

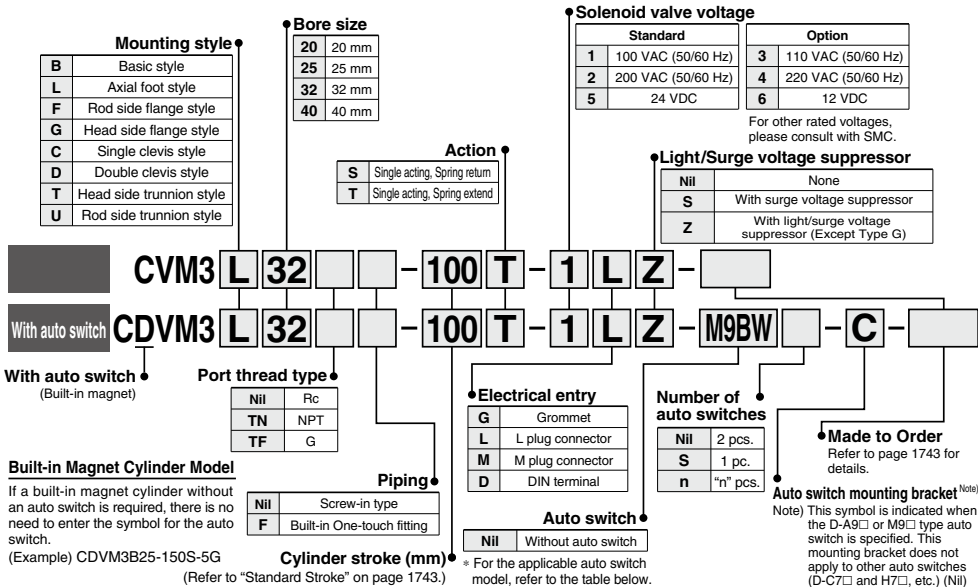
Valve Mounted Cylinder

Single Acting, Spring Return/Extend

Series CVM3

ø20, ø25, ø32, ø40

How to Order



Applicable Auto Switches

Refer to pages 1893 to 2007 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | | | | Pre-wired connector | Applicable load | |
|-------------------------|---|------------------|-----------------|-------------------------|--------------|------|-------------------|---------|----------------------|-------|-------|-------|---------------------|-----------------|----------|
| | | | | | DC | AC | Perpendicular | In-line | 0.5 (Nil) | 1 (M) | 3 (L) | 5 (Z) | | | None (N) |
| | | | | | | | | | ○ | ● | ○ | ○ | | | |
| Solid state auto switch | — | Grommet | — | 3-wire (NPN) | 5 V, 12 V | — | M9NV | M9N | ● | ● | ○ | ○ | ○ | IC circuit | |
| | | | | 3-wire (PNP) | | | M9PV | M9P | ● | ● | ○ | ○ | ○ | | |
| | Diagnostic indication (2-color indication) | Connector | Yes | 2-wire | 12 V | — | M9BV | M9B | ● | ● | ○ | ○ | ○ | — | |
| | | | | | | | — | H7C | ● | — | ● | ● | — | | — |
| | Water resistant (2-color indicator) | Grommet | — | 3-wire (NPN) | 5 V, 12 V | — | M9NWV | M9NW | ● | ● | ○ | ○ | ○ | IC circuit | |
| | | | | 3-wire (PNP) | | | M9PWV | M9PW | ● | ● | ○ | ○ | ○ | | |
| | With diagnostic output (2-color indication) | Connector | Yes | 2-wire | 12 V | — | M9BWW | M9WB | ● | ● | ○ | ○ | ○ | — | |
| | | | | | | | 3-wire (NPN) | M9NAV*1 | M9NA*1 | ○ | ○ | ○ | ○ | | ○ |
| | — | Grommet | — | 3-wire (PNP) | 5 V, 12 V | — | M9PAV*1 | M9PA*1 | ○ | ○ | ○ | ○ | ○ | IC circuit | |
| | | | | 2-wire | | | 12 V | M9BAV*1 | M9BA*1 | ○ | ○ | ○ | ○ | | ○ |
| Reed auto switch | — | Grommet | Yes | 3-wire (NPN equivalent) | 5 V | — | H7NF | — | ● | ● | ○ | ○ | ○ | IC circuit | |
| | | | | | | | — | A96V | A96 | ● | ● | ○ | ○ | | ○ |
| | Diagnostic indication (2-color indicator) | Connector | Yes | 2-wire | 24 V | 12 V | 100 V | A93V*2 | A93 | ● | ● | ○ | ○ | IC circuit | |
| | | | | | | | 100 V or less | A90V | A90 | ● | ● | ○ | ○ | | ○ |
| | — | Grommet | — | — | — | — | 100 V, 200 V | — | B54 | ● | ● | ○ | ○ | — | |
| | | | | | | | 200 V or less | — | B64 | ● | ● | ○ | ○ | | ○ |
| | — | Grommet | — | — | — | — | 24 V or less | — | C73C | ● | ● | ○ | ○ | IC circuit | |
| | | | | | | | — | — | C80C | ● | ● | ○ | ○ | | ○ |
| | — | Grommet | — | — | — | — | — | — | B59W | ● | ● | ○ | ○ | — | |
| | | | | | | | — | — | — | — | — | — | — | | — |

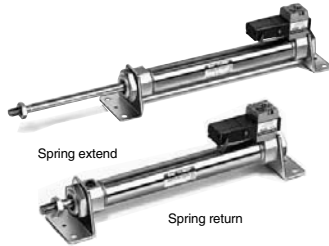
* Lead wire length symbols: 0.5 m Nil (Example) M9NW
 1 m M (Example) M9NWM
 3 m L (Example) M9NWL
 5 m Z (Example) M9NWZ
 None N (Example) H7CN

* Solid state auto switches marked with "○" are produced upon receipt of order.
 *1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Consult with SMC regarding water resistant types with the above model numbers.
 *2 1 m type lead wire is only applicable to D-A93.

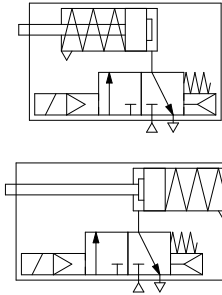
* Since there are other applicable auto switches than listed, refer to page 1763 for details.
 * For details about auto switches with pre-wired connector, refer to pages 1960 and 1961.
 * D-A9□/M9□ auto switches are shipped together (not assembled). (Only auto switch mounting brackets are assembled before shipped.)

Valve Mounted Cylinder Single Acting, Spring Return/Extend *Series CVM3*

An auto switch cylinder with the switch installed can also be manufactured.



Symbol
Rubber bumper



Made to Order Specifications
(For details, refer to pages 2009 to 2152.)

| Symbol | Specifications |
|--------|--------------------------------------|
| -XA□ | Change of rod end shape |
| -XC6 | Made of stainless steel |
| -XC29 | Double knuckle joint with spring pin |
| -XC52 | Mounting nut with set screw |

Refer to pages 1893 to 2007 for cylinders with auto switches.

- Minimum auto switch mounting stroke
- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range
- Switch mounting bracket: Part no.

Specifications

| Applicable bore size (mm) | | 20 | 25 | 32 | 40 |
|--------------------------------------|-----------------------------------|---|------------------------|-----------|-----------|
| Action | | Single acting, Spring return/Spring extend | | | |
| Fluid | | Air | | | |
| Cushion | | Rubber bumper | | | |
| Proof pressure | | 1.0 MPa | | | |
| Maximum operating pressure | | 0.7 MPa | | | |
| Minimum operating pressure | | 0.18 MPa Spring return | 0.23 MPa Spring extend | | |
| Ambient and fluid temperature | | -10 to 50°C (No freezing) | | | |
| Lubrication | | Not required (Non-lube) | | | |
| Stroke length tolerance | | $+1.4$ 0 | | | |
| Piping | Screw-in type | Rc 1/8 | | | |
| | Built-in One-touch fitting | O.D.: $\phi 6/1.D.: \phi 4$ | | | |
| Manual override | | Non locking (Standard) | | | |
| Piston speed (mm/s) | | 50 to 700 | 50 to 650 | 50 to 590 | 50 to 420 |
| Allowable kinetic energy | | 0.27 J | 0.4 J | 0.65 J | 1.2 J |
| Mounting | | Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Head side trunnion style, Rod side trunnion style | | | |

Solenoid Valve Specifications

| | | | |
|---|-----------|--|----------------------|
| Applicable solenoid valve model | | VZ319 | |
| Coil rated voltage | | Standard: 100/200 VAC (50/60 Hz), 24 VDC Semi-standard: 110/220 VAC, 12 VDC | |
| Effective area of valve (Cv factor) | | 4.5 mm ² (0.25) | |
| Allowable voltage | | -15 to 10% of the rated voltage | |
| Coil insulation | | Class B or equivalent (130°C) | |
| Electrical entry | | Grommet, L plug connector, M plug connector, DIN terminal | |
| Power consumption (W) ^{Note)} | DC | 1.8 (With indicator light: 2.1) | |
| power (VA) ^{Note)} | AC | Inrush | 4.5/50 Hz, 4.2/60 Hz |
| | | Holding | 3.5/50 Hz, 3.0/60 Hz |

Note) At the rated voltage.

Standard Stroke

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

Note 1) Intermediate stroke except mentioned above is produced upon receipt of order.
Note 2) Strokes marked with "*" are the maximum strokes which are available.

Theoretical Output

Refer to the Technical Data (Theoretical Output 1) in Best Pneumatics No. 2.

Spring Reaction Force

Refer to the Technical Data (Table 2: Spring Reaction Force) in Best Pneumatics No. 2.

CVQ

CVMQ

CVJ□

CVM□

CV3

CVS1

MVGQ

D-□

-X□

Series CVM3

Mounting Bracket and Accessory

| Accessory | Standard equipment | | | Option | | | |
|------------------------------------|----------------------|-------------|------------------|----------------------|----------------------|------------------------------|----------------------------------|
| | Mounting nut | Rod end nut | Clevis pin | Single knuckle joint | Double knuckle joint | Pivot bracket ⁽⁵⁾ | Pivot bracket pin ⁽⁶⁾ |
| Mounting | | | | | | | |
| Basic style | ● (1 pc.) | ● | — | ● | ● | | |
| Axial foot style | ● (2) | ● | — | ● | ● | | |
| Rod side flange style | ● (1) | ● | — | ● | ● | | |
| Head side flange style | ● (1) | ● | — | ● | ● | | |
| Single clevis style | — ⁽¹⁾ | ● | — | ● | ● | ● | ● |
| Double clevis style ⁽³⁾ | — ⁽¹⁾ | ● | ● ⁽⁴⁾ | ● | ● | — | — |
| Head side trunnion style | ● (1) ⁽²⁾ | ● | — | ● | ● | | |
| Rod side trunnion style | ● (1) ⁽²⁾ | ● | — | ● | ● | ● | — |

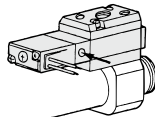
- Note 1) Mounting nut is not equipped with single clevis style and double clevis style.
 Note 2) Trunnion nuts are equipped for head side trunnion and rod side trunnion.
 Note 3) Pin and retaining ring are shipped together with double clevis and double knuckle joint.
 Note 4) Retaining rings (cotter pins for ø40) are included in clevis pins.
 Note 5) Pin and retaining ring are not included in pivot bracket.
 Note 6) Retaining rings are included in pivot bracket pin.

