

CMK2

Small bore size cylinder

ø20, ø25, ø32, ø40

General Type

Overview

A medium bore size (ø20 to ø40) series among general cylinders, featuring high corrosion resistance and long service life. This is a crimped type cylinder with abundant variations.



CONTENTS

| | |
|--|-----|
| Product Introduction | 2 |
| Series variation | 106 |
| Variation/Option Combination Availability Table | 109 |
| ● Double Acting, Single Rod Type (CMK2) | 110 |
| ● Single Acting, Push Type (CMK2-S) | 126 |
| ● Single Acting, Pull Type (CMK2-SR) | 138 |
| ● Double Acting, Stroke Adjustment Type, Push (CMK2-P) | 150 |
| ● Double Acting, Stroke Adjustment Type, Pull (CMK2-R) | 160 |
| ● Double Acting, Heat Resistant Type (CMK2-T) | 170 |
| ● Double Acting, with Rubber Air Cushion (CMK2-□C) | 174 |
| ● Double Acting, with Air Cushion (CMK2-C) | 182 |
| ● Double Acting, Drop Prevention Type (CMK2-Q) | 194 |
| ● Double Acting, Ultra Low Speed Type (CMK2-F) | 206 |
| ● Double Acting, Double Rod Type (CMK2-D) | 212 |
| ● Double Acting, Back-to-Back Type (CMK2-B) | 220 |
| ● Double Acting, Non-Rotating Type (CMK2-M) | 228 |
| ● Double Acting, with Built-in Speed Controller (CMK2-Z) | 240 |
| ● Double Acting, Low Hydraulic Pressure Type (CMK2-H) | 252 |
| ● Double Acting, Coolant Proof Type (CMK2-G2/G3) | 258 |
| ● Double Acting, All Stainless Steel Exterior, Water Resistant Type (CMK2-JG2/JG3) | 274 |
| Accessories External Dimensions Diagram | 123 |
| Outer Dimensions Diagram with Switch | 284 |
| Custom Products | 287 |
| ⚠ Precautions for Use | 288 |



Small bore size cylinder
Double Acting/Single Rod Type

CMK2 Series

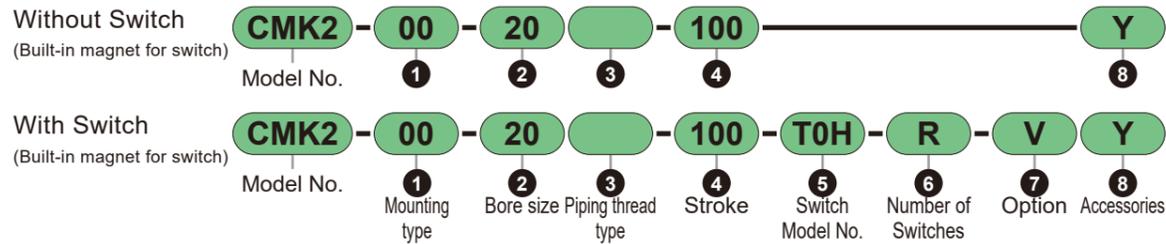
● Bore size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2 Series Model No. Notation Method

Model No. Notation Method



Mounting brackets are included with the product upon shipment. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Contents |
|------|--|
| 00 | Basic type |
| LB | Axial Foot Type (Both Sides) |
| LS | Axial Foot Type (Single Side) |
| FA | Rod Side Flange Type |
| FB | Head Side Flange Type |
| CA | Single Clevis Type |
| CC | Single Clevis Integrated Type |
| CC1 | Single Clevis, Bushing Press-fit Type |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) |
| TA | Rod Side Trunnion Type |
| TB | Head Side Trunnion Type |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 112.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | |
|-----------------------------------|---------------------------------|-----------------|------------------|----------|-------------------|------------|--------------|---------|
| | | | AC | DC | AC | DC | Straight | L-shape |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T5V□ | T5V□ |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ |
| | | 3-wire (NPN) | — | — | 100 or less | — | T3H□ | T3V□ |
| | 3-wire (PNP) | — | 30 or less | — | — | T3PH□ | T3PV□ | |
| | 2-Color | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WH□ | T2WV□ |
| | | | 3-wire (NPN) | — | 30 or less | — | 50 or less | T3WH□ |
| 2-Color Improved Water Resistance | | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ | |
| 1-Color Off-Delay Type | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | T5V□ | T5V□ | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | |
| Reed | 1-Color No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ |
| | 1-Color | 2-wire | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T5V□ | T5V□ |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|---|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H [3]
5 m T0H [5]

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content |
|------|---|
| I | Single Knuckle |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) |
| B2 | Double Yoke Bracket (Pin and Retaining Ring Attached) |

*1: "I" and "Y" cannot be selected at the same time.

7 Option

| Code | Contents | Max. Ambient Temperature | Instantaneous Max. Temperature |
|------|---------------------------------------|--------------------------|--------------------------------|
| J | Bellows | 100°C | 200°C |
| L | | 250°C | 400°C |
| F | With Push-in Fitting (Straight) | | |
| FE | With Push-in Fitting (Elbow) | | |
| M | Piston Rod Material (Stainless Steel) | | |
| V | Boss Cut | | |

*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.

*2: Instantaneous maximum temperature is the temperature when fire, chips, etc. momentarily contact the bellows.

*3: When Bore size $\phi 20$ or 25 is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

About Custom Product Specifications

For details, see P. 287.

| Code | Contents |
|----------------------------|-------------------------------|
| -XJ9 | Without Bellows |
| -T2 | Fluorine Packing Type |
| -A2 | With 2 Rod Nuts |
| -O | Low Speed Type |
| Rod End Shape Modification | Refer to End of Volume P. 11. |

Model No. Example)

CMK2 - - XJ9

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food-grade lubricant usable in food manufacturing processes

CMK2 - - FP1

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Structure usable in secondary battery manufacturing processes

CMK2 - - P4*

*Please contact us for details.

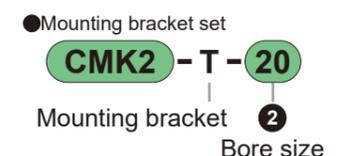
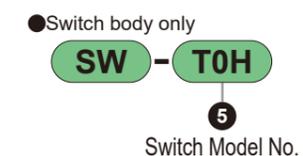
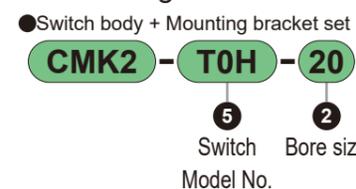
High Durability Components HP Series (Catalog No. CC-1421AA)

● Long-life actuator that can contribute to productivity improvement with stable operation

CMK2 - - HP*

*For combinations of variations and options, see P. 109.

Switch Single Unit Model No. Notation Method



Specifications

| Item | CMK2 | | | | |
|---------------------------|------|--|-------|-------|-------|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | | Double Acting Type | | | |
| Operating Fluid | | Compressed Air | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.1 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | | Rc1/8 | | | |
| Stroke tolerance | mm | ^{+2.0} ₀ (Up to 200), ^{+2.4} ₀ (Over 200,) | | | |
| Operating Piston Speed | m/s | 50 to 500 | | | |
| Cushion | | Rubber Cushion | | | |
| Lubrication | | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|-------------------------------------|-----------------|--------------|---------------------|-------------|
| | | Without Bellows | With Bellows | Without Bellows "L" | Bellows "J" |
| ø20 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 750 | 5 | 25 |
| ø25 | | | | | |
| ø32 | | | | | |
| ø40 | | | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.
 *2: Single side foot type (LS type) has a maximum stroke of 50 mm.
 *3: For bellows "J" with a stroke of less than 25 mm, please inquire each time.

Min. Stroke with Switch

(Unit: mm)

| Bore size (mm) | Number of Switches | 1 | | | | | | 2 | | | | | |
|----------------|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|--|--|
| | | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| ø20 | | 10 | | | | 25 | 30 | 35 | 25 | 35 | | | |
| ø25 | | 10 | | | | 25 | 30 | 35 | 25 | 35 | | | |
| ø32 | | 10 | | | | 25 | 30 | 35 | 25 | 35 | | | |
| ø40 | | 10 | | | | 25 | 30 | 35 | 25 | 35 | | | |

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|------------------|-------------------------|-----------------------|---|---------------------------|----------------------------|
| | Basic Type (00) | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CC) | Double clevis type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.17 | 0.32 | 0.25 | 0.23 | 0.32 | 0.18 | 0.32 | 0.22 | of P. 971 Please refer to the weight listed in the switch specifications. | 0.005 | 0.01 |
| ø25 | 0.26 | 0.52 | 0.39 | 0.41 | 0.50 | 0.26 | 0.50 | 0.36 | | 0.005 | 0.01 |
| ø32 | 0.30 | 0.56 | 0.43 | 0.45 | 0.54 | 0.30 | 0.54 | 0.40 | | 0.009 | 0.02 |
| ø40 | 0.48 | 0.74 | 0.61 | 0.63 | 0.72 | 0.50 | 0.72 | 0.64 | | 0.009 | 0.02 |

Product Weight at S = 0 mm: 0.45 kg
 Added weight at S=50 mm.... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg
 (Example) Product Weight of CMK2-FA-32-50-T0H-D Weight of 2 switches: 0.036 kg
 Weight of switch rail + 2 bands: 0.018 kg
 Product Weight 0.45 kg+0.1 kg+0.036 kg+0.018 kg=0.604 kg

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | | |
|----------------|---------------------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 31.4 | 47.1 | 62.8 | 94.2 | 1.26×10^2 | 1.57×10^2 | 1.88×10^2 | 2.20×10^2 | 2.51×10^2 | 2.83×10^2 | 3.14×10^2 |
| | Pull | 23.6 | 35.3 | 47.1 | 70.7 | 94.2 | 1.18×10^2 | 1.41×10^2 | 1.65×10^2 | 1.88×10^2 | 2.12×10^2 | 2.36×10^2 |
| ø25 | Push | 49.1k | 73.6 | 98.2 | 1.47×10^2 | 1.96×10^2 | 2.45×10^2 | 2.95×10^2 | 3.44×10^2 | 3.93×10^2 | 4.42×10^2 | 4.91×10^2 |
| | Pull | 37.8 | 56.7 | 75.6 | 1.13×10^2 | 1.51×10^2 | 1.89×10^2 | 2.27×10^2 | 2.64×10^2 | 3.02×10^2 | 3.40×10^2 | 3.78×10^2 |
| ø32 | Push | 80.4 | 1.21×10^2 | 1.61×10^2 | 2.41×10^2 | 3.22×10^2 | 4.02×10^2 | 4.83×10^2 | 5.63×10^2 | 6.43×10^2 | 7.24×10^2 | 8.04×10^2 |
| | Pull | 69.1 | 1.04×10^2 | 1.38×10^2 | 2.07×10^2 | 2.76×10^2 | 3.46×10^2 | 4.15×10^2 | 4.84×10^2 | 5.53×10^2 | 6.22×10^2 | 6.91×10^2 |
| ø40 | Push | 1.26×10^2 | 1.88×10^2 | 2.51×10^2 | 3.77×10^2 | 5.03×10^2 | 6.28×10^2 | 7.54×10^2 | 8.80×10^2 | 1.01×10^3 | 1.13×10^3 | 1.26×10^3 |
| | Pull | 1.10×10^2 | 1.65×10^2 | 2.21×10^2 | 3.31×10^2 | 4.41×10^2 | 5.51×10^2 | 6.62×10^2 | 7.72×10^2 | 8.82×10^2 | 9.92×10^2 | 1.10×10^3 |

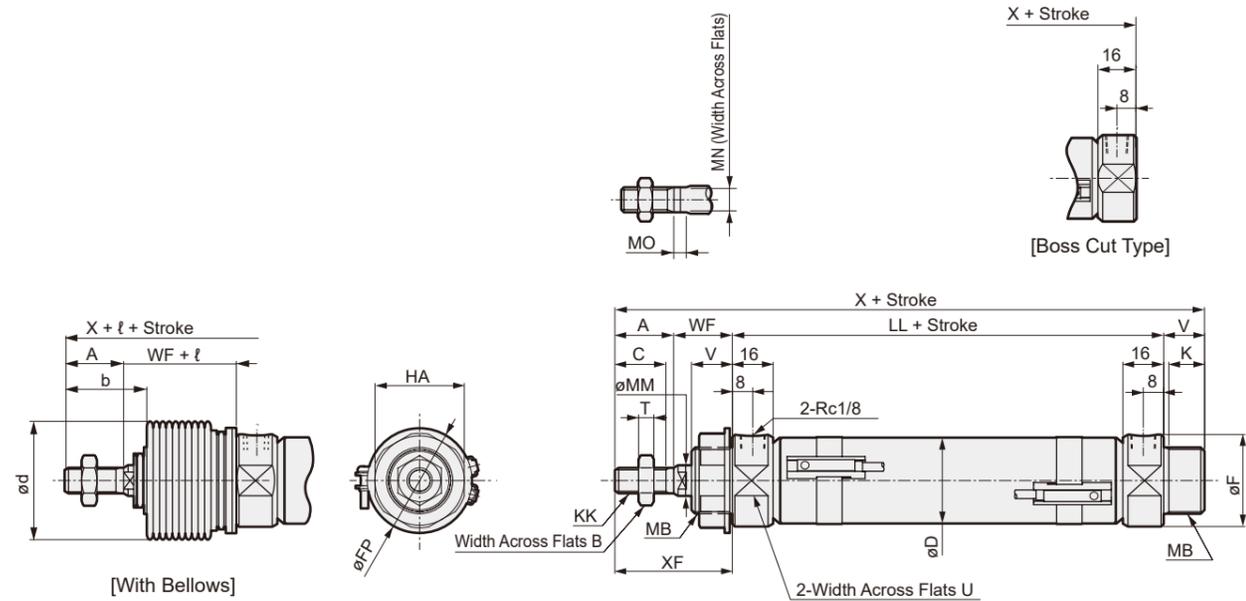
Mounting Bracket Model No. Notation Method

| Bore size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|----------|----------|----------|----------|
| Basic Type (00) | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
 *2: For axial foot type (both sides), 2 sets of "M1-LB-□1" from the table above are required.
 *3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

Outline Dimension Drawing

● Basic Type (OO)



| Code | Basic Type (OO) Basic Dimensions | | | | | | | | | | | | | | | | | | | |
|----------------|----------------------------------|----|----|------|----|----|----|----|------------|----|-----------|----|----|----|---|----|----|----|-----|----|
| Bore size (mm) | A | B | C | D | F | FP | HA | K | KK | LL | MB | MM | MN | MO | T | U | V | WF | X | XF |
| ø20 | 20 | 13 | 18 | 21.4 | 28 | 29 | 26 | 12 | M8 × 1.0 | 66 | M18 × 1.5 | 10 | 8 | 5 | 5 | 24 | 14 | 24 | 124 | 44 |
| ø25 | 23 | 17 | 20 | 26.4 | 32 | 41 | 35 | 14 | M10 × 1.25 | 69 | M26 × 1.5 | 12 | 10 | 5 | 6 | 30 | 16 | 23 | 131 | 46 |
| ø32 | 23 | 17 | 20 | 33.6 | 36 | 41 | 35 | 14 | M10 × 1.25 | 69 | M26 × 1.5 | 12 | 10 | 5 | 6 | 34 | 16 | 23 | 131 | 46 |
| ø40 | 25 | 19 | 22 | 41.6 | 45 | 41 | 35 | 14 | M12 × 1.5 | 73 | M26 × 1.5 | 14 | 12 | 6 | 7 | 43 | 16 | 23 | 137 | 48 |

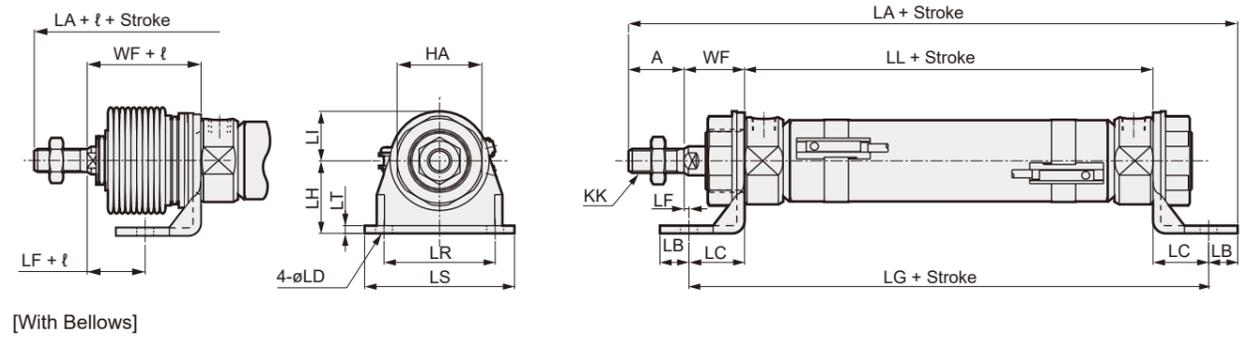
| Code | With Bellows | | | Boss Cut Type |
|------|--------------|----|---------------------|---------------|
| | b | d | ℓ | X |
| ø20 | 30 | 30 | (Stroke / 3) + 6 | 110 |
| ø25 | 32 | 46 | (Stroke / 3.25) + 7 | 115 |
| ø32 | 32 | 46 | (Stroke / 3.25) + 7 | 115 |
| ø40 | 34 | 46 | (Stroke / 3.25) + 7 | 121 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Double Acting/Single Rod Type

Outline Dimension Drawing

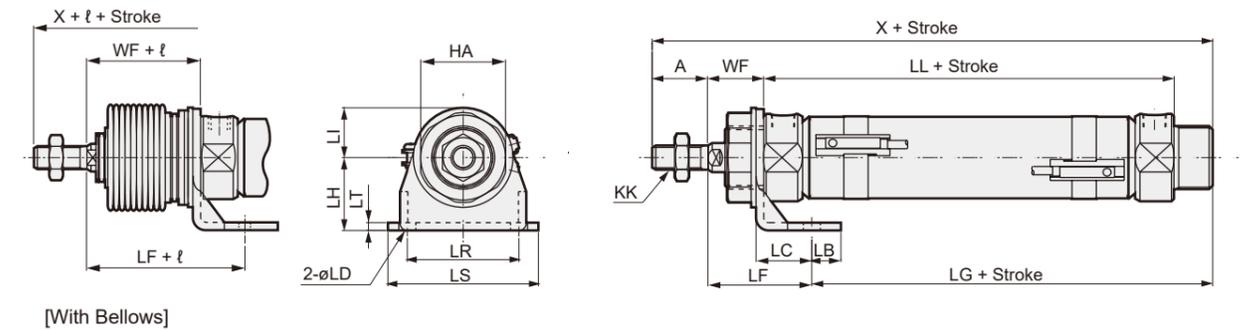
● Axial Foot Type (LB)



| Code | Axial Foot Type (LB) Mounting Dimensions | | | | | | | | | | | | | | | With Bellows | |
|----------------|--|----|------------|----|----|-----|----|----|----|----|-----|----|------|----|----|--------------|---------------------|
| Bore size (mm) | A | HA | KK | LL | WF | LA | LB | LC | LD | LF | LG | LH | LI | LR | LS | LT | ℓ |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 138 | 10 | 18 | 6 | 6 | 102 | 25 | 15 | 30 | 44 | 3.2 | (Stroke / 3) + 6 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 150 | 12 | 23 | 7 | 0 | 115 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 150 | 12 | 23 | 7 | 0 | 115 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 156 | 12 | 23 | 7 | 0 | 119 | 30 | 22.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P.284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

● Single Side Axial Foot Type (LS)

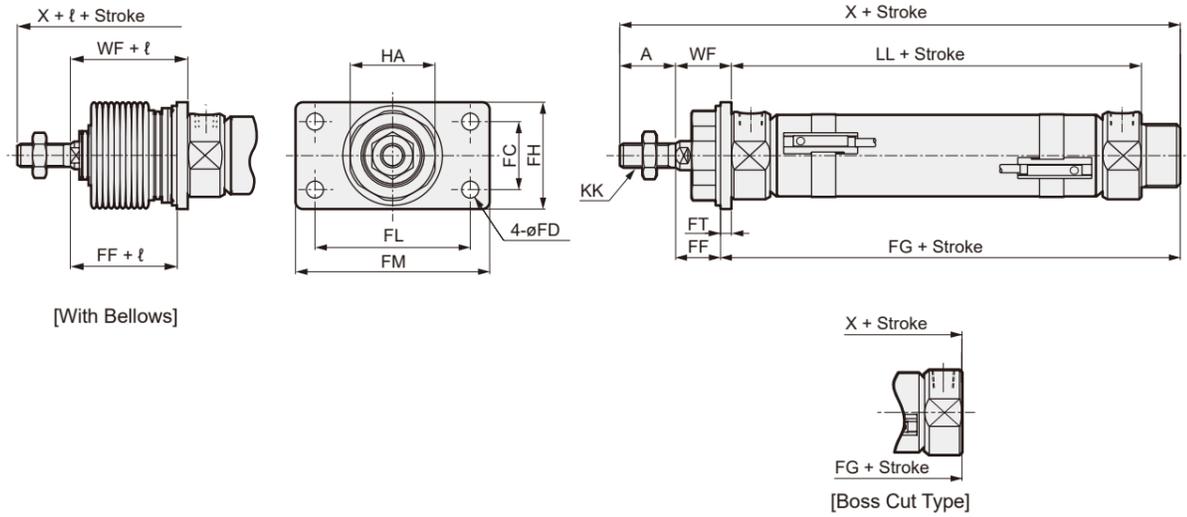


| Code | Single Side Axial Foot Type (LS) Mounting Dimensions | | | | | | | | | | | | | | | With Bellows | | Boss Cut Type | |
|----------------|--|----|------------|----|----|-----|----|----|----|------|------|----|------|----|----|--------------|---------------------|---------------|------|
| Bore size (mm) | A | HA | KK | LL | WF | X | LB | LC | LD | LF | LG | LH | LI | LR | LS | LT | ℓ | X | LG |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 10 | 18 | 6 | 38.8 | 65.2 | 25 | 15 | 30 | 44 | 3.2 | (Stroke / 3) + 6 | 110 | 51.2 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 12 | 23 | 7 | 42.8 | 65.2 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 | 115 | 49.2 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 12 | 23 | 7 | 42.8 | 65.2 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 | 115 | 49.2 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 12 | 23 | 7 | 42.8 | 69.2 | 30 | 22.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 | 121 | 53.2 |

*1: Max. stroke is 50 mm.
 *2: Round up the ℓ dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

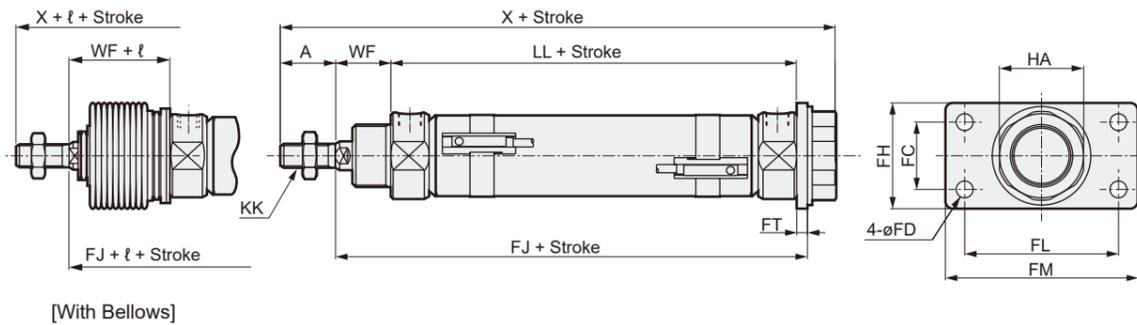
● Rod Side Flange Type (FA)



| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | | Boss Cut Type | |
|------|---|------------|----|----|-----|----|----|------|------|----|----|----|-----|----|---------------------|-----|---------------|----|
| | Bore size (mm) | A | KK | LL | WF | X | FC | FD | FF | FG | FH | FL | FM | FT | HA | ℓ | X | FG |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 20.8 | 83.2 | 34 | 40 | 54 | 3.2 | 26 | (Stroke / 3) + 6 | 110 | 69.2 | |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | 115 | 73.5 | |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | 115 | 73.5 | |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 18.5 | 93.5 | 44 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | 121 | 77.5 | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

● Head Side Flange Type (FB)

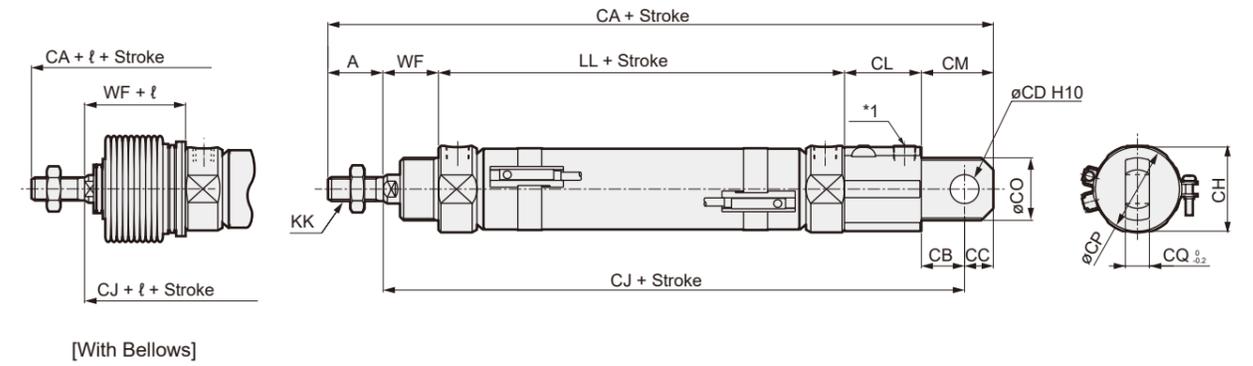


| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | |
|------|--|------------|----|----|-----|----|----|----|-------|----|----|-----|----|---------------------|--------------|--|
| | Bore size (mm) | A | KK | LL | WF | X | FC | FD | FH | FJ | FL | FM | FT | HA | ℓ | |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 34 | 93.2 | 40 | 54 | 3.2 | 26 | (Stroke / 3) + 6 | | |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | | |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | | |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 44 | 100.5 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

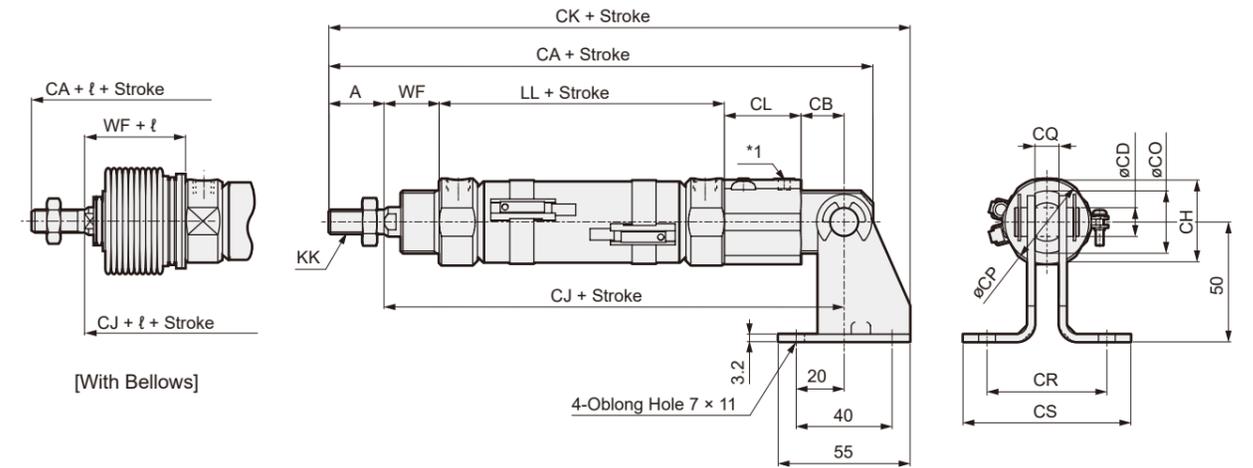
● Single Clevis Type (CA)



| Code | Single Clevis Type (CA) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | |
|------|---|------------|----|----|-----|----|----|----|----|-----|----|----|----|----|--------------|---------------------|
| | Bore size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | CQ |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 8 | (Stroke / 3) + 6 |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 |

*1: Not a piping port.
 *2: Round up the ℓ dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

● Single Clevis Type (CA) with Bracket (Option code B2)

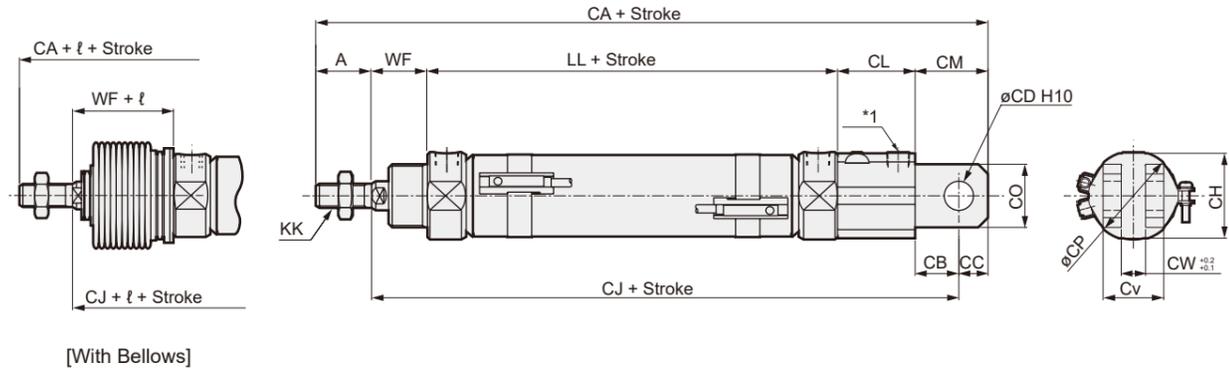


| Code | Single Clevis Type (CA) with Bracket (B2) Mounting Dimensions | | | | | | | | | | | | | | | | With Bellows | |
|------|---|------------|----|----|-----|----|----|----|-----|-------|----|----|----|----|----|----|---------------------|---|
| | Bore size (mm) | A | KK | LL | WF | CA | CB | CD | CH | CJ | CK | CL | CO | CP | CQ | CR | CS | ℓ |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 26 | 135 | 182.5 | 31 | 22 | 28 | 8 | 48 | 68 | (Stroke / 3) + 6 | |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 35 | 142 | 192.5 | 32 | 26 | 37 | 10 | 50 | 70 | (Stroke / 3.25) + 7 | |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 35 | 142 | 192.5 | 32 | 26 | 37 | 10 | 50 | 70 | (Stroke / 3.25) + 7 | |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 35 | 146 | 198.5 | 32 | 26 | 37 | 10 | 50 | 70 | (Stroke / 3.25) + 7 | |

*1: Not a piping port.
 *2: Round up the ℓ dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

- Double clevis type (CB)



SCP□3

| Code | Double Clevis Type (CB) Mounting Dimensions | | | | | | | | | | | | | | | | With Bellows | |
|------|---|----|------------|----|----|-----|----|----|----|----|-----|----|----|----|----|----|--------------|---------------------|
| | Bore size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | Cv | CW | ℓ |
| CMK2 | ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 19 | 8 | (Stroke / 3) + 6 |
| CMA2 | ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 25 | 10 | (Stroke / 3.25) + 7 |
| | ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 25 | 10 | (Stroke / 3.25) + 7 |
| SCM | ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 25 | 10 | (Stroke / 3.25) + 7 |

- *1: Not a piping port.
- *2: Round up the ℓ dimension to the nearest whole number.
- *3: For dimensions with each switch, see P. 284 to P. 286.
- *4: For outer dimensions diagram of accessories, refer to P. 123.

SCG

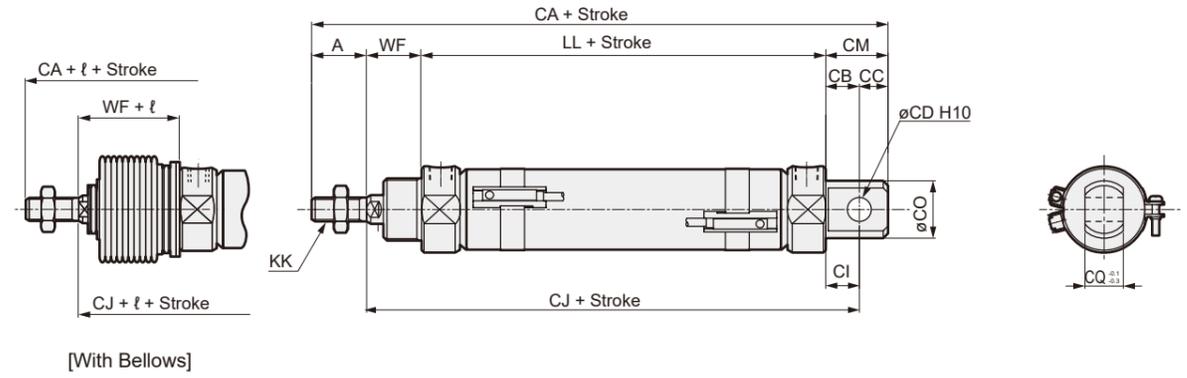
SCA2

SCS2

Double Acting/Single Rod Type

Outline Dimension Drawing

- Single Clevis Integrated Type (CC)
- Single Clevis Bushing Press-fit Type (CC1)

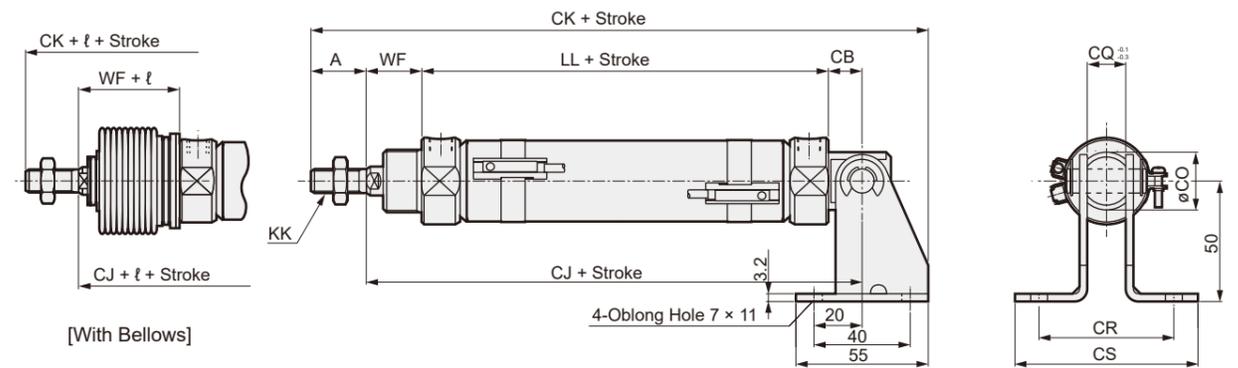


SCP□3

| Code | Single Clevis Integrated Type (CC), Bushing Press-fit Type (CC1) Mounting Dimensions | | | | | | | | | | | | | | With Bellows |
|------|--|----|------------|----|----|-----|----|----|----|-----|----|----|----|----|---------------------|
| | Bore size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CJ | CI | CM | CO | CQ | ℓ |
| CMK2 | ø20 | 20 | M8 × 1.0 | 66 | 24 | 131 | 12 | 9 | 8 | 102 | 11 | 21 | 22 | 16 | (Stroke / 3) + 6 |
| CMA2 | ø25 | 23 | M10 × 1.25 | 69 | 23 | 136 | 12 | 9 | 8 | 104 | 11 | 21 | 24 | 16 | (Stroke / 3.25) + 7 |
| SCM | ø32 | 23 | M10 × 1.25 | 69 | 23 | 141 | 14 | 12 | 10 | 106 | 13 | 26 | 24 | 16 | (Stroke / 3.25) + 7 |
| SCG | ø40 | 25 | M12 × 1.5 | 73 | 23 | 151 | 16 | 14 | 12 | 112 | 15 | 30 | 30 | 20 | (Stroke / 3.25) + 7 |

- *1: Round up the ℓ dimension to the nearest whole number.
- *2: For dimensions with each switch, see P.284 to P. 286.
- *3: For outer dimensions diagram of accessories, refer to P. 123.

- Single Clevis Integrated Type (CC) with Bracket (Option Code B2)
- Single Clevis Bushing Press-fit Type (CC1) with Bracket (Option Code B2)



| Code | Single Clevis Integrated Type (CC), Bushing Press-fit Type (CC1) with Bracket (Option code B2) Mounting Dimensions | | | | | | | | | | | With Bellows |
|------|--|----|------------|----|----|-----|-------|----|----|----|----|---------------------|
| | Bore size (mm) | A | KK | LL | WF | CJ | CK | CO | CQ | CR | CS | ℓ |
| CMK2 | ø20 | 20 | M8 × 1.0 | 66 | 24 | 102 | 149.5 | 22 | 16 | 56 | 76 | (Stroke / 3) + 6 |
| CMA2 | ø25 | 23 | M10 × 1.25 | 69 | 23 | 104 | 154.5 | 24 | 16 | 56 | 76 | (Stroke / 3.25) + 7 |
| SCM | ø32 | 23 | M10 × 1.25 | 69 | 23 | 106 | 156.5 | 24 | 16 | 56 | 76 | (Stroke / 3.25) + 7 |
| SCG | ø40 | 25 | M12 × 1.5 | 73 | 23 | 112 | 164.5 | 30 | 20 | 60 | 80 | (Stroke / 3.25) + 7 |

- *1: Round up the ℓ dimension to the nearest whole number.
- *2: For dimensions with each switch, see P. 284 to P. 286.
- *3: For outer dimensions diagram of accessories, refer to P. 123.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

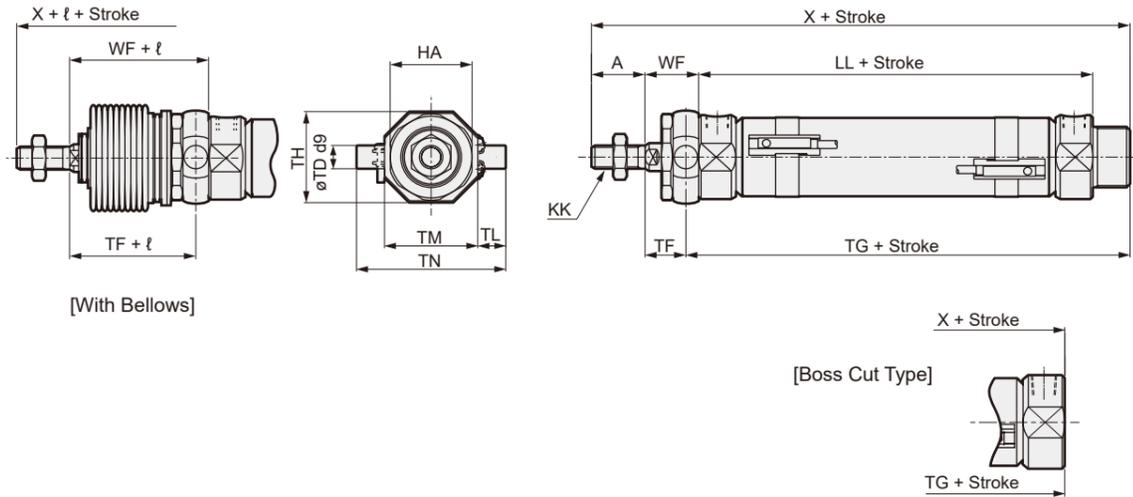
SCS2

Cylinder Switch

Ending

Outline Dimension Drawing

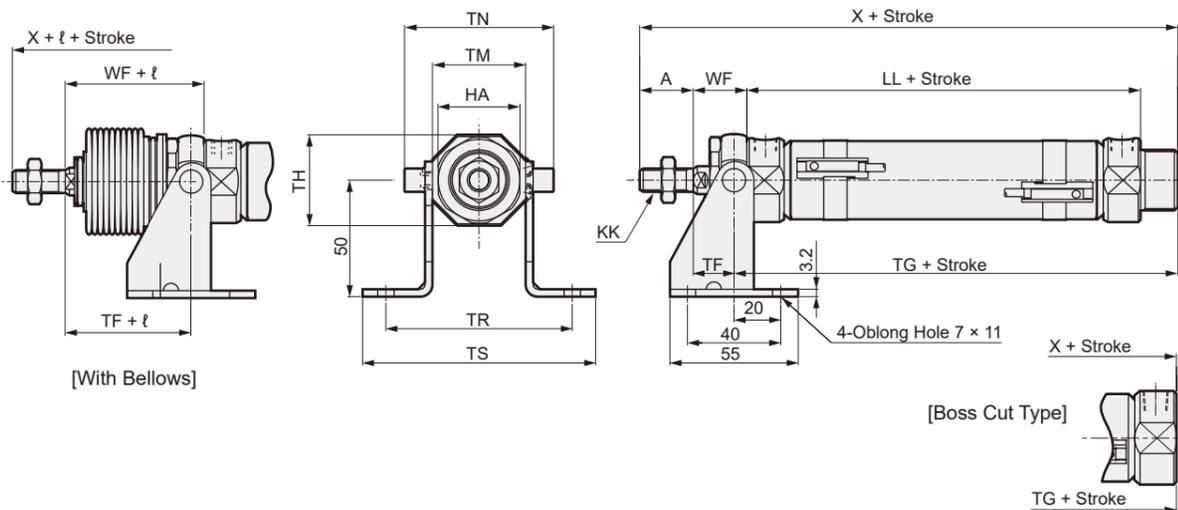
●Rod side trunnion type (TA)



| Code | Rod Side Trunnion Type (TA) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | | Boss Cut Type | |
|------|---|----|------------|----|----|-----|----|------|------|------|-----|----|----|---------------------|--------------|------|---------------|----|
| | Bore size (mm) | | | | | | | | | | | | | | ℓ | | X | TG |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 8 | 19.5 | 84.5 | 29.5 | 8 | 30 | 46 | (Stroke / 3) + 6 | 110 | 70.5 | | |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 17.5 | 90.5 | 39 | 12 | 40 | 64 | (Stroke / 3.25) + 7 | 115 | 74.5 | | |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 17.5 | 90.5 | 39 | 12 | 40 | 64 | (Stroke / 3.25) + 7 | 115 | 74.5 | | |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 10 | 17.5 | 94.5 | 44 | 9.5 | 53 | 72 | (Stroke / 3.25) + 7 | 121 | 78.5 | | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

●Rod side trunnion type (TA) with bracket (Option code B2)

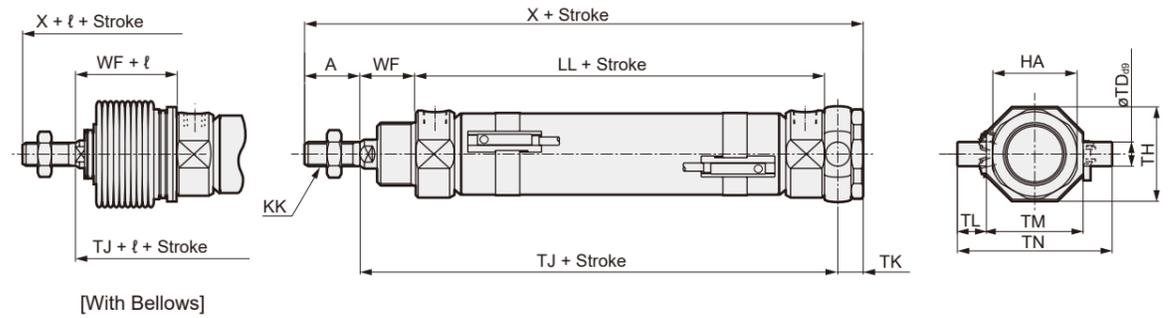


| Code | Rod Side Trunnion Type (TA) with Bracket (Option code B2) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | | Boss Cut Type | |
|------|---|----|------------|----|----|-----|------|------|------|----|----|----|-----|---------------------|--------------|------|---------------|----|
| | Bore size (mm) | | | | | | | | | | | | | | ℓ | | X | TG |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 19.5 | 84.5 | 29.5 | 30 | 46 | 70 | 90 | (Stroke / 3) + 6 | 110 | 70.5 | | |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 17.5 | 90.5 | 39 | 40 | 64 | 80 | 100 | (Stroke / 3.25) + 7 | 115 | 74.5 | | |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 17.5 | 90.5 | 39 | 40 | 64 | 80 | 100 | (Stroke / 3.25) + 7 | 115 | 74.5 | | |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 17.5 | 94.5 | 44 | 53 | 72 | 93 | 113 | (Stroke / 3.25) + 7 | 121 | 78.5 | | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

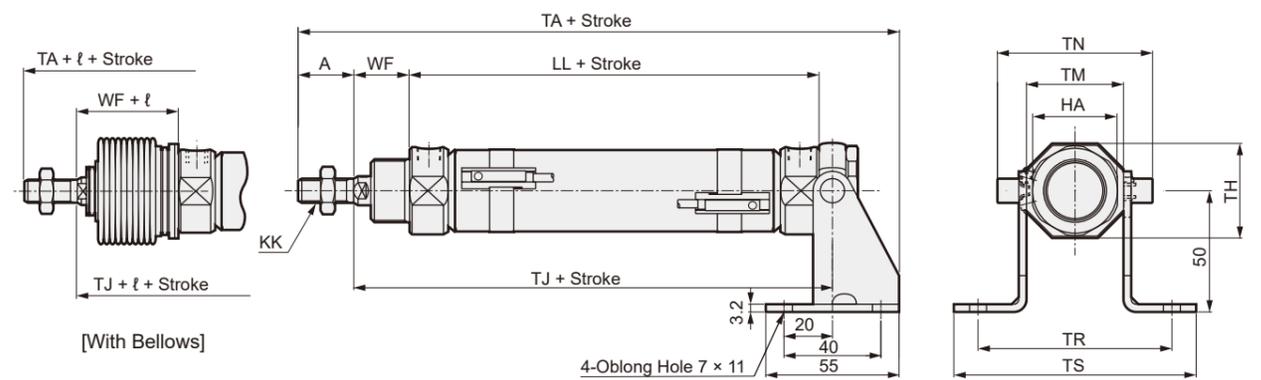
●Head Side Trunnion Type (TB)



| Code | Head Side Trunnion Type (TB) Mounting Dimensions | | | | | | | | | | | | | With Bellows | |
|------|--|----|------------|----|----|-----|----|------|-------|------|-----|----|----|---------------------|--|
| | Bore size (mm) | | | | | | | | | | | | | ℓ | |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 8 | 29.5 | 94.5 | 9.5 | 8 | 30 | 46 | (Stroke / 3) + 6 | |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 39 | 97.5 | 10.5 | 12 | 40 | 64 | (Stroke / 3.25) + 7 | |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 39 | 97.5 | 10.5 | 12 | 40 | 64 | (Stroke / 3.25) + 7 | |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 10 | 44 | 101.5 | 10.5 | 9.5 | 53 | 72 | (Stroke / 3.25) + 7 | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

●Head side trunnion type (TB) with bracket (Option code B2)



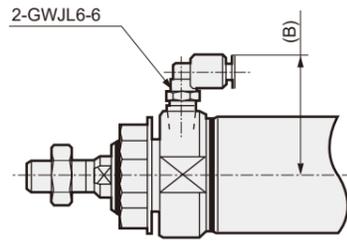
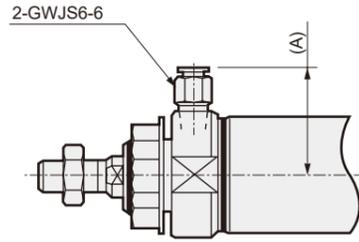
| Code | Head Side Trunnion Type (TB) With Bracket (Option code B2) Mounting Dimensions | | | | | | | | | | | | | With Bellows | |
|------|--|----|------------|----|----|-----|------|-------|----|----|----|-----|---------------------|--------------|--|
| | Bore size (mm) | | | | | | | | | | | | | ℓ | |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 142 | 29.5 | 94.5 | 30 | 46 | 70 | 90 | (Stroke / 3) + 6 | | |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 148 | 39 | 97.5 | 40 | 64 | 80 | 100 | (Stroke / 3.25) + 7 | | |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 148 | 39 | 97.5 | 40 | 64 | 80 | 100 | (Stroke / 3.25) + 7 | | |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 154 | 44 | 101.5 | 53 | 72 | 93 | 113 | (Stroke / 3.25) + 7 | | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outer Dimensions Diagram with Option

●With Push-in Fitting (-F)

●With Push-in Fitting (-FE)



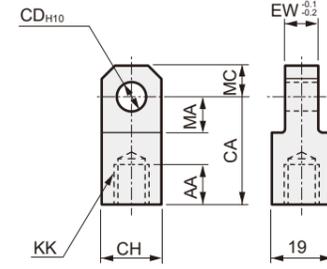
| Code | A | B |
|-----------------|------|------|
| Bores size (mm) | | |
| ø20 | 30.5 | 34.5 |
| ø25 | 32.5 | 36.5 |
| ø32 | 34.5 | 38.5 |
| ø40 | 39 | 43 |

Accessories Outline Dimension Drawing

Accessories Outline Dimension Drawing

●Single Knuckle (I)

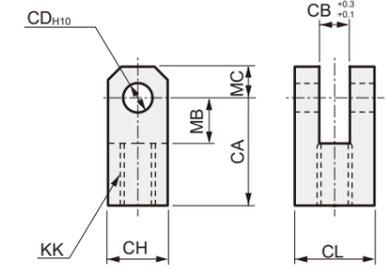
Material: Steel
Zinc Chromate



| Model No. | Applicable Bore size (mm) | AA | CA | CD | CH | EW | KK | MA | MC | Weight (g) |
|-----------|---------------------------|----|----|----|----|----|------------|----|----|------------|
| M1-I-20 | 20 | 14 | 30 | 10 | 19 | 8 | M8 × 1.0 | 13 | 10 | 60 |
| M1-I-30 | 25, 32 | 14 | 36 | 12 | 25 | 10 | M10 × 1.25 | 16 | 12 | 106 |
| M1-I-40 | 40 | 14 | 36 | 12 | 25 | 10 | M12 × 1.5 | 16 | 12 | 100 |

●Double Knuckle (Y)

Material: Steel
Zinc Chromate

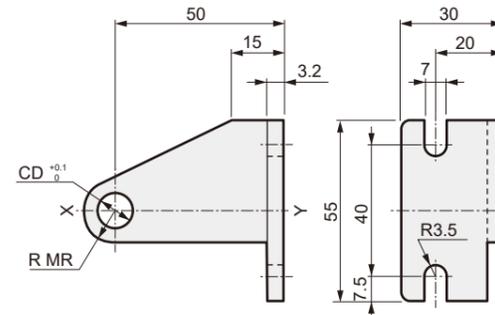


| Model No. | Applicable Bore size (mm) | CA | CB | CD | CH | CL | KK | MB | MC | Weight (g) |
|-----------|---------------------------|----|----|----|----|----|------------|----|----|------------|
| M1-Y-20 | 20 | 30 | 8 | 10 | 19 | 19 | M8 × 1.0 | 13 | 10 | 99 |
| M1-Y-30 | 25, 32 | 36 | 10 | 12 | 25 | 25 | M10 × 1.25 | 16 | 12 | 197 |
| M1-Y-40 | 40 | 36 | 10 | 12 | 25 | 25 | M12 × 1.5 | 16 | 12 | 193 |

Note: A pin, a washer and a split pin are included.

●Double Bracket (B2)

Material: Steel, Zinc chromate

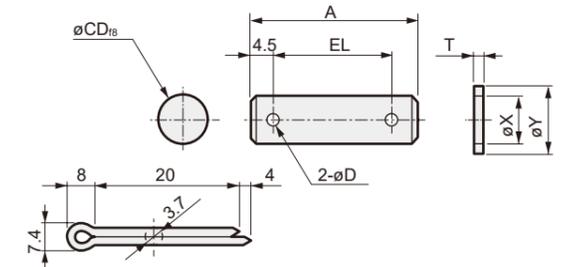


| Model No. | Applicable Model | Applicable Bore size (mm) | CD | MR | Weight (g) |
|----------------|----------------------|---------------------------|----|----|------------|
| *2 M1-B2-20-CC | CMK2-CCAA | 20, 25 | 8 | 8 | 145 |
| *2 M1-B2-30-CC | (Single Clevis | 32 | 10 | 11 | 163 |
| *2 M1-B2-40-CC | Integrated Type) | 40 | 12 | 11 | 170 |
| *2 M1-B2-30-CA | CMK2-CAAA | 20 | 10 | 11 | 158 |
| *2 M1-B2-40-CA | (Single Clevis Type) | 25, 32, 40 | 12 | 11 | 162 |
| M1-B2-20-TA | CMK2-TA/TB | 20 | 8 | 8 | 132 |
| M1-B2-30-TA | (Trunnion Type) | 25, 32, 40 | 10 | 11 | 142 |

*1: A pair consists of two symmetrical pieces with respect to the XY line.
*2: Retaining ring and pin are included.

●Pin for Double Knuckle (P)

Material: Steel, Zinc chromate

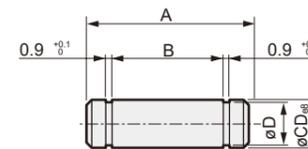


| Model No. | Applicable Bore size (mm) | A | D | CD | EL | T | X | Y | Weight (g) |
|-----------|---------------------------|----|---|----|----|-----|------|----|------------|
| M1-P-20 | 20 | 37 | 4 | 10 | 28 | 1.6 | 10.5 | 18 | 29 |
| M1-P-30 | 25, 32, 40 | 46 | 4 | 12 | 37 | 2.3 | 12.5 | 22 | 50 |

Note: A pin, a washer and a split pin are included with the rod clevis.

●Pin for Double Bracket (P1) (P2)

Material: Steel
Zinc Chromate

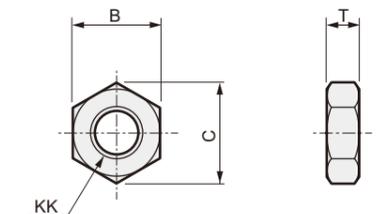


| Model No. | Applicable Model | Applicable Bore size (mm) | A | B | CD | D | To Be Used Retaining ring | Weight (g) |
|-----------|------------------|---------------------------|----|----|----|---|---------------------------|------------|
| M1-P1-20 | CMK2-CC | 20, 25 | 33 | 28 | 8 | 7 | E-type 7 | 13 |
| M1-P1-30 | CMK2-CC1 | 32 | 33 | 28 | 10 | 9 | E-type 9 | 21 |
| M1-P1-40 | | 40 | 37 | 32 | 12 | 9 | E-type 9 | 32 |
| M1-P2-20 | CMK2-CA | 20 | 25 | 20 | 10 | 9 | E-type 9 | 16 |
| M1-P2-30 | | 25, 32, 40 | 27 | 22 | 12 | 9 | E-type 9 | 24 |

*1: When selecting eye bracket CA or eye bracket integrated CC or eye bracket bush press-fit CC1 and clevis bracket, a pin and a snap ring are attached to the product.
*2: Retaining ring is included.

●Rod Nut (NR)

Material: Steel
Zinc Chromate



| Model No. | Applicable Bore size (mm) | B | C | KK | T | Weight (g) |
|-----------|---------------------------|----|------|------------|---|------------|
| M1-NR-20 | 20 | 13 | 15 | M8 × 1.0 | 5 | 3.6 |
| M1-NR-30 | 25, 32 | 17 | 19.6 | M10 × 1.25 | 6 | 7.8 |
| M1-NR-40 | 40 | 19 | 21.9 | M12 × 1.5 | 7 | 10 |

*2: Retaining ring is included.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

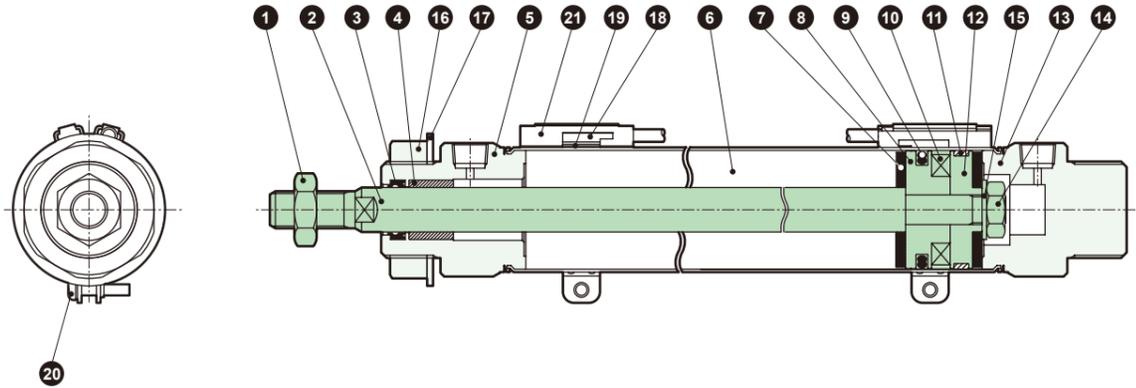
CMA2

SCM

SCG

SCA2

SCS2



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|---|-----------------------------------|-------------|---------------------|-----------------|---------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 11 | Wear Ring | Polyacetal | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel ø32, ø40: Carbon Steel | Industrial Hard Chrome Plating | 12 | Piston B | Aluminum Alloy | |
| 3 | Rod Packing | Nitrile Rubber | | 13 | Head Cover | Aluminum Alloy | |
| 4 | Bushing | ø20: Bearing Alloy ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 14 | Hexagon Nut | Steel | Zinc Chromate |
| 5 | Rod Cover | Aluminum Alloy | | 15 | Spacer | Steel | Zinc Chromate (ø20 to ø32 only) |
| 6 | Cylinder Tube | Stainless Steel | | 16 | Nut | Steel | Zinc Chromate |
| 7 | Cushion Rubber | Urethane Rubber | | 17 | Toothed Lock Washer | Steel | Zinc Chromate |
| 8 | Piston A | Aluminum Alloy | | With Switch | | | |
| 9 | Piston Packing | Nitrile Rubber | | 18 | Switch | | |
| 10 | Magnet | Plastic | | 19 | Band | Stainless Steel | |
| | | | | 20 | Pan Head Screw | Stainless Steel | |
| | | | | 21 | Switch Rail | Stainless Steel | |

Mounting Bracket Material

| Mounting type | Material |
|--------------------|----------|
| Foot (LB / LS) | Steel |
| Flange (FA / FB) | Steel |
| Trunnion (TA / TB) | Steel |
| Single Clevis (CA) | Steel |
| Double Clevis (CB) | Steel |

Note: Mounting brackets are included with the product upon shipment. However, when bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending



Small bore size cylinder
Single Acting, Push Type

CMK2-S Series

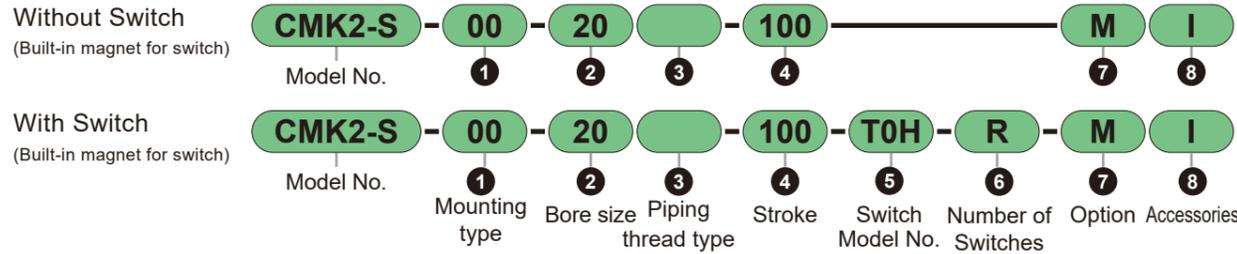
● Bore Size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2-S Series Model No. Notation Method

Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Content |
|------|--|
| 00 | Basic type |
| LB | Axial Foot Type (Both Sides) |
| LS | Axial Foot Type (Single Side) |
| FA | Rod Side Flange Type |
| FB | Head Side Flange Type |
| CA | Single Clevis Type |
| CC | Single Clevis Integrated Type |
| CC1 | Single Clevis, Bushing Press-fit Type |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) |
| TA | Rod Side Trunnion Type |
| TB | Head Side Trunnion Type |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 300 | Every 1 mm |
| $\phi 25$ | 5 to 300 | |
| $\phi 32$ | 5 to 300 | |
| $\phi 40$ | 5 to 300 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 128.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | |
|-----------------------------------|---------------------------------|-----------------|------------------|------------|-------------------|------------|--------------|---------|
| | | | AC | DC | AC | DC | Straight | L-shape |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T5V□ | T5V□ |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ |
| | | 3-wire (NPN) | — | — | 100 or less | — | T3H□ | T3V□ |
| | 3-wire (PNP) | — | 30 or less | — | — | T3PH□ | T3PV□ | |
| | 2-Color | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WH□ | T2WV□ |
| | | | — | 30 or less | — | 50 or less | T3WH□ | T3WV□ |
| 3-wire (NPN) | | — | 30 or less | — | 50 or less | T3WH□ | T3WV□ | |
| 2-Color Improved Water Resistance | 1-Color Off-Delay Type | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 |
| Reed | 1-Color No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ |
| | 1-Color | 2-wire | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|---|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H ③
5 m T0H ⑤

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content |
|------|---|
| I | Single Knuckle |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) |
| B2 | Double Yoke Bracket (Pin and Retaining Ring Attached) |

*1: "I" and "Y" cannot be selected at the same time.

7 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature |
|------|---------------------------------------|--------------------------|--------------------------------|
| J | Bellows | 100°C | 200°C |
| L | | 250°C | 400°C |
| F | With Push-in Fitting (Straight) | | |
| FE | With Push-in Fitting (Elbow) | | |
| M | Piston Rod Material (Stainless Steel) | | |
| V | Boss Cut | | |

*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.

*2: Instantaneous maximum temperature is the temperature when fire, chips, etc. momentarily contact the bellows.

*3: When Bore size $\phi 20$ or $\phi 25$ is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -T2 | Fluorine Packing Type |
| -A2 | With 2 Rod Nuts |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-S - - XJ9

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

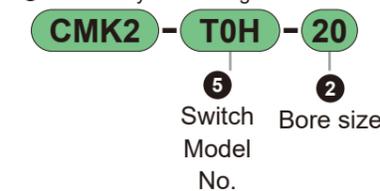
● Uses food-grade lubricant usable in food manufacturing processes

CMK2-S - - FP1

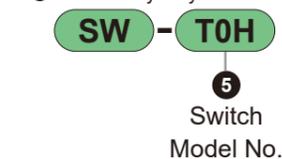
*For combinations of variations and options, see P. 109.

Switch Single Unit Model No. Notation Method

● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



Specifications

| Item | CMK2-S | | | | |
|---------------------------|---|---|-------|-------|-------|
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | Single Acting, Push Type | | | | |
| Operating Fluid | Compressed Air | | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.2 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | Rc1/8 | | | | |
| Stroke tolerance | mm | $^{+2.0}_0$ (Up to 200), $^{+2.4}_0$ (Over 200) | | | |
| Operating Piston Speed | mm/s | 50 to 500 | | | |
| Cushion | Rubber Cushion | | | | |
| Lubrication | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Note: Do not leave single acting cylinders pressurized. If left pressurized, the piston rod may not return by spring force when the pressure is released.

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|---------------------------|-----------------|--------------|--------------------------------|----------------|
| | | Without Bellows | With Bellows | Without Bellows Bellows "L" | Bellows "J" |
| ø20 | 25, 50, 75, 100, 150 | 300 | 300 | 5 | 25 |
| ø25 | | | | | |
| ø32 | 25, 50, 75, 100, 150, 200 | 300 | 300 | 5 | 25 |
| ø40 | | | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.

*2: Single side foot type (LS type) has a maximum stroke of 50 mm.

*3: For bellows "J" with a stroke of less than 25 mm, please inquire.

Min. Stroke with Switch

(Unit: mm)

| Number of Switches | 1 | | | | | | 2 | | | | | |
|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|--|--|
| | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| Bore Size (mm) | 10 | | | | | | 10 | | | | | |
| ø20 | 10 | | | | | | 10 | | | | | |
| ø25 | 10 | | | | | | 10 | | | | | |
| ø32 | 10 | | | | | | 10 | | | | | |
| ø40 | 10 | | | | | | 10 | | | | | |

Spring Load

(Unit: N)

| Bore Size (mm) | Stroke (mm) | 25 | 50 | 75 | 100 | 150 | 200 | 250 | 300 |
|--------------------------|----------------|----------------|------|------|------|------|------|------|------|
| | | At Stroke 0 mm | 11.9 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 |
| At Full Stroke Operation | | 31 | 38 | 31.5 | 38 | 38 | 38 | 38 | |
| ø25 | At Stroke 0 mm | 12.1 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | |
| At Full Stroke Operation | | 30.4 | 40.2 | 33.1 | 40.2 | 40.2 | 40.2 | 40.2 | |
| ø32 | At Stroke 0 mm | 24.5 | 24.3 | 24.5 | 24.3 | 24.3 | 24.3 | 24.3 | |
| At Full Stroke Operation | | 52.9 | 54.9 | 54.9 | 54.9 | 54.9 | 54.9 | 54.9 | |
| ø40 | At Stroke 0 mm | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | |
| At Full Stroke Operation | | 78.4 | 100 | 82.3 | 100 | 100 | 100 | 100 | |

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|-------------------|-------------------------|-----------------------|---|---------------------------|----------------------------|
| | Basic Type (00) | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CAA) | Double clevis type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.17 | 0.32 | 0.25 | 0.23 | 0.32 | 0.18 | 0.32 | 0.22 | Please refer to the weight listed in the switch specifications on P. 971. | 0.005 | 0.01 |
| ø25 | 0.26 | 0.52 | 0.39 | 0.41 | 0.50 | 0.26 | 0.50 | 0.36 | | 0.005 | 0.01 |
| ø32 | 0.30 | 0.56 | 0.43 | 0.45 | 0.54 | 0.30 | 0.54 | 0.40 | | 0.009 | 0.02 |
| ø40 | 0.48 | 0.74 | 0.61 | 0.63 | 0.72 | 0.50 | 0.72 | 0.64 | | 0.009 | 0.02 |

| Item/Mounting Style | Stroke (S) Added Weight | | | | | | | |
|---------------------|-------------------------|------------------------|------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | 25 or Less | Over 25, to 50 or Less | Over 50, to 75 or Less | Over 75 to 100 or Less | Over 100, to 150 or Less | Over 150, to 200 or Less | Over 200, to 250 or Less | Over 250, to 300 or Less |
| ø20 | 0.04 | 0.05 | 0.09 | 0.09 | 0.14 | 0.18 | 0.23 | 0.27 |
| ø25 | 0.05 | 0.06 | 0.12 | 0.12 | 0.18 | 0.24 | 0.29 | 0.35 |
| ø32 | 0.09 | 0.11 | 0.23 | 0.22 | 0.32 | 0.43 | 0.53 | 0.64 |
| ø40 | 0.13 | 0.16 | 0.31 | 0.31 | 0.47 | 0.62 | 0.78 | 0.93 |

(Example) Product Weight of CMK2-S-FA-32-50-T0H-D
 Product Weight at S = 0 mm:0.45 kg
 Added weight at S=50 mm..... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg
 Added Weight by S0.11 kg
 Weight of 2 switches:0.036 kg
 Weight of switch rail + 2 bands:0.018 kg
 Product weight..... 0.45 kg+0.10 kg+0.10 kg+0.036 kg+0.018 kg=0.704 kg

Theoretical Thrust Table

(Unit: N)

| Bore Size (mm) | Operating Pressure MPa | | | | | | | | |
|----------------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | 25 | 56 | 88 | 1.19×10^2 | 1.50×10^2 | 1.82×10^2 | 2.13×10^2 | 2.45×10^2 | 2.76×10^2 |
| ø25 | 58 | 1.07×10^2 | 1.56×10^2 | 2.05×10^2 | 2.55×10^2 | 3.04×10^2 | 3.53×10^2 | 4.02×10^2 | 4.51×10^2 |
| ø32 | 1.06×10^2 | 1.86×10^2 | 2.67×10^2 | 3.47×10^2 | 4.28×10^2 | 5.08×10^2 | 5.88×10^2 | 6.69×10^2 | 7.49×10^2 |
| ø40 | 1.51×10^2 | 2.77×10^2 | 4.03×10^2 | 5.28×10^2 | 6.54×10^2 | 7.80×10^2 | 9.10×10^2 | 1.03×10^3 | 1.16×10^3 |

Note: The load above indicates thrust excluding the spring force at the push end.

Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|----------|----------|----------|----------|
| Mounting bracket | | | | |
| Basic Type (00) | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

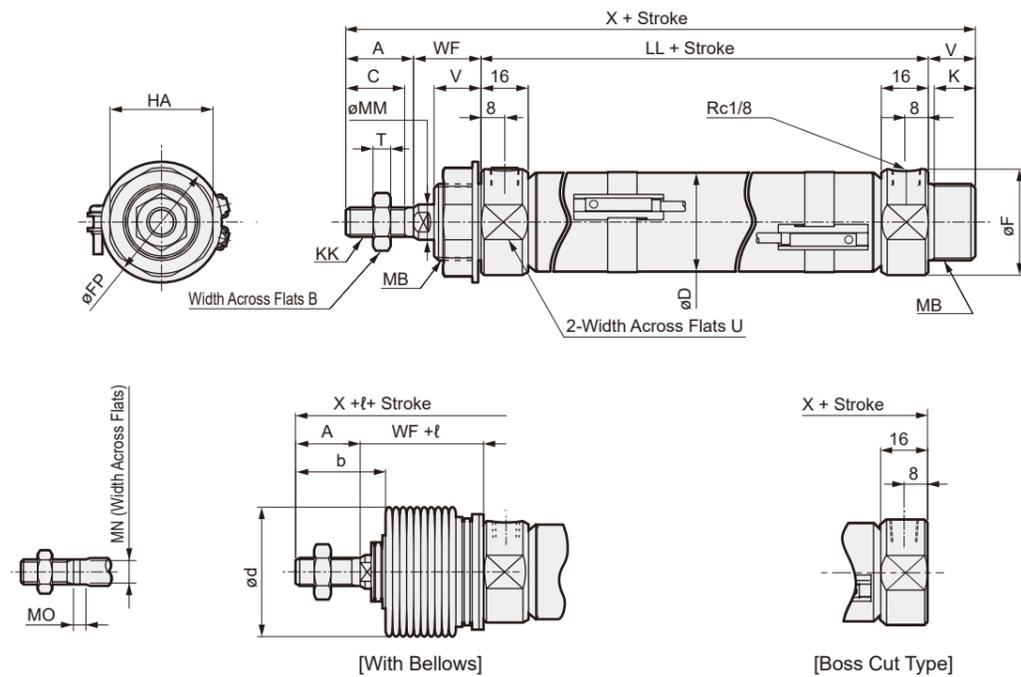
*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.

2: For axial foot type (both sides), 2 sets of "M1-LB-" from the table above are required.

*3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

Outline Dimension Drawing

●Basic Type (OO)



| Code | Basic Type (OO) Basic Dimensions | | | | | | | | | | LL | | | | | |
|------|----------------------------------|----|----|------|----|----|----|----|------------|---|-----|-----|-----|-----|-----|-----|
| | A | B | C | D | F | FP | HA | K | KK | 25 or Less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | | | | |
| ø20 | 20 | 13 | 18 | 21.4 | 28 | 29 | 26 | 12 | M8 × 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 |
| ø25 | 23 | 17 | 20 | 26.4 | 32 | 41 | 35 | 14 | M10 × 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 |
| ø32 | 23 | 17 | 20 | 33.6 | 36 | 41 | 35 | 14 | M10 × 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 |
| ø40 | 25 | 19 | 22 | 41.6 | 45 | 41 | 35 | 14 | M12 × 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 |

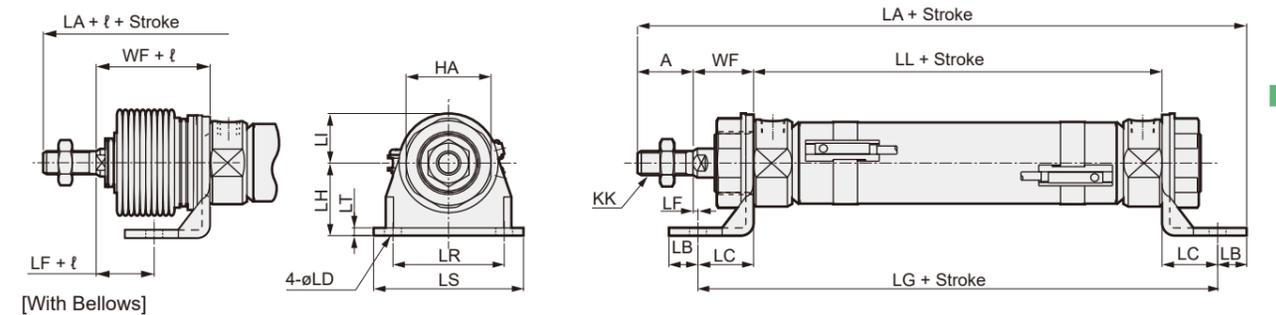
| Code | X | | | | | | | | With Bellows | | | | | | |
|------|-----------|----|----|----|---|----|----|----|---|-----|-----|-----|-----|-----|-----|
| | MB | MM | MN | MO | T | U | V | WF | 25 or Less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | | | | |
| ø20 | M18 × 1.5 | 10 | 8 | 5 | 5 | 24 | 14 | 24 | 149 | 151 | 178 | 205 | 232 | 259 | 286 |
| ø25 | M26 × 1.5 | 12 | 10 | 5 | 6 | 30 | 16 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 |
| ø32 | M26 × 1.5 | 12 | 10 | 5 | 6 | 34 | 16 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 |
| ø40 | M26 × 1.5 | 14 | 12 | 6 | 7 | 43 | 16 | 23 | 162 | 167 | 197 | 227 | 257 | 287 | 317 |

| Code | With Bellows | | | Boss Cut Type | | | | | | |
|------|--------------|----|---------------------|---|-----|-----|-----|-----|-----|-----|
| | b | d | ℓ | 25 or Less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | | | | |
| ø20 | 30 | 30 | (Stroke / 3) + 6 | 135 | 137 | 164 | 191 | 218 | 245 | 272 |
| ø25 | 32 | 46 | (Stroke / 3.25) + 7 | 140 | 145 | 175 | 205 | 235 | 265 | 295 |
| ø32 | 32 | 46 | (Stroke / 3.25) + 7 | 140 | 145 | 175 | 205 | 235 | 265 | 295 |
| ø40 | 34 | 46 | (Stroke / 3.25) + 7 | 146 | 151 | 181 | 211 | 241 | 271 | 301 |

*1: Round up the ℓ dimension to the nearest whole number.
*2: For dimensions with each switch, see P. 284 to P. 286.
*3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

●Axial Foot Type (LB)

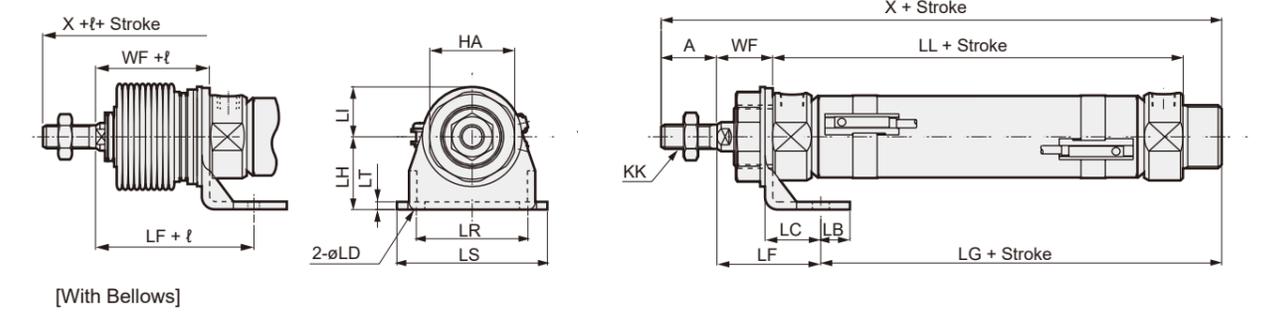


| Code | Axial Foot Type (LB) Mounting Dimensions | | | | | | | | | | | | | | | | | | | | |
|------|--|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|---|----|-----|-----|-----|-----|-----|-----|-----|
| | LA | | | LA | | | | LB | | | LC | | | LG | | | | | | | |
| ø20 | 20 | 26 | M8 × 1.0 | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | 10 | 18 | 6 | 6 | 127 | 129 | 156 | 183 | 210 | 237 | 264 |
| ø25 | 23 | 35 | M10 × 1.25 | 175 | 180 | 210 | 240 | 270 | 300 | 330 | 12 | 23 | 7 | 0 | 140 | 145 | 175 | 205 | 235 | 265 | 295 |
| ø32 | 23 | 35 | M10 × 1.25 | 175 | 180 | 210 | 240 | 270 | 300 | 330 | 12 | 23 | 7 | 0 | 140 | 145 | 175 | 205 | 235 | 265 | 295 |
| ø40 | 25 | 35 | M12 × 1.5 | 181 | 186 | 216 | 246 | 276 | 306 | 336 | 12 | 23 | 7 | 0 | 144 | 149 | 179 | 209 | 239 | 269 | 299 |

| Code | LL | | | | | | | | | | LR | | | LS | | | LT | | | WF | | | With Bellows | | |
|------|---|------|----|-----|-----|-----|---|-----|-----|---|----|-----|---|---------------------|---|---|----|--|---|----|--|--|--------------|--|--|
| | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | | | | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | | | | |
| ø20 | 25 | 15 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 4 | 44 | 3.2 | 24 | (Stroke / 3) + 6 | ℓ | | | | | | | | | | |
| ø25 | 30 | 20.5 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 5.5 | 62 | 3.2 | 23 | (Stroke / 3.25) + 7 | ℓ | | | | | | | | | | |
| ø32 | 30 | 20.5 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 5.5 | 62 | 3.2 | 23 | (Stroke / 3.25) + 7 | ℓ | | | | | | | | | | |
| ø40 | 30 | 20.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 7.5 | 62 | 3.2 | 23 | (Stroke / 3.25) + 7 | ℓ | | | | | | | | | | |

*1: Round up the ℓ dimension to the nearest whole number.
*2: For dimensions with each switch, see P. 284 to P. 286.
*3: For outer dimensions diagram of accessories, refer to P. 123.

●Single Side Axial Foot Type (LS)



| Code | Single Side Axial Foot Type (LS) Mounting Dimensions | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|--|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | LA | | | LA | | | | LB | | | LC | | | LG | | | | | | | | | | | | | | | | |
| ø20 | 20 | 26 | M8 × 1.0 | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | 10 | 18 | 6 | 38.8 | 90.2 | 92.2 | 119.2 | 146.2 | 173.2 | 200.2 | 227.2 | 25 | 15 | 91 | 93 | 120 | 147 | 174 | 201 | 228 |
| ø25 | 23 | 35 | M10 × 1.25 | 12 | 23 | 7 | 42.8 | 90.2 | 95.2 | 125.2 | 155.2 | 185.2 | 215.2 | 245.2 | 30 | 20.5 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 279 | 309 | 339 | 369 | 399 | 429 | 459 |
| ø32 | 23 | 35 | M10 × 1.25 | 12 | 23 | 7 | 42.8 | 90.2 | 95.2 | 125.2 | 155.2 | 185.2 | 215.2 | 245.2 | 30 | 20.5 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 279 | 309 | 339 | 369 | 399 | 429 | 459 |
| ø40 | 25 | 35 | M12 × 1.5 | 12 | 23 | 7 | 42.8 | 94.2 | 99.2 | 129.2 | 159.2 | 189.2 | 219.2 | 249.2 | 30 | 20.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 283 | 313 | 343 | 373 | 403 | 433 | 463 |

| Code | X | | | | | | | | | | LR | | | LS | | | LT | | | WF | | | With Bellows | | |
|------|---|----|-----|----|-----|-----|---|-----|-----|---|-----|---------------------|---|----|--|---|----|--|---|----|--|--|--------------|--|--|
| | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | | | | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | 25 or less, Over 25, 50 or less, Over 50, 100 or less, Over 100, 150 or Less, Over 150, 200 or Less, Over 200, 250 or Less, Over 250, 300 or Less | | | | | | |
| ø20 | 30 | 44 | 3.2 | 24 | 149 | 151 | 178 | 205 | 232 | 259 | 286 | (Stroke / 3) + 6 | ℓ | | | | | | | | | | | | |
| ø25 | 46 | 62 | 3.2 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | (Stroke / 3.25) + 7 | ℓ | | | | | | | | | | | | |
| ø32 | 46 | 62 | 3.2 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | (Stroke / 3.25) + 7 | ℓ | | | | | | | | | | | | |
| ø40 | 46 | 62 | 3.2 | 23 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | (Stroke / 3.25) + 7 | ℓ | | | | | | | | | | | | |

*1: Max. stroke is 50 mm.
*2: Round up the ℓ dimension to the nearest whole number.
*3: For dimensions with each switch, see P. 284 to P. 286.
*4: For outer dimensions diagram of accessories, refer to P. 123.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

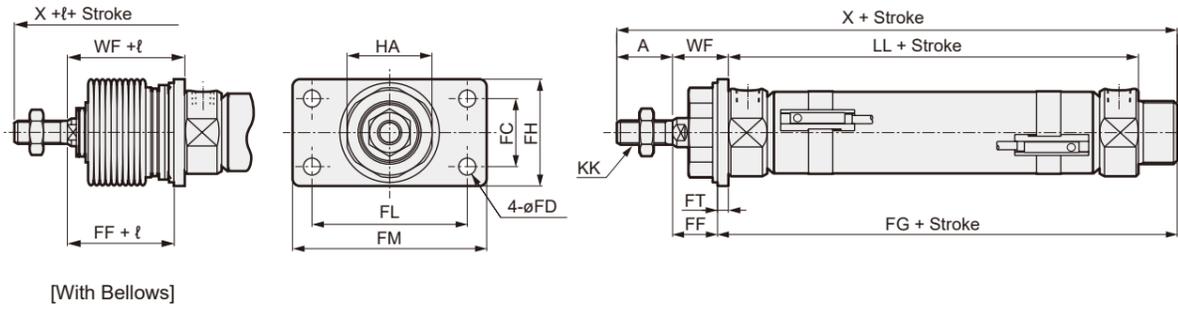
SCS2

Cylinder Switch

Ending

Outline Dimension Drawing

●Rod Side Flange Type (FA)

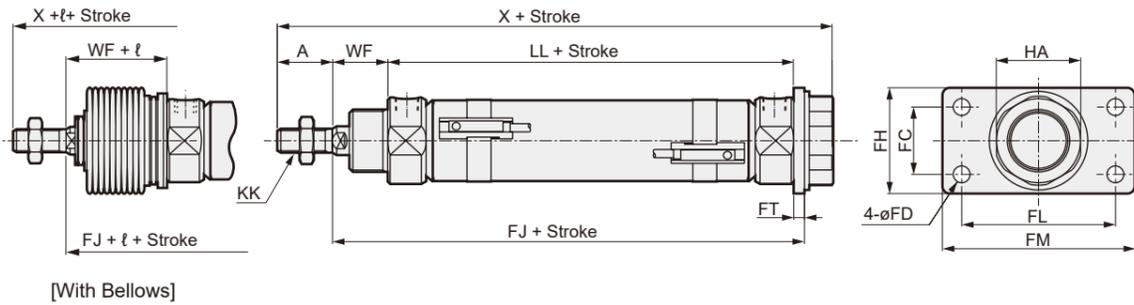


| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|---|----|----|------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|----|-----|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | FG | | | | | | | | | | | | | | | LL | | | | | | | | |
| Bore Size (mm) | A | FC | FD | FF | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | FH | FL | FM | FT | HA | KK | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less |
| ø20 | 20 | 20 | 6 | 20.8 | 108.2 | 110.2 | 137.2 | 164.2 | 191.2 | 218.2 | 245.2 | 34 | 40 | 54 | 3.2 | 26 | M8 x 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 |
| ø25 | 23 | 28 | 7 | 18.5 | 114.5 | 119.5 | 149.5 | 179.5 | 209.5 | 239.5 | 269.5 | 44 | 64 | 80 | 4.5 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 |
| ø32 | 23 | 28 | 7 | 18.5 | 114.5 | 119.5 | 149.5 | 179.5 | 209.5 | 239.5 | 269.5 | 44 | 64 | 80 | 4.5 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 |
| ø40 | 25 | 28 | 7 | 18.5 | 118.5 | 123.5 | 153.5 | 183.5 | 213.5 | 243.5 | 273.5 | 44 | 64 | 80 | 4.5 | 35 | M12 x 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 |

| Code | With Bellows | | | | | | | | | |
|----------------|--------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------|--|
| | X | | | | | | | | | |
| Bore Size (mm) | WF | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | ℓ | |
| ø20 | 24 | 149 | 151 | 178 | 205 | 232 | 259 | 286 | (Stroke / 3) + 6 | |
| ø25 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | (Stroke / 3.25) + 7 | |
| ø32 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | (Stroke / 3.25) + 7 | |
| ø40 | 23 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | (Stroke / 3.25) + 7 | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

●Head Side Flange Type (FB)



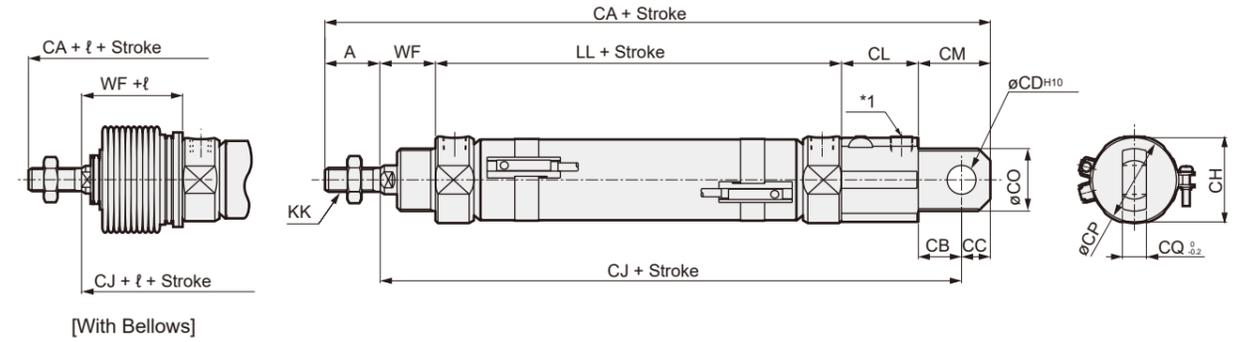
| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | | | | | | | | | | | |
|----------------|--|----|----|----|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|-----|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | FJ | | | | | | | | | | | | LL | | | | | | | | | | |
| Bore Size (mm) | A | FC | FD | FH | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | FL | FM | FT | HA | KK | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less |
| ø20 | 20 | 20 | 6 | 34 | 118.2 | 120.2 | 147.2 | 174.2 | 201.2 | 228.2 | 255.2 | 40 | 54 | 3.2 | 26 | M8 x 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 |
| ø25 | 23 | 28 | 7 | 44 | 121.5 | 126.5 | 156.5 | 186.5 | 216.5 | 246.5 | 276.5 | 64 | 80 | 4.5 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 |
| ø32 | 23 | 28 | 7 | 44 | 121.5 | 126.5 | 156.5 | 186.5 | 216.5 | 246.5 | 276.5 | 64 | 80 | 4.5 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 |
| ø40 | 25 | 28 | 7 | 44 | 125.5 | 130.5 | 160.5 | 190.5 | 220.5 | 250.5 | 280.5 | 64 | 80 | 4.5 | 35 | M12 x 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 |

| Code | With Bellows | | | | | | | | | |
|----------------|--------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------|--|
| | X | | | | | | | | | |
| Bore Size (mm) | WF | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | ℓ | |
| ø20 | 24 | 149 | 151 | 178 | 205 | 232 | 259 | 286 | (Stroke / 3) + 6 | |
| ø25 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | (Stroke / 3.25) + 7 | |
| ø32 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | (Stroke / 3.25) + 7 | |
| ø40 | 23 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | (Stroke / 3.25) + 7 | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

●Single Clevis Type (CA)

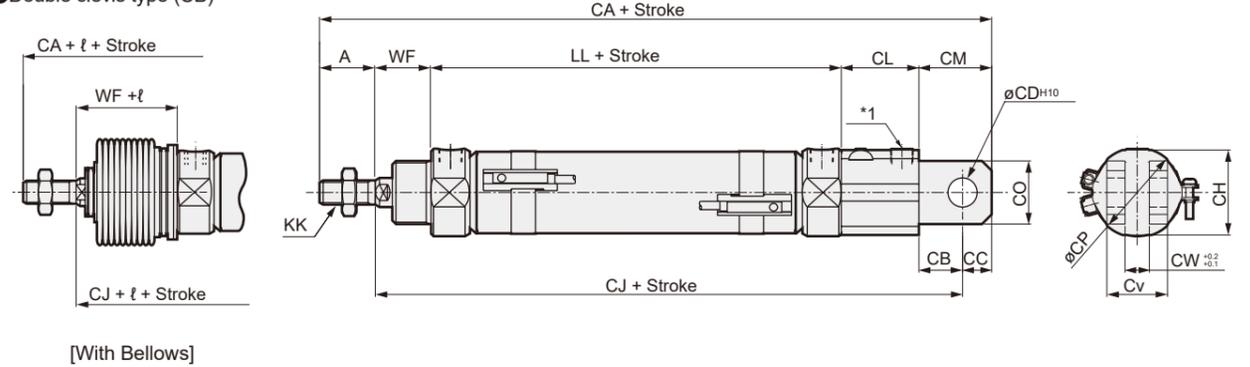


| Code | Single Clevis Type (CA) Mounting Dimensions | | | | | | | | | | | | | | | | | | |
|----------------|---|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|----|----|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | CA | | | | | | | | | | | | CJ | | | | | | |
| Bore Size (mm) | A | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | CB | CC | CD | CH | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less |
| ø20 | 20 | 190 | 192 | 219 | 246 | 273 | 300 | 327 | 14 | 10 | 10 | 26 | 160 | 162 | 189 | 216 | 243 | 270 | 297 |
| ø25 | 23 | 202 | 207 | 237 | 267 | 297 | 327 | 357 | 18 | 12 | 12 | 35 | 167 | 172 | 202 | 232 | 262 | 292 | 322 |
| ø32 | 23 | 202 | 207 | 237 | 267 | 297 | 327 | 357 | 18 | 12 | 12 | 35 | 167 | 172 | 202 | 232 | 262 | 292 | 322 |
| ø40 | 25 | 208 | 213 | 243 | 273 | 303 | 333 | 363 | 18 | 12 | 12 | 35 | 171 | 176 | 206 | 236 | 266 | 296 | 326 |

| Code | With Bellows | | | | | | | | | | | | | | |
|----------------|--------------|----|----|----|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|---------------------|
| | LL | | | | | | | | | | | | | | |
| Bore Size (mm) | CL | CM | CO | CP | CQ | KK | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | WF | ℓ |
| ø20 | 31 | 24 | 22 | 28 | 8 | M8 x 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 24 | (Stroke / 3) + 6 |
| ø25 | 32 | 30 | 26 | 37 | 10 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 23 | (Stroke / 3.25) + 7 |
| ø32 | 32 | 30 | 26 | 37 | 10 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 23 | (Stroke / 3.25) + 7 |
| ø40 | 32 | 30 | 26 | 37 | 10 | M12 x 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 23 | (Stroke / 3.25) + 7 |

*1: Not a piping port.
 *2: Round up the ℓ dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

●Double clevis type (CB)



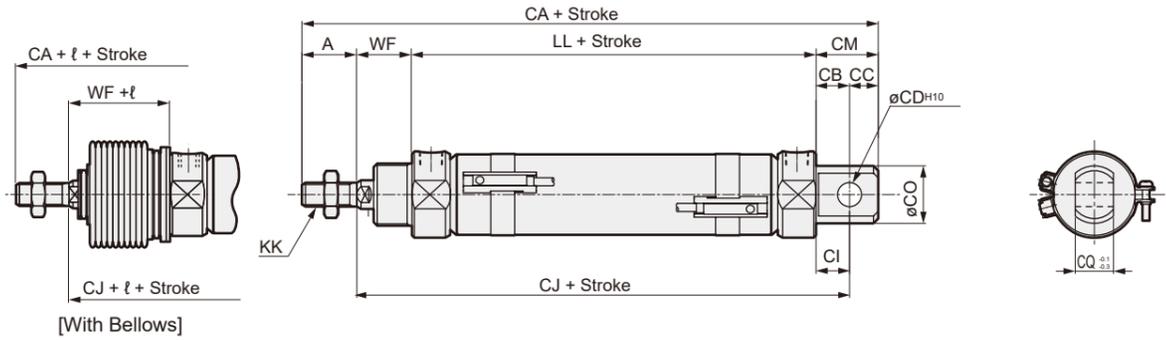
| Code | Double Clevis Type (CB) Mounting Dimensions | | | | | | | | | | | | | | | | | | |
|----------------|---|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|----|----|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | CA | | | | | | | | | | | | CJ | | | | | | |
| Bore Size (mm) | A | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | CB | CC | CD | CH | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less |
| ø20 | 20 | 190 | 192 | 219 | 246 | 273 | 300 | 327 | 14 | 10 | 10 | 26 | 160 | 162 | 189 | 216 | 243 | 270 | 297 |
| ø25 | 23 | 202 | 207 | 237 | 267 | 297 | 327 | 357 | 18 | 12 | 12 | 35 | 167 | 172 | 202 | 232 | 262 | 292 | 322 |
| ø32 | 23 | 202 | 207 | 237 | 267 | 297 | 327 | 357 | 18 | 12 | 12 | 35 | 167 | 172 | 202 | 232 | 262 | 292 | 322 |
| ø40 | 25 | 208 | 213 | 243 | 273 | 303 | 333 | 363 | 18 | 12 | 12 | 35 | 171 | 176 | 206 | 236 | 266 | 296 | 326 |

| Code | With Bellows | | | | | | | | | | | | | | | |
|----------------|--------------|----|----|----|----|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|---------------------|
| | LL | | | | | | | | | | | | | | | |
| Bore Size (mm) | CL | CM | CO | CP | Cv | CW | KK | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | WF | ℓ |
| ø20 | 31 | 24 | 22 | 28 | 19 | 8 | M8 x 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 24 | (Stroke / 3) + 6 |
| ø25 | 32 | 30 | 26 | 37 | 25 | 10 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 23 | (Stroke / 3.25) + 7 |
| ø32 | 32 | 30 | 26 | 37 | 25 | 10 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 23 | (Stroke / 3.25) + 7 |
| ø40 | 32 | 30 | 26 | 37 | 25 | 10 | M12 x 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 23 | (Stroke / 3.25) + 7 |

*1: Not a piping port.
 *2: Round up the ℓ dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

- Single Clevis Integrated Type (CC)
- Single Clevis Bushing Press-fit Type (CC1)



| Code | Single Clevis Integrated Type (CC), Bushing Press-fit Type (CC1) Mounting Dimensions | | | | | | | | | | | |
|------------|--|-----|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|----|----|
| | Bore Size (mm) | A | CA | | | | | | CB | CC | CD | CI |
| 25 or Less | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | | | | |
| ø20 | 20 | 156 | 158 | 185 | 212 | 239 | 266 | 293 | 12 | 9 | 8 | 11 |
| ø25 | 23 | 161 | 166 | 196 | 226 | 256 | 286 | 316 | 12 | 9 | 8 | 11 |
| ø32 | 23 | 166 | 171 | 201 | 231 | 261 | 291 | 321 | 14 | 12 | 10 | 13 |
| ø40 | 25 | 176 | 181 | 211 | 241 | 271 | 301 | 331 | 16 | 14 | 12 | 15 |

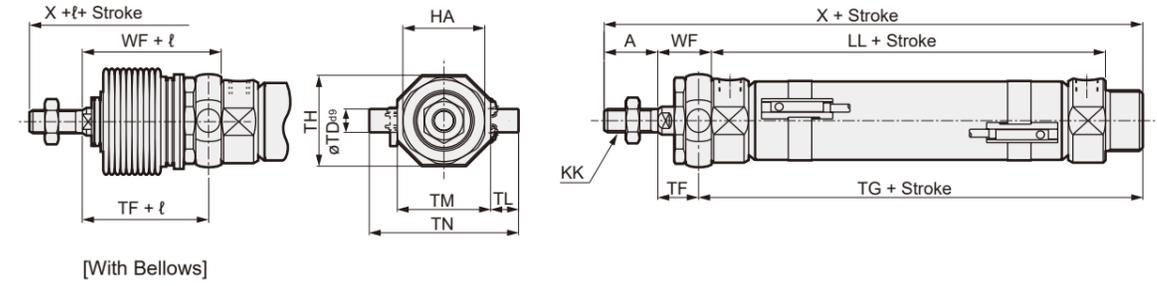
| Code | CJ | | | | | | | | | | |
|------|----------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|------------|
| | Bore Size (mm) | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | CM | CO | CQ |
| ø20 | | 127 | 129 | 156 | 183 | 210 | 237 | 264 | 21 | 22 | 16 |
| ø25 | 129 | 134 | 164 | 194 | 224 | 254 | 284 | 21 | 24 | 16 | M10 x 1.25 |
| ø32 | 131 | 136 | 166 | 196 | 226 | 256 | 286 | 26 | 24 | 16 | M10 x 1.25 |
| ø40 | 137 | 142 | 172 | 202 | 232 | 262 | 292 | 30 | 30 | 20 | M12 x 1.5 |

| Code | LL | | | | | | | | WF | With Bellows |
|------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|---------------------|--------------|
| | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | ℓ | | |
| ø20 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 24 | (Stroke / 3) + 6 | |
| ø25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 23 | (Stroke / 3.25) + 7 | |
| ø32 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 23 | (Stroke / 3.25) + 7 | |
| ø40 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 23 | (Stroke / 3.25) + 7 | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

- Rod side trunnion type (TA)

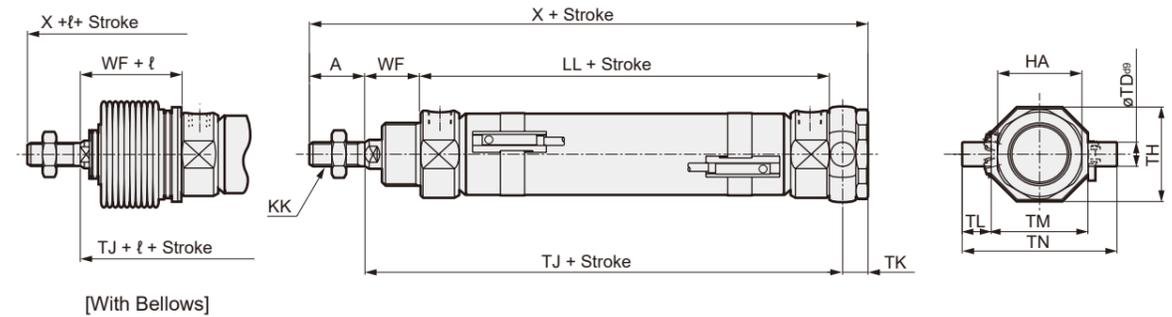


| Code | Rod Side Trunnion Type (TA) Mounting Dimensions | | | | | | | | | | | | | | | | | | |
|------------|---|----|------------|----|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|---------------------|-------|-------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Bore Size (mm) | A | HA | KK | LL | | | | | | | | TD | TF | TG | | | | |
| 25 or less | | | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | 25 or Less | Over 25, 50 or less | | | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less |
| ø20 | 20 | 26 | M8 x 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 8 | 19.5 | 109.5 | 111.5 | 138.5 | 165.5 | 192.5 | 219.5 | 246.5 |
| ø25 | 23 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 10 | 17.5 | 115.5 | 120.5 | 150.5 | 180.5 | 210.5 | 240.5 | 270.5 |
| ø32 | 23 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 10 | 17.5 | 115.5 | 120.5 | 150.5 | 180.5 | 210.5 | 240.5 | 270.5 |
| ø40 | 25 | 35 | M12 x 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 10 | 17.5 | 119.5 | 124.5 | 154.5 | 184.5 | 214.5 | 244.5 | 274.5 |

| Code | LL | | | | | | | | | | | With Bellows | |
|------|----------------|------|----|----|----|-----|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Bore Size (mm) | TH | TL | TM | TN | WF | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less |
| ø20 | | 29.5 | 8 | 30 | 46 | 24 | 149 | 151 | 178 | 205 | 232 | 259 | 286 |
| ø25 | 39 | 12 | 40 | 64 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | (Stroke / 3.25) + 7 |
| ø32 | 39 | 12 | 40 | 64 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | (Stroke / 3.25) + 7 |
| ø40 | 44 | 9.5 | 53 | 72 | 23 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

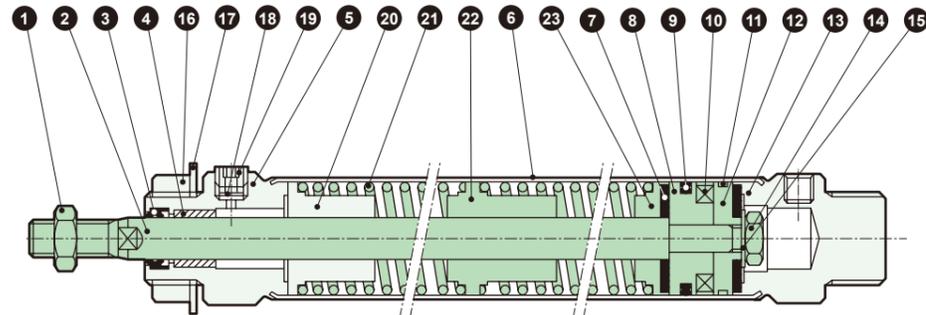
- Head Side Trunnion Type (TB)



| Code | Head Side Trunnion Type (TB) Mounting Dimensions | | | | | | | | | | | | | | | | | | |
|------------|--|----|------------|----|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|---------------------|-------|-------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Bore Size (mm) | A | HA | KK | LL | | | | | | | | TD | TH | TJ | | | | |
| 25 or Less | | | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | 25 or Less | Over 25, 50 or less | | | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less |
| ø20 | 20 | 26 | M8 x 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 8 | 29.5 | 119.5 | 121.5 | 148.5 | 175.5 | 202.5 | 229.5 | 256.5 |
| ø25 | 23 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 10 | 39 | 122.5 | 127.5 | 157.5 | 187.5 | 217.5 | 247.5 | 277.5 |
| ø32 | 23 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 10 | 39 | 122.5 | 127.5 | 157.5 | 187.5 | 217.5 | 247.5 | 277.5 |
| ø40 | 25 | 35 | M12 x 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 10 | 44 | 126.5 | 131.5 | 161.5 | 191.5 | 221.5 | 251.5 | 281.5 |

| Code | X | | | | | | | | | | | With Bellows | |
|------|----------------|-----|----|----|----|-----|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Bore Size (mm) | TK | TL | TM | TN | WF | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less |
| ø20 | | 9.5 | 8 | 30 | 46 | 24 | 149 | 151 | 178 | 205 | 232 | 259 | 286 |
| ø25 | 10.5 | 12 | 40 | 64 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | (Stroke / 3.25) + 7 |
| ø32 | 10.5 | 12 | 40 | 64 | 23 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | (Stroke / 3.25) + 7 |
| ø40 | 10.5 | 9.5 | 53 | 72 | 23 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|---|-----------------------------------|----------|---------------------------|-----------------|---------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 12 | Piston B | Aluminum Alloy | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel | Industrial Hard Chrome Plating | 13 | Head Cover | Aluminum Alloy | |
| | | ø32, ø40: Carbon Steel | | 14 | Hexagon Nut | Steel | Zinc Chromate |
| 3 | Rod Packing | Nitrile Rubber | | 15 | Spacer | Steel | Zinc Chromate (ø20 to ø32 only) |
| 4 | Bushing | ø20: Bearing Alloy | | 16 | Nut | Steel | Zinc Chromate |
| | | ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 17 | Toothed Lock Washer | Steel | Zinc Chromate |
| 5 | Rod Cover | Aluminum Alloy | | 18 | Stainless Steel Wire Mesh | Stainless Steel | |
| 6 | Cylinder Tube | Stainless Steel | | 19 | Plug | Steel | Zinc Chromate |
| 7 | Cushion Rubber | Urethane Rubber | | 20 | Spring Retainer | Aluminum Alloy | |
| 8 | Piston A | Aluminum Alloy | | 21 | Spring | Piano Wire | Painting |
| 9 | Piston Packing | Nitrile Rubber | | 22 | Spring Retainer | Aluminum Alloy | |
| 10 | Magnet | Plastic | | 23 | Spring Retainer | Aluminum Alloy | |
| 11 | Wear Ring | Polyacetal | | | | | |



Small bore size cylinder
Single Acting, Pull Type

CMK2-SR Series

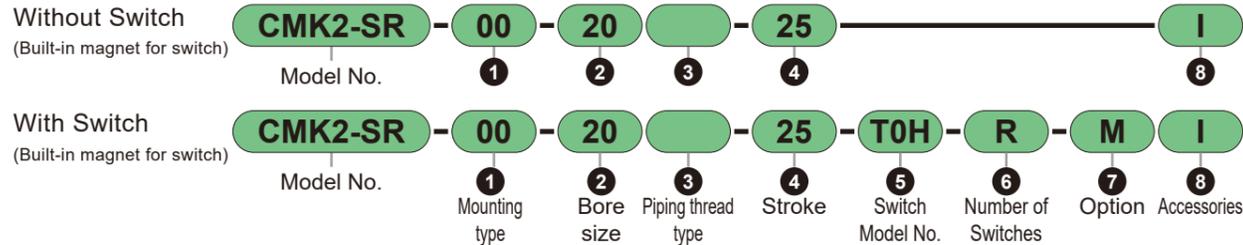
● Bore size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2-SR Series Model No. Notation Method

Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Content | |
|------|--|--|
| 00 | Basic type | |
| LB | Axial Foot Type (Both Sides) | |
| LS | Axial Foot Type (Single Side) | |
| FA | Rod Side Flange Type | |
| FB | Head Side Flange Type | |
| CA | Single Clevis Type | |
| CC | Single Clevis Integrated Type | |
| CC1 | Single Clevis, Bushing Press-fit Type | |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) | |
| TA | Rod Side Trunnion Type | |
| TB | Head Side Trunnion Type | |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 300 | Every 1 mm |
| $\phi 25$ | 5 to 300 | |
| $\phi 32$ | 5 to 300 | |
| $\phi 40$ | 5 to 300 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 140.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | | |
|-----------------------------------|---------------------------------|-----------------|------------------|----------|-------------------|------------|--------------|---------|--|
| | | | AC | DC | AC | DC | Straight | L-shape | |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T5V□ | T5V□ | |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ | |
| | | 3-wire (NPN) | — | — | 100 or less | — | T3H□ | T3V□ | |
| | 3-wire (PNP) | — | 30 or less | — | — | T3PH□ | T3PV□ | | |
| | 2-Color | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WH□ | T2WV□ | |
| | | | 3-wire (NPN) | — | 30 or less | — | 50 or less | T3WH□ | |
| 2-Color Improved Water Resistance | 1-Color Off-Delay Type | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ | |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ | |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | |
| Reed | No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ | |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ | |
| | 1-Color | 2-wire | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ | |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|--|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H [3]
5 m T0H [5]

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content | |
|------|---|--|
| I | Single Knuckle | |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) | |
| B2 | Double Yoke Bracket (Pin and Retaining Ring Attached) | |

*1: "I" and "Y" cannot be selected at the same time.

7 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature | |
|------|---------------------------------------|--------------------------|--------------------------------|--|
| J | Bellows | 100°C | 200°C | |
| L | | 250°C | 400°C | |
| F | With Push-in Fitting (Straight) | | | |
| FE | With Push-in Fitting (Elbow) | | | |
| M | Piston Rod Material (Stainless Steel) | | | |
| V | Boss Cut | | | |

*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.

*2: Instantaneous maximum temperature is the temperature when fire, chips, etc. momentarily contact the bellows.

*3: When Bore size $\phi 20$ or 25 is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

About Custom Product Specifications

For details, see P. 287.

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food-grade lubricant usable in food manufacturing processes

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -T2 | Fluorine Packing Type |
| -A2 | With 2 Rod Nuts |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

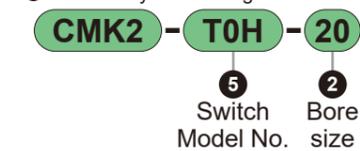
CMK2-SR - - XJ9

CMK2-SR - - FP1

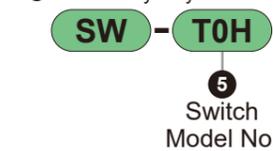
*For combinations of variations and options, see P. 109.

Switch Single Unit Model No. Notation Method

● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



Specifications

| Item | CMK2-SR | | | | |
|---------------------------|---|---|-------|-------------|-------|
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | Single Acting, Pull Type | | | | |
| Operating Fluid | Compressed Air | | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.2 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | Rc1/8 | | | | |
| Stroke tolerance | mm | ^{+2.0} ₀ (Up to 200) ⁴ | | (Over 200,) | |
| Operating Piston Speed | mm/s | 50 to 500 | | | |
| Cushion | Rubber Cushion | | | | |
| Lubrication | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Note: Do not leave single acting cylinders pressurized. If left pressurized, the piston rod may not return by spring force when the pressure is released.

Stroke (Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|---------------------------|-----------------|--------------|---------------------|-------------|
| | | Without Bellows | With Bellows | Without Bellows "L" | Bellows "J" |
| ø20 | 25, 50, 75, 100, 150 | 300 | 300 | 5 | 25 |
| ø25 | | | | | |
| ø32 | 25, 50, 75, 100, 150, 200 | | | | |
| ø40 | | | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.
 *2: Single side foot type (LS type) has a maximum stroke of 50 mm.
 *3: For bellows "J" with a stroke of less than 25 mm, please inquire.

Min. Stroke with Switch (Unit: mm)

| Number of Switches | 1 | | | | | | 2 | | | | | |
|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|----|--|
| | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| ø20 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø25 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø32 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø40 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |

Spring Load (Unit: N)

| Bore size (mm) | Stroke (mm) | 25 | 50 | 75 | 100 | 150 | 200 | 250 | 300 |
|----------------|--------------------------|------|----------------|------|------|------|------|------|------|
| | | ø20 | At Stroke 0 mm | 11.9 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 |
| | At Full Stroke Operation | 31 | 38 | 31.5 | 38 | 38 | 38 | 38 | 38 |
| ø25 | At Stroke 0 mm | 12.1 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 |
| | At Full Stroke Operation | 30.4 | 40.2 | 33.1 | 40.2 | 40.2 | 40.2 | 40.2 | 40.2 |
| ø32 | At Stroke 0 mm | 24.5 | 24.3 | 24.5 | 24.3 | 24.3 | 24.3 | 24.3 | 24.3 |
| | At Full Stroke Operation | 52.9 | 54.9 | 54.9 | 54.9 | 54.9 | 54.9 | 54.9 | 54.9 |
| ø40 | At Stroke 0 mm | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 |
| | At Full Stroke Operation | 78.4 | 100 | 82.3 | 100 | 100 | 100 | 100 | 100 |

Cylinder Weight (Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Per S=10 mm Added Weight |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|------------------|-------------------------|-----------------------|---|---------------------------|--------------------------|
| | Basic type 00 | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CC) | Double Clevis Type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.17 | 0.32 | 0.25 | 0.23 | 0.32 | 0.18 | 0.32 | 0.22 | Please refer to the weight listed in the switch specifications on P. 971. | 0.005 | 0.01 |
| ø25 | 0.26 | 0.52 | 0.39 | 0.41 | 0.50 | 0.26 | 0.50 | 0.36 | | 0.005 | 0.01 |
| ø32 | 0.30 | 0.56 | 0.43 | 0.45 | 0.54 | 0.30 | 0.54 | 0.40 | | 0.009 | 0.02 |
| ø40 | 0.48 | 0.74 | 0.61 | 0.63 | 0.72 | 0.50 | 0.72 | 0.64 | | 0.009 | 0.02 |

| Item/Mounting Style | Stroke (S) Added Weight | | | | | | | |
|---------------------|-------------------------|---------------------|---------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | 25 or Less | Over 25, 50 or less | Over 50, 75 or less | Over 75 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less |
| ø20 | 0.03 | 0.03 | 0.06 | 0.06 | 0.09 | 0.12 | 0.15 | 0.18 |
| ø25 | 0.03 | 0.04 | 0.07 | 0.07 | 0.11 | 0.14 | 0.18 | 0.21 |
| ø32 | 0.08 | 0.09 | 0.18 | 0.17 | 0.25 | 0.34 | 0.42 | 0.51 |
| ø40 | 0.10 | 0.13 | 0.25 | 0.25 | 0.37 | 0.49 | 0.62 | 0.74 |

(Example) Product Weight of CMK2-SR-FA-32-50-T0H-D Product Weight at S = 0 mm: 0.45 kg
 Added weight at S=50 mm.... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg
 Added Weight by S 0.09 kg
 Weight of 2 switches: 0.036 kg
 Weight of switch rail + 2 bands: 0.018 kg
 Product weight. 0.45 kg+0.09 kg+0.10 kg+0.036 kg+0.018 kg=0.694 kg

Theoretical Thrust Table (Unit: N)

| Bore Size (mm) | Operating Pressure MPa | | | | | | | | | |
|----------------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--|
| | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| ø20 | 9 | 33 | 56 | 80 | 1.03×10^2 | 1.27×10^2 | 1.50×10^2 | 1.74×10^2 | 1.98×10^2 | |
| ø25 | 35 | 73 | 1.11×10^2 | 1.49×10^2 | 1.87×10^2 | 2.24×10^2 | 2.62×10^2 | 3.00×10^2 | 3.38×10^2 | |
| ø32 | 83 | 1.52×10^2 | 2.21×10^2 | 2.91×10^2 | 3.60×10^2 | 4.29×10^2 | 4.98×10^2 | 5.67×10^2 | 6.36×10^2 | |
| ø40 | 1.21×10^2 | 2.31×10^2 | 3.41×10^2 | 4.51×10^2 | 5.62×10^2 | 6.72×10^2 | 7.82×10^2 | 8.92×10^2 | 1.00×10^3 | |

Note: The load above is the pulling thrust after subtracting the spring force at the retracted end.

Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|-------------|----------|----------|----------|
| Mounting bracket | | | | |
| Basic Type (00) | *3 M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
 *2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.
 *3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

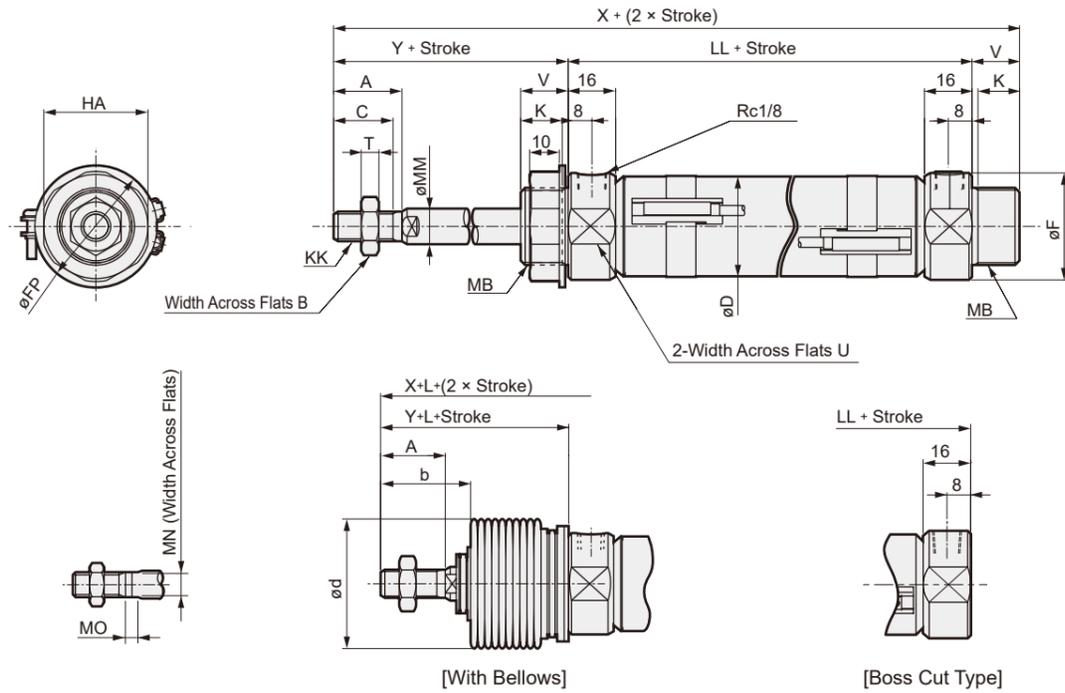
Ending

Cylinder Switch

Ending

Outline Dimension Drawing

●Basic Type (OO)



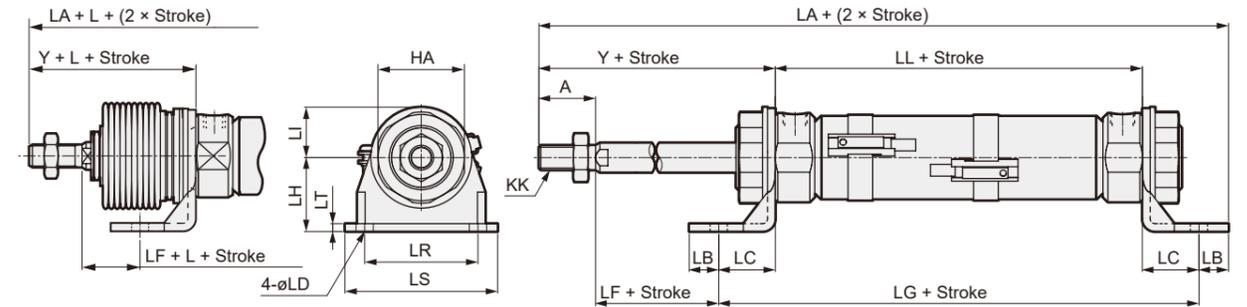
| Code | Basic Type (OO) Basic Dimensions | | | | | | | | | | LL | | | | | | |
|------|----------------------------------|----|----|------|----|----|----|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|
| | A | B | C | D | F | FP | HA | K | KK | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | |
| ø20 | 20 | 13 | 18 | 21.4 | 28 | 29 | 26 | 12 | M8 x 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | |
| ø25 | 23 | 17 | 20 | 26.4 | 32 | 41 | 35 | 14 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | |
| ø32 | 23 | 17 | 20 | 33.6 | 36 | 41 | 35 | 14 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | |
| ø40 | 25 | 19 | 22 | 41.6 | 45 | 41 | 35 | 14 | M12 x 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | |

| Code | With Bellows | | | | | | | | | | X | | | | Y | | | L | |
|------|--------------|----|----|----|---|----|----|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|----|---------------------|--|
| | MB | MM | MN | MO | T | U | V | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | b | d | L | | |
| ø20 | M18 x 1.5 | 10 | 8 | 5 | 5 | 24 | 14 | 149 | 151 | 178 | 205 | 232 | 259 | 286 | 44 | 30 | 30 | (Stroke / 3) + 6 | |
| ø25 | M26 x 1.5 | 12 | 10 | 5 | 6 | 30 | 16 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | 32 | 46 | (Stroke / 3.25) + 7 | |
| ø32 | M26 x 1.5 | 12 | 10 | 5 | 6 | 34 | 16 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | 32 | 46 | (Stroke / 3.25) + 7 | |
| ø40 | M26 x 1.5 | 14 | 12 | 6 | 7 | 43 | 16 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | 48 | 34 | 46 | (Stroke / 3.25) + 7 | |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

●Axial Foot Type (LB)



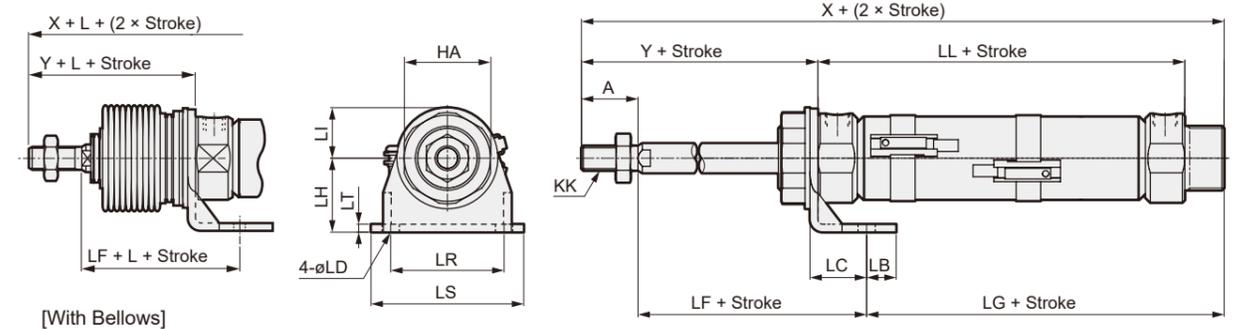
[With Bellows]

| Code | Axial Foot Type (LB) Mounting Dimensions | | | | | | | | | | | | | | | | | | | | |
|----------------|--|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|----|----|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | A | HA | KK | LA | | | | | | | LB | LC | LD | LF | LG | | | | | | |
| Bore Size (mm) | | | | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | | | | | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less |
| ø20 | 20 | 26 | M8 x 1.0 | 163 | 165 | 192 | 219 | 246 | 273 | 300 | 10 | 18 | 6 | 6 | 127 | 129 | 156 | 183 | 210 | 237 | 264 |
| ø25 | 23 | 35 | M10 x 1.25 | 175 | 180 | 210 | 240 | 270 | 300 | 330 | 12 | 23 | 7 | 0 | 140 | 145 | 175 | 205 | 235 | 265 | 295 |
| ø32 | 23 | 35 | M10 x 1.25 | 175 | 180 | 210 | 240 | 270 | 300 | 330 | 12 | 23 | 7 | 0 | 140 | 145 | 175 | 205 | 235 | 265 | 295 |
| ø40 | 25 | 35 | M12 x 1.5 | 181 | 186 | 216 | 246 | 276 | 306 | 336 | 12 | 23 | 7 | 0 | 144 | 149 | 179 | 209 | 239 | 269 | 299 |

| Code | With Bellows | | | | | | | | | | L | | | |
|------|--------------|------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----|----|-----|----|---------------------|
| | LH | LI | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | LR | LS | LT | Y | L |
| ø20 | 25 | 15 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 4 | 44 | 3.2 | 44 | (Stroke / 3) + 6 |
| ø25 | 30 | 20.5 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 5.5 | 62 | 3.2 | 46 | (Stroke / 3.25) + 7 |
| ø32 | 30 | 20.5 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 5.5 | 62 | 3.2 | 46 | (Stroke / 3.25) + 7 |
| ø40 | 30 | 20.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 7.5 | 62 | 3.2 | 48 | (Stroke / 3.25) + 7 |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

●Single Side Axial Foot Type (LS)



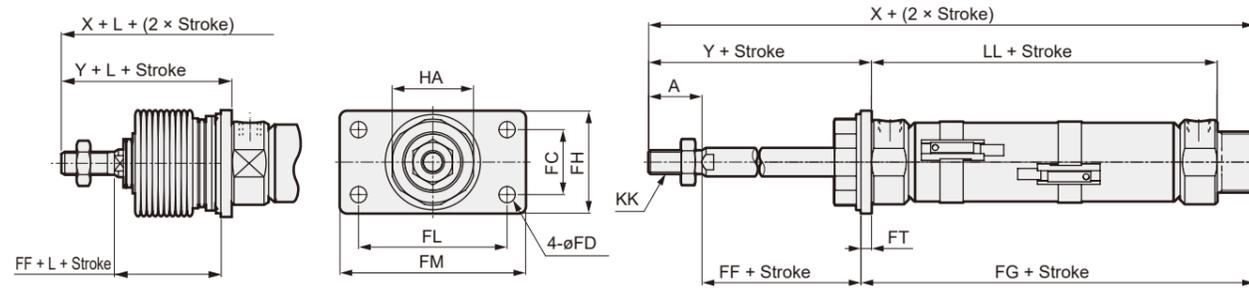
| Code | Single Side Axial Foot Type (LS) Mounting Dimensions | | | | | | | | | | | | | | | | |
|----------------|--|----|------------|----|----|----|------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|------|--|
| | A | HA | KK | LB | LC | LD | LF | LG | | | | | | | LH | LI | |
| Bore Size (mm) | | | | | | | | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | | | |
| ø20 | 20 | 26 | M8 x 1.0 | 10 | 18 | 6 | 38.8 | 90.2 | 92.2 | 119.2 | 146.2 | 173.2 | 200.2 | 227.2 | 25 | 15 | |
| ø25 | 23 | 35 | M10 x 1.25 | 12 | 23 | 7 | 42.8 | 90.2 | 95.2 | 125.2 | 155.2 | 185.2 | 215.2 | 245.2 | 30 | 20.5 | |
| ø32 | 23 | 35 | M10 x 1.25 | 12 | 23 | 7 | 42.8 | 90.2 | 95.2 | 125.2 | 155.2 | 185.2 | 215.2 | 245.2 | 30 | 20.5 | |
| ø40 | 25 | 35 | M12 x 1.5 | 12 | 23 | 7 | 42.8 | 94.2 | 99.2 | 129.2 | 159.2 | 189.2 | 219.2 | 249.2 | 30 | 20.5 | |

| Code | With Bellows | | | | | | | | | | L | | | | | | | | |
|------|--------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|----|---------------------|
| | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | LR | LS | LT | Y | L | | | | | | | |
| ø20 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 30 | 44 | 3.2 | 149 | 151 | 178 | 205 | 232 | 259 | 286 | 44 | (Stroke / 3) + 6 |
| ø25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 46 | 62 | 3.2 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | (Stroke / 3.25) + 7 |
| ø32 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 46 | 62 | 3.2 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | (Stroke / 3.25) + 7 |
| ø40 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 46 | 62 | 3.2 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | 48 | (Stroke / 3.25) + 7 |

*1: Max. stroke is 50 mm.
 *2: Round up the L dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

●Rod Side Flange Type (FA)



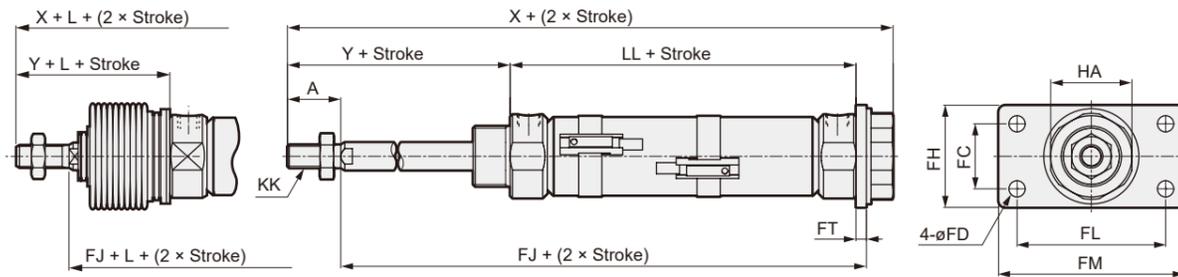
[With Bellows]

| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | | | | | |
|------------|---|----|----|----|------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------|----|----|----|-----|----|------------|
| | Bore Size (mm) | A | FC | FD | FF | FG | | | | | | FH | FL | FM | FT | HA | KK | |
| 25 or less | | | | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | | | | | | | |
| SCP□3 | ø20 | 20 | 20 | 6 | 20.8 | 108.2 | 110.2 | 137.2 | 164.2 | 191.2 | 218.2 | 245.2 | 34 | 40 | 54 | 3.2 | 26 | M8 × 1.0 |
| CMK2 | ø25 | 23 | 28 | 7 | 18.5 | 114.5 | 119.5 | 149.5 | 179.5 | 209.5 | 239.5 | 269.5 | 44 | 64 | 80 | 4.5 | 35 | M10 × 1.25 |
| | ø32 | 23 | 28 | 7 | 18.5 | 114.5 | 119.5 | 149.5 | 179.5 | 209.5 | 239.5 | 269.5 | 44 | 64 | 80 | 4.5 | 35 | M10 × 1.25 |
| CMA2 | ø40 | 25 | 28 | 7 | 18.5 | 118.5 | 123.5 | 153.5 | 183.5 | 213.5 | 243.5 | 273.5 | 44 | 64 | 80 | 4.5 | 35 | M12 × 1.5 |

| Code | Bore Size (mm) | LL | | | | | | | | | | | X | | | | Y | With Bellows | |
|------|----------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|---------------------|--------------|--|
| | | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | L | | | |
| SCM | ø20 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 149 | 151 | 178 | 205 | 232 | 259 | 286 | 44 | (Stroke / 3) + 6 | | |
| SCG | ø25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | (Stroke / 3.25) + 7 | | |
| | ø32 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | (Stroke / 3.25) + 7 | | |
| SCA2 | ø40 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | 48 | (Stroke / 3.25) + 7 | | |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

●Head Side Flange Type (FB)



[With Bellows]

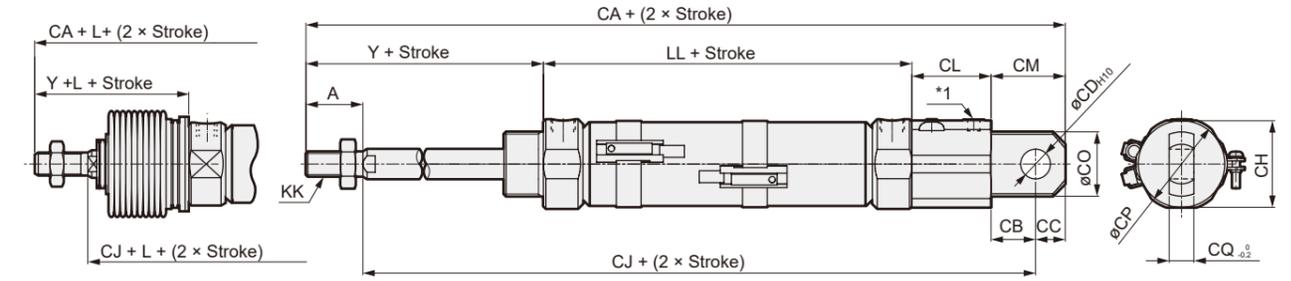
| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | | | | | |
|------------|--|----|----|----|----|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------|----|----|-----|----|------------|
| | Bore Size (mm) | A | FC | FD | FH | FJ | | | | | | FL | FM | FT | HA | KK | |
| 25 or less | | | | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | | | | | | |
| SCP□3 | ø20 | 20 | 20 | 6 | 34 | 118.2 | 120.2 | 147.2 | 174.2 | 201.2 | 228.2 | 255.2 | 40 | 54 | 3.2 | 26 | M8 × 1.0 |
| CMK2 | ø25 | 23 | 28 | 7 | 44 | 121.5 | 126.5 | 156.5 | 186.5 | 216.5 | 246.5 | 276.5 | 64 | 80 | 4.5 | 35 | M10 × 1.25 |
| | ø32 | 23 | 28 | 7 | 44 | 121.5 | 126.5 | 156.5 | 186.5 | 216.5 | 246.5 | 276.5 | 64 | 80 | 4.5 | 35 | M10 × 1.25 |
| CMA2 | ø40 | 25 | 28 | 7 | 44 | 125.5 | 130.5 | 160.5 | 190.5 | 220.5 | 250.5 | 280.5 | 64 | 80 | 4.5 | 35 | M12 × 1.5 |

| Code | Bore Size (mm) | LL | | | | | | | | | | | X | | | | Y | With Bellows | |
|------|----------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|---------------------|--------------|--|
| | | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | L | | | |
| SCM | ø20 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 149 | 151 | 178 | 205 | 232 | 259 | 286 | 44 | (Stroke / 3) + 6 | | |
| SCG | ø25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | (Stroke / 3.25) + 7 | | |
| | ø32 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | (Stroke / 3.25) + 7 | | |
| SCA2 | ø40 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | 48 | (Stroke / 3.25) + 7 | | |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

●Single Clevis Type (CA)



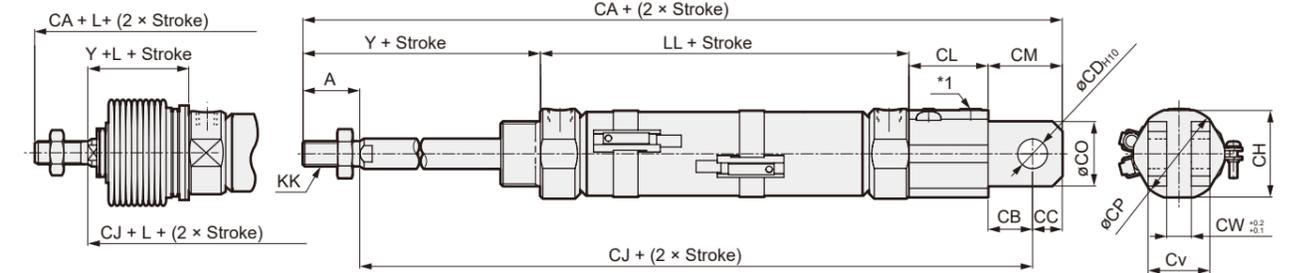
[With Bellows]

| Code | Single Clevis Type (CA) Mounting Dimensions | | | | | | | | | | | | | | | | | | | |
|------------|---|----|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|----|----|----|----|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----|
| | Bore Size (mm) | A | CA | | | | | | | CB | CC | CD | CH | CJ | | | | | | |
| 25 or less | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | 25 or less | | | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | |
| SCP□3 | ø20 | 20 | 190 | 192 | 219 | 246 | 273 | 300 | 327 | 14 | 10 | 10 | 26 | 160 | 162 | 189 | 216 | 243 | 270 | 297 |
| CMK2 | ø25 | 23 | 202 | 207 | 237 | 267 | 297 | 327 | 357 | 18 | 12 | 12 | 35 | 167 | 172 | 202 | 232 | 262 | 292 | 322 |
| | ø32 | 23 | 202 | 207 | 237 | 267 | 297 | 327 | 357 | 18 | 12 | 12 | 35 | 167 | 172 | 202 | 232 | 262 | 292 | 322 |
| CMA2 | ø40 | 25 | 208 | 213 | 243 | 273 | 303 | 333 | 363 | 18 | 12 | 12 | 35 | 171 | 176 | 206 | 236 | 266 | 296 | 326 |

| Code | Bore Size (mm) | CL | CM | CO | CP | CQ | KK | LL | | | | | | Y | With Bellows | |
|------|----------------|----|----|----|----|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----|-----------------------|---------------------|
| | | | | | | | | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | | Over 250, 300 or less | L |
| SCM | ø20 | 31 | 24 | 22 | 28 | 8 | M8 × 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 44 | (Stroke / 3) + 6 |
| SCG | ø25 | 32 | 30 | 26 | 37 | 10 | M10 × 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 46 | (Stroke / 3.25) + 7 |
| | ø32 | 32 | 30 | 26 | 37 | 10 | M10 × 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 46 | (Stroke / 3.25) + 7 |
| SCA2 | ø40 | 32 | 30 | 26 | 37 | 10 | M12 × 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 48 | (Stroke / 3.25) + 7 |

