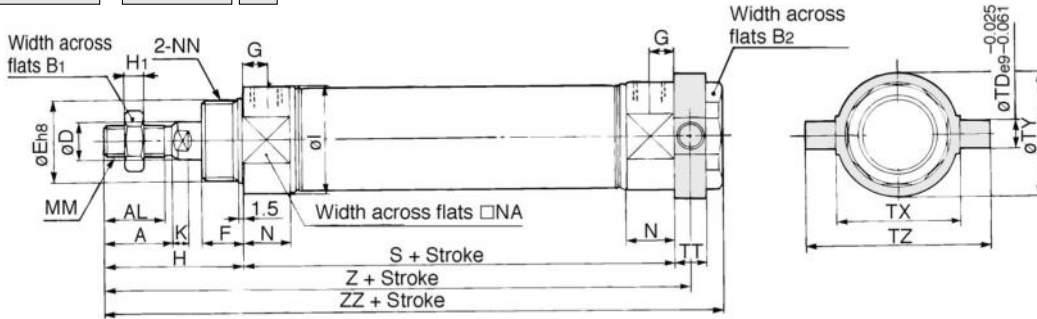
- CJ1
- CJP
- CJ2
- CM2**
- C85
- CG1
- MB
- C95
- CA1
- CS1



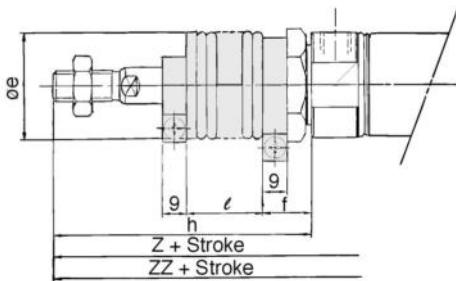
# Series CM2

## Rear Trunnion (T)

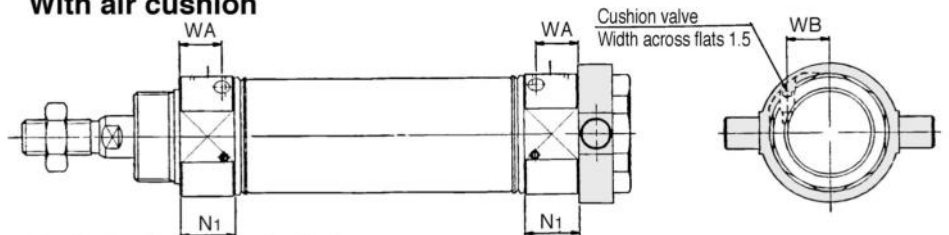
CM2T



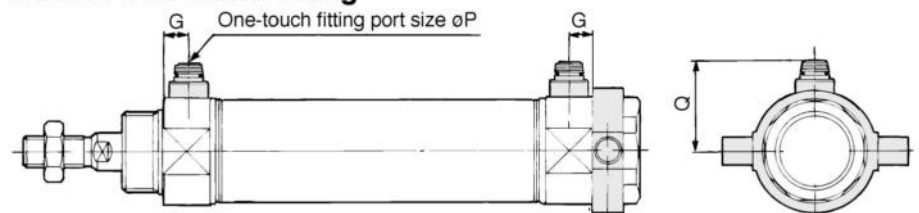
### With rod boot



### With air cushion



### Built-in One-touch fitting



| Bore | Stroke range | A  | AL   | B1 | B2 | D  | E                                 | F  | G  | H  | H1 | I    | K   | MM         | N    | NA   | NN        | P   |
|------|--------------|----|------|----|----|----|-----------------------------------|----|----|----|----|------|-----|------------|------|------|-----------|-----|
| 20   | 1 to 300     | 18 | 15.5 | 13 | 26 | 8  | 20 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 41 | 5  | 28   | 5   | M8 X 1.25  | 15   | 24   | M20 X 1.5 | 1/8 |
| 25   | 1 to 300     | 22 | 19.5 | 17 | 32 | 10 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 33.5 | 5.5 | M10 X 1.25 | 15   | 30   | M26 X 1.5 | 1/8 |
| 32   | 1 to 300     | 22 | 19.5 | 17 | 32 | 12 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 37.5 | 5.5 | M10 X 1.25 | 15   | 34.5 | M26 X 1.5 | 1/8 |
| 40   | 1 to 300     | 24 | 21   | 22 | 41 | 14 | 32 <sup>0</sup> <sub>-0.039</sub> | 16 | 11 | 50 | 8  | 46.5 | 7   | M14 X 1.5  | 21.5 | 42.5 | M32 X 2   | 1/4 |

| Bore | S  | TD | TT | TX | TY | TZ | Z     | ZZ  |
|------|----|----|----|----|----|----|-------|-----|
| 20   | 62 | 8  | 10 | 32 | 32 | 52 | 108   | 118 |
| 25   | 62 | 9  | 10 | 40 | 40 | 60 | 112   | 122 |
| 32   | 64 | 9  | 10 | 40 | 40 | 60 | 114   | 124 |
| 40   | 88 | 10 | 11 | 53 | 53 | 77 | 143.5 | 154 |

