Micro Mechanical Valve
VM1000 Series

Miniature structure requires little mounting space.
Built-in hose nipple connection.
Piping options:
Side piping, Bottom piping
Over Travel after actuation (mechanical operated types)

Standard Specifications

<table>
<thead>
<tr>
<th>Valve type</th>
<th>Number of ports</th>
<th>Piping</th>
<th>Fluid</th>
<th>Operating pressure</th>
<th>Ambient and fluid temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 or 3</td>
<td>Side or bottom ported</td>
<td>Air</td>
<td>0 to 0.8 MPa</td>
<td>–5 to 60°C (No freezing)</td>
</tr>
</tbody>
</table>

Flow rate characteristics

<table>
<thead>
<tr>
<th>Fitting</th>
<th>Valve type</th>
<th>Number of ports</th>
<th>Piping</th>
<th>Fluid</th>
<th>Operating pressure</th>
<th>Ambient and fluid temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2 or 3</td>
<td>Side or bottom ported</td>
<td>Air</td>
<td>0 to 0.8 MPa</td>
<td>–5 to 60°C (No freezing)</td>
</tr>
</tbody>
</table>

Over Travel after actuation (mechanical operated types)

<table>
<thead>
<tr>
<th>Model</th>
<th>Actuator</th>
<th>Piping</th>
<th>Number of ports</th>
<th>Applicable tubing</th>
<th>Note</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic</td>
<td>Side ported</td>
<td>3 port</td>
<td>VM1000-4N-00</td>
<td>---</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bottom ported</td>
<td>2 port</td>
<td>VM1100-4N-00</td>
<td>---</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Roller lever</td>
<td>Side ported</td>
<td>3 port</td>
<td>VM1000-4N-01</td>
<td>---</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bottom ported</td>
<td>2 port</td>
<td>VM1100-4N-01</td>
<td>---</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td>Side ported</td>
<td>3 port</td>
<td>VM1000-4N-02</td>
<td>---</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bottom ported</td>
<td>2 port</td>
<td>VM1100-4N-02</td>
<td>---</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Toggle lever</td>
<td>Side ported</td>
<td>3 port</td>
<td>VM1000-4N-08</td>
<td>---</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bottom ported</td>
<td>2 port</td>
<td>VM1100-4N-08</td>
<td>---</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Manual operation</td>
<td>Side ported</td>
<td>3 port</td>
<td>VM1000-4N-32R</td>
<td>---</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bottom ported</td>
<td>3 port</td>
<td>VM1100-4N-32R</td>
<td>---</td>
<td>31</td>
</tr>
</tbody>
</table>

Note) To replace the push button and push button cover alone, refer to page 1656. Other parts and actuator cannot be replaced.
How to Order

VM1 0 0 0 - 4N - 00

Actuator type*1
- 00 Basic
- 01 Roller lever
- 02 One way roller lever
- 08 Toggle lever
- 32 Push button

Color of push button*1
- R Red
- G Green
- B Black

Applicable tubing (Material/Size)
- 4N Nylon ø4/2.5 (T0425)
- 4NU Soft Nylon ø4/2.5 (TS0425)
- Polyurethane ø4/2.5 (TU0425)

Total travel/Basic (T.T.)
- 0 4.8 mm
- 1 2.5 mm (Option)*1

Number of ports
- 0 3 port
- 1 2 port

Piping
- 0 Side ported
- 1 Bottom ported

Construction

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>PBT</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Valve</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Valve</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Retainer</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Valve return spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Lever return spring</td>
<td>Stainless steel</td>
<td>T.T. = 2.5 mm only, with threads</td>
</tr>
<tr>
<td>7</td>
<td>Plunger</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Lever</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Packing</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>O-ring</td>
<td>NBR</td>
<td></td>
</tr>
</tbody>
</table>

For details on the color variations for the actuator with push button, refer to Model on page 1582.