Accessory Bracket

Further information on accessories are the same specifications as these of the standard double acting single rod. Refer to page 1738.

Manual Operation

Manual operation is possible by pushing the manual button indicated with the arrow.



Weight

Spring Return/(): Denotes Spring Extend.

| Bore size (mm) | | 20 | 25 | 32 | 40 |
|-------------------------|---------------------------|-------------|-------------|-------------|-------------|
| Basic weight | 25 stroke | 0.30 (0.30) | 0.40 (0.04) | 0.52 (0.51) | 0.87 (0.86) |
| | 50 stroke | 0.32 (0.32) | 0.43 (0.43) | 0.56 (0.56) | 0.94 (0.93) |
| | 75 stroke | 0.37 (0.37) | 0.52 (0.51) | 0.68 (0.66) | 1.13 (1.09) |
| | 100 stroke | 0.39 (0.39) | 0.55 (0.54) | 0.73 (0.70) | 1.19 (1.16) |
| | 125 stroke | 0.45 (0.44) | 0.64 (0.61) | 0.86 (0.82) | 1.39 (1.33) |
| | 150 stroke | 0.47 (0.46) | 0.67 (0.64) | 0.90 (0.86) | 1.46 (1.40) |
| | 200 stroke | — (—) | — (—) | 1.07 (1.02) | 1.71 (1.63) |
| | 250 stroke | — (—) | — (—) | — (—) | 1.97 (1.85) |
| Mounting bracket weight | Axial foot | 0.15 (0.15) | 0.16 (0.16) | 0.16 (0.16) | 0.27 (0.27) |
| | Flange | 0.06 (0.06) | 0.09 (0.09) | 0.09 (0.09) | 0.12 (0.12) |
| | Single clevis | 0.04 (0.04) | 0.04 (0.04) | 0.04 (0.04) | 0.09 (0.09) |
| | Double clevis | 0.05 (0.05) | 0.06 (0.06) | 0.06 (0.06) | 0.13 (0.13) |
| Option bracket | Trunnion | 0.04 (0.04) | 0.07 (0.07) | 0.07 (0.07) | 0.10 (0.10) |
| | Single knuckle joint | 0.06 (0.06) | 0.06 (0.06) | 0.06 (0.06) | 0.23 (0.23) |
| | Double knuckle (With pin) | 0.07 (0.07) | 0.07 (0.07) | 0.07 (0.07) | 0.20 (0.20) |

Calculation: (Example) **CVM3L32-100-1G**
 (ø32, 100 stroke, Spring return)
 • Basic weight:.....0.73 (kg)
 • Weight of brackets:.....0.16 (kg)
 0.73 + 0.16 = 0.89 kg

⚠ Precautions

Be sure to read before handling. Refer to front matter 39 for Safety Instructions, pages 3 to 12 for Actuator and Auto Switch I Precautions and 3/4/5 Port Solenoid Valve Precautions in Best Pneumatics No. 1.

Operating Precautions

⚠ Warning

1. Do not rotate the cover.

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

⚠ Caution

1. Not able to disassemble.

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

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

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

⚠ Caution

3. Do not touch the cylinder during operation.

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

4. One-touch fitting cannot be replaced.

One-touch fitting is press-fit into the cover, thus cannot be replaced.

Model Selection

⚠ Warning

1. Confirm the specifications.

Products in this catalog are designed to be used for compressed air systems (including vacuum). If not operated within the designated pressure or temperature, it may damage the products or cause malfunction. (Refer to specifications.)

2. Energizing continuously for a long period of time

When the valve is continuously energized for a long period of time, the performance may deteriorate, shorten the service life or affect peripheral equipment adversely since temperature rises when coils generate heat.

Built-in One-touch Fitting

CVM3 F —
 ↓ Built-in One-touch fitting

One-touch fittings are installed on cylinders.



For dimensions of each mounting bracket, refer to pages 1748 to 1754.

Specifications

| | | | | |
|----------------------------|---|-----------|------------------------------|-----------|
| Action | Single acting, Spring return | | Single acting, Spring extend | |
| Bore size (mm) | ø20, ø25, ø32, ø40 | | | |
| Max. operating pressure | 0.7 MPa | | | |
| Min. operating pressure | 0.18 MPa | | 0.23 MPa | |
| Cushion | Rubber bumper | | | |
| Piping | Built-in One-touch fitting | | | |
| Piston speed (mm/s) | ø20 | ø25 | ø32 | ø40 |
| | 50 to 700 | 50 to 650 | 50 to 590 | 50 to 420 |
| Port size (Tube bore size) | O.D.: ø6/I.D.: ø4 | | | |
| Applicable bore size | Can be used for either nylon, soft nylon or polyurethane tube. | | | |
| Mounting | Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Head side trunnion style, Rod side trunnion style | | | |

Mounting Bracket Part No.

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

* Two foot brackets and a mounting nut are attached.

When ordering the foot bracket, order 2 pcs. per cylinder.

** Clevis pin and retaining ring (cotter pin for ø40) are packaged together.

CVQ

CVQM

CVJ

CVM

CV3

CVS1

MVGQ

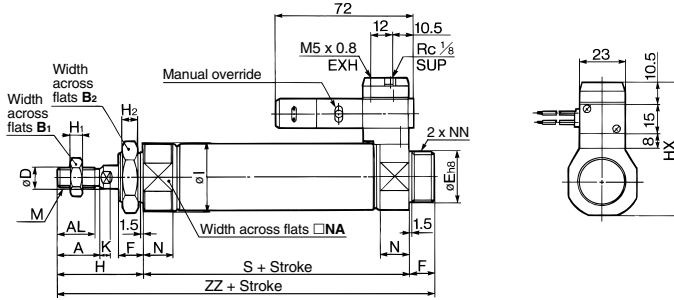
D-

-X

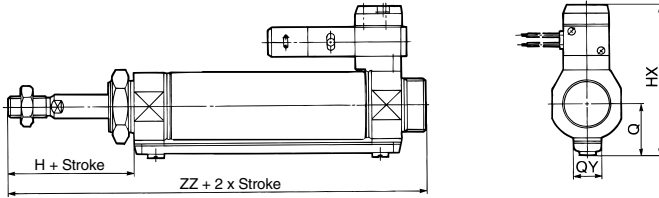
Valve Mounted Cylinder Single Acting, Spring Return/Extend **Series CVM3**

Basic Style (B)

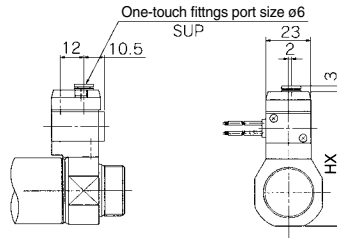
Single acting, Spring return: CVM3B Bore size — Stroke S



Single acting, Spring extend: CVM3B Bore size — Stroke T



Built-in One-touch fitting



| Bore size (mm) | A | AL | B ₁ | B ₂ | D | Eh ₈ | F | H | H ₁ | H ₂ | HX | I | K | MM | N | NA | NN |
|----------------|----|------|----------------|----------------|----|---------------------|----|----|----------------|----------------|------|------|-----|------------|------|------|-----------|
| 20 | 18 | 15.5 | 13 | 26 | 8 | 20 ^{0.023} | 13 | 41 | 5 | 8 | 57.5 | 28 | 5 | M8 x 1.25 | 15 | 24 | M20 x 1.5 |
| 25 | 22 | 19.5 | 17 | 32 | 10 | 26 ^{0.033} | 13 | 45 | 6 | 8 | 63.5 | 33.5 | 5.5 | M10 x 1.25 | 15 | 30 | M26 x 1.5 |
| 32 | 22 | 19.5 | 17 | 32 | 12 | 26 ^{0.033} | 13 | 45 | 6 | 8 | 68 | 37.5 | 5.5 | M10 x 1.25 | 15 | 34.5 | M26 x 1.5 |
| 40 | 24 | 21 | 22 | 41 | 14 | 32 ^{0.039} | 16 | 50 | 8 | 10 | 76 | 46.5 | 7 | M14 x 1.5 | 21.5 | 42.5 | M32 x 2 |

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

| Single Acting/Spring Extend (mm) | | | |
|----------------------------------|------|------|----|
| Bore size (mm) | HX | Q | QY |
| 20 | 65.3 | 19.8 | 14 |
| 25 | 70.5 | 22 | 14 |
| 32 | 76.5 | 25.8 | 16 |
| 40 | 84.5 | 29.8 | 16 |

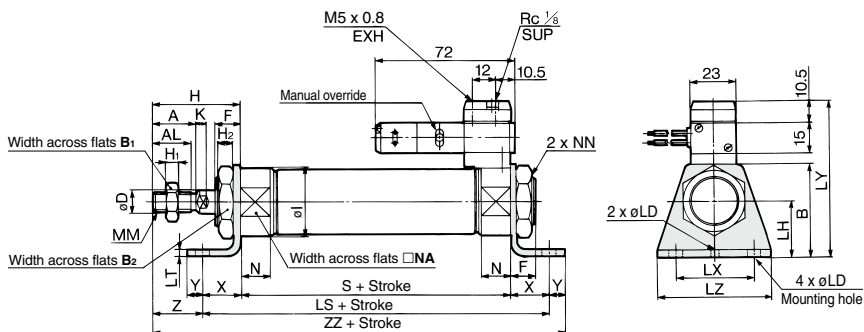
- CVQ
- CVQM
- CVJ
- CVM
- CV3
- CVS1
- MVGQ

- D-
- X

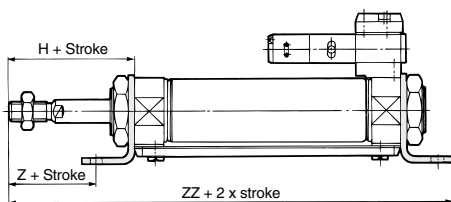
Series CVM3

Axial Foot Style (L)

Single acting, Spring return: CVM3L — S



Single acting, Spring extend: CVM3L — T



| Bore size (mm) | A | AL | B | B ₁ | B ₂ | D | F | H | H ₁ | H ₂ | I | K | LC | LD | LH | LT | LX | LY | LZ | MM | N | NA |
|----------------|----|------|----|----------------|----------------|----|----|----|----------------|----------------|------|-----|----|-----|----|-----|----|------|----|------------|------|------|
| 20 | 18 | 15.5 | 40 | 13 | 26 | 8 | 13 | 41 | 5 | 8 | 28 | 5 | 4 | 6.8 | 25 | 3.2 | 40 | 70.5 | 55 | M8 x 1.25 | 15 | 24 |
| 25 | 22 | 19.5 | 47 | 17 | 32 | 10 | 13 | 45 | 6 | 8 | 33.5 | 5.5 | 4 | 6.8 | 28 | 3.2 | 40 | 76.5 | 55 | M10 x 1.25 | 15 | 30 |
| 32 | 22 | 19.5 | 47 | 17 | 32 | 12 | 13 | 45 | 6 | 8 | 37.5 | 5.5 | 4 | 6.8 | 28 | 3.2 | 40 | 78.8 | 55 | M10 x 1.25 | 15 | 34.5 |
| 40 | 24 | 21 | 54 | 22 | 41 | 14 | 16 | 50 | 8 | 10 | 46.5 | 7 | 4 | 7 | 30 | 3.2 | 55 | 84.8 | 75 | M14 x 1.5 | 21.5 | 42.5 |

| Bore size (mm) | NN | X | Y | Z |
|----------------|-----------|----|----|----|
| 20 | M20 x 1.5 | 20 | 8 | 21 |
| 25 | M26 x 1.5 | 20 | 8 | 25 |
| 32 | M26 x 1.5 | 20 | 8 | 25 |
| 40 | M32 x 2 | 23 | 10 | 27 |