*1: Not a piping port.
 *2: Round up the L dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

●Double clevis type (CB)



[With Bellows]

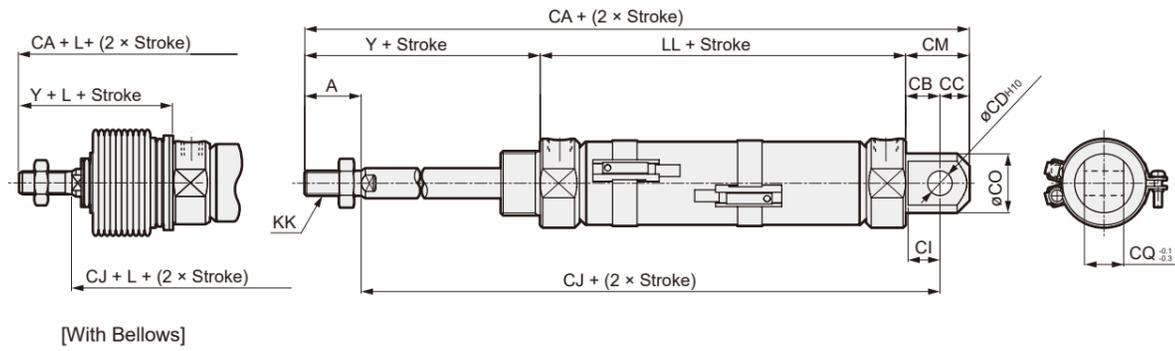
| Code | Double Clevis Type (CB) Mounting Dimensions | | | | | | | | | | | | | | | | | | | |
|------------|---|----|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|----|----|----|----|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----|
| | Bore Size (mm) | A | CA | | | | | | | CB | CC | CD | CH | CJ | | | | | | |
| 25 or less | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | 25 or less | | | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | Over 250, 300 or less | |
| SCP□3 | ø20 | 20 | 190 | 192 | 219 | 246 | 273 | 300 | 327 | 14 | 10 | 10 | 26 | 160 | 162 | 189 | 216 | 243 | 270 | 297 |
| CMK2 | ø25 | 23 | 202 | 207 | 237 | 267 | 297 | 327 | 357 | 18 | 12 | 12 | 35 | 167 | 172 | 202 | 232 | 262 | 292 | 322 |
| | ø32 | 23 | 202 | 207 | 237 | 267 | 297 | 327 | 357 | 18 | 12 | 12 | 35 | 167 | 172 | 202 | 232 | 262 | 292 | 322 |
| CMA2 | ø40 | 25 | 208 | 213 | 243 | 273 | 303 | 333 | 363 | 18 | 12 | 12 | 35 | 171 | 176 | 206 | 236 | 266 | 296 | 326 |

| Code | Bore Size (mm) | CL | CM | CO | CP | Cv | Cw | KK | LL | | | | | | Y | With Bellows | |
|------|----------------|----|----|----|----|----|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----|-----------------------|---------------------|
| | | | | | | | | | 25 or less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or less | Over 150, 200 or less | Over 200, 250 or less | | Over 250, 300 or less | L |
| SCM | ø20 | 31 | 24 | 22 | 28 | 19 | 8 | M8 × 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 44 | (Stroke / 3) + 6 |
| SCG | ø25 | 32 | 30 | 26 | 37 | 25 | 10 | M10 × 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 46 | (Stroke / 3.25) + 7 |
| | ø32 | 32 | 30 | 26 | 37 | 25 | 10 | M10 × 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 46 | (Stroke / 3.25) + 7 |
| SCA2 | ø40 | 32 | 30 | 26 | 37 | 25 | 10 | M12 × 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 48 | (Stroke / 3.25) + 7 |

*1: Not a piping port.
 *2: Round up the L dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

- Single Clevis Integrated Type (CC)
- Single Clevis Bushing Press-fit Type (CC1)



| Code | | | | | | | | | | | | Single Clevis Integrated Type (CC), Bushing Press-fit Type (CC1) Mounting Dimensions | | | | | | | |
|----------------|----|------------|---------------------|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|----|----|----|--|--|--|--|--|--|--|--|
| Bore Size (mm) | A | CA | | | | | | | CB | CC | CD | CI | | | | | | | |
| | | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, to 150 or Less | Over 150, to 200 or Less | Over 200, to 250 or Less | Over 250, to 300 or Less | | | | | | | | | | | |
| ø20 | 20 | 156 | 158 | 185 | 212 | 239 | 266 | 293 | 12 | 9 | 8 | 11 | | | | | | | |
| ø25 | 23 | 161 | 166 | 196 | 226 | 256 | 286 | 316 | 12 | 9 | 8 | 11 | | | | | | | |
| ø32 | 23 | 166 | 171 | 201 | 231 | 261 | 291 | 321 | 14 | 12 | 10 | 13 | | | | | | | |
| ø40 | 25 | 176 | 181 | 211 | 241 | 271 | 301 | 331 | 16 | 14 | 12 | 15 | | | | | | | |

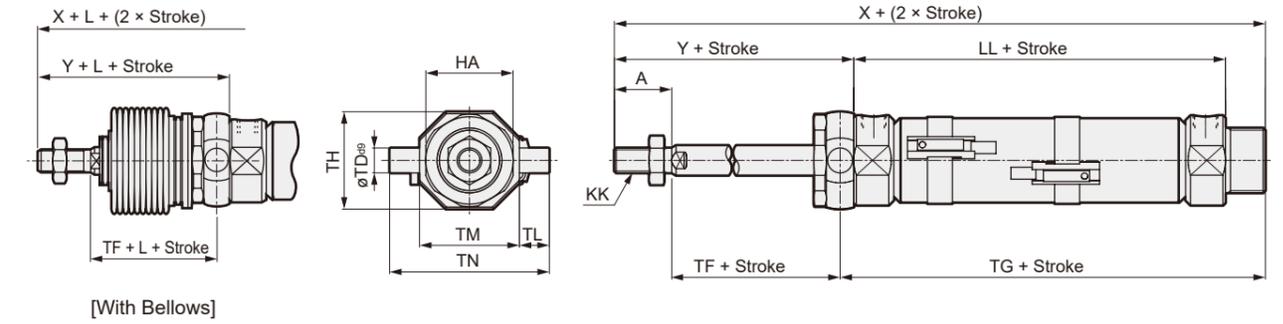
| Code | | | | | | | | | | | | CJ | | | | CM | CO | CQ | KK |
|----------------|------------|---------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----|-----|-----|------------|-----|-----|-----|-----|----|----|----|----------|
| Bore Size (mm) | 25 or Less | Over 25, 50 or less | Over 50, to 100 or Less | Over 100, to 150 or Less | Over 150, to 200 or Less | Over 200, to 250 or Less | Over 250, to 300 or Less | | | | | | | | | | | | |
| | | | | | | | | ø20 | 127 | 129 | 156 | 183 | 210 | 237 | 264 | 21 | 22 | 16 | M8 x 1.0 |
| ø25 | 129 | 134 | 164 | 194 | 224 | 254 | 284 | 21 | 24 | 16 | M10 x 1.25 | | | | | | | | |
| ø32 | 131 | 136 | 166 | 196 | 226 | 256 | 286 | 26 | 24 | 16 | M10 x 1.25 | | | | | | | | |
| ø40 | 137 | 142 | 172 | 202 | 232 | 262 | 292 | 30 | 30 | 20 | M12 x 1.5 | | | | | | | | |

| Code | | | | | | | | | | | | With Bellows | |
|----------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|---------------------|--|--|--------------|--|
| Bore Size (mm) | LL | | | | | | | Y | L | | | | |
| | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | | | | | | |
| ø20 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 44 | (Stroke / 3) + 6 | | | | |
| ø25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 46 | (Stroke / 3.25) + 7 | | | | |
| ø32 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 46 | (Stroke / 3.25) + 7 | | | | |
| ø40 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 48 | (Stroke / 3.25) + 7 | | | | |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

- Rod side trunnion type (TA)

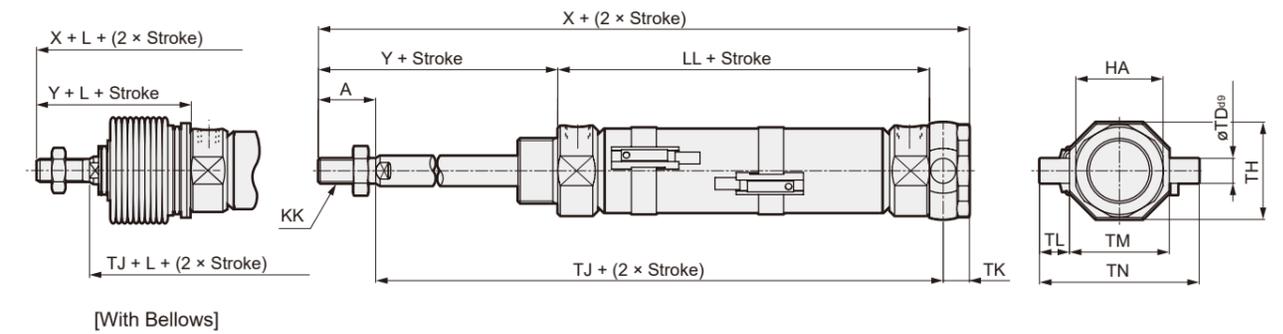


| Code | | | | | | | | | | | | | | | | | | Rod Side Trunnion Type (TA) Mounting Dimensions | | | | | | | | | |
|----------------|----|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|------|-------|---------------------|----------------------|-----------------------|-----------------------|---|-----------------------|--|--|--|--|--|--|--|--|
| Bore Size (mm) | A | HA | KK | LL | | | | | | | | TD | TF | TG | | | | | | | | | | | | | |
| | | | | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | 25 or less | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | | | | | | | | |
| ø20 | 20 | 26 | M8 x 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 8 | 19.5 | 109.5 | 111.5 | 138.5 | 165.5 | 192.5 | 219.5 | 246.5 | | | | | | | | |
| ø25 | 23 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 10 | 17.5 | 115.5 | 120.5 | 150.5 | 180.5 | 210.5 | 240.5 | 270.5 | | | | | | | | |
| ø32 | 23 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 10 | 17.5 | 115.5 | 120.5 | 150.5 | 180.5 | 210.5 | 240.5 | 270.5 | | | | | | | | |
| ø40 | 25 | 35 | M12 x 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 10 | 17.5 | 119.5 | 124.5 | 154.5 | 184.5 | 214.5 | 244.5 | 274.5 | | | | | | | | |

| Code | | | | | | | | | | | | | | | | | | With Bellows | |
|----------------|------|-----|----|----|------------|------------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|---------------------|--|--|--|--|--------------|--|
| Bore Size (mm) | TH | TL | TM | TN | X | | | | | | | Y | L | | | | | | |
| | | | | | 25 or Less | Over 25, to 50 or Less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | | | | | | | | |
| ø20 | 29.5 | 8 | 30 | 46 | 149 | 151 | 178 | 205 | 232 | 259 | 286 | 44 | (Stroke / 3) + 6 | | | | | | |
| ø25 | 39 | 12 | 40 | 64 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | (Stroke / 3.25) + 7 | | | | | | |
| ø32 | 39 | 12 | 40 | 64 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | (Stroke / 3.25) + 7 | | | | | | |
| ø40 | 44 | 9.5 | 53 | 72 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | 48 | (Stroke / 3.25) + 7 | | | | | | |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

- Head Side Trunnion Type (TB)



| Code | | | | | | | | | | | | | | | | | | Head Side Trunnion Type (TB) Mounting Dimensions | | | | | | | | | |
|----------------|----|----|------------|------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|------|-------|---------------------|----------------------|-----------------------|-----------------------|--|-----------------------|--|--|--|--|--|--|--|--|
| Bore Size (mm) | A | HA | KK | LL | | | | | | | | TD | TH | TJ | | | | | | | | | | | | | |
| | | | | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | 25 or less | | | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | | | | | | | | |
| ø20 | 20 | 26 | M8 x 1.0 | 91 | 93 | 120 | 147 | 174 | 201 | 228 | 8 | 29.5 | 119.5 | 121.5 | 148.5 | 175.5 | 202.5 | 229.5 | 256.5 | | | | | | | | |
| ø25 | 23 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 10 | 39 | 122.5 | 127.5 | 157.5 | 187.5 | 217.5 | 247.5 | 277.5 | | | | | | | | |
| ø32 | 23 | 35 | M10 x 1.25 | 94 | 99 | 129 | 159 | 189 | 219 | 249 | 10 | 39 | 122.5 | 127.5 | 157.5 | 187.5 | 217.5 | 247.5 | 277.5 | | | | | | | | |
| ø40 | 25 | 35 | M12 x 1.5 | 98 | 103 | 133 | 163 | 193 | 223 | 253 | 10 | 44 | 126.5 | 131.5 | 161.5 | 191.5 | 221.5 | 251.5 | 281.5 | | | | | | | | |

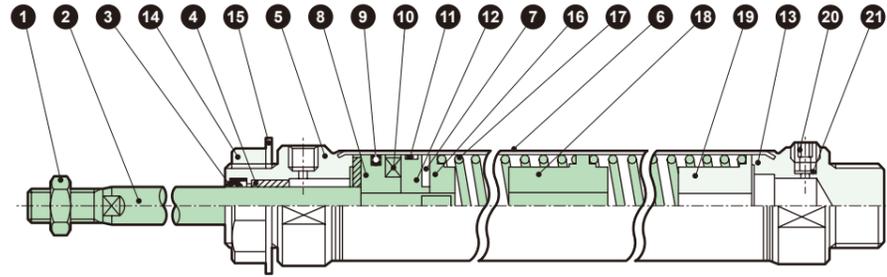
| Code | | | | | | | | | | | | | | | | | | With Bellows | |
|----------------|------|-----|----|----|------------|------------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|---------------------|--|--|--|--|--------------|--|
| Bore Size (mm) | TK | TL | TM | TN | X | | | | | | | Y | L | | | | | | |
| | | | | | 25 or Less | Over 25, to 50 or Less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | | | | | | | | |
| ø20 | 9.5 | 8 | 30 | 46 | 149 | 151 | 178 | 205 | 232 | 259 | 286 | 44 | (Stroke / 3) + 6 | | | | | | |
| ø25 | 10.5 | 12 | 40 | 64 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | (Stroke / 3.25) + 7 | | | | | | |
| ø32 | 10.5 | 12 | 40 | 64 | 156 | 161 | 191 | 221 | 251 | 281 | 311 | 46 | (Stroke / 3.25) + 7 | | | | | | |
| ø40 | 10.5 | 9.5 | 53 | 72 | 162 | 167 | 197 | 227 | 257 | 287 | 317 | 48 | (Stroke / 3.25) + 7 | | | | | | |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

CMK2-SR Series

Internal Structure Diagram / Material

● CMK2-SR



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|--|--------------------------------|----------|---------------------------|------------------|---------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 11 | Wear Ring | Polyacetal Resin | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel ø32, ø40: Carbon Steel | Industrial Hard Chrome Plating | 12 | Piston B | Aluminum Alloy | |
| 3 | Rod Packing | Nitrile Rubber | | 13 | Head Cover | Aluminum Alloy | |
| 4 | Bushing | ø20: Bearing Alloy ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 14 | Nut | Steel | Zinc Chromate |
| 5 | Rod Cover | Aluminum Alloy | | 15 | Toothed Lock Washer | Steel | Zinc Chromate |
| 6 | Cylinder Tube | Stainless Steel | | 16 | Spring Retainer | Aluminum Alloy | |
| 7 | Cushion Rubber | Urethane Rubber | | 17 | Spring | Piano Wire | Painting |
| 8 | Piston A | Aluminum Alloy | | 18 | Spring Retainer | Aluminum Alloy | |
| 9 | Piston Packing | Nitrile Rubber | | 19 | Spring Retainer | Aluminum Alloy | |
| 10 | Magnet | Plastic | | 20 | Plug | Steel | Zinc Chromate |
| | | | | 21 | Stainless Steel Wire Mesh | Stainless Steel | |

MEMO

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

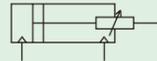


Small bore size cylinder
Double Acting, Stroke Adjustment Type (Push)

CMK2-P Series

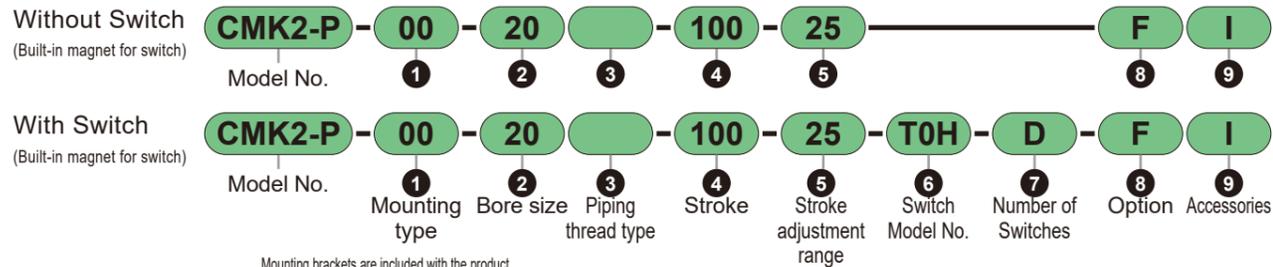
● Bore size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2-P Series Model No. Notation Method

Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Content | |
|------|-------------------------------|--|
| 00 | Basic type | |
| LB | Axial Foot Type (Both Sides) | |
| LS | Axial Foot Type (Single Side) | |
| FA | Rod Side Flange Type | |
| FB | Head Side Flange Type | |
| TA | Rod Side Trunnion Type | |
| TB | Head Side Trunnion Type | |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|-----------|---------------------|
| $\phi 20$ | 25 to 450 | Every 1 mm |
| $\phi 25$ | 25 to 450 | |
| $\phi 32$ | 25 to 430 | |
| $\phi 40$ | 25 to 400 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 152.

5 Stroke adjustment range (mm)

| Code | Content |
|------|---------|
| 25 | 25 |
| 50 | 50 |

6 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | | | |
|-------------|---------------------------------|-----------------|------------------------|--------------|-------------------|-------------|--------------|------------|--|-------|
| | | | AC | DC | AC | DC | Straight | L-shape | | |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ | | |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ | | |
| | | | — | — | — | 100 or less | T3H□ | T3V□ | | |
| | | 3-wire (NPN) | — | 30 or less | — | 50 or less | T3PH□ | T3PV□ | | |
| | | | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WH□ | | T2WV□ |
| | | | | 3-wire (NPN) | — | 30 or less | — | 50 or less | | T3WH□ |
| Reed | No Indicator Lamp | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ | | |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ | | |
| | | 1-Color | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | | |
| | | | 1-Color Off-Delay Type | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | | T2VR3 |
| 1-Color | Flexible Lead Wire Type | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ | | |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ | | |
| 1-Color | — | 2-wire | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ | | |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|--|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H □
3 m T0H □
5 m T0H □

7 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

9 Accessories

| Code | Content | |
|------|---|--|
| I | Single Knuckle | |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) | |
| B2 | Double Yoke Bracket (Pin and retaining ring included) | |

*1: "I" and "Y" cannot be selected at the same time.

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -T2 | Fluorine Packing Type |
| -A2 | With 2 Rod Nuts |
| -O | Low Speed Type |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-P-.....-XJ9

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food-grade lubricant usable in food manufacturing processes

CMK2-P-.....-FP1

*For combinations of variations and options, see P. 109.

8 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature | |
|-------|---------------------------------------|--------------------------|--------------------------------|--|
| J | Bellows | 100°C | 200°C | |
| L | | 250°C | 400°C | |
| *1 F | With Push-in Fitting (Straight) | | | |
| *1 FE | With Push-in Fitting (Elbow) | | | |
| *3 M | Piston Rod Material (Stainless Steel) | | | |

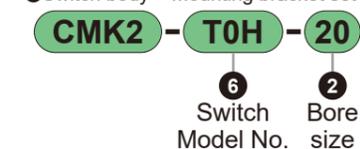
*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.

*2: Instantaneous maximum temperature is the temperature when fire, chips, etc. momentarily contact the bellows.

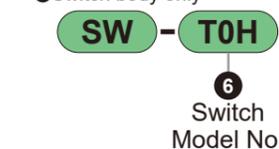
*3: When Bore size $\phi 20$ or 25 is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

Switch Single Unit Model No. Notation Method

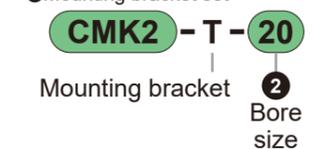
● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

Specifications

| Item | CMK2-P | | | | |
|---------------------------|---|--|-------|-------|-------|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | Double Acting, Stroke Adjustment Type (Push) | | | | |
| Operating Fluid | Compressed Air | | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.15 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | Rc1/8 | | | | |
| Stroke tolerance | mm | ^{+2.0} ₀ (Up to 200), ^{+2.4} ₀ (Over 200.) | | | |
| Operating Piston Speed | mm/s | 50 to 500 | | | |
| Cushion | Rubber Cushion | | | | |
| Lubrication | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | | |
| Stroke adjustment range | mm | Max. 50 | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Adjustment Stroke | Product Weight at Stroke (S) = 0 mm | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Per S=10 mm Added Weight |
|---------------------|-------------------|-------------------------------------|----------------------|----------------------|----------------|-----------------------|--|---------------------------|--------------------------|
| | | Basic type (00) | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange (FA/FB) | Trunnion Type (TA/TB) | | | |
| ø20 | 25 | 0.23 | 0.38 | 0.31 | 0.29 | 0.28 | Refer to the mass described in the switch specifications on P. 971 | 0.005 | 0.01 |
| | 50 | 0.26 | 0.41 | 0.34 | 0.32 | 0.31 | | | |
| ø25 | 25 | 0.41 | 0.67 | 0.54 | 0.56 | 0.51 | | 0.005 | 0.01 |
| | 50 | 0.49 | 0.75 | 0.62 | 0.64 | 0.59 | | | |
| ø32 | 25 | 0.45 | 0.71 | 0.58 | 0.60 | 0.55 | | 0.009 | 0.02 |
| | 50 | 0.52 | 0.78 | 0.65 | 0.67 | 0.62 | | | |
| ø40 | 25 | 0.63 | 0.89 | 0.76 | 0.78 | 0.79 | | 0.009 | 0.02 |
| | 50 | 0.71 | 0.97 | 0.84 | 0.86 | 0.87 | | | |

(Example) Product Weight of CMK2-P-FA-32-50-25T0H-D

Product Weight at S = 0 mm 0.60 kg

Added weight at S=50 mm.... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg

Weight of 2 switches: 0.036 kg

Weight of switch rail + 2 bands: 0.018 kg

Product weight 0.60 kg+0.1 kg+0.036 kg+0.018 kg=0.754 kg

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|-------------------------------------|-----------------|--------------|-----------------|--------------|
| | | Without Bellows | With Bellows | Without Bellows | With Bellows |
| ø20 | 25, 50, 75, 100, 150, 200, 250, 300 | 430 | 350 | 25 | 25 |
| ø25 | | | | | |
| ø32 | | | | | |
| ø40 | | 400 | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.
 *2: Single side foot type (LS type) has a maximum stroke of 50 mm.
 *3: For strokes less than 25 mm, please inquire each time.

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | |
|----------------|---------------------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push/Pull | 35.3 | 47.1 | 70.7 | 94.2 | 1.18×10^2 | 1.41×10^2 | 1.65×10^2 | 1.88×10^2 | 2.12×10^2 | 2.36×10^2 |
| ø25 | Push/Pull | 56.7 | 75.6 | 1.13×10^2 | 1.51×10^2 | 1.89×10^2 | 2.27×10^2 | 2.64×10^2 | 3.02×10^2 | 3.40×10^2 | 3.78×10^2 |
| ø32 | Push/Pull | 1.04×10^2 | 1.38×10^2 | 2.07×10^2 | 2.76×10^2 | 3.46×10^2 | 4.15×10^2 | 4.84×10^2 | 5.53×10^2 | 6.22×10^2 | 6.91×10^2 |
| ø40 | Push/Pull | 1.65×10^2 | 2.21×10^2 | 3.31×10^2 | 4.41×10^2 | 5.51×10^2 | 6.62×10^2 | 7.72×10^2 | 8.82×10^2 | 9.92×10^2 | 1.10×10^3 |

Min. Stroke with Switch

(Unit: mm)

| Number of Switches | 1 | | | | | | 2 | | | | | |
|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|--|--|
| | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| Bore Size (mm) | | | | | | | | | | | | |
| ø20 | 25 | | | 25 | | | 30 | | | 35 | | |
| ø25 | 25 | | | 25 | | | 30 | | | 35 | | |
| ø32 | 25 | | | 25 | | | 30 | | | 35 | | |
| ø40 | 25 | | | 25 | | | 30 | | | 35 | | |

Mounting Bracket Model No. Notation Method

| Bore Size (mm) | Mounting bracket | ø20 | ø25 | ø32 | ø40 |
|-------------------------|------------------|----------|----------|----------|----------|
| Basic Type (00) | *3 | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |

*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
 *2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.
 *3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

General Type

General Type

SCP□3

SCP□3

CMK2

CMK2

CMA2

CMA2

SCM

SCM

SCG

SCG

SCA2

SCA2

SCS2

SCS2

Cylinder Switch

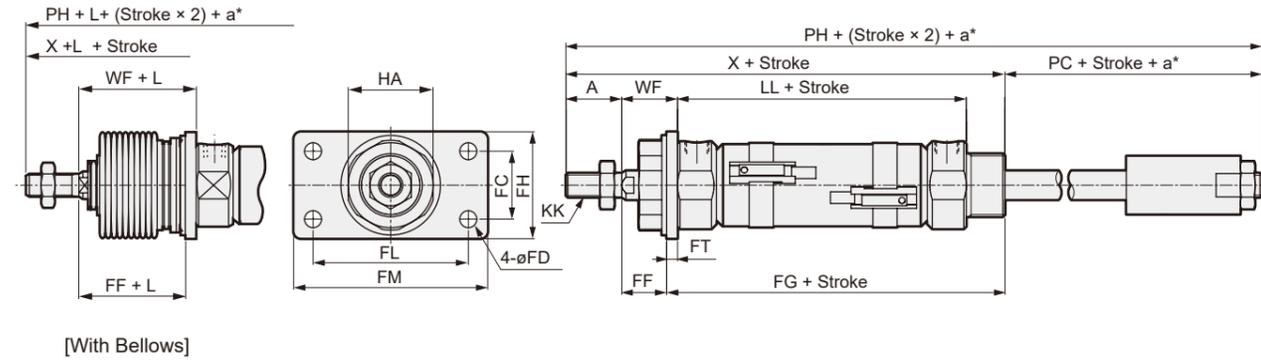
Cylinder Switch

Ending

Ending

Outline Dimension Drawing

● Rod Side Flange Type (FA)



General Type

SCP3

CMK2

CMA2

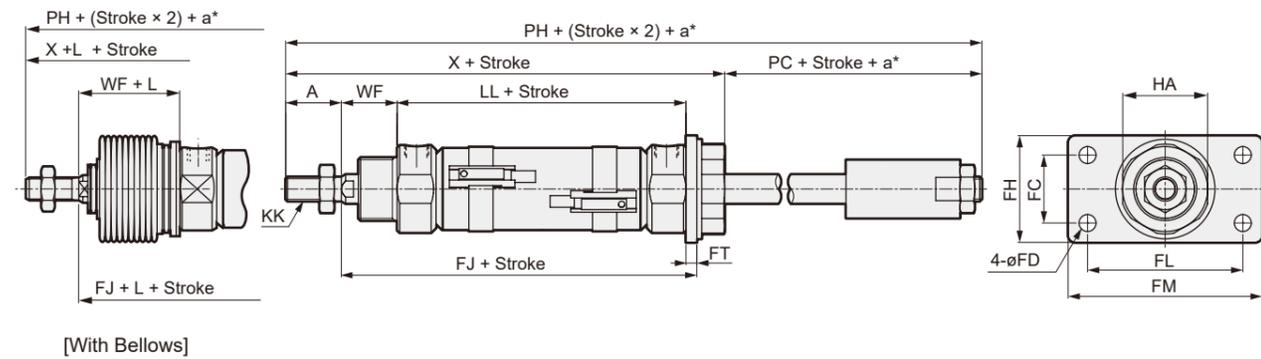
SCM

SCG

SCA2

SCS2

● Head Side Flange Type (FB)



* "a" is the adjustment stroke.

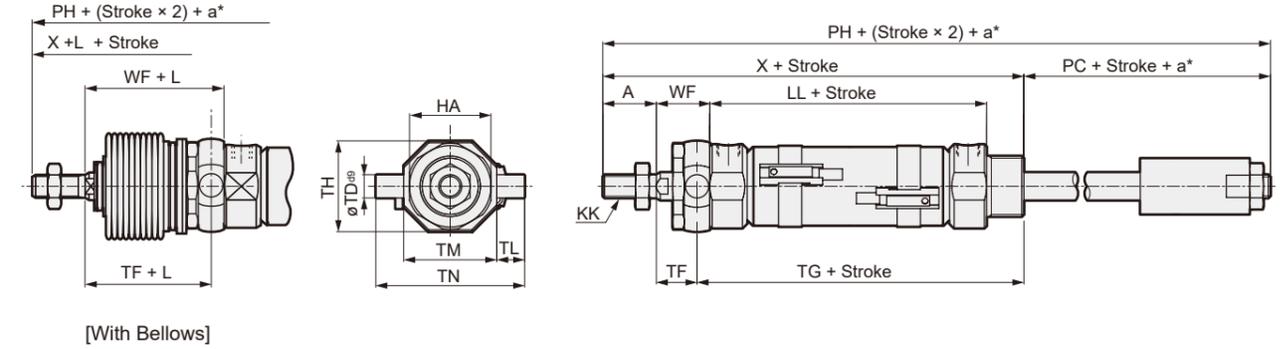
| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | | | | With Bellows | |
|----------------|--|----|----|----|-------|----|----|-----|----|------------|----|----|-----|----|-----|---------------------|--|
| Bore Size (mm) | A | FC | FD | FH | FJ | FL | FM | FT | HA | KK | LL | PC | PH | WF | X | L | |
| ø20 | 20 | 20 | 6 | 34 | 93.2 | 40 | 54 | 3.2 | 26 | M8 x 1.0 | 66 | 29 | 153 | 24 | 124 | (Stroke / 3) + 6 | |
| ø25 | 23 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | 35 | M10 x 1.25 | 69 | 31 | 162 | 23 | 131 | (Stroke / 3.25) + 7 | |
| ø32 | 23 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | 35 | M10 x 1.25 | 69 | 31 | 162 | 23 | 131 | (Stroke / 3.25) + 7 | |
| ø40 | 25 | 28 | 7 | 44 | 100.5 | 64 | 80 | 4.5 | 35 | M12 x 1.5 | 73 | 32 | 169 | 23 | 137 | (Stroke / 3.25) + 7 | |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Double Acting, Stroke Adjustment Type (Push)

Outline Dimension Drawing

● Rod side trunnion type (TA)



General Type

SCP3

CMK2

CMA2

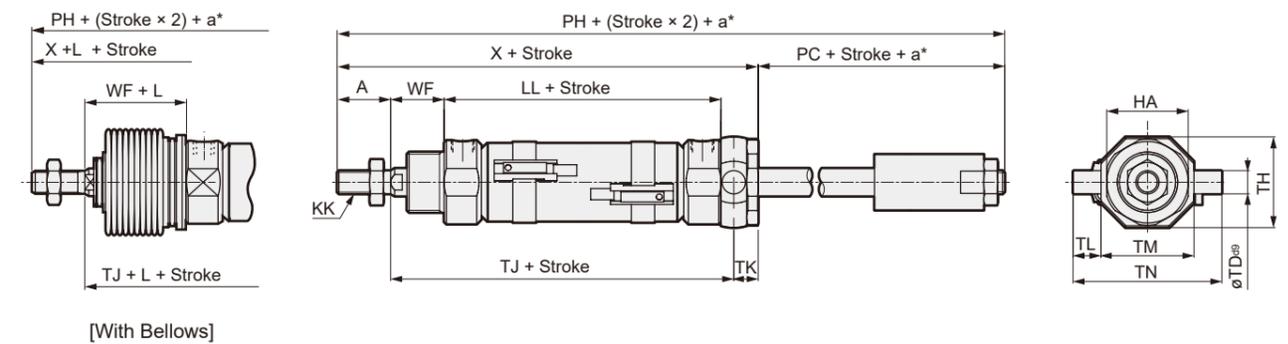
SCM

SCG

SCA2

SCS2

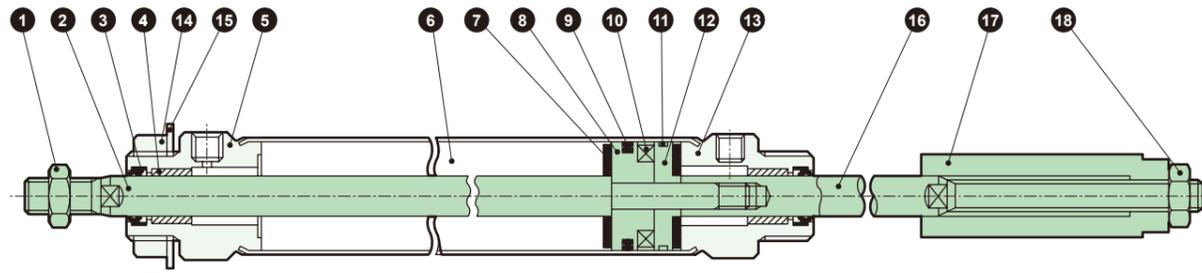
● Head Side Trunnion Type (TB)



* "a" is the adjustment stroke.

| Code | Head Side Trunnion Type (TB) Mounting Dimensions | | | | | | | | | | | | | | | With Bellows | |
|----------------|--|----|------------|----|----|------|-------|------|-----|----|----|----|-----|----|-----|---------------------|--|
| Bore Size (mm) | A | HA | KK | LL | TD | TH | TJ | TK | TL | TM | TN | PC | PH | WF | X | L | |
| ø20 | 20 | 26 | M8 x 1.0 | 66 | 8 | 29.5 | 94.5 | 9.5 | 8 | 30 | 46 | 29 | 153 | 24 | 124 | (Stroke / 3) + 6 | |
| ø25 | 23 | 35 | M10 x 1.25 | 69 | 10 | 39 | 97.5 | 10.5 | 12 | 40 | 64 | 31 | 162 | 23 | 131 | (Stroke / 3.25) + 7 | |
| ø32 | 23 | 35 | M10 x 1.25 | 69 | 10 | 39 | 97.5 | 10.5 | 12 | 40 | 64 | 31 | 162 | 23 | 131 | (Stroke / 3.25) + 7 | |
| ø40 | 25 | 35 | M12 x 1.5 | 73 | 10 | 44 | 101.5 | 10.5 | 9.5 | 53 | 72 | 32 | 169 | 23 | 137 | (Stroke / 3.25) + 7 | |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|---|-----------------------------------|----------|---------------------|---|-----------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 10 | Magnet | Plastic | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel ø32, ø40: Carbon Steel | Industrial Hard Chrome Plating | 11 | Wear Ring | Polyacetal | |
| 3 | Rod Packing | Nitrile Rubber | | 12 | Piston B | Aluminum Alloy | |
| 4 | Bushing | ø20: Bearing Alloy ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 13 | Head Cover | Aluminum Alloy | |
| 5 | Rod Cover | Aluminum Alloy | | 14 | Nut | Steel | Zinc Chromate |
| 6 | Cylinder Tube | Stainless Steel | | 15 | Toothed Lock Washer | Steel | Zinc Chromate |
| 7 | Cushion Rubber | Urethane Rubber | | 16 | Piston Rod B | ø20, ø25: Stainless Steel ø32, ø40: Carbon Steel | Industrial Hard Chrome Plating |
| 8 | Piston A | Aluminum Alloy | | 17 | Adjusting Stopper | Steel | Zinc Chromate |
| 9 | Piston Packing | Nitrile Rubber | | 18 | Lock Nut | Steel | Zinc Chromate |

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending



Small bore size cylinder
Double Acting, Stroke Adjustment Type (Pull)

CMK2-R Series

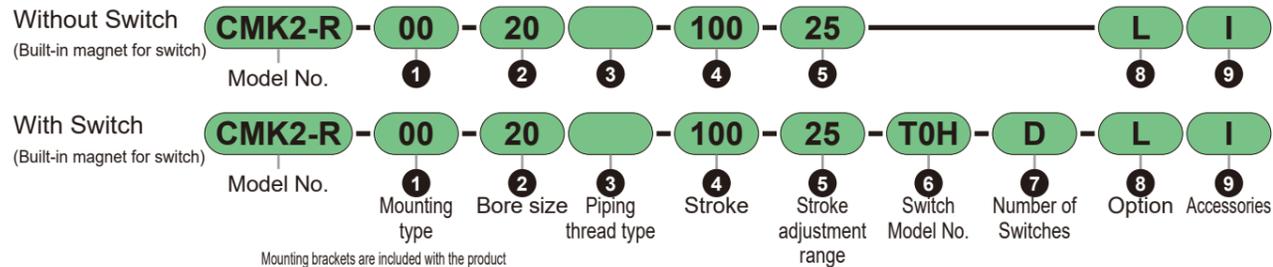
● Bore Size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2-R Series Model No. Notation Method

Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Content |
|------|-------------------------------|
| 00 | Basic type |
| LB | Axial Foot Type (Both Sides) |
| LS | Axial Foot Type (Single Side) |
| FA | Rod Side Flange Type |
| FB | Head Side Flange Type |
| TA | Rod Side Trunnion Type |
| TB | Head Side Trunnion Type |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|-----------|---------------------|
| $\phi 20$ | 25 to 750 | Every 1 mm |
| $\phi 25$ | 25 to 750 | |
| $\phi 32$ | 25 to 750 | |
| $\phi 40$ | 25 to 750 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 162.

5 Stroke adjustment range (mm)

| Code | Content |
|------|---------|
| 25 | 25 |
| 50 | 50 |

6 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | |
|------------------------|---------------------------------|-----------------|------------------|------------|-------------------|-------------|--------------|---------|
| | | | AC | DC | AC | DC | Straight | L-shape |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ |
| | | | — | 30 or less | — | 100 or less | T3H□ | T3V□ |
| | 2-Color | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WH□ | T2WV□ |
| | | | — | 30 or less | — | 50 or less | T3WH□ | T3WV□ |
| | | | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ |
| 1-Color Off-Delay Type | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | |
| Reed | No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ |
| | 1-Color | 2-wire | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|--|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H □
5 m T0H □

7 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

9 Accessories

| Code | Content |
|------|---|
| I | Single Knuckle |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) |
| B2 | Double Yoke Bracket (Pin and retaining ring included) |

*1: "I" and "Y" cannot be selected at the same time.

8 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature |
|------|---------------------------------------|--------------------------|--------------------------------|
| J | Bellows | 100°C | 200°C |
| L | | 250°C | 400°C |
| F | With Push-in Fitting (Straight) | | |
| FE | With Push-in Fitting (Elbow) | | |
| M | Piston Rod Material (Stainless Steel) | | |

*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.

*2: Instantaneous maximum temperature is the temperature when fire, chips, etc. momentarily contact the bellows.

*3: When Bore size $\phi 20$ or 25 is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

About Custom Product Specifications

For details, see P. 287.

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food-grade lubricant usable in food manufacturing processes

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -T2 | Fluorine Packing Type |
| -A2 | With 2 Rod Nuts |
| -O | Low Speed Type |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

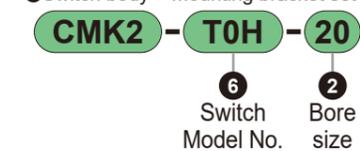
CMK2-R-.....-XJ9

CMK2-R-.....-FP1

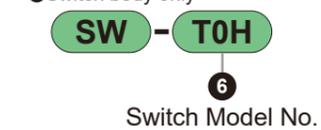
*For combinations of variations and options, see P. 109.

Switch Single Unit Model No. Notation Method

● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



General Type

SCP□3

CMK2

CMA2

SCM

*1

SCG

SCA2

SCS2

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

Cylinder Switch

Ending

Specifications

| Item | CMK2-R | | | | |
|---------------------------|--------|---|-------|-------|-------|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | | Double Acting, Stroke Adjustment Type (Pull) | | | |
| Operating Fluid | | Compressed Air | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.1 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | | Rc1/8 | | | |
| Stroke tolerance | mm | $^{+2.0}_0$ (Up to 200), $^{+2.4}_0$ (Over 200,) | | | |
| Operating Piston Speed | mm/s | 50 to 500 | | | |
| Cushion | | Rubber Cushion | | | |
| Lubrication | | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | |
| Stroke adjustment range | mm | Max. 50 | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Adjustment Stroke | Product Weight at Stroke (S) = 0 mm | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------|-------------------------------------|----------------------|----------------------|----------------|-----------------------|--|---------------------------|----------------------------|
| | | Basic type (00) | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange (FA/FB) | Trunnion Type (TA/TB) | | | |
| ø20 | 25 | 0.20 | 0.35 | 0.28 | 0.26 | 0.25 | Refer to the mass described in the switch specifications on P. 971 | 0.005 | 0.01 |
| | 50 | 0.20 | 0.35 | 0.28 | 0.26 | 0.25 | | | |
| ø25 | 25 | 0.35 | 0.61 | 0.48 | 0.50 | 0.45 | | 0.005 | 0.01 |
| | 50 | 0.37 | 0.63 | 0.50 | 0.52 | 0.47 | | | |
| ø32 | 25 | 0.39 | 0.65 | 0.52 | 0.54 | 0.49 | | 0.009 | 0.02 |
| | 50 | 0.41 | 0.67 | 0.54 | 0.56 | 0.51 | | | |
| ø40 | 25 | 0.58 | 0.84 | 0.71 | 0.73 | 0.74 | | 0.009 | 0.02 |
| | 50 | 0.60 | 0.86 | 0.73 | 0.75 | 0.76 | | | |

(Example) Product Weight of CMK2-R-FA-32-50-25T0H-D

Product Weight at S = 0 mm.....0.54 kg
 Added weight at S=50 mm..... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg
 Weight of 2 switches:0.036 kg
 Weight of switch rail + 2 bands:0.018 kg
 Product weight0.54 kg+0.1 kg+0.036 kg+0.018 kg=0.694 kg

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|-------------------------------------|-----------------|--------------|-----------------|--------------|
| | | Without Bellows | With Bellows | Without Bellows | With Bellows |
| ø20 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 650 | 25 | 25 |
| ø25 | | | | | |
| ø32 | | | | | |
| ø40 | | | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.
 *2: Single side foot type (LS type) has a maximum stroke of 50 mm.
 *3: For strokes less than 25 mm, please inquire each time.

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | | |
|----------------|---------------------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 31.4 | 47.1 | 62.8 | 94.2 | 1.26×10^2 | 1.57×10^2 | 1.88×10^2 | 2.20×10^2 | 2.51×10^2 | 2.83×10^2 | 3.14×10^2 |
| | Pull | 23.6 | 35.3 | 47.1 | 70.7 | 94.2 | 1.18×10^2 | 1.41×10^2 | 1.65×10^2 | 1.88×10^2 | 2.12×10^2 | 2.36×10^2 |
| ø25 | Push | 49.1k | 73.6 | 98.2 | 1.47×10^2 | 1.96×10^2 | 2.45×10^2 | 2.95×10^2 | 3.44×10^2 | 3.93×10^2 | 4.42×10^2 | 4.91×10^2 |
| | Pull | 37.8 | 56.7 | 75.6 | 1.13×10^2 | 1.51×10^2 | 1.89×10^2 | 2.27×10^2 | 2.64×10^2 | 3.02×10^2 | 3.40×10^2 | 3.78×10^2 |
| ø32 | Push | 80.4 | 1.21×10^2 | 1.61×10^2 | 2.41×10^2 | 3.22×10^2 | 4.02×10^2 | 4.83×10^2 | 5.63×10^2 | 6.43×10^2 | 7.24×10^2 | 8.04×10^2 |
| | Pull | 69.1 | 1.04×10^2 | 1.38×10^2 | 2.07×10^2 | 2.76×10^2 | 3.46×10^2 | 4.15×10^2 | 4.84×10^2 | 5.53×10^2 | 6.22×10^2 | 6.91×10^2 |
| ø40 | Push | 1.26×10^2 | 1.88×10^2 | 2.51×10^2 | 3.77×10^2 | 5.03×10^2 | 6.28×10^2 | 7.54×10^2 | 8.80×10^2 | 1.01×10^3 | 1.13×10^3 | 1.26×10^3 |
| | Pull | 1.10×10^2 | 1.65×10^2 | 2.21×10^2 | 3.31×10^2 | 4.41×10^2 | 5.51×10^2 | 6.62×10^2 | 7.72×10^2 | 8.82×10^2 | 9.92×10^2 | 1.10×10^3 |

Min. Stroke with Switch

(Unit: mm)

| Number of Switches | 1 | | | | | | 2 | | | | | |
|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|--|--|
| | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| ø20 | 25 | | | 25 | | | 30 | | | 35 | | |
| ø25 | 25 | | | 25 | | | 30 | | | 35 | | |
| ø32 | 25 | | | 25 | | | 30 | | | 35 | | |
| ø40 | 25 | | | 25 | | | 30 | | | 35 | | |

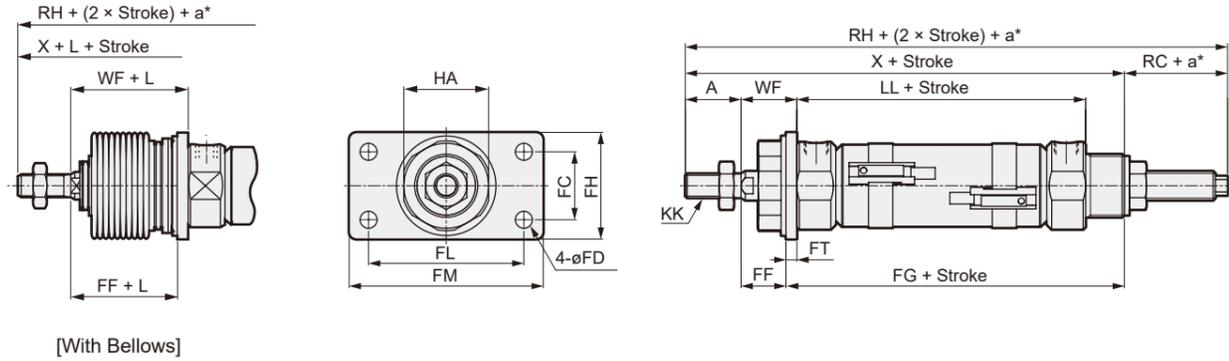
Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|----------|----------|----------|----------|
| Mounting bracket | | | | |
| Basic Type (00) | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |

*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
 *2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.
 *3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

Outline Dimension Drawing

● Rod Side Flange Type (FA)



* "a" is the adjustment stroke.

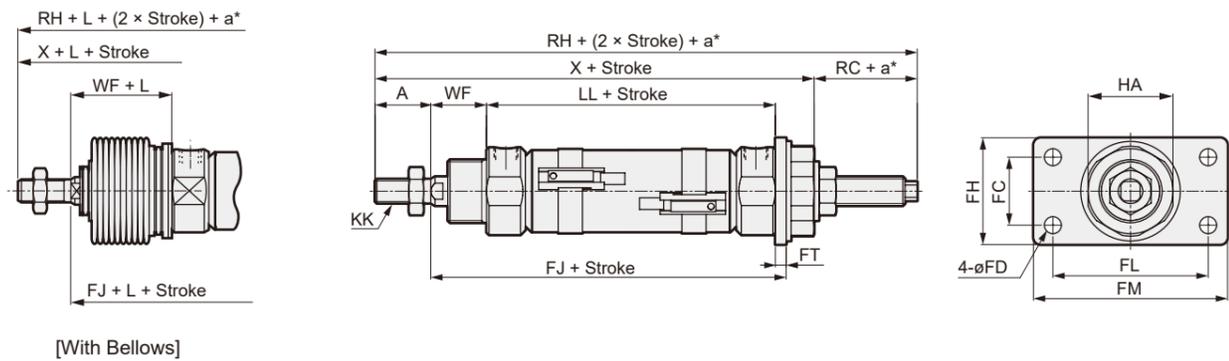
| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | | | | With Bellows | |
|------|---|----|----|----|------|------|----|----|----|-----|----|------------|----|------|-------|----|--------------|---------------------|
| | Bore Size (mm) | A | FC | FD | FF | FG | FH | FL | FM | FT | HA | KK | LL | RC | RH | WF | X | L |
| CMA2 | ø20 | 20 | 20 | 6 | 20.8 | 83.2 | 34 | 40 | 54 | 3.2 | 26 | M8 × 1.0 | 66 | 11 | 135 | 24 | 124 | (Stroke / 3) + 6 |
| | ø25 | 23 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 | 35 | M10 × 1.25 | 69 | 17.5 | 148.5 | 23 | 131 | (Stroke / 3.25) + 7 |
| | ø32 | 23 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 | 35 | M10 × 1.25 | 69 | 17.5 | 148.5 | 23 | 131 | (Stroke / 3.25) + 7 |
| SCM | ø40 | 25 | 28 | 7 | 18.5 | 93.5 | 44 | 64 | 80 | 4.5 | 35 | M12 × 1.5 | 73 | 16 | 153 | 23 | 137 | (Stroke / 3.25) + 7 |

*1: Round up the L dimension to the nearest whole number.

*2: For dimensions with each switch, see P. 284 to P. 286.

*3: For outer dimensions diagram of accessories, refer to P. 123.

● Head Side Flange Type (FB)



* "a" is the adjustment stroke.

| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | | | | | With Bellows |
|-----------------|--|----|----|----|----|-------|----|----|-----|----|------------|----|------|-------|----|-----|---------------------|
| | Bore Size (mm) | A | FC | FD | FH | FJ | FL | FM | FT | HA | KK | LL | RC | RH | WF | X | L |
| Cylinder Switch | ø20 | 20 | 20 | 6 | 34 | 93.2 | 40 | 54 | 3.2 | 26 | M8 × 1.0 | 66 | 11 | 135 | 24 | 124 | (Stroke / 3) + 6 |
| | ø25 | 23 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | 35 | M10 × 1.25 | 69 | 17.5 | 148.5 | 23 | 131 | (Stroke / 3.25) + 7 |
| | ø32 | 23 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | 35 | M10 × 1.25 | 69 | 17.5 | 148.5 | 23 | 131 | (Stroke / 3.25) + 7 |
| Ending | ø40 | 25 | 28 | 7 | 44 | 100.5 | 64 | 80 | 4.5 | 35 | M12 × 1.5 | 73 | 16 | 153 | 23 | 137 | (Stroke / 3.25) + 7 |

*1: Round up the L dimension to the nearest whole number.

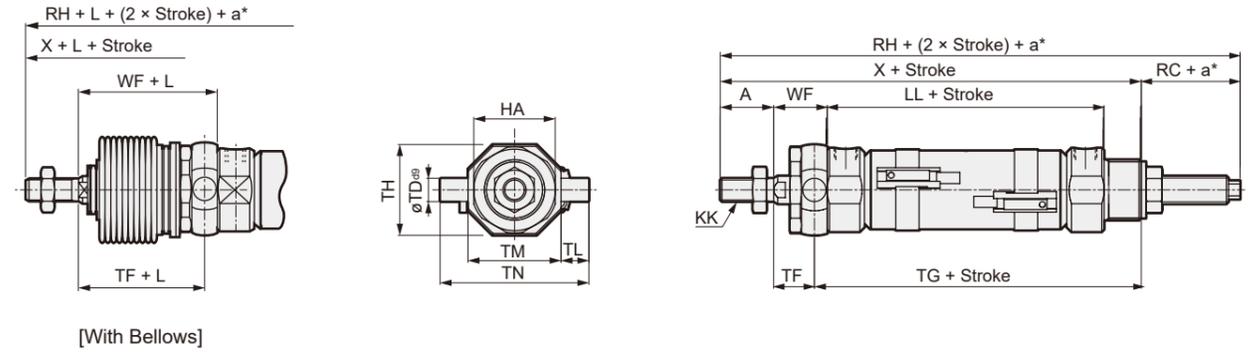
*2: For dimensions with each switch, see P. 284 to P. 286.

*3: For outer dimensions diagram of accessories, refer to P. 123.

Double Acting, Stroke Adjustment Type (Pull)

Outline Dimension Drawing

● Rod side trunnion type (TA)



* "a" is the adjustment stroke.

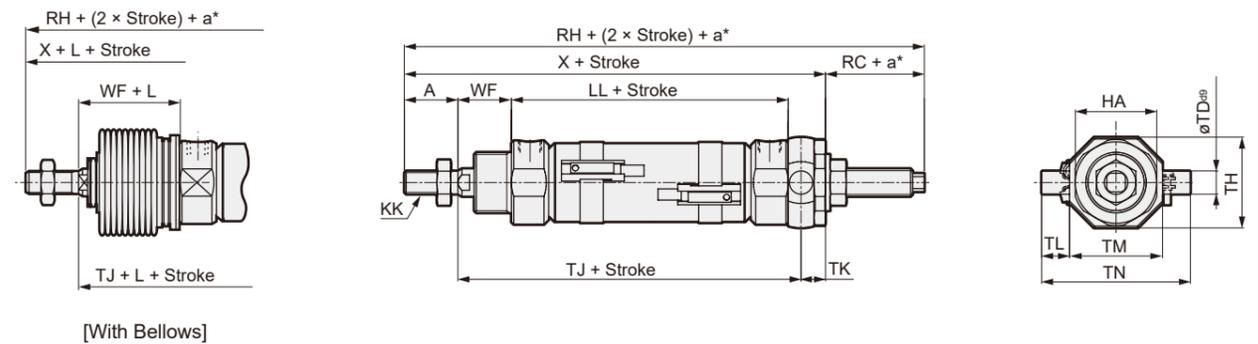
| Code | Rod Side Trunnion Type (TA) Mounting Dimensions | | | | | | | | | | | | | | | | With Bellows |
|------|---|----|----|------------|----|----|------|------|------|-----|----|----|------|-------|----|-----|---------------------|
| | Bore Size (mm) | A | HA | KK | LL | TD | TF | TG | TH | TL | TM | TN | RC | RH | WF | X | L |
| CMA2 | ø20 | 20 | 26 | M8 × 1.0 | 66 | 8 | 19.5 | 84.5 | 29.5 | 8 | 30 | 46 | 11 | 135 | 24 | 124 | (Stroke / 3) + 6 |
| | ø25 | 23 | 35 | M10 × 1.25 | 69 | 10 | 17.5 | 90.5 | 39 | 12 | 40 | 64 | 17.5 | 148.5 | 23 | 131 | (Stroke / 3.25) + 7 |
| | ø32 | 23 | 35 | M10 × 1.25 | 69 | 10 | 17.5 | 90.5 | 39 | 12 | 40 | 64 | 17.5 | 148.5 | 23 | 131 | (Stroke / 3.25) + 7 |
| SCM | ø40 | 25 | 35 | M12 × 1.5 | 73 | 10 | 17.5 | 94.5 | 44 | 9.5 | 53 | 72 | 16 | 153 | 23 | 137 | (Stroke / 3.25) + 7 |

*1: Round up the L dimension to the nearest whole number.

*2: For dimensions with each switch, see P. 284 to P. 286.

*3: For outer dimensions diagram of accessories, refer to P. 123.

● Head Side Trunnion Type (TB)



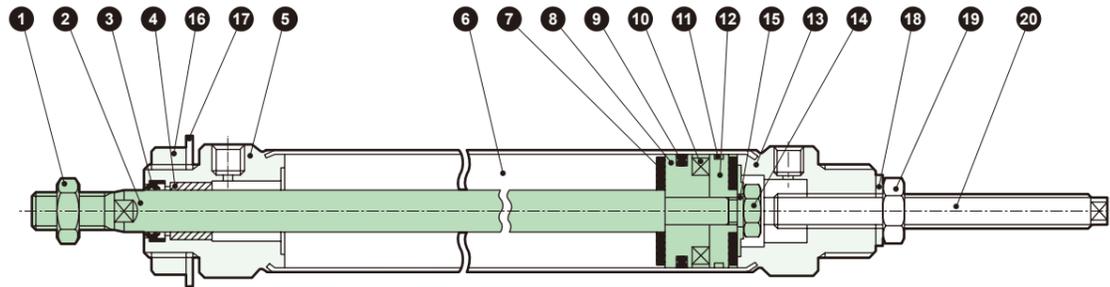
* "a" is the adjustment stroke.

| Code | Head Side Trunnion Type (TB) Mounting Dimensions | | | | | | | | | | | | | | | | With Bellows |
|-----------------|--|----|----|------------|----|----|------|-------|------|-----|----|----|------|-------|----|-----|---------------------|
| | Bore Size (mm) | A | HA | KK | LL | TD | TH | TJ | TK | TL | TM | TN | RC | RH | WF | X | L |
| Cylinder Switch | ø20 | 20 | 26 | M8 × 1.0 | 66 | 8 | 29.5 | 94.5 | 9.5 | 8 | 30 | 46 | 11 | 135 | 24 | 124 | (Stroke / 3) + 6 |
| | ø25 | 23 | 35 | M10 × 1.25 | 69 | 10 | 39 | 97.5 | 10.5 | 12 | 40 | 64 | 17.5 | 148.5 | 23 | 131 | (Stroke / 3.25) + 7 |
| | ø32 | 23 | 35 | M10 × 1.25 | 69 | 10 | 39 | 97.5 | 10.5 | 12 | 40 | 64 | 17.5 | 148.5 | 23 | 131 | (Stroke / 3.25) + 7 |
| Ending | ø40 | 25 | 35 | M12 × 1.5 | 73 | 10 | 44 | 101.5 | 10.5 | 9.5 | 53 | 72 | 16 | 153 | 23 | 137 | (Stroke / 3.25) + 7 |

*1: Round up the L dimension to the nearest whole number.

*2: For dimensions with each switch, see P. 284 to P. 286.

*3: For outer dimensions diagram of accessories, refer to P. 123.



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|---|-----------------------------------|----------|---------------------|-----------------------|---------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 10 | Magnet | Plastic | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel ø32, ø40: Carbon Steel | Industrial Hard Chrome Plating | 11 | Wear Ring | Polyacetal | |
| 3 | Rod Packing | Nitrile Rubber | | 12 | Piston B | Aluminum Alloy | |
| 4 | Bushing | ø20: Bearing Alloy ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 13 | Head Cover | Aluminum Alloy | |
| 5 | Rod Cover | Aluminum Alloy | | 14 | Hexagon Nut | Steel | Zinc Chromate |
| 6 | Cylinder Tube | Stainless Steel | | 15 | Spacer | Steel | Zinc Chromate (ø20 to ø32 only) |
| 7 | Cushion Rubber | Urethane Rubber | | 16 | Nut | Steel | Zinc Chromate |
| 8 | Piston A | Aluminum Alloy | | 17 | Toothed Lock Washer | Steel | Zinc Chromate |
| 9 | Piston Packing | Nitrile Rubber | | 18 | Seal Washer | Nitrile Rubber, Steel | |
| | | | | 19 | Lock Nut | Steel | Zinc Chromate |
| | | | | 20 | Adjusting Bolt | Steel | Zinc Chromate |

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder
Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder
Switch

Ending

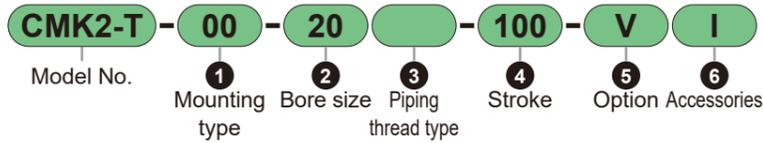


Small bore size cylinder
Double Acting/Heat Resistant Type
CMK2-T Series

● Bore size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$



Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Content | |
|------|--|--|
| 00 | Basic type | |
| LB | Axial Foot Type (Both Sides) | |
| LS | Axial Foot Type (Single Side) | |
| FA | Rod Side Flange Type | |
| FB | Head Side Flange Type | |
| CA | Single Clevis Type | |
| CC | Single Clevis Integrated Type | |
| CC1 | Single Clevis, Bushing Press-fit Type | |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) | |
| TA | Rod Side Trunnion Type | |
| TB | Head Side Trunnion Type | |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 172.

5 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature | |
|------|---------------------------------------|--------------------------|--------------------------------|--|
| L | Bellows | 250°C | 400°C | |
| M | Piston Rod Material (Stainless Steel) | | | |
| V | Boss Cut | | | |

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.

*2: When Bore size $\phi 20$, 25 is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

6 Accessories

| Code | Content | |
|------|---|--|
| I | Single Knuckle | |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) | |
| B2 | Double Yoke Bracket (Pin and retaining ring included) | |

*1: "I" and "Y" cannot be selected at the same time.

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -A2 | With 2 Rod Nuts |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-T-..... - XJ9

*For combinations of variations and options, see P. 109.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

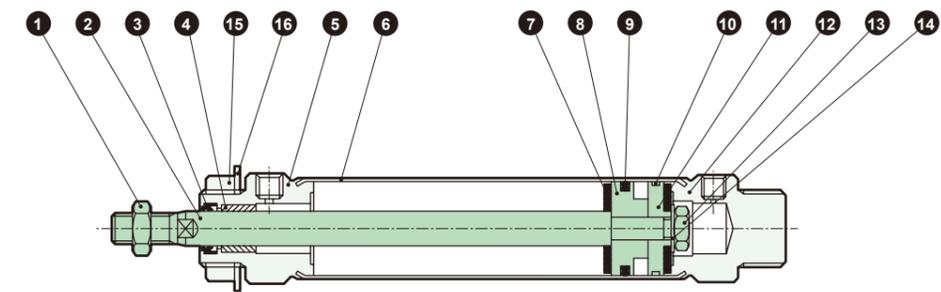
Specifications

| Item | CMK2-T | | | | |
|---------------------------|---------------------------------------|-------|-------|-------|-----|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore Size | | | | | |
| Actuation method | Double Acting/Heat Resistant Type | | | | |
| Operating Fluid | Compressed Air | | | | |
| Max. Working Pressure | 1.0 MPa | | | | |
| Min. Operating Pressure | 0.1 MPa | | | | |
| Proof Pressure | 1.6 MPa | | | | |
| Ambient Temperature | 5 to 120 °C | | | | |
| Port Size | Rc1/8 | | | | |
| Stroke tolerance | +2.0 (Up to 200), +2.4 (Over 200.) mm | | | | |
| Operating Piston Speed | 50 to 500 mm/s | | | | |
| Cushion | Rubber Cushion | | | | |
| Lubrication | Not Available | | | | |
| Allowable Absorbed Energy | 0.166 | 0.308 | 0.424 | 0.639 | |

Outline Dimension Drawing

Same as double acting/single rod type. See P. 114 to P. 121. However, switches are not included.

Internal Structure Diagram / Material



Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke |
|-----------|-------------------------------------|-----------------|--------------|-------------------------------|
| | | Without Bellows | With Bellows | Without Bellows, With Bellows |
| ø20 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 650 | 5 |
| ø25 | | | | |
| ø32 | | | | |
| ø40 | | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.
*2: Single side foot side (LS type) has a max. stroke of 50 mm.

