



## Air Cylinder: Standard Type Single Acting, Spring Return/Extend

# CM2 Series

ø20, ø25, ø32, ø40

RoHS

### How to Order

|                                     |                                  |   |  |   |
|-------------------------------------|----------------------------------|---|--|---|
| <b>B</b> Basic (Double-side bossed) | <b>T</b> Head trunnion           | Cylinder stroke (mm)  | Action<br><b>S</b> Single acting, Spring return<br><b>T</b> Single acting, Spring extend             | Pivot bracket<br><b>NII</b> None<br><b>N</b> Pivot bracket is shipped together with the product, but not assembled. |
| <b>L</b> Axial foot                 | <b>E</b> Integrated clevis       |   |  |   |
| <b>F</b> Rod flange                 | <b>V</b> Integrated clevis (90°) | Rod end thread<br><b>NII</b> Male rod end<br><b>F</b> Female rod end  | Rod end bracket<br><b>NII</b> None<br><b>V</b> Single knuckle joint<br><b>W</b> Double knuckle joint | Auto switch<br><b>NII</b> Without auto switch   |
| <b>G</b> Head flange                | <b>BZ</b> Boss-cut/Basic         |   |  |   |
| <b>C</b> Single clevis              | <b>FZ</b> Boss-cut/Rod flange    | Made to Order   | Number of auto switches<br><b>NII</b> 2 pcs.<br><b>S</b> 1 pc.<br><b>n</b> "n" pcs.                  |   |
| <b>D</b> Double clevis              | <b>UZ</b> Boss-cut/Rod trunnion  |   |  |   |
| <b>U</b> Rod trunnion               |                                  | <p><b>CM2 B 32 - 150 S Z - [ ] - [ ] - [ ]</b></p> <p><b>With auto switch CDM2 B 32 - 150 S Z - [ ] - [ ] - M9BW [ ] - [ ]</b></p> <p><b>With auto switch (Built-in magnet)</b></p> |  |   |

**Bore size**

|    |       |
|----|-------|
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |

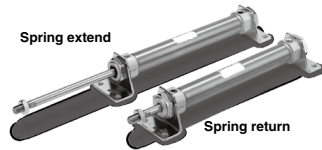
\* No bracket is provided for the female rod end.  
\* A knuckle joint pin is not provided with the single knuckle joint.  
\* Rod end bracket is shipped together with the product, but not assembled.  
\* Not applicable to XB12.

### Applicable Auto Switches

| Type                                      | Special function                          | Electrical entry                    | Indicator light | Wiring (Output)         | Load voltage |               |               | Auto switch model |           | Lead wire length (m) |       |      |            | Pre-wired connector | Applicable load |   |   |   |            |
|---|---|-------------------------------------|-----------------|-------------------------|--------------|---------------|---------------|-------------------|-----------|----------------------|-------|------|------------|---------------------|-----------------|---|---|---|------------|
|   |   |                                     |                 |                         | DC           | AC            | Perpendicular | In-line           | 0.5       | 1                    | 3     | 5    |            |                     |                 |   |   |   |            |
|   |   |                                     |                 |                         |              |               |               |                   | (NII)     | (M)                  | (L)   | (Z)  | (None (N)) |                     |                 |   |   |   |            |
| Solid state auto switch                   | —   | Grommet                             | Yes             | 3-wire (NPN)            | 5 V, 12 V    | —             | M9NV          | M9N               | ●         | ●                    | ●     | ○    | —          | ○                   | Relay, PLC      |   |   |   |            |
|   |   |                                     |                 | 3-wire (PNP)            |              |               | M9PV          | M9P               | ●         | ●                    | ●     | ○    | —          |                     |                 |   |   |   |            |
|   |   | 2-wire                              |                 | M9BV                    |              |               | M9B           | ●                 | ●         | ●                    | ○     | —    |            |                     |                 |   |   |   |            |
|   |   | Terminal conduit                    |                 | —                       |              |               | H7C           | ●                 | ●         | ●                    | ●     | —    |            |                     |                 |   |   |   |            |
|   | Diagnostic indication (2-color indicator) | Grommet                             | Yes             | 3-wire (NPN)            | 5 V, 12 V    | —             | M9NVW         | M9NW              | ●         | ●                    | ●     | ○    | —          | ○                   |                 |   |   |   |            |
|   |   |                                     |                 | 3-wire (PNP)            |              |               | M9PVW         | M9PW              | ●         | ●                    | ●     | ○    | —          |                     |                 |   |   |   |            |
|   |   | 2-wire                              |                 | M9BWW                   |              |               | M9BW          | ●                 | ●         | ●                    | ○     | —    |            |                     |                 |   |   |   |            |
|   |   | Terminal conduit                    |                 | —                       |              |               | K39A          | ●                 | ●         | ●                    | ●     | —    |            |                     |                 |   |   |   |            |
|   |   | Water resistant (2-color indicator) |                 | Grommet                 |              |               | Yes           | 3-wire (NPN)      | 5 V, 12 V | —                    | M9NAV | M9NA | ○          | ○                   |                 | ○ | ○ | — | ○          |
|   |   |                                     |                 |                         |              |               |               | 3-wire (PNP)      |           |                      | M9PAV | M9PA | ○          | ○                   |                 | ○ | ○ | — |            |
| Reed auto switch                          | —   | Grommet                             | Yes             | 3-wire (NPN equivalent) | —            | 5 V           | A96V          | A96               | ●         | —                    | ●     | —    | —          | —                   | Relay, PLC      |   |   |   |            |
|   |   |                                     |                 | Terminal conduit        |              |               | —             | A93V              | A93       | ●                    | ●     | ●    | —          | —                   |                 |   |   |   |            |
|   |   | Connector                           |                 | No (Yes/No/Yes/No)      |              |               | 2-wire        | 24 V              | 12 V      | 100 V                | A90V  | A90  | ●          | —                   |                 | ● | — | — | IC circuit |
|   |   |                                     |                 |                         |              |               |               |                   |           | 100 V or less        | —     | B54  | ●          | —                   |                 | ● | — | — |            |
|   |   | Terminal conduit                    |                 | Yes                     |              |               | 2-wire        | 24 V              | 12 V      | 200 V or less        | —     | B64  | ●          | —                   |                 | ● | — | — | —          |
|   |   |                                     |                 |                         |              |               |               |                   |           | 24 V or less         | —     | C73C | ●          | —                   |                 | ● | — | — |            |
| Diagnostic indication (2-color indicator) | Grommet                                   | Yes                                 | 2-wire          | 24 V                    | 12 V         | 100 V, 200 V  | —             | A33A              | —         | —                    | —     | —    | —          | PLC                 |                 |   |   |   |            |
|   |   |                                     |                 |                         |              | 200 V or less | —             | A34A              | —         | —                    | —     | —    | —          | —                   | Relay, PLC      |   |   |   |            |
| —   | —   | —                                   | —               | —                       | —            | —             | B59W          | ●                 | —         | ●                    | —     | —    |            |                     |                 |   |   |   |            |



## CM2 Series

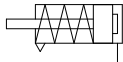


### Specifications

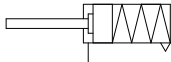
| Bore size (mm)                       |                              | 20  | 25     | 32     | 40     |
|--------------------------------------|------------------------------|---|--------|--------|--------|
| <b>Action</b>                        |                              | Single acting, Spring return/Single acting, Spring extend                           |        |        |        |
| <b>Type</b>                          |                              | Pneumatic   |        |        |        |
| <b>Cushion</b>                       |                              | Rubber bumper   |        |        |        |
| <b>Fluid</b>                         |                              | Air   |        |        |        |
| <b>Proof pressure</b>                |                              | 1.5 MPa   |        |        |        |
| <b>Maximum operating pressure</b>    |                              | 1.0 MPa   |        |        |        |
| <b>Minimum operating pressure</b>    | Single acting, Spring return | 0.18 MPa  |        |        |        |
|                                      | Single acting, Spring extend | 0.23 MPa  |        |        |        |
| <b>Ambient and fluid temperature</b> |                              | Without auto switch: -10°C to 70°C<br>With auto switch: -10°C to 60°C (No freezing) |        |        |        |
| <b>Lubrication</b>                   |                              | Not required (Non-lube)   |        |        |        |
| <b>Stroke length tolerance</b>       |                              | $\begin{matrix} +1.4 \\ 0 \end{matrix}$ mm  |        |        |        |
| <b>Piston speed</b>                  |                              | 50 to 750 mm/s  |        |        |        |
| <b>Allowable kinetic energy</b>      | <b>Male thread</b>           | 0.27 J  | 0.4 J  | 0.65 J | 1.2 J  |
|                                      | <b>Female thread</b>         | 0.11 J  | 0.18 J | 0.29 J | 0.52 J |