Dimensions by Stroke

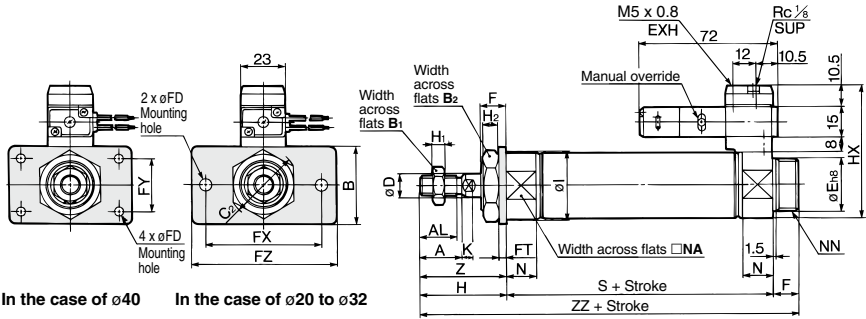
| Bore size (mm) | Stroke (mm) | | | | | | | | | | | | | | |
|----------------|-------------|-----------|------------|------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 1 to 50 | 51 to 100 | 101 to 150 | 151 to 200 | 201 to 250 | | | | | | | | | | |
| | S | LS | ZZ | S | LS | ZZ | S | LS | ZZ | S | LS | ZZ | S | LS | ZZ |
| 20 | 87 | 127 | 156 | 112 | 152 | 181 | 137 | 177 | 206 | — | — | — | — | — | — |
| 25 | 87 | 127 | 160 | 112 | 152 | 185 | 137 | 177 | 210 | — | — | — | — | — | — |
| 32 | 89 | 129 | 162 | 114 | 154 | 187 | 139 | 179 | 212 | 164 | 204 | 237 | — | — | — |
| 40 | 113 | 159 | 196 | 138 | 184 | 221 | 163 | 209 | 246 | 188 | 234 | 271 | 213 | 259 | 296 |

* Brackets are packaged together.

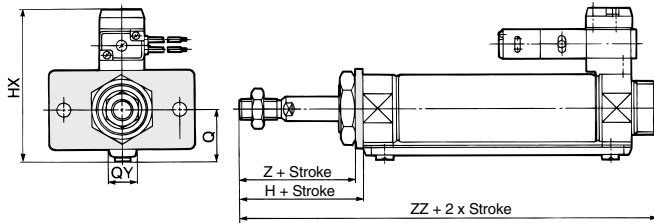
Valve Mounted Cylinder Single Acting, Spring Return/Extend *Series CVM3*

Rod Side Flange Style (F)

Single acting, Spring return: CVM3F — S



Single acting, Spring extend: CVM3F — T



| Bore size (mm) | A | AL | B | B ₁ | B ₂ | C ₂ | D | Eh ₈ | F | FD | FT | FX | FY | FZ | H | H ₁ | H ₂ | HX | I | K |
|----------------|----|------|----|----------------|----------------|----------------|----|-----------------------------------|----|----|----|----|----|----|----|----------------|----------------|------|------|-----|
| 20 | 18 | 15.5 | 34 | 13 | 26 | 30 | 8 | 20 ⁰ _{-0.033} | 13 | 7 | 4 | 60 | — | 75 | 41 | 5 | 8 | 57.5 | 28 | 5 |
| 25 | 22 | 19.5 | 40 | 17 | 32 | 37 | 10 | 26 ⁰ _{-0.033} | 13 | 7 | 4 | 60 | — | 75 | 45 | 6 | 8 | 63.5 | 33.5 | 5.5 |
| 32 | 22 | 19.5 | 40 | 17 | 32 | 37 | 12 | 26 ⁰ _{-0.033} | 13 | 7 | 4 | 60 | — | 75 | 45 | 6 | 8 | 68 | 37.5 | 5.5 |
| 40 | 24 | 21 | 52 | 22 | 41 | 47.3 | 14 | 32 ⁰ _{-0.033} | 16 | 7 | 5 | 66 | 36 | 82 | 50 | 8 | 10 | 76 | 46.5 | 7 |

| Bore size (mm) | MM | N | NA | NN | Z | Dimensions by Stroke (mm) | | | | | | | | | | Single Acting/Spring Extend (mm) | | | | | |
|----------------|------------|------|------|-----------|----|---------------------------|-----|-----------|-----|------------|-----|------------|-----|------------|-----|----------------------------------|----|----|------|------|----|
| | | | | | | Stroke 1 to 50 | | 51 to 100 | | 101 to 150 | | 151 to 200 | | 201 to 250 | | Bore size (mm) | HX | Q | QY | | |
| | | | | | | S | ZZ | S | ZZ | S | ZZ | S | ZZ | S | ZZ | | | | | | |
| 20 | M8 x 1.25 | 15 | 24 | M20 x 1.5 | 37 | 20 | 87 | 141 | 112 | 166 | 137 | 191 | — | — | — | — | — | 20 | 65.3 | 19.8 | 14 |
| 25 | M10 x 1.25 | 15 | 30 | M26 x 1.5 | 41 | 25 | 87 | 145 | 112 | 170 | 137 | 195 | — | — | — | — | — | 25 | 70.5 | 22 | 14 |
| 32 | M10 x 1.25 | 15 | 34.5 | M26 x 1.5 | 41 | 32 | 89 | 147 | 114 | 172 | 139 | 197 | 164 | 222 | — | — | — | 32 | 76.5 | 25.8 | 16 |
| 40 | M14 x 1.5 | 21.5 | 42.5 | M32 x 2 | 45 | 40 | 113 | 179 | 138 | 204 | 163 | 229 | 188 | 254 | 213 | 279 | — | 40 | 84.5 | 29.8 | 16 |

* Brackets are packaged together.

CVQ

CVQM

CVJ

CVM

CV3

CVS1

MVGQ

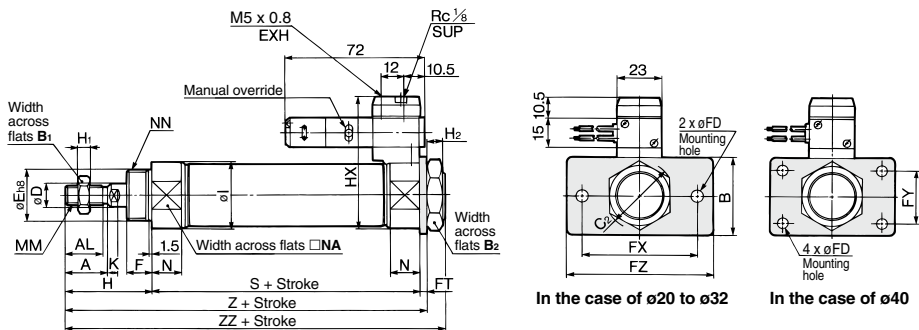
D-

-X

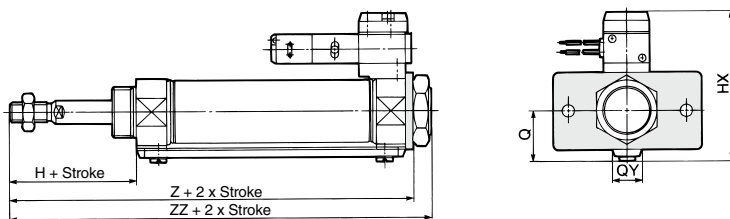
Series CVM3

Head Side Flange Style (G)

Single acting, Spring return: CVM3G — S



Single acting, Spring extend: CVM3G — T



| | | | | | | | | | | | | | | | | | | | (mm) | | |
|----------------|----|------|----|----------------|----------------|----------------|----|------------------------------------|----|----|----|----|----|----|----|----------------|----------------|------|------|-----|------------|
| Bore size (mm) | A | AL | B | B ₁ | B ₂ | C ₂ | D | Eh ₆ | F | FD | FT | FX | FY | FZ | H | H ₁ | H ₂ | HX | I | K | MM |
| 20 | 18 | 15.5 | 34 | 13 | 26 | 30 | 8 | 20 ⁰ _{-0.0333} | 13 | 7 | 4 | 60 | — | 75 | 41 | 5 | 8 | 57.5 | 28 | 5 | M8 x 1.25 |
| 25 | 22 | 19.5 | 40 | 17 | 32 | 37 | 10 | 26 ⁰ _{-0.0333} | 13 | 7 | 4 | 60 | — | 75 | 45 | 6 | 8 | 63.5 | 33.5 | 5.5 | M10 x 1.25 |
| 32 | 22 | 19.5 | 40 | 17 | 32 | 37 | 12 | 26 ⁰ _{-0.0333} | 13 | 7 | 4 | 60 | — | 75 | 45 | 6 | 8 | 68 | 37.5 | 5.5 | M10 x 1.25 |
| 40 | 24 | 21 | 52 | 22 | 41 | 47.3 | 14 | 32 ⁰ _{-0.039} | 16 | 7 | 5 | 66 | 36 | 82 | 50 | 8 | 10 | 76 | 46.5 | 7 | M14 x 1.5 |

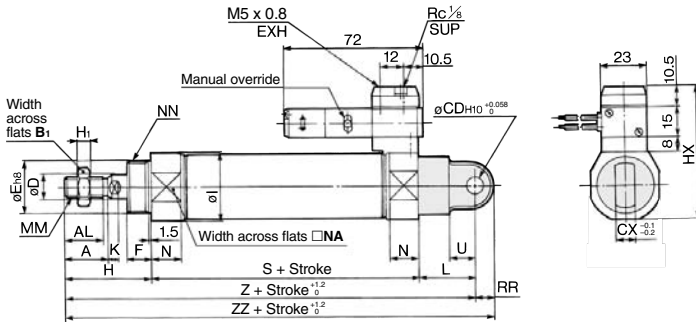
| (mm) | | | | | | | | | | (mm) | | | | | | | | | | | | | |
|----------------------|------|------|-----------|---------------|---------|-----|-----|-----------|-----|-----------------------------|------------|-----|-----|------------|-----|-----|------------|-----|-----|----------------|------|------|----|
| Dimensions by Stroke | | | | | | | | | | Single Acting/Spring Extend | | | | | | | | | | | | | |
| Bore size (mm) | N | NA | NN | Stroke Symbol | 1 to 50 | | | 51 to 100 | | | 101 to 150 | | | 151 to 200 | | | 201 to 250 | | | Bore size (mm) | HX | Q | QY |
| | | | | | S | Z | ZZ | S | Z | ZZ | S | Z | ZZ | S | Z | ZZ | S | Z | ZZ | | | | |
| 20 | 15 | 24 | M20 x 1.5 | 20 | 87 | 132 | 141 | 112 | 157 | 166 | 137 | 182 | 191 | — | — | — | — | — | 20 | 65.3 | 19.8 | 14 | |
| 25 | 15 | 30 | M26 x 1.5 | 25 | 87 | 136 | 145 | 112 | 161 | 170 | 137 | 186 | 195 | — | — | — | — | — | 25 | 70.5 | 22 | 14 | |
| 32 | 15 | 34.5 | M26 x 1.5 | 32 | 89 | 138 | 147 | 114 | 163 | 172 | 139 | 188 | 197 | 164 | 213 | 222 | — | — | 32 | 76.5 | 25.8 | 16 | |
| 40 | 21.5 | 42.5 | M32 x 2 | 40 | 113 | 168 | 179 | 138 | 193 | 204 | 163 | 218 | 229 | 188 | 243 | 254 | 213 | 268 | 279 | 40 | 84.5 | 29.8 | 16 |

* Brackets are packaged together.