### With rod boot

| Symbol<br>Bore \ Stroke | e  | f  | h       |           |            |            |            |            |            |
|-------------------------|----|----|---------|-----------|------------|------------|------------|------------|------------|
|                         |    |    | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 301 to 400 | 401 to 500 |
| 20                      | 36 | 17 | 68      | 81        | 93         | 106        | 131        | 156        | —          |
| 25                      | 36 | 17 | 72      | 85        | 97         | 110        | 135        | 160        | 185        |
| 32                      | 36 | 17 | 72      | 85        | 97         | 110        | 135        | 160        | 185        |
| 40                      | 46 | 19 | 77      | 90        | 102        | 115        | 140        | 165        | 190        |

### With rod boot

| Symbol<br>Bore \ Stroke | l       |           |            |            |            | Z       |           |            |            |            | ZZ      |           |            |            |            |
|-------------------------|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|
|                         | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |
| 20                      | 12.5    | 25        | 37.5       | 50         | 75         | 135     | 148       | 160        | 173        | 198        | 145     | 158       | 170        | 183        | 208        |
| 25                      | 12.5    | 25        | 37.5       | 50         | 75         | 139     | 152       | 164        | 177        | 202        | 149     | 162       | 174        | 187        | 212        |
| 32                      | 12.5    | 25        | 37.5       | 50         | 75         | 141     | 154       | 166        | 179        | 204        | 151     | 164       | 176        | 189        | 214        |
| 40                      | 12.5    | 25        | 37.5       | 50         | 75         | 170.5   | 183.5     | 195.5      | 208.5      | 233.5      | 181     | 194       | 206        | 219        | 244        |

### With air cushion

| Bore | N1   | WA | WB   |
|------|------|----|------|
| 20   | 17.5 | 13 | 8.5  |
| 25   | 17.5 | 13 | 10.5 |
| 32   | 17.5 | 13 | 11.5 |
| 40   | 21.5 | 16 | 15   |

### Built-in One-touch fitting

| Bore | G  | P | Q    |
|------|----|---|------|
| 20   | 8  | 6 | 23   |
| 25   | 8  | 6 | 26   |
| 32   | 8  | 6 | 28.5 |
| 40   | 11 | 8 | 32.5 |



Rear trunnion      Built-in One-touch fitting

CM2T20.....SCM220A, #9      SCM220A, #9, #19

CM2T25.....SCM225A, #9      SCM225A, #9, #19

CM2T32.....SCM232A, #9      SCM232A, #9, #19

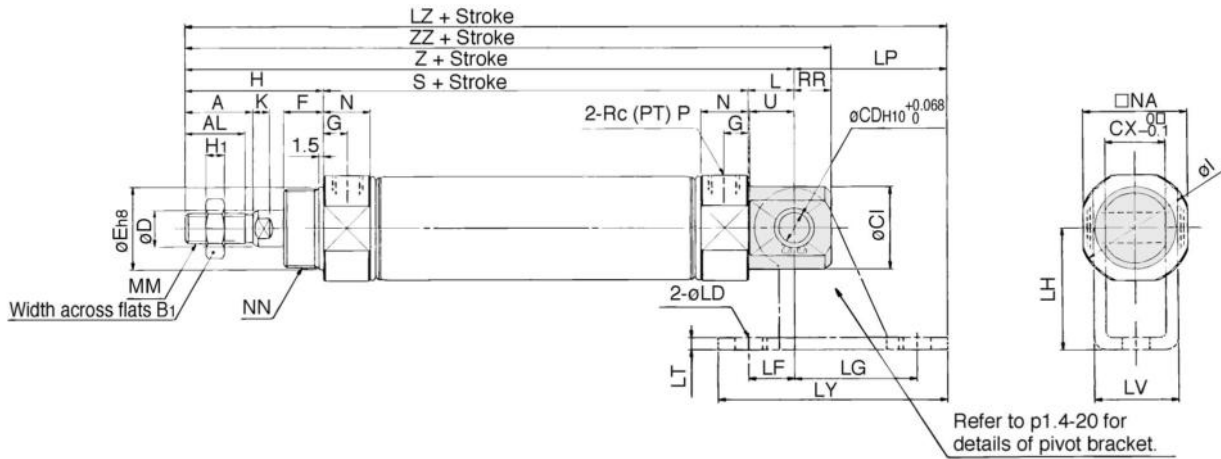
CM2T40.....SCM240A, #9      SCM240A, #9, #19

\* The data shows auto switch equipped styles.  
Please delete the unnecessary part.