VM VMG VR VR51 VHK VH VHS
Micro Mechanical Valve VM1000 Series

VM1000 Series/Bottom Ported

Basic
VM1010-4N-00
VM1010-4NU-00
VM1110-4N-00
VM1110-4NU-00

Roller lever
VM1010-4N-01
VM1010-4NU-01
VM1110-4N-01
VM1110-4NU-01

One way roller lever
VM1010-4N-02
VM1010-4NU-02
VM1110-4N-02
VM1110-4NU-02

Toggle lever
M1010-4N-08
VM1010-4NU-08
VM1110-4N-08
VM1110-4NU-08

Push button
VM1010-4N-32
VM1010-4NU-32
VM1110-4N-32
VM1110-4NU-32

Applicable tubing

<table>
<thead>
<tr>
<th>Bottom ported</th>
<th>3 port</th>
<th>2 port</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM1010-4N-00</td>
<td>VM1010-4NU-00</td>
<td></td>
</tr>
<tr>
<td>VM1110-4N-00</td>
<td>VM1110-4NU-00</td>
<td></td>
</tr>
</tbody>
</table>

Applicable tubing

<table>
<thead>
<tr>
<th>Bottom ported</th>
<th>3 port</th>
<th>2 port</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM1010-4N-01</td>
<td>VM1010-4NU-01</td>
<td></td>
</tr>
<tr>
<td>VM1110-4N-01</td>
<td>VM1110-4NU-01</td>
<td></td>
</tr>
</tbody>
</table>

Applicable tubing

<table>
<thead>
<tr>
<th>Bottom ported</th>
<th>3 port</th>
<th>2 port</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM1010-4N-02</td>
<td>VM1010-4NU-02</td>
<td></td>
</tr>
<tr>
<td>VM1110-4N-02</td>
<td>VM1110-4NU-02</td>
<td></td>
</tr>
</tbody>
</table>

Applicable tubing

<table>
<thead>
<tr>
<th>Bottom ported</th>
<th>3 port</th>
<th>2 port</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM1010-4N-08</td>
<td>VM1010-4NU-08</td>
<td></td>
</tr>
<tr>
<td>VM1110-4N-08</td>
<td>VM1110-4NU-08</td>
<td></td>
</tr>
</tbody>
</table>

Applicable tubing

<table>
<thead>
<tr>
<th>Bottom ported</th>
<th>3 port</th>
<th>2 port</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM1010-4N-32</td>
<td>VM1010-4NU-32</td>
<td></td>
</tr>
<tr>
<td>VM1110-4N-32</td>
<td>VM1110-4NU-32</td>
<td></td>
</tr>
</tbody>
</table>

Micro Mechanical Valve VM1000 Series
2/3 Port Mechanical Valve
VM100/200 Series

Lightweight
VM100 60 g* (Current model: 95 g)
VM200 90 g* (Current model: 111 g)
* Side ported, basic type

Mounting interchangeable with the current model

Available in vacuum applications (VM100)
−100 kPa to 1 MPa
(VM200: 0 to 1 MPa)

Piping direction
Bracket mounting and bottom mounting are newly added.

Mounting
Bracket mounting
Bottom mounting (Side ported only)

Side ported
Bottom ported (VM100 only)

With miniature indicator
Possible to check if air is output to the secondary port.

* VM100/Bottom ported only
## Actuator Variations

*It is possible to change the actuator assembly and mount to basic type.

### Mechanical Operation

<table>
<thead>
<tr>
<th>Actuator Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roller lever</td>
<td></td>
</tr>
<tr>
<td>One way roller lever</td>
<td></td>
</tr>
<tr>
<td>Note)</td>
<td>If operated (by cam or dog) in the opposite direction, the valve will not be opened.</td>
</tr>
<tr>
<td>Straight plunger</td>
<td></td>
</tr>
<tr>
<td>Roller plunger</td>
<td></td>
</tr>
<tr>
<td>Cross roller plunger</td>
<td></td>
</tr>
</tbody>
</table>

### Manual Operation

<table>
<thead>
<tr>
<th>Actuator Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toggle lever</td>
<td></td>
</tr>
<tr>
<td>Push button (Mushroom)</td>
<td>Color: Red, Black, Green, Yellow</td>
</tr>
<tr>
<td>Push button (Extended)</td>
<td>Color: Red, Black, Green, Yellow</td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>Color: Red, Black, Green, Yellow</td>
</tr>
<tr>
<td>Twist selector (2 position)</td>
<td>Color: Red, Black, Green, Yellow</td>
</tr>
<tr>
<td>Key selector (2 position)</td>
<td></td>
</tr>
<tr>
<td>Foot pedal (VM200 only)</td>
<td>4 colors available for buttons</td>
</tr>
</tbody>
</table>