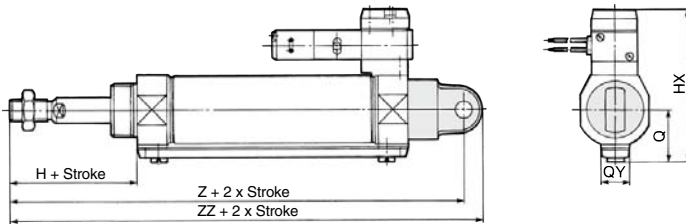
Valve Mounted Cylinder Single Acting, Spring Return/Extend **Series CVM3**

Single Clevis Style (C)

Single acting, Spring return: CVM3C — S



Single acting, Spring extend: CVM3C — T



| Bore size (mm) | A | AL | B ₁ | CD | CX | D | Eh _a | F | H | H ₁ | HX | I | K | L | MM | N | NA | NN | RR | U |
|----------------|----|------|----------------|----|----|----|-----------------------------------|----|----|----------------|------|------|-----|----|------------|------|------|-----------|----|----|
| 20 | 18 | 15.5 | 13 | 9 | 10 | 8 | 20 ⁰ _{-0.033} | 13 | 41 | 5 | 57.5 | 28 | 5 | 30 | M8 x 1.25 | 15 | 24 | M20 x 1.5 | 9 | 14 |
| 25 | 22 | 19.5 | 17 | 9 | 10 | 10 | 26 ⁰ _{-0.033} | 13 | 45 | 6 | 63.5 | 33.5 | 5.5 | 30 | M10 x 1.25 | 15 | 30 | M26 x 1.5 | 9 | 14 |
| 32 | 22 | 19.5 | 17 | 9 | 10 | 12 | 26 ⁰ _{-0.033} | 13 | 45 | 6 | 68 | 37.5 | 5.5 | 30 | M10 x 1.25 | 15 | 34.5 | M26 x 1.5 | 9 | 14 |
| 40 | 24 | 21 | 22 | 10 | 15 | 14 | 32 ⁰ _{-0.039} | 16 | 50 | 8 | 76 | 46.5 | 7 | 39 | M14 x 1.5 | 21.5 | 42.5 | M32 x 2 | 11 | 18 |

Dimensions by Stroke

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

Single Acting/Spring Extend (mm)

| Bore size (mm) | HX | Q | QY |
|----------------|------|------|----|
| 20 | 65.3 | 19.8 | 14 |
| 25 | 70.5 | 22 | 14 |
| 32 | 76.5 | 25.8 | 16 |
| 40 | 84.5 | 29.8 | 16 |

CVQ

CVQM

CVJ

CVM

CV3

CVS1

MVGQ

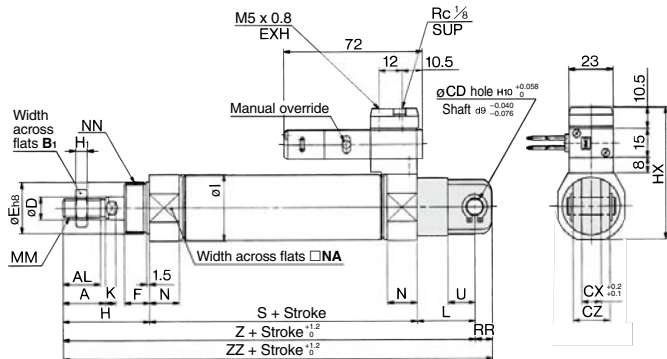
D-

-X

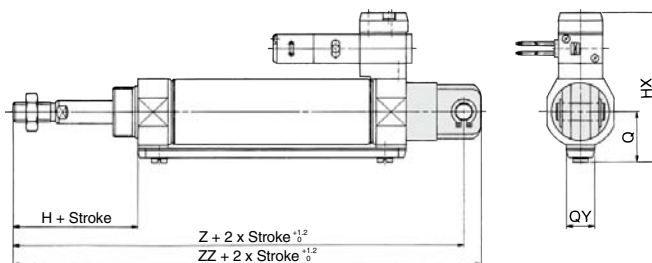
Series CVM3

Double Clevis Style (D)

Single acting, Spring return: CVM3D **Bore size** — **Stroke** **S**



Single acting, Spring extend: CVM3D **Bore size** — **Stroke** **T**



| Bore size (mm) | A | AL | B ₁ | CD | CX | CZ | D | Eh ₀ | F | H | H ₁ | HX | I | K | L | MM | N | NA | NN | RR | U |
|----------------|----|------|----------------|----|----|----|----|-----------------------------------|----|----|----------------|------|------|-----|----|------------|------|------|-----------|----|----|
| 20 | 18 | 15.5 | 13 | 9 | 10 | 19 | 8 | 20 ⁰ _{-0.033} | 13 | 41 | 5 | 57.5 | 28 | 5 | 30 | M8 x 1.25 | 15 | 24 | M20 x 1.5 | 9 | 14 |
| 25 | 22 | 19.5 | 17 | 9 | 10 | 19 | 10 | 26 ⁰ _{-0.033} | 13 | 45 | 6 | 63.5 | 33.5 | 5.5 | 30 | M10 x 1.25 | 15 | 30 | M26 x 1.5 | 9 | 14 |
| 32 | 22 | 19.5 | 17 | 9 | 10 | 19 | 12 | 26 ⁰ _{-0.033} | 13 | 45 | 6 | 68 | 37.5 | 5.5 | 30 | M10 x 1.25 | 15 | 34.5 | M26 x 1.5 | 9 | 14 |
| 40 | 24 | 21 | 22 | 10 | 15 | 30 | 14 | 32 ⁰ _{-0.033} | 16 | 50 | 8 | 76 | 46.5 | 7 | 39 | M14 x 1.5 | 21.5 | 42.5 | M32 x 2 | 11 | 18 |

Dimensions by Stroke

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

Single Acting/Spring Extend

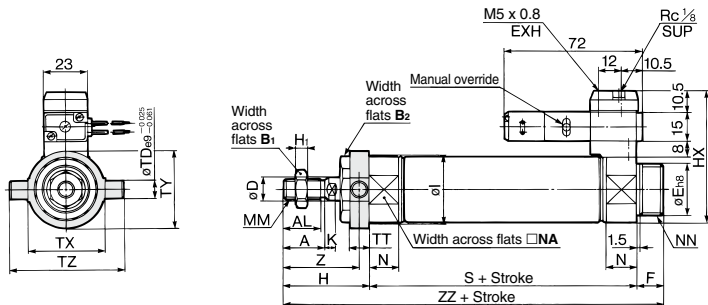
| Bore size (mm) | HX | Q | QY |
|----------------|------|------|----|
| 20 | 65.3 | 19.8 | 14 |
| 25 | 70.5 | 22 | 14 |
| 32 | 76.5 | 25.8 | 16 |
| 40 | 84.5 | 29.8 | 16 |

* Clevis pin and snap ring (cotter pin for φ40) is shipped together.

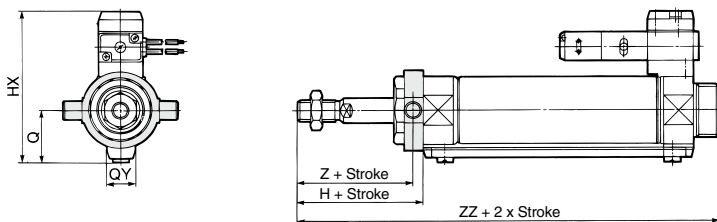
Valve Mounted Cylinder Single Acting, Spring Return/Extend **Series CVM3**

Rod Side Trunnion Style (U)

Single acting, Spring return: CVM3U Bore size — Stroke S



Single acting, Spring extend: CVM3U Bore size — Stroke T



| Bore size (mm) | A | AL | B ₁ | B ₂ | D | E _h | F | H | H ₁ | HX | I | K | MM | N | NA | NN | TD | TT | TX | TY | TZ | Z |
|----------------|----|------|----------------|----------------|----|----------------------|----|----|----------------|------|------|-----|------------|------|------|-----------|----|----|----|----|----|------|
| 20 | 18 | 15.5 | 13 | 26 | 8 | 20 ^{-0.030} | 13 | 41 | 5 | 57.5 | 28 | 5 | M8 x 1.25 | 15 | 24 | M20 x 1.5 | 8 | 10 | 32 | 32 | 52 | 36 |
| 25 | 22 | 19.5 | 17 | 32 | 10 | 26 ^{-0.030} | 13 | 45 | 6 | 63.5 | 33.5 | 5.5 | M10 x 1.25 | 15 | 30 | M26 x 1.5 | 9 | 10 | 40 | 40 | 60 | 40 |
| 32 | 22 | 19.5 | 17 | 32 | 12 | 26 ^{-0.030} | 13 | 45 | 6 | 68 | 37.5 | 5.5 | M10 x 1.25 | 15 | 34.5 | M26 x 1.5 | 9 | 10 | 40 | 40 | 60 | 40 |
| 40 | 24 | 21 | 22 | 41 | 14 | 32 ^{-0.030} | 16 | 50 | 8 | 76 | 46.5 | 7 | M14 x 1.5 | 21.5 | 42.5 | M32 x 2 | 10 | 11 | 53 | 53 | 77 | 44.5 |

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

| Single Acting/Spring Extend (mm) | | | |
|----------------------------------|------|------|----|
| Bore size (mm) | HX | Q | QY |
| 20 | 65.3 | 19.8 | 14 |
| 25 | 70.5 | 22 | 14 |
| 32 | 76.5 | 25.8 | 16 |
| 40 | 84.5 | 29.8 | 16 |

* Brackets are packaged together.