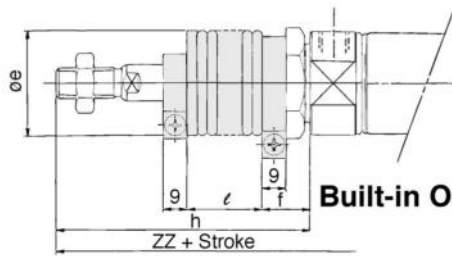
## Integrated Clevis (E)



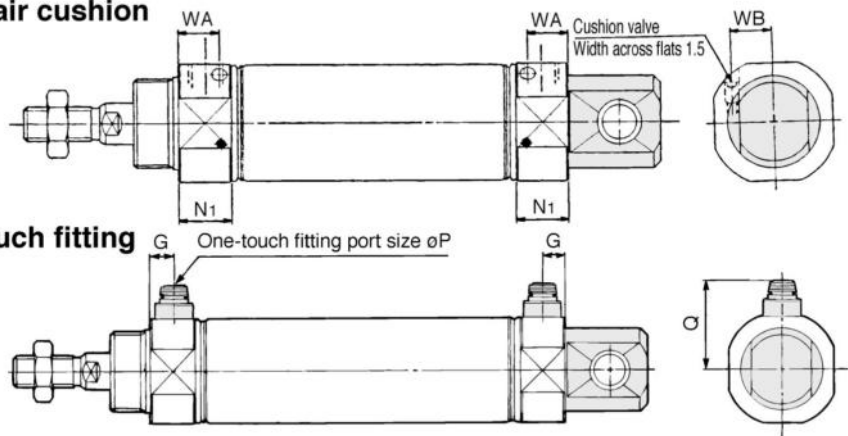
CM2E Bore size — Stroke



### With rod boot



### With air cushion



- CJ1
- CJP
- CJ2
- CM2**
- C85
- CG1
- MB
- C95
- CA1
- CS1

| Bore | Stroke range | A  | AL   | B1 | CD | CI | CX | D  | E                                 | F  | G  | H  | H1 | I    | K   | L  | MM         | N    | NA   | NN        |
|------|--------------|----|------|----|----|----|----|----|-----------------------------------|----|----|----|----|------|-----|----|------------|------|------|-----------|
| 20   | 1 to 300     | 18 | 15.5 | 13 | 8  | 20 | 12 | 8  | 20 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 41 | 5  | 28   | 5   | 12 | M8 X 1.25  | 15   | 24   | M20 X 1.5 |
| 25   | 1 to 300     | 22 | 19.5 | 17 | 8  | 22 | 12 | 10 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 33.5 | 5.5 | 12 | M10 X 1.25 | 15   | 30   | M26 X 1.5 |
| 32   | 1 to 300     | 22 | 19.5 | 17 | 10 | 27 | 20 | 12 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 8  | 45 | 6  | 37.5 | 5.5 | 15 | M10 X 1.25 | 15   | 34.5 | M26 X 1.5 |
| 40   | 1 to 300     | 24 | 21   | 22 | 10 | 33 | 20 | 14 | 32 <sup>0</sup> <sub>-0.039</sub> | 16 | 11 | 50 | 8  | 46.5 | 7   | 15 | M14 X 1.5  | 21.5 | 42.5 | M32 X 2   |

| Bore | P   | RR | S  | U    | Z   | ZZ  |
|------|-----|----|----|------|-----|-----|
| 20   | 1/8 | 9  | 62 | 11.5 | 115 | 124 |
| 25   | 1/8 | 9  | 62 | 11.5 | 119 | 128 |
| 32   | 1/8 | 12 | 64 | 14.5 | 124 | 136 |
| 40   | 1/4 | 12 | 88 | 14.5 | 153 | 165 |