VM
VMG
VR
VR51
VHK
VH
VHS

Note: 1587
# 2/3 Port Mechanical Valve

**VM100 Series**

## Specifications

### Piping
- **Side ported**: Bottom ported

### Fluid
- **Air**

### Operating pressure range
- −100 kPa to 1 MPa

### Ambient and fluid temperature
- −5 to 60°C (No freezing)

### Flow rate characteristics
- \[ \frac{C}{[\text{dm}^3/(s \cdot \text{bar})]} = \begin{cases} 0.6 & (P) \\ 0.5 & (A) \end{cases} \]

### Lubrication
- **Note 1)** Not required

### Port size
- 1/8 (Rc, NPT, G) M5

### Weight (Basic)
- 60 g 67 g

### Bracket part number
- **Note 2)** VM1-B

---

## Model

### Piping direction
- **Side ported**, **Bottom ported**

### Body option
- **Standard**, **With bottom mounting thread**

### Number of ports
- 2 port 3 port 2 port 3 port 2 port 3 port

### Actuator part number
- VM120-01-00A VM130-01-00A VM120U-01-00A VM130U-01-00A VM122-M5-00A VM132-M5-00A

### Additional weight
- 11 g 15 g 15 g 15 g

### Mechanical operation
- **Basic**, **Roller lever**, **One way roller lever**, **Straight plunger**, **Roller plunger**, **Cross roller plunger**, **Toggle lever**, **Push button (Mushroom)**, **Push button (Extended)**, **Push button (Flush)**, **Twist selector (2 position)**, **Key selector (2 position)**, **Twist selector (3 position)**

### Note 1)** It is possible to change the actuator assembly and mount to basic type when an actuator part number is specified in the column.

### Note 2)** For push button (mushroom), push button (flush), push button (extended) and individual fastening ring, refer to page 1612.

### Note 3)** The handle of the selector (2 position and 3 position) cannot be removed or replaced alone.

### Note 4)** Color of plunger: Gray (2 port), White (3 port)

---

![Image](http://example.com/image.png)

## Notes

1. Use turbine oil Class 1 ISO VG32, if lubricated.
2. The bracket can only be used for side mounting of side ported type.
# How to Order

## VM100 Series

### VM1 3 1 01 01 A

- **Number of ports**
  - 2: 2 port
  - 3: 3 port
  - 5: 5 port (Twist selector 3 position only)

- **Piping direction and the height of plunger**
  - 0: Side ported Long
  - 1: Side ported Short
  - 2: Bottom ported Long
  - 3: Bottom ported Short

- **Body option**
  - Nil: Side mounting
  - U: With bottom mounting thread

- **Port size**
  - 01: Rc1/8
  - N01: NPT1/8
  - F01: G1/8
  - M5: M5 x 0.8

- **Suffix for actuator**
  - *: Hard steel roller
  - R: Red
  - B: Black
  - G: Green
  - Y: Yellow

- **Suffix for indicator**
  - Nil: None
  - Z: With miniature indicator

- **Actuator type**
  - 00: Basic
  - 01: Roller lever
  - 02: One way roller lever
  - 05: Straight plunger
  - 06: Roller plunger
  - 07: Cross roller plunger
  - 08: Toggle lever
  - 30: Push button (Mushroom)
  - 32: Push button (Extended)
  - 33: Push button (Flush)
  - 34: Twist selector (2 position)
  - 35: Twist selector (3 position)

- **Bracket option**
  - Nil: None
  - B: With bracket

### Made to Order (Pages1608, 1609)
- X207: Alternate type, Mushroom push button
- X219: Push-lock turn-reset type, Mushroom push button

Note) Applicable only to push button (mushroom)

### Bracket
- Note) Applicable only to side ported, side mounting type.
- Bracket is shipped together, but not assembled.