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|--------------------|-------------------------|-----------------------|----------------------------|
| | Basic Type (00) | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CCAA) | Double clevis type (CB) | Trunnion Type (TA/TB) | |
| ø20 | 0.17 | 0.32 | 0.25 | 0.23 | 0.32 | 0.18 | 0.32 | 0.22 | 0.01 |
| ø25 | 0.26 | 0.52 | 0.39 | 0.41 | 0.50 | 0.26 | 0.50 | 0.36 | 0.01 |
| ø32 | 0.29 | 0.55 | 0.42 | 0.44 | 0.53 | 0.29 | 0.53 | 0.39 | 0.02 |
| ø40 | 0.47 | 0.73 | 0.60 | 0.62 | 0.71 | 0.49 | 0.71 | 0.63 | 0.02 |

(Example) Product Weight of CMK2-T-FA-32-50
 Product Weight at S = 0 mm ...0.44 kg
 Added weight at S=50 mm..... Added weight at S=10 mm 0.02 × $\frac{\text{Product Stroke (50)}}{10}$ = 0.10 kg
 Product weight0.44 kg+0.1 kg=0.54 kg

Do not disassemble

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | | |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 31.4 | 47.1 | 62.8 | 94.2 | 1.26 × 10 ² | 1.57 × 10 ² | 1.88 × 10 ² | 2.20 × 10 ² | 2.51 × 10 ² | 2.83 × 10 ² | 3.14 × 10 ² |
| | Pull | 23.6 | 35.3 | 47.1 | 70.7 | 94.2 | 1.18 × 10 ² | 1.41 × 10 ² | 1.65 × 10 ² | 1.88 × 10 ² | 2.12 × 10 ² | 2.36 × 10 ² |
| ø25 | Push | 49.1k | 73.6 | 98.2 | 1.47 × 10 ² | 1.96 × 10 ² | 2.45 × 10 ² | 2.95 × 10 ² | 3.44 × 10 ² | 3.93 × 10 ² | 4.42 × 10 ² | 4.91 × 10 ² |
| | Pull | 37.8 | 56.7 | 75.6 | 1.13 × 10 ² | 1.51 × 10 ² | 1.89 × 10 ² | 2.27 × 10 ² | 2.64 × 10 ² | 3.02 × 10 ² | 3.40 × 10 ² | 3.78 × 10 ² |
| ø32 | Push | 80.4 | 1.21 × 10 ² | 1.61 × 10 ² | 2.41 × 10 ² | 3.22 × 10 ² | 4.02 × 10 ² | 4.83 × 10 ² | 5.63 × 10 ² | 6.43 × 10 ² | 7.24 × 10 ² | 8.04 × 10 ² |
| | Pull | 69.1 | 1.04 × 10 ² | 1.38 × 10 ² | 2.07 × 10 ² | 2.76 × 10 ² | 3.46 × 10 ² | 4.15 × 10 ² | 4.84 × 10 ² | 5.53 × 10 ² | 6.22 × 10 ² | 6.91 × 10 ² |
| ø40 | Push | 1.26 × 10 ² | 1.88 × 10 ² | 2.51 × 10 ² | 3.77 × 10 ² | 5.03 × 10 ² | 6.28 × 10 ² | 7.54 × 10 ² | 8.80 × 10 ² | 1.01 × 10 ³ | 1.13 × 10 ³ | 1.26 × 10 ³ |
| | Pull | 1.10 × 10 ² | 1.65 × 10 ² | 2.21 × 10 ² | 3.31 × 10 ² | 4.41 × 10 ² | 5.51 × 10 ² | 6.62 × 10 ² | 7.72 × 10 ² | 8.82 × 10 ² | 9.92 × 10 ² | 1.10 × 10 ³ |

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|--|------------------------|----------|---------------------|----------------------------------|---------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 8 | Piston A | Aluminum Alloy | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel | Industrial Hard Chrome | 9 | Piston Packing | Fluoro Rubber | |
| | | ø32, ø40: Carbon Copper | Plating | 10 | Wear Ring | Fabric-Reinforced Phenolic Resin | |
| 3 | Rod Packing | Fluoro Rubber | | 11 | Piston B | Aluminum Alloy | |
| 4 | Bushing | ø20: Bearing Alloy | | 12 | Head Cover | Aluminum Alloy | |
| | | ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 13 | Hexagon Nut | Steel | Zinc Chromate |
| 5 | Rod Cover | Aluminum Alloy | | 14 | Spacer | Steel | Zinc Chromate (ø20 to ø32 only) |
| 6 | Cylinder Tube | Stainless Steel | | 15 | Nut | Steel | Zinc Chromate |
| 7 | Cushion Rubber | Fluoro Rubber | | 16 | Toothed Lock Washer | Steel | Zinc Chromate |

General Type

General Type

SCP□3

SCP□3

CMK2

CMK2

CMA2

CMA2

SCM

SCM

SCG

SCG

SCA2

SCA2

SCS2

SCS2

Cylinder Switch

Cylinder Switch

Ending

Ending



Small bore size cylinder
Double Acting/With Rubber Air Cushion

CMK2-□C Series

- Bore size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$
- Connection Port Size: Rc1/8

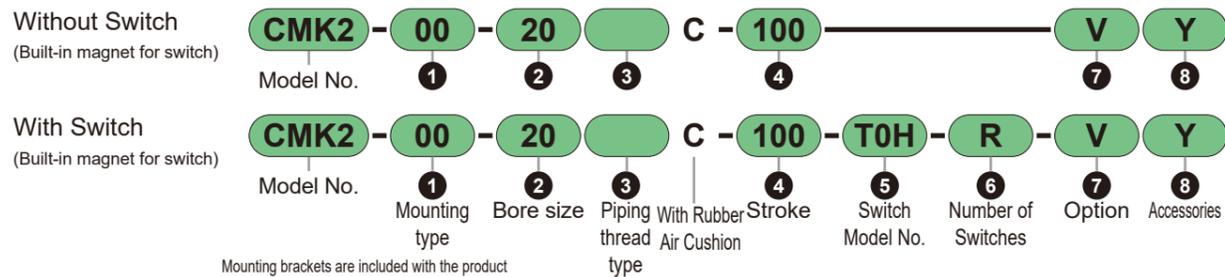
Circuit Diagram Symbol



CMK2-□C Series

Model No. Notation Method

Model No. Notation Method



1 Mounting type

| Code | Content | |
|------|--|--|
| 00 | Basic type | |
| LB | Axial Foot Type (Both Sides) | |
| LS | Axial Foot Type (Single Side) | |
| FA | Rod Side Flange Type | |
| FB | Head Side Flange Type | |
| CA | Single Clevis Type | |
| CC | Single Clevis Integrated Type | |
| CC1 | Single Clevis, Bushing Press-fit Type | |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) | |
| TA | Rod Side Trunnion Type | |
| TB | Head Side Trunnion Type | |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| N | NPT Thread (Custom Order Product) |
| G | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 176.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | | |
|------------------------|---------------------------------|-----------------------------------|------------------|-----------------|-------------------|-------------|--------------|---------|--|
| | | | AC | DC | AC | DC | Straight | L-shape | |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ | |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ | |
| | | 3-wire (NPN) | — | 30 or less | — | 100 or less | T3H□ | T3V□ | |
| | 2-Color | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WH□ | T2WV□ | |
| | | | 3-wire (NPN) | — | 30 or less | — | 50 or less | T3WH□ | |
| | | 2-Color Improved Water Resistance | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ | |
| 1-Color Off-Delay Type | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ | | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | | |
| Reed | 1-Color No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ | |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ | |
| | 1-Color | 110/220 | 12/24 | 7 to 20/7 to 10 | 5 to 50 | T8H□ | T8V□ | | |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|---|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H ③
5 m T0H ⑤

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content | |
|------|---|--|
| I | Single Knuckle | |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) | |
| B2 | Double Yoke Bracket (Pin and retaining ring included) | |

*1: "I" and "Y" cannot be selected at the same time.

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -A2 | With 2 Rod Nuts |
| -O | Low Speed Type |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-□C-.....-XJ9

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food-grade lubricant usable in food manufacturing processes

CMK2-□C-.....-FP1

*For combinations of variations and options, see P. 109.

7 Option

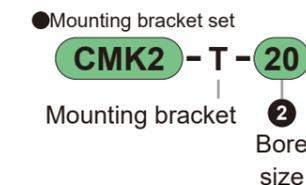
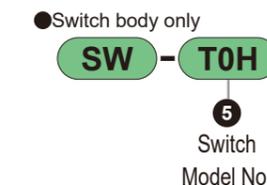
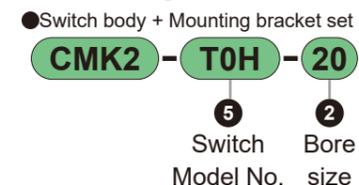
| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature | |
|------|---------------------------------------|--------------------------|--------------------------------|--|
| J | Bellows | 100°C | 200°C | |
| L | | 250°C | 400°C | |
| F | With Push-in Fitting (Straight) | | | |
| FE | With Push-in Fitting (Elbow) | | | |
| M | Piston Rod Material (Stainless Steel) | | | |
| V | Boss Cut | | | |

*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.

*2: Instantaneous maximum temperature is the temperature when fire, chips, etc. momentarily contact the bellows.

*3: When Bore size $\phi 20$ or $\phi 25$ is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

Switch Single Unit Model No. Notation Method



General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

Cylinder Switch

Ending

Specifications

| Item | CMK2 | | | |
|-----------------------------|---|-------|-------|-------|
| | ø20 | ø25 | ø32 | ø40 |
| Bore size | ø20 | ø25 | ø32 | ø40 |
| Actuation method | Double Acting Type | | | |
| Operating Fluid | Compressed Air | | | |
| Max. Working Pressure MPa | 1.0 | | | |
| Min. Operating Pressure MPa | 0.2 | | | |
| Proof Pressure MPa | 1.6 | | | |
| Ambient Temperature °C | -10 to 60 (No freezing) | | | |
| Port Size | Rc1/8 | | | |
| Stroke tolerance mm | +2.0 0 (Up to 200), +2.4 0 (Over 200.) | | | |
| Operating Piston Speed mm/s | 50 to 500 (Use within absorption energy.) | | | |
| Cushion | Rubber Air Cushion | | | |
| Lubrication | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | |
| Allowable Absorbed Energy J | 0.089 | 0.137 | 0.179 | 0.278 |

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 62.8 | 94.2 | 1.26 × 10 ² | 1.57 × 10 ² | 1.88 × 10 ² | 2.20 × 10 ² | 2.51 × 10 ² | 2.83 × 10 ² | 3.14 × 10 ² |
| | Pull | 47.1 | 70.7 | 94.2 | 1.18 × 10 ² | 1.41 × 10 ² | 1.65 × 10 ² | 1.88 × 10 ² | 2.12 × 10 ² | 2.36 × 10 ² |
| ø25 | Push | 98.2 | 1.47 × 10 ² | 1.96 × 10 ² | 2.45 × 10 ² | 2.95 × 10 ² | 3.44 × 10 ² | 3.93 × 10 ² | 4.42 × 10 ² | 4.91 × 10 ² |
| | Pull | 75.6 | 1.13 × 10 ² | 1.51 × 10 ² | 1.89 × 10 ² | 2.27 × 10 ² | 2.64 × 10 ² | 3.02 × 10 ² | 3.40 × 10 ² | 3.78 × 10 ² |
| ø32 | Push | 1.61 × 10 ² | 2.41 × 10 ² | 3.22 × 10 ² | 4.02 × 10 ² | 4.83 × 10 ² | 5.63 × 10 ² | 6.43 × 10 ² | 7.24 × 10 ² | 8.04 × 10 ² |
| | Pull | 1.38 × 10 ² | 2.07 × 10 ² | 2.76 × 10 ² | 3.46 × 10 ² | 4.15 × 10 ² | 4.84 × 10 ² | 5.53 × 10 ² | 6.22 × 10 ² | 6.91 × 10 ² |
| ø40 | Push | 2.51 × 10 ² | 3.77 × 10 ² | 5.03 × 10 ² | 6.28 × 10 ² | 7.54 × 10 ² | 8.80 × 10 ² | 1.01 × 10 ³ | 1.13 × 10 ³ | 1.26 × 10 ³ |
| | Pull | 2.21 × 10 ² | 3.31 × 10 ² | 4.41 × 10 ² | 5.51 × 10 ² | 6.62 × 10 ² | 7.72 × 10 ² | 8.82 × 10 ² | 9.92 × 10 ² | 1.10 × 10 ³ |

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|--|-----------------|--------------|---------------------|-------------|
| | | Without Bellows | With Bellows | Without Bellows "L" | Bellows "J" |
| ø20 | 25, 50, 75, 100, 150, 200, 250 300 | 750 | 650 | 5 | 25 |
| ø25 | | | | | |
| ø32 | | | | | |
| ø40 | | | | | |

- *1: Intermediate strokes can be manufactured in 1 mm increments.
- *2: Single side foot type (LS type) has a maximum stroke of 50 mm.
- *3: For bellows "J", if stroke is less than 25 mm, please inquire.

Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|----------|----------|----------|----------|
| Basic Type (00) | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

- *1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. For trunnion type, mounting nuts are included.
- *2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.
- *3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

Min. Stroke with Switch

(Unit: mm)

| Number of Switches | 1 | | | | | | 2 | | | | | |
|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|----|--|
| | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| Bore Size (mm) | | | | | | | | | | | | |
| ø20 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø25 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø32 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø40 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |

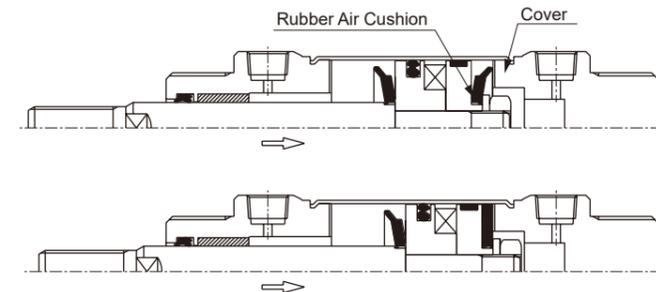
Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|--------------------|-------------------------|-----------------------|---|---------------------------|----------------------------|
| | Basic Type (00) | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CCAA) | Double clevis type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.17 | 0.32 | 0.25 | 0.23 | 0.32 | 0.18 | 0.32 | 0.22 | Please refer to the weight listed in the switch specifications on P. 971. | 0.005 | 0.01 |
| ø25 | 0.26 | 0.52 | 0.39 | 0.41 | 0.50 | 0.26 | 0.50 | 0.36 | | | |
| ø32 | 0.30 | 0.56 | 0.43 | 0.45 | 0.54 | 0.30 | 0.54 | 0.40 | | | |
| ø40 | 0.48 | 0.74 | 0.61 | 0.63 | 0.72 | 0.50 | 0.72 | 0.64 | | | |

(Example) Product Weight of CMK2-FA-32C-50-T0H-D
 Product Weight at S = 0 mm:0.45 kg
 Added weight at S=50 mm..... Added weight at S=10 mm 0.02 × $\frac{\text{Product Stroke (50)}}{10}$ = 0.10 kg
 Weight of 2 switches:0.036 kg
 Weight of switch rail + 2 bands: 0.018 kg
 Product Weight 0.45 kg+0.1 kg+0.036 kg+0.018 kg=0.604 kg

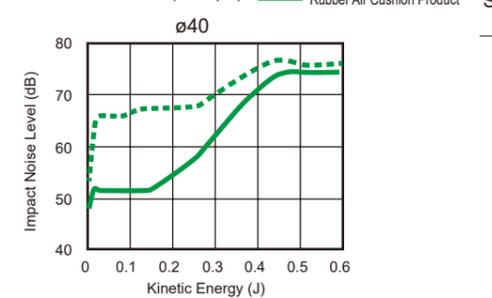
Rubber air cushion mechanism



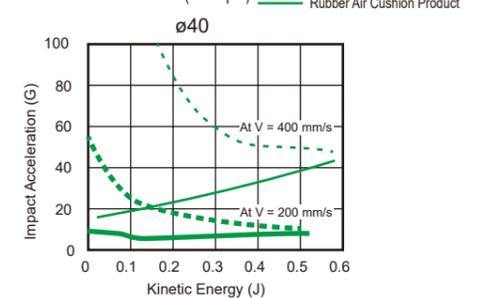
Explanation at Pull

When the piston operates and the rubber air cushion contacts the cover, an enclosed air space is formed in the ■ part. The air in this enclosed space is compressed as the piston operates, absorbing energy. At the stroke end, energy absorption due to the compressive strain of the rubber air cushion is also added.

Impact Noise Level Reduction Data (Example)



Impact Acceleration Level Reduction Data (Example)



Note: For impact noise/impact acceleration level reduction data for other bore sizes, see P. 179.

General Type

General Type

SCP□3

SCP□3

CMK2

CMK2

CMA2

CMA2

SCM

SCM

SCG

SCG

SCA2

SCA2

SCS2

SCS2

Cylinder Switch

Cylinder Switch

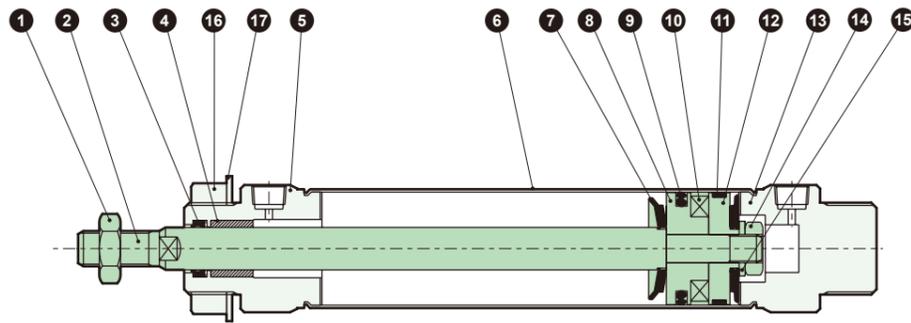
Ending

Ending

Outline Dimension Drawing

Same as double acting/single rod type. See P. 114 to P. 121.

Internal Structure Diagram / Material

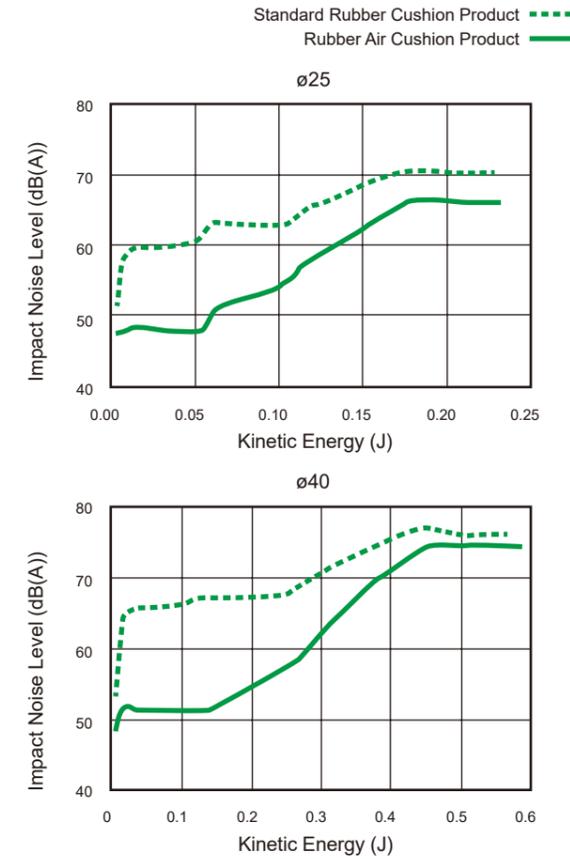
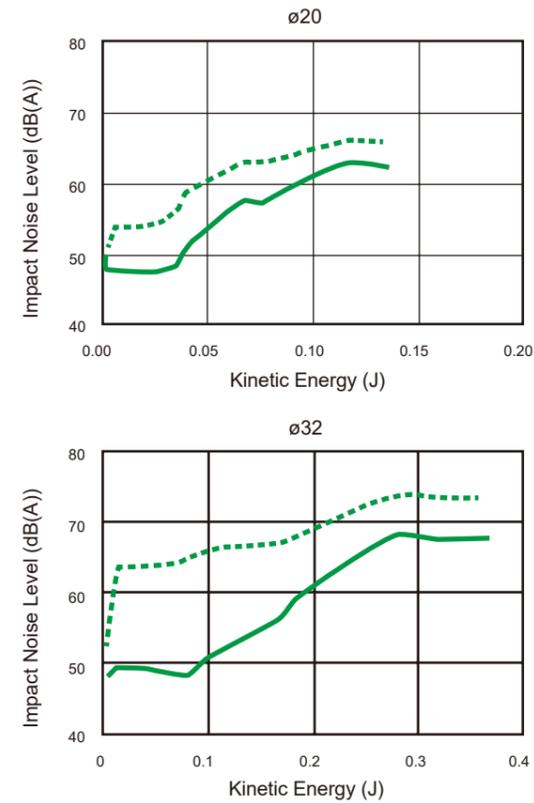


Do not disassemble

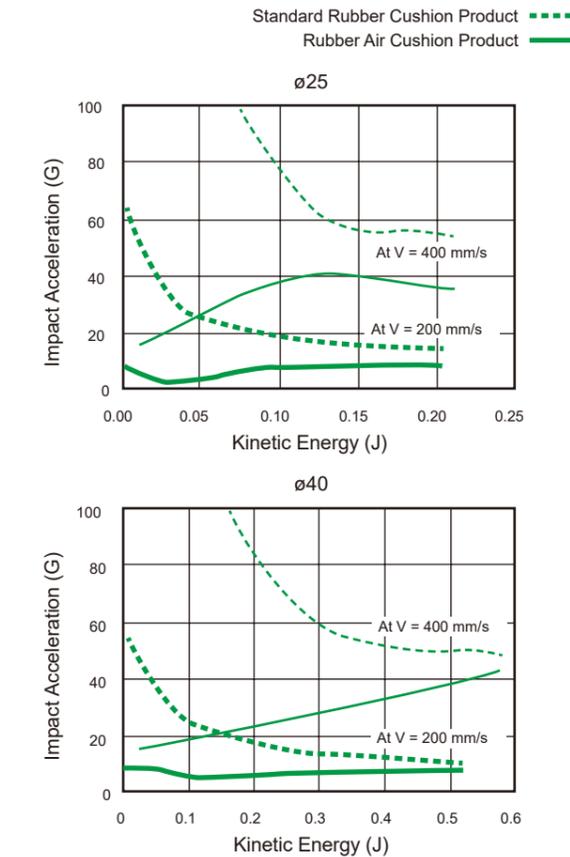
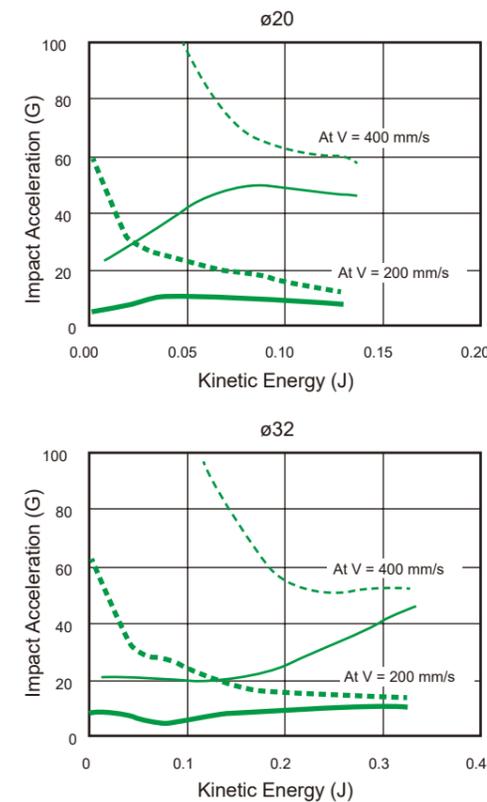
| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|--------------------|--|------------------------|----------|---------------------|------------------|---------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 9 | Piston Packing | Nitrile Rubber | |
| 2 | Piston Rod | ø20ø25: Stainless Steel | Industrial Hard Chrome | 10 | Magnet | Plastic | |
| | | ø32ø40: Carbon Steel | Plating | 11 | Wear Ring | Polyacetal Resin | |
| 3 | Rod Packing | Nitrile Rubber | | 12 | Piston B | Aluminum Alloy | |
| 4 | Bushing | ø20: Bearing Alloy | | 13 | Head Cover | Aluminum Alloy | |
| | | ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 14 | Hexagon Nut | Steel | Zinc Chromate |
| 5 | Rod Cover | Aluminum Alloy | | 15 | Spacer | Steel | Zinc Chromate (ø20 to ø32 only) |
| 6 | Cylinder Tube | Stainless Steel | | 16 | Nut | Steel | Zinc Chromate |
| 7 | Rubber Air Cushion | Hydrogenated Nitrile Rubber | | 17 | Toothed Lock Washer | Steel | Zinc Chromate |
| 8 | Piston A | Aluminum Alloy | | | | | |

Technical Data

[Performance Comparison of Impact Noise Level]

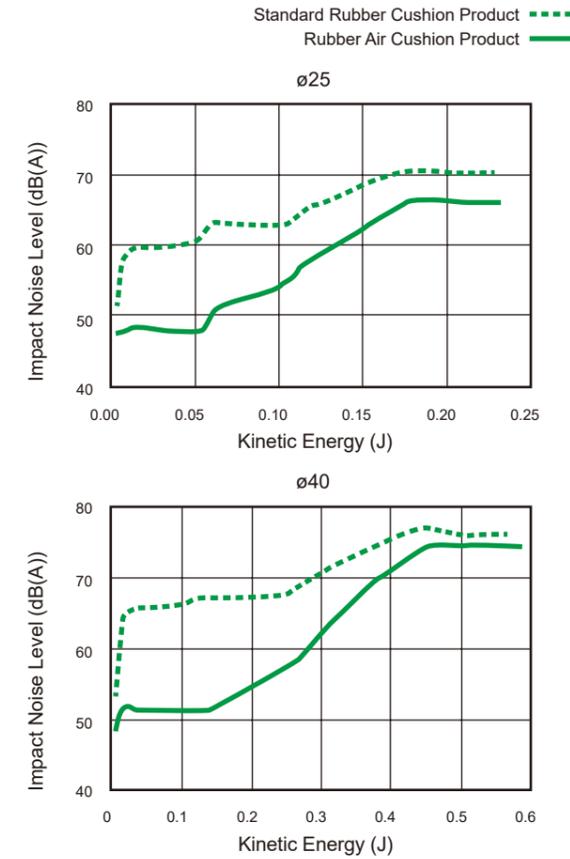
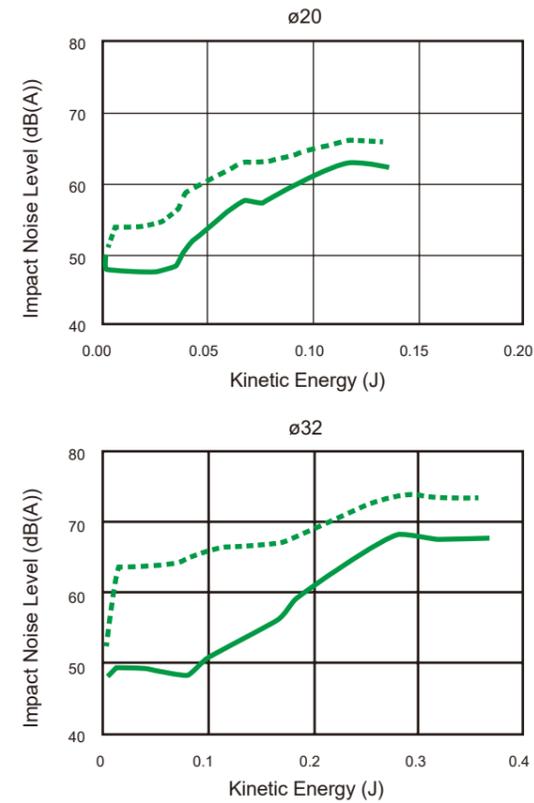


[Performance Comparison of Impact Acceleration]

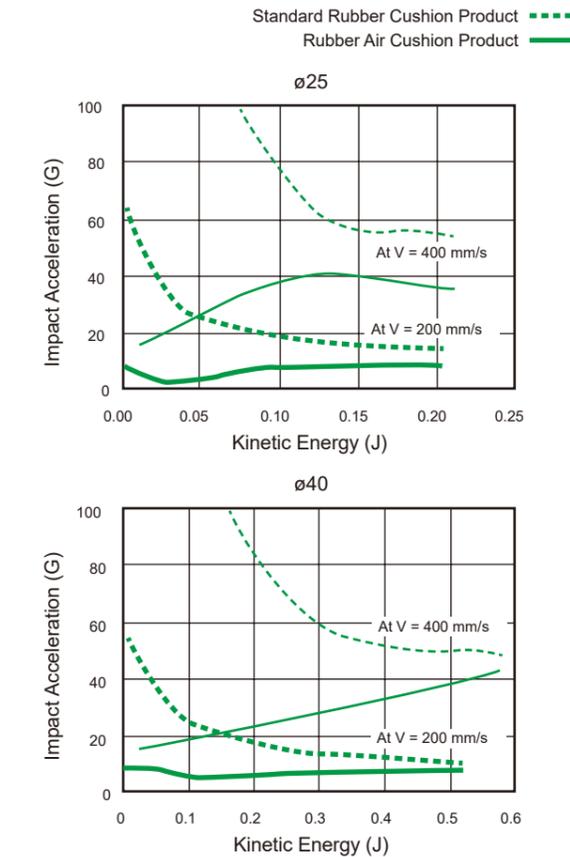
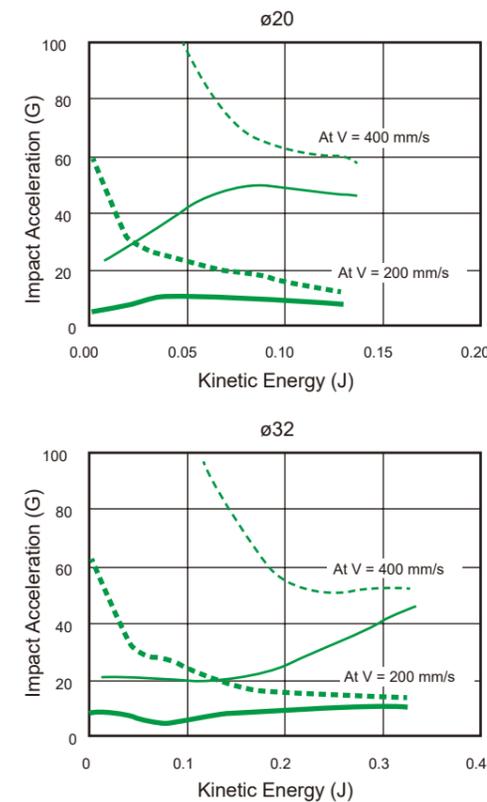


Technical Data

[Performance Comparison of Impact Noise Level]

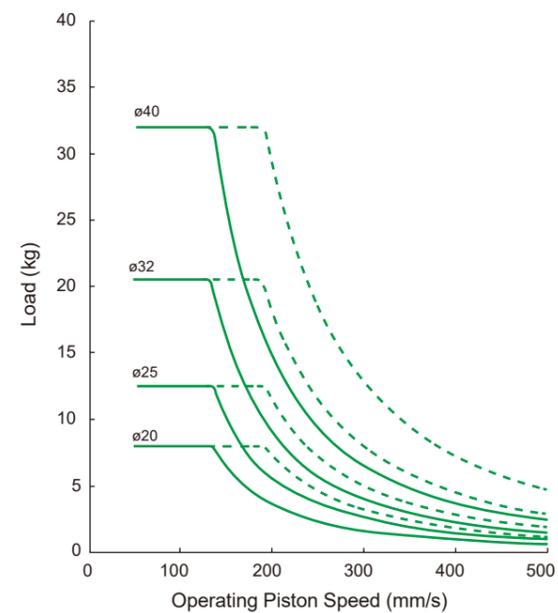


[Performance Comparison of Impact Acceleration]



Technical Data

[Allowable Energy Value]



The usable range is to the lower left of the curve. Use is possible even in the range indicated by in the figure, but it is recommended to use within the solid line range to more effectively exhibit the noise reduction and damping effects.

MEMO

General Type
 SCP□3
CMK2
 CMA2
 SCM
 SCG
 SCA2
 SCS2

General Type
 SCP□3
CMK2
 CMA2
 SCM
 SCG
 SCA2
 SCS2

Cylinder Switch
 Ending

Cylinder Switch
 Ending



Small bore size cylinder
Double Acting/With Air Cushion

CMK2-C Series

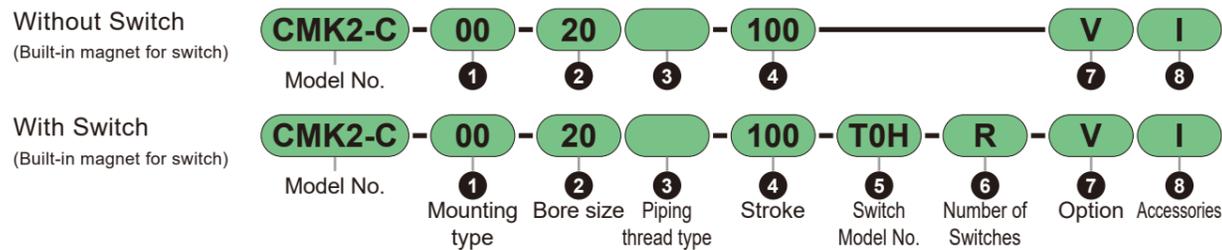
● Bore size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$
● Double acting type

Circuit Diagram Symbol



CMK2-C Series Model No. Notation Method

Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Content |
|------|--|
| 00 | Basic type |
| LB | Axial Foot Type (Both Sides) |
| LS | Axial Foot Type (Single Side) |
| FA | Rod Side Flange Type |
| FB | Head Side Flange Type |
| CA | Single Clevis Type |
| CC | Single Clevis Integrated Type |
| CC1 | Single Clevis, Bushing Press-fit Type |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) |
| TA | Rod Side Trunnion Type |
| TB | Head Side Trunnion Type |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 184.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | |
|-------------|---------------------------------|-----------------------------------|------------------|-------------------|-------------------|-------------|--------------|---------|
| | | | AC | DC | AC | DC | Straight | L-shape |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ |
| | | 3-wire (NPN) | — | 30 or less | — | 100 or less | T3H□ | T3V□ |
| | 2-Color | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WH□ | T2WV□ |
| | | | 3-wire (NPN) | — | 30 or less | — | 50 or less | T3WH□ |
| | | 2-Color Improved Water Resistance | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ |
| Reed | 1-Color | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 |
| | No Indicator Lamp | — | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ |
| 1-Color | 2-wire | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ | |
| | | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ | |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|--|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H □
3 m T0H □
5 m T0H □

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content |
|------|---|
| I | Single Knuckle |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) |
| B2 | Double Yoke Bracket (Pin and retaining ring included) |

*1: "I" and "Y" cannot be selected at the same time.

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -A2 | With 2 Rod Nuts |
| -O | Low Speed Type |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-C-.....-XJ9

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food-grade lubricant usable in food manufacturing processes

CMK2-C-.....-FP1

*For combinations of variations and options, see P. 109.

7 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature |
|------|---------------------------------------|--------------------------|--------------------------------|
| J | Bellows | 100°C | 200°C |
| L | | 250°C | 400°C |
| F | With Push-in Fitting (Straight) | | |
| FE | With Push-in Fitting (Elbow) | | |
| M | Piston Rod Material (Stainless Steel) | | |
| V | Boss Cut | | |

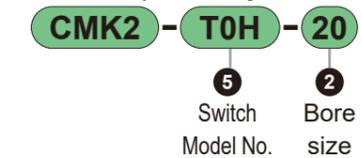
*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.

*2: Instantaneous maximum temperature is the temperature when fire, chips, etc. momentarily contact the bellows.

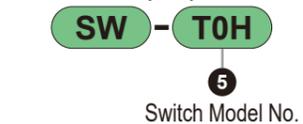
*3: When Bore size $\phi 20$ or $\phi 25$ is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

Switch Single Unit Model No. Notation Method

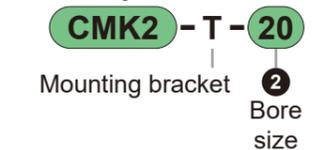
● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

Cylinder Switch

Ending

Specifications

| Item | CMK2-C | | | | |
|---------------------------|---|------------------------------------|------|------|------|
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | Double Acting/With Air Cushion | | | | |
| Operating Fluid | Compressed Air | | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.1 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | Rc 1/8 | | | | |
| Stroke tolerance | mm | +2.0 (Up to 200), +2.4 (Over 200,) | | | |
| Operating Piston Speed | mm/s | 50 to 700 | | | |
| Cushion | Air Cushion | | | | |
| Effective Cushion Length | mm | 12 | | | |
| Allowable Absorbed Energy | J | 0.34 | 0.46 | 0.88 | 1.27 |
| Lubrication | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | | |

Stroke (Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|--|-----------------|--------------|---------------------|-------------|
| | | Without Bellows | With Bellows | Without Bellows "L" | Bellows "J" |
| ø20 | 25, 50, 75, 100, 150, 200, 250 300 | 750 | 650 | 5 | 25 |
| ø25 | | | | | |
| ø32 | | | | | |
| ø40 | | | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.
 *2: Single side foot type (LS type) has a maximum stroke of 50 mm.
 *3: For bellows "J" with a stroke of less than 25 mm, please inquire each time.

Min. Stroke with Switch (Unit: mm)

| Number of Switches | 1 | | | | | | 2 | | | | | |
|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|----|--|
| | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| ø20 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø25 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø32 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø40 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |

Cylinder Weight (Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|------------------|-------------------------|-----------------------|--|---------------------------|----------------------------|
| | Basic type 00 | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CC) | Double Clevis Type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.17 | 0.32 | 0.25 | 0.23 | 0.32 | 0.18 | 0.32 | 0.22 | Please refer to the weight listed in the switch specifications of P. 971 | 0.005 | 0.01 |
| ø25 | 0.26 | 0.52 | 0.39 | 0.41 | 0.50 | 0.26 | 0.50 | 0.36 | | 0.005 | 0.01 |
| ø32 | 0.30 | 0.56 | 0.43 | 0.45 | 0.54 | 0.30 | 0.54 | 0.40 | | 0.009 | 0.02 |
| ø40 | 0.48 | 0.74 | 0.61 | 0.63 | 0.72 | 0.50 | 0.72 | 0.64 | | 0.009 | 0.02 |

(Example) Product Weight of CMK2-C-FA-32-50-T0H-D

Product Weight at S = 0 mm: 0.45 kg
 Added weight at S=50 mm..... Added weight at S=10 mm 0.02 x Product Stroke (50) = 0.10 kg
 Weight of 2 switches: 0.036 kg
 Weight of switch rail + 2 bands: 0.018 kg
 Product Weight 0.45 kg+0.1 kg+0.036 kg+0.018 kg=0.604 kg (Unit: N)

Theoretical Thrust Table

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | | |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 31.4 | 47.1 | 62.8 | 94.2 | 1.26 × 10 ² | 1.57 × 10 ² | 1.88 × 10 ² | 2.20 × 10 ² | 2.51 × 10 ² | 2.83 × 10 ² | 3.14 × 10 ² |
| | Pull | 23.6 | 35.3 | 47.1 | 70.7 | 94.2 | 1.18 × 10 ² | 1.41 × 10 ² | 1.65 × 10 ² | 1.88 × 10 ² | 2.12 × 10 ² | 2.36 × 10 ² |
| ø25 | Push | 49.1k | 73.6 | 98.2 | 1.47 × 10 ² | 1.96 × 10 ² | 2.45 × 10 ² | 2.95 × 10 ² | 3.44 × 10 ² | 3.93 × 10 ² | 4.42 × 10 ² | 4.91 × 10 ² |
| | Pull | 37.8 | 56.7 | 75.6 | 1.13 × 10 ² | 1.51 × 10 ² | 1.89 × 10 ² | 2.27 × 10 ² | 2.64 × 10 ² | 3.02 × 10 ² | 3.40 × 10 ² | 3.78 × 10 ² |
| ø32 | Push | 80.4 | 1.21 × 10 ² | 1.61 × 10 ² | 2.41 × 10 ² | 3.22 × 10 ² | 4.02 × 10 ² | 4.83 × 10 ² | 5.63 × 10 ² | 6.43 × 10 ² | 7.24 × 10 ² | 8.04 × 10 ² |
| | Pull | 69.1 | 1.04 × 10 ² | 1.38 × 10 ² | 2.07 × 10 ² | 2.76 × 10 ² | 3.46 × 10 ² | 4.15 × 10 ² | 4.84 × 10 ² | 5.53 × 10 ² | 6.22 × 10 ² | 6.91 × 10 ² |
| ø40 | Push | 1.26 × 10 ² | 1.88 × 10 ² | 2.51 × 10 ² | 3.77 × 10 ² | 5.03 × 10 ² | 6.28 × 10 ² | 7.54 × 10 ² | 8.80 × 10 ² | 1.01 × 10 ³ | 1.13 × 10 ³ | 1.26 × 10 ³ |
| | Pull | 1.10 × 10 ² | 1.65 × 10 ² | 2.21 × 10 ² | 3.31 × 10 ² | 4.41 × 10 ² | 5.51 × 10 ² | 6.62 × 10 ² | 7.72 × 10 ² | 8.82 × 10 ² | 9.92 × 10 ² | 1.10 × 10 ³ |

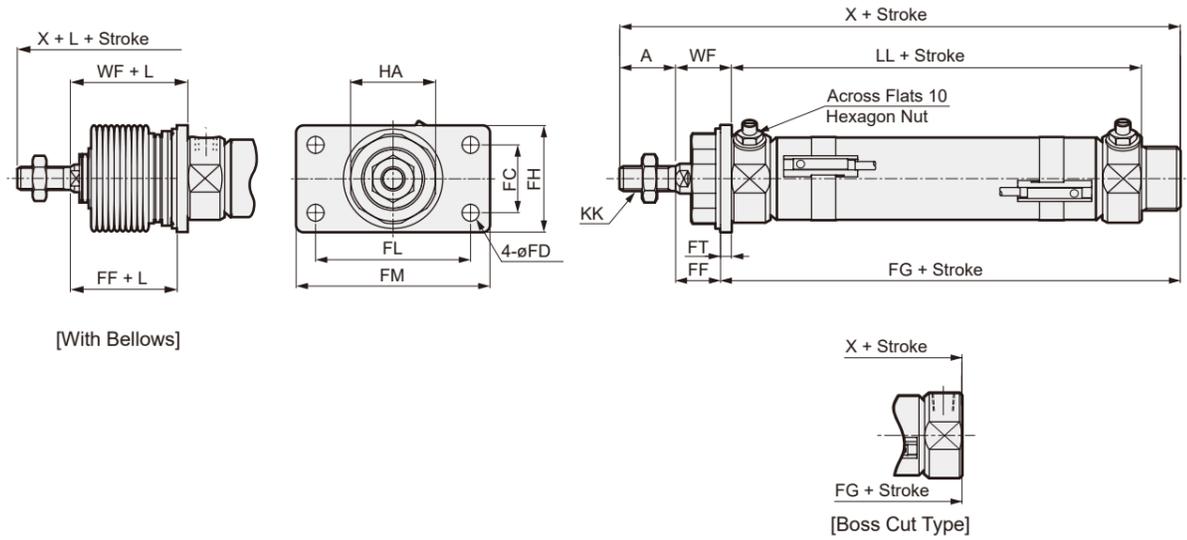
Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|----------|----------|----------|----------|
| Basic Type (00) | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
 *2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.
 *3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

Outline Dimension Drawing

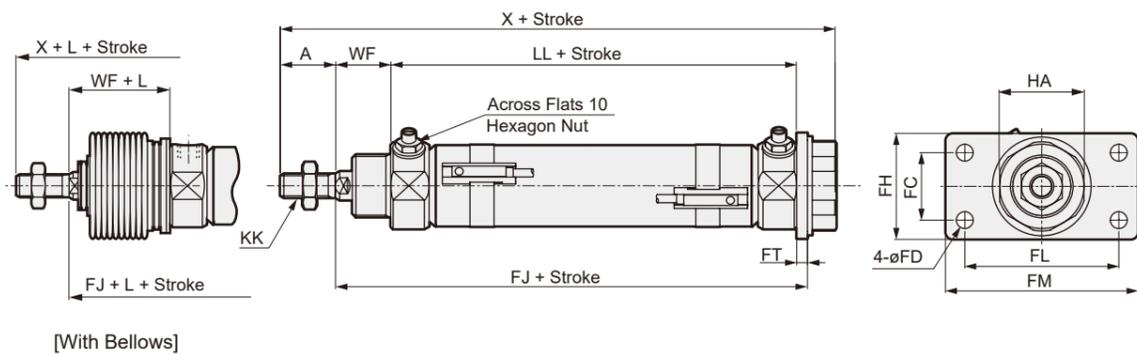
●Rod Side Flange Type (FA)



| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | | Boss Cut Type | |
|------|---|----|----|------------|----|----|-----|----|----|------|------|----|----|----|--------------|---------------------|---------------|------|
| | Bore Size (mm) | A | HA | KK | LL | WF | X | FC | FD | FF | FG | FH | FL | FM | FT | L | X | FG |
| SCM | ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 20.8 | 83.2 | 34 | 40 | 54 | 3.2 | (Stroke / 3) + 6 | 110 | 69.2 |
| SCG | ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | 115 | 73.5 |
| SCA2 | ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | 115 | 73.5 |
| SCS2 | ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 18.5 | 93.5 | 44 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | 121 | 77.5 |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

●Head Side Flange Type (FB)

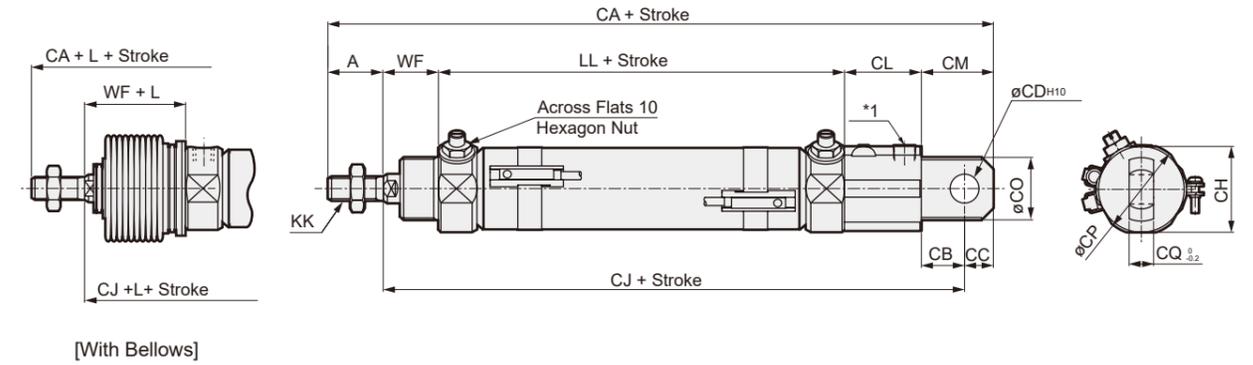


| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | |
|------|--|----|----|------------|----|----|-----|----|----|----|-------|----|----|-----|---------------------|---|
| | Bore Size (mm) | A | HA | KK | LL | WF | X | FC | FD | FH | FJ | FL | FM | FT | L | L |
| SCM | ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 34 | 93.2 | 40 | 54 | 3.2 | (Stroke / 3) + 6 | |
| SCG | ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | |
| SCA2 | ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | |
| SCS2 | ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 44 | 100.5 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

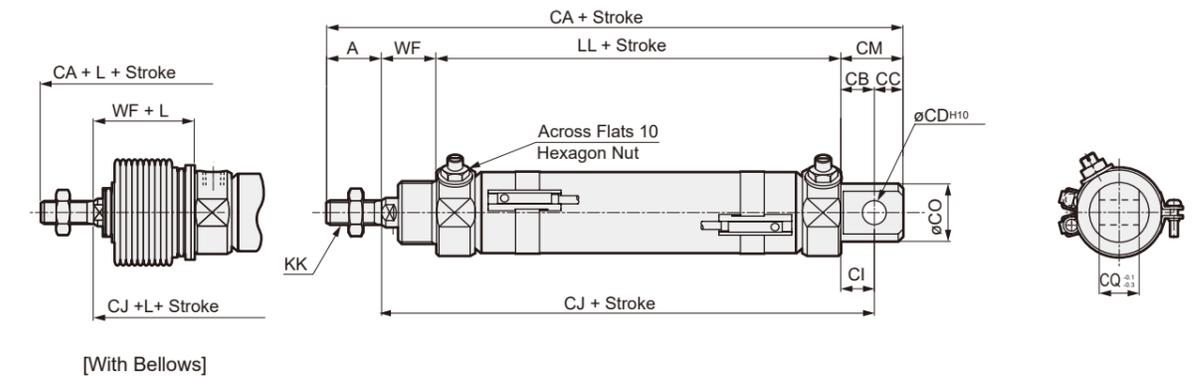
●Single Clevis Type (CA)



| Code | Single Clevis Type (CA) Mounting Dimensions | | | | | | | | | | | | | | | | With Bellows | |
|------|---|----|------------|----|----|-----|----|----|----|----|-----|----|----|----|----|----|---------------------|--|
| | Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | CQ | L | |
| SCM | ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 8 | (Stroke / 3) + 6 | |
| SCG | ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 | |
| SCA2 | ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 | |
| SCS2 | ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 | |

*1: Not a piping port.
 *2: Round up the L dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

●Single Clevis Integrated Type (CC)
 ●Single Clevis Bushing Press-fit Type (CC1)

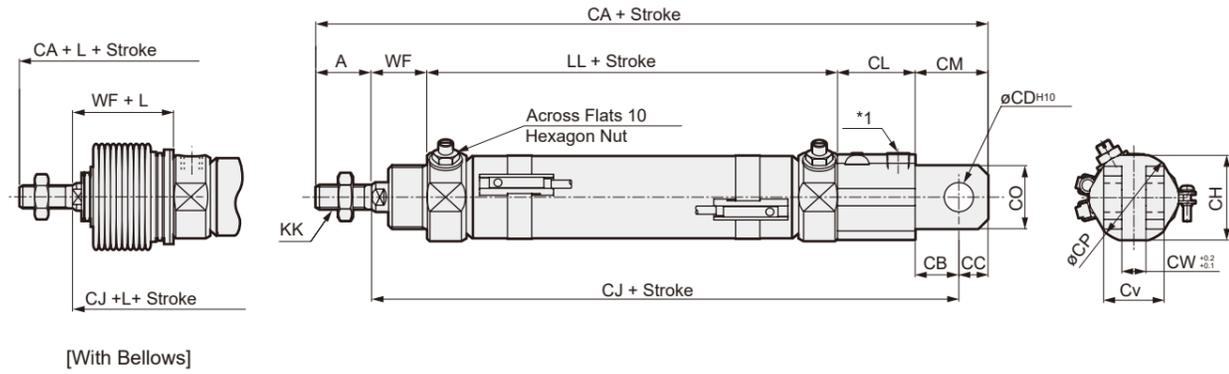


| Code | Single Clevis Integrated Type (CC), Bushing Press-fit Type (CC1) Mounting Dimensions | | | | | | | | | | | | | | | | With Bellows | |
|------|--|----|------------|----|----|-----|----|----|----|-----|----|----|----|----|---------------------|--|--------------|--|
| | Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CJ | CI | CM | CO | CQ | L | | | |
| SCM | ø20 | 20 | M8 × 1.0 | 66 | 24 | 131 | 12 | 9 | 8 | 102 | 11 | 21 | 22 | 16 | (Stroke / 3) + 6 | | | |
| SCG | ø25 | 23 | M10 × 1.25 | 69 | 23 | 136 | 12 | 9 | 8 | 104 | 11 | 21 | 24 | 16 | (Stroke / 3.25) + 7 | | | |
| SCA2 | ø32 | 23 | M10 × 1.25 | 69 | 23 | 141 | 14 | 12 | 10 | 106 | 13 | 26 | 24 | 16 | (Stroke / 3.25) + 7 | | | |
| SCS2 | ø40 | 25 | M12 × 1.5 | 73 | 23 | 151 | 16 | 14 | 12 | 112 | 15 | 30 | 30 | 20 | (Stroke / 3.25) + 7 | | | |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

● Double clevis type (CB)



SCP□3

CMK2

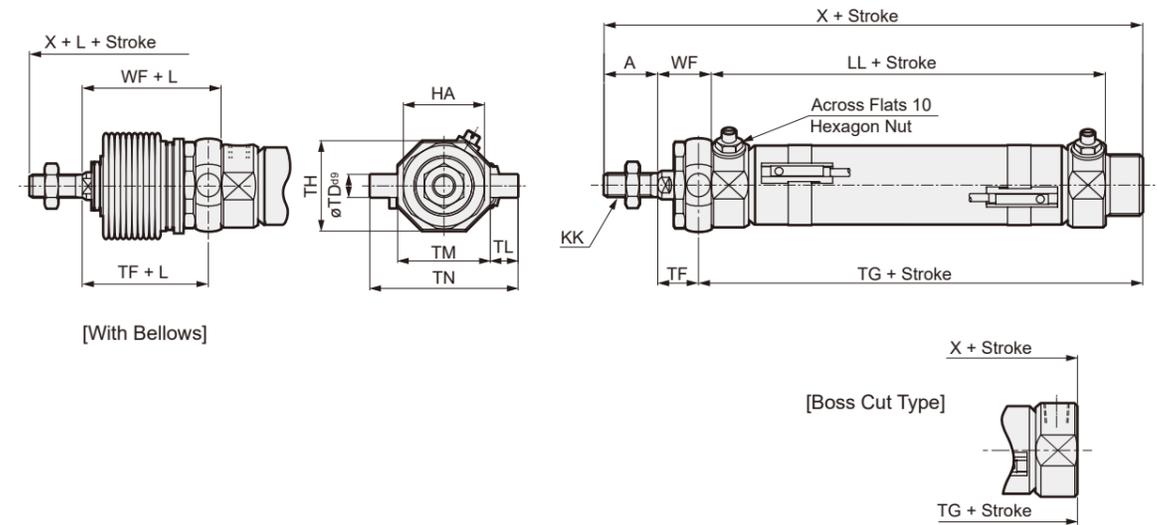
| Code | Double Clevis Type (CB) Mounting Dimensions | | | | | | | | | | | | | | | | With Bellows |
|----------------|---|------------|----|----|-----|----|----|----|----|-----|----|----|----|----|----|----|---------------------|
| Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | Cv | CW | L |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 19 | 8 | (Stroke / 3) + 6 |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 25 | 10 | (Stroke / 3.25) + 7 |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 25 | 10 | (Stroke / 3.25) + 7 |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 25 | 10 | (Stroke / 3.25) + 7 |

*1: Not a piping port.
 *2: Round up the L dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

SCS2

Outline Dimension Drawing

● Rod side trunnion type (TA)



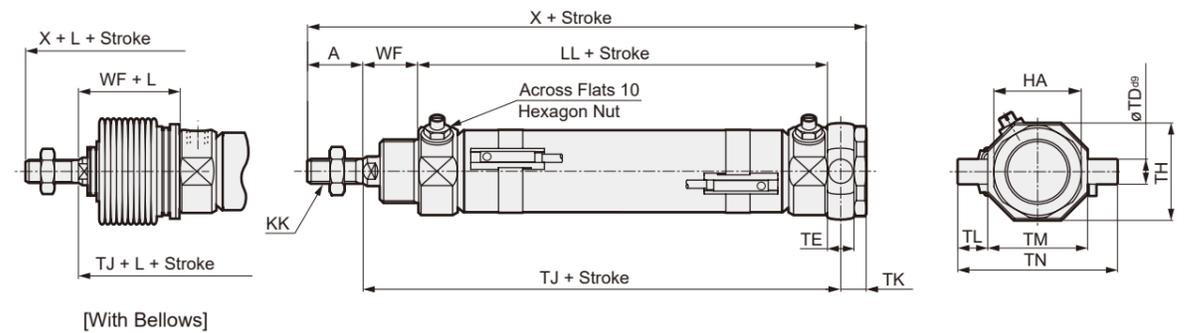
SCP□3

CMK2

| Code | Rod Side Trunnion Type (TA) Mounting Dimensions | | | | | | | | | | | | | With Bellows | Boss Cut Type | |
|----------------|---|----|------------|----|----|-----|----|------|------|------|-----|----|----|---------------------|---------------|------|
| Bore Size (mm) | A | HA | KK | LL | WF | X | TD | TF | TG | TH | TL | TM | TN | L | X | TG |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 8 | 19.5 | 84.5 | 29.5 | 8 | 30 | 46 | (Stroke / 3) + 6 | 110 | 70.5 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 17.5 | 90.5 | 39 | 12 | 40 | 64 | (Stroke / 3.25) + 7 | 115 | 74.5 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 17.5 | 90.5 | 39 | 12 | 40 | 64 | (Stroke / 3.25) + 7 | 115 | 74.5 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 10 | 17.5 | 94.5 | 44 | 9.5 | 53 | 72 | (Stroke / 3.25) + 7 | 121 | 78.5 |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

● Head Side Trunnion Type (TB)



| Code | Head Side Trunnion Type (TB) Mounting Dimensions | | | | | | | | | | | | | | With Bellows |
|----------------|--|----|------------|----|----|-----|----|----|------|-------|------|-----|----|----|---------------------|
| Bore Size (mm) | A | HA | KK | LL | WF | X | TD | TE | TH | TJ | TK | TL | TM | TN | L |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 8 | 9 | 29.5 | 94.5 | 9.5 | 8 | 30 | 46 | (Stroke / 3) + 6 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 11 | 39 | 97.5 | 10.5 | 12 | 40 | 64 | (Stroke / 3.25) + 7 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 11 | 39 | 97.5 | 10.5 | 12 | 40 | 64 | (Stroke / 3.25) + 7 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 10 | 11 | 44 | 101.5 | 10.5 | 9.5 | 53 | 72 | (Stroke / 3.25) + 7 |

*1: Round up the L dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

General Type

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

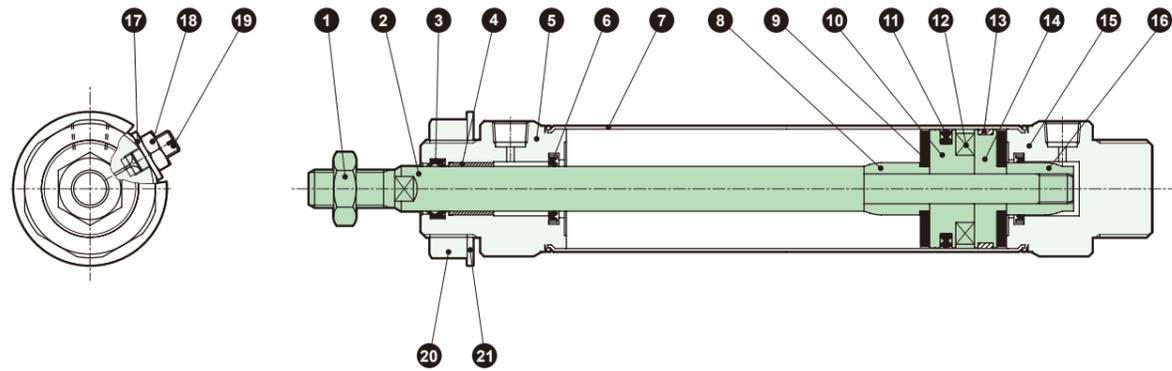
SCG

SCA2

SCS2

Cylinder Switch

Ending



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|-----------------|------------------------------------|------------------------|----------|--------------------------|-----------------------|---------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 11 | Piston Packing | Nitrile Rubber | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel | Industrial Hard Chrome | 12 | Magnet | Plastic | |
| | | ø32, ø40: Carbon Steel | Plating | 13 | Wear Ring | Polyacetal | |
| 3 | Rod Packing | Nitrile Rubber | | 14 | Piston B | Aluminum Alloy | |
| 4 | Bushing | ø20, ø25, ø32: Bearing Alloy | | 15 | Head Cover | Aluminum Alloy | |
| | | ø40: Oil-Impregnated Bearing Alloy | | 16 | Cushion Ring B | Aluminum Alloy | |
| 5 | Rod Cover | Aluminum Alloy | | 17 | Seal Washer | Nitrile Rubber, Steel | |
| 6 | Cushion Packing | Urethane Rubber | | 18 | Hexagon Nut | Steel | Zinc Chromate |
| 7 | Cylinder Tube | Stainless Steel | | 19 | Cushion Adjusting Needle | Copper | Zinc Chromate |
| 8 | Cushion Ring A | Aluminum Alloy | | 20 | Nut | Steel | Zinc Chromate |
| 9 | Cushion Rubber | Urethane Rubber | | 21 | Toothed Lock Washer | Steel | Zinc Chromate |
| 10 | Piston A | Aluminum Alloy | | | | | |

General Type
SCP□3
CMK2
CMA2
SCM
SCG
SCA2
SCS2

General Type
SCP□3
CMK2
CMA2
SCM
SCG
SCA2
SCS2

Cylinder Switch
Ending

Cylinder Switch
Ending



Small bore size cylinder
Double Acting, Drop Prevention Type

CMK2-Q Series

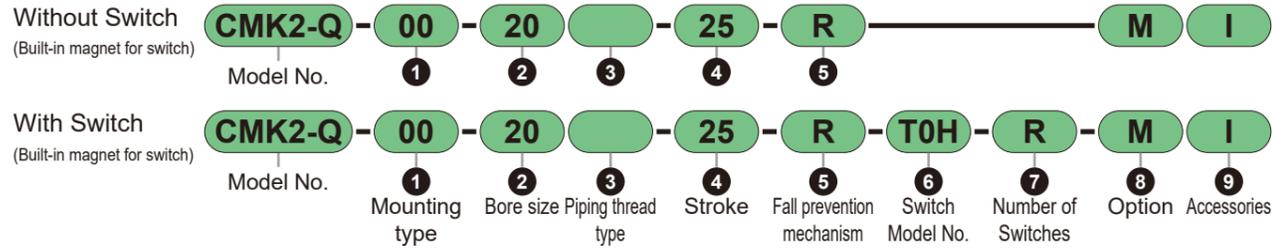
● Bore Size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2-Q Series Model No. Notation Method

Model No. Notation Method



1 Mounting type

| Code | Content |
|------|--|
| 00 | Basic type |
| LB | Axial Foot Type |
| FA | Rod Side Flange Type |
| FB | Head Side Flange Type |
| CA | Single Clevis Type |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) |
| TA | Rod Side Trunnion Type |
| TB | Head Side Trunnion Type |

*1: TA with rod side drop prevention and TB with head side drop prevention cannot be manufactured.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

Note: For minimum stroke with switch, refer to P. 196.

5 Fall prevention mechanism

| Code | Content |
|------|--------------------------------|
| R | Rod Side With Fall Prevention |
| H | Head Side With Fall Prevention |

6 Switch Model No.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | |
|------------------------|---------------------------------|-----------------|------------------|-------------------|-------------------|------------|--------------|---------|
| | | | AC | DC | AC | DC | Straight | L-shape |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ |
| | | 3-wire (NPN) | — | — | 100 or less | — | T3H□ | T3V□ |
| | 2-Color | 2-wire | — | 30 or less | — | — | T3PH□ | T3PV□ |
| | | | — | 24 ± 10% | — | 5 to 20 | T2WH□ | T2WV□ |
| | | 3-wire (NPN) | — | 30 or less | — | 50 or less | T3WH□ | T3WV□ |
| 1-Color Off-Delay Type | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | |
| Reed | No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ |
| | 1-Color | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ | |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length" table.
 *2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
 *3: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|----------------|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |

Example) Lead wire length
 1 m T0H
 3 m T0H [3]
 5 m T0H [5]

7 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more pcs are required, please arrange for the shortage of switch mounting brackets separately.

9 Accessories

| Code | Content |
|------|---|
| I | Single Knuckle |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) |
| B2 | Double Yoke Bracket (Pin and retaining ring included) |

*1: "I" and "Y" cannot be selected at the same time.

8 Option

| Code | Content |
|------|---|
| F | With Push-in Fitting (Straight) |
| FE | With Push-in Fitting (Elbow) |
| M | Piston Rod Material (Stainless Steel) |
| M0 | Non-Locking Manual Device (Release bolt attached) |
| M1 | Locking Manual Device |

*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.
 *2: If "M0" or "M1" is not selected as an option, it will be a non-locking manual device only. Release bolt is not included.
 *3: When Bore size $\phi 20$ or $\phi 25$ is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -A2 | With 2 Rod Nuts |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-Q - - XJ9

Rechargeable Battery Compatible Specification

(Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

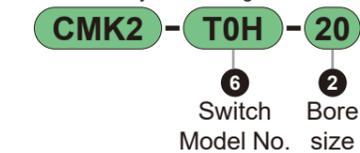
CMK2-Q - - P4*

*Please contact us for details.

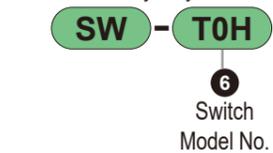
*For combinations of variations and options, see P. 109.

Switch Single Unit Model No. Notation Method

● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



Specifications

| Item | CMK2-Q | | | | |
|---------------------------|--------|---|-------|-------|-------|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | | Double Acting, Drop Prevention Type | | | |
| Operating Fluid | | Compressed Air | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.15 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | | Rc 1/8 | | | |
| Stroke tolerance | mm | $^{+2.0}_0$ (Up to 200), $^{+2.4}_0$ (Over 200,) | | | |
| Operating Piston Speed | mm/s | 50 to 500 | | | |
| Cushion | | Rubber Cushion | | | |
| Lubrication | | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | |
| Fall prevention mechanism | | Head Side or Rod Side | | | |
| Holding Force | N | Max. Thrust × 0.7 | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | Min. Stroke |
|-----------|-------------------------------------|-------------|-------------|
| ø20 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 750 |
| ø25 | | | |
| ø32 | | | |
| ø40 | | | |

Note: Intermediate strokes can be produced in 1 mm increments.

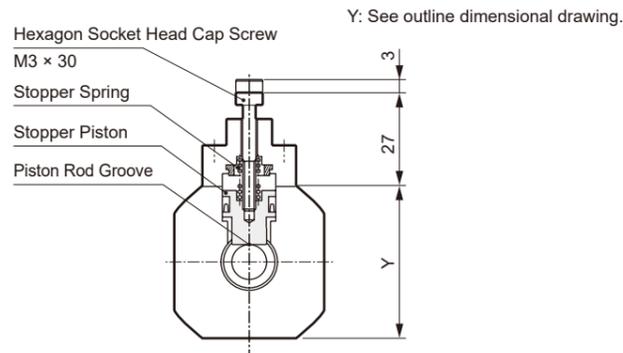
Min. Stroke with Switch

(Unit: mm)

| Bore Size (mm) | Number of Switches | 1 | | | | | | 2 | | | | | |
|----------------|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|----|----|
| | | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| ø20 | | 10 | | | | | | 25 | 30 | | 35 | 25 | 35 |
| ø25 | | 10 | | | | | | 25 | 30 | | 35 | 25 | 35 |
| ø32 | | 10 | | | | | | 25 | 30 | | 35 | 25 | 35 |
| ø40 | | 10 | | | | | | 25 | 30 | | 35 | 25 | 35 |

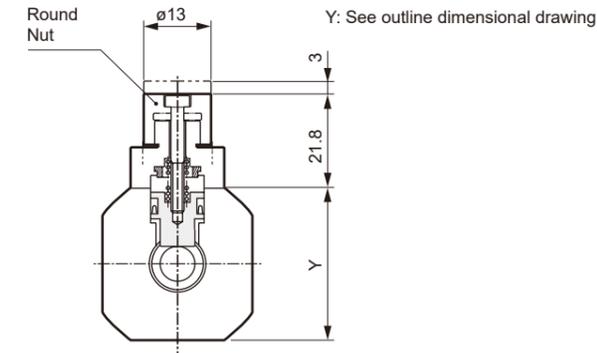
[Explanation of Manual Device]

● Non-locking manual override (Option code: M0) 00



Screw the hexagon socket head cap screw (M3 × 30) into the stopper piston, and if you pull the bolt 3 mm with a force of 20 N or more, the stopper piston will move and the lock will be released. (No load horizontal mounting, opposite side port pressurized) Also, when you release your hand, the stopper piston returns to its original position by the built-in spring, and if it enters the piston rod groove, the piston is locked.

● Locking manual override (Option code: M1) 00



When the round nut is turned to the left (counterclockwise), the stopper piston moves and the lock is released. Also, when turned to the right (clockwise) to the lock position, the stopper piston returns, and if it enters the piston rod groove, the piston is locked.

Cylinder Weight

●CMK2-Q-H (Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|-------------------|-------------------------|-----------------------|--|---------------------------|----------------------------|
| | Basic type 00 | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CAA) | Double Clevis Type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.20 | 0.35 | 0.28 | 0.26 | 0.35 | 0.21 | 0.35 | 0.25 | Refer to the weight listed in the switch specifications on P. 971. | 0.005 | 0.01 |
| ø25 | 0.29 | 0.55 | 0.42 | 0.44 | 0.53 | 0.29 | 0.53 | 0.39 | | 0.005 | 0.01 |
| ø32 | 0.32 | 0.58 | 0.45 | 0.47 | 0.56 | 0.32 | 0.56 | 0.42 | | 0.009 | 0.02 |
| ø40 | 0.51 | 0.77 | 0.64 | 0.66 | 0.75 | 0.53 | 0.75 | 0.67 | | 0.009 | 0.02 |

●CMK2-Q-R (Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|------------------|-------------------------|-----------------------|--|---------------------------|----------------------------|
| | Basic Type (00) | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CC) | Double Clevis Type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.19 | 0.34 | 0.27 | 0.25 | 0.34 | 0.20 | 0.34 | 0.24 | Refer to the weight listed in the switch specifications on P. 971. | 0.005 | 0.01 |
| ø25 | 0.29 | 0.55 | 0.42 | 0.44 | 0.53 | 0.29 | 0.53 | 0.39 | | 0.005 | 0.01 |
| ø32 | 0.32 | 0.58 | 0.45 | 0.47 | 0.56 | 0.32 | 0.56 | 0.42 | | 0.009 | 0.02 |
| ø40 | 0.50 | 0.76 | 0.63 | 0.65 | 0.74 | 0.52 | 0.74 | 0.66 | | 0.009 | 0.02 |

Product mass at S = 0 mm: 0.47 kg
 Added weight at S=50 mm..... Added weight at S=10 mm 0.02 × $\frac{\text{Product Stroke (50)}}{10}$ = 0.10 kg
 (Example) Product mass of CMK2-Q-FA-32-50-R-T0H-D
 Weight of 2 switches:0.036 kg
 Weight of switch rail + 2 bands: ..0.018 kg
 Product weight0.47 kg + 0.1 kg + 0.036 kg + 0.018 kg = 0.624 kg

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 47.1 | 62.8 | 94.2 | 1.26 × 10 ² | 1.57 × 10 ² | 1.88 × 10 ² | 2.20 × 10 ² | 2.51 × 10 ² | 2.83 × 10 ² | 3.14 × 10 ² |
| | Pull | 35.3 | 47.1 | 70.7 | 94.2 | 1.18 × 10 ² | 1.41 × 10 ² | 1.65 × 10 ² | 1.88 × 10 ² | 2.12 × 10 ² | 2.36 × 10 ² |
| ø25 | Push | 73.6 | 98.2 | 1.47 × 10 ² | 1.96 × 10 ² | 2.45 × 10 ² | 2.95 × 10 ² | 3.44 × 10 ² | 3.93 × 10 ² | 4.42 × 10 ² | 4.91 × 10 ² |
| | Pull | 56.7 | 75.6 | 1.13 × 10 ² | 1.51 × 10 ² | 1.89 × 10 ² | 2.27 × 10 ² | 2.64 × 10 ² | 3.02 × 10 ² | 3.40 × 10 ² | 3.78 × 10 ² |
| ø32 | Push | 1.21 × 10 ² | 1.61 × 10 ² | 2.41 × 10 ² | 3.22 × 10 ² | 4.02 × 10 ² | 4.83 × 10 ² | 5.63 × 10 ² | 6.43 × 10 ² | 7.24 × 10 ² | 8.04 × 10 ² |
| | Pull | 1.04 × 10 ² | 1.38 × 10 ² | 2.07 × 10 ² | 2.76 × 10 ² | 3.46 × 10 ² | 4.15 × 10 ² | 4.84 × 10 ² | 5.53 × 10 ² | 6.22 × 10 ² | 6.91 × 10 ² |
| ø40 | Push | 1.88 × 10 ² | 2.51 × 10 ² | 3.77 × 10 ² | 5.03 × 10 ² | 6.28 × 10 ² | 7.54 × 10 ² | 8.80 × 10 ² | 1.01 × 10 ³ | 1.13 × 10 ³ | 1.26 × 10 ³ |
| | Pull | 1.65 × 10 ² | 2.21 × 10 ² | 3.31 × 10 ² | 4.41 × 10 ² | 5.51 × 10 ² | 6.62 × 10 ² | 7.72 × 10 ² | 8.82 × 10 ² | 9.92 × 10 ² | 1.10 × 10 ³ |

Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|-------------|----------|----------|----------|
| Mounting bracket | | | | |
| Basic Type (00) | *3 M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.