### With rod boot

| Symbol<br>Stroke | e  | f  | h       |           |            |            |            |
|------------------|----|----|---------|-----------|------------|------------|------------|
|                  |    |    | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |
| 20               | 36 | 17 | 68      | 81        | 93         | 106        | 131        |
| 25               | 36 | 17 | 72      | 85        | 97         | 110        | 135        |
| 32               | 36 | 17 | 72      | 85        | 97         | 110        | 135        |
| 40               | 46 | 19 | 77      | 90        | 102        | 115        | 140        |

### With rod boot

| Symbol<br>Stroke | e       |           |            |            |            | Z       |           |            |            |            | ZZ      |           |            |            |            |
|------------------|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|---------|-----------|------------|------------|------------|
|                  | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 300 |
| 20               | 12.5    | 25        | 37.5       | 50         | 75         | 142     | 155       | 167        | 180        | 205        | 151     | 164       | 176        | 189        | 214        |
| 25               | 12.5    | 25        | 37.5       | 50         | 75         | 146     | 159       | 171        | 184        | 209        | 155     | 168       | 180        | 193        | 218        |
| 32               | 12.5    | 25        | 37.5       | 50         | 75         | 151     | 164       | 176        | 189        | 214        | 163     | 176       | 188        | 201        | 226        |
| 40               | 12.5    | 25        | 37.5       | 50         | 75         | 180     | 193       | 205        | 218        | 243        | 192     | 205       | 217        | 230        | 255        |

### With air cushion

| Bore | N1   | WA | WB   |
|------|------|----|------|
| 20   | 17.5 | 13 | 8.5  |
| 25   | 17.5 | 13 | 10.5 |
| 32   | 17.5 | 13 | 11.5 |
| 40   | 21.5 | 16 | 15   |

### Built-in One-touch fitting

| Bore | G  | P | Q    |
|------|----|---|------|
| 20   | 8  | 6 | 23   |
| 25   | 8  | 6 | 26   |
| 32   | 8  | 6 | 28.5 |
| 40   | 11 | 8 | 32.5 |

### Pivot bracket

| Bore | LD  | LF | LG | LH | LP | LT  | LV   | LY | LZ  |
|------|-----|----|----|----|----|-----|------|----|-----|
| 20   | 6.8 | 15 | 30 | 30 | 37 | 3.2 | 18.4 | 59 | 152 |
| 25   | 6.8 | 15 | 30 | 30 | 37 | 3.2 | 18.4 | 59 | 156 |
| 32   | 9   | 15 | 40 | 40 | 50 | 4   | 28   | 75 | 174 |
| 40   | 9   | 15 | 40 | 40 | 50 | 4   | 28   | 75 | 203 |



Integrated clevis

Built-in One-touch fitting

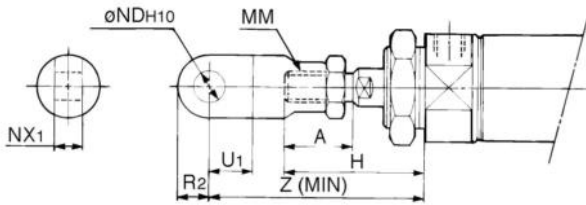
CM2E20.....SCM220A, #10 SCM220A, #10, #19  
 CM2E25.....SCM225A, #10 SCM225A, #10, #19  
 CM2E32.....SCM232A, #10 SCM232A, #10, #19  
 CM2E40.....SCM240A, #10 SCM240A, #10, #19

\* The data shows auto switch equipped styles.  
 Please delete the unnecessary part.

# Series CM2 Accessory Dimensions

## Single Knuckle Joint

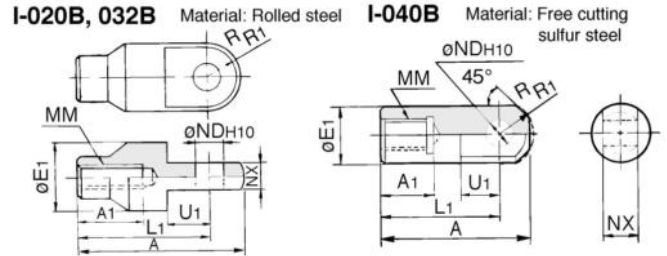
(mm)



| Bore size | A  | H  | MM         | NDH10                             | NX1                                | U1 | R2 | Z  |
|-----------|----|----|------------|-----------------------------------|------------------------------------|----|----|----|
| 20        | 18 | 41 | M8 X 1.25  | 9 <sup>+0.058</sup> <sub>0</sub>  | 9 <sup>-0.1</sup> <sub>-0.2</sub>  | 14 | 10 | 66 |
| 25/32     | 22 | 45 | M10 X 1.25 | 9 <sup>+0.058</sup> <sub>0</sub>  | 9 <sup>-0.1</sup> <sub>-0.2</sub>  | 14 | 10 | 69 |
| 40        | 24 | 50 | M14 X 1.5  | 12 <sup>+0.070</sup> <sub>0</sub> | 16 <sup>-0.1</sup> <sub>-0.3</sub> | 20 | 14 | 92 |