### Suffix for actuator
- Refer to the table on page 1588 for combinations of actuator type and suffix.

## Construction

### Side ported
- **Non-actuated**
- **Actuated**

### Bottom ported
- **Non-actuated**
- **Actuated**

## Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Valve</td>
<td>ZDC</td>
<td>White coated</td>
</tr>
<tr>
<td>2</td>
<td>Plunger</td>
<td>Polyacetal</td>
<td>2 port Gray</td>
</tr>
<tr>
<td>3</td>
<td>Valve sheet</td>
<td>PBT</td>
<td>White</td>
</tr>
<tr>
<td>4</td>
<td>Valve</td>
<td>NBR</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Plunger retainer</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Spring</td>
<td>Spring steel</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Hexagon socket head taper plug</td>
<td>Rolled steel</td>
<td></td>
</tr>
</tbody>
</table>
VM100 Series

VM100 Series/Side Ported

Basic
VM120-01-00A
VM130-01-00A
VM121-01-00A
VM131-01-00A

Roller lever
VM121-01-01A
VM131-01-01A
VM121-01-01SA
VM131-01-01SA

One way roller lever
VM121-01-02A
VM131-01-02A
VM121-01-02SA
VM131-01-02SA

Straight plunger
VM120-01-05A
VM130-01-05A

---

Model | L | A |
---|---|---|
VM120-01-00A | 32.5 | 7.5 |
VM130-01-00A | 28.5 | 3.5 |
VM121-01-00A | 28.5 | 3.5 |
VM131-01-00A | 28.5 | 3.5 |

Symbol
2 port
3 port

---

Model | L | A |
---|---|---|
VM120-01-00A | 32.5 | 7.5 |
VM130-01-00A | 28.5 | 3.5 |
VM121-01-00A | 28.5 | 3.5 |
VM131-01-00A | 28.5 | 3.5 |

Symbol
2 port
3 port

---

VM100 Series/Side Ported

Basic
VM120-01-00A
VM130-01-00A
VM121-01-00A
VM131-01-00A

Roller lever
VM121-01-01A
VM131-01-01A
VM121-01-01SA
VM131-01-01SA

One way roller lever
VM121-01-02A
VM131-01-02A
VM121-01-02SA
VM131-01-02SA

Straight plunger
VM120-01-05A
VM130-01-05A

---

Model | L | A |
---|---|---|
VM120-01-00A | 32.5 | 7.5 |
VM130-01-00A | 28.5 | 3.5 |
VM121-01-00A | 28.5 | 3.5 |
VM131-01-00A | 28.5 | 3.5 |

Symbol
2 port
3 port

---

Model | L | A |
---|---|---|
VM120-01-00A | 32.5 | 7.5 |
VM130-01-00A | 28.5 | 3.5 |
VM121-01-00A | 28.5 | 3.5 |
VM131-01-00A | 28.5 | 3.5 |

Symbol
2 port
3 port

---

Model | L | A |
---|---|---|
VM120-01-00A | 32.5 | 7.5 |
VM130-01-00A | 28.5 | 3.5 |
VM121-01-00A | 28.5 | 3.5 |
VM131-01-00A | 28.5 | 3.5 |

Symbol
2 port
3 port
**VM100 Series/Side Ported**

Roller plunger
VM120-01-06A
VM130-01-06A
VM120-01-06SA
VM130-01-06SA

Cross roller plunger
VM120-01-07A
VM130-01-07A
VM120-01-07SA
VM130-01-07SA

Toggle lever
VM120-01-08A
VM130-01-08A

Push button (Mushroom)
VM120-01-30 (R, B, G, Y) A
VM130-01-30 (R, B, G, Y) A

---

* 0.5 MPa supply

F.O.F.*
29 N
P.T.
2 mm
O.T.
1.5 mm
T.T.
3.5 mm

---

F.O.F.*
27 N
T.T.
6.5 mm
VM100 Series

VM100 Series/Side Ported

**Push button (Extended)**
VM120-01-32 (R, B, G, Y) A
VM130-01-32 (R, B, G, Y) A

**Push button (Flush)**
VM120-01-33A
VM130-01-33A

**Twist selector (2 position)**
VM120-01-34 (R, B, G, Y) A
VM130-01-34 (R, B, G, Y) A

---

**Panel mounting hole**

* 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F. *</th>
<th>27 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.T.</td>
<td>6.5 mm</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Symbol 2 port</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A)</td>
</tr>
<tr>
<td>(P)</td>
</tr>
</tbody>
</table>

---

* 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F. *</th>
<th>15 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.T.</td>
<td>90°</td>
</tr>
</tbody>
</table>

---

* O.F. O. F.