### Symbol

Single acting, Spring return, Rubber bumper



Single acting, Spring extend, Rubber bumper

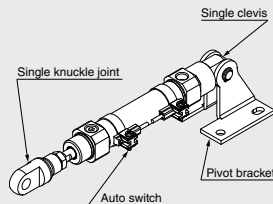


### Standard Strokes

| Bore size (mm) | Standard stroke (mm)                |
|----------------|-------------------------------------|
| 20             | 25, 50, 75, 100, 125, 150           |
| 25             | 25, 50, 75, 100, 125, 150           |
| 32             | 25, 50, 75, 100, 125, 150, 200      |
| 40             | 25, 50, 75, 100, 125, 150, 200, 250 |

### Option: Ordering Example of Cylinder Assembly

Cylinder model: CDM2C32-150SZ-NV-M9BW



**Mounting C: Single clevis**  
**Pivot bracket N: Yes**  
**Rod end bracket V: Single knuckle joint**  
**Auto switch D-M9BW: 2 pcs.**

\* Pivot bracket, single knuckle joint and auto switch are shipped together with the product, but not assembled.

\* Pivot bracket is available only for C, T, U, E, V, UZ mounting types.

\* No bracket is provided for the female rod end.



## Air Cylinder: Standard Type *CM2 Series*

### Mounting and Accessories

| Accessories                         | Body     | Standard (mounted to the body) |                           |               |               |               |              | Standard (packaged together, but not assembled) |        |               |                   |                   |          |                             |                                  | Option                           |   |   |
|-------------------------------------|----------|--------------------------------|---------------------------|---------------|---------------|---------------|--------------|---|--------|---------------|-------------------|-------------------|----------|-----------------------------|----------------------------------|----------------------------------|---|---|
|                                     |          | Mounting nut                   | Rod end nut (Male thread) | Single clevis | Double clevis | Liner         | Mounting nut | Foot  | Flange | Pivot bracket | Pivot bracket pin | Double clevis pin | Trunnion | Mounting nut (For trunnion) | Clevis pivot bracket (CM2E/CM2V) | Clevis pivot bracket (CM2E/CM2V) | Single knuckle joint (Male thread only) | Double knuckle joint (Male thread only) |
| <b>B</b> Basic (Double-side bossed) | ●(1 pc.) | ●(1 pc.)                       | ●(1 pc.)                  | —             | —             | —             | —            | —   | —      | —             | —                 | —                 | —        | —                           | —                                | —                                | ●                                       | ●                                       |
| <b>L</b> Axial foot                 | ●(1 pc.) | ●(1 pc.)                       | ●(1 pc.)                  | —             | —             | —             | ●(1 pc.)     | ●(2 pcs.)                                       | —      | —             | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>F</b> Rod flange                 | ●(1 pc.) | ●(1 pc.)                       | ●(1 pc.)                  | —             | —             | —             | —            | —   | —      | ●(1 pc.)      | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>G</b> Head flange                | ●(1 pc.) | ●(1 pc.)                       | ●(1 pc.)                  | —             | —             | —             | —            | —   | —      | ●(1 pc.)      | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>C</b> Single clevis              | ●(1 pc.) | —                              | ●(1 pc.)                  | ●(1 pc.)      | —             | ●(Max 3 pcs.) | —            | —   | —      | —             | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>D</b> Double clevis              | ●(1 pc.) | —                              | ●(1 pc.)                  | —             | ●(1 pc.)      | ●(Max 3 pcs.) | —            | —   | —      | —             | —                 | ●(1 pc.)          | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>U</b> Rod trunnion               | ●(1 pc.) | —                              | ●(1 pc.)                  | —             | —             | —             | —            | —   | —      | —             | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>T</b> Head trunnion              | ●(1 pc.) | —                              | ●(1 pc.)                  | —             | —             | —             | —            | —   | —      | —             | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>E</b> Integrated clevis          | ●(1 pc.) | —                              | ●(1 pc.)                  | —             | —             | —             | —            | —   | —      | —             | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>V</b> Integrated clevis (90°)    | ●(1 pc.) | —                              | ●(1 pc.)                  | —             | —             | —             | —            | —   | —      | —             | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>BZ</b> Boss-cut/Basic            | ●(1 pc.) | ●(1 pc.)                       | ●(1 pc.)                  | —             | —             | —             | —            | —   | —      | —             | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>FZ</b> Boss-cut/Rod flange       | ●(1 pc.) | ●(1 pc.)                       | ●(1 pc.)                  | —             | —             | —             | —            | —   | —      | ●(1 pc.)      | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |
| <b>UZ</b> Boss-cut/Rod trunnion     | ●(1 pc.) | —                              | ●(1 pc.)                  | —             | —             | —             | —            | —   | —      | —             | —                 | —                 | —        | —                           | —                                | —                                | —                                       | —                                       |

### Mounting Brackets/Part No.

| Mounting bracket                         | Min. order qty | Bore size (mm) |          |          |          | Contents (for minimum order quantity)                      |
|--|----------------|----------------|----------|----------|----------|--|
|  |                | 20             | 25       | 32       | 40       |  |
| Foot*                                    | 2              | CM-L020B       | CM-L032B | CM-L040B | CM-L040B | 2 feets, 1 mounting nut                                    |
| Flange                                   | 1              | CM-F020B       | CM-F032B | CM-F040B | CM-F040B | 1 flange   |
| Single clevis**                          | 1              | CM-C020B       | CM-C032B | CM-C040B | CM-C040B | 1 single clevis, 3 liners                                  |
| Double clevis (with pin)***              | 1              | CM-D020B       | CM-D032B | CM-D040B | CM-D040B | 1 double clevis, 3 liners, 1 clevis pin, 2 retaining rings |
| Double clevis pin                        | 1              | CDP-1          |          | CDP-2    | CDP-2    | 1 clevis pin, 2 retaining rings (split pins)               |
| Trunnion (with nut)                      | 1              | CM-T020B       | CM-T032B | CM-T040B | CM-T040B | 1 trunnion, 1 trunnion nut                                 |
| Rod end nut                              | 1              | NT-02          | NT-03    | NT-04    | NT-04    | 1 rod end nut  |
| Mounting nut                             | 1              | SN-020B        | SN-032B  | SN-040B  | SN-040B  | 1 mounting nut   |
| Trunnion nut                             | 1              | TN-020B        | TN-032B  | TN-040B  | TN-040B  | 1 trunnion nut   |
| Single knuckle joint                     | 1              | I-020B         | I-032B   | I-040B   | I-040B   | 1 single knuckle joint                                     |
| Double knuckle joint                     | 1              | Y-020B         | Y-032B   | Y-040B   | Y-040B   | 1 double knuckle joint, 1 knuckle pin, 2 retaining rings   |
| Double knuckle joint pin                 | 1              | CDP-1          |          | CDP-3    | CDP-3    | 1 knuckle pin, 2 retaining rings (split pins)              |
| Clevis pivot bracket pin (For CM2E/CM2V) | 1              | CD-S02         |          | CD-S03   |          | 1 clevis pin, 2 retaining rings                            |
| Clevis pivot bracket (For CM2E/CM2V)     | 1              | CM-E020B       | CM-E032B |          |          | 1 clevis pivot bracket, 1 clevis pin, 2 retaining rings    |
| Pivot bracket (For CM2C)                 | 1              | CM-B032        |          | CM-B040  |          | 2 pivot brackets (1 of each type)                          |
| Pivot bracket pin (For CM2C)             | 1              | CDP-1          |          | CD-S03   |          | 1 pin, 2 retaining rings                                   |
| Pivot bracket (For CM2T/CM2U)            | 1              | CM-B020        | CM-B032  | CM-B040  |          | 2 pivot brackets (1 of each type)                          |

\* Order 2 feets per cylinder.

\*\* 3 liners are included with a clevis bracket for adjusting the mounting angle.