## Single Knuckle Joint

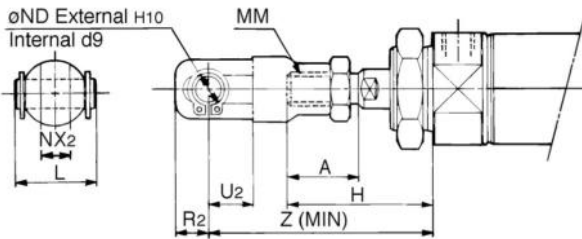
(mm)



| Part No. | Applicable bore size | A  | A1 | E1 | L1 | MM         | NDH10                             | NX                                 | R1   | U1 |
|----------|----------------------|----|----|----|----|------------|-----------------------------------|------------------------------------|------|----|
| I-020B   | 20                   | 46 | 16 | 20 | 36 | M8 X 1.25  | 9 <sup>+0.058</sup> <sub>0</sub>  | 9 <sup>-0.1</sup> <sub>-0.2</sub>  | 10   | 14 |
| I-032B   | 25/32                | 48 | 18 | 20 | 38 | M10 X 1.25 | 9 <sup>+0.058</sup> <sub>0</sub>  | 9 <sup>-0.1</sup> <sub>-0.2</sub>  | 10   | 14 |
| I-040B   | 40                   | 69 | 22 | 24 | 55 | M14 X 1.5  | 12 <sup>+0.070</sup> <sub>0</sub> | 16 <sup>-0.1</sup> <sub>-0.3</sub> | 15.5 | 20 |

## Double Knuckle Joint

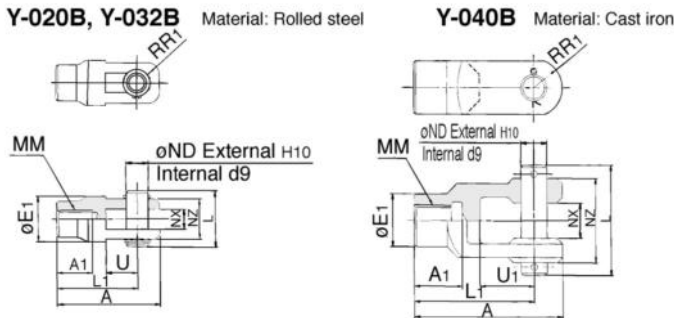
(mm)



| Bore size | A  | H  | L    | MM         | ND | NX2                                | R2 | U2 | Z  |
|-----------|----|----|------|------------|----|------------------------------------|----|----|----|
| 20        | 18 | 41 | 25   | M8 X 1.25  | 9  | 9 <sup>+0.2</sup> <sub>+0.1</sub>  | 10 | 14 | 66 |
| 25/32     | 22 | 45 | 25   | M10 X 1.25 | 9  | 9 <sup>+0.2</sup> <sub>+0.1</sub>  | 10 | 14 | 69 |
| 40        | 24 | 50 | 49.7 | M14 X 1.5  | 12 | 16 <sup>+0.3</sup> <sub>+0.1</sub> | 13 | 25 | 92 |

## Double Knuckle Joint

(mm)



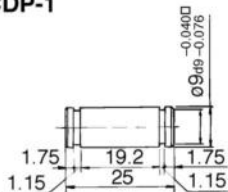
| Part No. | Applicable bore size | A  | A1 | E1 | L    | L1 | MM         | ND | NX                                 | NZ | R1 | U1 | Applicable pin part No. | Snap ring/Cotter pin size |
|----------|----------------------|----|----|----|------|----|------------|----|------------------------------------|----|----|----|-------------------------|---------------------------|
| Y-020B   | 20                   | 46 | 16 | 20 | 25   | 36 | M8 X 1.25  | 9  | 9 <sup>+0.2</sup> <sub>+0.1</sub>  | 18 | 5  | 14 | CDP-1                   | C9 type for pivot         |
| Y-032B   | 25,32                | 48 | 18 | 20 | 25   | 38 | M10 X 1.25 | 9  | 9 <sup>+0.2</sup> <sub>+0.1</sub>  | 18 | 5  | 14 | CDP-1                   | C9 type for pivot         |
| Y-040B   | 40                   | 68 | 22 | 24 | 49.7 | 55 | M14 X 1.5  | 12 | 16 <sup>+0.3</sup> <sub>+0.1</sub> | 38 | 13 | 25 | CDP-3                   | ø3 X 18ℓ                  |

\*Clevis pins and snap rings (cotter pins for bore size 40) are attached.