---

Push button (Extended)
VM120-01-32 (R, B, G, Y) A
VM130-01-32 (R, B, G, Y) A

Panel mounting hole

Symbol 2 port
(3 port only)

Panel mounting hole

Symbol 2 port
(3 port only)

Panel mounting hole

Symbol 2 port
(3 port only)
VM100 Series/Side Ported

Key selector (2 position)
VM120-01-36A
VM130-01-36A

Twist selector (3 position)
VM131-01-35 (R, B, G, Y) A
VM151-01-35 (R, B, G, Y) A

Key can be removed at the “on” and “off” positions.
One spare key is included.

Panel mounting hole

Symbol
2 port
3 port
5 port

Panel mounting hole

* 0.5 MPa supply
F.O.F.* | 15 N
T.T. | 90°

F.O.F.* | 20 N
T.T. | 45°
**VM100 Series**

**VM100 Series/Side Ported**

**With bracket**
- VM120-01-□A-B
- VM130-01-□A-B
- VM121-01-□A-B
- VM131-01-□A-B

**With bottom mounting thread**
- VM120U-01-□A
- VM130U-01-□A
- VM121U-01-□A
- VM131U-01-□A

---

**VM1-B**

<table>
<thead>
<tr>
<th>Component parts</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket</td>
<td>1</td>
</tr>
<tr>
<td>Hexagon socket head cap screw M4 x 25</td>
<td>2</td>
</tr>
<tr>
<td>Hexagon nut M4</td>
<td>2</td>
</tr>
</tbody>
</table>

For mounting bolt, a hexagon socket head cap screw is recommended.

---

**VM100 Series**

**With bottom mounting thread**
- VM120U-01-□A
- VM130U-01-□A
- VM121U-01-□A
- VM131U-01-□A

---

**VM131U-01-35□A**

**VM151U-01-35□A**
### VM100 Series/Bottom Ported

#### Basic
- VM122-M5-00A
- VM132-M5-00A
- VM123-M5-00A
- VM133-M5-00A

#### Roller lever
- VM123-M5-01A
- VM133-M5-01A
- VM123-M5-01SA
- VM133-M5-01SA

#### One way roller lever
- VM123-M5-02A
- VM133-M5-02A
- VM123-M5-02SA
- VM133-M5-02SA

---

<table>
<thead>
<tr>
<th>Model</th>
<th>L</th>
<th>A</th>
<th>F.O.F.*</th>
<th>P.T.</th>
<th>O.T.</th>
<th>T.T.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM122-M5-00A</td>
<td>32.5</td>
<td>7.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM132-M5-00A</td>
<td>28.5</td>
<td>3.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM123-M5-00A</td>
<td></td>
<td></td>
<td>+ 0.5 MPa supply</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM133-M5-00A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Symbol**

- 2 port
- 3 port
- With miniature indicator

---

**With miniature indicator**

- Pneumatic indicator

---

**Actuator mounting hole**

- 2 x M3 x 0.5

---

**One way roller lever**

- Polyacetal or hard steel roller

---

**One way roller lever**

- Polyacetal or hard steel roller

---

**Actuator mounting hole**

- 2 x M5 x 0.8 depth 4
VM100 Series/Bottom Ported

**Straight plunger**
VM122-M5-05A
VM132-M5-05A

**Roller plunger**
VM122-M5-06A
VM132-M5-06A
VM122-M5-06SA
VM132-M5-06SA

**Cross roller plunger**
VM122-M5-07A
VM132-M5-07A
VM122-M5-07SA
VM132-M5-07SA

---

**Panel mounting hole**

**Symbol**
2 port
3 port

---

**+ 0.5 MPa supply**

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>29 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>2 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>3.5 mm</td>
</tr>
</tbody>
</table>

---

**Panel mounting hole**

**Symbol**
2 port
3 port

---

**+ 0.5 MPa supply**

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>29 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>2 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>3.5 mm</td>
</tr>
</tbody>
</table>

---

**Panel mounting hole**

**Symbol**
2 port
3 port

---

**+ 0.5 MPa supply**

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>29 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>2 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>3.5 mm</td>
</tr>
</tbody>
</table>

---

**Panel mounting hole**

**Symbol**
2 port
3 port

---

**+ 0.5 MPa supply**

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>29 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>2 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>3.5 mm</td>
</tr>
</tbody>
</table>

---

**Panel mounting hole**

**Symbol**
2 port
3 port

---

**+ 0.5 MPa supply**

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>29 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>2 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>3.5 mm</td>
</tr>
</tbody>
</table>