\*\*\* A clevis pin and retaining rings (split pins for 40) are included.



## CM2 Series

### Mounting Brackets, Accessories/Material, Surface Treatment

| Segment           | Description              | Material                                | Surface treatment   |
|-------------------|--------------------------|---|---|
| Mounting brackets | Foot                     | Carbon steel                            | Nickel plating  |
|                   | Flange                   | Carbon steel                            | Nickel plating  |
|                   | Single clevis            | Carbon steel                            | Nickel plating  |
|                   | Double clevis            | Carbon steel                            | Nickel plating  |
|                   | Trunnion                 | Cast iron                               | Electroless nickel plating  |
| Accessories       | Rod end nut              | Carbon steel                            | Zinc chromated  |
|                   | Mounting nut             | Carbon steel                            | Nickel plating  |
|                   | Trunnion nut             | Carbon steel                            | Nickel plating  |
|                   | Clevis pivot bracket     | Carbon steel                            | Nickel plating  |
|                   | Clevis pivot bracket pin | Carbon steel                            | (None)  |
|                   | Single knuckle joint     | Carbon steel<br>ø40: Free-cutting steel | Electroless nickel plating  |
|                   | Double knuckle joint     | Carbon steel<br>ø40: Cast iron          | Electroless nickel plating<br>Metallic silver color painted for ø40 |
|                   | Double clevis pin        | Carbon steel                            | (None)  |
|                   | Double knuckle joint pin | Carbon steel                            | (None)  |
|                   | Pivot bracket            | Carbon steel                            | Nickel plating  |
|                   | Pivot bracket pin        | Carbon steel                            | (None)  |



## Precautions

### Handling

### ⚠ Warning

#### 1. Do not rotate the cover.

If a cover is rotated when installing a cylinder or screwing a fitting into the port, it is likely to damage the junction part with cover.

### ⚠ Caution

#### 1. Not able to disassemble.

Cover and cylinder tube are connected to each other by caulking method, thus making it impossible to disassemble. Therefore, internal parts of a cylinder other than rod seal are not replaceable.

#### 2. Use caution to the popping of a retaining ring.

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

#### 3. Do not touch the cylinder during operation.

Use caution when handling a cylinder, which is running at a high speed and a high frequency, because the surface of a cylinder tube could get so hot enough as to cause you get burned.

#### 4. The oil stuck to the cylinder is grease.

The base oil of grease may seep out.

#### 6. When using a rod end bracket and/or pivot bracket, make sure they do not interfere with other brackets, workpieces and rod section, etc.

### Weights

#### Spring Return

(kg)

| Bore size (mm)                  |                                     | 20                   | 25    | 32    | 40    |
|---------------------------------|-------------------------------------|----------------------|-------|-------|-------|
| Basic weight                    | 25 stroke                           | 0.20                 | 0.30  | 0.42  | 0.77  |
|                                 | 50 stroke                           | 0.22                 | 0.33  | 0.46  | 0.84  |
|                                 | 75 stroke                           | 0.27                 | 0.42  | 0.58  | 1.03  |
|                                 | 100 stroke                          | 0.29                 | 0.45  | 0.63  | 1.09  |
|                                 | 125 stroke                          | 0.35                 | 0.54  | 0.76  | 1.29  |
|                                 | 150 stroke                          | 0.37                 | 0.57  | 0.80  | 1.36  |
|                                 | 200 stroke                          | —                    | —     | 0.97  | 1.61  |
|                                 | 250 stroke                          | —                    | —     | —     | 1.87  |
|                                 | Foot                                | 0.15                 | 0.16  | 0.16  | 0.27  |
|                                 | Flange                              | 0.06                 | 0.09  | 0.09  | 0.12  |
| Mounting bracket weight         | Single clevis                       | 0.04                 | 0.04  | 0.04  | 0.09  |
|                                 | Double clevis                       | 0.05                 | 0.06  | 0.06  | 0.13  |
|                                 | Trunnion                            | 0.04                 | 0.07  | 0.07  | 0.10  |
|                                 | Clevis integrated                   | -0.02                | -0.02 | -0.01 | -0.04 |
|                                 | Boss-cut/Basic                      | -0.01                | -0.02 | -0.02 | -0.03 |
|                                 | Boss-cut/Flange                     | 0.05                 | 0.07  | 0.07  | 0.09  |
|                                 | Boss-cut/Trunnion                   | 0.03                 | 0.05  | 0.05  | 0.07  |
|                                 | Clevis pivot bracket (with pin)     | 0.07                 | 0.07  | 0.14  | 0.14  |
|                                 | Weight reduction for female rod end | -0.01                | -0.02 | -0.02 | -0.04 |
|                                 | Option bracket                      | Single knuckle joint | 0.06  | 0.06  | 0.06  |
| Double knuckle joint (with pin) | 0.07                                | 0.07                 | 0.07  | 0.20  |       |

Calculation:

(Example) **CM2L32-100SZ** (Bore size ø32, Foot, 100 stroke)

$$0.63 \text{ (Basic weight)} + 0.16 \text{ (Mounting bracket weight)} = \mathbf{0.79 \text{ kg}}$$

#### Spring Extend

(kg)

| Bore size (mm)                      |                      | 20    | 25    | 32    | 40    |
|-------------------------------------|----------------------|-------|-------|-------|-------|
| Basic weight                        | 25 stroke            | 0.19  | 0.29  | 0.40  | 0.74  |
|                                     | 50 stroke            | 0.21  | 0.32  | 0.44  | 0.81  |
|                                     | 75 stroke            | 0.25  | 0.39  | 0.54  | 0.97  |
|                                     | 100 stroke           | 0.27  | 0.42  | 0.58  | 1.03  |
|                                     | 125 stroke           | 0.32  | 0.49  | 0.69  | 1.20  |
|                                     | 150 stroke           | 0.34  | 0.52  | 0.73  | 1.27  |
|                                     | 200 stroke           | —     | —     | 0.88  | 1.49  |
| Mounting bracket weight             | 250 stroke           | —     | —     | —     | 1.72  |
|                                     | Foot                 | 0.15  | 0.16  | 0.16  | 0.27  |
|                                     | Flange               | 0.06  | 0.09  | 0.09  | 0.12  |
|                                     | Single clevis        | 0.04  | 0.04  | 0.04  | 0.09  |
|                                     | Double clevis        | 0.05  | 0.06  | 0.06  | 0.13  |
|                                     | Trunnion             | 0.04  | 0.07  | 0.07  | 0.10  |
|                                     | Clevis integrated    | -0.02 | -0.02 | -0.01 | -0.04 |
|                                     | Boss-cut/Basic       | -0.01 | -0.02 | -0.02 | -0.03 |
|                                     | Boss-cut/Flange      | 0.05  | 0.07  | 0.07  | 0.09  |
|                                     | Boss-cut/Trunnion    | 0.03  | 0.05  | 0.05  | 0.07  |
| Clevis pivot bracket (with pin)     | 0.07                 | 0.07  | 0.14  | 0.14  |       |
| Weight reduction for female rod end | -0.01                | -0.02 | -0.02 | -0.04 |       |
| Option bracket                      | Single knuckle joint | 0.06  | 0.06  | 0.06  | 0.23  |
| Double knuckle joint (with pin)     | 0.07                 | 0.07  | 0.07  | 0.20  |       |



## Air Cylinder: Standard Type *CM2 Series* Single Acting, Spring Return/Extend

### Built-in One-touch Fittings

CM2 | Mounting type | Bore size | F — Stroke | Action

↓ Built-in One-touch fittings

This type has the One-touch fitting integrated in a cylinder, which enables to reduce the piping labor and installing space dramatically.



### Specifications

|                         |  |                                 |
|-------------------------|--|---------------------------------|
| Action                  | Single acting,<br>Spring return  | Single acting,<br>Spring extend |
| Bore size (mm)          | ø20, ø25, ø32, ø40   |                                 |
| Max. operating pressure | 1.0 MPa  |                                 |
| Min. operating pressure | 0.18 MPa   | 0.23 MPa                        |
| Cushion                 | Rubber bumper  |                                 |
| Piping                  | One-touch fittings   |                                 |
| Piston speed            | 50 to 750 mm/s   |                                 |
| Mounting                | Basic, Axial foot, Rod flange, Head flange,<br>Single clevis, Double clevis, Rod trunnion,<br>Head trunnion, Integrated clevis, Boss-cut |                                 |

\* Auto switch can be mounted.