## Double Clevis Pin/Material: Carbon steel

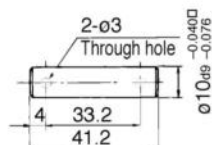
(mm)

Bore size: ø20, ø25, ø32  
CDP-1



Snap ring: C9 type for pivot

Bore size: ø40  
CDP-2

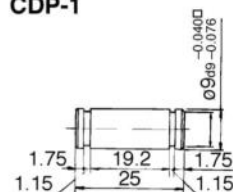


Cotter pin: ø3 X 18ℓ

## Double Knuckle Pin/Material: Carbon steel

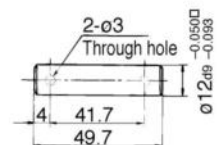
(mm)

Bore size: ø20, ø25, ø32  
CDP-1



Snap ring: C9 type for pivot

Bore size: ø40  
CDP-3

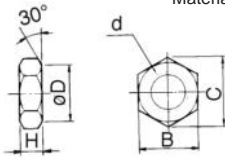


Cotter pin: ø3 X 18ℓ

# Standard: Double Acting Single Rod *Series CM2*

## Rod End Nut (mm)

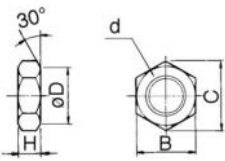
Material: Carbon steel



| Part No.     | Applicable bore size | B  | C    | D    | d          | H |
|--------------|----------------------|----|------|------|------------|---|
| <b>NT-02</b> | <b>20</b>            | 13 | 15.0 | 12.5 | M8 X 1.25  | 5 |
| <b>NT-03</b> | <b>25/32</b>         | 17 | 19.6 | 16.5 | M10 X 1.25 | 6 |
| <b>NT-04</b> | <b>40</b>            | 22 | 25.4 | 21.0 | M14 X 1.5  | 8 |

## Mounting Nut (mm)

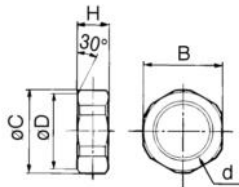
Material: Carbon steel



| Part No.       | Applicable bore size | B  | C    | D    | d         | H  |
|----------------|----------------------|----|------|------|-----------|----|
| <b>SN-020B</b> | <b>20</b>            | 26 | 30   | 25.5 | M20 X 1.5 | 8  |
| <b>SN-032B</b> | <b>25/32</b>         | 32 | 37   | 31.5 | M26 X 1.5 | 8  |
| <b>SN-040B</b> | <b>40</b>            | 41 | 47.3 | 40.5 | M32 X 2.0 | 10 |

## Trunnion Nut (mm)

Material: Carbon steel

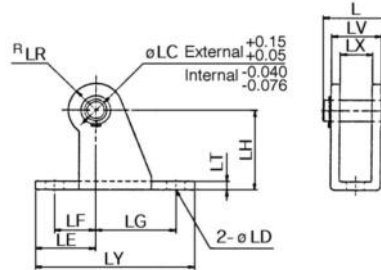


| Part No.       | Applicable bore size | B  | C  | D    | d         | H  |
|----------------|----------------------|----|----|------|-----------|----|
| <b>TN-020B</b> | <b>20</b>            | 26 | 28 | 25.5 | M20 X 1.5 | 10 |
| <b>TN-032B</b> | <b>25/32</b>         | 32 | 34 | 31.5 | M26 X 1.5 | 10 |
| <b>TN-040B</b> | <b>40</b>            | 41 | 45 | 40.5 | M32 X 2   | 10 |

Pivot bracket for integrated clevis style CM2E: Please order it separately.