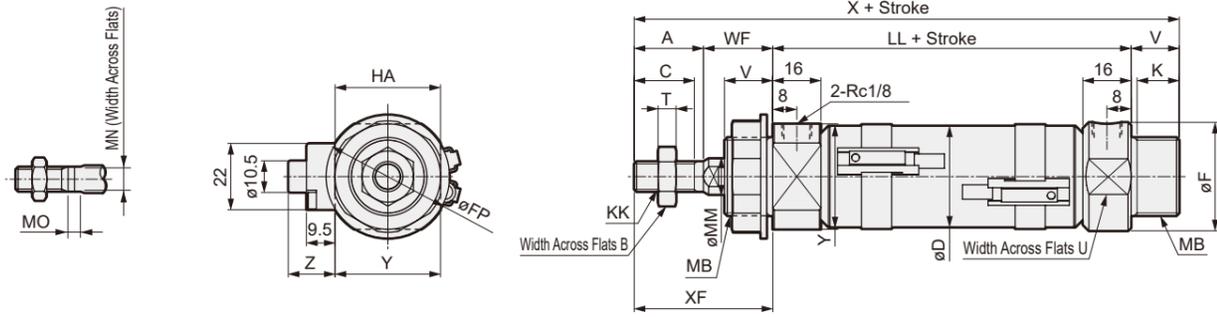
*2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.

*3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

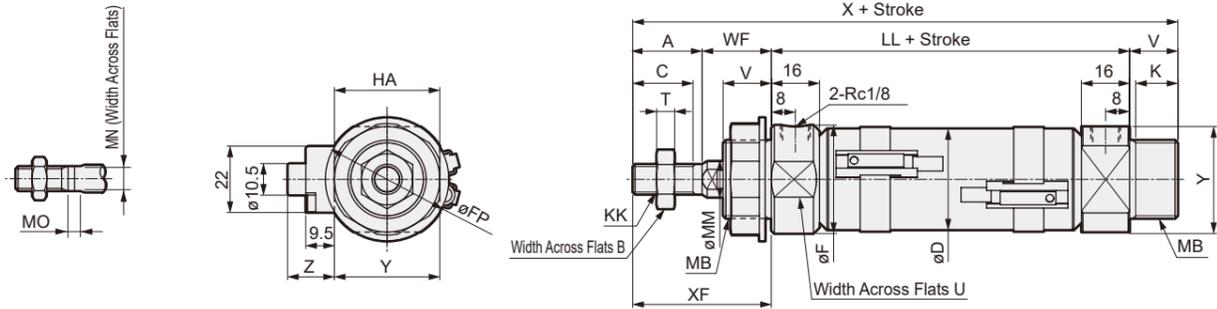
Ending Before use, be sure to read the precautions for use for **Fall Prevention** Type on P. 288 to P. 290.

Outline Dimension Drawing

- Basic Type (00)
(With rod side fall prevention)



- (With head side fall prevention)



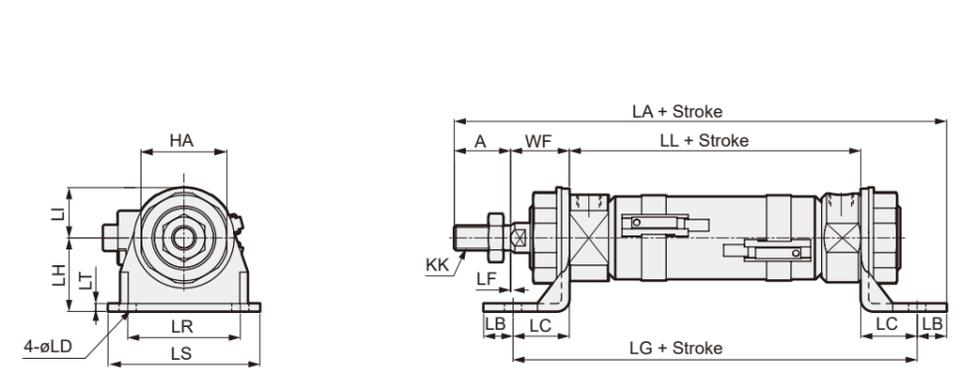
| Code | Basic Type (00) Basic Dimensions | | | | | | | | | | |
|----------------|----------------------------------|----|----|------|----|----|----|------------|----|-----------|----|
| Bore Size (mm) | A | B | C | D | FP | HA | K | KK | LL | MB | MM |
| ø20 | 20 | 13 | 18 | 21.4 | 29 | 26 | 12 | M8 × 1.0 | 66 | M18 × 1.5 | 10 |
| ø25 | 23 | 17 | 20 | 26.4 | 41 | 35 | 14 | M10 × 1.25 | 69 | M26 × 1.5 | 12 |
| ø32 | 23 | 17 | 20 | 33.6 | 41 | 35 | 14 | M10 × 1.25 | 69 | M26 × 1.5 | 12 |
| ø40 | 25 | 19 | 22 | 41.6 | 41 | 35 | 14 | M12 × 1.5 | 73 | M26 × 1.5 | 14 |

| Code | Basic Type (00) Basic Dimensions | | | | | | | | |
|----------------|----------------------------------|----|---|----|----|-----|----|----|------|
| Bore Size (mm) | MN | MO | T | V | WF | X | XF | Y | Z |
| ø20 | 8 | 5 | 5 | 14 | 24 | 124 | 44 | 31 | 15.5 |
| ø25 | 10 | 5 | 6 | 16 | 23 | 131 | 46 | 35 | 15.5 |
| ø32 | 10 | 5 | 6 | 16 | 23 | 131 | 46 | 35 | 15.5 |
| ø40 | 12 | 6 | 7 | 16 | 23 | 137 | 48 | 43 | 15.5 |

*1: For outline dimensions with manual device, refer to the diagram in [Explanation of Manual Device] on P. 196.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

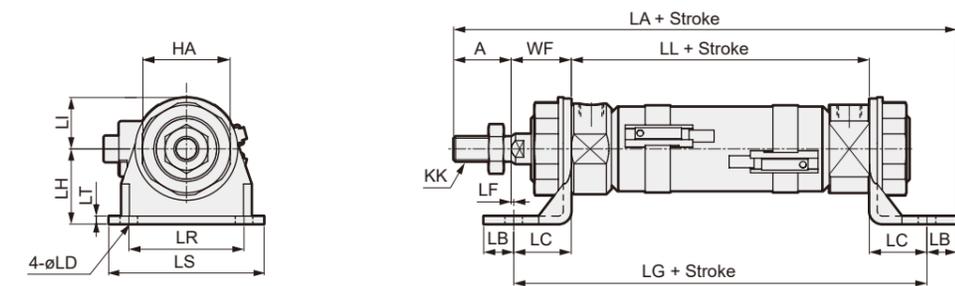
- Axial Foot Type (LB)
(With rod side fall prevention)



| Code | Axial Foot Type (LB) Mounting Dimensions | | | | | | | | | | | | | | | |
|----------------|--|----|------------|----|----|-----|----|----|----|----|-----|----|------|----|----|-----|
| Bore Size (mm) | A | HA | KK | LL | WF | LA | LB | LC | LD | LF | LG | LH | LI | LR | LS | LT |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 138 | 10 | 18 | 6 | 6 | 102 | 25 | 15 | 30 | 44 | 3.2 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 150 | 12 | 23 | 7 | 0 | 115 | 30 | 20.5 | 46 | 62 | 3.2 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 150 | 12 | 23 | 7 | 0 | 115 | 30 | 20.5 | 46 | 62 | 3.2 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 156 | 12 | 23 | 7 | 0 | 119 | 30 | 22.5 | 46 | 62 | 3.2 |

*1: For dimensions with each switch, see P. 284 to P. 286.
 *2: For outer dimensions diagram of accessories, refer to P. 123.

- (With head side fall prevention)



| Code | Axial Foot Type (LB) Mounting Dimensions | | | | | | | | | | | | | | | |
|----------------|--|----|------------|----|----|-----|----|----|----|----|-----|----|------|----|----|-----|
| Bore Size (mm) | A | HA | KK | LL | WF | LA | LB | LC | LD | LF | LG | LH | LI | LR | LS | LT |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 138 | 10 | 18 | 6 | 6 | 102 | 25 | 15 | 30 | 44 | 3.2 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 150 | 12 | 23 | 7 | 0 | 115 | 30 | 20.5 | 46 | 62 | 3.2 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 150 | 12 | 23 | 7 | 0 | 115 | 30 | 20.5 | 46 | 62 | 3.2 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 156 | 12 | 23 | 7 | 0 | 119 | 30 | 22.5 | 46 | 62 | 3.2 |

*1: For dimensions with each switch, see P. 284 to P. 286.
 *2: For outer dimensions diagram of accessories, refer to P. 123.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

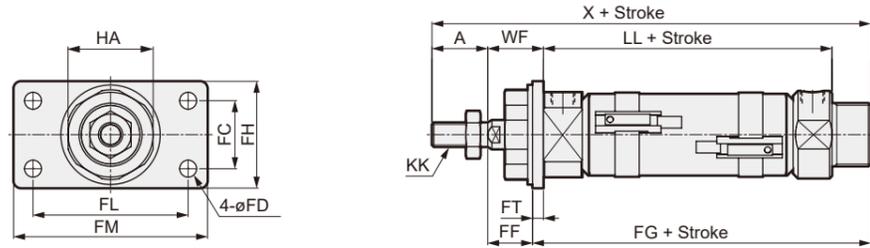
Ending

Cylinder Switch

Ending

Outline Dimension Drawing

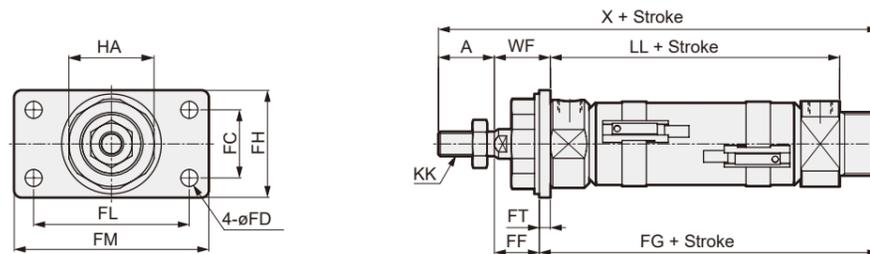
- Rod Side Flange Type (FA)
(With rod side fall prevention)



| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | |
|----------------|---|----|------------|----|----|-----|----|----|------|------|----|----|----|-----|
| Bore Size (mm) | A | HA | KK | LL | WF | X | FC | FD | FF | FG | FH | FL | FM | FT |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 20.8 | 83.2 | 34 | 40 | 54 | 3.2 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 18.5 | 93.5 | 44 | 64 | 80 | 4.5 |

*1: For dimensions with each switch, see P. 284 to P. 286.
*2: For outer dimensions diagram of accessories, refer to P. 123.

(With head side fall prevention)

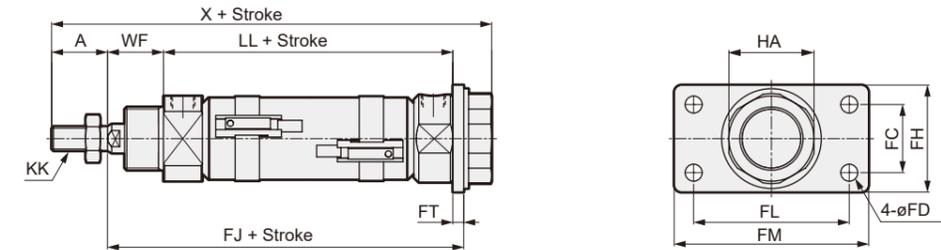


| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | | | |
|----------------|---|----|----|------------|----|----|-----|----|----|------|------|----|----|----|----|-----|
| Bore Size (mm) | A | HA | F | KK | LL | WF | X | FC | FD | FF | FG | FH | FL | FM | FP | FT |
| ø20 | 20 | 26 | 28 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 20.8 | 83.2 | 34 | 40 | 54 | 29 | 3.2 |
| ø25 | 23 | 35 | 32 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 41 | 4.5 |
| ø32 | 23 | 35 | 36 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 41 | 4.5 |
| ø40 | 25 | 35 | 45 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 18.5 | 93.5 | 44 | 64 | 80 | 41 | 4.5 |

*1: For dimensions with each switch, see P. 284 to P. 286.
*2: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

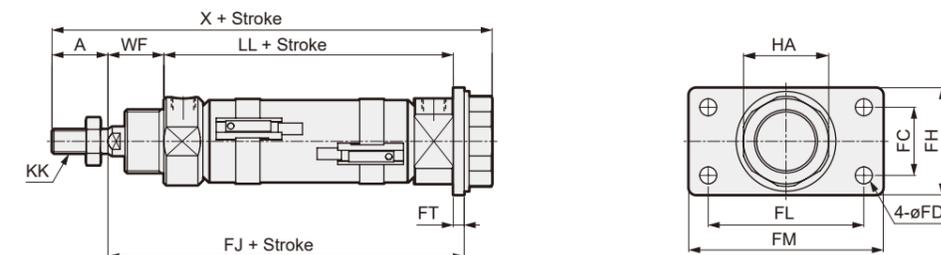
- Head Side Flange Type (FB)
(With rod side fall prevention)



| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | | |
|----------------|--|----|------------|----|----|-----|----|----|----|-------|----|----|-----|--|
| Bore Size (mm) | A | HA | KK | LL | WF | X | FC | FD | FH | FJ | FL | FM | FT | |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 34 | 93.2 | 40 | 54 | 3.2 | |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 44 | 100.5 | 64 | 80 | 4.5 | |

*1: For dimensions with each switch, see P. 284 to P. 286.
*2: For outer dimensions diagram of accessories, refer to P. 123.

(With head side fall prevention)

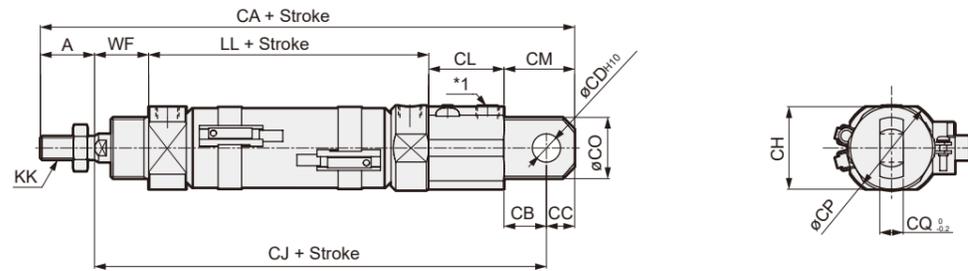


| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | | |
|----------------|--|----|------------|----|----|-----|----|----|----|-------|----|----|-----|--|
| Bore Size (mm) | A | HA | KK | LL | WF | X | FC | FD | FH | FJ | FL | FM | FT | |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 34 | 93.2 | 40 | 54 | 3.2 | |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 44 | 100.5 | 64 | 80 | 4.5 | |

*1: For dimensions with each switch, see P. 284 to P. 286.
*2: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

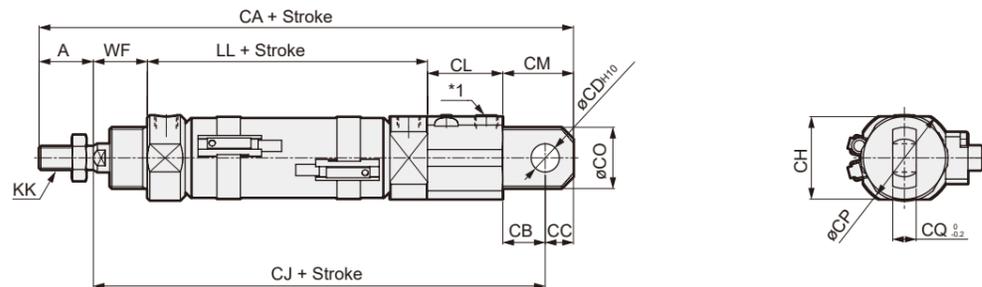
- Single Yoke Clevis Type (CA)
(With rod side fall prevention)



| Code | Single Clevis Type (CA) Mounting Dimensions | | | | | | | | | | | | | | | |
|----------------|---|------------|----|----|-----|----|----|----|----|-----|----|----|----|----|----|--|
| Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | CQ | |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 8 | |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 10 | |

*1: Not a piping port.
*2: For dimensions with each switch, see P. 284 to P. 286.
*3: For outer dimensions diagram of accessories, refer to P. 123.

(With head side fall prevention)

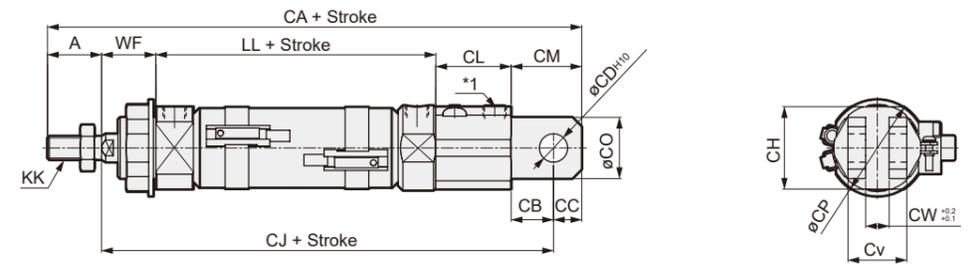


| Code | Single Clevis Type (CA) Mounting Dimensions | | | | | | | | | | | | | | | |
|----------------|---|------------|----|----|-----|----|----|----|----|-----|----|----|----|----|----|--|
| Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | CQ | |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 8 | |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 10 | |

*1: Not a piping port.
*2: For dimensions with each switch, see P. 284 to P. 286.
*3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

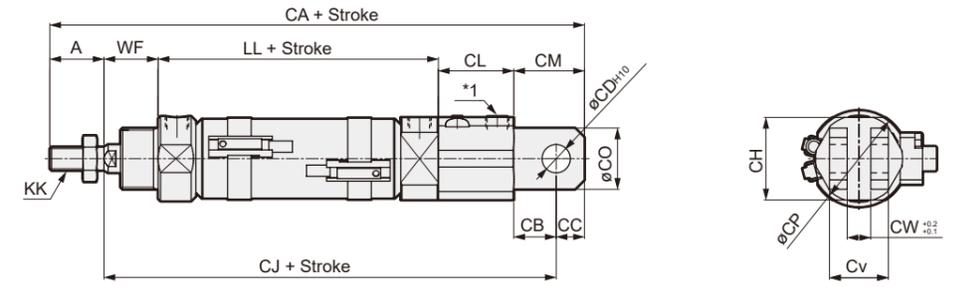
- Double Knuckle Clevis Type (CB)
(With rod side fall prevention)



| Code | Double Clevis Type (CB) Mounting Dimensions | | | | | | | | | | | | | | | | | |
|----------------|---|------------|----|----|-----|----|----|----|----|-----|----|----|----|----|----|----|--|--|
| Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | Cv | CW | | |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 19 | 8 | | |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 25 | 10 | | |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 25 | 10 | | |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 25 | 10 | | |

*1: Not a piping port.
*2: For dimensions with each switch, see P. 284 to P. 286.
*3: For outer dimensions diagram of accessories, refer to P. 123.

(With head side fall prevention)

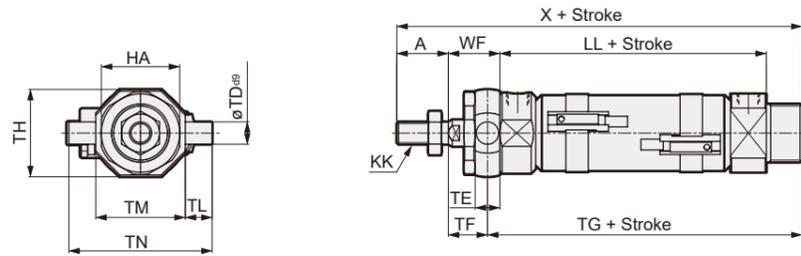


| Code | Double Clevis Type (CB) Mounting Dimensions | | | | | | | | | | | | | | | | | |
|----------------|---|------------|----|----|-----|----|----|----|----|-----|----|----|----|----|----|----|--|--|
| Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | Cv | CW | | |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 19 | 8 | | |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 25 | 10 | | |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 25 | 10 | | |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 25 | 10 | | |

*1: Not a piping port.
*2: For dimensions with each switch, see P. 284 to P. 286.
*3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

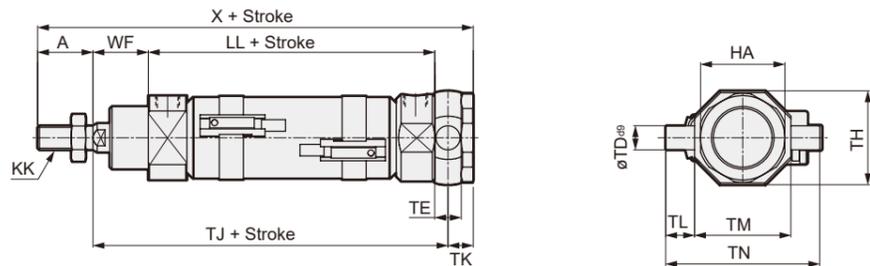
- Rod Side Trunnion Type (TA)
(With head side fall prevention)



| Code | Rod Side Trunnion Type (TA) Mounting Dimensions | | | | | | | | | | | | | |
|----------------|---|----|------------|----|----|-----|----|----|------|------|------|-----|----|----|
| Bore Size (mm) | A | HA | KK | LL | WF | X | TD | TE | TF | TG | TH | TL | TM | TN |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 8 | 9 | 19.5 | 84.5 | 29.5 | 8 | 30 | 46 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 11 | 17.5 | 90.5 | 39 | 12 | 40 | 64 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 11 | 17.5 | 90.5 | 39 | 12 | 40 | 64 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 10 | 11 | 17.5 | 94.5 | 44 | 9.5 | 53 | 72 |

*1: For dimensions with each switch, see P. 284 to P. 286.
*2: For outer dimensions diagram of accessories, refer to P. 123.

- Head Side Trunnion Type (TB)
(With rod side fall prevention)



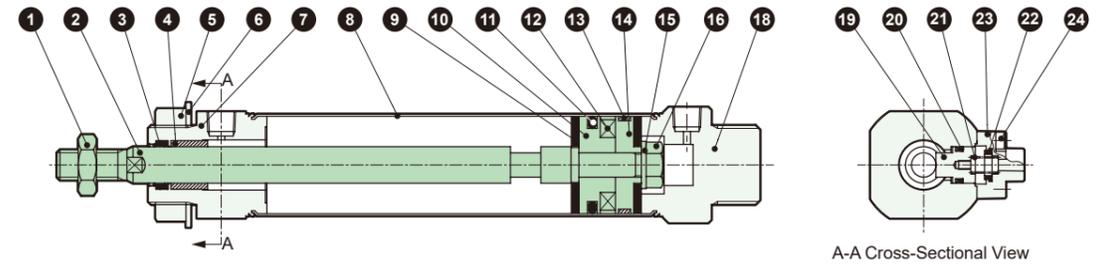
| Code | Head Side Trunnion Type (TB) Mounting Dimensions | | | | | | | | | | | | | |
|----------------|--|----|------------|----|----|-----|----|----|------|-------|------|-----|----|----|
| Bore Size (mm) | A | HA | KK | LL | WF | X | TD | TE | TH | TJ | TK | TL | TM | TN |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 8 | 9 | 29.5 | 94.5 | 9.5 | 8 | 30 | 46 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 11 | 39 | 97.5 | 10.5 | 12 | 40 | 64 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 11 | 39 | 97.5 | 10.5 | 12 | 40 | 64 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 10 | 11 | 44 | 101.5 | 10.5 | 9.5 | 53 | 72 |

*1: For dimensions with each switch, see P. 284 to P. 286.
*2: For outer dimensions diagram of accessories, refer to P. 123.

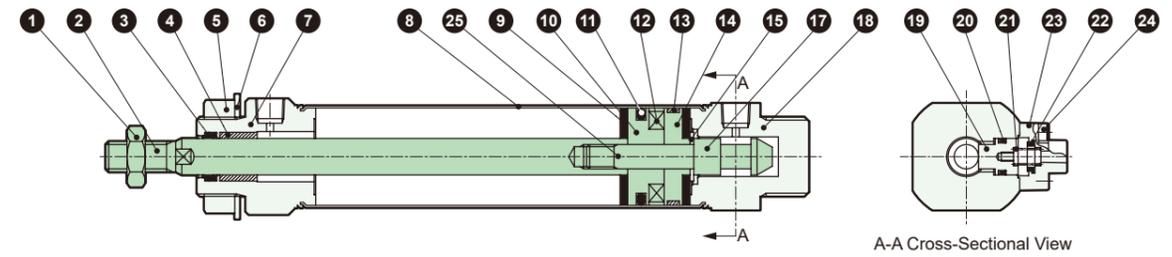
Internal Structure Diagram / Material

Internal Structure Diagram / Material

- CMK2-Q (Rod Side Fall Prevention)



- CMK2-Q (Head Side Fall Prevention)



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|---------------------|--|--------------------------------|----------|-------------------------------|-----------------|----------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 13 | Wear Ring | Polyacetal | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel | Industrial Hard Chrome Plating | 14 | Piston (B) | Aluminum Alloy | |
| | | ø32, ø40: Steel | | 15 | Spacer | Steel | Zinc Chromate (*1) |
| 3 | Rod Packing | Nitrile Rubber | | 16 | Nut | Steel | Zinc Chromate |
| 4 | Bushing | ø20: Bearing Alloy | | 17 | Sleeve | Steel | Nitriding Treatment |
| | | ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 18 | Head Cover | Aluminum Alloy | |
| 5 | Nut | Steel | Zinc Chromate | 19 | Stopper Piston | Steel | Nitriding Treatment |
| 6 | Toothed Lock Washer | Steel | Zinc Chromate | 20 | Piston Packing (B) | Nitrile Rubber | |
| 7 | Rod Cover | Aluminum Alloy | | 21 | Spring | Steel | Painting |
| 8 | Cylinder Tube | Stainless Steel | | 22 | Cushion Rubber (B) | Urethane Rubber | |
| 9 | Cushion Rubber (A) | Urethane Rubber | | 23 | Stopper Cover | Aluminum Alloy | Chromate |
| 10 | Piston (A) | Aluminum Alloy | | 24 | Hexagon Socket Head Cap Screw | Alloy Steel | Zinc Chromate |
| 11 | Piston Packing (A) | Nitrile Rubber | | 25 | Spring Pin | Steel | Black Oxide or Phosphate Coating |
| 12 | Magnet | Plastic | | | | | |

*1: For ø40 with rod side fall prevention, 15 spacer is not included.



Small bore size cylinder
Double Acting/Fine Speed Type

CMK2-F Series

● Bore Size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram
Symbol



CMK2-F Series Model No. Notation Method

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

7 Option

| Code | Content |
|------|---------------------------------------|
| M | Piston Rod Material (Stainless Steel) |
| V | Boss Cut |

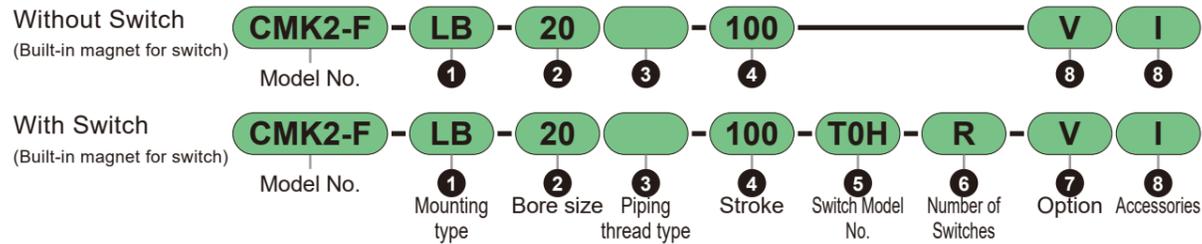
*1: When Bore size $\phi 20$ or 25 is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

8 Accessories

| Code | Content |
|------|---|
| I | Single Knuckle |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) |
| B2 | Double Yoke Bracket (Pin and retaining ring included) |

*1: "I" and "Y" cannot be selected at the same time.

Model No. Notation Method



1 Mounting type

Mounting brackets are included with the product and shipped.

| Code | Content |
|------|--|
| 00 | Basic type |
| LB | Double Side Axial Foot Type |
| LS | Single Side Axial Foot Type (Rod Side) |
| FA | Rod Side Flange Type |
| FB | Head Side Flange Type |
| CA | Single Clevis Type |
| CC | Single Clevis Integrated Type |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) |
| TA | Rod Side Trunnion Type |
| TB | Head Side Trunnion Type |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

Note: For minimum stroke with switch, refer to P. 208.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | | Image |
|------------------------|---------------------------------|-----------------------------------|------------------|-------------------|-------------------|------------|--------------|---------|-------|
| | | | AC | DC | AC | DC | Straight | L-shape | |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ | Image |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ | |
| | | 3-wire (NPN) | — | — | 100 or less | — | T3H□ | T3V□ | |
| | 2-Color | 2-wire | — | 24 \pm 10% | — | 5 to 20 | T2WH□ | T2WV□ | Image |
| | | | 3-wire (PNP) | — | 30 or less | — | 50 or less | T3WH□ | |
| | | 2-Color Improved Water Resistance | — | 24 \pm 10% | — | 5 to 20 | T2WLH□ | T2WLV□ | |
| 1-Color Off-Delay Type | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ | Image | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | | |
| Reed | 1-Color No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ | Image |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ | |
| | 1-Color | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ | | |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|--|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H ③
5 m T0H ⑤

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -A2 | With 2 Rod Nuts |
| Rod End Shape Modification | Refer to Ending P. 11. |

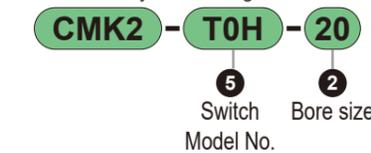
Model No. Example)

CMK2-F - - XJ9

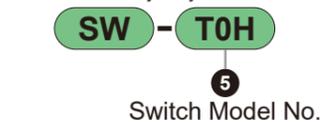
*For combinations of variations and options, see P. 109.

Switch Single Unit Model No. Notation Method

● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



Specifications

| Item | CMK2-F | | | |
|-----------------------------|--|-------|-------|-------|
| Bore Size mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | Double Acting Type | | | |
| Operating Fluid | Compressed Air | | | |
| Max. Working Pressure MPa | 1.0 | | | |
| Min. Operating Pressure MPa | 0.1 | | | |
| Proof Pressure MPa | 1.6 | | | |
| Ambient Temperature °C | 5 to 60 | | | |
| Port Size | Rc 1/8 | | | |
| Stroke tolerance mm | +2.0 0 (Up to 200), +2.4 0 (Over 200.) | | | |
| Operating Piston Speed mm/s | 1 to 200 | | | |
| Cushion | Rubber Cushion | | | |
| Lubrication | Lubrication Not Possible | | | |
| Allowable Absorbed EnergyJ | 0.166 | 0.308 | 0.424 | 0.639 |

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|------------------|-------------------------|-----------------------|--|---------------------------|----------------------------|
| | Basic type 00 | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CC) | Double Clevis Type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.17 | 0.32 | 0.25 | 0.23 | 0.32 | 0.18 | 0.32 | 0.22 | Refer to the mass described in the switch specifications on P. 971 | 0.005 | 0.01 |
| ø25 | 0.26 | 0.52 | 0.39 | 0.41 | 0.50 | 0.26 | 0.50 | 0.36 | | 0.005 | 0.01 |
| ø32 | 0.30 | 0.56 | 0.43 | 0.45 | 0.54 | 0.30 | 0.54 | 0.40 | | 0.009 | 0.02 |
| ø40 | 0.48 | 0.74 | 0.61 | 0.63 | 0.72 | 0.50 | 0.72 | 0.64 | | 0.009 | 0.02 |

(Example) Product Weight of CMK2-F-FA-32-50-T0H-D
 Product Weight at S = 0 mm:0.45 kg
 Added weight at S=50 mm..... Added weight at S=10 mm 0.02 × $\frac{\text{Product Stroke (50)}}{10}$ = 0.10 kg
 Weight of 2 switches:0.036 kg
 Weight of switch rail + 2 bands: ..0.018 kg
 Product Weight0.45 kg+0.1 kg+0.036 kg+0.018 kg=0.604 kg

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | Min. Stroke |
|--------------------|-------------------------------------|-------------|-------------|
| ø20, ø25, ø32, ø40 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 5 |

*1: Intermediate strokes can be manufactured in 1 mm increments.
 *2: Single side foot type (LS type) has a maximum stroke of 50 mm.

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | | |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 31.4 | 47.1 | 62.8 | 94.2 | 1.26 × 10 ² | 1.57 × 10 ² | 1.88 × 10 ² | 2.20 × 10 ² | 2.51 × 10 ² | 2.83 × 10 ² | 3.14 × 10 ² |
| | Pull | 23.6 | 35.3 | 47.1 | 70.7 | 94.2 | 1.18 × 10 ² | 1.41 × 10 ² | 1.65 × 10 ² | 1.88 × 10 ² | 2.12 × 10 ² | 2.36 × 10 ² |
| ø25 | Push | 49.1k | 73.6 | 98.2 | 1.47 × 10 ² | 1.96 × 10 ² | 2.45 × 10 ² | 2.95 × 10 ² | 3.44 × 10 ² | 3.93 × 10 ² | 4.42 × 10 ² | 4.91 × 10 ² |
| | Pull | 37.8 | 56.7 | 75.6 | 1.13 × 10 ² | 1.51 × 10 ² | 1.89 × 10 ² | 2.27 × 10 ² | 2.64 × 10 ² | 3.02 × 10 ² | 3.40 × 10 ² | 3.78 × 10 ² |
| ø32 | Push | 80.4 | 1.21 × 10 ² | 1.61 × 10 ² | 2.41 × 10 ² | 3.22 × 10 ² | 4.02 × 10 ² | 4.83 × 10 ² | 5.63 × 10 ² | 6.43 × 10 ² | 7.24 × 10 ² | 8.04 × 10 ² |
| | Pull | 69.1 | 1.04 × 10 ² | 1.38 × 10 ² | 2.07 × 10 ² | 2.76 × 10 ² | 3.46 × 10 ² | 4.15 × 10 ² | 4.84 × 10 ² | 5.53 × 10 ² | 6.22 × 10 ² | 6.91 × 10 ² |
| ø40 | Push | 1.26 × 10 ² | 1.88 × 10 ² | 2.51 × 10 ² | 3.77 × 10 ² | 5.03 × 10 ² | 6.28 × 10 ² | 7.54 × 10 ² | 8.80 × 10 ² | 1.01 × 10 ³ | 1.13 × 10 ³ | 1.26 × 10 ³ |
| | Pull | 1.10 × 10 ² | 1.65 × 10 ² | 2.21 × 10 ² | 3.31 × 10 ² | 4.41 × 10 ² | 5.51 × 10 ² | 6.62 × 10 ² | 7.72 × 10 ² | 8.82 × 10 ² | 9.92 × 10 ² | 1.10 × 10 ³ |

Min. Stroke with Switch

(Unit: mm)

| Bore Size (mm) | 1 | | | | | | 2 | | | | | |
|----------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|--|--|
| | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| ø20 | 10 | | | 25 | | | 30 | | | 35 | | |
| ø25 | 10 | | | 25 | | | 30 | | | 35 | | |
| ø32 | 10 | | | 25 | | | 30 | | | 35 | | |
| ø40 | 10 | | | 25 | | | 30 | | | 35 | | |

Mounting Bracket Model No. Notation Method

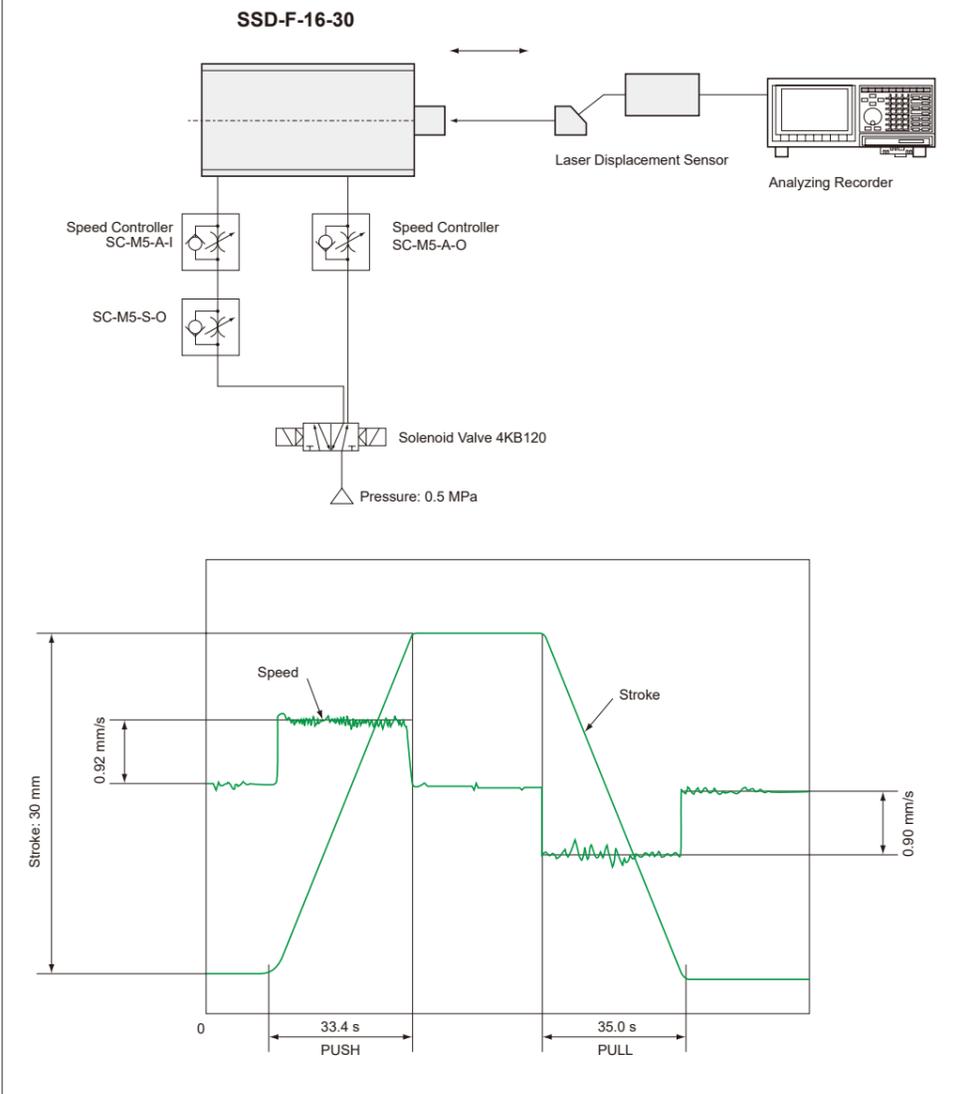
| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|----------|----------|----------|----------|
| Basic Type (00) | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
 *2: For axial foot type (both sides), 2 sets of "M1-LB-□1" from the table above are required.
 *3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

Outline Dimension Drawing

Same as double acting/single rod type CMK2 series. See P. 114 to P. 121.

Measurement Method





Small bore size cylinder
Double Acting/Double Rod Type

CMK2-D Series

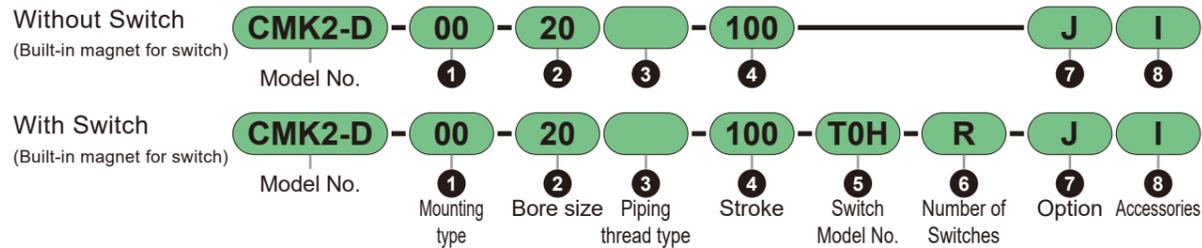
● Bore Size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2-D Series Model No. Notation Method

Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Content |
|------|-------------------------------|
| 00 | Basic type |
| LB | Axial Foot Type (Both Sides) |
| LS | Axial Foot Type (Single Side) |
| FA | Rod Side Flange Type |
| TA | Rod Side Trunnion Type |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 500 | Every 1 mm |
| $\phi 25$ | 5 to 550 | |
| $\phi 32$ | 5 to 480 | |
| $\phi 40$ | 5 to 450 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 214.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | | | |
|------------------------|---------------------------------|-----------------------------------|------------------|--------------|-------------------|-------------|--------------|---------|--------|--------|
| | | | AC | DC | AC | DC | Straight | L-shape | | |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ | | |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ | | |
| | | 3-wire (NPN) | — | — | — | 100 or less | — | T3H□ | T3V□ | |
| | | | — | 30 or less | — | — | — | T3PH□ | T3PV□ | |
| | 2-Color | 2-wire | — | 24 \pm 10% | — | 5 to 20 | — | T2WH□ | T2WV□ | |
| | | | — | 30 or less | — | 50 or less | — | T3WH□ | T3WV□ | |
| | | 2-Color Improved Water Resistance | 2-wire | — | 24 \pm 10% | — | 5 to 20 | — | T2WLH□ | T2WLV□ |
| | | | | — | 10 to 30 | — | 5 to 20 *2 | — | T2JH□ | T2JV□ |
| 1-Color Off-Delay Type | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | — | T2HR3 | T2VR3 | | |
| | | — | 10 to 30 | — | 5 to 20 *2 | — | — | — | | |
| Reed | 1-Color No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ | | |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ | | |
| | 1-Color | 2-wire | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ | | |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. 00 If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|---|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H ③
5 m T0H ⑤

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content |
|------|---|
| I | Single Knuckle |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) |
| B2 | Double Yoke Bracket (Pin and retaining ring included) |

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -T2 | Fluorine Packing Type |
| -A2 | With 2 Rod Nuts |
| -O | Low Speed Type |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-D - - XJ9

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

CMK2-D - - FP1

*For combinations of variations and options, see P. 109.

7 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature |
|------|---------------------------------------|--------------------------|--------------------------------|
| J | Bellows | 100°C | 200°C |
| L | | 250°C | 400°C |
| F | With One-touch Fitting (Straight) | | |
| FE | With One-touch Fitting (Elbow) | | |
| M | Piston Rod Material (Stainless Steel) | | |

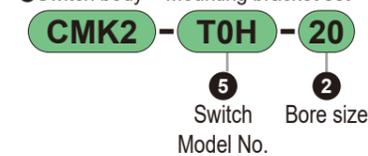
*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.

*2: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.

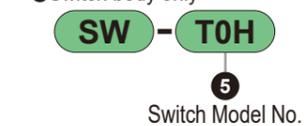
*3: When Bore size $\phi 20$ or 25 is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

Switch Single Unit Model No. Notation Method

● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



Specifications

| Item | CMK2-D | | | | |
|---------------------------|--------|---|-------|-------|-------|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | | Double Acting/Double Rod Type | | | |
| Operating Fluid | | Compressed Air | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.15 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | | Rc1/8 | | | |
| Stroke tolerance | mm | $^{+2.0}_0$ (Up to 200), $^{+2.4}_0$ (Over 200.) | | | |
| Operating Piston Speed | mm/s | 50 to 500 | | | |
| Cushion | | Rubber Cushion | | | |
| Lubrication | | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|-----------------------------------|-----------------|--------------|---------------------|-------------|
| | | Without Bellows | With Bellows | Without Bellows "L" | Bellows "J" |
| ø20 | 25, 50, 75, 100, 150, 200, 250 | 480 | 300 | 5 | 25 |
| ø25 | | | | | |
| ø32 | | | | | |
| ø40 | 300 | 450 | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.
*2: Single side foot type (LS type) has a maximum stroke of 50 mm.
*3: For bellows "J" with stroke less than 25 mm, please inquire each time.

Min. Stroke with Switch

(Unit: mm)

| Number of Switches | 1 | | | | | | 2 | | | | | | |
|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|----|----|----|
| | Solid State | | | Reed | | | Solid State | | | Reed | | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | | |
| ø20 | 10 | | | | | | 25 | 30 | | | 35 | 25 | 35 |
| ø25 | 10 | | | | | | 25 | 30 | | | 35 | 25 | 35 |
| ø32 | 10 | | | | | | 25 | 30 | | | 35 | 25 | 35 |
| ø40 | 10 | | | | | | 25 | 30 | | | 35 | 25 | 35 |

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-----------------------|--|---------------------------|----------------------------|
| | Basic type 00 | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.21 | 0.36 | 0.29 | 0.27 | 0.26 | Refer to the mass described in the switch specifications on P. 971 | 0.005 | 0.02 |
| ø25 | 0.32 | 0.58 | 0.45 | 0.47 | 0.42 | | 0.005 | 0.02 |
| ø32 | 0.36 | 0.62 | 0.49 | 0.51 | 0.46 | | 0.009 | 0.03 |
| ø40 | 0.57 | 0.83 | 0.70 | 0.72 | 0.73 | | 0.009 | 0.03 |

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push/Pull | 35.3 | 47.1 | 70.7 | 94.2 | 1.18 × 10 ² | 1.41 × 10 ² | 1.65 × 10 ² | 1.88 × 10 ² | 2.12 × 10 ² | 2.36 × 10 ² |
| ø25 | Push/Pull | 56.7 | 75.6 | 1.13 × 10 ² | 1.51 × 10 ² | 1.89 × 10 ² | 2.27 × 10 ² | 2.64 × 10 ² | 3.02 × 10 ² | 3.40 × 10 ² | 3.78 × 10 ² |
| ø32 | Push/Pull | 1.04 × 10 ² | 1.38 × 10 ² | 2.07 × 10 ² | 2.76 × 10 ² | 3.46 × 10 ² | 4.15 × 10 ² | 4.84 × 10 ² | 5.53 × 10 ² | 6.22 × 10 ² | 6.91 × 10 ² |
| ø40 | Push/Pull | 1.65 × 10 ² | 2.21 × 10 ² | 3.31 × 10 ² | 4.41 × 10 ² | 5.51 × 10 ² | 6.62 × 10 ² | 7.72 × 10 ² | 8.82 × 10 ² | 9.92 × 10 ² | 1.10 × 10 ³ |

Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|-------------|----------|----------|----------|
| Mounting bracket | | | | |
| Basic Type (00) | *3 M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |

*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
*2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.
*3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

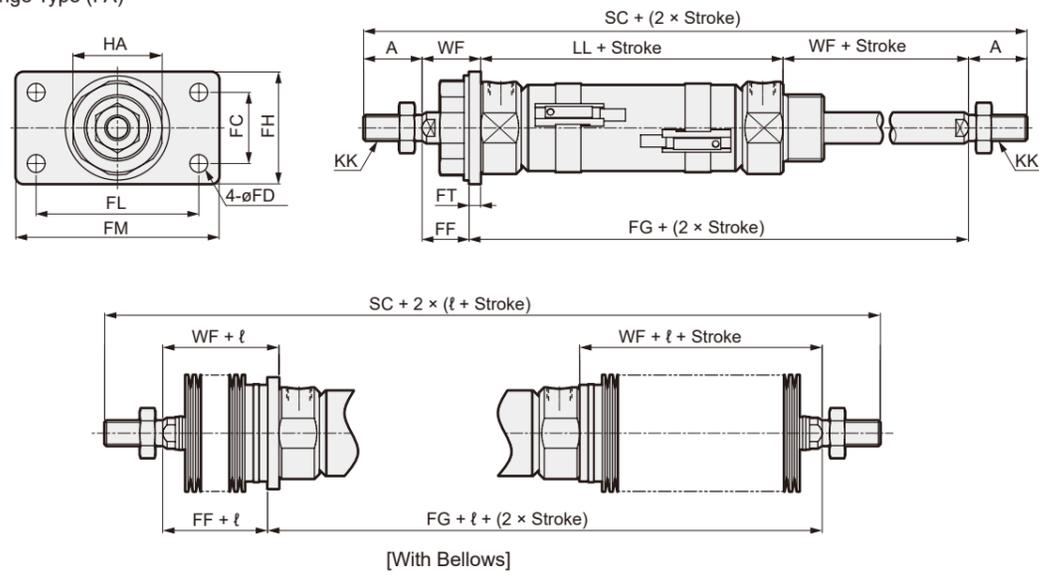
Ending

Cylinder Switch

Ending

Outline Dimension Drawing

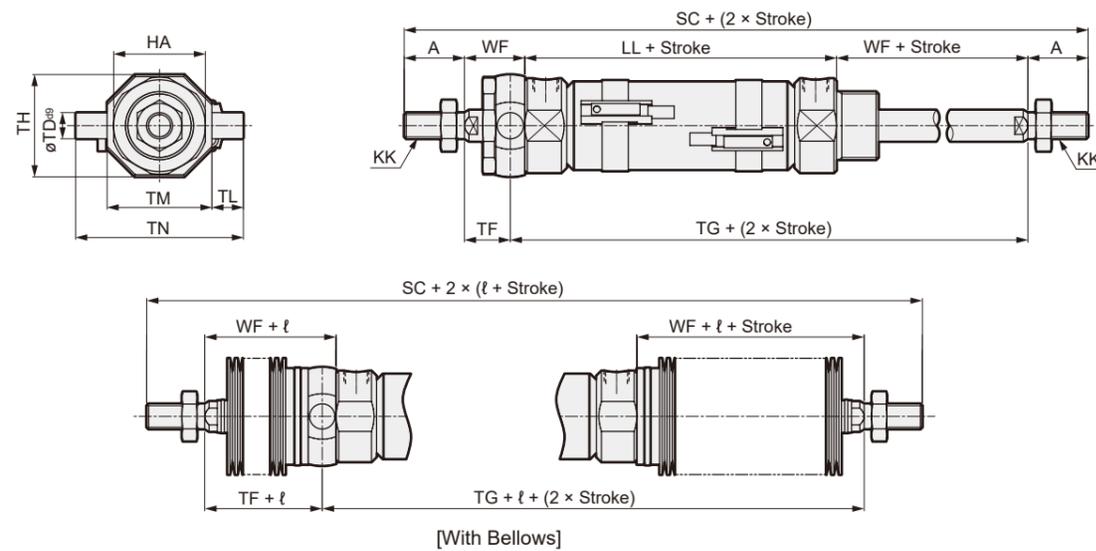
● Rod Side Flange Type (FA)



| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | With Bellows | | |
|------|---|----|----|----|------|-------|----|----|----|-----|----|------------|----|--------------|----|---------------------|
| | Bore Size (mm) | A | FC | FD | FF | FG | FH | FL | FM | FT | HA | KK | LL | SC | WF | ℓ |
| SCM | ø20 | 20 | 20 | 6 | 20.8 | 107.2 | 34 | 40 | 54 | 3.2 | 26 | M8 × 1.0 | 66 | 154 | 24 | (Stroke / 3) + 6 |
| SCG | ø25 | 23 | 28 | 7 | 18.5 | 112.5 | 44 | 64 | 80 | 4.5 | 35 | M10 × 1.25 | 69 | 161 | 23 | (Stroke / 3.25) + 7 |
| SCA2 | ø32 | 23 | 28 | 7 | 18.5 | 112.5 | 44 | 64 | 80 | 4.5 | 35 | M10 × 1.25 | 69 | 161 | 23 | (Stroke / 3.25) + 7 |
| SCS2 | ø40 | 25 | 28 | 7 | 18.5 | 116.5 | 44 | 64 | 80 | 4.5 | 35 | M12 × 1.5 | 73 | 169 | 23 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

● Rod side trunnion type (TA)

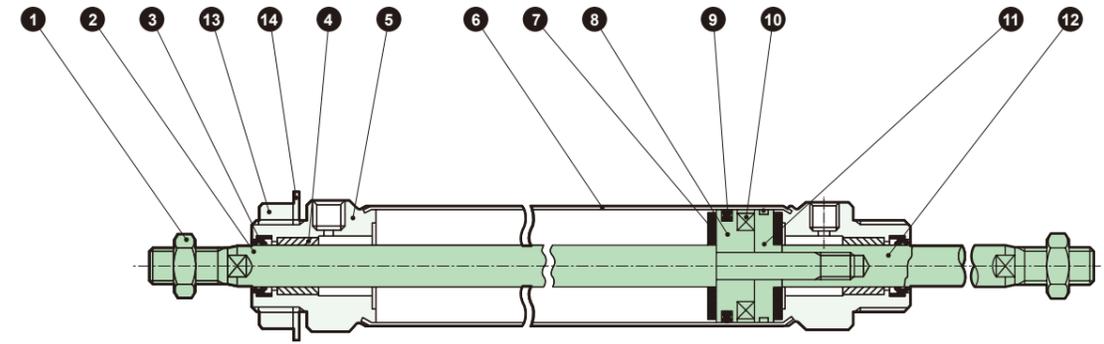


| Code | Rod Side Trunnion Type (TA) Mounting Dimensions | | | | | | | | | | | | | With Bellows | |
|------|---|----|----|------------|----|----|------|-------|------|-----|----|----|-----|--------------|---------------------|
| | Bore Size (mm) | A | HA | KK | LL | TD | TF | TG | TH | TL | TM | TN | SC | WF | ℓ |
| SCM | ø20 | 20 | 26 | M8 × 1.0 | 66 | 8 | 19.5 | 108.5 | 29.5 | 8 | 30 | 46 | 154 | 24 | (Stroke / 3) + 6 |
| SCG | ø25 | 23 | 35 | M10 × 1.25 | 69 | 10 | 17.5 | 113.5 | 39 | 12 | 40 | 64 | 161 | 23 | (Stroke / 3.25) + 7 |
| SCA2 | ø32 | 23 | 35 | M10 × 1.25 | 69 | 10 | 17.5 | 113.5 | 39 | 12 | 40 | 64 | 161 | 23 | (Stroke / 3.25) + 7 |
| SCS2 | ø40 | 25 | 35 | M12 × 1.5 | 73 | 10 | 17.5 | 117.5 | 44 | 9.5 | 53 | 72 | 169 | 23 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Internal Structure Diagram / Material

Internal Structure Diagram / Material



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|--|-----------------------------------|----------|---------------------|---|-----------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 8 | Piston A | Aluminum Alloy | |
| 2 | Piston Rod A | ø20, ø25: Stainless Steel ø32, ø40: Carbon Steel | Industrial Hard Chrome Plating | 9 | Piston Packing | Nitrile Rubber | |
| 3 | Rod Packing | Nitrile Rubber | | 10 | Magnet | Plastic | |
| 4 | Bushing | ø20: Bearing Alloy ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 11 | Piston B | Aluminum Alloy | |
| 5 | Rod Cover | Aluminum Alloy | | 12 | Piston Rod B | ø20, ø25: Stainless Steel ø32, ø40: Carbon Steel | Industrial Hard Chrome Plating |
| 6 | Cylinder Tube | Stainless Steel | | 13 | Nut | Steel | Zinc Chromate |
| 7 | Cushion Rubber | Urethane Rubber | | 14 | Toothed Lock Washer | Steel | Zinc Chromate |

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending



Small bore size cylinder
Double Acting, Back-to-Back Type

CMK2-B Series

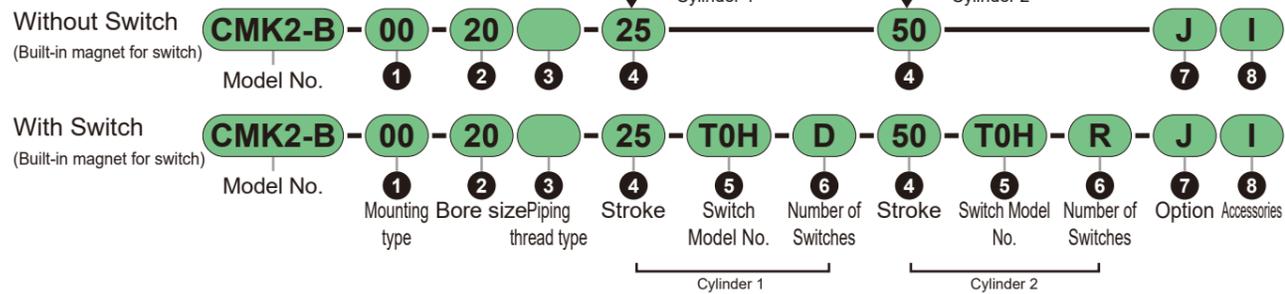
● Bore size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2-B Series Model No. Notation Method

Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and mounting brackets are LB or FA, they will be shipped assembled.

1 Mounting type

| Code | Content |
|------|------------------------------|
| 00 | Basic type |
| LB | Axial Foot Type (Both Sides) |
| FA | Rod Side Flange Type |

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

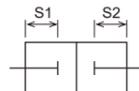
3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

Stroke of cylinder 1: 25 mm Indicated by S1
+ Stroke of cylinder 2: 50 mm Indicated by S2
Total stroke 75 mm S1 + S2



Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 222.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | |
|------------------------|---------------------------------|-----------------|------------------|------------|-------------------|-------------|--------------|---------|
| | | | AC | DC | AC | DC | Straight | L-shape |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ |
| | | | — | 30 or less | — | 100 or less | T3H□ | T3V□ |
| | 2-Color | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WH□ | T2WV□ |
| | | | — | 30 or less | — | 50 or less | T3WH□ | T3WV□ |
| | | | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ |
| 1-Color Off-Delay Type | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | |
| Reed | No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ |
| | | | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ |

*Lead wire length, connector specification

| Code | Content |
|-------|--|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H ③
5 m T0H ⑤

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content |
|------|--|
| I | Single Knuckle |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) |

7 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature |
|------|---------------------------------------|--------------------------|--------------------------------|
| J | Bellows | 100°C | 200°C |
| L | | 250°C | 400°C |
| F | With One-touch Fitting (Straight) | | |
| FE | With One-touch Fitting (Elbow) | | |
| M | Piston Rod Material (Stainless Steel) | | |

*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.
*2: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.
*3: When Bore size $\phi 20$ or $\phi 25$ is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -T2 | Fluorine Packing Type |
| -A2 | With 2 Rod Nuts |
| -O | Low Speed Type |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-B - - XJ9

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

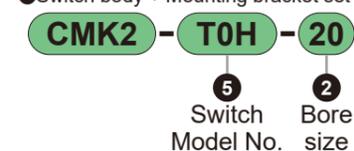
● Uses food-grade lubricant usable in food manufacturing processes

CMK2-B - - FP1

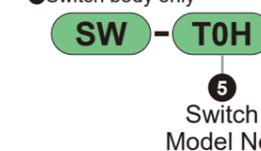
*For combinations of variations and options, see P. 109.

Switch Single Unit Model No. Notation Method

● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



Specifications

| Item | CMK2-B | | | | |
|---------------------------|--------|--|-------|-------|-------|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | | Double Acting, Back-to-Back Type | | | |
| Operating Fluid | | Compressed Air | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.1 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | | Rc 1/8 | | | |
| Stroke tolerance | mm | $\begin{matrix} +2.0 \\ 0 \end{matrix}$ (Up to 200), $\begin{matrix} +2.4 \\ 0 \end{matrix}$ (Over 200,) | | | |
| Operating Piston Speed | mm/s | 50 to 500 | | | |
| Cushion | | Rubber Cushion | | | |
| Lubrication | | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|-------------------------------------|-----------------|--------------|---------------------|-------------|
| | | Without Bellows | With Bellows | Without Bellows "L" | Bellows "J" |
| ø20 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 650 | 5 | 25 |
| ø25 | | | | | |
| ø32 | | | | | |
| ø40 | | | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.
*2: For bellows "J" with stroke less than 25 mm, please inquire each time.

Min. Stroke with Switch

(Unit: mm)

| Number of Switches | 1 | | | | | | 2 | | | | | |
|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|----|--|
| | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| ø20 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø25 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø32 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø40 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | Added Weight | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|---------------------|---------------|----------------------|------------------|---|---------------------------|----------------------------|
| | Basic type 00 | Axial Foot Type (LB) | Flange Type (FA/FB) | Basic type 00 | Axial Foot Type (LB) | Flange Type (FA) | | | |
| ø20 | 0.17 | 0.32 | 0.23 | 0.03 | 0.18 | 0.09 | Refer to the mass described in the switch specifications on P.971 | 0.005 | 0.01 |
| ø25 | 0.26 | 0.52 | 0.41 | 0.03 | 0.29 | 0.18 | | 0.005 | 0.01 |
| ø32 | 0.30 | 0.56 | 0.45 | 0.05 | 0.31 | 0.20 | | 0.009 | 0.02 |
| ø40 | 0.48 | 0.74 | 0.63 | 0.10 | 0.36 | 0.25 | | 0.009 | 0.02 |

[Weight of S₁]
Product Weight at S = 0 mm:0.45 kg
Added weight at S=50 mm.... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg
Weight of 2 switches:0.036 kg
Weight of switch rail + 2 bands:0.018 kg
Weight of S₁:.....0.45 kg+0.1 kg+0.036 kg+0.018 kg=0.604 kg

(Example) Product Weight of CMK2-B-FA-32-50-T0H-D-50-T0H-R
S₁ S₂

[Weight of S₂]
Product Weight at S = 0 mm:0.45 kg
Added weight at S=50 mm.... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg
Weight of 2 switches:0.036 kg
Weight of switch rail + 2 bands:0.018 kg
Weight of S₂:.....0.45 kg+0.10 kg+0.036 kg+0.018 kg=0.604 kg
Product Weight (Weight of S₁ + Weight of S₂ + Added Weight)...
...0.604 kg + 0.604 kg + 0.20 kg = 1.408 kg

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | | |
|----------------|---------------------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 31.4 | 47.1 | 62.8 | 94.2 | 1.26×10^2 | 1.57×10^2 | 1.88×10^2 | 2.20×10^2 | 2.51×10^2 | 2.83×10^2 | 3.14×10^2 |
| | Pull | 23.6 | 35.3 | 47.1 | 70.7 | 94.2 | 1.18×10^2 | 1.41×10^2 | 1.65×10^2 | 1.88×10^2 | 2.12×10^2 | 2.36×10^2 |
| ø25 | Push | 49.1k | 73.6 | 98.2 | 1.47×10^2 | 1.96×10^2 | 2.45×10^2 | 2.95×10^2 | 3.44×10^2 | 3.93×10^2 | 4.42×10^2 | 4.91×10^2 |
| | Pull | 37.8 | 56.7 | 75.6 | 1.13×10^2 | 1.51×10^2 | 1.89×10^2 | 2.27×10^2 | 2.64×10^2 | 3.02×10^2 | 3.40×10^2 | 3.78×10^2 |
| ø32 | Push | 80.4 | 1.21×10^2 | 1.61×10^2 | 2.41×10^2 | 3.22×10^2 | 4.02×10^2 | 4.83×10^2 | 5.63×10^2 | 6.43×10^2 | 7.24×10^2 | 8.04×10^2 |
| | Pull | 69.1 | 1.04×10^2 | 1.38×10^2 | 2.07×10^2 | 2.76×10^2 | 3.46×10^2 | 4.15×10^2 | 4.84×10^2 | 5.53×10^2 | 6.22×10^2 | 6.91×10^2 |
| ø40 | Push | 1.26×10^2 | 1.88×10^2 | 2.51×10^2 | 3.77×10^2 | 5.03×10^2 | 6.28×10^2 | 7.54×10^2 | 8.80×10^2 | 1.01×10^3 | 1.13×10^3 | 1.26×10^3 |
| | Pull | 1.10×10^2 | 1.65×10^2 | 2.21×10^2 | 3.31×10^2 | 4.41×10^2 | 5.51×10^2 | 6.62×10^2 | 7.72×10^2 | 8.82×10^2 | 9.92×10^2 | 1.10×10^3 |

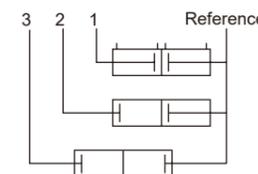
Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|----------------------|-------------|----------|----------|----------|
| Basic Type (00) | *3 M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |

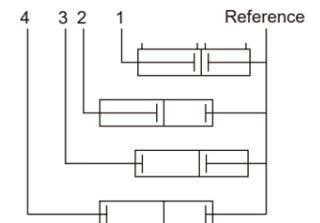
*1: Mounting nuts and toothed lock washers are included to each mounting bracket.
*2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.
*3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

Usage Example

3 positions can be obtained when combining the same stroke.