### Applicable Tubing O.D./I.D.

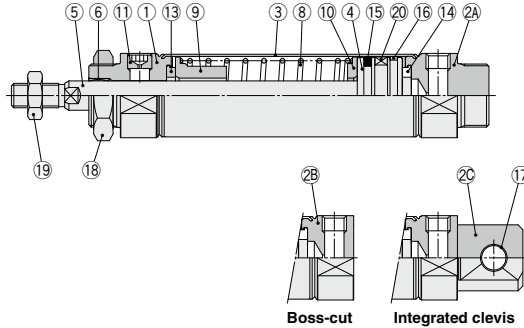
|                                  |  |     |     |     |
|----------------------------------|--|-----|-----|-----|
| Bore size (mm)                   | 20   | 25  | 32  | 40  |
| Applicable tubing O.D./I.D. (mm) | 6/4  | 6/4 | 6/4 | 8/6 |
| Applicable tubing material       | Can be used for either nylon, soft nylon or polyurethane tubing. |     |     |     |



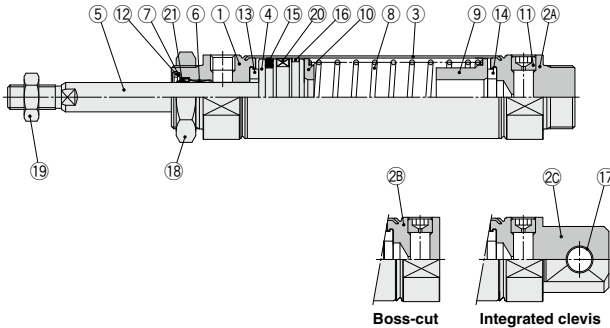
## CM2 Series

### Construction

#### Spring return



#### Spring extend



### Component Parts

| No. | Description             | Material        | Note                 |
|-----|-------------------------|-----------------|----------------------|
| 1   | Rod cover               | Aluminum alloy  | Anodized             |
| 2A  | Head cover A            | Aluminum alloy  | Anodized             |
| 2B  | Head cover B            | Aluminum alloy  | Anodized             |
| 2C  | Head cover C            | Aluminum alloy  | Anodized             |
| 3   | Cylinder tube           | Stainless steel |                      |
| 4   | Piston                  | Aluminum alloy  |                      |
| 5   | Piston rod              | Carbon steel    | Hard chrome plating  |
| 6   | Bushing                 | Bearing alloy   |                      |
| 7   | Seal retainer           | Stainless steel |                      |
| 8   | Return spring           | Steel wire      | Zinc chromated       |
| 9   | Spring guide            | Aluminum alloy  | Chromated            |
| 10  | Spring seat             | Aluminum alloy  | Chromated            |
| 11  | Plug with fixed orifice | Alloy steel     | Black zinc chromated |
| 12  | Retaining ring          | Carbon steel    | Phosphate coating    |

| No. | Description    | Material      | Note                            |
|-----|----------------|---------------|---------------------------------|
| 13  | Bumper         | Resin         | ø25 or larger is common.        |
| 14  | Bumper         | Resin         |                                 |
| 15  | Piston seal    | NBR           |                                 |
| 16  | Wear ring      | Resin         |                                 |
| 17  | Clevis bushing | Bearing alloy |                                 |
| 18  | Mounting nut   | Carbon steel  | Nickel plating                  |
| 19  | Rod end nut    | Carbon steel  | Zinc chromated                  |
| 20  | Magnet         | —             | CDM2□20 to 40-□ $\frac{5}{8}$ Z |
| 21  | Rod seal       | NBR           |                                 |

### Replacement Part: Seal

#### ● With Rubber Bumper (Spring extend only)

| No. | Description | Material | Part no. |          |          |          |
|-----|-------------|----------|----------|----------|----------|----------|
|     |             |          | 20       | 25       | 32       | 40       |
| 21  | Rod seal    | NBR      | CM20Z-PS | CM25Z-PS | CM32Z-PS | CM40Z-PS |

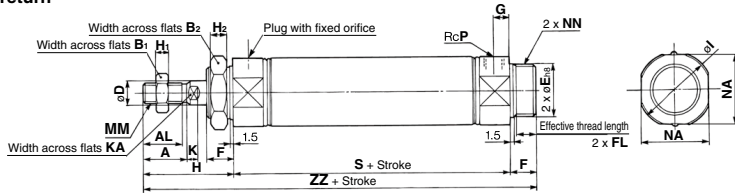
\* Since the seal does not include a grease pack, order it separately.  
**Grease pack part number: GR-S-010 (10 g)**



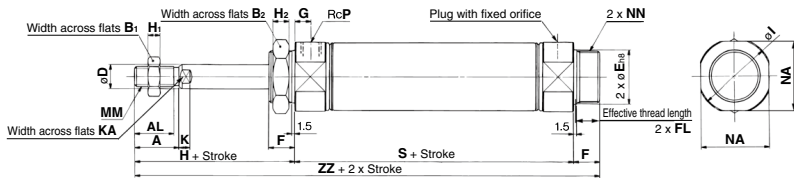
## Air Cylinder: Standard Type **CM2 Series** Single Acting, Spring Return/Extend

### Basic (Double-side Bossed) (B)

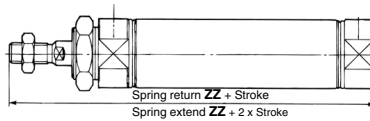
CM2B Bore size – Stroke  $\frac{S}{Z}$   
Spring return



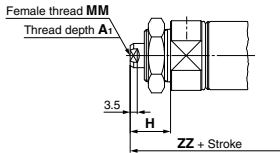
### Spring extend



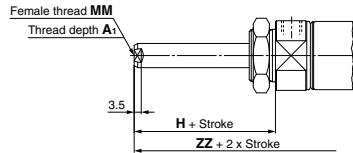
### Boss-cut



### Female rod end Spring return



### Spring extend



| Bore size | A  | AL   | B <sub>1</sub> | B <sub>2</sub> | D  | E                   | F  | FL   | G  | H  | H <sub>1</sub> | H <sub>2</sub> | I    | K   | KA | MM         | NA   | NN        | P   |
|-----------|----|------|----------------|----------------|----|---------------------|----|------|----|----|----------------|----------------|------|-----|----|------------|------|-----------|-----|
| 20        | 18 | 15.5 | 13             | 26             | 8  | 20 <sup>0.033</sup> | 13 | 10.5 | 8  | 41 | 5              | 8              | 28   | 5   | 6  | M8 x 1.25  | 24   | M20 x 1.5 | 1/8 |
| 25        | 22 | 19.5 | 17             | 32             | 10 | 26 <sup>0.033</sup> | 13 | 10.5 | 8  | 45 | 6              | 8              | 33.5 | 5.5 | 8  | M10 x 1.25 | 30   | M26 x 1.5 | 1/8 |
| 32        | 22 | 19.5 | 17             | 32             | 12 | 26 <sup>0.033</sup> | 13 | 10.5 | 8  | 45 | 6              | 8              | 37.5 | 5.5 | 10 | M10 x 1.25 | 34.5 | M26 x 1.5 | 1/8 |
| 40        | 24 | 21   | 22             | 41             | 14 | 32 <sup>0.039</sup> | 16 | 13.5 | 11 | 50 | 8              | 10             | 46.5 | 7   | 12 | M14 x 1.5  | 42.5 | M32 x 2   | 1/4 |

### Dimensions by Stroke

| Bore size | Stroke |     | 1 to 50 |     | 51 to 100 |     | 101 to 150 |     | 151 to 200 |     | 201 to 250 |    |
|-----------|--------|-----|---------|-----|-----------|-----|------------|-----|------------|-----|------------|----|
|           | S      | ZZ  | S       | ZZ  | S         | ZZ  | S          | ZZ  | S          | ZZ  | S          | ZZ |
| 20        | 87     | 141 | 112     | 166 | 137       | 191 | —          | —   | —          | —   | —          | —  |
| 25        | 87     | 145 | 112     | 170 | 137       | 195 | —          | —   | —          | —   | —          | —  |
| 32        | 89     | 147 | 114     | 172 | 139       | 197 | 164        | 222 | —          | —   | —          | —  |
| 40        | 113    | 179 | 138     | 204 | 163       | 229 | 188        | 254 | 213        | 279 | —          | —  |