## Pivot Bracket (mm)

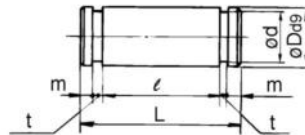
Material: Rolled steel



| Part No.        | Applicable bore size | L    | LC | LD  | LE | LF | LG | LH | LR | LT  | LX | LY | LV   | Applicable pin part No. |
|-----------------|----------------------|------|----|-----|----|----|----|----|----|-----|----|----|------|-------------------------|
| <b>CM-E020B</b> | <b>20/25</b>         | 24.5 | 8  | 6.8 | 22 | 15 | 30 | 30 | 10 | 3.2 | 12 | 59 | 18.4 | CD-S02                  |
| <b>CM-E032B</b> | <b>32/40</b>         | 34   | 10 | 9   | 25 | 15 | 40 | 40 | 13 | 4   | 20 | 75 | 28   | CD-S03                  |

## Clevis Pin (mm)

Material: Carbon steel



| Part No.      | Applicable bore size | Dø9                                      | d   | L    | ℓ    | m    | t    | Applicable snap ring part No. |
|---------------|----------------------|--|-----|------|------|------|------|-------------------------------|
| <b>CD-S02</b> | <b>20/25</b>         | 8 <sup>-0.040</sup> / <sub>-0.076</sub>  | 7.6 | 24.5 | 19.5 | 1.6  | 0.9  | C8 type for pivot             |
| <b>CD-S03</b> | <b>32/40</b>         | 10 <sup>-0.040</sup> / <sub>-0.076</sub> | 9.6 | 34   | 29   | 1.35 | 1.15 | C10 type for pivot            |