---

**Panel mounting hole**

**Symbol**
2 port
3 port

---

**+ 0.5 MPa supply**

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>29 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>2 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>3.5 mm</td>
</tr>
</tbody>
</table>
VM100 Series Bottom Ported

Toggle lever
VM122-M5-08A
VM132-M5-08A

Push button (Mushroom)
VM122-M5-30 (R, B, G, Y) A
VM132-M5-30 (R, B, G, Y) A

Push button (Extended)
VM122-M5-32 (R, B, G, Y) A
VM132-M5-32 (R, B, G, Y) A
VM100 Series/Bottom Ported

Push button (Flush)
VM122-M5-33A
VM132-M5-33A

Twist selector (2 position)
VM122-M5-34 (R, B, G, Y) A
VM132-M5-34 (R, B, G, Y) A

Panel mounting hole

<table>
<thead>
<tr>
<th>Symbol</th>
<th>2 port</th>
<th>3 port</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>OFF</td>
<td>R port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3 port only)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel mounting hole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. 6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F.O.F.*</th>
<th>27 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.T.</td>
<td>6.5 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F.O.F.*</th>
<th>15 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.T.</td>
<td>90°</td>
</tr>
</tbody>
</table>

* 0.5 MPa supply

VM100 Series
2/3 Port Mechanical Valve VM100 Series

VM100 Series/Bottom Ported

Key selector (2 position)
VM122-M5-36A
VM132-M5-36A

Twist selector (3 position)
VM133-M5-35 (R, B, G, Y) A
VM153-M5-35 (R, B, G, Y) A

Key can be removed at the “on” and “off” positions. One spare key is included.

Panel mounting hole

Symbol

Panel mounting hole

Symbol

Panel mounting hole

Symbol

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>15 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.T.</td>
<td>90°</td>
</tr>
</tbody>
</table>

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>20 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.T.</td>
<td>45°</td>
</tr>
</tbody>
</table>
## Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating pressure range</strong></td>
<td>0 to 1 MPa</td>
</tr>
<tr>
<td><strong>Ambient and fluid temperature</strong></td>
<td>−5 to 60 °C (No freezing)</td>
</tr>
<tr>
<td><strong>Flow rate characteristics</strong></td>
<td>$C (\text{dm}^3/(s \cdot \text{bar}))$ 2 $A$, $b$, $Cv$</td>
</tr>
<tr>
<td></td>
<td>1 $A$</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

| Lubrication | Not required |
| **Port size** | 1/4 |
| **Weight (Basic)** | 90 g |
| **Bracket part number** | VM2-B |

### Note 1)
Use turbine oil Class 1 ISO VG32, if lubricated.

### Note 2)
The bracket can only be used for side mounting.

---

### Model

<table>
<thead>
<tr>
<th>Piping direction</th>
<th>Side ported</th>
<th>Actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body option</strong></td>
<td><strong>Standard</strong></td>
<td><strong>With bottom mounting thread</strong></td>
</tr>
<tr>
<td>Number of ports</td>
<td>2 port</td>
<td>3 port</td>
</tr>
<tr>
<td><strong>Basic</strong></td>
<td>VM220-02-00A</td>
<td>VM230-02-00A</td>
</tr>
<tr>
<td><strong>Roller lever</strong></td>
<td>Polyacetal roller</td>
<td>VM220-02-01A</td>
</tr>
<tr>
<td><strong>One way roller lever</strong></td>
<td>Polyacetal roller</td>
<td>VM220-02-02A</td>
</tr>
<tr>
<td><strong>Straight plunger</strong></td>
<td>Polyacetal roller</td>
<td>VM220-02-05A</td>
</tr>
<tr>
<td><strong>Roller plunger</strong></td>
<td>Polyacetal roller</td>
<td>VM220-02-06A</td>
</tr>
<tr>
<td><strong>Cross roller plunger</strong></td>
<td>Polyacetal roller</td>
<td>VM220-02-07A</td>
</tr>
<tr>
<td><strong>Toggle lever</strong></td>
<td>Polyacetal roller</td>
<td>VM220-02-08A</td>
</tr>
<tr>
<td><strong>Push button (Mushroom)</strong></td>
<td>Red</td>
<td>VM220-02-30RA</td>
</tr>
<tr>
<td><strong>Push button (Extended)</strong></td>
<td>Yellow</td>
<td>VM220-02-30YA</td>
</tr>
<tr>
<td><strong>Push button (Flush)</strong></td>
<td>With a set of red, black, green, yellow</td>
<td>VM220-02-33A</td>
</tr>
<tr>
<td><strong>Twist selector (2 position)</strong></td>
<td>Red</td>
<td>VM220-02-34RA</td>
</tr>
<tr>
<td><strong>Twist selector (3 position)</strong></td>
<td>Red</td>
<td>VM220-02-35RA</td>
</tr>
</tbody>
</table>

---

### Note 1)
It is possible to change the actuator assembly and mount to basic type when an actuator part number is specified in the column.