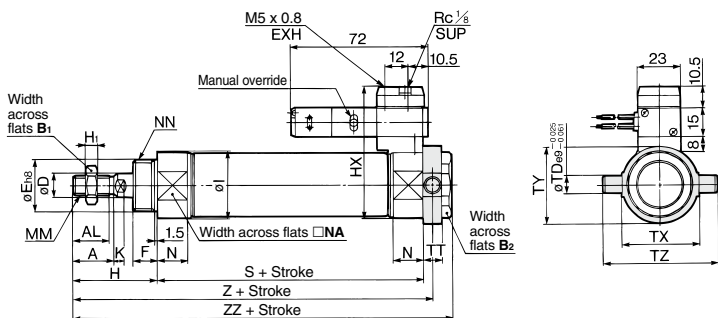
- CVQ
- CVQM
- CVJ
- CVM
- CV3
- CVS1
- MVGQ

- D
- X

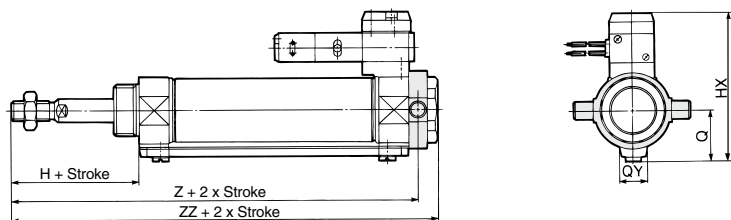
Series CVM3

Head Side Trunnion Style (T)

Single acting, Spring return: CVM3T — S



Single acting, Spring extend: CVM3T — T



| Bore size (mm) | A | AL | B ₁ | B ₂ | D | Eh ₈ | F | H | H ₁ | HX | I | K | MM | N | NA | NN | TD | TT | TX | TY | TZ |
|----------------|----|------|----------------|----------------|----|-----------------------------------|----|----|----------------|------|------|-----|------------|------|------|-----------|----|----|----|----|----|
| 20 | 18 | 15.5 | 13 | 26 | 8 | 20 ⁰ _{-0.033} | 13 | 41 | 5 | 57.5 | 28 | 5 | M8 x 1.25 | 15 | 24 | M20 x 1.5 | 8 | 10 | 32 | 32 | 52 |
| 25 | 22 | 19.5 | 17 | 32 | 10 | 26 ⁰ _{-0.033} | 13 | 45 | 6 | 63.5 | 33.5 | 5.5 | M10 x 1.25 | 15 | 30 | M26 x 1.5 | 9 | 10 | 40 | 40 | 60 |
| 32 | 22 | 19.5 | 17 | 32 | 12 | 26 ⁰ _{-0.033} | 13 | 45 | 6 | 68 | 37.5 | 5.5 | M10 x 1.25 | 15 | 34.5 | M26 x 1.5 | 9 | 10 | 40 | 40 | 60 |
| 40 | 24 | 21 | 22 | 41 | 14 | 32 ⁰ _{-0.039} | 16 | 50 | 8 | 76 | 46.5 | 7 | M14 x 1.5 | 21.5 | 42.5 | M32 x 2 | 10 | 11 | 53 | 53 | 77 |

Dimensions by Stroke (mm)

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

Single Acting/Spring Extend (mm)

| Bore size (mm) | HX | Q | QY |
|----------------|------|------|----|
| 20 | 65.3 | 19.8 | 14 |
| 25 | 70.5 | 22 | 14 |
| 32 | 76.5 | 25.8 | 16 |
| 40 | 84.5 | 29.8 | 16 |

* Brackets are packaged together.

Valve Mounted Cylinder: Non-rotating Rod Type Single Acting, Spring Return/Extend

Series CVM3K

ø20, ø25, ø32, ø40

How to Order

Mounting style

| | |
|---|--------------------------|
| B | Basic style |
| L | Axial foot style |
| F | Rod side flange style |
| G | Head side flange style |
| C | Single clevis style |
| D | Double clevis style |
| T | Head side trunnion style |
| U | Rod side trunnion style |

Bore size

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

Solenoid valve voltage

| Standard | | Option | |
|----------|--------------------|--------|--------------------|
| 1 | 100 VAC (50/60 Hz) | 3 | 110 VAC (50/60 Hz) |
| 2 | 200 VAC (50/60 Hz) | 4 | 220 VAC (50/60 Hz) |
| 5 | 24 VDC | 6 | 12 VDC |

For other rated voltages, please consult with SMC.

Action

| | |
|---|------------------------------|
| S | Single acting, Spring return |
| T | Single acting, Spring extend |

Light/Surge voltage suppressor

| | |
|-----|---|
| Nil | None |
| S | With surge voltage suppressor |
| Z | With light/surge voltage suppressor (Except Type G) |

Electrical entry

| | |
|---|------------------|
| G | Grommet |
| L | L plug connector |
| M | M plug connector |
| D | DIN terminal |

Number of auto switches

| | |
|-----|---------------------|
| Nil | Without auto switch |
| S | 1 pc. |
| n | "n" pcs. |

Made to Order
Refer to page 1756 for details.

Auto switch mounting bracket^(Note)
Note) This symbol is indicated when the D-A9□ or M9□ type auto switch is specified. This mounting bracket does not apply to other auto switches (D-C7□ and H7□, etc.) (Nil)

Auto switch

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

Port thread type

| | |
|-----|-----|
| Nil | Rc |
| TN | NPT |
| TF | G |

Piping

| | |
|-----|----------------------------|
| Nil | Screw-in type |
| F | Built-in One-touch fitting |

Cylinder stroke (mm)
(Refer to "Standard Stroke" on page 1756.)

With auto switch
(Built-in magnet)

Non-rotating rod type

Built-in Magnet Cylinder Model
If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDVM3K40-100S-5G

Applicable Auto Switches
Refer to pages 1893 to 2007 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | | | | | Pre-wired connector | Applicable load | | |
|-------------------------|---|------------------|-----------------|------------------------------|--|-----------|-------------------|---------------------|----------------------|-------|-------|-------|----------|---------------------|-----------------|--------------|--------------|
| | | | | | DC | AC | Perpendicular | In-line | 0.5 (Nil) | 1 (M) | 3 (L) | 5 (Z) | None (N) | | | | |
| | | | | | | | | | | | | | | | | 3-wire (NPN) | 3-wire (PNP) |
| Solid state auto switch | | Grommet | | 3-wire (NPN) 3-wire (PNP) | 5 V, 12 V | | M9NV | M9N | ● | ● | ● | ○ | ○ | ○ | IC circuit | | |
| | | | | | | | M9PV | M9P | ● | ● | ● | ○ | ○ | ○ | | | |
| | | Connector | | 2-wire | 12 V | | M9BV | M9B | ● | ● | ● | ○ | ○ | ○ | — | | |
| | | | | | | | — | H7C | ● | ● | ● | ● | ● | ● | | ● | |
| | Diagnostic indication (2-color indication) | Yes | Grommet | | 3-wire (NPN) 2-wire | 5 V, 12 V | 24 V | M9NVV | M9NV | ● | ● | ● | ○ | ○ | IC circuit | Relay, PLC | |
| | | | | | | | | M9PVV | M9PV | ● | ● | ● | ○ | ○ | | | ○ |
| | Water resistant (2-color indicator) | Grommet | | | 3-wire (NPN) 3-wire (PNP) 2-wire | 5 V, 12 V | | M9NAV ^{*1} | M9NA ^{*1} | ○ | ○ | ○ | ● | ● | IC circuit | | |
| | | | | | | | | M9PAV ^{*1} | M9PA ^{*1} | ○ | ○ | ○ | ○ | ○ | | ○ | |
| | With diagnostic output (2-color indication) | Grommet | | | 4-wire (NPN) | 5 V, 12 V | | M9BAV ^{*1} | M9BA ^{*1} | ○ | ○ | ○ | ○ | ○ | IC circuit | | |
| | | | | | | | | — | H7FN | ● | ● | ● | ○ | ○ | | ○ | |
| Reed auto switch | | Grommet | Yes | 2-wire (NPN equivalent) | — | 5 V | A96V | A96 | ● | ● | ● | ○ | ○ | IC circuit | — | | |
| | | | | | | | 100 V | A93V ^{*2} | A93 | ● | ● | ● | ○ | | | ○ | |
| | | | | | | | 100 V or less | A90V | A90 | ● | ● | ● | ○ | | | ○ | IC circuit |
| | | | | | | | 100 V, 200 V | — | B54 | ● | ● | ● | ○ | | | ○ | |
| | | | | | | | 200 V or less | — | B64 | ● | ● | ● | ○ | | | ○ | — |
| | | | | | | | — | — | C73C | ● | ● | ● | ● | | | ● | |
| | | | | | | | 24 V or less | — | C80C | ● | ● | ● | ● | | | ● | |
| — | — | B59W | ● | ● | ● | ○ | ○ | | | | | | | | | | |

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
 1 m M (Example) M9NVM
 3 m L (Example) M9NWL
 5 m Z (Example) M9NVZ
 None N (Example) H7CN

* Solid state auto switches marked with "○" are produced upon receipt of order.
 * D-A9□/M9□V□/M9□W□/M9□A(V) types cannot be mounted.
 *1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Consult with SMC regarding water resistant types with the above model numbers.
 *2 1 m type lead wire is only applicable to D-A93.

* Since there are other applicable auto switches than listed, refer to page 1763 for details.
 * For details about auto switches with pre-wired connector, refer to pages 1960 and 1961.
 * D-A9□/M9□/M9□W auto switches are shipped together (not assembled). (Only auto switch mounting brackets are assembled before shipped.)

- CVQ
- CVQM
- CVJ
- CVM
- CV3
- CVS1
- MVGQ

- D-□
- X□

Series CVM3K

A hexagon shaped rod that does not rotate.

Non-rotating accuracy

∅20, ∅25 — ±0.7°

∅32, ∅40 — ±0.5°

Can operate without lubrication.

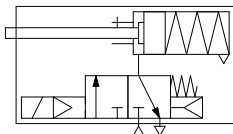
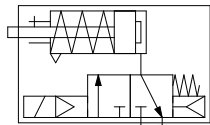
Auto switches can also be mounted.

Can be installed with auto switches to facilitate the detection of the cylinder's stroke position.



Symbol

Rubber bumper



Made to Order Specifications
(For details, refer to pages 2009 to 2152.)

| Symbol | Specifications |
|--------|-------------------------|
| -XA□ | Change of rod end shape |
| -XC6 | Made of stainless steel |

Mounting Bracket Part No.

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

* Two foot brackets and a mounting nut are attached.
When ordering the foot bracket, order 2 pcs. per cylinder.