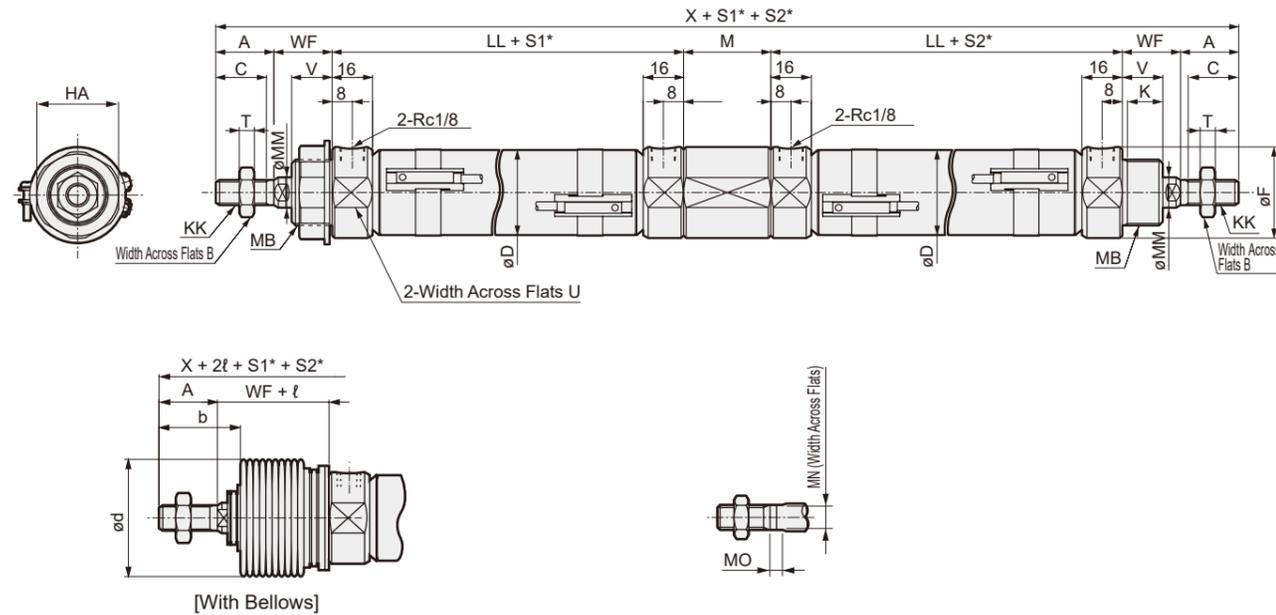


4 positions can be obtained when combining different strokes.



Outline Dimension Drawing

● Basic Type (OO)



* S1 = Stroke of Cylinder 1,
S2 = Stroke of Cylinder 2

| Code | Basic Type (OO) Basic Dimensions | | | | | | | | | | | | |
|----------------|----------------------------------|----|----|------|----|----|----|------------|----|------------|-----------|----|----|
| Bore Size (mm) | A | B | C | D | F | HA | K | KK | LL | M | MB | MM | MN |
| ø20 | 20 | 13 | 18 | 21.4 | 28 | 26 | 12 | M8 × 1.0 | 66 | 29 to 30.5 | M18 × 1.5 | 10 | 8 |
| ø25 | 23 | 17 | 20 | 26.4 | 32 | 35 | 14 | M10 × 1.25 | 69 | 33 to 34.5 | M26 × 1.5 | 12 | 10 |
| ø32 | 23 | 17 | 20 | 33.6 | 36 | 35 | 14 | M10 × 1.25 | 69 | 33 to 34.5 | M26 × 1.5 | 12 | 10 |
| ø40 | 25 | 19 | 22 | 41.6 | 45 | 35 | 14 | M12 × 1.5 | 73 | 33 to 34.5 | M26 × 1.5 | 14 | 12 |

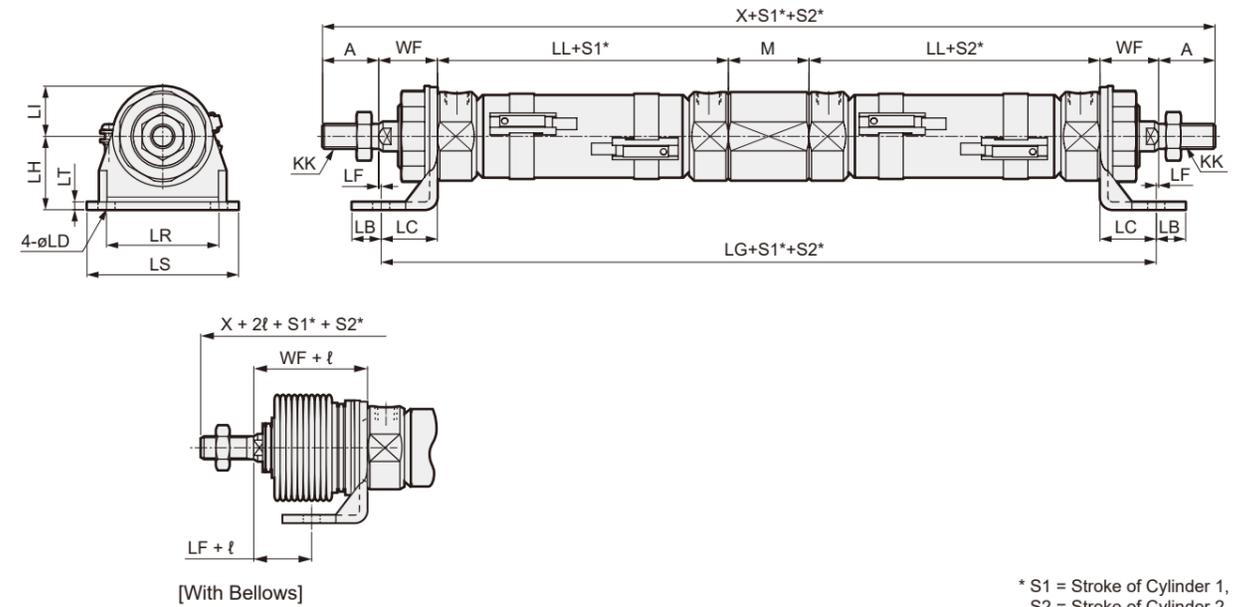
| Code | With Bellows | | | | | | | | |
|----------------|--------------|---|----|----|----|--------------|----|----|---------------------|
| Bore Size (mm) | MO | T | U | V | WF | X | b | d | ℓ |
| ø20 | 5 | 5 | 24 | 14 | 24 | 249 to 250.5 | 30 | 30 | (Stroke / 3) + 6 |
| ø25 | 5 | 6 | 30 | 16 | 23 | 263 to 264.5 | 32 | 46 | (Stroke / 3.25) + 7 |
| ø32 | 5 | 6 | 34 | 16 | 23 | 263 to 264.5 | 32 | 46 | (Stroke / 3.25) + 7 |
| ø40 | 6 | 7 | 43 | 16 | 23 | 275 to 276.5 | 34 | 46 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.
 *4: For back-to-back type, port alignment is adjusted with spacers, so X and M dimensions have a tolerance of 0 to 1.5 mm.

Double Acting, Back-to-Back Type

Outline Dimension Drawing

● Axial Foot Type (LB)

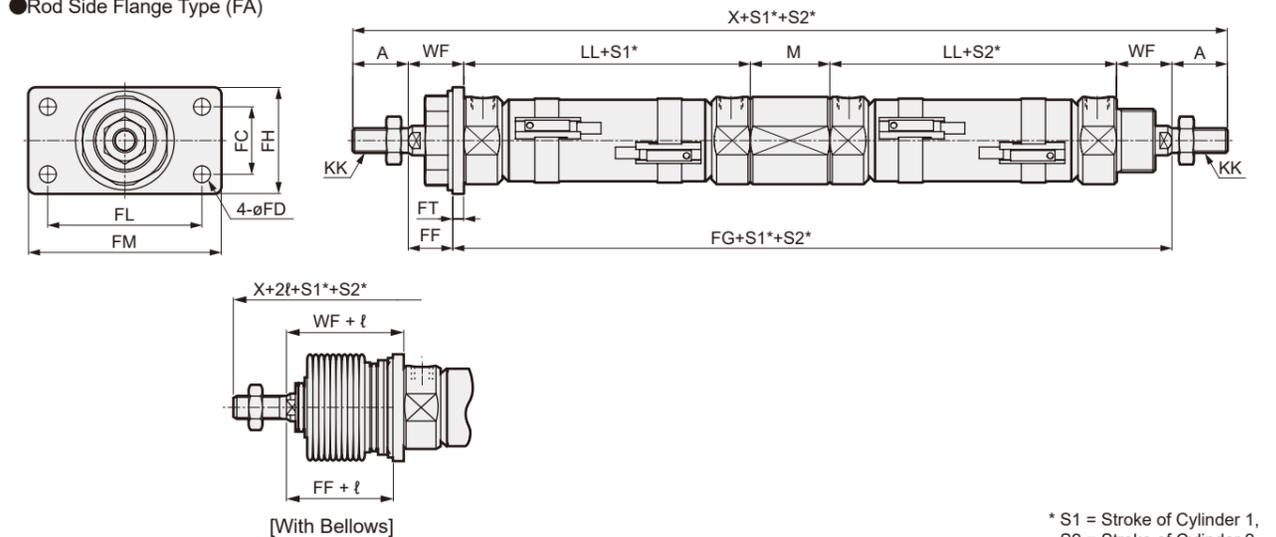


* S1 = Stroke of Cylinder 1,
S2 = Stroke of Cylinder 2

| Code | Axial Foot Type (LB) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | | |
|----------------|--|------------|----|----|----|----|--------------|----|------|----|-----|----|-----|------------|--------------|--------------|---------------------|
| Bore Size (mm) | A | KK | LB | LC | LD | LF | LG | LH | LI | LL | LR | LS | LT | M | WF | X | ℓ |
| ø20 | 20 | M8 × 1.0 | 10 | 18 | 6 | 6 | 197 to 198.5 | 25 | 15 | 66 | 4 | 44 | 3.2 | 29 to 30.5 | 24 | 249 to 250.5 | (Stroke / 3) + 6 |
| ø25 | 23 | M10 × 1.25 | 12 | 23 | 7 | 0 | 217 to 218.5 | 30 | 20.5 | 69 | 5.5 | 62 | 3.2 | 33 to 34.5 | 23 | 263 to 264.5 | (Stroke / 3.25) + 7 |
| ø32 | 23 | M10 × 1.25 | 12 | 23 | 7 | 0 | 217 to 218.5 | 30 | 20.5 | 69 | 5.5 | 62 | 3.2 | 33 to 34.5 | 23 | 263 to 264.5 | (Stroke / 3.25) + 7 |
| ø40 | 25 | M12 × 1.5 | 12 | 23 | 7 | 0 | 225 to 226.5 | 30 | 20.5 | 73 | 7.5 | 62 | 3.2 | 33 to 34.5 | 23 | 275 to 276.5 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.
 *4: For back-to-back type, port alignment is adjusted with spacers, so X and M dimensions have a tolerance of 0 to 1.5 mm.

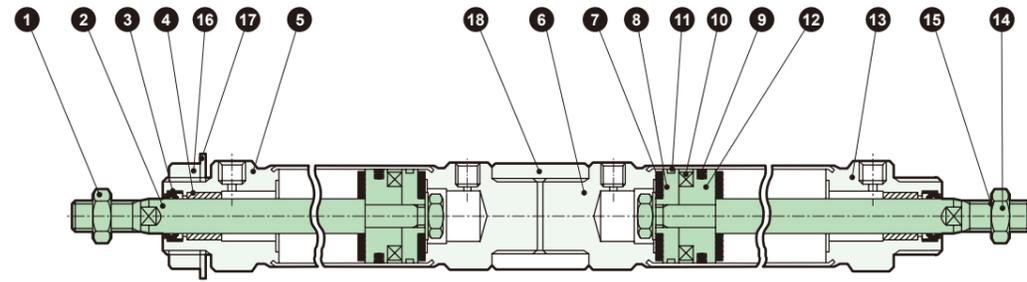
● Rod Side Flange Type (FA)



* S1 = Stroke of Cylinder 1,
S2 = Stroke of Cylinder 2

| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | | With Bellows |
|----------------|---|----|----|------|----------------|----|----|----|-----|------------|----|------------|----|--------------|---------------------|
| Bore Size (mm) | A | FC | FD | FF | FG | FH | FL | FM | FT | KK | LL | M | WF | X | ℓ |
| ø20 | 20 | 20 | 6 | 20.8 | 188.2 to 189.7 | 34 | 40 | 54 | 3.2 | M8 × 1.0 | 66 | 29 to 30.5 | 24 | 249 to 250.5 | (Stroke / 3) + 6 |
| ø25 | 23 | 28 | 7 | 18.5 | 198.5 to 200 | 44 | 64 | 80 | 4.5 | M10 × 1.25 | 69 | 33 to 34.5 | 23 | 263 to 264.5 | (Stroke / 3.25) + 7 |
| ø32 | 23 | 28 | 7 | 18.5 | 198.5 to 200 | 44 | 64 | 80 | 4.5 | M10 × 1.25 | 69 | 33 to 34.5 | 23 | 263 to 264.5 | (Stroke / 3.25) + 7 |
| ø40 | 25 | 28 | 7 | 18.5 | 206.5 to 208 | 44 | 64 | 80 | 4.5 | M12 × 1.5 | 73 | 33 to 34.5 | 23 | 275 to 276.5 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.
 *4: For back-to-back type, port alignment is adjusted with spacers, so X and M dimensions have a tolerance of 0 to 1.5 mm.



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|--|------------------------|----------|---------------------|----------------|---------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 9 | Piston Packing | Nitrile Rubber | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel | Industrial Hard Chrome | 10 | Magnet | Plastic | |
| | | ø32, ø40: Carbon Steel | Plating | 11 | Wear Ring | Polyacetal | |
| 3 | Rod Packing | Nitrile Rubber | | 12 | Piston B | Aluminum Alloy | |
| 4 | Bushing | ø20: Bearing Alloy | | 13 | Head Cover | Aluminum Alloy | |
| | | ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 14 | Hexagon Nut | Steel | Zinc Chromate |
| 5 | Rod Cover | Aluminum Alloy | | 15 | Spacer | Steel | Zinc Chromate (ø20 to ø32 only) |
| 6 | Cylinder Tube | Stainless Steel | | 16 | Nut | Steel | Zinc Chromate |
| 7 | Cushion Rubber | Urethane Rubber | | 17 | Toothed Lock Washer | Steel | Zinc Chromate |
| 8 | Piston A | Aluminum Alloy | | 18 | Adapter | Aluminum Alloy | |

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

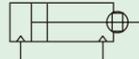


Small bore size cylinder
Double Acting, Non-Rotating Type

CMK2-M Series

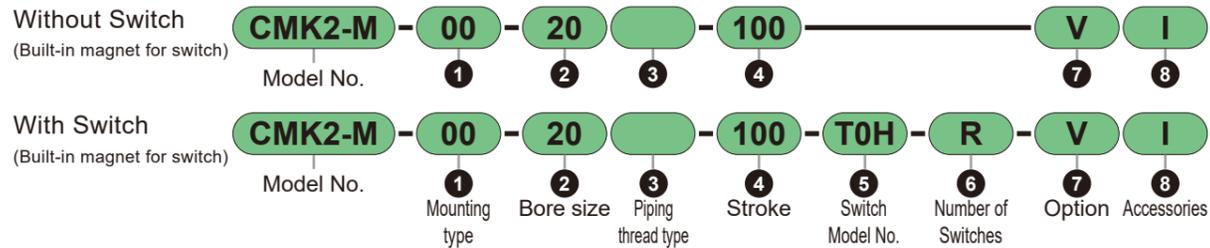
● Bore Size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2-M Series Model No. Notation Method

Model No. Notation Method



Mounting brackets are included to the product and shipped. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Content | |
|------|--|--|
| 00 | Basic type | |
| LB | Axial Foot Type (Double Side) | |
| LS | Axial Foot Type (Single Side) | |
| FA | Rod Side Flange Type | |
| FB | Head Side Flange Type | |
| CA | Single Clevis Type | |
| CC | Single Clevis Integrated Type | |
| CC1 | Single Clevis, Bushing Press-fit Type | |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) | |
| TA | Rod Side Trunnion Type | |
| TB | Head Side Trunnion Type | |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

*1: For the min. stroke length with switch and the max. and min. stroke lengths with bellows, refer to P. 230.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included to the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | | |
|------------------------|---------------------------------|-----------------------------------|------------------|------------|-------------------|-------------|--------------|---------|--------|
| | | | AC | DC | AC | DC | Straight | L-shape | |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ | |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ | |
| | | 3-wire (NPN) | — | — | — | 100 or less | T3H□ | T3V□ | |
| | | | — | 30 or less | — | 50 or less | T3PH□ | T3PV□ | |
| | | 3-wire (PNP) | — | — | — | 50 or less | T3WH□ | T3WV□ | |
| | | | — | 30 or less | — | 50 or less | T3WH□ | T3WV□ | |
| | 2-Color | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WH□ | T2WV□ | |
| | | | — | 30 or less | — | 50 or less | T3WH□ | T3WV□ | |
| | | 2-Color Improved Water Resistance | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ |
| | | | | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ |
| 1-Color Off-Delay Type | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | | |
| Reed | 1-Color No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ | |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ | |
| | 1-Color | 2-wire | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ | |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|---|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H [3]
5 m T0H [5]

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content | |
|------|---|--|
| I | Single Knuckle | |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) | |
| B2 | Double Yoke Bracket (Pin and retaining ring included) | |

*1: "I" and "Y" cannot be selected at the same time.

7 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature | |
|-------|---------------------------------------|--------------------------|--------------------------------|--|
| J | Bellows | 100°C | 200°C | |
| L | | 250°C | 400°C | |
| *1 F | With One-touch Fitting (Straight) | | | |
| *1 FE | With One-touch Fitting (Elbow) | | | |
| V | Boss Cut | | | |
| *3 M | Piston Rod Material (Stainless Steel) | | | |

*1:F: With Push-in fitting (Straight) and FE: Applicable tube diameter for push-in fitting (elbow) is $\phi 6$.

*2: Instantaneous maximum temperature is the temperature when fire, chips, etc. momentarily contact the bellows.

*3: When Bore size $\phi 20$ or $\phi 25$ is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -A2 | With 2 Rod Nuts |
| -O | Low Speed Type |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-M - - XJ9

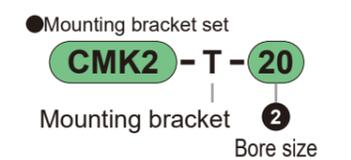
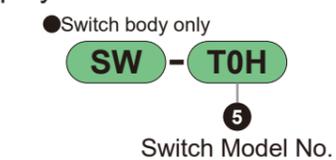
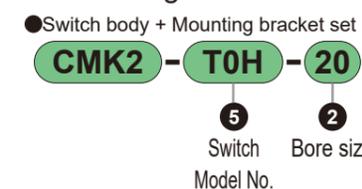
Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

CMK2-M - - FP1

*For combinations of variations and options, see P. 109.

Switch Single Unit Model No. Display Method



Specifications

| Item | CMK2-M | | | | |
|------------------------------------|--------|---|-------|-------|-------|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | | Double Acting, Non-Rotating Type | | | |
| Operating Fluid | | Compressed Air | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.1 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | | Rc 1/8 | | | |
| Stroke tolerance | | $^{+2.0}_0$ (Up to 200), $^{+2.4}_0$ (Over 200) | | | |
| Operating Piston Speed | mm/s | 50 to 500 | | | |
| Cushion | | Rubber Cushion | | | |
| Lubrication | | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | |
| Non-rotating accuracy(Note)Degrees | | ±1.5 | | ±1.0 | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Note: Value when stroke is 0 mm (except for piston rod deflection)

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at stroke (S) = 00 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|--------------------------------------|----------------------|----------------------|---------------------|-------------------------|--------------------|-------------------------|-----------------------|---|---------------------------|----------------------------|
| | Basic type 00 | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CCAA) | Double clevis type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.17 | 0.32 | 0.25 | 0.23 | 0.32 | 0.18 | 0.32 | 0.22 | Refer to the mass described in the switch specifications on P.971 | 0.005 | 0.01 |
| ø25 | 0.26 | 0.52 | 0.39 | 0.41 | 0.50 | 0.26 | 0.50 | 0.36 | | 0.005 | 0.01 |
| ø32 | 0.30 | 0.56 | 0.43 | 0.45 | 0.54 | 0.30 | 0.54 | 0.40 | | 0.009 | 0.02 |
| ø40 | 0.48 | 0.74 | 0.61 | 0.63 | 0.72 | 0.50 | 0.72 | 0.64 | | 0.009 | 0.02 |

(Example) Product Weight of CMK2-M-FA-32-50-T0H-D

Product weight when S = 00 mm ...0.45 kg
 Added weight at S=50 mm..... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg
 Weight of 2 switches:0.036 kg
 Weight of switch rail + 2 bands:0.018 kg
 Product Weight 0.45 kg+0.1 kg+0.036 kg+0.018 kg=0.604 kg

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|-------------------------------------|-----------------|--------------|---------------------|-------------|
| | | Without Bellows | With Bellows | Without Bellows "L" | Bellows "J" |
| ø20 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 650 | 5 | 25 |
| ø25 | | | | | |
| ø32 | | | | | |
| ø40 | | | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.
 *2: Single side foot type (LS type) has a maximum stroke of 50 mm.
 *3: For bellows "J" with a stroke of less than 25 mm, please inquire each time.

Min. Stroke with Switch

(Unit: mm)

| Number of Switches | 1 | | | | | | 2 | | | | | |
|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|--|--|
| | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| ø20 | 10 | | | 25 | | | 30 | | | 35 | | |
| ø25 | 10 | | | 25 | | | 30 | | | 35 | | |
| ø32 | 10 | | | 25 | | | 30 | | | 35 | | |
| ø40 | 10 | | | 25 | | | 30 | | | 35 | | |

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | | |
|----------------|---------------------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 31.4 | 47.1 | 62.8 | 94.2 | 1.26×10^2 | 1.57×10^2 | 1.88×10^2 | 2.20×10^2 | 2.51×10^2 | 2.83×10^2 | 3.14×10^2 |
| | Pull | 23.6 | 35.3 | 47.1 | 70.7 | 94.2 | 1.18×10^2 | 1.41×10^2 | 1.65×10^2 | 1.88×10^2 | 2.12×10^2 | 2.36×10^2 |
| ø25 | Push | 49.1k | 73.6 | 98.2 | 1.47×10^2 | 1.96×10^2 | 2.45×10^2 | 2.95×10^2 | 3.44×10^2 | 3.93×10^2 | 4.42×10^2 | 4.91×10^2 |
| | Pull | 37.8 | 56.7 | 75.6 | 1.13×10^2 | 1.51×10^2 | 1.89×10^2 | 2.27×10^2 | 2.64×10^2 | 3.02×10^2 | 3.40×10^2 | 3.78×10^2 |
| ø32 | Push | 80.4 | 1.21×10^2 | 1.61×10^2 | 2.41×10^2 | 3.22×10^2 | 4.02×10^2 | 4.83×10^2 | 5.63×10^2 | 6.43×10^2 | 7.24×10^2 | 8.04×10^2 |
| | Pull | 69.1 | 1.04×10^2 | 1.38×10^2 | 2.07×10^2 | 2.76×10^2 | 3.46×10^2 | 4.15×10^2 | 4.84×10^2 | 5.53×10^2 | 6.22×10^2 | 6.91×10^2 |
| ø40 | Push | 1.26×10^2 | 1.88×10^2 | 2.51×10^2 | 3.77×10^2 | 5.03×10^2 | 6.28×10^2 | 7.54×10^2 | 8.80×10^2 | 1.01×10^3 | 1.13×10^3 | 1.26×10^3 |
| | Pull | 1.10×10^2 | 1.65×10^2 | 2.21×10^2 | 3.31×10^2 | 4.41×10^2 | 5.51×10^2 | 6.62×10^2 | 7.72×10^2 | 8.82×10^2 | 9.92×10^2 | 1.10×10^3 |

Mounting Bracket Model No. Display Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|----------|----------|----------|----------|
| Basic Type (00) | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
 *2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.
 *3: Only mounting nuts and toothed lock washers are included. One set is included to the basic type (00) of the product, but use this if additional sets are required.

General Type

General Type

SCP□3

SCP□3

CMK2

CMK2

CMA2

CMA2

SCM

SCM

SCG

SCG

SCA2

SCA2

SCS2

SCS2

Cylinder Switch

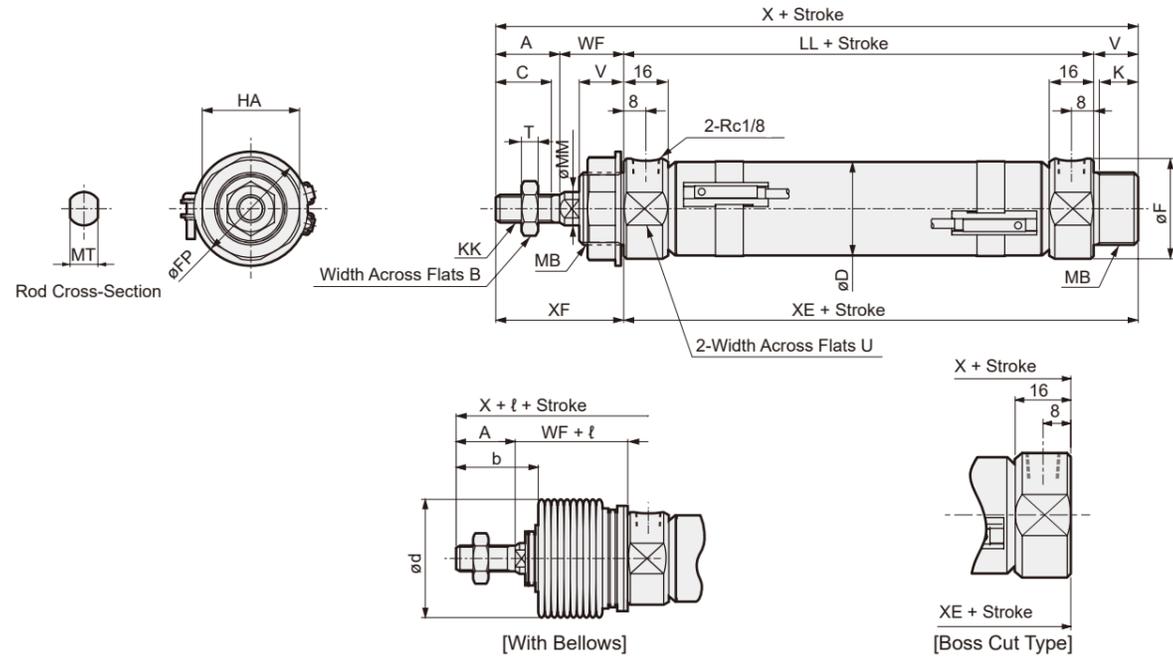
Cylinder Switch

Ending

Ending

Outline Dimension Drawing

● Basic Type (OO)



| Code | Basic Dimensions of Basic Type (OO) | | | | | | | | | | | | | |
|----------------|-------------------------------------|----|----|------|----|----|----|----|------------|----|-----------|----|----|---|
| Bore Size (mm) | A | B | C | D | F | FP | HA | K | KK | LL | MB | MM | MT | T |
| ø20 | 20 | 13 | 18 | 21.4 | 28 | 29 | 26 | 12 | M8 × 1.0 | 66 | M18 × 1.5 | 10 | 8 | 5 |
| ø25 | 23 | 17 | 20 | 26.4 | 32 | 41 | 35 | 14 | M10 × 1.25 | 69 | M26 × 1.5 | 12 | 10 | 6 |
| ø32 | 23 | 17 | 20 | 33.6 | 36 | 41 | 35 | 14 | M10 × 1.25 | 69 | M26 × 1.5 | 12 | 10 | 6 |
| ø40 | 25 | 19 | 22 | 41.6 | 45 | 41 | 35 | 14 | M12 × 1.5 | 73 | M26 × 1.5 | 14 | 12 | 7 |

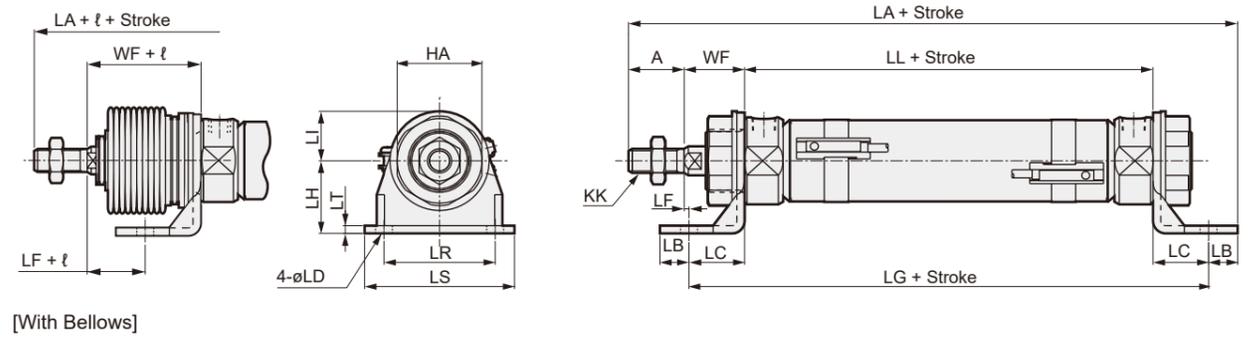
| Code | With Bellows | | | | | | | | | Boss Cut Type | |
|----------------|--------------|----|----|-----|----|----|----|----|---------------------|---------------|----|
| Bore Size (mm) | U | V | WF | X | XE | XF | b | d | ℓ | X | XE |
| ø20 | 24 | 14 | 24 | 124 | 80 | 44 | 30 | 30 | (Stroke / 3) + 6 | 110 | 66 |
| ø25 | 30 | 16 | 23 | 131 | 85 | 46 | 32 | 46 | (Stroke / 3.25) + 7 | 115 | 69 |
| ø32 | 34 | 16 | 23 | 131 | 85 | 46 | 32 | 46 | (Stroke / 3.25) + 7 | 115 | 69 |
| ø40 | 43 | 16 | 23 | 137 | 89 | 48 | 34 | 46 | (Stroke / 3.25) + 7 | 121 | 73 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Double Acting, Non-Rotating Type

Outline Dimension Drawing

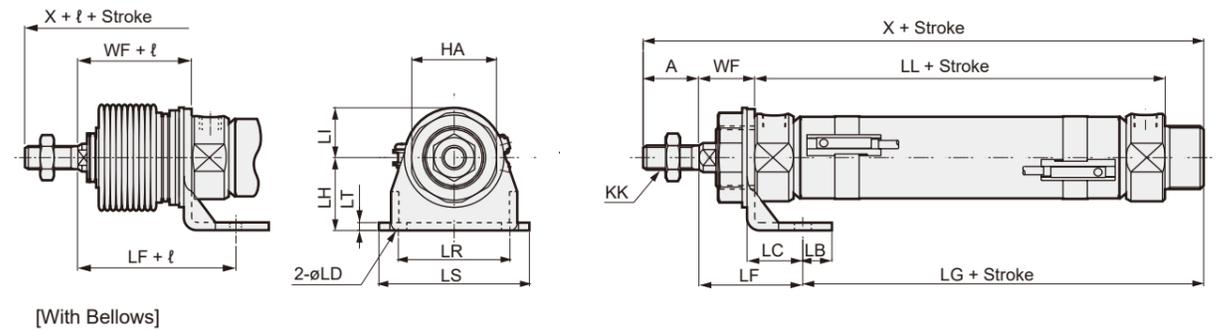
● Axial Foot Type (LB)



| Code | Axial Foot Type (LB) Mounting Dimensions | | | | | | | | | | | | | | | With Bellows | |
|----------------|--|----|------------|----|----|-----|----|----|----|----|-----|----|------|----|----|--------------|---------------------|
| Bore Size (mm) | A | HA | KK | LL | WF | LA | LB | LC | LD | LF | LG | LH | LI | LR | LS | LT | ℓ |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 138 | 10 | 18 | 6 | 6 | 102 | 25 | 15 | 30 | 44 | 3.2 | (Stroke / 3) + 6 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 150 | 12 | 23 | 7 | 0 | 115 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 150 | 12 | 23 | 7 | 0 | 115 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 156 | 12 | 23 | 7 | 0 | 119 | 30 | 22.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

● Single Side Axial Foot Type (LS)

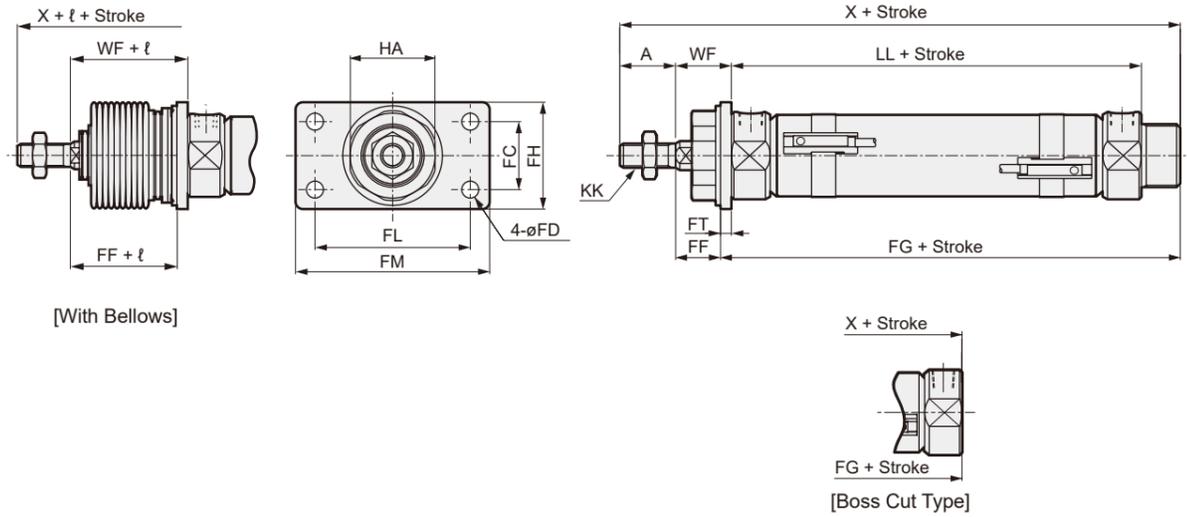


| Code | Single Side Axial Foot Type (LS) Mounting Dimensions | | | | | | | | | | | | | | | With Bellows | Boss Cut Type | | |
|----------------|--|----|------------|----|----|-----|----|----|----|------|------|----|------|----|----|--------------|---------------------|-----|------|
| Bore Size (mm) | A | HA | KK | LL | WF | X | LB | LC | LD | LF | LG | LH | LI | LR | LS | LT | ℓ | X | LG |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 10 | 18 | 6 | 38.8 | 65.2 | 25 | 15 | 30 | 44 | 3.2 | (Stroke / 3) + 6 | 110 | 51.2 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 12 | 23 | 7 | 42.8 | 65.2 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 | 115 | 49.2 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 12 | 23 | 7 | 42.8 | 65.2 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 | 115 | 49.2 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 12 | 23 | 7 | 42.8 | 69.2 | 30 | 22.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 | 121 | 53.2 |

*1: Max. stroke is 50 mm.
 *2: Round up the ℓ dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

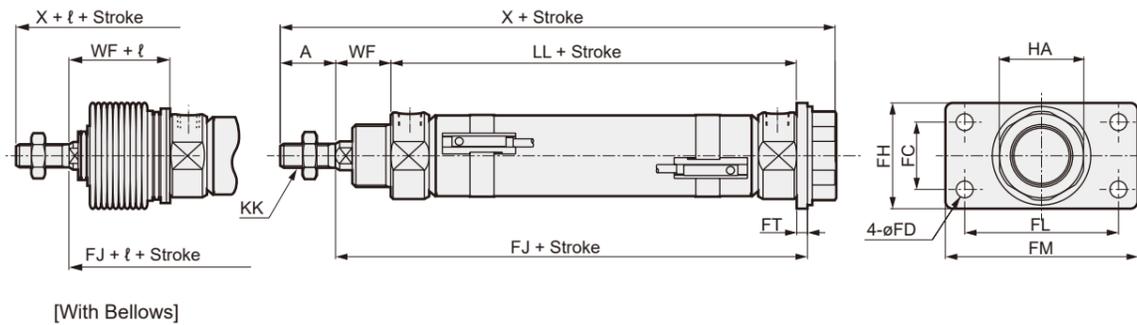
●Rod Side Flange Type (FA)



| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | | Boss Cut Type | |
|------|---|----|------------|----|----|-----|----|----|------|------|----|----|----|-----|--------------|---------------------|---------------|------|
| | Bore Size (mm) | A | KK | LL | WF | X | FC | FD | FF | FG | FH | FL | FM | FT | HA | ℓ | X | FG |
| SCM | ø20 | 20 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 20.8 | 83.2 | 34 | 40 | 54 | 3.2 | 26 | (Stroke / 3) + 6 | 110 | 69.2 |
| SCG | ø25 | 23 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | 115 | 73.5 |
| SCA2 | ø32 | 23 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | 115 | 73.5 |
| SCS2 | ø40 | 25 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 18.5 | 93.5 | 44 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | 121 | 77.5 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

●Head Side Flange Type (FB)

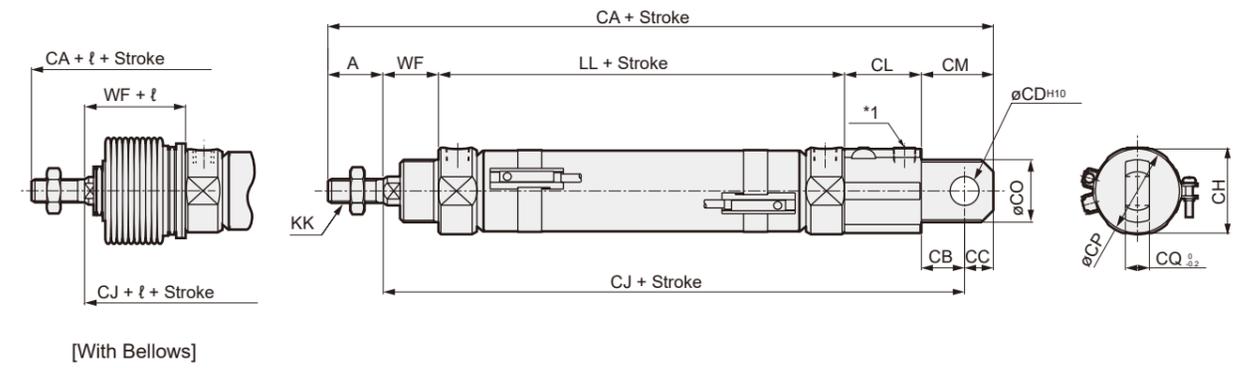


| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | | |
|------|--|----|------------|----|----|-----|----|----|----|-------|----|----|-----|----|---------------------|-----|------|
| | Bore Size (mm) | A | KK | LL | WF | X | FC | FD | FH | FJ | FL | FM | FT | HA | ℓ | X | FG |
| SCM | ø20 | 20 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 34 | 93.2 | 40 | 54 | 3.2 | 26 | (Stroke / 3) + 6 | 110 | 69.2 |
| SCG | ø25 | 23 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | 115 | 73.5 |
| SCA2 | ø32 | 23 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | 115 | 73.5 |
| SCS2 | ø40 | 25 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 44 | 100.5 | 64 | 80 | 4.5 | 35 | (Stroke / 3.25) + 7 | 121 | 77.5 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

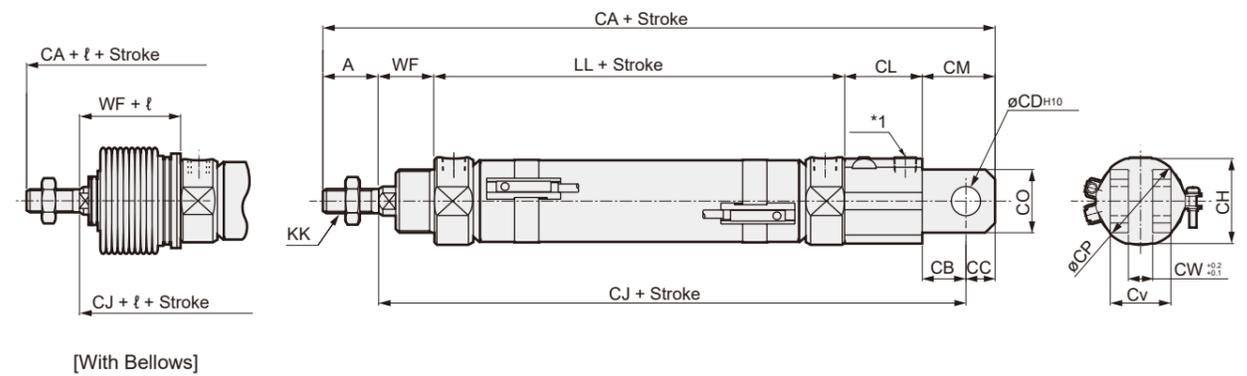
●Single Clevis Type (CA)



| Code | Single Clevis Type (CA) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | | |
|------|---|----|------------|----|----|-----|----|----|----|----|-----|----|----|----|--------------|----|---------------------|
| | Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | CQ | ℓ |
| SCM | ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 8 | (Stroke / 3) + 6 |
| SCG | ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 |
| SCA2 | ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 |
| SCS2 | ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 |

*1: Not a piping port.
 *2: Round up the ℓ dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

●Double clevis type (CB)

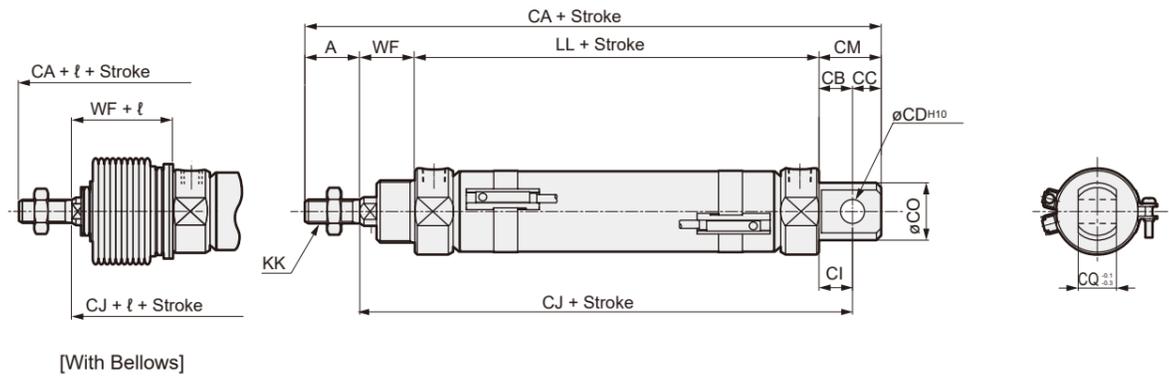


| Code | Double Clevis Type (CB) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | | | |
|------|---|----|------------|----|----|-----|----|----|----|----|-----|----|----|----|--------------|----|----|---------------------|
| | Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | Cv | CW | ℓ |
| SCM | ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 19 | 8 | (Stroke / 3) + 6 |
| SCG | ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 25 | 10 | (Stroke / 3.25) + 7 |
| SCA2 | ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 25 | 10 | (Stroke / 3.25) + 7 |
| SCS2 | ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 25 | 10 | (Stroke / 3.25) + 7 |

*1: Not a piping port.
 *2: Round up the ℓ dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

- Single Yoke Clevis Integrated Type (CC)
- Single Clevis Bushing Press-fit Type (CC1)

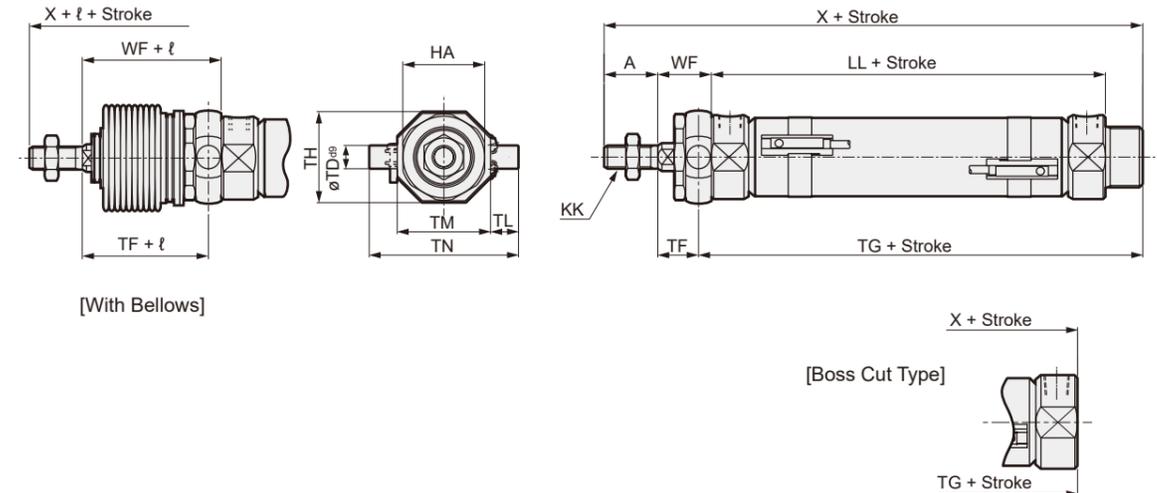


| Code | Single Clevis Integrated Type (CC), Bushing Press-fit Type (CC1) Mounting Dimensions | | | | | | | | | | | | | With Bellows |
|----------------|--|------------|----|----|-----|----|----|----|-----|----|----|----|----|---------------------|
| Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CJ | CI | CM | CO | CQ | ℓ |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 131 | 12 | 9 | 8 | 102 | 11 | 21 | 22 | 16 | (Stroke / 3) + 6 |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 136 | 12 | 9 | 8 | 104 | 11 | 21 | 24 | 16 | (Stroke / 3.25) + 7 |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 141 | 14 | 12 | 10 | 106 | 13 | 26 | 24 | 16 | (Stroke / 3.25) + 7 |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 151 | 16 | 14 | 12 | 112 | 15 | 30 | 30 | 20 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

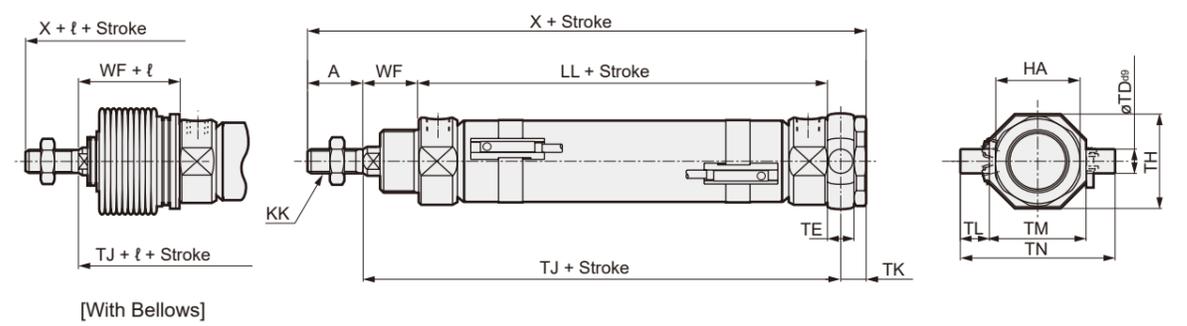
- Rod side trunnion type (TA)



| Code | Rod Side Trunnion Type (TA) Mounting Dimensions | | | | | | | | | | | | | With Bellows | Boss Cut Type | |
|----------------|---|----|------------|----|----|-----|----|------|------|------|-----|----|----|---------------------|---------------|------|
| Bore Size (mm) | A | HA | KK | LL | WF | X | TD | TF | TG | TH | TL | TM | TN | ℓ | X | TG |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 8 | 19.5 | 84.5 | 29.5 | 8 | 30 | 46 | (Stroke / 3) + 6 | 110 | 70.5 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 17.5 | 90.5 | 39 | 12 | 40 | 64 | (Stroke / 3.25) + 7 | 115 | 74.5 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 17.5 | 90.5 | 39 | 12 | 40 | 64 | (Stroke / 3.25) + 7 | 115 | 74.5 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 10 | 17.5 | 94.5 | 44 | 9.5 | 53 | 72 | (Stroke / 3.25) + 7 | 121 | 78.5 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

- Head Side Trunnion Type (TB)



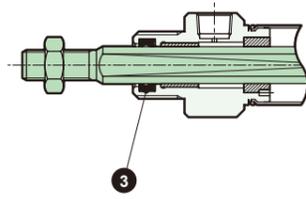
| Code | Head Side Trunnion Type (TB) Mounting Dimensions | | | | | | | | | | | | | With Bellows |
|----------------|--|----|------------|----|----|-----|----|------|-------|------|-----|----|----|---------------------|
| Bore Size (mm) | A | HA | KK | LL | WF | X | TD | TH | TJ | TK | TL | TM | TN | ℓ |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 8 | 29.5 | 94.5 | 9.5 | 8 | 30 | 46 | (Stroke / 3) + 6 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 39 | 97.5 | 10.5 | 12 | 40 | 64 | (Stroke / 3.25) + 7 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 10 | 39 | 97.5 | 10.5 | 12 | 40 | 64 | (Stroke / 3.25) + 7 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 10 | 44 | 101.5 | 10.5 | 9.5 | 53 | 72 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

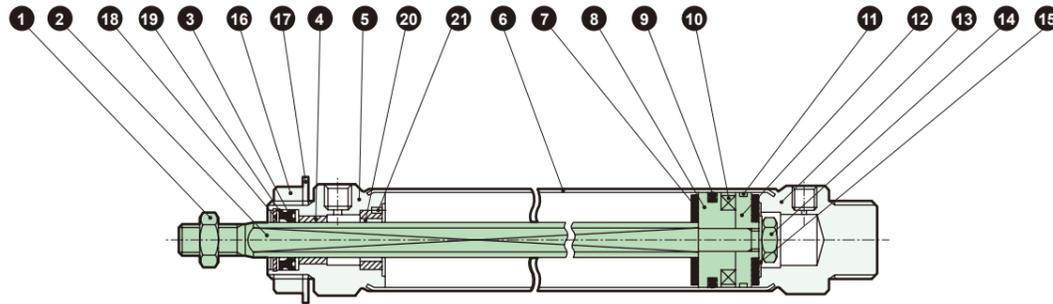
CMK2-M Series

Internal Structure Diagram / Material

● ϕ 20



● ϕ 25, ϕ 32, ϕ 40



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|--|---------------|----------|-----------------------------|-------------------------------|---|
| 1 | Rod Nut | Steel | Zinc Chromate | 11 | Wear Ring | Polyacetal | |
| 2 | Piston Rod | Stainless Steel | | 12 | Piston B | Aluminum Alloy | |
| 3 | Rod Packing | Nitrile Rubber | | 13 | Head Cover | Aluminum Alloy | |
| 4 | Bushing | ϕ 20: Bearing Alloy ϕ 25, ϕ 32, ϕ 40: Oil Impregnated Bearing Alloy | | 14 | Hexagon Nut | Steel | Zinc Chromate |
| 5 | Rod Cover | Aluminum Alloy | | 15 | Spacer | Steel | Zinc Chromate (ϕ 20 to ϕ 32 only) |
| 6 | Cylinder Tube | Stainless Steel | | 16 | Nut | Steel | Zinc Chromate |
| 7 | Cushion Rubber | Urethane Rubber | | 17 | Toothed Lock Washer | Steel | Zinc Chromate |
| 8 | Piston A | Aluminum Alloy | | 18 | Round R Type Retaining Ring | Steel | Zinc Phosphate (ϕ 25 to ϕ 40 only) |
| 9 | Piston Packing | Nitrile Rubber | | 19 | Packing Retainer | Steel | Zinc Chromate (ϕ 25 to ϕ 40 only) |
| 10 | Magnet | Plastic | | 20 | Non-Rotating Bushing | Oil-Impregnated Bearing Alloy | |
| | | | | 21 | Taper Pin | Stainless Steel | |

Mounting Bracket Material

| Mounting type | Material |
|--------------------|----------|
| Foot (LB/LS) | Steel |
| Flange (FA/FB) | Steel |
| Trunnion (TA/TB) | Steel |
| Single Clevis (CA) | Steel |
| Double Clevis (CB) | Steel |

Note: Mounting brackets are included to the product upon shipment. However, when bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

MEMO



Small Bore Size Cylinder Double Acting/Built-in Speed Controller Type

CMK2-Z Series

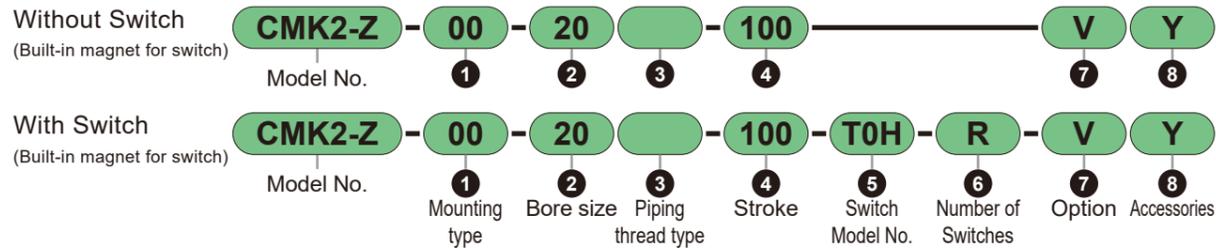
● Bore size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$



CMK2-Z Series

Model No. Notation Method

Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Content | Image |
|------|--|-------|
| 00 | Basic type | |
| LB | Axial Foot Type (Both Sides) | |
| LS | Axial Foot Type (Single Side) | |
| FA | Rod Side Flange Type | |
| FB | Head Side Flange Type | |
| CA | Single Clevis Type | |
| CC | Single Clevis Integrated Type | |
| CC1 | Single Clevis, Bushing Press-fit Type | |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) | |
| TA | Rod Side Trunnion Type | |
| TB | Head Side Trunnion Type | |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 242.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | | Image |
|------------------------|---------------------------------|-----------------|------------------|--------------|-------------------|-------------|--------------|---------|-------|
| | | | AC | DC | AC | DC | Straight | L-shape | |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ | |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ | |
| | | | — | 30 or less | — | 100 or less | T3H□ | T3V□ | |
| | 2-Color | 2-wire | — | 24 \pm 10% | — | 5 to 20 | T2WH□ | T2WV□ | |
| | | | — | 30 or less | — | 50 or less | T3WH□ | T3WV□ | |
| | | | — | 24 \pm 10% | — | 5 to 20 | T2WLH□ | T2WLV□ | |
| 1-Color Off-Delay Type | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ | | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | | |
| Reed | No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ | |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ | |
| | | | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ | |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|--|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H 3
5 m T0H 5

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content | Image |
|------|---|-------|
| I | Single Knuckle | |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) | |
| B2 | Double Yoke Bracket (Pin and Retaining Ring Attached) | |

*1: "I" and "Y" cannot be selected at the same time.

7 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature | Image |
|------|---------------------------------------|--------------------------|--------------------------------|-------|
| J | Bellows | 100°C | 200°C | |
| L | | 250°C | 400°C | |
| F | With Push-in Fitting (Straight) | | | |
| FE | With Push-in Fitting (Elbow) | | | |
| M | Piston Rod Material (Stainless Steel) | | | |
| V | Boss Cut | | | |

*1: For F: With Push-in fitting (Straight) and FE: With Push-in fitting (Elbow), the applicable tube O.D. is $\phi 6$.

*2: Instantaneous maximum temperature is the temperature when fire, chips, etc. momentarily contact the bellows.

*3: When Bore size $\phi 20$ or 25 is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

About Custom Product Specifications

For details, see P. 287.

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food-grade lubricant usable in food manufacturing processes

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -A2 | With 2 Rod Nuts |
| -O | Low Speed Type |
| Rod End Shape Modification | Refer to Ending P. 11. |

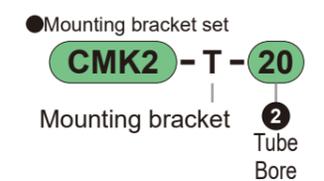
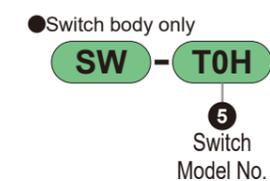
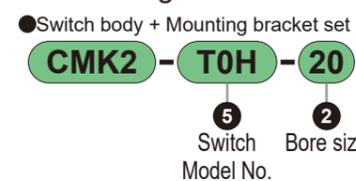
Model No. Example)

CMK2-Z - - XJ9

CMK2-Z - - FP1

*For combinations of variations and options, see P. 109.

Switch Single Unit Model No. Notation Method



Specifications

| Item | CMK2-Z | | | | |
|---------------------------|---|--|-------|-------|-------|
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | Double Acting/Built-in Speed Controller Type | | | | |
| Operating Fluid | Compressed Air | | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.1 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (No freezing) | | | |
| Port Size | Rc 1/8 | | | | |
| Stroke tolerance | mm | ^{+2.0} ₀ (Up to 200), ^{+2.4} ₀ (Over 200.) | | | |
| Operating Piston Speed | mm/s | 50 to 300 | | | |
| Cushion | Rubber Cushion | | | | |
| Lubrication | Not required (When lubricating, use turbine oil Class 1 ISO VG32) | | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|------------------|-------------------------|-----------------------|---|---------------------------|----------------------------|
| | Basic Type (00) | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CC) | Double clevis type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.18 | 0.33 | 0.26 | 0.24 | 0.33 | 0.19 | 0.33 | 0.23 | Refer to the mass described in the switch specifications on P.971 | 0.005 | 0.01 |
| ø25 | 0.28 | 0.54 | 0.41 | 0.43 | 0.52 | 0.28 | 0.52 | 0.38 | | 0.005 | 0.01 |
| ø32 | 0.32 | 0.58 | 0.45 | 0.47 | 0.56 | 0.32 | 0.56 | 0.42 | | 0.009 | 0.02 |
| ø40 | 0.51 | 0.77 | 0.64 | 0.66 | 0.75 | 0.53 | 0.75 | 0.67 | | 0.009 | 0.02 |

(Example) Product Weight of CMK2-Z-FA-32-50- Product mass at S = 0 mm: 0.47 kg
 T0H-D Added weight at S=50 mm.... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg
 Weight of 2 switches: 0.036 kg
 Weight of switch rail + 2 bands: 0.018 kg
 Product weight.....0.47 kg + 0.1 kg + 0.036 kg + 0.018 kg = 0.624 kg

SCP□3

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|-------------------------------------|-----------------|--------------|---------------------|-------------|
| | | Without Bellows | With Bellows | Without Bellows "L" | Bellows "J" |
| ø20 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 650 | 5 | 25 |
| ø25 | | | | | |
| ø32 | | | | | |
| ø40 | | | | | |

*1: Intermediate strokes can be manufactured in 1 mm increments.
 *2: Single side foot type (LS type) has a maximum stroke of 50 mm.
 *3: For bellows "J" with a stroke of less than 25 mm, please inquire each time.

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | | |
|----------------|---------------------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 31.4 | 47.1 | 62.8 | 94.2 | 1.26×10^2 | 1.57×10^2 | 1.88×10^2 | 2.20×10^2 | 2.51×10^2 | 2.83×10^2 | 3.14×10^2 |
| | Pull | 23.6 | 35.3 | 47.1 | 70.7 | 94.2 | 1.18×10^2 | 1.41×10^2 | 1.65×10^2 | 1.88×10^2 | 2.12×10^2 | 2.36×10^2 |
| ø25 | Push | 49.1k | 73.6 | 98.2 | 1.47×10^2 | 1.96×10^2 | 2.45×10^2 | 2.95×10^2 | 3.44×10^2 | 3.93×10^2 | 4.42×10^2 | 4.91×10^2 |
| | Pull | 37.8 | 56.7 | 75.6 | 1.13×10^2 | 1.51×10^2 | 1.89×10^2 | 2.27×10^2 | 2.64×10^2 | 3.02×10^2 | 3.40×10^2 | 3.78×10^2 |
| ø32 | Push | 80.4 | 1.21×10^2 | 1.61×10^2 | 2.41×10^2 | 3.22×10^2 | 4.02×10^2 | 4.83×10^2 | 5.63×10^2 | 6.43×10^2 | 7.24×10^2 | 8.04×10^2 |
| | Pull | 69.1 | 1.04×10^2 | 1.38×10^2 | 2.07×10^2 | 2.76×10^2 | 3.46×10^2 | 4.15×10^2 | 4.84×10^2 | 5.53×10^2 | 6.22×10^2 | 6.91×10^2 |
| ø40 | Push | 1.26×10^2 | 1.88×10^2 | 2.51×10^2 | 3.77×10^2 | 5.03×10^2 | 6.28×10^2 | 7.54×10^2 | 8.80×10^2 | 1.01×10^3 | 1.13×10^3 | 1.26×10^3 |
| | Pull | 1.10×10^2 | 1.65×10^2 | 2.21×10^2 | 3.31×10^2 | 4.41×10^2 | 5.51×10^2 | 6.62×10^2 | 7.72×10^2 | 8.82×10^2 | 9.92×10^2 | 1.10×10^3 |

Min. Stroke with Switch

(Unit: mm)

| Number of Switches | 1 | | | | | 2 | | | | |
|--------------------|-------------|----------------|----|--------|----|-------------|----------------|----|--------|----|
| | Solid State | | | Reed | | Solid State | | | Reed | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 |
| ø20 | 10 | | | | | 25 | 30 | 35 | 25 | 35 |
| ø25 | 10 | | | | | 25 | 30 | 35 | 25 | 35 |
| ø32 | 10 | | | | | 25 | 30 | 35 | 25 | 35 |
| ø40 | 10 | | | | | 25 | 30 | 35 | 25 | 35 |

Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|----------|----------|----------|----------|
| Basic Type (00) | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

*1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
 *2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.
 *3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

General Type

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

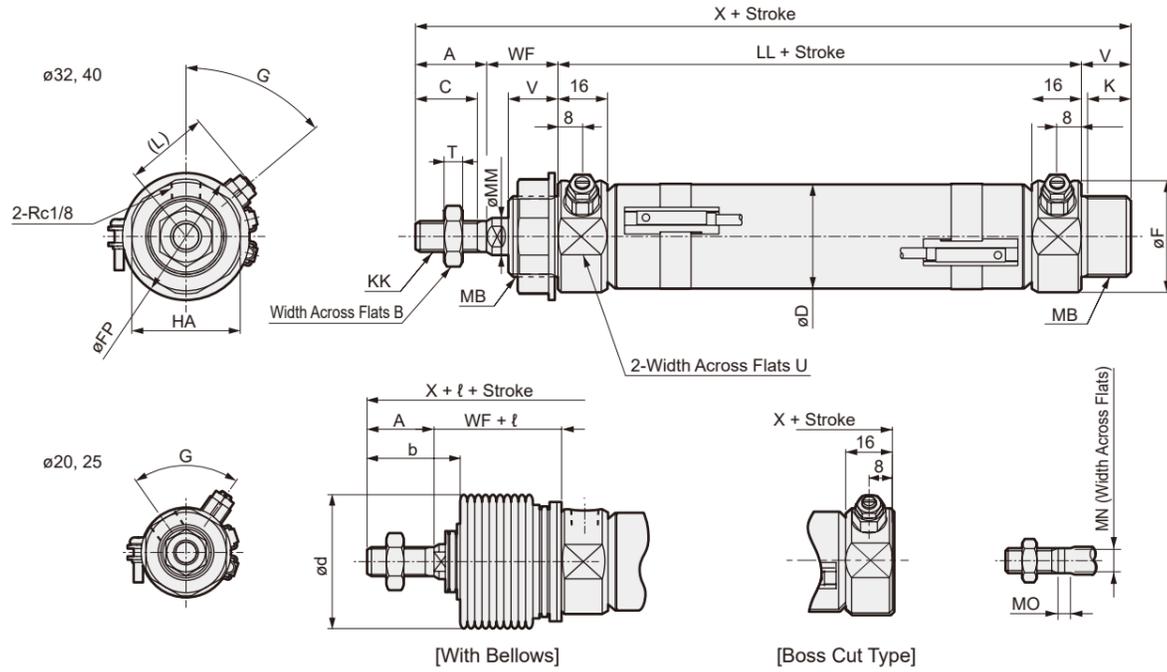
Cylinder Switch

Ending

Ending

Outline Dimension Drawing

●Basic Type (OO)



| Code | Basic Type (OO) Basic Dimensions | | | | | | | | | | | | | | | | |
|----------------|----------------------------------|----|----|------|----|----|-----|----|----|------------|----|----|-----------|----|----|----|--|
| Bore Size (mm) | A | B | C | D | F | FP | G | HA | K | KK | L | LL | MB | MM | MN | MO | |
| ø20 | 20 | 13 | 18 | 21.4 | 28 | 29 | 70° | 26 | 12 | M8 × 1.0 | 23 | 66 | M18 × 1.5 | 10 | 8 | 5 | |
| ø25 | 23 | 17 | 20 | 26.4 | 32 | 41 | 60° | 35 | 14 | M10 × 1.25 | 26 | 69 | M26 × 1.5 | 12 | 10 | 5 | |
| ø32 | 23 | 17 | 20 | 33.6 | 36 | 41 | 50° | 35 | 14 | M10 × 1.25 | 27 | 69 | M26 × 1.5 | 12 | 10 | 5 | |
| ø40 | 25 | 19 | 22 | 41.6 | 45 | 41 | 50° | 35 | 14 | M12 × 1.5 | 31 | 73 | M26 × 1.5 | 14 | 12 | 6 | |

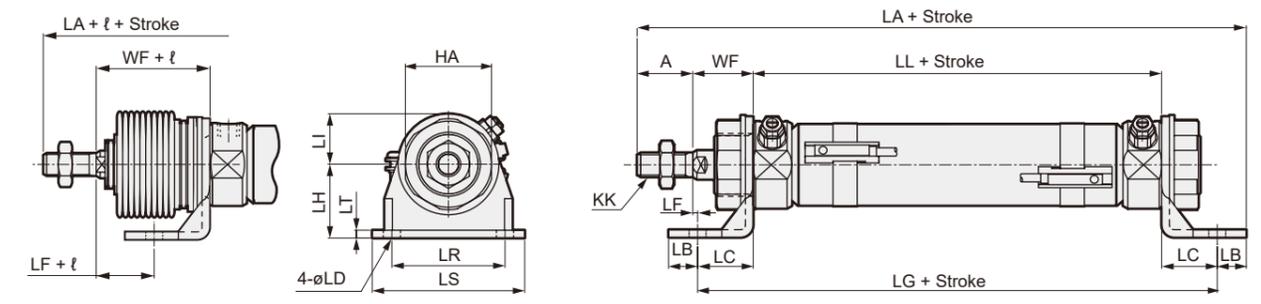
| Code | With Bellows | | | | | | | Boss Cut Type | |
|----------------|--------------|----|----|----|-----|----|----|---------------------|-----|
| Bore Size (mm) | T | U | V | WF | X | b | d | ℓ | X |
| ø20 | 5 | 24 | 14 | 24 | 124 | 30 | 30 | (Stroke / 3) + 6 | 110 |
| ø25 | 6 | 30 | 16 | 23 | 131 | 32 | 46 | (Stroke / 3.25) + 7 | 115 |
| ø32 | 6 | 34 | 16 | 23 | 131 | 32 | 46 | (Stroke / 3.25) + 7 | 115 |
| ø40 | 7 | 43 | 16 | 23 | 137 | 34 | 46 | (Stroke / 3.25) + 7 | 121 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Double Acting/Built-in Speed Controller Type

Outline Dimension Drawing

●Axial Foot Type (LB)

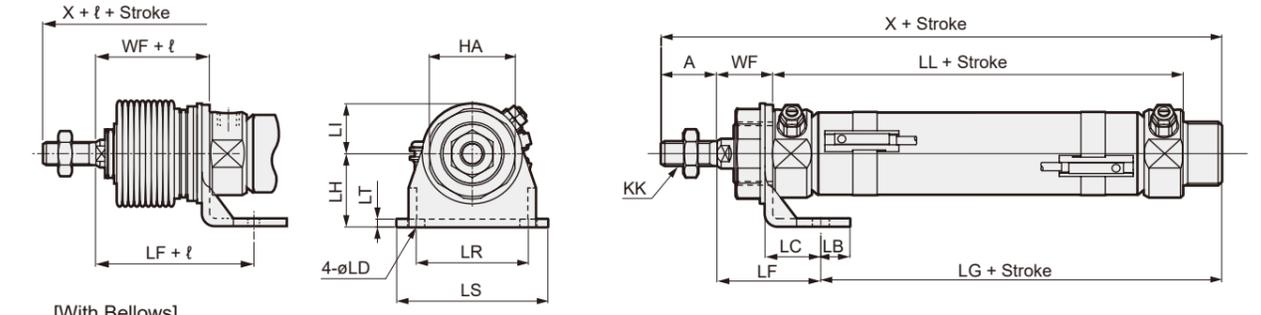


[With Bellows]

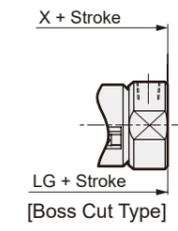
| Code | Axial Foot Type (LB) Mounting Dimensions | | | | | | | | | | | | | | | With Bellows | |
|----------------|--|----|------------|----|----|-----|----|----|----|----|-----|----|------|----|----|--------------|---------------------|
| Bore Size (mm) | A | HA | KK | LL | WF | LA | LB | LC | LD | LF | LG | LH | LI | LR | LS | LT | ℓ |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 138 | 10 | 18 | 6 | 6 | 102 | 25 | 15 | 30 | 44 | 3.2 | (Stroke / 3) + 6 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 150 | 12 | 23 | 7 | 0 | 115 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 150 | 12 | 23 | 7 | 0 | 115 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 156 | 12 | 23 | 7 | 0 | 119 | 30 | 22.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

●Single Side Axial Foot Type (LS)



[With Bellows]



| Code | Single Side Axial Foot Type (LS) Mounting Dimensions | | | | | | | | | | | | | | | With Bellows | | Boss Cut Type | |
|----------------|--|----|------------|----|----|-----|----|----|----|------|------|----|------|----|----|--------------|---------------------|---------------|------|
| Bore Size (mm) | A | HA | KK | LL | WF | X | LB | LC | LD | LF | LG | LH | LI | LR | LS | LT | ℓ | X | LG |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 10 | 18 | 6 | 38.8 | 65.2 | 25 | 15 | 30 | 44 | 3.2 | (Stroke / 3) + 6 | 110 | 51.2 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 12 | 23 | 7 | 42.8 | 65.2 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 | 115 | 49.2 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 12 | 23 | 7 | 42.8 | 65.2 | 30 | 20.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 | 115 | 49.2 |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 12 | 23 | 7 | 42.8 | 69.2 | 30 | 22.5 | 46 | 62 | 3.2 | (Stroke / 3.25) + 7 | 121 | 53.2 |

*1: Max. stroke is 50 mm.
 *2: Round up the ℓ dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

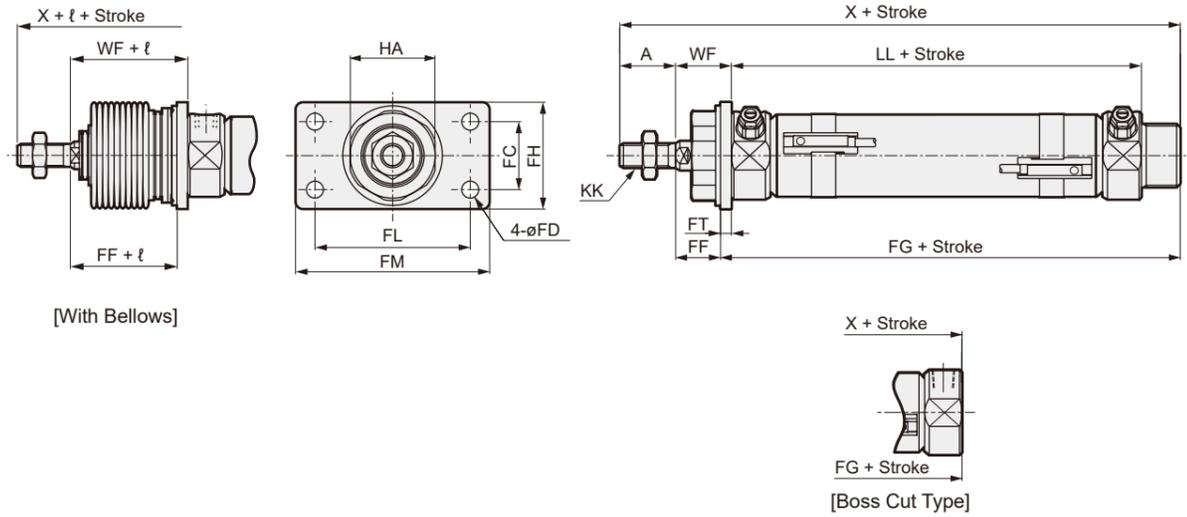
SCS2

Cylinder Switch

Ending

Outline Dimension Drawing

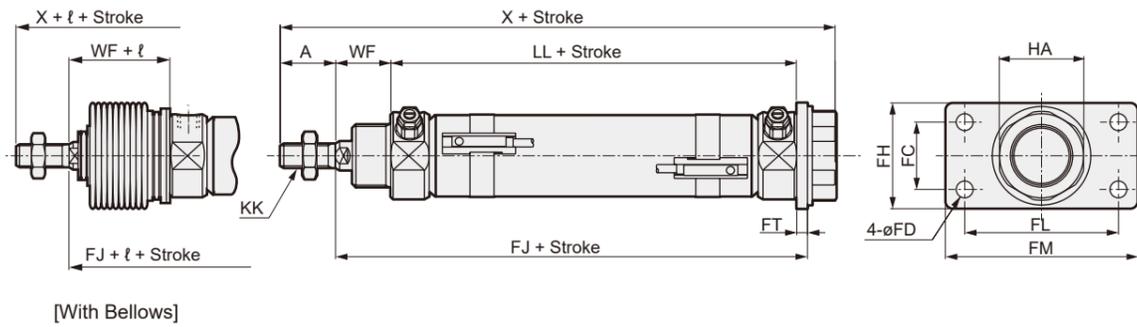
● Rod Side Flange Type (FA)



| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | | Boss Cut Type | |
|------|---|----|------------|----|----|-----|----|----|------|------|----|----|----|-----|---------------------|-----|---------------|----|
| | Bore Size (mm) | A | HA | KK | LL | WF | X | FC | FD | FF | FG | FH | FL | FM | FT | ℓ | X | FG |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 20.8 | 83.2 | 34 | 40 | 54 | 3.2 | (Stroke / 3) + 6 | 110 | 69.2 | |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | 115 | 73.5 | |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 18.5 | 89.5 | 44 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | 115 | 73.5 | |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 18.5 | 93.5 | 44 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | 121 | 77.5 | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

● Head Side Flange Type (FB)



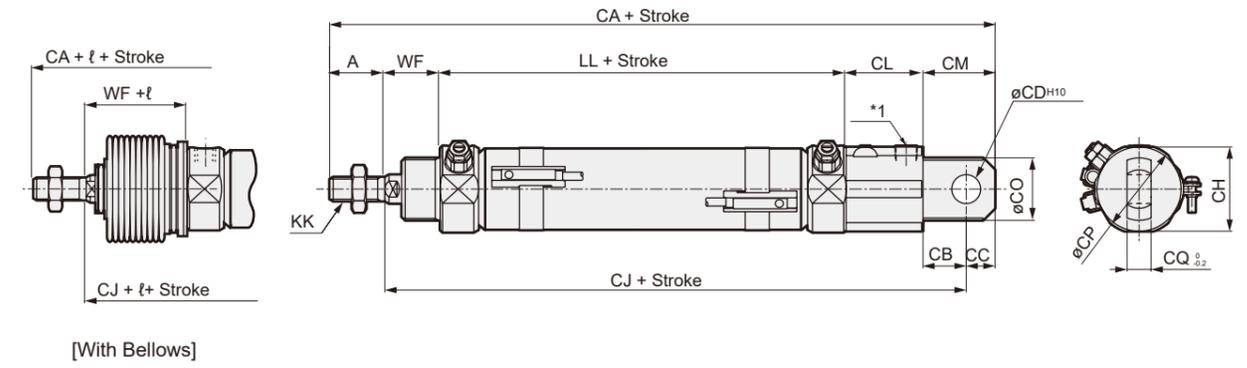
| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | |
|------|--|----|------------|----|----|-----|----|----|----|-------|----|----|-----|---------------------|--------------|--|
| | Bore Size (mm) | A | HA | KK | LL | WF | X | FC | FD | FH | FJ | FL | FM | FT | ℓ | |
| ø20 | 20 | 26 | M8 × 1.0 | 66 | 24 | 124 | 20 | 6 | 34 | 93.2 | 40 | 54 | 3.2 | (Stroke / 3) + 6 | | |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | | |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 23 | 131 | 28 | 7 | 44 | 96.5 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | | |
| ø40 | 25 | 35 | M12 × 1.5 | 73 | 23 | 137 | 28 | 7 | 44 | 100.5 | 64 | 80 | 4.5 | (Stroke / 3.25) + 7 | | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.