### Note 2)
For push button (mushroom), push button (flush), push button (extended) and individual fastening ring, refer to page 1612.

### Note 3)
The handle of the selector (2 position and 3 position) cannot be removed or replaced alone.

### Note 4)
Color of plunger: Gray (2 port), White (3 port)
How to Order

VM2 [ ] [ ] [ ] [ ] [ ]

- Number of ports
  - 2: 2 port
  - 3: 3 port
  - 5: 5 port (Twist selector 3 position only)

- Body option
  - Nil: Side mounting
  - U: With bottom mounting thread

- Actuator type
  - 00: Basic
  - 01: Roller lever
  - 02: One way roller lever
  - 05: Straight plunger
  - 06: Roller plunger
  - 07: Cross roller plunger
  - 08: Toggle lever
  - 30: Push button (Mushroom)
  - 32: Push button (Extended)
  - 33: Push button (Flush)
  - 34: Twist selector (2 position)
  - 35: Twist selector (3 position)
  - 36: Key selector (2 position)
  - 40: Foot pedal

- Suffix for actuator

- Port size
  - 02: R1/4
  - N02: NPT1/4
  - F02: G1/4

- Made to Order (Pages 1608, 1609)

- Bracket option
  - Nil: None
  - B: With bracket
  Note: Applicable only to side mounting type. However, not applicable to twist selector (3 position) and foot pedal. Bracket is shipped together, but not assembled.

- Suffix for actuator
  - S: Hard steel roller
  - R: Red
  - B: Black
  - G: Green
  - Y: Yellow
  Note: Applicable only to push button (mushroom)

- Non-actuated

- Actuated

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Valve</td>
<td>ADC</td>
<td>White coated</td>
</tr>
<tr>
<td>2</td>
<td>Plunger</td>
<td>Polyacetal</td>
<td>2 port</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 port</td>
</tr>
<tr>
<td>3</td>
<td>Plunger retainer</td>
<td>PBT</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cover</td>
<td>PBT</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Inner valve</td>
<td>NBR, Brass</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Spring</td>
<td>Spring steel</td>
<td></td>
</tr>
</tbody>
</table>
VM200 Series

Basic
VM220-02-00A
VM230-02-00A

Roller lever
VM220-02-01A
VM230-02-01A
VM220-02-01SA
VM230-02-01SA

One way roller lever
VM220-02-02A
VM230-02-02A
VM220-02-02SA
VM230-02-02SA

Symbol
2 port

<Diagram of VM200 Series>

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F°</th>
<th>52 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>3 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>2 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>5 mm</td>
</tr>
</tbody>
</table>

Symbol
3 port

<Diagram of VM200 Series>

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F°</th>
<th>24 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>6.5 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>4.5 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>11 mm</td>
</tr>
</tbody>
</table>

Symbol
2 port

<Diagram of VM200 Series>

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F°</th>
<th>22 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>7 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>5 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>12 mm</td>
</tr>
</tbody>
</table>
VM200 Series

Straight plunger
VM220-02-05A
VM230-02-05A

Roller plunger
VM220-02-06A
VM230-02-06A
VM220-02-06SA
VM230-02-06SA

Cross roller plunger
VM220-02-07A
VM230-02-07A
VM220-02-07SA
VM230-02-07SA

Panel mounting hole

Symbol

2 port

3 port

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th></th>
<th>F.O.F.</th>
<th>P.T.</th>
<th>O.T.</th>
<th>T.T.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight plunger</td>
<td>56 N</td>
<td>3.5 mm</td>
<td>2 mm</td>
<td>5.5 mm</td>
</tr>
<tr>
<td>Roller plunger</td>
<td>56 N</td>
<td>3.5 mm</td>
<td>2 mm</td>
<td>5.5 mm</td>
</tr>
<tr>
<td>Cross roller plunger</td>
<td>56 N</td>
<td>3.5 mm</td>
<td>2 mm</td>
<td>5.5 mm</td>
</tr>
</tbody>
</table>
VM200 Series