** Clevis pin and retaining ring (cotter pin for ∅40) are packaged together.

Specifications

| Applicable bore size (mm) | 20 | 25 | 32 | 40 |
|-------------------------------|---|------------------------|-----------|-----------|
| Rod non-rotating accuracy | ±0.7° | | ±0.5° | |
| Action | Single acting, Spring return/Spring extend | | | |
| Fluid | Air | | | |
| Cushion | Rubber bumper | | | |
| Proof pressure | 1.0 MPa | | | |
| Maximum operating pressure | 0.7 MPa | | | |
| Minimum operating pressure | 0.18 MPa spring return | 0.23 MPa spring extend | | |
| Ambient and fluid temperature | -10 to 50°C (No freezing) | | | |
| Lubrication | Not required (Non-lube) | | | |
| Stroke length tolerance | +1.4 0 | | | |
| Piping | Screw-in type | Rc 1/8 | | |
| | Built-in One-touch fitting | O.D.: ∅6/I.D.: ∅4 | | |
| Manual override | Non locking (Standard) | | | |
| Piston speed (mm/s) | 50 to 700 | 50 to 650 | 50 to 590 | 50 to 420 |
| Allowable kinetic energy | 0.27 J | 0.4 J | 0.65 J | 1.2 J |
| Mounting | Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Head side trunnion style, Rod side trunnion style | | | |

Solenoid Valve Specifications

| Applicable solenoid valve model | VZ319 | | |
|--|--|---------------------------------|----------------------|
| Coil rated voltage | Standard: 100/200 VAC (50/60 Hz), 24 VDC Semi-standard: 110/220 VAC, 12 VDC | | |
| Effective area of valve (Cv factor) | 4.5 mm ² (0.25) | | |
| Allowable voltage | -15 to 10% of the rated voltage | | |
| Coil insulation | Class B or equivalent (130°C) | | |
| Electrical entry | Grommet, L plug connector, M plug connector, DIN terminal | | |
| Power consumption (W) <small>(Note)</small> | DC | 1.8 (With indicator light: 2.1) | |
| Apparent power (VA) <small>(Note)</small> | AC | Inrush | 4.5/50 Hz, 4.2/60 Hz |
| | | Holding | 3.5/50 Hz, 3.0/60 Hz |

Note) At the rated voltage.

Standard Stroke

| Bore size (mm) | Standard stroke (mm) <small>(Note)</small> |
|----------------|---|
| 20 | 25, 50, 75, 100, 125, 150 * |
| 25 | 25, 50, 75, 100, 125, 150 * |
| 32 | 25, 50, 75, 100, 125, 150, 200 * |
| 40 | 25, 50, 75, 100, 125, 150, 200, 250 * |

Note 1) Intermediate stroke other than above is manufactured upon receipt of order.

Note 2) Strokes marked with "*" are the maximum strokes which are available.

| Refer to pages 1760 to 1763 for cylinders with auto switches. |
|--|
| · Minimum auto switch mounting stroke |
| · Proper auto switch mounting position (detection at stroke end) and mounting height |
| · Operating range |
| · Switch mounting bracket: Part no. |

Theoretical Output

Refer to the Technical Data (Theoretical Output 1) in Best Pneumatics No. 2.

Spring Reaction Force

Refer to the Technical Data (Table 2: Spring Reaction Force) in Best Pneumatics No. 2.

Valve Mounted Cylinder: Non-rotating Rod Type Single Acting, Spring Return/Extend *Series CVM3K*

Mounting Bracket and Accessory

| Accessory | Standard equipment | | | Option | | | |
|------------------------------------|----------------------|-------------|------------------|----------------------|-------------------------------------|------------------------------|----------------------------------|
| | Mounting nut | Rod end nut | Clevis pin | Single knuckle joint | Double knuckle joint ⁽³⁾ | Pivot bracket ⁽⁵⁾ | Pivot bracket pin ⁽⁶⁾ |
| Mounting | | | | | | | |
| Basic style | ● (1 pc.) | ● | — | ● | ● | | |
| Axial foot style | ● (2) | ● | — | ● | ● | | |
| Rod side flange style | ● (1) | ● | — | ● | ● | | |
| Head side flange style | ● (1) | ● | — | ● | ● | | |
| Single clevis style | — ⁽¹⁾ | ● | — | ● | ● | ● | ● |
| Double clevis style ⁽²⁾ | — ⁽¹⁾ | ● | ● ⁽⁴⁾ | ● | ● | — | — |
| Head side trunnion style | ● (1) ⁽²⁾ | ● | — | ● | ● | ● | — |
| Rod side trunnion style | ● (1) ⁽²⁾ | ● | — | ● | ● | | |

- Note 1) Mounting nut is not equipped with single clevis style and double clevis style.
 Note 2) Trunnion nuts are equipped for head side trunnion and rod side trunnion.
 Note 3) Pin and retaining ring are shipped together with double clevis and double knuckle joint.
 Note 4) Retaining rings (cotter pins for ø40) are included in clevis pins.
 Note 5) Pin and retaining ring are not included in pivot bracket.
 Note 6) Retaining rings are included in pivot bracket pin.

Weight

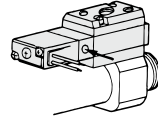
Spring Return/(): Denotes Spring Extend.

| Bore size (mm) | | 20 | 25 | 32 | 40 |
|-------------------------|---------------------------|-------------|-------------|-------------|-------------|
| Basic weight | 25 stroke | 0.30 (0.30) | 0.40 (0.04) | 0.52 (0.51) | 0.87 (0.86) |
| | 50 stroke | 0.32 (0.32) | 0.43 (0.43) | 0.56 (0.56) | 0.94 (0.93) |
| | 75 stroke | 0.37 (0.37) | 0.52 (0.51) | 0.68 (0.66) | 1.13 (1.09) |
| | 100 stroke | 0.39 (0.39) | 0.55 (0.54) | 0.73 (0.70) | 1.19 (1.16) |
| | 125 stroke | 0.45 (0.44) | 0.64 (0.61) | 0.86 (0.82) | 1.39 (1.33) |
| | 150 stroke | 0.47 (0.46) | 0.67 (0.64) | 0.90 (0.86) | 1.46 (1.40) |
| | 200 stroke | — (—) | — (—) | 1.07 (1.02) | 1.71 (1.63) |
| | 250 stroke | — (—) | — (—) | — (—) | 1.97 (1.85) |
| Mounting bracket weight | Axial foot | 0.15 (0.15) | 0.16 (0.16) | 0.16 (0.16) | 0.27 (0.27) |
| | Flange | 0.06 (0.06) | 0.09 (0.09) | 0.09 (0.09) | 0.12 (0.12) |
| | Single clevis | 0.04 (0.04) | 0.04 (0.04) | 0.04 (0.04) | 0.09 (0.09) |
| | Double clevis | 0.05 (0.05) | 0.06 (0.06) | 0.06 (0.06) | 0.13 (0.13) |
| | Trunnion | 0.04 (0.04) | 0.07 (0.07) | 0.07 (0.07) | 0.10 (0.10) |
| Option bracket weight | Single knuckle joint | 0.06 (0.06) | 0.06 (0.06) | 0.06 (0.06) | 0.23 (0.23) |
| | Double knuckle (With pin) | 0.07 (0.07) | 0.07 (0.07) | 0.07 (0.07) | 0.20 (0.20) |

Calculation: (Example) **CVM3KL32-100-1G** (ø32, 100 stroke, Spring return)
 • Basic weight 0.73 (kg)
 • Weight of brackets 0.16 (kg)
 0.73 + 0.16 = 0.89 kg

Manual Operation

Manual operation is possible by pushing the manual button indicated with the arrow.



⚠ Precautions

- Be sure to read before handling.
 Refer to front matter 39 for Safety Instructions, pages 3 to 12 for Actuator and Auto Switch Precautions and 3/4/5 Port Solenoid Valve Precautions in Best Pneumatics No. 1.

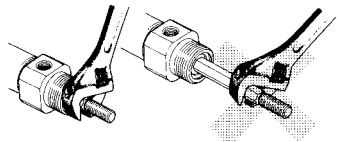
Operating Precautions

⚠ Caution

1. Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.

If rotational torque is applied, the non-rotating guide will deform, causing a loss of non-rotating accuracy. Also, to screw a bracket or a nut onto the threaded portion at the end of the piston rod, make sure to retract the piston rod entirely, and place a wrench on the parallel sections of the rod that protrudes. To tighten, take precautions to prevent the tightening torque from being applied to the non-rotating guide.

| Allowable rotational torque (N·m or less) | ø20 | ø25 | ø32 | ø40 |
|---|-----|------|------|------|
| | 0.2 | 0.25 | 0.25 | 0.44 |



Disassembly/Replacement

⚠ Caution

1. When replacing rod seals, please contact SMC.

Air leakage may be happened, depending on the position in which a rod seal is fitted. Thus, please contact SMC when replacing them.

Model Selection

⚠ Warning

1. Confirm the specifications.

Products in this catalog are designed to be used for compressed air systems. If not operated within the designated pressure or temperature, it may damage the products or cause malfunction. (Refer to specifications.)

2. Energizing continuously for a long period of time

When the valve is continuously energized for a long period of time, the performance may deteriorate or affect peripheral equipment adversely since temperature rises when coils generate heat.

CVQ

CVQM

CVJ

CVM

CV3

CVS1

MVGQ

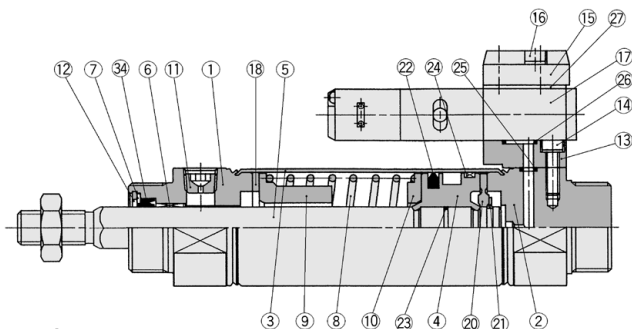
D-

-X

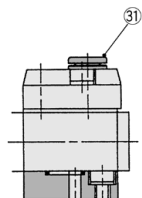
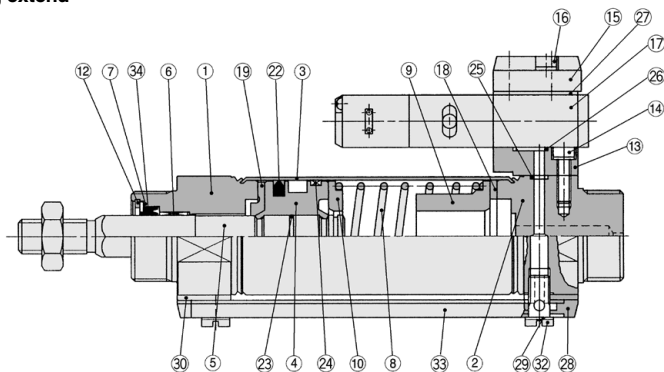
Series CVM3K

Construction

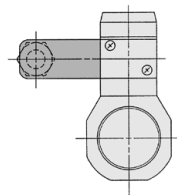
Spring return



Spring extend



Built-in One-touch fitting



DIN terminal

Component Parts

| No. | Description | Material | Note |
|-----|---|-------------------|----------------------|
| 1 | Rod cover | Aluminum alloy | Clear anodized |
| 2 | Head cover | Aluminum alloy | Clear anodized |
| 3 | Cylinder tube | Stainless steel | |
| 4 | Piston | Aluminum alloy | Chromated |
| 5 | Piston rod | Carbon steel | Hard chrome plated |
| 6 | Non-rotating guide | Bearing alloy | |
| 7 | Seal retainer | Rolled steel | Nickel plated |
| 8 | Return spring | Steel wire | Zinc chromated |
| 9 | Spring guide | Aluminum alloy | Chromated |
| 10 | Spring seat | Aluminum alloy | Chromated |
| 11 | Plug with fixed orifice | Alloy steel | Black zinc chromated |
| 12 | Retaining ring | Carbon tool steel | Phosphate coated |
| 13 | Sub-plate | Aluminum alloy | Metallic painted |
| 14 | Hex. socket head cap screw with spring washer | Carbon steel | Nickel plated |
| 15 | Plate | Aluminum alloy | Metallic painted |
| 16 | Hex. socket head cap screw with spring washer | Carbon steel | Nickel plated |
| 17 | Solenoid valve | — | Refer to the below.* |
| 18 | Bumper | Urethane | |
| 19 | Bumper A | Urethane | |