### Boss-cut

| Bore size | Stroke |     | 1 to 50 |     | 51 to 100 |    | 101 to 150 |    | 151 to 200 |    | 201 to 250 |  |
|-----------|--------|-----|---------|-----|-----------|----|------------|----|------------|----|------------|--|
|           | ZZ     | ZZ  | ZZ      | ZZ  | ZZ        | ZZ | ZZ         | ZZ | ZZ         | ZZ | ZZ         |  |
| 20        | 128    | 153 | 178     | —   | —         | —  | —          | —  | —          | —  | —          |  |
| 25        | 132    | 157 | 182     | —   | —         | —  | —          | —  | —          | —  | —          |  |
| 32        | 134    | 159 | 184     | 209 | —         | —  | —          | —  | —          | —  | —          |  |
| 40        | 163    | 188 | 213     | 238 | 263       | —  | —          | —  | —          | —  | —          |  |

### Female Rod End

| Bore size | Stroke         |    | MM        | 1 to 50 |     | 51 to 100 |     | 101 to 150 |     | 151 to 200 |     | 201 to 250 |     |
|-----------|----------------|----|-----------|---------|-----|-----------|-----|------------|-----|------------|-----|------------|-----|
|           | A <sub>1</sub> | H  |           | S       | ZZ  | S         | ZZ  | S          | ZZ  | S          | ZZ  | S          | ZZ  |
| 20        | 8              | 20 | M4 x 0.7  | 87      | 120 | 112       | 145 | 137        | 170 | —          | —   | —          | —   |
| 25        | 8              | 20 | M5 x 0.8  | 87      | 120 | 112       | 145 | 137        | 170 | —          | —   | —          | —   |
| 32        | 12             | 20 | M6 x 1    | 89      | 122 | 114       | 147 | 139        | 172 | 164        | 197 | —          | —   |
| 40        | 13             | 21 | M8 x 1.25 | 113     | 150 | 138       | 175 | 163        | 200 | 188        | 225 | 213        | 250 |

\* When female thread is used, use a thin wrench when tightening the piston rod.

\* When female thread is used, use a washer etc. to prevent the contact part at the rod end from being deformed depending on the material of the workpiece.

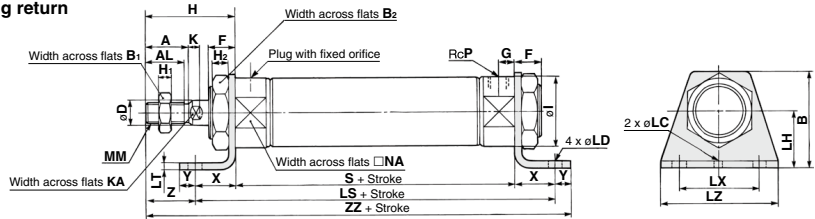


## CM2 Series

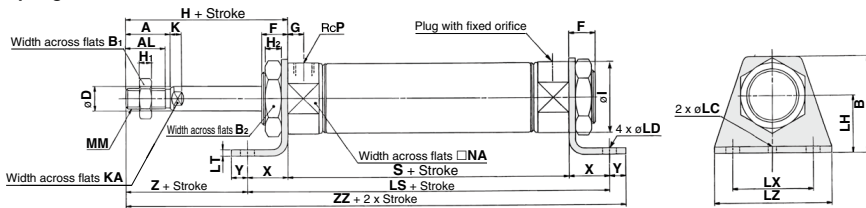
### Axial Foot (L)

CM2L Bore size – Stroke  $\frac{S}{Z}$

#### Spring return



#### Spring extend



| Bore size | A  | AL   | B  | B <sub>1</sub> | B <sub>2</sub> | D  | F  | G  | H  | H <sub>1</sub> | H <sub>2</sub> | I    | K   | KA | LC | LD  | LH | LT  | LX | LZ | MM         | NA   | P   | X  | Y  | Z  |
|-----------|----|------|----|----------------|----------------|----|----|----|----|----------------|----------------|------|-----|----|----|-----|----|-----|----|----|------------|------|-----|----|----|----|
| 20        | 18 | 15.5 | 40 | 13             | 26             | 8  | 13 | 8  | 41 | 5              | 8              | 28   | 5   | 6  | 4  | 6.8 | 25 | 3.2 | 40 | 55 | M8 x 1.25  | 24   | 1/8 | 20 | 8  | 21 |
| 25        | 22 | 19.5 | 47 | 17             | 32             | 10 | 13 | 8  | 45 | 6              | 8              | 33.5 | 5.5 | 8  | 4  | 6.8 | 28 | 3.2 | 40 | 55 | M10 x 1.25 | 30   | 1/8 | 20 | 8  | 25 |
| 32        | 22 | 19.5 | 47 | 17             | 32             | 12 | 13 | 8  | 45 | 6              | 8              | 37.5 | 5.5 | 10 | 4  | 6.8 | 28 | 3.2 | 40 | 55 | M10 x 1.25 | 34.5 | 1/8 | 20 | 8  | 25 |
| 40        | 24 | 21   | 54 | 22             | 41             | 14 | 16 | 11 | 50 | 8              | 10             | 46.5 | 7   | 12 | 4  | 7   | 30 | 3.2 | 55 | 75 | M14 x 1.5  | 42.5 | 1/4 | 23 | 10 | 27 |

#### Dimensions by Stroke

(mm)

| Bore size | Stroke |     | Stroke |     | Stroke |     | Stroke |     | Stroke |     |     |     |     |
|-----------|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|-----|-----|-----|
|           | LS     | S   | LS     | S   | LS     | S   | LS     | S   | LS     | S   |     |     |     |
| 20        | 127    | 87  | 156    | 152 | 112    | 181 | 177    | 137 | 206    | —   | —   |     |     |
| 25        | 127    | 87  | 160    | 152 | 112    | 185 | 177    | 137 | 210    | —   | —   |     |     |
| 32        | 129    | 89  | 162    | 154 | 114    | 187 | 179    | 139 | 212    | 204 | 164 |     |     |
| 40        | 159    | 113 | 196    | 184 | 138    | 221 | 209    | 163 | 246    | 234 | 188 |     |     |
|           |        |     |        |     |        |     |        |     |        | 271 | 259 | 213 | 296 |



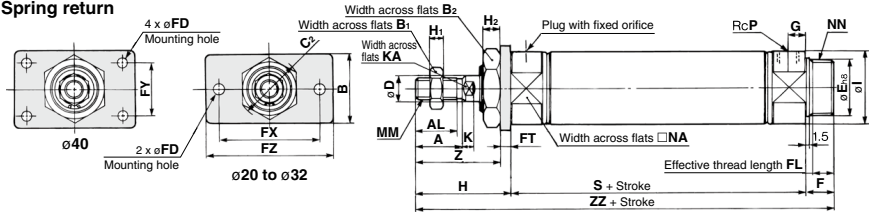


## Air Cylinder: Standard Type **CM2 Series** Single Acting, Spring Return/Extend

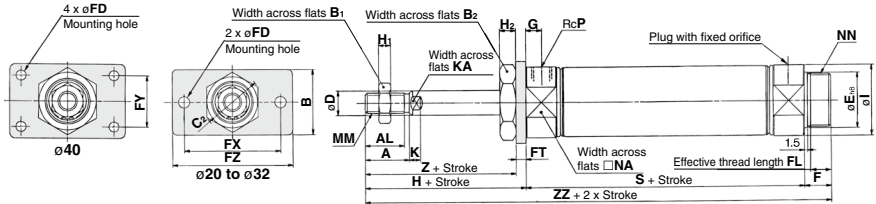
### Rod Flange (F)