**CJ1**

**CJP**

**CJ2**

**CM2**

**C85**

**CG1**

**MB**

**C95**

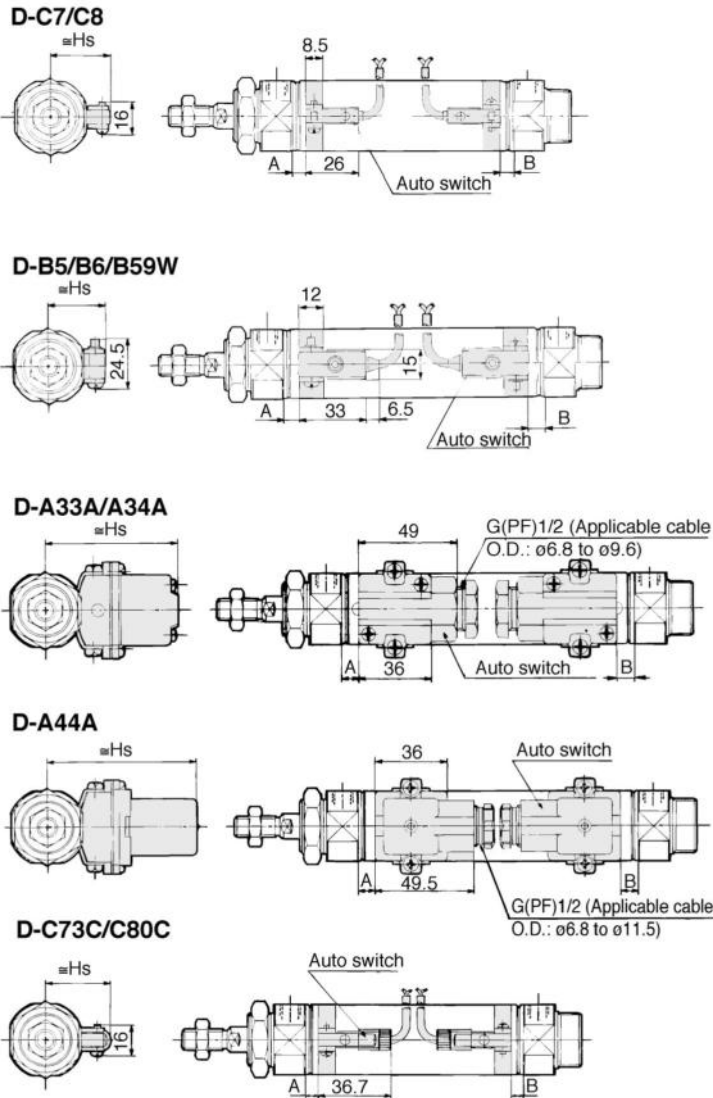
**CA1**

**CS1**

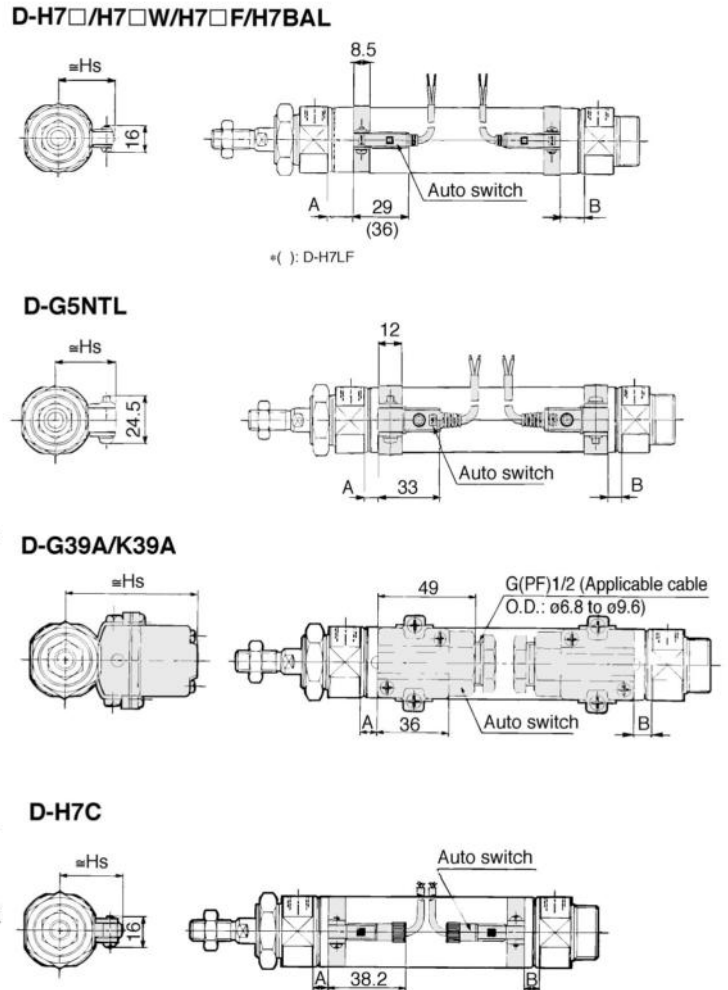
# Series CDM2

## Auto Switch Mounting Position and Mounting Height

### Reed Switch



### Solid State Switch



### Auto Switch Mounting Position

(mm)

| Auto switch model | D-B5<br>D-B6 |      | D-C7<br>D-C8<br>D-C73C<br>D-C80C |      | D-B59W |      | D-A3□A<br>D-G39A<br>D-K39A<br>D-A44A |        | D-H7□<br>D-H7C |      | D-H7□W<br>D-H7BAL<br>D-H7□F |          | D-G5NTL  |          |
|-------------------|--------------|------|----------------------------------|------|--------|------|--------------------------------------|--------|----------------|------|-----------------------------|----------|----------|----------|
|                   | A            | B    | A                                | B    | A      | B    | A                                    | B      | A              | B    | A                           | B        | A        | B        |
| ø20               | 1(0)         | 0(0) | 7(5)                             | 6(4) | 4(2)   | 3(1) | 0.5(0)                               | 0(0)   | 6(4)           | 5(3) | 4.5(2.5)                    | 3.5(1.5) | 2.5(0.5) | 1.5(0)   |
| ø25               | 1(0)         | 0(0) | 7(5)                             | 6(4) | 4(2)   | 3(1) | 0.5(0)                               | 0(0)   | 6(4)           | 5(3) | 4.5(2.5)                    | 3.5(1.5) | 2.5(0.5) | 1.5(0)   |
| ø32               | 2(0)         | 1(0) | 8(6)                             | 7(5) | 5(3)   | 4(2) | 1.5(0)                               | 0.5(0) | 7(5)           | 6(4) | 5.5(3.5)                    | 4.5(2.5) | 3.5(1.5) | 2.5(0.5) |
| ø40               | 7            | 6    | 13                               | 12   | 10     | 9    | 6.5                                  | 5.5    | 12             | 11   | 10.5                        | 9.5      | 8.5      | 7.5      |

\*( ) : With air cushion

### Mounting Height

(mm)

| D-B5<br>D-B6<br>D-B59W<br>D-G5NTL<br>D-H7C | D-C7<br>D-C8<br>D-H7□<br>D-H7□W<br>D-H7BAL<br>D-H7□F | D-C73C<br>D-C80C | D-A3□A<br>D-G39A<br>D-K39A | D-A44A |
|--|--|------------------|----------------------------|--------|
| Hs   | Hs   | Hs               | Hs                         | Hs     |
| 25.5                                       | 22.5   | 25               | 60                         | 69.5   |
| 28   | 25   | 27.5             | 62.5                       | 72     |
| 31.5                                       | 28.5   | 31               | 66                         | 75.5   |
| 35.5                                       | 32.5   | 35               | 70                         | 79.5   |