* How to order solenoid valves

VZ319 - □□□□

Rated voltage ↓ □ □ □ □
 ↓ Light/surge voltage suppressor
 ↓ Electrical entry

Component Parts

| No. | Description | Material | Note |
|-----|-------------------|-----------------|---------------------------|
| 20 | Bumper B | Urethane | |
| 21 | Retaining ring | Stainless steel | |
| 22 | Piston seal | NBR | |
| 23 | Piston gasket | NBR | |
| 24 | Wear ring | Resin | |
| 25 | Head cover gasket | NBR | |
| 26 | Sub-plate gasket | NBR | |
| 27 | Gasket | NBR | |
| 28 | Pipe gasket | Urethane rubber | |
| 29 | Gasket | Resin | |
| 30 | Spacer gasket | Resin | |
| 31 | One-touch fitting | — | Port size: ø6 |
| 32 | Stud | Brass | Electroless nickel plated |
| 33 | Pipe | Aluminum alloy | Clear anodized |

Replacement Parts/Seal Kit

| No. | Description | Material | Part no. | | | |
|-----|-------------|----------|-----------|-----------|-----------|-----------|
| | | | 20 | 25 | 32 | 40 |
| 34 | Rod seal | NBR | CM2K20-PS | CM2K25-PS | CM2K32-PS | CM2K40-PS |

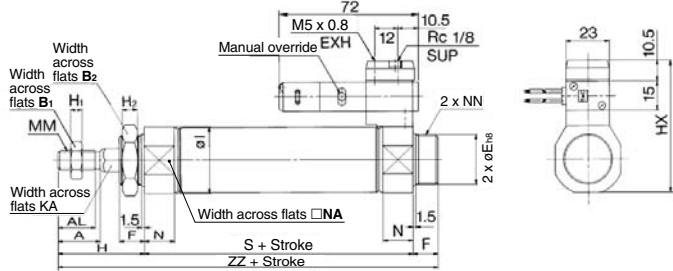
* Since the seal kit does not include a grease pack, order it separately.

Grease pack part no.: GR-S-010 (10g)

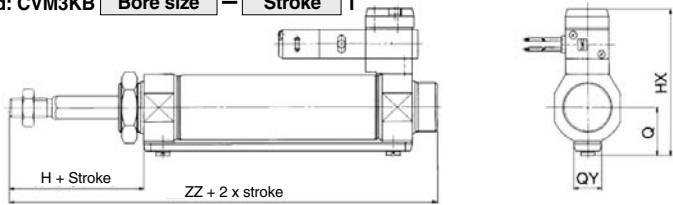
Valve Mounted Cylinder: Non-rotating Rod Type Single Acting, Spring Return/Extend **Series CVM3K**

Basic Style (B): External Dimensions

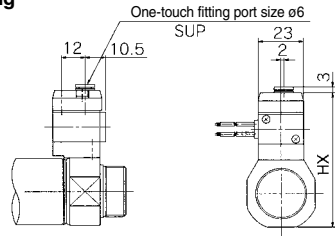
Single acting, Spring return: CVM3KB Bore size — Stroke **S**



Single acting, Spring extend: CVM3KB Bore size — Stroke **T**



Built-in One-touch fitting



| Bore size (mm) | A | AL | B ₁ | B ₂ | Eh ₈ | F | H | H ₁ | H ₂ | HX | I | KA | MM | N | NA | NN |
|----------------|----|------|----------------|----------------|-----------------------------------|----|----|----------------|----------------|------|------|------|------------|------|------|-----------|
| 20 | 18 | 15.5 | 13 | 26 | 20 ⁰ _{-0.033} | 13 | 41 | 5 | 8 | 57.5 | 28 | 8.2 | M8 x 1.25 | 15 | 24 | M20 x 1.5 |
| 25 | 22 | 19.5 | 17 | 32 | 26 ⁰ _{-0.033} | 13 | 45 | 6 | 8 | 63.5 | 33.5 | 10.2 | M10 x 1.25 | 15 | 30 | M26 x 1.5 |
| 32 | 22 | 19.5 | 17 | 32 | 26 ⁰ _{-0.033} | 13 | 45 | 6 | 8 | 68 | 37.5 | 12.2 | M10 x 1.25 | 15 | 34.5 | M26 x 1.5 |
| 40 | 24 | 21 | 22 | 41 | 32 ⁰ _{-0.039} | 16 | 50 | 8 | 10 | 76 | 46.5 | 14.2 | M14 x 1.5 | 21.5 | 42.5 | M32 x 2 |

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

| Bore size (mm) | Single Acting/Spring Extend (mm) | | |
|----------------|----------------------------------|------|----|
| | HX | Q | QY |
| 20 | 65.3 | 19.8 | 14 |
| 25 | 70.5 | 22 | 14 |
| 32 | 76.5 | 25.8 | 16 |
| 40 | 84.5 | 29.8 | 16 |

- CVQ
- CVQM
- CVJ□
- CVM□
- CV3
- CVS1
- MVGQ

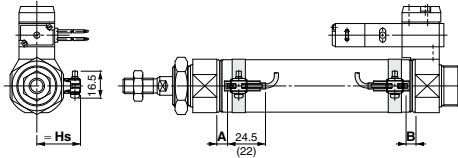
- D-□
- X□

Auto Switch Mounting 1

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

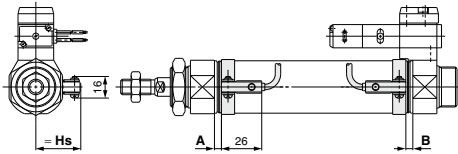
Reed auto switch

D-A9□

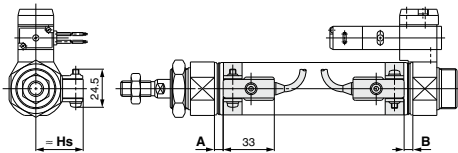


() : For D-A96 type
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

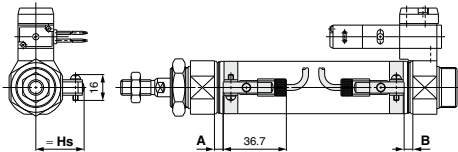
D-C7/C8



D-B5/B6/B59W

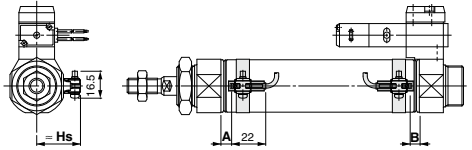


D-C73C/C80C

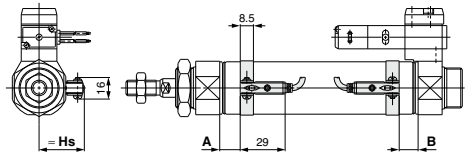


Solid state auto switch

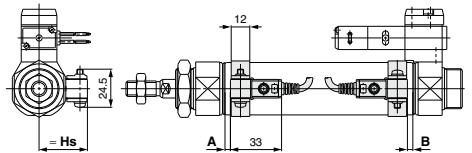
D-M9□
D-M9□W



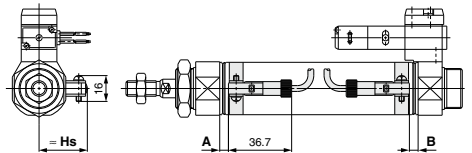
D-H7□/H7□W/H7NF



D-G5NT



D-H7C



**Auto Switch Proper Mounting Position (Detection at Stroke End)
and Its Mounting Height: Single Acting, Spring Return (S)/Spring Extend (T)**

**Auto Switch Proper Mounting Position: Standard, Spring Return (S)
Non-Rotating, Spring Return (S)** (mm)

| Auto switch model | Bore size | A dimension | | | | | B |
|------------------------------------|-----------|---------------------|-------------------------|--------------------------|--------------------------|--------------------------|------|
| | | to 15 st | 51 to 100 st | 101 to 150 st | 151 to 200 st | 201 to 250 st | |
| D-A9□(V) | 20 | 31.5 | 56.5 | 81.5 | — | — | 5.5 |
| | 25 | 31.5 | 56.5 | 81.5 | — | — | 5.5 |
| | 32 | 32.5 | 57.5 | 82.5 | 107.5 | — | 6.5 |
| | 40 | 38.5 | 63.5 | 88.5 | 113.5 | 138.5 | 11.5 |
| D-M9□(V) D-M9□W(V) D-M9□A(V) | 20 | 35.5 | 60.5 | 85.5 | — | — | 9.5 |
| | 25 | 35.5 | 60.5 | 85.5 | — | — | 9.5 |
| | 32 | 36.5 | 61.5 | 86.5 | 111.5 | — | 10.5 |
| | 40 | 42.5 | 67.5 | 92.5 | 117.5 | 142.5 | 15.5 |
| D-B5□ D-B64 | 20 | 26 | 51 | 76 | — | — | 0 |
| | 25 | 26 | 51 | 76 | — | — | 0 |
| | 32 | 27 | 52 | 77 | 102 | — | 1 |
| D-C7□ D-C80 D-C73C D-C80C | 40 | 32 | 57 | 82 | 107 | 132 | 6 |
| | 20 | 32 | 57 | 82 | — | — | 6 |
| | 25 | 32 | 57 | 82 | — | — | 6 |
| D-B59W | 32 | 33 | 58 | 83 | 108 | — | 7 |
| | 40 | 38 | 63 | 88 | 113 | 138 | 12 |
| | 20 | 29 | 54 | 79 | — | — | 3 |
| | 25 | 29 | 54 | 79 | — | — | 3 |
| D-H7□ D-H7C D-H7□W D-H7NF | 32 | 30 | 55 | 80 | 105 | — | 4 |
| | 40 | 35 | 60 | 85 | 110 | 135 | 9 |
| | 20 | 31 | 56 | 81 | — | — | 5 |
| | 25 | 31 | 56 | 81 | — | — | 5 |
| D-G5NT | 32 | 32 | 57 | 82 | 107 | — | 6 |
| | 40 | 37 | 62 | 87 | 112 | 137 | 11 |
| | 20 | 27.5 | 52.5 | 77.5 | — | — | 1.5 |
| | 25 | 27.5 | 52.5 | 77.5 | — | — | 1.5 |
| | 32 | 28.5 | 53.5 | 78.5 | 103.5 | — | 2.5 |
| | 40 | 33.5 | 58.5 | 83.5 | 108.5 | 133.5 | 7.5 |