Double Acting/Built-in Speed Controller Type

Outline Dimension Drawing

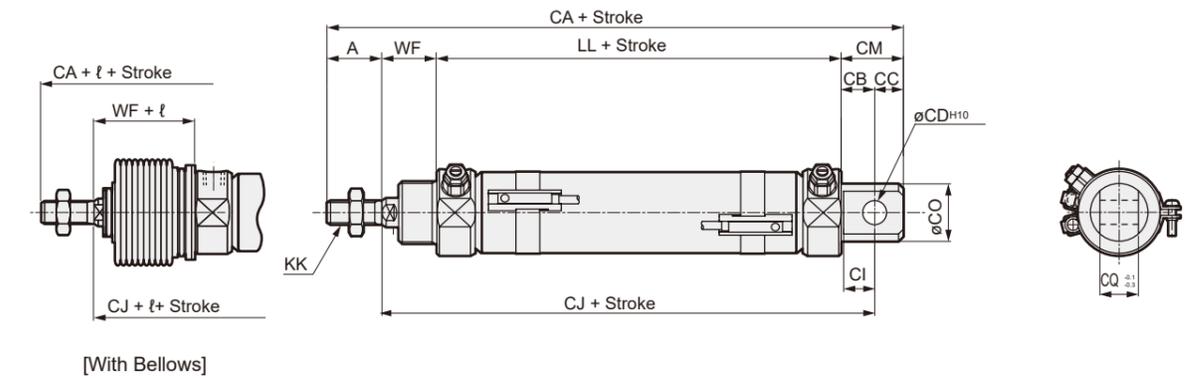
● Single Clevis Type (CA)



| Code | Single Clevis Type (CA) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | |
|------|---|------------|----|----|-----|----|----|----|----|-----|----|----|----|----|--------------|---------------------|
| | Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | CQ |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 165 | 14 | 10 | 10 | 26 | 135 | 31 | 24 | 22 | 28 | 8 | (Stroke / 3) + 6 |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 177 | 18 | 12 | 12 | 35 | 142 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 183 | 18 | 12 | 12 | 35 | 146 | 32 | 30 | 26 | 37 | 10 | (Stroke / 3.25) + 7 |

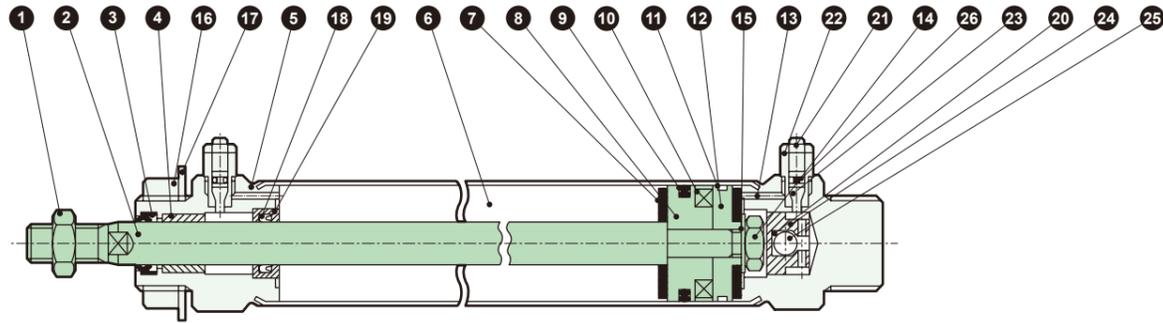
*1: Not a piping port.
 *2: Round up the ℓ dimension to the nearest whole number.
 *3: For dimensions with each switch, see P. 284 to P. 286.
 *4: For outer dimensions diagram of accessories, refer to P. 123.

● Single Yoke Clevis Integrated Type (CC)
 ● Single Clevis Bushing Press-fit Type (CC1)



| Code | Single Clevis Integrated Type (CC), Bushing Press-fit Type (CC1) Mounting Dimensions | | | | | | | | | | | | | | With Bellows | |
|------|--|------------|----|----|-----|----|----|----|-----|----|----|----|----|---------------------|--------------|--|
| | Bore Size (mm) | A | KK | LL | WF | CA | CB | CC | CD | CJ | CI | CM | CO | CQ | ℓ | |
| ø20 | 20 | M8 × 1.0 | 66 | 24 | 131 | 12 | 9 | 8 | 102 | 11 | 21 | 22 | 16 | (Stroke / 3) + 6 | | |
| ø25 | 23 | M10 × 1.25 | 69 | 23 | 136 | 12 | 9 | 8 | 104 | 11 | 21 | 24 | 16 | (Stroke / 3.25) + 7 | | |
| ø32 | 23 | M10 × 1.25 | 69 | 23 | 141 | 14 | 12 | 10 | 106 | 13 | 26 | 24 | 16 | (Stroke / 3.25) + 7 | | |
| ø40 | 25 | M12 × 1.5 | 73 | 23 | 151 | 16 | 14 | 12 | 112 | 15 | 30 | 30 | 20 | (Stroke / 3.25) + 7 | | |

*1: Round up the ℓ dimension to the nearest whole number.
 *2: For dimensions with each switch, see P. 284 to P. 286.
 *3: For outer dimensions diagram of accessories, refer to P. 123.



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|--|-----------------------------------|----------|---------------------|-----------------|---------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 13 | Head Cover | Aluminum Alloy | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel ø32, ø40: Carbon Steel | Industrial Hard Chrome Plating | 14 | Hexagon Nut | Steel | Zinc Chromate |
| 3 | Rod Packing | Nitrile Rubber | | 15 | Spacer | Steel | Zinc Chromate (ø20 to ø32 only) |
| 4 | Bushing | ø20: Bearing Alloy ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 16 | Nut | Steel | Zinc Chromate |
| 5 | Rod Cover | Aluminum Alloy | | 17 | Toothed Lock Washer | Steel | Zinc Chromate |
| 6 | Cylinder Tube | Stainless Steel | | 18 | Check Packing | Nitrile Rubber | |
| 7 | Cushion Rubber | Urethane Rubber | | 19 | Packing Adapter | Steel | Chromate |
| 8 | Piston A | Aluminum Alloy | | 20 | Check Ball Retainer | Steel | Zinc Chromate |
| 9 | Piston Packing | Nitrile Rubber | | 21 | Hexagon Nut | Steel | Zinc Chromate |
| 10 | Magnet | Plastic | | 22 | Needle Holder | Steel | Zinc Chromate |
| 11 | Wear Ring | Polyacetal | | 23 | Needle | Steel | Zinc Chromate |
| 12 | Piston B | Aluminum Alloy | | 24 | Check Ball Receiver | Steel | Black Oxide |
| | | | | 25 | Urethane Ball | Urethane Rubber | |
| | | | | 26 | Needle Gasket | Nitrile Rubber | |



Small bore cylinder
Double Acting, Low Hydraulic Pressure Type

CMK2-H Series

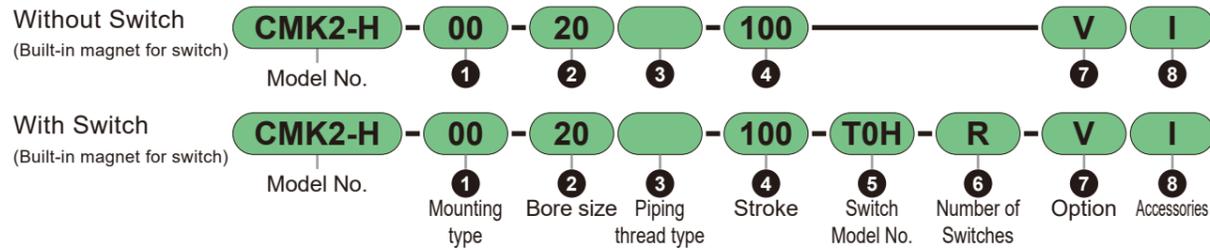
● Bore Size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2-H Series Model No. Notation Method

Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.

1 Mounting type

| Code | Content | |
|------|--|--|
| 00 | Basic type | |
| LB | Axial Foot Type (Both Sides) | |
| LS | Axial Foot Type (Single Side) | |
| FA | Rod Side Flange Type | |
| FB | Head Side Flange Type | |
| CA | Single Clevis Type | |
| CC | Single Clevis Integrated Type | |
| CC1 | Single Clevis, Bushing Press-fit Type | |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) | |
| TA | Rod Side Trunnion Type | |
| TB | Head Side Trunnion Type | |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

2 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

3 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 254.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | | |
|------------------------|---------------------------------|-----------------|------------------|------------|-------------------|-------------|--------------|---------|--|
| | | | AC | DC | AC | DC | Straight | L-shape | |
| Solid State | 1-Color | 2-wire | 85 to 265 | — | 5 to 100 | — | T1H□ | T1V□ | |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2H□ | T2V□ | |
| | | | — | 30 or less | — | 100 or less | T3H□ | T3V□ | |
| | 2-Color | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WH□ | T2WV□ | |
| | | | — | 30 or less | — | 50 or less | T3WH□ | T3WV□ | |
| | | | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ | |
| 1-Color Off-Delay Type | 2-wire | — | 10 to 30 | — | 5 to 20 *2 | T2JH□ | T2JV□ | | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | | |
| | | — | 10 to 30 | — | 5 to 20 *2 | T2HR3 | T2VR3 | | |
| Reed | No Indicator Lamp | 2-wire | 110 | 12/24 | 7 to 20 | 5 to 50 | T0H□ | T0V□ | |
| | | | 110 | 5/12/24 | 20 or less | 50 or less | T5H□ | T5V□ | |
| | | | 110/220 | 12/24 | 7 to 20 / 7 to 10 | 5 to 50 | T8H□ | T8V□ | |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.

*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|--|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T0H
3 m T0H ③
5 m T0H ⑤

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content | |
|------|---|--|
| I | Single Knuckle | |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) | |
| B2 | Double Yoke Bracket (Pin and Retaining Ring Attached) | |

*1: "I" and "Y" cannot be selected at the same time.

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -A2 | With 2 Rod Nuts |
| Rod End Shape Modification | Refer to Ending P. 11. |

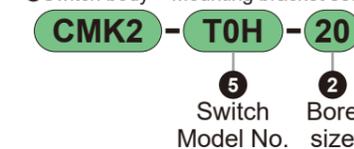
Model No. Example)

CMK2-H - - XJ9

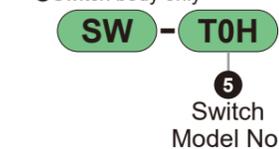
*For combinations of variations and options, see P. 109.

Switch Single Unit Model No. Notation Method

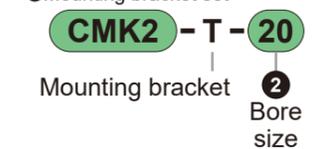
● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



7 Option

| Code | Content | Max. Ambient Temperature | Instantaneous Max. Temperature | |
|------|---------------------------------------|--------------------------|--------------------------------|--|
| J | Bellows | 100°C | 200°C | |
| L | | 250°C | 400°C | |
| M | Piston Rod Material (Stainless Steel) | | | |
| V | Boss Cut | | | |

*1: Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.

*2: When Bore size $\phi 20$, 25 is selected, the piston rod material is already stainless steel. (If M is selected, the rod nut material will also be stainless steel.)

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

Cylinder Switch

Ending

Specifications

| Item | CMK2-H | | | | |
|---------------------------|--------|--|-------|-------|-------|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | | Double Acting, Low Hydraulic Pressure Type | | | |
| Operating Fluid | | Hydraulic Operating Fluid | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.15 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | 5 to 50 | | | |
| Port Size | | Rc 1/8 | | | |
| Stroke tolerance | mm | ^{+2.0} ₀ (Up to 200), ^{+2.4} ₀ (Over 200.) | | | |
| Operating Piston Speed | mm/s | 5 to 300 | | | |
| Cushion | | Rubber Cushion | | | |
| Lubrication | | Not Required | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Note: The product weight, thrust and Dimensions are the same as those of CMK2 (double acting/single rod).

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | | Min. Stroke | |
|-----------|--|-----------------|--------------|--------------------------------|----------------|
| | | Without Bellows | With Bellows | Without Bellows Bellows "L" | Bellows "J" |
| ø20 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 650 | 5 | 25 |
| ø25 | | | | | |
| ø32 | | | | | |
| ø40 | | | | | |

- *1: Intermediate strokes can be manufactured in 1 mm increments.
- *2: Single side foot type (LS type) has a maximum stroke of 50 mm.
- *3: For bellows "J" with a stroke of less than 25 mm, please inquire each time.

Min. Stroke with Switch

(Unit: mm)

| Number of Switches | 1 | | | | | | 2 | | | | | |
|--------------------|-------------|----------------|----|--------|----|--------|----------------|----|--------|------|----|--|
| | Solid State | | | Reed | | | Solid State | | | Reed | | |
| | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | T2, T3 | T2W, T3W, T2WL | T1 | T0, T5 | T8 | | |
| ø20 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø25 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø32 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |
| ø40 | 10 | | | | | | 25 | 30 | 35 | 25 | 35 | |

Specifications

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|-------------------|-------------------------|-----------------------|---|---------------------------|----------------------------|
| | Basic Type (00) | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CAA) | Double clevis type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.17 | 0.32 | 0.25 | 0.23 | 0.32 | 0.18 | 0.32 | 0.22 | Refer to the mass described in the switch specifications on P.971 | 0.005 | 0.01 |
| ø25 | 0.26 | 0.52 | 0.39 | 0.41 | 0.50 | 0.26 | 0.50 | 0.36 | | 0.005 | 0.01 |
| ø32 | 0.30 | 0.56 | 0.43 | 0.45 | 0.54 | 0.30 | 0.54 | 0.40 | | 0.009 | 0.02 |
| ø40 | 0.48 | 0.74 | 0.61 | 0.63 | 0.72 | 0.50 | 0.72 | 0.64 | | 0.009 | 0.02 |

(Example) Product Weight of CMK2-H-FA-32-50-T0H-D

Product Weight at S = 0 mm:0.45 kg
 Added weight at S=50 mm..... Added weight at S=10 mm 0.02 × $\frac{\text{Product Stroke (50)}}{10}$ = 0.10 kg
 Weight of 2 switches:0.036 kg
 Weight of switch rail + 2 bands: ..0.018 kg
 Product Weight0.45 kg+0.1 kg+0.036 kg+0.018 kg=0.604 kg

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | |
|----------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 47.1 | 62.8 | 94.2 | 1.26 × 10 ² | 1.57 × 10 ² | 1.88 × 10 ² | 2.20 × 10 ² | 2.51 × 10 ² | 2.83 × 10 ² | 3.14 × 10 ² |
| | Pull | 35.3 | 47.1 | 70.7 | 94.2 | 1.18 × 10 ² | 1.41 × 10 ² | 1.65 × 10 ² | 1.88 × 10 ² | 2.12 × 10 ² | 2.36 × 10 ² |
| ø25 | Push | 73.6 | 98.2 | 1.47 × 10 ² | 1.96 × 10 ² | 2.45 × 10 ² | 2.95 × 10 ² | 3.44 × 10 ² | 3.93 × 10 ² | 4.42 × 10 ² | 4.91 × 10 ² |
| | Pull | 56.7 | 75.6 | 1.13 × 10 ² | 1.51 × 10 ² | 1.89 × 10 ² | 2.27 × 10 ² | 2.64 × 10 ² | 3.02 × 10 ² | 3.40 × 10 ² | 3.78 × 10 ² |
| ø32 | Push | 1.21 × 10 ² | 1.61 × 10 ² | 2.41 × 10 ² | 3.22 × 10 ² | 4.02 × 10 ² | 4.83 × 10 ² | 5.63 × 10 ² | 6.43 × 10 ² | 7.24 × 10 ² | 8.04 × 10 ² |
| | Pull | 1.04 × 10 ² | 1.38 × 10 ² | 2.07 × 10 ² | 2.76 × 10 ² | 3.46 × 10 ² | 4.15 × 10 ² | 4.84 × 10 ² | 5.53 × 10 ² | 6.22 × 10 ² | 6.91 × 10 ² |
| ø40 | Push | 1.88 × 10 ² | 2.51 × 10 ² | 3.77 × 10 ² | 5.03 × 10 ² | 6.28 × 10 ² | 7.54 × 10 ² | 8.80 × 10 ² | 1.01 × 10 ³ | 1.13 × 10 ³ | 1.26 × 10 ³ |
| | Pull | 1.65 × 10 ² | 2.21 × 10 ² | 3.31 × 10 ² | 4.41 × 10 ² | 5.51 × 10 ² | 6.62 × 10 ² | 7.72 × 10 ² | 8.82 × 10 ² | 9.92 × 10 ² | 1.10 × 10 ³ |

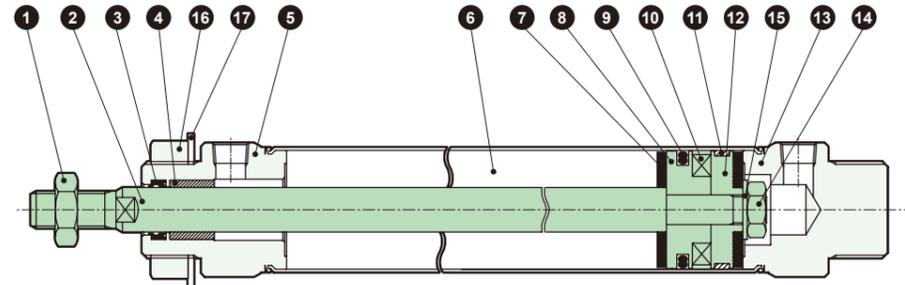
Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|----------|----------|----------|----------|
| Basic Type (00) | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | M1-FA-30 |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | M1-TA-40 |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

- *1: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
- *2: For axial foot type (both sides), 2 sets of "M1-LB-□" from the table above are required.
- *3: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

Outline Dimension Drawing

Same as double acting/single rod type. See P. 114 to P. 121.



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|---|-----------------------------------|----------|---------------------|----------------|---------------------------------|
| 1 | Rod Nut | Steel | Zinc Chromate | 9 | Piston Packing | Nitrile Rubber | |
| 2 | Piston Rod | ø20, ø25: Stainless Steel ø32, ø40: Carbon Steel | Industrial Hard Chrome Plating | 10 | Magnet | Plastic | |
| 3 | Rod Packing | Nitrile Rubber | | 11 | Wear Ring | Polyacetal | |
| 4 | Bushing | ø20: Bearing Alloy ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 12 | Piston B | Aluminum Alloy | |
| 5 | Rod Cover | Aluminum Alloy | | 13 | Head Cover | Aluminum Alloy | |
| 6 | Cylinder Tube | Stainless Steel | | 14 | Hexagon Nut | Steel | Zinc Chromate |
| 7 | Cushion Rubber | Urethane Rubber | | 15 | Spacer | Steel | Zinc Chromate (ø20 to ø32 only) |
| 8 | Piston A | Aluminum Alloy | | 16 | Nut | Steel | Zinc Chromate |
| | | | | 17 | Toothed Lock Washer | Steel | Zinc Chromate |

Mounting Bracket Material

| Mounting type | Material |
|--------------------|----------|
| Foot (LB / LS) | Steel |
| Flange (FA / FB) | Steel |
| Trunnion (TA / TB) | Steel |
| Single Clevis (CA) | Steel |
| Double Clevis (CB) | Steel |

Note: Mounting brackets are included with the product upon shipment. However, when bellows are included and the mounting brackets are LB, LS, FA, or TA, they will be shipped assembled.



Small Bore Size Cylinder Double Acting/Cutting Oil Resistant Type

CMK2-G2/G3 Series

● Bore Size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Circuit Diagram Symbol



CMK2-G2/G3 Series

Model No. Notation Method

*Lead wire length, connector specification

| Code | Content |
|-------|--|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*4

*4: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T2WLH
3 m T2WLH^[3]
5 m T2WLH^[5]

6 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | |
|-------------|-----------------------------------|-----------------|------------------|------------|-------------------|------------|--------------|---------|
| | | | AC | DC | AC | DC | Straight | L-shape |
| Solid State | 2-Color Water Resistance Improved | 2-wire | — | 24 ± 10% | — | 5 to 20 | T2WLH□ | T2WLV□ |
| | 2-Color For Cutting Oil | | — | 10 to 30 | — | 5 to 20 *2 | T2YLH□ | T2YLV□ |
| | 2-Color For Cutting Oil | 3-wire (NPN) | — | 30 or less | — | 50 or less | T3YLH□ | T3YLV□ |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

7 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

8 Accessories

| Code | Content |
|------|---|
| I | Single Knuckle |
| Y | Double Knuckle (Pin and Washer Split Pin Attached) |
| B2 | Double Yoke Bracket (Pin and retaining ring included) |

*1: "I" and "Y" cannot be selected at the same time.

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -A2 | With 2 Rod Nuts |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-G2/G3 - - XJ9

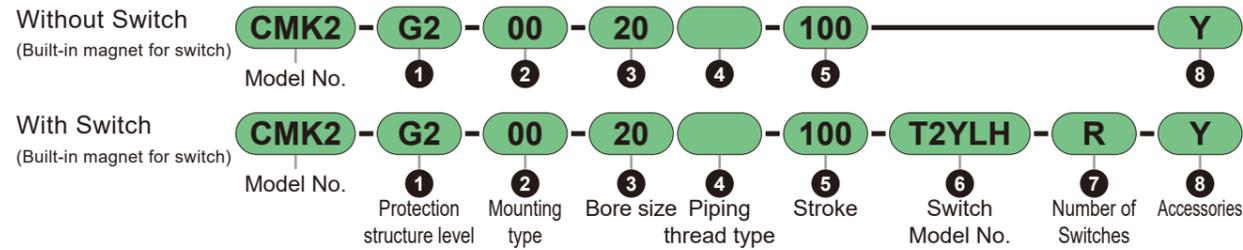
Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

CMK2-G2/G3 - - FP1

*For combinations of variations and options, see P. 109.

Model No. Notation Method



1 Protection structure level

| Code | Content |
|------|---|
| G2 | Cutting Oil Resistant Scraper + NBR Packing |
| G3 | Cutting Oil Resistant Scraper + FKM Packing |

2 Mounting type

| Code | Content |
|------|--|
| 00 | Basic type |
| LB | Axial Foot Type (Both Sides) |
| LS | Axial Foot Type (Single Side) |
| FA | Rod Side Flange Type |
| FB | Head Side Flange Type |
| CA | Single Clevis Type |
| CC | Single Clevis Integrated Type |
| CC1 | Single Clevis, Bushing Press-fit Type |
| CB | Double Clevis Type (Pin and Washer Split Pin Attached) |
| TA | Rod Side Trunnion Type |
| TB | Head Side Trunnion Type |

*1

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

3 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

4 Piping thread type

| Code | Content |
|-------|-----------------------------------|
| Blank | Rc Thread |
| NN | NPT Thread (Custom Order Product) |
| GN | G Thread (Custom Order Product) |

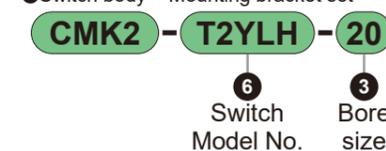
5 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

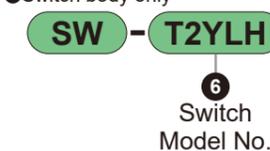
Note: For minimum stroke with switch, refer to P. 260.

Switch Single Unit Model No. Notation Method

● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

Cylinder Switch

Ending

Specifications

| Item | CMK2-G2/G3 | | | | |
|---------------------------|------------|---|-------|-------|-------|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | | Double Acting, Coolant Proof Type | | | |
| Operating Fluid | | Compressed Air | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.15 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (Provided that freezing does not occur) | | | |
| Port Size | | Rc 1/8 | | | |
| Stroke tolerance | mm | $^{+2.0}_0$ (0 to 200) $^{+2.4}_0$ (Over 200,) | | | |
| Operating piston speed | mm/s | 50 to 500 | | | |
| Cushion | | Rubber Cushion | | | |
| Lubrication | | Not Required (When lubricating, use turbine oil Class 1 ISO VG32) | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | Min. Stroke | With Switch Min. Stroke |
|--------------------|-------------------------------------|-------------|-------------|-------------------------|
| ø20, ø25, ø32, ø40 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 5 | 25 |

*1: Intermediate strokes can be manufactured in 1 mm increments.
 *2: Single side foot type (LS type) has a maximum stroke of 50 mm.

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|----------------------|----------------------|---------------------|-------------------------|------------------|-------------------------|-----------------------|---|---------------------------|----------------------------|
| | Basic type 00 | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA/FB) | Single Clevis Type (CA) | Clevis Type (CC) | Double Clevis Type (CB) | Trunnion Type (TA/TB) | | | |
| ø20 | 0.21 | 0.36 | 0.29 | 0.27 | 0.36 | 0.22 | 0.36 | 0.26 | P. 971 Refer to the weight described in the switch specifications. | 0.005 | 0.01 |
| ø25 | 0.27 | 0.53 | 0.40 | 0.42 | 0.51 | 0.27 | 0.51 | 0.37 | | 0.005 | 0.01 |
| ø32 | 0.31 | 0.57 | 0.44 | 0.46 | 0.55 | 0.31 | 0.55 | 0.41 | | 0.009 | 0.02 |
| ø40 | 0.49 | 0.75 | 0.62 | 0.64 | 0.73 | 0.51 | 0.73 | 0.65 | | 0.009 | 0.02 |

(Example) Product mass of CMK2-G2-FA-32-50-T2WL Product Weight at S = 0 mm: ...0.45 kg
 Added weight at S=50 mm.... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg
 Mass of 2 switches: 0.062 kg
 Weight of switch rail + 2 bands:0.018 kg
 Product Weight0.45 kg+0.1 kg+0.062 kg+0.018 kg=0.63 kg

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | |
|----------------|---------------------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 47.1 | 62.8 | 94.2 | 1.26×10^2 | 1.57×10^2 | 1.88×10^2 | 2.20×10^2 | 2.51×10^2 | 2.83×10^2 | 3.14×10^2 |
| | Pull | 35.3 | 47.1 | 70.7 | 94.2 | 1.18×10^2 | 1.41×10^2 | 1.65×10^2 | 1.88×10^2 | 2.12×10^2 | 2.36×10^2 |
| ø25 | Push | 73.6 | 98.2 | 1.47×10^2 | 1.96×10^2 | 2.45×10^2 | 2.95×10^2 | 3.44×10^2 | 3.93×10^2 | 4.42×10^2 | 4.91×10^2 |
| | Pull | 56.7 | 75.6 | 1.13×10^2 | 1.51×10^2 | 1.89×10^2 | 2.27×10^2 | 2.64×10^2 | 3.02×10^2 | 3.40×10^2 | 3.78×10^2 |
| ø32 | Push | 1.21×10^2 | 1.61×10^2 | 2.41×10^2 | 3.22×10^2 | 4.02×10^2 | 4.83×10^2 | 5.63×10^2 | 6.43×10^2 | 7.24×10^2 | 8.04×10^2 |
| | Pull | 1.04×10^2 | 1.38×10^2 | 2.07×10^2 | 2.76×10^2 | 3.46×10^2 | 4.15×10^2 | 4.84×10^2 | 5.53×10^2 | 6.22×10^2 | 6.91×10^2 |
| ø40 | Push | 1.88×10^2 | 2.51×10^2 | 3.77×10^2 | 5.03×10^2 | 6.28×10^2 | 7.54×10^2 | 8.80×10^2 | 1.01×10^3 | 1.13×10^3 | 1.26×10^3 |
| | Pull | 1.65×10^2 | 2.21×10^2 | 3.31×10^2 | 4.41×10^2 | 5.51×10^2 | 6.62×10^2 | 7.72×10^2 | 8.82×10^2 | 9.92×10^2 | 1.10×10^3 |

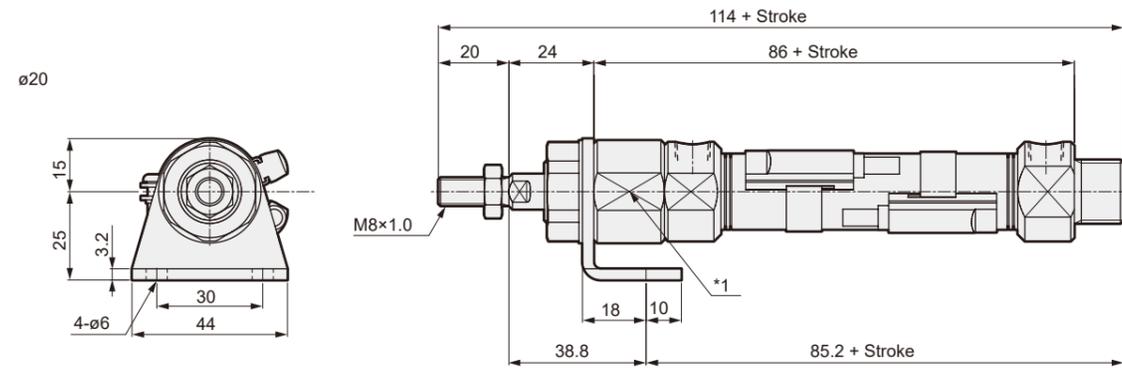
Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|-------------------------|----------|----------|----------|--|
| Mounting bracket | | | | |
| Basic Type (0) *4 | M1-00-20 | M1-00-30 | M1-00-30 | M1-00-30 |
| Axial Foot Type (LB/LS) | M1-LB-20 | M1-LB-30 | M1-LB-30 | M1-LB-30 CMK2-G2-40-LS (Rod side of LB) |
| Flange (FA/FB) | M1-FA-20 | M1-FA-30 | M1-FA-30 | CMK2-G2-40-FA (FA) M1-FA-30 (FB) |
| Trunnion (TA/TB) | M1-TA-20 | M1-TA-30 | M1-TA-30 | CMK2-G2-40-TA (TA) M1-TA-40 (TB) |
| Single Clevis Type (CA) | M1-CA-20 | M1-CA-30 | M1-CA-30 | M1-CA-30 |
| Double clevis type (CB) | M1-CB-20 | M1-CB-30 | M1-CB-30 | M1-CB-30 |

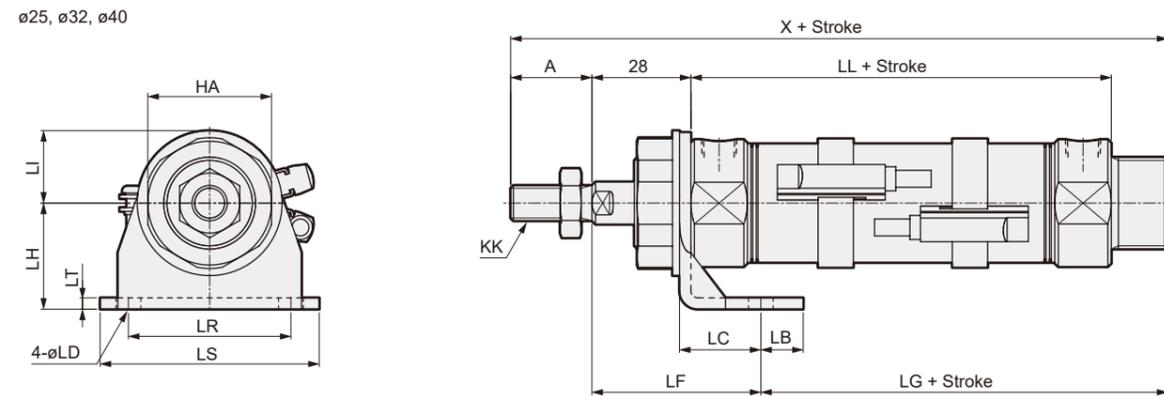
*1: For Bore size ø40, the nut attached to the rod cover, LS bracket (rod side of LB), FA bracket, and TA bracket are different from the standard type.
 *2: For axial foot type and flange type mounting brackets, mounting nuts and toothed washers are included. Also, for trunnion type, mounting nuts are included.
 *3: For axial foot type (double side), 2 sets of "M1-LB-□" in the table above are required.
 *4: Only mounting nuts and toothed lock washers are included. One set is included with the basic type (00) of the product, but use this if additional sets are required.

Outline Dimension Drawing

● Single Side Axial Foot Type (LS)



*1: The position of the width across flats of the adapter is not fixed.



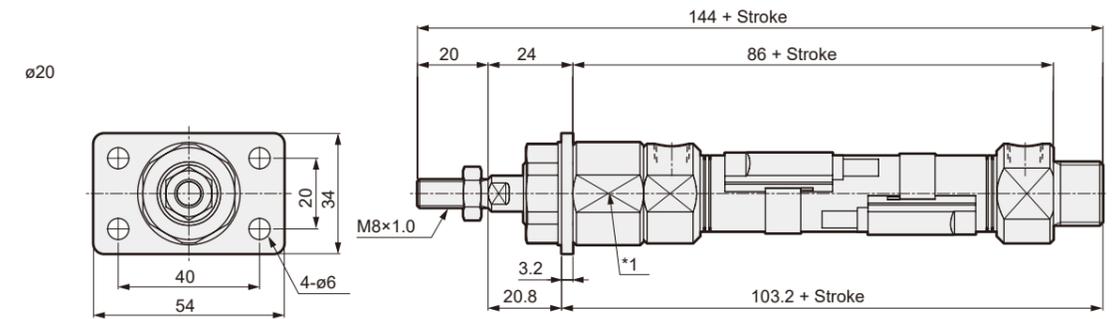
| Code | Single Side Axial Foot Type (LS) Mounting Dimensions | | | | | | | | | | | | | | |
|----------------|--|----|------------|----|----|----|------|------|----|------|----|----|----|-----|-----|
| Bore Size (mm) | A | HA | KK | LB | LC | LD | LF | LG | LH | LI | LL | LR | LS | LT | X |
| $\phi 25$ | 23 | 35 | M10 x 1.25 | 12 | 23 | 7 | 47.8 | 70.2 | 30 | 20.5 | 69 | 46 | 62 | 3.2 | 136 |
| $\phi 32$ | 23 | 35 | M10 x 1.25 | 12 | 23 | 7 | 47.8 | 70.2 | 30 | 20.5 | 69 | 46 | 62 | 3.2 | 136 |
| $\phi 40$ | 25 | 38 | M12 x 1.5 | 12 | 23 | 7 | 47.8 | 74.2 | 30 | 20.5 | 73 | 46 | 62 | 3.2 | 142 |

*1: For dimensions with each switch, see P. 284 to P. 286.

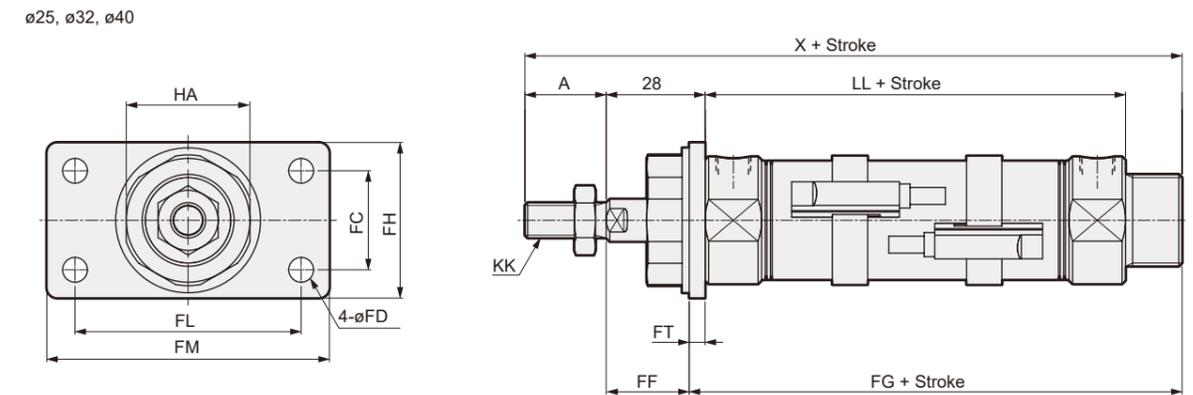
*2: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

● Rod Side Flange Type (FA)



*1: The position of the width across flats of the adapter is not fixed.



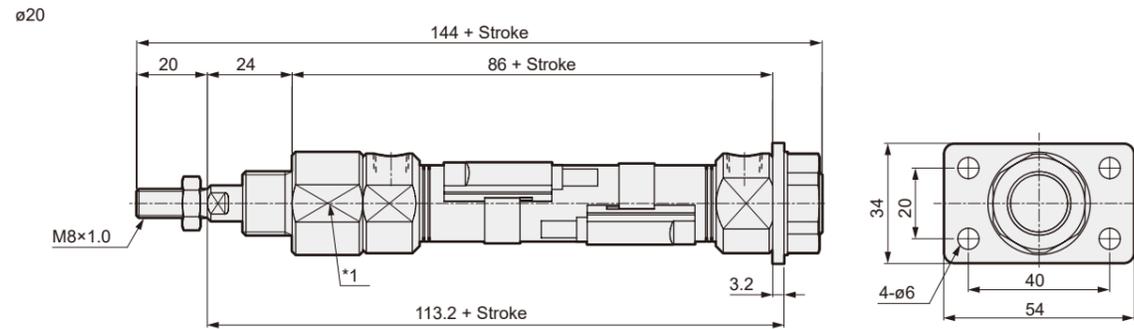
| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | |
|----------------|---|----|----|------|------|----|----|----|-----|----|------------|----|-----|
| Bore Size (mm) | A | FC | FD | FF | FG | FH | FL | FM | FT | HA | KK | LL | X |
| $\phi 25$ | 23 | 28 | 7 | 23.5 | 94.5 | 44 | 64 | 80 | 4.5 | 35 | M10 x 1.25 | 69 | 136 |
| $\phi 32$ | 23 | 28 | 7 | 23.5 | 94.5 | 44 | 64 | 80 | 4.5 | 35 | M10 x 1.25 | 69 | 136 |
| $\phi 40$ | 25 | 28 | 7 | 23.5 | 98.5 | 44 | 64 | 80 | 4.5 | 38 | M12 x 1.5 | 73 | 142 |

*1: For dimensions with each switch, see P. 284 to P. 286.

*2: For outer dimensions diagram of accessories, refer to P. 123.

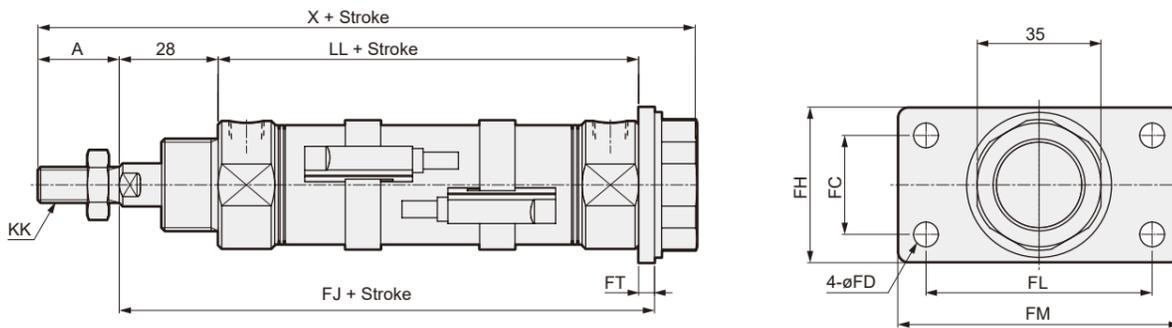
Outline Dimension Drawing

● Head Side Flange Type (FB)



*1: The position of the width across flats of the adapter is not fixed.

$\phi 25, \phi 32, \phi 40$



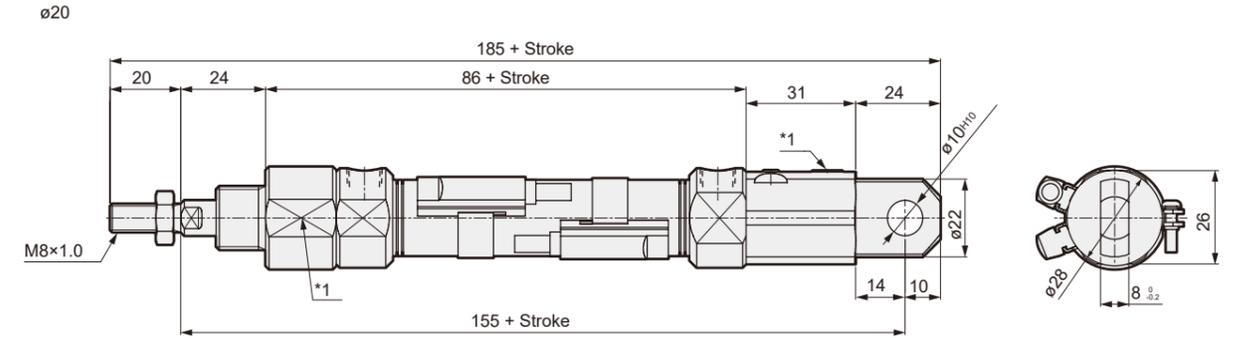
| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | |
|----------------|--|----|----|----|-------|----|----|-----|-------------------|----|-----|
| Bore Size (mm) | A | FC | FD | FH | FJ | FL | FM | FT | KK | LL | X |
| $\phi 25$ | 23 | 28 | 7 | 44 | 101.5 | 64 | 80 | 4.5 | M10 \times 1.25 | 69 | 136 |
| $\phi 32$ | 23 | 28 | 7 | 44 | 101.5 | 64 | 80 | 4.5 | M10 \times 1.25 | 69 | 136 |
| $\phi 40$ | 25 | 28 | 7 | 44 | 105.5 | 64 | 80 | 4.5 | M12 \times 1.5 | 73 | 142 |

*1: For dimensions with each switch, see P. 284 to P. 286.

*2: For outer dimensions diagram of accessories, refer to P. 123.

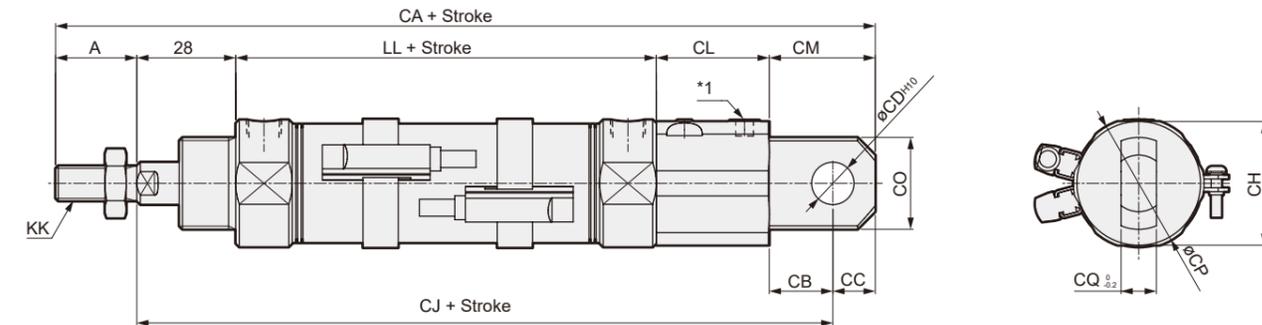
Outline Dimension Drawing

● Single Yoke Clevis Type (CA)



*1: The position of the width across flats of the adapter is not fixed.

$\phi 25, \phi 32, \phi 40$



| Code | Single Clevis Type (CA) Mounting Dimensions | | | | | | | | | | | | | |
|----------------|---|-----|----|----|----|----|-----|----|----|----|----|----|-------------------|----|
| Bore Size (mm) | A | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | CQ | KK | LL |
| $\phi 25$ | 23 | 182 | 18 | 12 | 12 | 35 | 147 | 32 | 30 | 26 | 37 | 10 | M10 \times 1.25 | 69 |
| $\phi 32$ | 23 | 182 | 18 | 12 | 12 | 35 | 147 | 32 | 30 | 26 | 37 | 10 | M10 \times 1.25 | 69 |
| $\phi 40$ | 25 | 188 | 18 | 12 | 12 | 35 | 151 | 32 | 30 | 26 | 37 | 10 | M12 \times 1.5 | 73 |

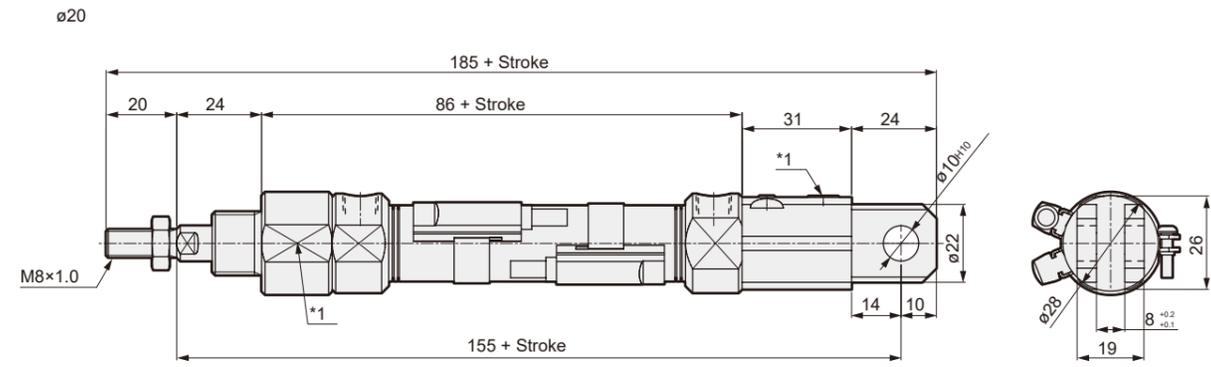
*1: Not a piping port.

*2: For dimensions with each switch, see P. 284 to P. 286.

*3: For outer dimensions diagram of accessories, refer to P. 123.

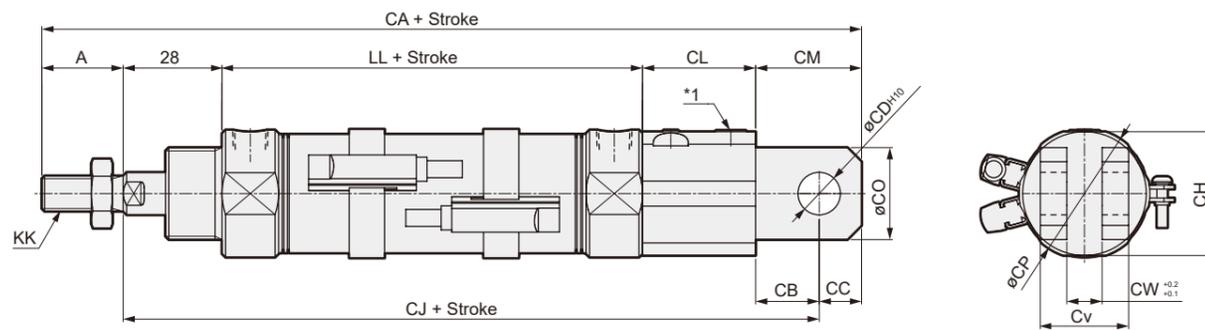
Outline Dimension Drawing

- Double Clevis Type (CB) $\phi 20$



*1: The position of the width across flats of the adapter is not fixed.

$\phi 25, \phi 32, \phi 40$

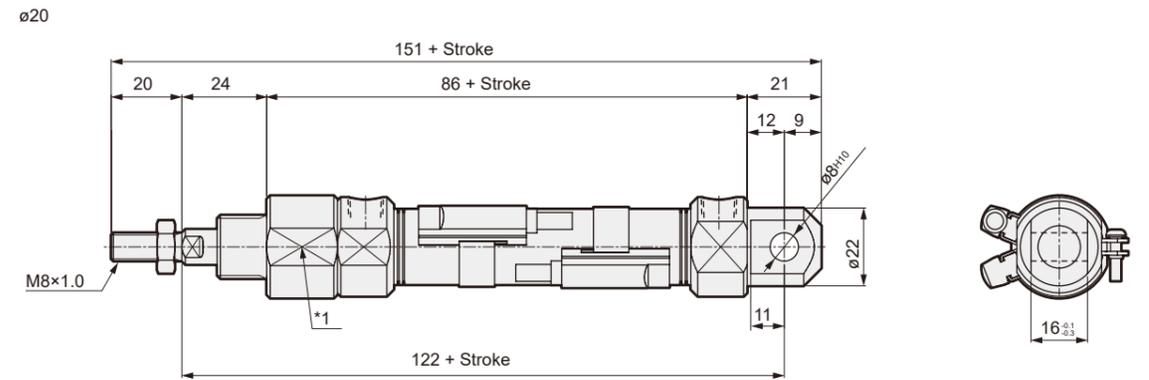


| Code | Double Clevis Type (CB) Mounting Dimensions | | | | | | | | | | | | | | |
|----------------|---|-----|----|----|----|----|-----|----|----|----|----|----|----|-------------------|----|
| Bore Size (mm) | A | CA | CB | CC | CD | CH | CJ | CL | CM | CO | CP | Cv | CW | KK | LL |
| $\phi 25$ | 23 | 182 | 18 | 12 | 12 | 35 | 147 | 32 | 30 | 26 | 37 | 25 | 10 | M10 \times 1.25 | 69 |
| $\phi 32$ | 23 | 182 | 18 | 12 | 12 | 35 | 147 | 32 | 30 | 26 | 37 | 25 | 10 | M10 \times 1.25 | 69 |
| $\phi 40$ | 25 | 188 | 18 | 12 | 12 | 35 | 151 | 32 | 30 | 26 | 37 | 25 | 10 | M12 \times 1.5 | 73 |

- *1: Not a piping port.
- *2: For dimensions with each switch, see P. 284 to P. 286.
- *3: For outer dimensions diagram of accessories, refer to P. 123.

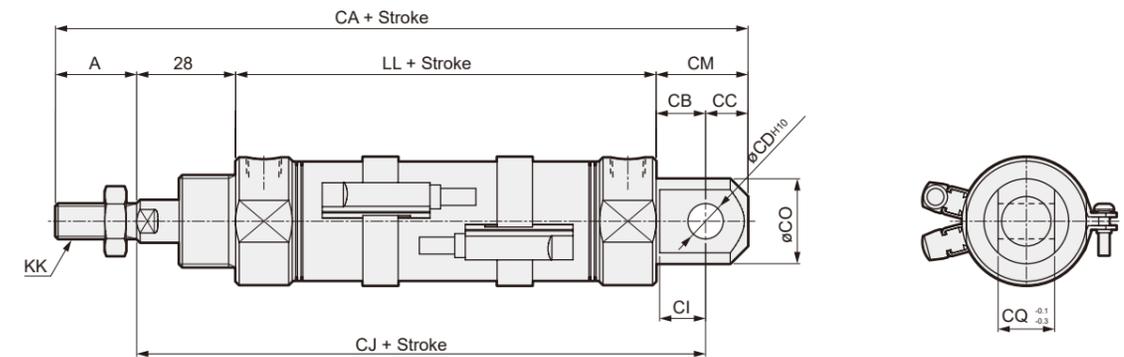
Outline Dimension Drawing

- Single Yoke Clevis Integrated Type (CC)
- Single Clevis Bushing Press-fit Type (CC1)



*1: The position of the width across flats of the adapter is not fixed.

$\phi 25, \phi 32, \phi 40$

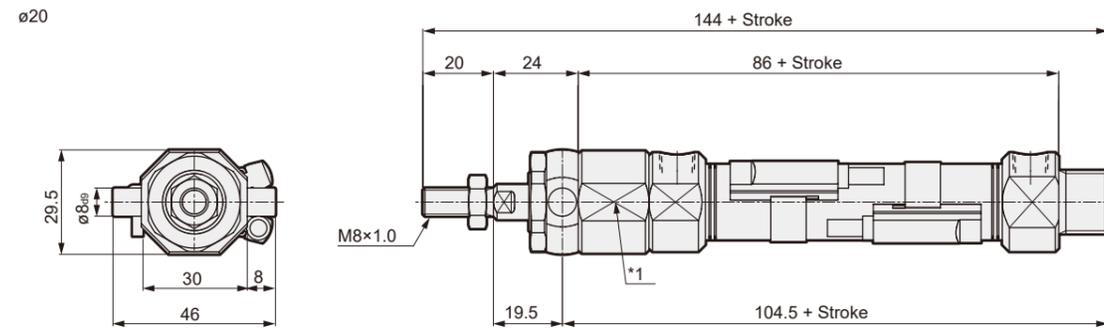


| Code | Single Clevis Integrated Type (CC), Bushing Press-fit Type (CC1) Mounting Dimensions | | | | | | | | | | | | |
|----------------|--|-----|----|----|----|----|-----|----|----|----|-------------------|----|--|
| Bore Size (mm) | A | CA | CB | CC | CD | CI | CJ | CM | CO | CQ | KK | LL | |
| $\phi 25$ | 23 | 141 | 12 | 9 | 8 | 11 | 109 | 21 | 24 | 16 | M10 \times 1.25 | 69 | |
| $\phi 32$ | 23 | 146 | 14 | 12 | 10 | 13 | 111 | 26 | 24 | 16 | M10 \times 1.25 | 69 | |
| $\phi 40$ | 25 | 156 | 16 | 14 | 12 | 15 | 117 | 30 | 30 | 20 | M12 \times 1.5 | 73 | |

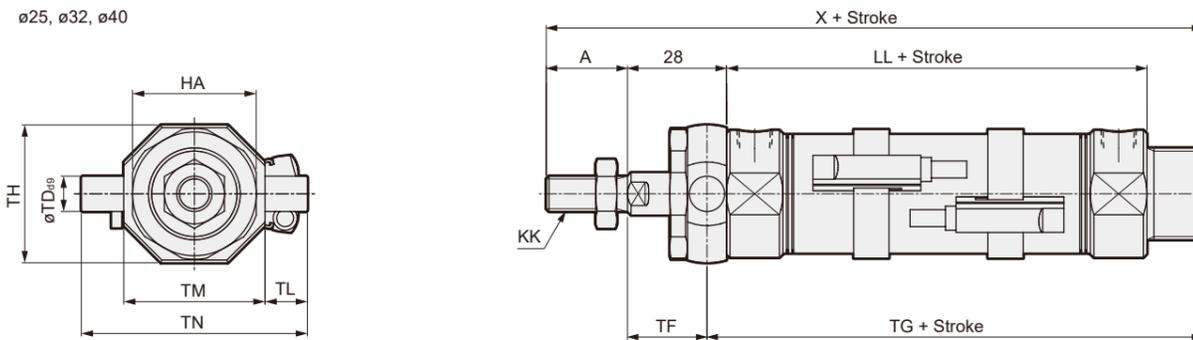
- *1: For dimensions with each switch, see P. 284 to P. 286.
- *2: For outer dimensions diagram of accessories, refer to P. 123.

Outline Dimension Drawing

● Rod side trunnion type (TA)

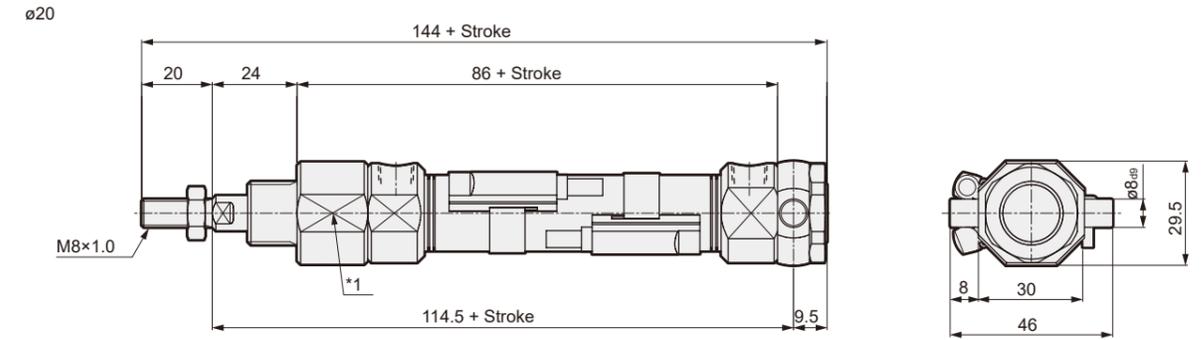


*1: The position of the width across flats of the adapter is not fixed.

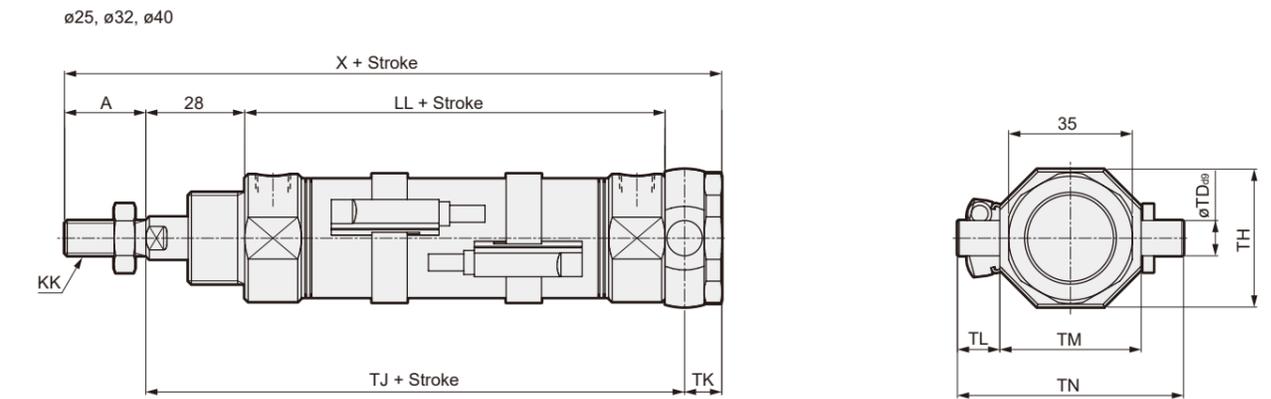


Outline Dimension Drawing

● Head Side Trunnion Type (TB)



*1: The position of the width across flats of the adapter is not fixed.



| Code | Rod Side Trunnion Type (TA) Mounting Dimensions | | | | | | | | | | | |
|----------------|---|----|------------|----|----|------|------|----|-----|----|----|-----|
| Bore Size (mm) | A | HA | KK | LL | TD | TF | TG | TH | TL | TM | TN | X |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 10 | 22.5 | 95.5 | 39 | 12 | 40 | 64 | 136 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 10 | 22.5 | 95.5 | 39 | 12 | 40 | 64 | 136 |
| ø40 | 25 | 38 | M12 × 1.5 | 73 | 10 | 22.5 | 99.5 | 44 | 9.5 | 53 | 72 | 142 |

*1: For dimensions with each switch, see P. 284 to P. 286.
*2: For outer dimensions diagram of accessories, refer to P. 123.

| Code | Head Side Trunnion Type (TB) Mounting Dimensions | | | | | | | | | | | |
|----------------|--|------------|----|----|----|-------|------|-----|----|----|-----|--|
| Bore Size (mm) | A | KK | LL | TD | TH | TJ | TK | TL | TM | TN | X | |
| ø25 | 23 | M10 × 1.25 | 69 | 10 | 39 | 102.5 | 10.5 | 12 | 40 | 64 | 136 | |
| ø32 | 23 | M10 × 1.25 | 69 | 10 | 39 | 102.5 | 10.5 | 12 | 40 | 64 | 136 | |
| ø40 | 25 | M12 × 1.5 | 73 | 10 | 44 | 106.5 | 10.5 | 9.5 | 53 | 72 | 142 | |

*1: For dimensions with each switch, see P. 284 to P. 286.
*2: For outer dimensions diagram of accessories, refer to P. 123.