CM2F Bore size – Stroke  $\frac{S}{Z}$

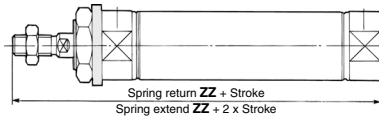
#### Spring return



#### Spring extend



#### Boss-cut



| Bore size | A  | AL   | B  | B <sub>1</sub> | B <sub>2</sub> | C <sub>2</sub> | D  | E                                | F  | FD | FL   | FT | FX | FY | FZ | G  | H  | H <sub>1</sub> | H <sub>2</sub> | I    | K   | KA | MM         | NA   | NN        | P   | Z  |
|-----------|----|------|----|----------------|----------------|----------------|----|----------------------------------|----|----|------|----|----|----|----|----|----|----------------|----------------|------|-----|----|------------|------|-----------|-----|----|
| 20        | 18 | 15.5 | 34 | 13             | 26             | 30             | 8  | 20 <sup>0.023</sup> <sub>0</sub> | 13 | 7  | 10.5 | 4  | 60 | —  | 75 | 8  | 41 | 5              | 8              | 28   | 5   | 6  | M8 x 1.25  | 24   | M20 x 1.5 | 1/8 | 37 |
| 25        | 22 | 19.5 | 40 | 17             | 32             | 37             | 10 | 26 <sup>0.023</sup> <sub>0</sub> | 13 | 7  | 10.5 | 4  | 60 | —  | 75 | 8  | 45 | 6              | 8              | 33.5 | 5.5 | 8  | M10 x 1.25 | 30   | M26 x 1.5 | 1/8 | 41 |
| 32        | 22 | 19.5 | 40 | 17             | 32             | 37             | 12 | 26 <sup>0.023</sup> <sub>0</sub> | 13 | 7  | 10.5 | 4  | 60 | —  | 75 | 8  | 45 | 6              | 8              | 37.5 | 5.5 | 10 | M10 x 1.25 | 34.5 | M26 x 1.5 | 1/8 | 41 |
| 40        | 24 | 21   | 52 | 22             | 41             | 47.3           | 14 | 32 <sup>0.029</sup> <sub>0</sub> | 16 | 7  | 13.5 | 5  | 66 | 36 | 82 | 11 | 50 | 8              | 10             | 46.5 | 7   | 12 | M14 x 1.5  | 42.5 | M32 x 2   | 1/4 | 45 |

| Bore size | Stroke (mm) |           |            |            |            |
|-----------|-------------|-----------|------------|------------|------------|
|           | 1 to 50     | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 250 |
| 20        | 87          | 141       | 112        | 166        | 137        |
| 25        | 87          | 145       | 112        | 170        | 137        |
| 32        | 89          | 147       | 114        | 172        | 139        |
| 40        | 113         | 179       | 138        | 204        | 163        |

| Bore size | Boss-cut (mm) |           |            |            |            |
|-----------|---------------|-----------|------------|------------|------------|
|           | 1 to 50       | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 250 |
| 20        | 128           | 153       | 178        | —          | —          |
| 25        | 132           | 157       | 182        | —          | —          |
| 32        | 134           | 159       | 184        | 209        | —          |
| 40        | 163           | 188       | 213        | 238        | 263        |

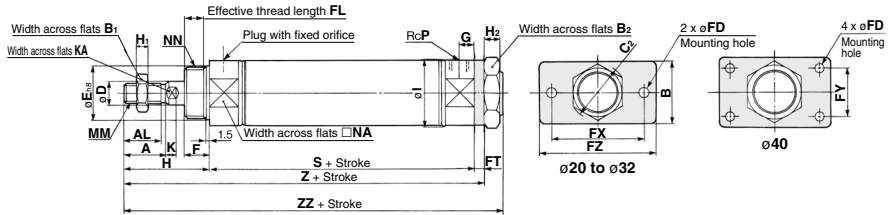


## CM2 Series

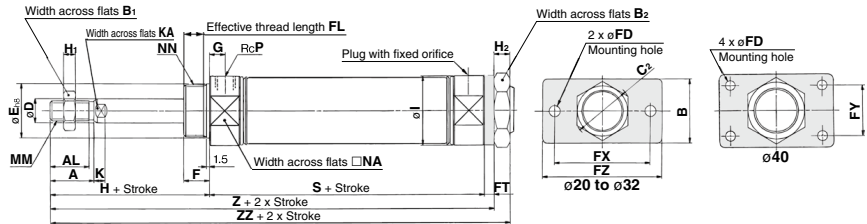
### Head Flange (G)

CM2G Bore size – Stroke  $\frac{S}{Z}$

#### Spring return



#### Spring extend



(mm)

| Bore size | A  | AL   | B  | B <sub>1</sub> | B <sub>2</sub> | C <sub>2</sub> | D  | E                   | F  | FD | FL   | FT | FX | FY | FZ | G  | H  | H <sub>1</sub> | H <sub>2</sub> | I    | K   | KA | MM         | NA   | NN        | P   |
|-----------|----|------|----|----------------|----------------|----------------|----|---------------------|----|----|------|----|----|----|----|----|----|----------------|----------------|------|-----|----|------------|------|-----------|-----|
| 20        | 18 | 15.5 | 34 | 13             | 26             | 30             | 8  | 20 <sup>0.033</sup> | 13 | 7  | 10.5 | 4  | 60 | —  | 75 | 8  | 41 | 5              | 8              | 28   | 5   | 6  | M8 x 1.25  | 24   | M20 x 1.5 | 1/8 |
| 25        | 22 | 19.5 | 40 | 17             | 32             | 37             | 10 | 26 <sup>0.033</sup> | 13 | 7  | 10.5 | 4  | 60 | —  | 75 | 8  | 45 | 6              | 8              | 33.5 | 5.5 | 8  | M10 x 1.25 | 30   | M26 x 1.5 | 1/8 |
| 32        | 22 | 19.5 | 40 | 17             | 32             | 37             | 12 | 26 <sup>0.033</sup> | 13 | 7  | 10.5 | 4  | 60 | —  | 75 | 8  | 45 | 6              | 8              | 37.5 | 5.5 | 10 | M10 x 1.25 | 34.5 | M26 x 1.5 | 1/8 |
| 40        | 24 | 21   | 52 | 22             | 41             | 47.3           | 14 | 32 <sup>0.033</sup> | 16 | 7  | 13.5 | 5  | 66 | 36 | 82 | 11 | 50 | 8              | 10             | 46.5 | 7   | 12 | M14 x 1.5  | 42.5 | M32 x 2   | 1/4 |

#### Dimensions by Stroke

(mm)

| Bore size | Stroke |     | 1 to 50 |     |     | 51 to 100 |     |     | 101 to 150 |     |     | 151 to 200 |     |     | 201 to 250 |  |  |
|-----------|--------|-----|---------|-----|-----|-----------|-----|-----|------------|-----|-----|------------|-----|-----|------------|--|--|
|           | S      | Z   | ZZ      | S   | Z   | ZZ        | S   | Z   | ZZ         | S   | Z   | ZZ         | S   | Z   | ZZ         |  |  |
| 20        | 87     | 132 | 141     | 112 | 157 | 166       | 137 | 182 | 191        | —   | —   | —          | —   | —   | —          |  |  |
| 25        | 87     | 136 | 145     | 112 | 161 | 170       | 137 | 186 | 195        | —   | —   | —          | —   | —   | —          |  |  |
| 32        | 89     | 138 | 147     | 114 | 163 | 172       | 139 | 188 | 197        | 164 | 213 | 222        | —   | —   | —          |  |  |
| 40        | 113    | 168 | 179     | 138 | 193 | 204       | 163 | 218 | 229        | 188 | 243 | 254        | 213 | 268 | 279        |  |  |

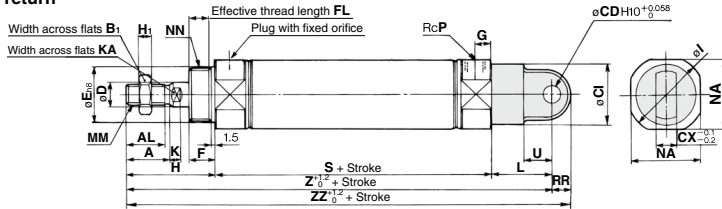


## Air Cylinder: Standard Type **CM2 Series**

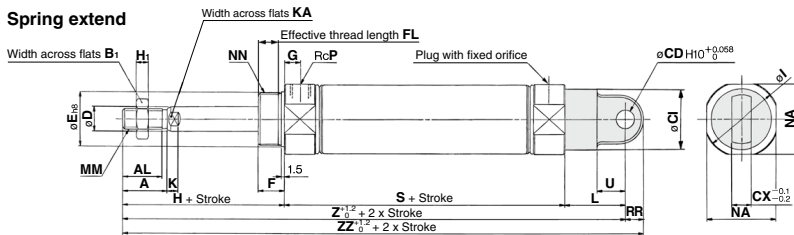
### Single Clevis (C)