**Auto Switch Proper Mounting Position: Standard, Spring Extend (T)
Non-Rotating, Spring Extend (T)** (mm)

| Auto switch model | Bore size | A | B dimension | | | | |
|------------------------------------|-----------|------|---------------------|-------------------------|--------------------------|--------------------------|--------------------------|
| | | | to 15 st | 51 to 100 st | 101 to 150 st | 151 to 200 st | 201 to 250 st |
| D-A9□(V) | 20 | 6.5 | 30.5 | 55.5 | 80.5 | — | — |
| | 25 | 6.5 | 30.5 | 55.5 | 80.5 | — | — |
| | 32 | 7.5 | 31.5 | 56.5 | 81.5 | 106.5 | — |
| | 40 | 13.5 | 36.5 | 61.5 | 86.5 | 111.5 | 136.5 |
| D-M9□(V) D-M9□W(V) D-M9□A(V) | 20 | 10.5 | 34.5 | 59.5 | 84.5 | — | — |
| | 25 | 10.5 | 34.5 | 59.5 | 84.5 | — | — |
| | 32 | 11.5 | 35.5 | 60.5 | 85.5 | 110.5 | — |
| | 40 | 17.5 | 40.5 | 65.5 | 90.5 | 115.5 | 140.5 |
| D-B5□ D-B64 | 20 | 1 | 25 | 50 | 75 | — | — |
| | 25 | 1 | 25 | 50 | 75 | — | — |
| | 32 | 2 | 26 | 51 | 76 | 101 | — |
| D-C7□ D-C80 D-C73C D-C80C | 40 | 7 | 31 | 56 | 81 | 106 | 131 |
| | 20 | 7 | 31 | 56 | 81 | — | — |
| | 25 | 7 | 31 | 56 | 81 | — | — |
| | 32 | 8 | 32 | 57 | 82 | 107 | — |
| D-B59W | 40 | 13 | 37 | 62 | 87 | 112 | 137 |
| | 20 | 4 | 28 | 53 | 78 | — | — |
| | 25 | 4 | 28 | 53 | 78 | — | — |
| | 32 | 5 | 29 | 54 | 79 | 104 | — |
| D-H7□ D-H7C D-H7□W D-H7NF | 40 | 10 | 34 | 59 | 84 | 109 | 134 |
| | 20 | 6 | 30 | 55 | 80 | — | — |
| | 25 | 6 | 30 | 55 | 80 | — | — |
| | 32 | 7 | 31 | 56 | 81 | 106 | — |
| D-G5NT | 40 | 12 | 36 | 61 | 86 | 111 | 136 |
| | 20 | 2.5 | 26.5 | 51.5 | 76.5 | — | — |
| | 25 | 2.5 | 26.5 | 51.5 | 76.5 | — | — |
| | 32 | 3.5 | 27.5 | 52.5 | 77.5 | 102.5 | — |
| | 40 | 8.5 | 32.5 | 57.5 | 81.5 | 107.5 | 132.5 |

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

- CVQ
- CVQM
- CVJ□
- CVM□
- CV3
- CVS1
- MVGQ

- D-□
- X□

Auto Switch Mounting 2

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Auto Switch Mounting Height

(mm)

| Auto switch model Bore size (mm) | D-A9□(V) D-M9□(V) D-M9□W(V) D-M9□A(V) | D-B5□ D-B64 D-B59W D-G5NT D-H7C | D-C7□ D-C80 D-H7□ D-H7□W D-H7NF | D-C73C D-C80C |
|-------------------------------------|--|---|---|------------------|
| | Hs | Hs | Hs | Hs |
| 20 | 23 | 25.5 | 22.5 | 25 |
| 25 | 25.5 | 28 | 25 | 27.5 |
| 32 | 29 | 31.5 | 28.5 | 31 |
| 40 | 33 | 35.5 | 32.5 | 35 |

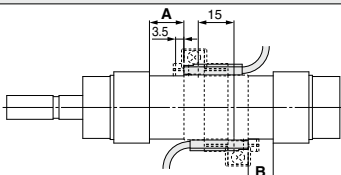
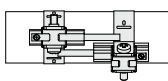
Minimum Auto Switch Mounting Stroke

n: No. of auto switches (mm)

| Auto switch model | No. of auto switch mounted | | | | |
|---------------------------|----------------------------|--------------------------|--------------------------|---|---|
| | 1 | 2 | | n | |
| | | Different surfaces | Same surface | Different surfaces | Same surface |
| D-A9□ D-M9□ D-M9□W | 10 | 15 <small>Note 1</small> | 45 <small>Note 1</small> | $15 + 45 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...)</small> <small>Note2</small> | $45 + 45 (n-2)$ <small>(n = 2, 3, 4, 5...)</small> |
| D-M9□V | 5 | 20 | 35 | $20 + 35 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...)</small> <small>Note2</small> | $35 + 35 (n-2)$ <small>(n = 2, 3, 4, 5...)</small> |
| D-A9□V | 5 | 15 | 25 | $15 + 35 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...)</small> <small>Note2</small> | $25 + 35 (n-2)$ <small>(n = 2, 3, 4, 5...)</small> |
| D-M9□WV D-M9□AV | 10 | 20 | 35 | $20 + 35 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...)</small> <small>Note2</small> | $35 + 35 (n-2)$ <small>(n = 2, 3, 4, 5...)</small> |
| D-C7□ D-C80 | 10 | 15 | 50 | $15 + 45 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...)</small> <small>Note2</small> | $50 + 45 (n-2)$ <small>(n = 2, 3, 4, 5...)</small> |
| D-H7□ D-H7□W D-H7NF | 10 | 15 | 60 | $15 + 45 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...)</small> <small>Note2</small> | $60 + 45 (n-2)$ <small>(n = 2, 3, 4, 5...)</small> |
| D-C73C D-C80C D-H7C | 10 | 15 | 65 | $15 + 50 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...)</small> <small>Note2</small> | $65 + 50 (n-2)$ <small>(n = 2, 3, 4, 5...)</small> |
| D-B5□/B64 D-G5NT | 10 | 15 | 75 | $15 + 50 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...)</small> <small>Note2</small> | $75 + 55 (n-2)$ <small>(n = 2, 3, 4, 5...)</small> |
| D-B59W | 15 | 20 | 75 | $20 + 50 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...)</small> <small>Note2</small> | $75 + 55 (n-2)$ <small>(n = 2, 3, 4, 5...)</small> |

Note 2) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.

Note 1) Auto switch mounting (The adjustment as shown in the figures below is required with the following stroke ranges.)

| Auto switch model | With 2 auto switches | |
|-------------------|---|---|
| | Different surfaces <small>Note 1</small> | Same surface <small>Note 1</small> |
| |  <p>The proper auto switch mounting position is 6 mm inward from the switch holder edge.</p> |  <p>The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.</p> |
| D-A93 | — | 45 to less than 50 stroke |
| D-M9□ D-M9□W | 15 to less than 20 stroke | 45 to less than 55 stroke |

Operating Range

| Auto switch model | Bore size (mm) | | | |
|-------------------------------|----------------|-----|-----|----|
| | 20 | 25 | 32 | 40 |
| D-A9□(V) | 6 | 6 | 6 | 6 |
| D-M9□(V)/M9□W(V) D-M9□A(V) | 3.5 | 3 | 3.5 | 3 |
| D-C7□/C80 D-C73C/C80C | 7 | 8 | 8 | 8 |
| D-B5□/B64 | 8 | 8 | 9 | 9 |
| D-B59W | 12 | 12 | 13 | 13 |
| D-H7□/H7□W D-G5NT/H7NF | 4 | 4 | 4.5 | 5 |
| D-H7C | 7 | 8.5 | 9 | 10 |

* Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately ±30% dispersion).

It may vary substantially depending on an ambient environment.

Auto Switch Mounting Bracket: Part No.

| Auto switch mounting | Bore size (mm) | | | |
|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | ø20 | ø25 | ø32 | ø40 |
| D-M9□(V) D-M9□W(V) D-A9□(V) | BM5-020 <small>Note 1)</small> | BM5-025 <small>Note 1)</small> | BM5-032 <small>Note 1)</small> | BM5-040 <small>Note 1)</small> |
| D-M9□A(V) | BM5-020S <small>Note 2)</small> | BM5-025S <small>Note 2)</small> | BM5-032S <small>Note 2)</small> | BM5-040S <small>Note 2)</small> |
| D-H7□ D-B59W D-H7NF D-C7□/C80 D-C73C/C80C | BM2-020A | BM2-025A | BM2-032A | BM2-040A |
| D-B5□/B64 D-B59W D-G5NT D-G5NB | BA2-020 | BA2-025 | BA2-032 | BA2-040 |

Note 1) Set part number which includes the auto switch mounting band (BM2-□□□A) and the holder kit (BJ5-1/ Switch bracket: Transparent).

Since the switch bracket (made from nylon) are affected in an environment where alcohol, chloroform, methylamines, hydrochloric acid or sulfuric acid is splashed over, so it cannot be used. Please consult SMC regarding other chemicals.

Note 2) Set part number which includes the auto switch mounting band (BM2-□□□AS/tainless steel screw) and the holder kit (BJ4-1/Switch bracket: White).

Note 3) For the D-M9□A (V) type auto switch, do not install the switch bracket on the indicator light.

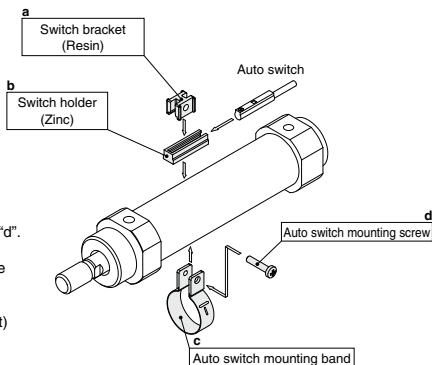
[Mounting screw set made of stainless steel]

The following set of mounting screws made of stainless steel is available. Use it in accordance with the operating environment. (Please order the auto switch mounting bracket separately, since it is not included.)

BBA4: For D-C7/C8/H7 types

Note 4) Refer to page 1990 for the details of BBA4.

- (1) BJ□-1 is a set of "a" and "b".
 - (2) BM2-□□□A (S) is a set of "c" and "d".
- Band (c) is mounted so that the projected part is on the internal side (contact side with the tube).
 BJ4-1 (Switch bracket: White)
 BJ5-1 (Switch bracket: Transparent)



Besides the models listed in How to Order, the following auto switches are applicable.
 Refer to pages 1893 to 2007 for detailed specifications.

| Auto switch type | Part no. | Electrical entry (Fetching direction) | Features |
|------------------|--------------------|---------------------------------------|---------------------------------|
| Reed | D-B53, C73, C76 | Grommet (In-let) | — |
| | D-C80 | | Without indicator light |
| Solid state | D-H7A1, H7A2, H7B | | — |
| | D-H7NW, H7PW, H7BW | | Diagnostic indication (2-color) |
| | D-G5NT | With timer | |

* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1960 and 1961 for details.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H types) are also available. Refer to page 1911 for details.

* Wide range detection type, solid state auto switches (D-G5NB type) are also available. Refer to page 1953 for details.

CVQ

CVQM

CVJ□

CVM□

CV3

CVS1

MVGQ

D-□

-X□