CMK2-G2/G3 Series

Internal Structure Diagram / Material

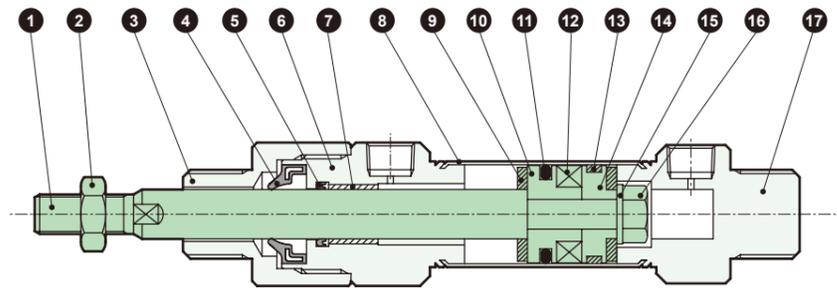
- Protection structure level NBR Packing

CMK2-G2

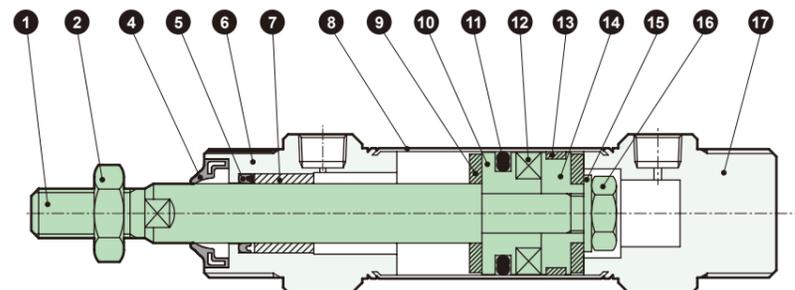
- Protection structure level: FKM Packing

CMK2-G3

ø20



ø25, ø32, ø40



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|---------------|--|--------------------------------|----------|----------------|---------------------------------------|---------------------------------|
| 1 | Piston Rod | Stainless Steel | Industrial Hard Chrome Plating | 9 | Cushion Rubber | Urethane Rubber | |
| 2 | Hexagon Nut | Stainless Steel | | 10 | Piston A | Aluminum Alloy | Chromate |
| 3 | Adapter | Aluminum Alloy | Chromate | 11 | Piston Packing | G2 Nitrile Rubber G3 Fluoro Rubber | |
| 4 | Scraper | G2 Nitrile Rubber G3 Fluoro Rubber | | 12 | Magnet | Plastic | |
| 5 | Rod Packing | G2 Nitrile Rubber G3 Fluoro Rubber | | 13 | Wear Ring | Polyacetal | |
| 6 | Rod Cover | Aluminum Alloy | Chromate | 14 | Piston B | Aluminum Alloy | Chromate |
| 7 | Bushing | ø20: Bearing Alloy ø25, ø32, ø40: Oil Impregnated Bearing Alloy | | 15 | Spacer | Steel | Zinc Chromate (ø20 to ø32 only) |
| 8 | Cylinder Tube | Stainless Steel | | 16 | Hexagon Nut | Steel | Zinc Chromate |
| | | | | 17 | Bed Cover | Aluminum Alloy | Chromate |

MEMO

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending



Small Bore Size Cylinder Double Acting/All Stainless Steel Exterior/
Water Resistant Type

CMK2-JG2/JG3 Series

● Bore Size: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Custom Products

Circuit Diagram Symbol



CMK2-JG2/JG3 Series

Model No. Notation Method

6 Number of Switches

| Code | Content |
|------|------------------------|
| R | With 1 pc on rod side |
| H | With 1 pc on head side |
| D | With 2 pcs |
| T | With 3 pcs |

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please order the insufficient switch mounting brackets separately by individual model number.

7 Option

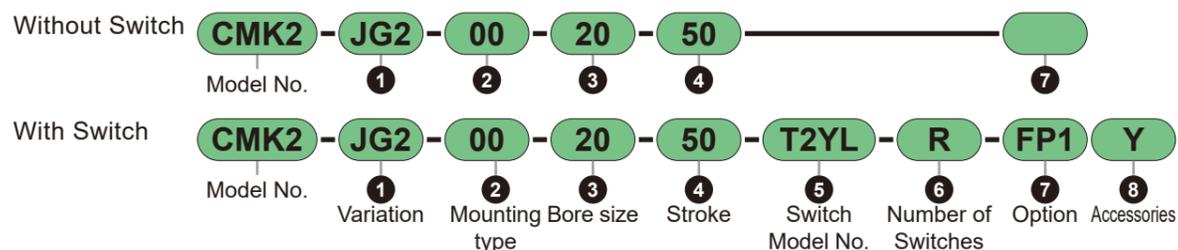
| Code | Content |
|-------|--|
| Blank | Standard |
| V | Boss Cut  |

8 Accessories

| Code | Content |
|------|--|
| I | Single Knuckle  |
| Y | Double Knuckle (Pin and retaining ring included)  |

Note: I and "Y" cannot be selected simultaneously.

Model No. Notation Method



Mounting brackets are included with the product and shipped. However, if bellows are included and mounting brackets are LB, LS, or FA, they will be shipped assembled.

1 Variation

| Code | Content |
|------|--|
| JG2 | All Stainless Steel Exterior + Water Resistant Scraper + NBR Packing |
| JG3 | All Stainless Steel Exterior + Water Resistant Scraper + FKM Packing |

2 Mounting type

| Code | Content |
|------|---|
| 00 | Basic type  |
| LB | Axial Foot Type (Both Sides)  |
| LS | Axial Foot Type (Single Side)  |
| FA | Rod Side Flange Type  |
| FB | Head Side Flange Type  |
| CC | Single Clevis Integrated Type  |

*1: Single side foot type (LS type) has a max. stroke of 50 mm.

3 Bore Size (mm)

| Code | Content |
|------|-----------|
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

4 Stroke (mm)

| Bore size | Stroke | Intermediate Stroke |
|-----------|----------|---------------------|
| $\phi 20$ | 5 to 750 | Every 1 mm |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

*1: For minimum stroke with switch, refer to P. 276.

5 Switch Model No.

For switch details, please refer to P. 971. Switches are included with the product and shipped.

| Contact | Indicator Lamp Special Function | Wiring (Output) | Load Voltage (V) | | Load Current (mA) | | Lead Wire *1 | |
|-------------|-----------------------------------|-----------------|------------------|--------------|-------------------|------------|--------------------------------|--------------------------------|
| | | | AC | DC | AC | DC | Straight | L-shape |
| Solid State | 2-Color Improved Water Resistance | 2-wire | — | 24 \pm 10% | — | 5 to 20 | T2WLH <input type="checkbox"/> | T2WLV <input type="checkbox"/> |
| | | | — | 10 to 30 | — | 5 to 20 *2 | T2YLH <input type="checkbox"/> | T2YLV <input type="checkbox"/> |
| | 2-Color For Cutting Oil | 3-wire (NPN) | — | 30 or less | — | 50 or less | T3YLH <input type="checkbox"/> | T3YLV <input type="checkbox"/> |

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 971.

*Lead wire length, connector specification

| Code | Content |
|-------|--|
| Blank | 1 m (Standard) |
| 3 | 3 m (Option) |
| 5 | 5 m (Option) |
| W | M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m |

*4: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T2WLH
3 m T2WLH
5 m T2WLH

About Custom Product Specifications

For details, see P. 287.

| Code | Content |
|----------------------------|------------------------|
| -XJ9 | Without Bellows |
| -A2 | With 2 Rod Nuts |
| Rod End Shape Modification | Refer to Ending P. 11. |

Model No. Example)

CMK2-JG2/JG3 - - XJ9

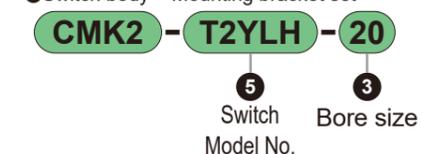
Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

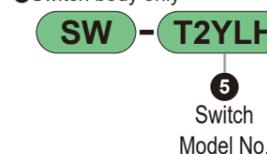
CMK2-JG2/JG3 - - FP1

Switch Single Unit Model No. Notation Method

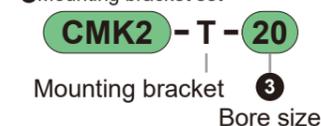
● Switch body + Mounting bracket set



● Switch body only



● Mounting bracket set



Specifications

| Item | CMK2-JG2/JG3 | | | | |
|---------------------------|--------------|---|-------|-------|-------|
| | mm | ø20 | ø25 | ø32 | ø40 |
| Bore Size | mm | ø20 | ø25 | ø32 | ø40 |
| Actuation method | | Double Acting/Water Resistant Type | | | |
| Operating Fluid | | Compressed Air | | | |
| Max. Working Pressure | MPa | 1.0 | | | |
| Min. Operating Pressure | MPa | 0.15 | | | |
| Proof Pressure | MPa | 1.6 | | | |
| Ambient Temperature | °C | -10 to 60 (Provided that freezing does not occur) | | | |
| Port Size | | Rc 1/8 | | | |
| Stroke tolerance | mm | $^{+2.0}_0$ (0 to 200), $^{+2.4}_0$ (Over 200,) | | | |
| Operating piston speed | mm/s | 50 to 500 | | | |
| Cushion | | Rubber Cushion | | | |
| Lubrication | | Not Required (When lubricating, use turbine oil Class 1 ISO VG32) | | | |
| Allowable Absorbed Energy | J | 0.166 | 0.308 | 0.424 | 0.639 |

Cylinder Weight

(Unit: kg)

| Item/Mounting Style | Product Weight at Stroke (S) = 0 mm | | | | | Switch Weight (Per Piece) | Switch Rail + Band Weight | Added Weight per S = 10 mm |
|---------------------|-------------------------------------|---------------|----------------------|----------------------|----------------------|---|---------------------------|----------------------------|
| | Bore Size (mm) | Basic type 00 | Axial Foot Type (LB) | Axial Foot Type (LS) | Flange Type (FA, FB) | | | |
| ø20 | 0.31 | 0.57 | 0.44 | 0.46 | 0.37 | Please refer to the weight listed in the switch specifications on P. 971. | 0.005 | 0.01 |
| ø25 | 0.32 | 0.58 | 0.45 | 0.47 | 0.39 | | 0.005 | 0.01 |
| ø32 | 0.43 | 0.69 | 0.56 | 0.58 | 0.55 | | 0.009 | 0.02 |
| ø40 | 0.65 | 0.91 | 0.78 | 0.80 | 0.90 | | 0.009 | 0.02 |

(Example) Product Weight of CMK2-JG2-FA-32-50-T2WL Product Weight at S = 0 mm: ...0.56 kg
 Added weight at S=50 mm.... Added weight at S=10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ kg
 Mass of 2 switches:0.062 kg
 Weight of switch rail + 2 bands:0.018 kg
 Product weight0.56 kg+0.1 kg+0.062 kg+0.018 kg=0.74 kg

Stroke

(Unit: mm)

| Bore size | Standard Stroke | Max. Stroke | Min. Stroke | With Switch Min. Stroke |
|--------------------|-------------------------------------|-------------|-------------|-------------------------|
| ø20, ø25, ø32, ø40 | 25, 50, 75, 100, 150, 200, 250, 300 | 750 | 5 | 25 |

*1: Intermediate strokes can be manufactured in 1 mm increments.
 *2: Single side foot type (LS type) has a maximum stroke of 50 mm.

Theoretical Thrust Table

(Unit: N)

| Bore size (mm) | Operating Direction | Operating Pressure MPa | | | | | | | | | |
|----------------|---------------------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| ø20 | Push | 47.1 | 62.8 | 94.2 | 1.26×10^2 | 1.57×10^2 | 1.88×10^2 | 2.20×10^2 | 2.51×10^2 | 2.83×10^2 | 3.14×10^2 |
| | Pull | 35.3 | 47.1 | 70.7 | 94.2 | 1.18×10^2 | 1.41×10^2 | 1.65×10^2 | 1.88×10^2 | 2.12×10^2 | 2.36×10^2 |
| ø25 | Push | 73.6 | 98.2 | 1.47×10^2 | 1.96×10^2 | 2.45×10^2 | 2.95×10^2 | 3.44×10^2 | 3.93×10^2 | 4.42×10^2 | 4.91×10^2 |
| | Pull | 56.7 | 75.6 | 1.13×10^2 | 1.51×10^2 | 1.89×10^2 | 2.27×10^2 | 2.64×10^2 | 3.02×10^2 | 3.40×10^2 | 3.78×10^2 |
| ø32 | Push | 1.21×10^2 | 1.61×10^2 | 2.41×10^2 | 3.22×10^2 | 4.02×10^2 | 4.83×10^2 | 5.63×10^2 | 6.43×10^2 | 7.24×10^2 | 8.04×10^2 |
| | Pull | 1.04×10^2 | 1.38×10^2 | 2.07×10^2 | 2.76×10^2 | 3.46×10^2 | 4.15×10^2 | 4.84×10^2 | 5.53×10^2 | 6.22×10^2 | 6.91×10^2 |
| ø40 | Push | 1.88×10^2 | 2.51×10^2 | 3.77×10^2 | 5.03×10^2 | 6.28×10^2 | 7.54×10^2 | 8.80×10^2 | 1.01×10^3 | 1.13×10^3 | 1.26×10^3 |
| | Pull | 1.65×10^2 | 2.21×10^2 | 3.31×10^2 | 4.41×10^2 | 5.51×10^2 | 6.62×10^2 | 7.72×10^2 | 8.82×10^2 | 9.92×10^2 | 1.10×10^3 |

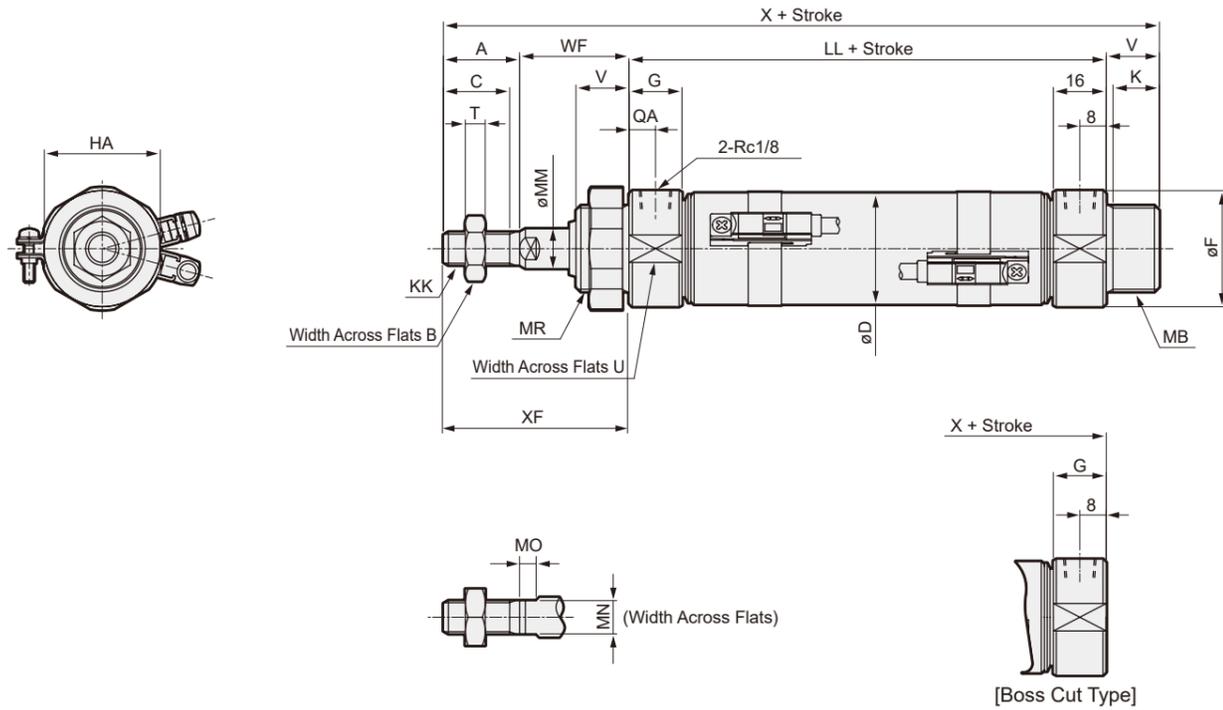
Mounting Bracket Model No. Notation Method

| Bore Size (mm) | ø20 | ø25 | ø32 | ø40 |
|--------------------------|----------------|----------------|----------------|--|
| Mounting bracket | | | | |
| Axial Foot Type (LB, LS) | CMK2-JG2-20-LS | CMK2-JG2-20-LS | CMK2-JG2-20-LS | CMK2-JG2-40-LS CMK2-JG2-20-LS (Head side of LB) |
| Flange (FA, FB) | CMK2-JG2-20-FA | CMK2-JG2-20-FA | CMK2-JG2-20-FA | CMK2-JG2-20-FA (For FB) CMK2-JG2-40-FA (For FA) |

*1: For mounting brackets, mounting nuts are included for axial foot type and flange type.
 *2: For axial foot type (LB), 2 sets of "CMK2-JG2-□-LS" in the table above are required.

Outline Dimension Drawing

●Basic Type (OO)



| Code | Basic Type (OO) Basic Dimensions | | | | | | | | | | | |
|----------------|----------------------------------|----|----|------|----|----|----|----|----|------------|----|-----------|
| Bore Size (mm) | A | B | C | D | F | G | QA | HA | K | KK | LL | MR |
| ø20 | 20 | 13 | 18 | 21.4 | 30 | 16 | 8 | 35 | 14 | M8 × 1.0 | 66 | M26 × 1.5 |
| ø25 | 23 | 17 | 20 | 26.4 | 32 | 16 | 8 | 35 | 14 | M10 × 1.25 | 69 | M26 × 1.5 |
| ø32 | 23 | 17 | 20 | 33.6 | 36 | 16 | 8 | 35 | 14 | M10 × 1.25 | 69 | M26 × 1.5 |
| ø40 | 25 | 19 | 22 | 41.6 | 45 | 16 | 8 | 38 | 14 | M12 × 1.5 | 73 | M30 × 1.5 |

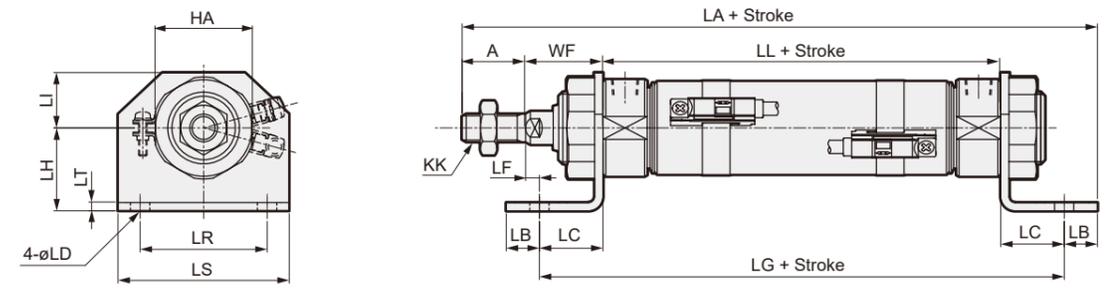
| Code | | | | | | | | | | | Boss Cut Type | |
|----------------|-----------|----|----|----|---|----|----|----|-----|----|---------------|--|
| Bore Size (mm) | MB | MM | MN | MO | T | U | V | WF | X | XF | X | |
| ø20 | M26 × 1.5 | 10 | 8 | 5 | 5 | 28 | 16 | 28 | 130 | 48 | ø | |
| ø25 | M26 × 1.5 | 12 | 10 | 5 | 6 | 30 | 16 | 28 | 136 | 51 | 120 | |
| ø32 | M26 × 1.5 | 12 | 10 | 5 | 6 | 34 | 16 | 28 | 136 | 51 | 120 | |
| ø40 | M26 × 1.5 | 14 | 12 | 6 | 7 | 43 | 16 | 28 | 142 | 53 | 126 | |

*1: For dimensions with each switch, see P. 284 to P. 286.
*2: For accessories, see P. 123.

Water Resistant Type

Outline Dimension Drawing

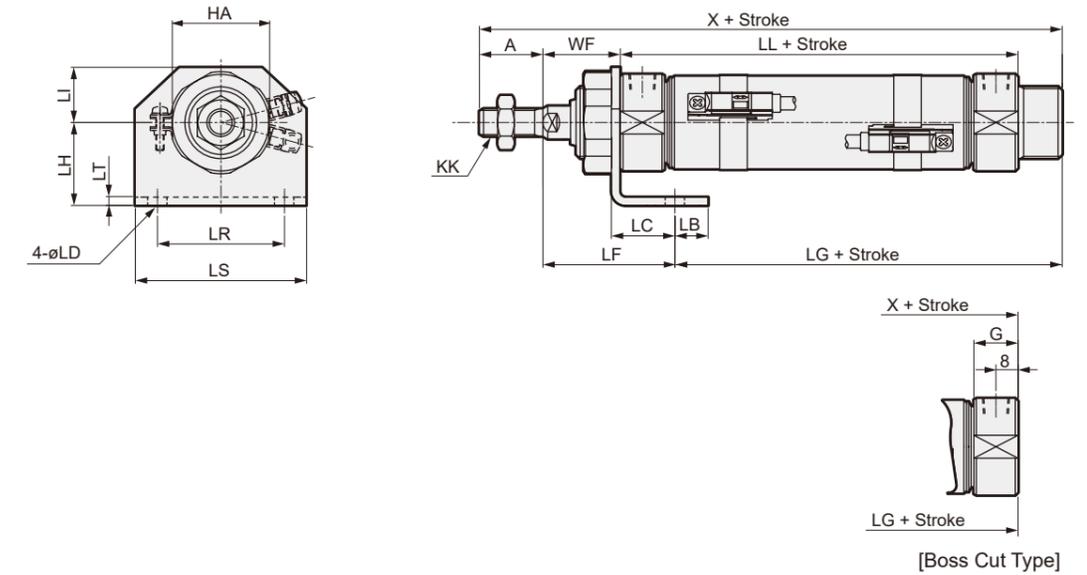
●Axial Foot Type (LB)



| Code | Axial Foot Type (LB) Mounting Dimensions | | | | | | | | | | | | | | | |
|----------------|--|----|------------|----|----|-----|----|----|----|----|-----|----|----|----|----|----|
| Bore Size (mm) | A | HA | KK | LL | WF | LA | LB | LC | LD | LF | LG | LH | LI | LR | LS | LT |
| ø20 | 20 | 35 | M8 × 1.0 | 66 | 28 | 149 | 12 | 23 | 7 | 5 | 112 | 30 | 20 | 46 | 62 | 3 |
| ø25 | 23 | 35 | M10 × 1.25 | 69 | 28 | 155 | 12 | 23 | 7 | 5 | 115 | 30 | 20 | 46 | 62 | 3 |
| ø32 | 23 | 35 | M10 × 1.25 | 69 | 28 | 155 | 12 | 23 | 7 | 5 | 115 | 30 | 20 | 46 | 62 | 3 |
| ø40 | 25 | 38 | M12 × 1.5 | 73 | 28 | 161 | 12 | 23 | 7 | 5 | 119 | 30 | 20 | 46 | 62 | 3 |

*1: For dimensions with each switch, see P. 284 to P. 286.
*2: For accessories, see P. 123.

●Single Side Axial Foot Type (LS)

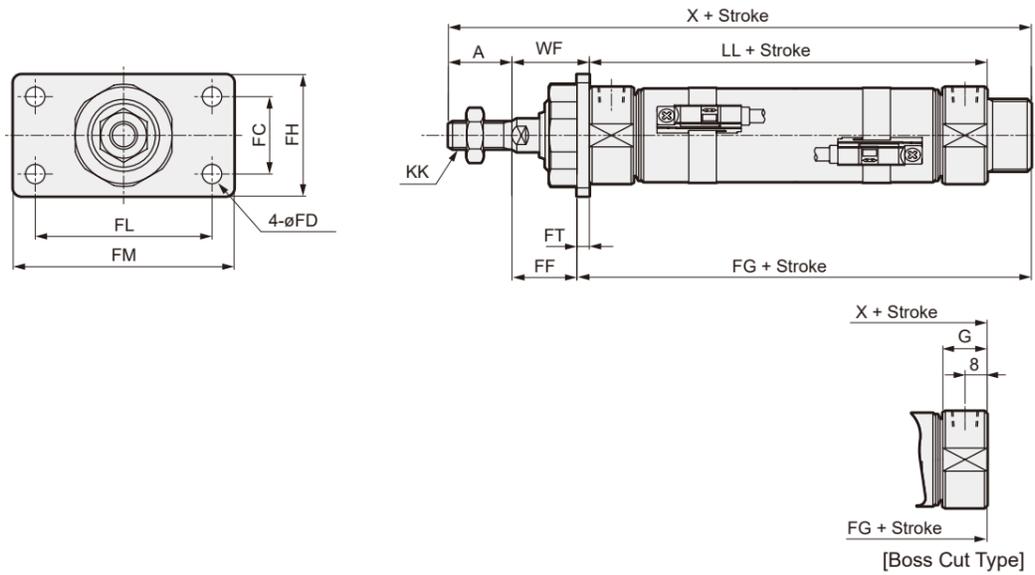


| Code | Axial Foot Type (LS) Mounting Dimensions | | | | | | | | | | | | | | | | Boss Cut Type | | |
|----------------|--|----|----|------------|----|----|-----|----|----|----|----|----|----|----|----|----|---------------|-----|----|
| Bore Size (mm) | A | HA | G | KK | LL | WF | X | LB | LC | LD | LF | LG | LH | LI | LR | LS | LT | X | LG |
| ø20 | 20 | 35 | 16 | M8 × 1.0 | 66 | 28 | 130 | 12 | 23 | 7 | 48 | 62 | 30 | 20 | 46 | 62 | 3 | 114 | 46 |
| ø25 | 23 | 35 | 16 | M10 × 1.25 | 69 | 28 | 136 | 12 | 23 | 7 | 48 | 65 | 30 | 20 | 46 | 62 | 3 | 120 | 49 |
| ø32 | 23 | 35 | 16 | M10 × 1.25 | 69 | 28 | 136 | 12 | 23 | 7 | 48 | 65 | 30 | 20 | 46 | 62 | 3 | 120 | 49 |
| ø40 | 25 | 38 | 16 | M12 × 1.5 | 73 | 28 | 142 | 12 | 23 | 7 | 48 | 69 | 30 | 20 | 46 | 62 | 3 | 126 | 53 |

*1: Stroke up to 50.
*2: For dimensions with each switch, see P. 284 to P. 286.
*3: For accessories, see P. 123.

Outline Dimension Drawing

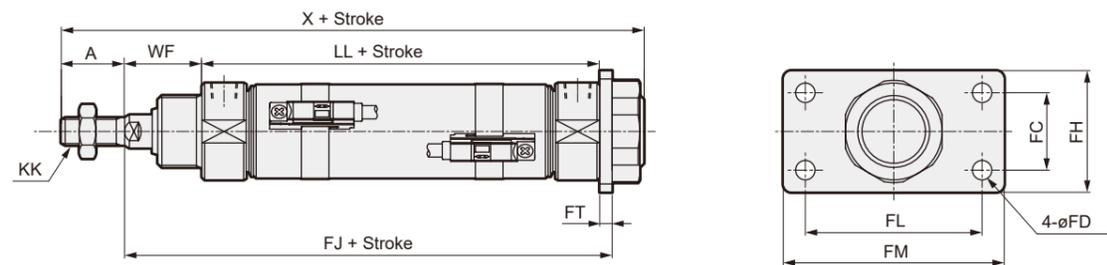
● Rod Side Flange Type (FA)



| Code | Rod Side Flange Type (FA) Mounting Dimensions | | | | | | | | | | | | | | | Boss Cut Type | |
|------|---|----|----|------------|----|----|-----|----|----|----|----|----|----|----|----|---------------|----|
| | Bore Size (mm) | A | G | KK | LL | WF | X | FC | FD | FF | FG | FH | FL | FM | FT | X | FG |
| SCM | ø20 | 20 | 16 | M8 × 1.0 | 66 | 28 | 130 | 28 | 7 | 23 | 87 | 44 | 64 | 80 | 5 | 114 | 71 |
| | ø25 | 23 | 16 | M10 × 1.25 | 69 | 28 | 136 | 28 | 7 | 23 | 90 | 44 | 64 | 80 | 5 | 120 | 74 |
| | ø32 | 23 | 16 | M10 × 1.25 | 69 | 28 | 136 | 28 | 7 | 23 | 90 | 44 | 64 | 80 | 5 | 120 | 74 |
| SCG | ø40 | 25 | 16 | M12 × 1.5 | 73 | 28 | 142 | 28 | 7 | 23 | 94 | 44 | 64 | 80 | 5 | 126 | 78 |

*1: For dimensions with each switch, see P. 284 to P. 286.
 *2: For accessories, see P. 123.

● Head Side Flange Type (FB)

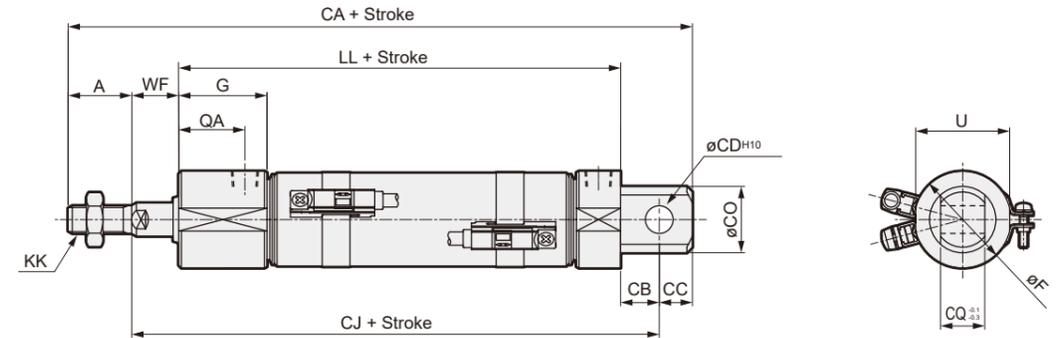


| Code | Head Side Flange Type (FB) Mounting Dimensions | | | | | | | | | | | | |
|------|--|----|------------|----|----|-----|----|----|----|-----|----|----|----|
| | Bore Size (mm) | A | KK | LL | WF | X | FC | FD | FH | FJ | FL | FM | FT |
| SCM | ø20 | 20 | M8 × 1.0 | 66 | 28 | 130 | 28 | 7 | 44 | 99 | 64 | 80 | 5 |
| | ø25 | 23 | M10 × 1.25 | 69 | 28 | 136 | 28 | 7 | 44 | 102 | 64 | 80 | 5 |
| | ø32 | 23 | M10 × 1.25 | 69 | 28 | 136 | 28 | 7 | 44 | 102 | 64 | 80 | 5 |
| SCG | ø40 | 25 | M12 × 1.5 | 73 | 28 | 142 | 28 | 7 | 44 | 106 | 64 | 80 | 5 |

*1: For dimensions with each switch, see P. 284 to P. 286.
 *2: For accessories, see P. 123.

Outline Dimension Drawing

● Single Yoke Clevis Integrated Type (CC)



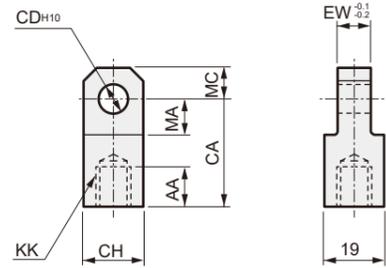
| Code | Single Clevis Integrated Type (CC) Mounting Dimensions | | | | | | | | | | | | | | | |
|------|--|----|----|----|----|------------|----|----|----|-----|----|----|----|-----|----|----|
| | Bore Size (mm) | A | F | G | QA | KK | LL | U | WF | CA | CB | CC | CD | CJ | CO | CQ |
| SCM | ø20 | 20 | 30 | 32 | 24 | M8 × 1.0 | 82 | 28 | 12 | 135 | 12 | 9 | 8 | 106 | 22 | 16 |
| | ø25 | 23 | 32 | 32 | 24 | M10 × 1.25 | 85 | 30 | 12 | 141 | 12 | 9 | 8 | 109 | 24 | 16 |
| | ø32 | 23 | 36 | 32 | 24 | M10 × 1.25 | 85 | 34 | 12 | 146 | 14 | 12 | 10 | 111 | 24 | 16 |
| SCG | ø40 | 25 | 45 | 32 | 24 | M12 × 1.5 | 89 | 43 | 12 | 156 | 16 | 14 | 12 | 117 | 30 | 20 |

*1: For dimensions with each switch, see P. 284 to P. 286.
 *2: For accessories, see P. 123.

Accessories Outline Dimension Drawing

●Single Yoke Knuckle (I)

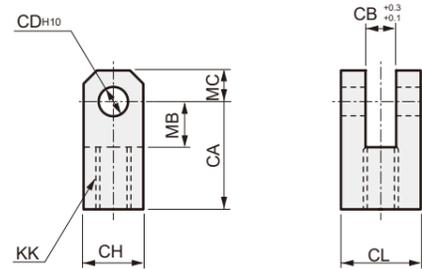
Material: Stainless Steel



| Model No. | Applicable Bore size (mm) | AA | CA | CD | CH | EW | KK | MA | MC | Weight (g) |
|-----------|---------------------------|----|----|----|----|----|------------|----|----|------------|
| M1-I-20S | 20 | 14 | 30 | 10 | 19 | 8 | M8 × 1.0 | 13 | 10 | 60 |
| M1-I-30S | 25, 32 | 14 | 36 | 12 | 25 | 10 | M10 × 1.25 | 16 | 12 | 106 |
| M1-I-40S | 40 | 14 | 36 | 12 | 25 | 10 | M12 × 1.5 | 16 | 12 | 100 |

●Double Knuckle (Y)

Material: Stainless Steel

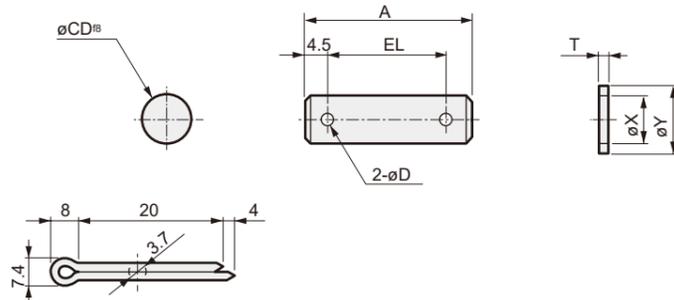


| Model No. | Applicable Bore size (mm) | CA | CB | CD | CH | CL | KK | MB | MC | Weight (g) |
|-----------|---------------------------|----|----|----|----|----|------------|----|----|------------|
| M1-Y-20S | 20 | 30 | 8 | 10 | 19 | 19 | M8 × 1.0 | 13 | 10 | 99 |
| M1-Y-30S | 25, 32 | 36 | 10 | 12 | 25 | 25 | M10 × 1.25 | 16 | 12 | 197 |
| M1-Y-40S | 40 | 36 | 10 | 12 | 25 | 25 | M12 × 1.5 | 16 | 12 | 193 |

Note: A pin, a washer and a split pin are included.

●Pin for Double Knuckle (P)

Material: Stainless Steel

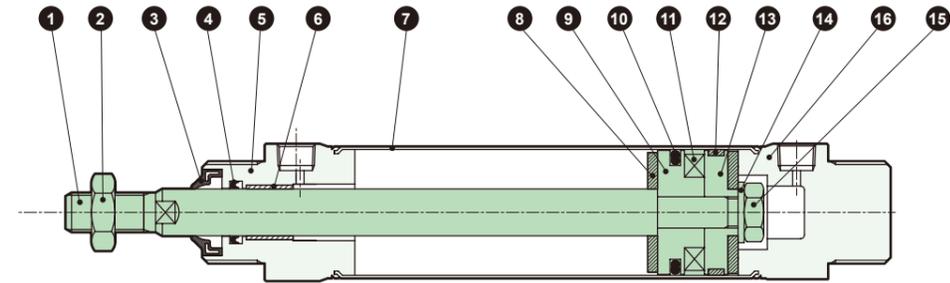


| Model No. | Applicable Bore size (mm) | A | D | CD | EL | T | X | Y | Weight (g) |
|-----------|---------------------------|----|---|----|----|-----|------|----|------------|
| M1-P-20S | 20 | 37 | 4 | 10 | 28 | 1.6 | 10.5 | 18 | 29 |
| M1-P-30S | 25, 32, 40 | 46 | 4 | 12 | 37 | 2.3 | 12.5 | 22 | 50 |

Note: A pin and split washer pin for rod clevis use are included with the product.

Internal Structure Diagram / Material

Internal Structure Diagram / Material



Do not disassemble

| Part No. | Part Name | Material | Remarks | Part No. | Part Name | Material | Remarks |
|----------|----------------|---|---------|----------|----------------|---|---------------------------------|
| 1 | Piston Rod | Stainless Steel | | 9 | Piston A | Aluminum Alloy | |
| 2 | Rod Nut | Stainless Steel | | 10 | Piston Packing | JG2: Nitrile Rubber JG3: Fluoro Rubber | |
| 3 | Scraper | JG2: Nitrile Rubber JG3: Fluoro Rubber | | 11 | Magnet | Plastic | |
| 4 | Rod Packing | JG2: Nitrile Rubber JG3: Fluoro Rubber | | 12 | Wear Ring | Polyacetal | |
| 5 | Rod Cover | Stainless Steel | | 13 | Piston B | Aluminum Alloy | |
| 6 | Bushing | Bearing Alloy | | 14 | Spacer | Steel | Zinc Chromate (ø20 to ø32 only) |
| 7 | Cylinder Tube | Stainless Steel | | 15 | Hexagon Nut | Steel | Zinc Chromate |
| 8 | Cushion Rubber | Urethane Rubber | | 16 | Head Cover | Stainless Steel | |

Mounting Bracket Material

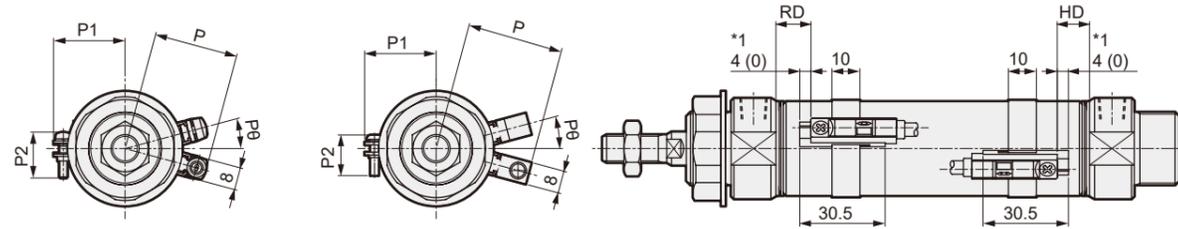
| Mounting type | Material |
|------------------|-----------------|
| Foot (LB / LS) | Stainless Steel |
| Flange (FA / FB) | Stainless Steel |

Note: Mounting bracket is included with the product.

CMK2 Series Switch Outline Dimension Drawing

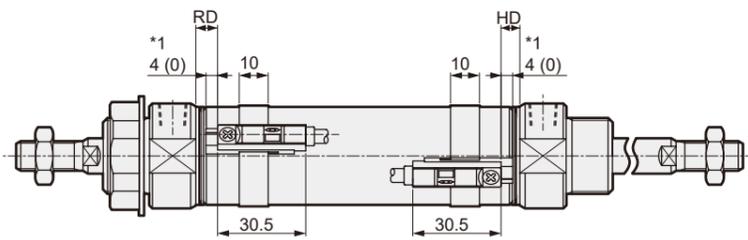
● T1H/V, T8H/V, T2JH/V, T2YLH/V, T3YLH/V

· CMK2, -S, SR, P, R, □, C, C, Q, F, M, Z, H, G2/G3/JG2/JG3

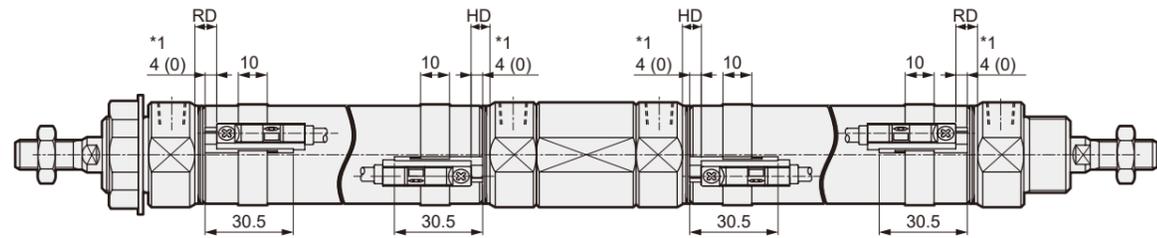


[In case of T8H/V, T2JH/V, T2YLH/V, T3YLH/V] [For T1H/V]

· CMK2-D



· CMK2-B



| Code | CMK2-Standard ,SR,P,R,□,C,C,Q,F,M,Z,H,G2/G3,JG2/JG3,D,B | | | | | | | | | | | |
|------|---|----|-------|------|------|-----|------|---------------|-----|------|-----|-----|
| | Bore Size (mm) | P1 | P2 | Pθ | T1 | | | T2J,T2YL,T3YL | | | T8 | |
| P | | | | | RD | HD | P | RD | HD | P | RD | HD |
| ø20 | 19.5 | 12 | (22°) | 28.5 | 7 | 6 | 23.1 | 7 | 6 | 23.1 | 2 | 1 |
| ø25 | 22 | 12 | (18°) | 31 | 8.5 | 7.5 | 25.6 | 8.5 | 7.5 | 25.6 | 3.5 | 2.5 |
| ø32 | 25.5 | 14 | (15°) | 35.5 | 8.5 | 7.5 | 30.1 | 8.5 | 7.5 | 30.1 | 3.5 | 2.5 |
| ø40 | 29.5 | 14 | (12°) | 39.5 | 10.5 | 9.5 | 34.1 | 10.5 | 9.5 | 34.1 | 5.5 | 4.5 |

| Code | CMK2-S | | | | | | | | | | | | | | |
|------------|----------------|----|-------|------|------|------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----|----|--|--|
| | Bore Size (mm) | P1 | P2 | Pθ | P | T1 RD | | | | | | | HD | | |
| 25 or Less | | | | | | Over 25, to 50 or Less | Over 50, to 100 or Less | Over 100, to 150 or Less | Over 150, to 200 or Less | Over 200, to 250 or Less | Over 250, to 300 or Less | | | | |
| ø20 | 19.5 | 12 | (22°) | 28.5 | 32 | 34 | 61 | 88 | 115 | 142 | 169 | 6 | | | |
| ø25 | 22 | 12 | (18°) | 31 | 33.5 | 38.5 | 68.5 | 98.5 | 128.5 | 158.5 | 188.5 | 7.5 | | | |
| ø32 | 25.5 | 14 | (15°) | 35.5 | 33.5 | 38.5 | 68.5 | 98.5 | 128.5 | 158.5 | 188.5 | 7.5 | | | |
| ø40 | 29.5 | 14 | (12°) | 39.5 | 35.5 | 40.5 | 70.5 | 100.5 | 130.5 | 160.5 | 190.5 | 9.5 | | | |

| Code | CMK2-S | | | | | | | | | | | | | | | | | |
|------------|----------------|------|------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------|------|------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|-----|
| | Bore Size (mm) | P | T2J RD | | | | | | | HD | T8 RD | | | | | | | HD |
| 25 or Less | | | Over 25, to 50 or Less | Over 50, to 100 or Less | Over 100, to 150 or Less | Over 150, to 200 or Less | Over 200, to 250 or Less | Over 250, to 300 or Less | 25 or Less | | Over 25, to 50 or Less | Over 50, to 100 or Less | Over 100, to 150 or Less | Over 150, to 200 or Less | Over 200, to 250 or Less | Over 250, to 300 or Less | | |
| ø20 | 23.1 | 32 | 34 | 61 | 88 | 115 | 142 | 169 | 6 | 23.1 | 27 | 29 | 56 | 83 | 110 | 137 | 164 | 1 |
| ø25 | 25.6 | 33.5 | 38.5 | 68.5 | 98.5 | 128.5 | 158.5 | 188.5 | 7.5 | 25.6 | 28.5 | 33.5 | 63.5 | 93.5 | 123.5 | 153.5 | 183.5 | 2.5 |
| ø32 | 30.1 | 33.5 | 38.5 | 68.5 | 98.5 | 128.5 | 158.5 | 188.5 | 7.5 | 30.1 | 28.5 | 33.5 | 63.5 | 93.5 | 123.5 | 153.5 | 183.5 | 2.5 |
| ø40 | 34.1 | 35.5 | 40.5 | 70.5 | 100.5 | 130.5 | 160.5 | 190.5 | 9.5 | 34.1 | 30.5 | 35.5 | 65.5 | 95.5 | 125.5 | 155.5 | 185.5 | 4.5 |

*1: Dimensions are in () when stroke is 35mm and over from T2YL, T3YL, T2J and T1 switches and T8 switches.

*2: For switch mountability, refer to the model number display method for each variation.

| Code | CMK2-SR | | | | | | | | | | | | | |
|------------|----------------|----|-------|------|------|------|------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------|------|
| | T1 | | | | | | | | | | T2J | | | |
| | Bore Size (mm) | P1 | P2 | Pθ | P | RD | HD | | | | | | P | RD |
| 25 or Less | | | | | | | Over 25, to 50 or Less | Over 50, to 100 or Less | Over 100, to 150 or Less | Over 150, to 200 or Less | Over 200, to 250 or Less | Over 250, to 300 or Less | | |
| ø20 | 19.5 | 12 | (22°) | 28.5 | 7 | 31 | 33 | 60 | 87 | 114 | 141 | 168 | 23.1 | 7 |
| ø25 | 22 | 12 | (18°) | 31 | 8.5 | 32.5 | 37.5 | 67.5 | 97.5 | 127.5 | 157.5 | 187.5 | 25.6 | 8.5 |
| ø32 | 25.5 | 14 | (15°) | 35.5 | 8.5 | 32.5 | 37.5 | 67.5 | 97.5 | 127.5 | 157.5 | 187.5 | 30.1 | 8.5 |
| ø40 | 29.5 | 14 | (12°) | 39.5 | 10.5 | 34.5 | 39.5 | 69.5 | 99.5 | 129.5 | 159.5 | 189.5 | 34.1 | 10.5 |

| Code | CMK2-SR | | | | | | | | | | | | | | | |
|------------|----------------|------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------|-----|------|------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | T2J | | | | | | | | T8 | | | | | | | |
| | Bore Size (mm) | HD | | | | | | | P | RD | HD | | | | | |
| 25 or Less | | Over 25, to 50 or Less | Over 50, to 100 or Less | Over 100, to 150 or Less | Over 150, to 200 or Less | Over 200, to 250 or Less | Over 250, to 300 or Less | 25 or Less | | | Over 25, to 50 or Less | Over 50, to 100 or Less | Over 100, to 150 or Less | Over 150, to 200 or Less | Over 200, to 250 or Less | Over 250, to 300 or Less |
| ø20 | 31 | 33 | 60 | 87 | 114 | 141 | 168 | 23.1 | 2 | 26 | 28 | 55 | 82 | 109 | 136 | 163 |
| ø25 | 32.5 | 37.5 | 67.5 | 97.5 | 127.5 | 157.5 | 187.5 | 25.6 | 3.5 | 27.5 | 32.5 | 62.5 | 92.5 | 122.5 | 152.5 | 182.5 |
| ø32 | 32.5 | 37.5 | 67.5 | 97.5 | 127.5 | 157.5 | 187.5 | 30.1 | 3.5 | 27.5 | 32.5 | 62.5 | 92.5 | 122.5 | 152.5 | 182.5 |
| ø40 | 34.5 | 39.5 | 69.5 | 99.5 | 129.5 | 159.5 | 189.5 | 34.1 | 5.5 | 29.5 | 34.5 | 64.5 | 94.5 | 124.5 | 154.5 | 184.5 |

*1: Dimensions are in () when stroke is 35mm and over from T2YL, T3YL, T2J and T1 switches and T8 switches.

*2: For switch mountability, refer to the model number display method for each variation.

General Type

General Type

SCP□3

SCP□3

CMK2

CMK2

CMA2

CMA2

SCM

SCM

SCG

SCG

SCA2

SCA2

SCS2

SCS2

Cylinder Switch

Cylinder Switch

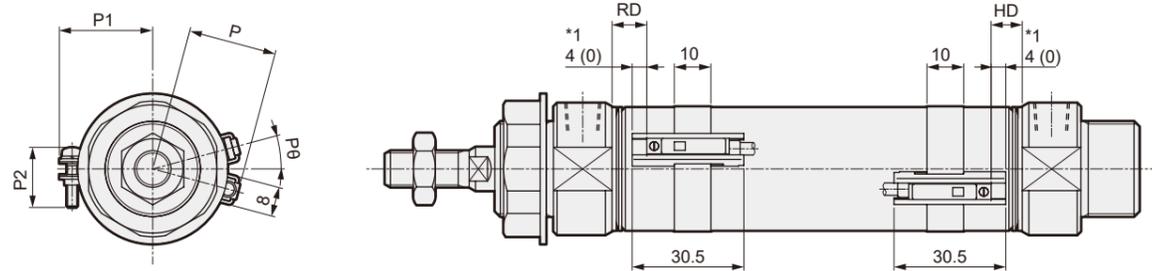
Ending

Ending

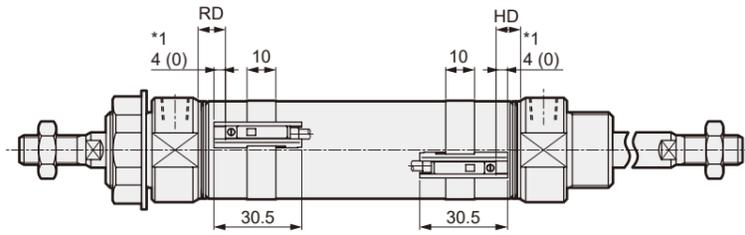
CMK2 Series Switch Outline Dimension Drawing

●T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2WH/V, T3WH/V, T2WLH/V, T2H/VR 3

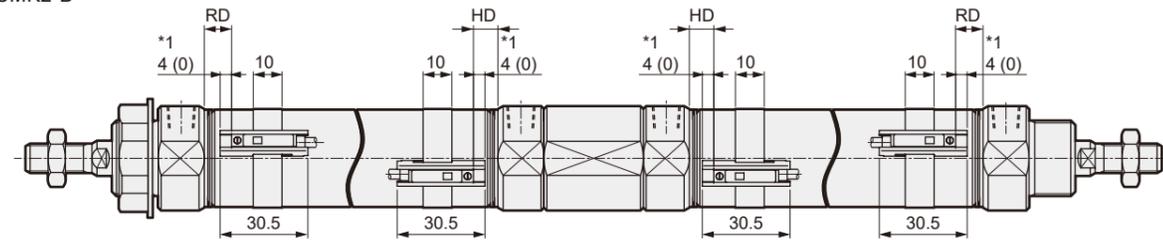
·CMK2,-S,SR,P,R,□C,C,Q,F,M,Z,H,G2/G3,JG2/JG3



·CMK2-D



·CMK2-B



| Code | CMK2-Standard,P,R,□C,C,Q,F,M,Z,H,G2/G3,JG2/JG3,D,B | | | | | | | |
|----------------|--|------|----|-------|----------------------------|------|----------------|------|
| Bore Size (mm) | P | P1 | P2 | Pθ | T0, T5, T2, T3, T3P, T2□R3 | | T2W, T3W, T2WL | |
| | | | | | RD | HD | RD | HD |
| ø20 | 17.3 | 19.5 | 12 | (22°) | 8 | 7 | 10 | 9 |
| ø25 | 19.8 | 22 | 12 | (18°) | 9.5 | 8.5 | 11.5 | 10.5 |
| ø32 | 24.3 | 25.5 | 14 | (15°) | 9.5 | 8.5 | 11.5 | 10.5 |
| ø40 | 28.3 | 29.5 | 14 | (12°) | 11.5 | 10.5 | 13.5 | 12.5 |

| Code | CMK2-S | | | | | | | | | | | | | | | | | | | |
|----------------|------------|---------------------|----------------------|-----------------------|----------------------------|-----------------------|-----------------------|------------|---------------------|----------------------|-----------------------|----------------|-----------------------|-----------------------|-----------------------|-------|-------|-------|-------|------|
| | P | P1 | P2 | Pθ | T0, T5, T2, T3, T3P, T2□R3 | | | | | | | T2W, T3W, T2WL | | | | | | | | |
| | | | | | RD | | | | | | | HD | RD | | | | | | | HD |
| Bore Size (mm) | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | | | | | |
| ø20 | 17.3 | 19.5 | 12 | (22°) | 33 | 35 | 62 | 89 | 116 | 143 | 170 | 7 | 35 | 37 | 64 | 91 | 118 | 145 | 172 | 9 |
| ø25 | 19.8 | 22 | 12 | (18°) | 34.5 | 39.5 | 69.5 | 99.5 | 129.5 | 159.5 | 189.5 | 8.5 | 36.5 | 41.5 | 71.5 | 101.5 | 131.5 | 161.5 | 191.5 | 10.5 |
| ø32 | 24.3 | 25.5 | 14 | (15°) | 34.5 | 39.5 | 69.5 | 99.5 | 129.5 | 159.5 | 189.5 | 8.5 | 36.5 | 41.5 | 71.5 | 101.5 | 131.5 | 161.5 | 191.5 | 10.5 |
| ø40 | 28.3 | 29.5 | 14 | (12°) | 36.5 | 41.5 | 71.5 | 101.5 | 131.5 | 161.5 | 191.5 | 10.5 | 38.5 | 43.5 | 73.5 | 103.5 | 133.5 | 163.5 | 193.5 | 12.5 |

| Code | CMK2-SR | | | | | | | | | | | | | | | | | | | |
|----------------|------------|---------------------|----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|------------|---------------------|----------------------|----------------|-----------------------|-----------------------|-----------------------|-----------------------|-------|-------|-------|-------|
| | P | P1 | P2 | Pθ | T0, T5, T2, T3, T3P, T2□R3 | | | | | | | T2W, T3W, T2WL | | | | | | | | |
| | | | | | RD | HD | | | | | | RD | HD | | | | | | | |
| Bore Size (mm) | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | Over 100, 150 or Less | | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | 25 or Less | Over 25, 50 or less | Over 50, 100 or less | | Over 100, 150 or Less | Over 150, 200 or Less | Over 200, 250 or Less | Over 250, 300 or Less | | | | |
| ø20 | 17.3 | 19.5 | 12 | (22°) | 8 | 32 | 34 | 61 | 88 | 115 | 142 | 169 | 10 | 34 | 36 | 63 | 90 | 117 | 144 | 171 |
| ø25 | 19.8 | 22 | 12 | (18°) | 9.5 | 33.5 | 38.5 | 68.5 | 98.5 | 128.5 | 158.5 | 188.5 | 11.5 | 35.5 | 40.5 | 70.5 | 100.5 | 130.5 | 160.5 | 190.5 |
| ø32 | 24.3 | 25.5 | 14 | (15°) | 9.5 | 33.5 | 38.5 | 68.5 | 98.5 | 128.5 | 158.5 | 188.5 | 11.5 | 35.5 | 40.5 | 70.5 | 100.5 | 130.5 | 160.5 | 190.5 |
| ø40 | 28.3 | 29.5 | 14 | (12°) | 11.5 | 35.5 | 40.5 | 70.5 | 100.5 | 130.5 | 160.5 | 190.5 | 13.5 | 37.5 | 42.5 | 72.5 | 102.5 | 132.5 | 162.5 | 192.5 |

*1: Dimensions of T2W, T3W switches are shown in ().

*2: For switch mountability, refer to the model number display method for each variation.

Without Bellows (-XJ9)

Content: Piston rod with dimensions for bellows, but bellows not assembled

Model No. Notation Method

CMK2 - 00 - 20 - 100 - XJ9

Model No.

See CMK2 model number display method.

Outline Dimension Drawing

Same dimensions as with bellows, but bellows are not included.

Fluorine Packing Type (-T2)

Content: Change the rod packing, piston packing and O-rings to FKM. (Cushion packing is not changed)

Model No. Notation Method

CMK2 - T2 - 00 - 20 - 100

Model No.

See CMK2 model number display method.

Outline Dimension Drawing

Same as standard type.

With 2 Rod Nuts (-A2)

Content: Shipped with 2 rod nuts, same as standard.

Model No. Notation Method

CMK2 - 00 - 20 - 100 - A2

Model No.

See CMK2 model number display method.

Outline Dimension Drawing

Same as standard type except that 2 rod nuts are included.

Low Speed Type (-O)

Content: Low speed specifications (working speed range 10 to 200 mm/S)

Model No. Notation Method

CMK2 - O - 00 - 25 - 50

Small bore size cylinder

Model No.

See CMK2 model number display method.

Outline Dimension Drawing

Same as standard type.

General Type

General Type

SCP□3

SCP□3

CMK2

CMK2

CMA2

CMA2

SCM

SCM

SCG

SCG

SCA2

SCA2

SCS2

SCS2

Cylinder Switch

Cylinder Switch

Ending

Ending



To Use This Product Safely

Be sure to read this before use.

For general cylinder information, see Intro P. 41, and for cylinder switches, see P. 1026.

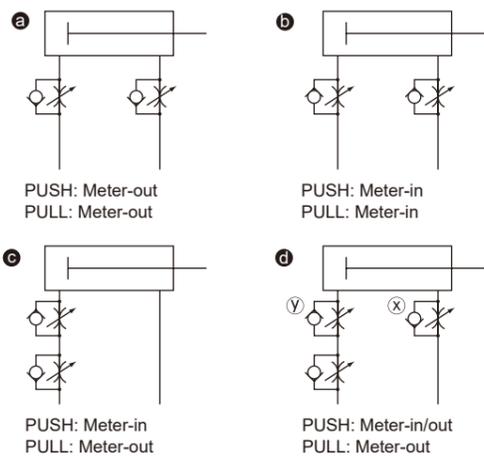
Individual Precautions: Small bore size cylinder CMK2 Series

During Design / Selection

1. Ultra Low Speed Type CMK2-F

Caution

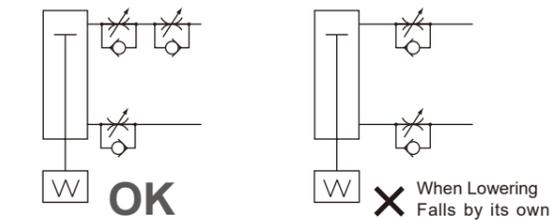
- Use without lubrication.
 - Lubrication may change characteristics.
- Install the speed controller near the cylinder.
 - If installed far from the cylinder, adjustment will be unstable.
 - Use SC-M3/M5, SC3W, SCD-M3/M5, SC3U series speed controllers.
- Generally, the higher the air pressure and the lower the load factor, the more stable the speed.
 - Use with a load factor of 50% or less.
- Speed control with a meter-out circuit provides stability.
 - When driving a single-rod cylinder at creep speed in the PUSH direction, if the load resistance is small, a flying-out phenomenon may occur at the start of operation. As countermeasures, use circuits **b**, **c** or **d**. In addition, the **d** circuit is the most stable.



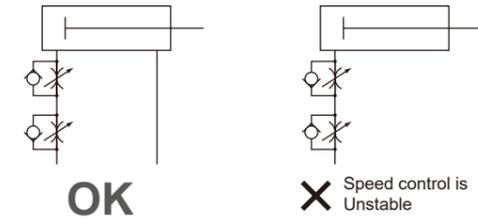
- d** Speed adjustment method for PUSH operation of the circuit:
1. Speed setting with x speed controller
 2. Throttle with y speed controller until projection stops.
 3. Reconfirmation of speed

(*1) Comparing **b**, **c**, **d**, the **d** circuit offers the most stable operation.

(*2) For vertical mounting, it will fall by its own weight in a meter-in circuit, so combine it with a meter-out circuit.



(*3) For series connection of speed controllers, use the circuit shown in the figure below.



(Guideline for lurching occurrence)

Lurching occurs in the following cases:

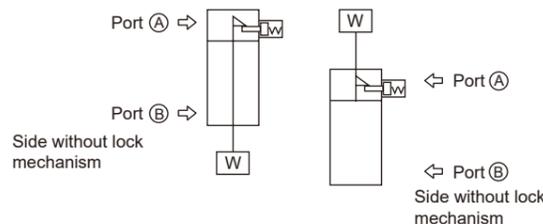
- Thrust > Resistance
 - *Resistance: *Resistance: Thrust due to residual pressure on exhaust side (For creep speed type, intake pressure = residual pressure)
 - + [For horizontal use: Frictional force due to load to load
 - For vertical use: Dead weight of the load
- Do not apply lateral load to the cylinder. Also, install the sliding guide without twisting.
 - Operation becomes unstable when lateral load is applied.

- Avoid use in places with vibration.
 - Operation becomes unstable due to the influence of vibration.

2. Fall Prevention Type CMK2-Q

Warning

- In the locked state, if pressure is supplied to port **A** from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, be sure to supply pressure to port **B** and release it after ensuring that no load is applied to the lock mechanism.



- When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

- Do not use 3-position solenoid valves.
 - Do not use in combination with 3-position solenoid valves (especially closed center metal seal type). If pressure is sealed in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked, air leaked from the solenoid valve may enter the cylinder, and the lock may be released over time.

Caution

- Keep the cylinder load factor at 50% or less.
 - If the load factor is high, the lock may not be released, or it may lead to damage to the lock part.
- Do not use multiple cylinders synchronized.
 - Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

3. Low Hydraulic Pressure Type CMK2-H

Caution

- This product is a pneumatic cylinder that can use hydraulic operating fluid as the operating fluid. It does not comply with JIS standards for hydraulic cylinders regarding operation and leakage tests.

4. Cutting Oil Resistant Type CMK2-G2/G3

Caution

- Do not apply an eccentric load to the piston rod. This may reduce the life of scrapers and bearings.

- If there is no splashing of cutting oil or water on the piston rod, use the G or G1 series. Please note that if there is no scattering of cutting oil or water with G2 and G3 series, the lubrication of the piston rod will be cut off and the service life will be reduced.

- Install a speed controller on the cylinder.
 - Install a speed controller on the cylinder. Use within the operating piston speed range of each cylinder.

5. All Stainless Steel Exterior/Water Resistant CMK2-JG2/JG3

Caution

- After sufficiently confirming the compatibility of the constituent materials of each component (only exterior parts are stainless steel) with the valve structure, operating fluid, and operating atmosphere, use at your own discretion.
- Bearings used in cylinders contain a small amount of mineral oil. Within the product specification range, it is processed to prevent discharge, but please consider the installation location.
- Do not apply an eccentric load to the piston rod. This may reduce the life of scrapers and bearings.
- Install a speed controller on the cylinder.
 - Install a speed controller on the cylinder. Use within the operating piston speed range of each cylinder.
- If there is no scattering of water, piston rod lubrication will be lost, reducing life. Please be careful.

During Use

1. Common

Caution

- Do not turn the cover.
 - When mounting the cylinder and screwing pipe fittings into the ports, if the cover rotates, there is a risk of damage from the cover joint.
- When moving the switch position in the stroke direction.
 - Loosen the switch mounting screw, move the switch along the rail, and tighten at the specified position. For T2, T3, T0, T5, use a flat-head screwdriver (watchmaker's screwdriver, precision screwdriver, etc.) with a grip diameter of 5 to 6 mm, tip shape width of 2.4 mm or less, and thickness of 0.3 mm or less to tighten the switch fixing screw with a tightening torque of 0.1 to 0.2 N·m. For T1, T□C, T2J, T2Y, T3Y, T8, tighten with a tightening torque of 0.5 to 0.7 N·m.

2. Single Acting Type CMK2-S/SR

Caution

- Do not leave pressurized.
 - If left pressurized, the piston rod may not return due to spring load when pressure is released.

3. Heat Resistant Type CMK2-T

Caution

- Magnet is not built-in.

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

General Type

SCP□3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

Cylinder Switch

Ending

4. With Rubber Air Cushion CMK2-□C

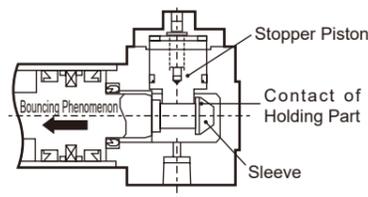
⚠ Caution

- Due to the structure, if the air supply is cut off, the stroke end position cannot be maintained. Please be careful. When detecting the stroke end with a switch, it may be outside the detection range, so set the switch position in an air-pressurized state.
- Do not rapidly exhaust the air in the cylinder after operating at low speed outside the catalog specification range. Example Removing piping or coupler, etc.) The rubber-air cushion may become detached. Please be especially careful as this is more likely to occur when the air pressure is high.

5. Fall Prevention Type CMK2-Q

⚠ Warning

- When stopping with external shock absorbing equipment (shock absorber, etc.), adjust so that there is no bouncing. If the piston bounces at the stroke end, the sleeve and stopper piston will impact, leading to damage of the lock mechanism. Also, please perform periodic inspections once or twice a year to check for damage to the holding part due to this phenomenon.



⚠ Caution

- Since the lock mechanism works at the stroke end, if an external stopper is applied mid-stroke, the lock mechanism will not work, and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.
- Supply pressure equal to or higher than the minimum operating pressure for each model to the port on the side with the lock mechanism.
- If the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful. Also, clogging of the silencer included with the EXH. port of the solenoid valve will lead to similar results.

- Release the lock when installing or adjusting the cylinder.
If installation work, etc. is performed while the lock is engaged, the lock part may be damaged.

- Use the speed controller with meter-out control.
Lock may not be released with meter-in control.

- On the side with the lock, be sure to use the cylinder to the stroke end.
If the cylinder piston has not reached the stroke end, the lock may not engage, or it may not be possible to release the lock.

6. Non-Rotating Type CMK2-M

⚠ Caution

- When fixing a workpiece to the end of the piston rod, retract the piston rod to the stroke end, put a wrench on the part of the rod parallel section that is outside, and tighten carefully so that the tightening torque is not applied to the cylinder body.

7. All Stainless Steel Exterior/Water Resistant Type CMK2-JG2/JG3

⚠ Caution

- To prevent seizure, apply grease when using pins.
- Minimize cleaning of sliding parts, and grease up after cleaning is recommended. If water scattering is temporary, please perform regular greasing. For maintenance grease, please contact our sales department.
- After installation, check for piping leaks and electrical connections to ensure correct installation.
- Do not use the product as a scaffold or place heavy objects on it.
- If unused for 1 month or more, perform a trial run before starting operation.

MEMO

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (<https://www.ckd.co.jp/kiki/en/>) -> "Model No." -> [Instruction Manual](#)