CM2C Bore size – Stroke  $\frac{S}{Z}$

#### Spring return



#### Spring extend



| Bore size | A  | AL   | B <sub>1</sub> | CD | CI | CX | D  | E                                | F  | FL   | G  | H  | H <sub>1</sub> | I    | K   | KA | L  | MM         | NA   | NN        | P   | RR | U  |
|-----------|----|------|----------------|----|----|----|----|----------------------------------|----|------|----|----|----------------|------|-----|----|----|------------|------|-----------|-----|----|----|
| 20        | 18 | 15.5 | 13             | 9  | 24 | 10 | 8  | 20 <sup>0</sup> <sub>0.033</sub> | 13 | 10.5 | 8  | 41 | 5              | 28   | 5   | 6  | 30 | M8 x 1.25  | 24   | M20 x 1.5 | 1/8 | 9  | 14 |
| 25        | 22 | 19.5 | 17             | 9  | 30 | 10 | 10 | 26 <sup>0</sup> <sub>0.033</sub> | 13 | 10.5 | 8  | 45 | 6              | 33.5 | 5.5 | 8  | 30 | M10 x 1.25 | 30   | M26 x 1.5 | 1/8 | 9  | 14 |
| 32        | 22 | 19.5 | 17             | 9  | 30 | 10 | 12 | 26 <sup>0</sup> <sub>0.033</sub> | 13 | 10.5 | 8  | 45 | 6              | 37.5 | 5.5 | 10 | 30 | M10 x 1.25 | 34.5 | M26 x 1.5 | 1/8 | 9  | 14 |
| 40        | 24 | 21   | 22             | 10 | 38 | 15 | 14 | 32 <sup>0</sup> <sub>0.033</sub> | 16 | 13.5 | 11 | 50 | 8              | 46.5 | 7   | 12 | 39 | M14 x 1.5  | 42.5 | M32 x 2   | 1/4 | 11 | 18 |

#### Dimensions by Stroke

| Bore size | Stroke  |     |     |           |     |     |            |     |     |            |     |     |            |     |     |
|-----------|---------|-----|-----|-----------|-----|-----|------------|-----|-----|------------|-----|-----|------------|-----|-----|
|           | 1 to 50 |     |     | 51 to 100 |     |     | 101 to 150 |     |     | 151 to 200 |     |     | 201 to 250 |     |     |
|           | S       | Z   | ZZ  | S         | Z   | ZZ  | S          | Z   | ZZ  | S          | Z   | ZZ  | S          | Z   | ZZ  |
| 20        | 87      | 158 | 167 | 112       | 183 | 192 | 137        | 208 | 217 | —          | —   | —   | —          | —   | —   |
| 25        | 87      | 162 | 171 | 112       | 187 | 196 | 137        | 212 | 221 | —          | —   | —   | —          | —   | —   |
| 32        | 89      | 164 | 173 | 114       | 189 | 198 | 139        | 214 | 223 | 164        | 239 | 248 | —          | —   | —   |
| 40        | 113     | 202 | 213 | 138       | 227 | 238 | 163        | 252 | 263 | 188        | 277 | 288 | 213        | 302 | 313 |

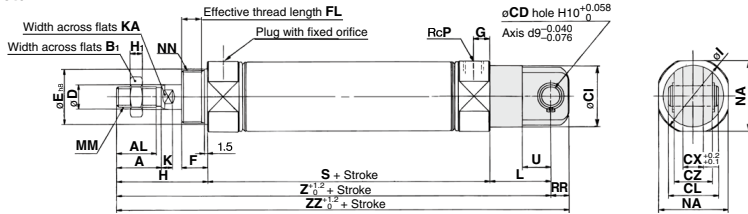


## CM2 Series

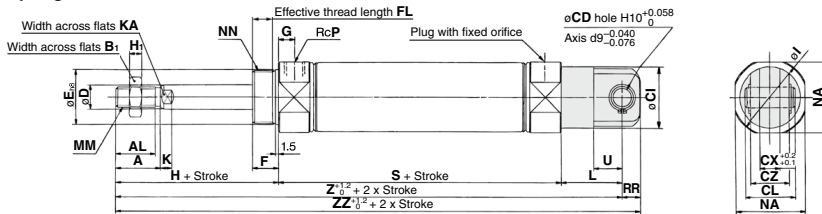
### Double Clevis (D)

CM2D Bore size – Stroke  $\frac{S}{T}$  Z

#### Spring return



#### Spring extend



(mm)

| Bore size | A  | AL   | B <sub>1</sub> | CD | CI | CL   | CX | CZ | D  | E                    | F  | FL   | G  | H  | H <sub>1</sub> | I    | K   | KA | L  | MM         | NA   | NN        | P   | RR | U  |
|-----------|----|------|----------------|----|----|------|----|----|----|----------------------|----|------|----|----|----------------|------|-----|----|----|------------|------|-----------|-----|----|----|
| 20        | 18 | 15.5 | 13             | 9  | 24 | 25   | 10 | 19 | 8  | 20 $\frac{0}{0.033}$ | 13 | 10.5 | 8  | 41 | 5              | 28   | 5   | 6  | 30 | M8 x 1.25  | 24   | M20 x 1.5 | 1/8 | 9  | 14 |
| 25        | 22 | 19.5 | 17             | 9  | 30 | 25   | 10 | 19 | 10 | 26 $\frac{0}{0.033}$ | 13 | 10.5 | 8  | 45 | 6              | 33.5 | 5.5 | 8  | 30 | M10 x 1.25 | 30   | M26 x 1.5 | 1/8 | 9  | 14 |
| 32        | 22 | 19.5 | 17             | 9  | 30 | 25   | 10 | 19 | 12 | 26 $\frac{0}{0.033}$ | 13 | 10.5 | 8  | 45 | 6              | 37.5 | 5.5 | 10 | 30 | M10 x 1.25 | 34.5 | M26 x 1.5 | 1/8 | 9  | 14 |
| 40        | 24 | 21   | 22             | 10 | 38 | 41.2 | 15 | 30 | 14 | 32 $\frac{0}{0.039}$ | 16 | 13.5 | 11 | 50 | 8              | 46.5 | 7   | 12 | 39 | M14 x 1.5  | 42.5 | M32 x 2   | 1/4 | 11 | 18 |

#### Dimensions by Stroke

(mm)

| Bore size | Stroke  |     |     |           |     |     |            |     |     |            |     |     |            |     |     |
|-----------|---------|-----|-----|-----------|-----|-----|------------|-----|-----|------------|-----|-----|------------|-----|-----|
|           | 1 to 50 |     |     | 51 to 100 |     |     | 101 to 150 |     |     | 151 to 200 |     |     | 201 to 250 |     |     |
|           | S       | Z   | ZZ  | S         | Z   | ZZ  | S          | Z   | ZZ  | S          | Z   | ZZ  | S          | Z   | ZZ  |
| 20        | 87      | 158 | 167 | 112       | 183 | 192 | 137        | 208 | 217 | —          | —   | —   | —          | —   | —   |
| 25        | 87      | 162 | 171 | 112       | 187 | 196 | 137        | 212 | 221 | —          | —   | —   | —          | —   | —   |
| 32        | 89      | 164 | 173 | 114       | 189 | 198 | 139        | 214 | 223 | 164        | 239 | 248 | —          | —   | —   |
| 40        | 113     | 202 | 213 | 138       | 227 | 238 | 163        | 252 | 263 | 188        | 277 | 288 | 213        | 302 | 313 |

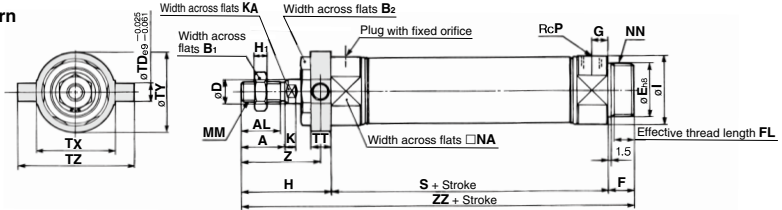


## Air Cylinder: Standard Type **CM2 Series**

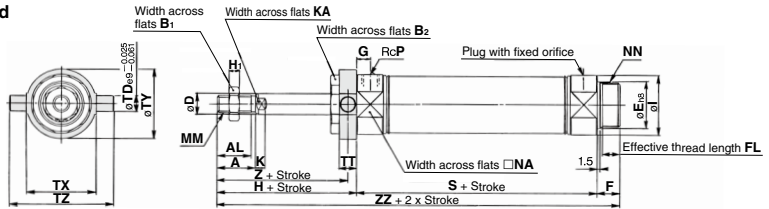
### Rod Trunnion (U)

CM2U Bore size – Stroke  $\frac{S}{Z}$

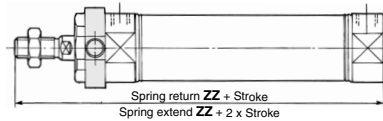
#### Spring return



#### Spring extend



#### Boss-cut



| Bore size | A  | AL   | B <sub>1</sub> | B <sub>2</sub> | D  | E                   | F  | FL   | G  | H  | H <sub>1</sub> | I    | K   | KA | MM         | NA   | NN        | P   | TD | TT | TX | TY | TZ | Z    |
|-----------|----|------|----------------|----------------|----|---------------------|----|------|----|----|----------------|------|-----|----|------------|------|-----------|-----|----|----|----|----|----|------|
| 20        | 18 | 15.5 | 13             | 26             | 8  | 20 <sub>0.033</sub> | 13 | 10.5 | 8  | 41 | 5              | 28   | 5   | 6  | M8 x 1.25  | 24   | M20 x 1.5 | 1/8 | 8  | 10 | 32 | 32 | 52 | 36   |
| 25        | 22 | 19.5 | 17             | 32             | 10 | 26 <sub>0.033</sub> | 13 | 10.5 | 8  | 45 | 6              | 33.5 | 5.5 | 8  | M10 x 1.25 | 30   | M26 x 1.5 | 1/8 | 9  | 10 | 40 | 40 | 60 | 40   |
| 32        | 22 | 19.5 | 17             | 32             | 12 | 26 <sub>0.033</sub> | 13 | 10.5 | 8  | 45 | 6              | 37.5 | 5.5 | 10 | M10 x 1.25 | 34.5 | M26 x 1.5 | 1/8 | 9  | 10 | 40 | 40 | 60 | 40   |
| 40        | 24 | 21   | 22             | 41             | 14 | 32 <sub>0.039</sub> | 16 | 13.5 | 11 | 50 | 8              | 46.5 | 7   | 12 | M14 x 1.5  | 42.5 | M32 x 2   | 1/4 | 10 | 11 | 53 | 53 | 77 | 44.5 |

#### Dimensions by Stroke

| Bore size | Stroke Symbol |     | Stroke Symbol |     | Stroke Symbol |     | Stroke Symbol |     | Stroke Symbol |     |
|-----------|---------------|-----|---------------|-----|---------------|-----|---------------|-----|---------------|-----|
|           | S             | ZZ  | S             | ZZ  | S             | ZZ  | S             | ZZ  | S             | ZZ  |
| 20        | 87            | 141 | 112           | 166 | 137           | 191 | —             | —   | —             | —   |
| 25        | 87            | 145 | 112           | 170 | 137           | 195 | —             | —   | —             | —   |
| 32        | 89            | 147 | 114           | 172 | 139           | 197 | 164           | 222 | —             | —   |
| 40        | 113           | 179 | 138           | 204 | 163           | 229 | 188           | 254 | 213           | 279 |

#### Boss-cut

| Bore size | Stroke Symbol |     | Stroke Symbol |     | Stroke Symbol |    |
|-----------|---------------|-----|---------------|-----|---------------|----|
|           | ZZ            | ZZ  | ZZ            | ZZ  | ZZ            | ZZ |
| 20        | 128           | 153 | 178           | —   | —             | —  |
| 25        | 132           | 157 | 182           | —   | —             | —  |
| 32        | 134           | 159 | 184           | 209 | —             | —  |
| 40        | 163           | 188 | 213           | 238 | 263           | —  |

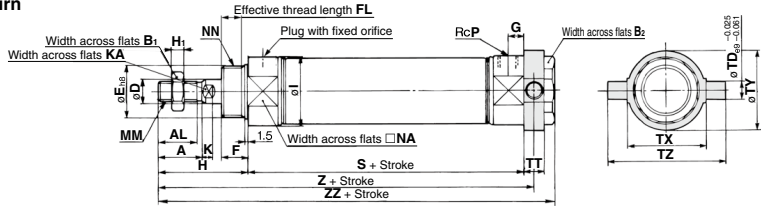


## CM2 Series

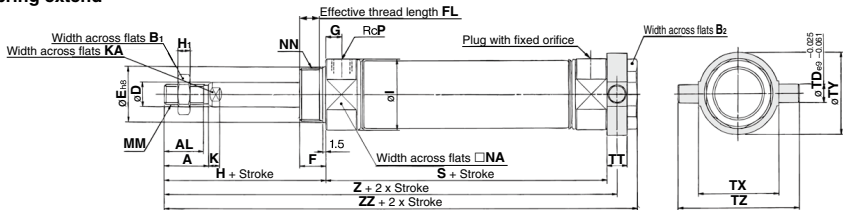
### Head Trunnion (T)

CM2T Bore size – Stroke  $\frac{S}{Z}$

#### Spring return



#### Spring extend



| Bore size | A  | AL   | B <sub>1</sub> | B <sub>2</sub> | D  | E                                 | F  | FL   | G  | H  | H <sub>1</sub> | I    | K   | KA | MM         | NA   | NN        | P   | TD | TT | TX | TY | TZ |
|-----------|----|------|----------------|----------------|----|-----------------------------------|----|------|----|----|----------------|------|-----|----|------------|------|-----------|-----|----|----|----|----|----|
| 20        | 18 | 15.5 | 13             | 26             | 8  | 20 <sup>0</sup> <sub>-0.033</sub> | 13 | 10.5 | 8  | 41 | 5              | 28   | 5   | 6  | M8 x 1.25  | 24   | M20 x 1.5 | 1/8 | 8  | 10 | 32 | 32 | 52 |
| 25        | 22 | 19.5 | 17             | 32             | 10 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 10.5 | 8  | 45 | 6              | 33.5 | 5.5 | 8  | M10 x 1.25 | 30   | M26 x 1.5 | 1/8 | 9  | 10 | 40 | 40 | 60 |
| 32        | 22 | 19.5 | 17             | 32             | 12 | 26 <sup>0</sup> <sub>-0.033</sub> | 13 | 10.5 | 8  | 45 | 6              | 37.5 | 5.5 | 10 | M10 x 1.25 | 34.5 | M26 x 1.5 | 1/8 | 9  | 10 | 40 | 40 | 60 |
| 40        | 24 | 21   | 22             | 41             | 14 | 32 <sup>0</sup> <sub>-0.033</sub> | 16 | 13.5 | 11 | 50 | 8              | 46.5 | 7   | 12 | M14 x 1.5  | 42.5 | M32 x 2   | 1/4 | 10 | 11 | 53 | 53 | 77 |

#### Dimensions by Stroke

| Bore size | Stroke |       | 1 to 50 |     | 51 to 100 |     | 101 to 150 |       | 151 to 200 |     | 201 to 250 |     |     |       |     |
|-----------|--------|-------|---------|-----|-----------|-----|------------|-------|------------|-----|------------|-----|-----|-------|-----|
|           | S      | Z     | S       | Z   | S         | Z   | S          | Z     | S          | Z   | S          | Z   |     |       |     |
| 20        | 87     | 133   | 143     | 112 | 158       | 168 | 137        | 183   | 193        | —   | —          | —   |     |       |     |
| 25        | 87     | 137   | 147     | 112 | 162       | 172 | 137        | 187   | 197        | —   | —          | —   |     |       |     |
| 32        | 89     | 139   | 149     | 114 | 164       | 174 | 139        | 189   | 199        | 164 | 214        | 224 |     |       |     |
| 40        | 113    | 168.5 | 179     | 138 | 193.5     | 204 | 163        | 218.5 | 229        | 188 | 243.5      | 254 | 213 | 268.5 | 279 |