Toggle lever
VM220-02-08A
VM230-02-08A

Push button (Mushroom)
VM220-02-30 (R, B, G, Y) A
VM230-02-30 (R, B, G, Y) A

Push button (Extended)
VM220-02-32 (R, B, G, Y) A
VM230-02-32 (R, B, G, Y) A

Panel mounting hole

Symbol
2 port
3 port

Panel mounting hole

F.O.F.° 12 N
T.T. 60°

F.O.F.° 52 N
T.T. 6.5 mm

F.O.F.° 52 N
T.T. 6.5 mm
VM200 Series

Push button (Flush)
VM220-02-33A
VM230-02-33A

Twist selector (2 position)
VM220-02-34 (R, B, G, Y) A
VM230-02-34 (R, B, G, Y) A

Key selector (2 position)
VM220-02-36A
VM230-02-36A

Panel mounting hole

Symbol
2 port

Symbol
3 port

Key can be removed at the “on” and “off” positions.
One spare key is included.
VM200 Series

Twist selector (3 position)
VM230-02-35 (R, B, G, Y) A
VM250-02-35 (R, B, G, Y) A

Foot pedal
VM220-02-40A
VM230-02-40A

Panel mounting hole

Symbol
3 port

Symbol
2 port

* 0.5 MPa supply

F.O.F."  40 N
T.T.  45°

F.O.F."  65 N
T.T.  1.2°
VM200 Series

With bracket
VM220-02-□A-B
VM230-02-□A-B

With bottom mounting thread
VM220U-02-□A
VM230U-02-□A

Component parts

<table>
<thead>
<tr>
<th></th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket</td>
<td>1</td>
</tr>
<tr>
<td>Hexagon socket head cap screw M5 x 35</td>
<td>2</td>
</tr>
<tr>
<td>Hexagon nut M5</td>
<td>2</td>
</tr>
</tbody>
</table>

M5 x 35 Bracket mounting bolt

2 x ø5.4 mounting hole

* For mounting bolt, a hexagon socket head cap screw is recommended.

VM2-B

48.7
10.5
60
16.4

2 x M4
Bottom mounting thread

VM230U-02-35□A
VM250U-02-35□A

4 x M4 x 0.7
(Bottom mounting thread)

1.6
16.5

10.5
16.4

31
3.1

2/3 Port Mechanical Valve VM200 Series

VM
VMG
VR
VR51
VHK
VH
VHS
VM100/200 Series
Made to Order
Please contact SMC for detailed specifications, dimensions and lead times.

1 Alternate type, Mushroom push button

Alternate type: When pressing the push button, the valve actuates and its status is self-retained even after your hand has been released. Pressing the button again will restore the valve to its previous status.

VM120-01-30 (R, B, G, Y) A-X207
VM130-01-30 (R, B, G, Y) A-X207

VM220-02-30 (R, B, G, Y) A-X207
VM230-02-30 (R, B, G, Y) A-X207

Panel mounting hole

Symbol

2 port

Panel mounting hole

Symbol

3 port

* 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>T.T.</th>
</tr>
</thead>
<tbody>
<tr>
<td>27 N</td>
<td>6.7 mm</td>
</tr>
</tbody>
</table>

* 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>T.T.</th>
</tr>
</thead>
<tbody>
<tr>
<td>52 N</td>
<td>6.7 mm</td>
</tr>
</tbody>
</table>
2 Push-lock turn-reset type, Mushroom push button

Push-lock turn-reset type: When pressing the push button, it is locked in this status. Turning the button clockwise will reset it.

VM120-01-30 (R, B, G, Y) A-X219
VM130-01-30 (R, B, G, Y) A-X219

VM220-02-30 (R, B, G, Y) A-X219
VM230-02-30 (R, B, G, Y) A-X219
VM100/200 Series
Specific Product Precautions 1
Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 3 to 9 for 3/4/5 Port Solenoid Valve Precautions.

Definition of Symbol
The abbreviations F.O.F. / P.T. / O.T. / T.T. shown in this catalog are detailed below.

- **F.O.F. <Full Operating Force>**
  Required force to total travel position

- **P.T. <Pre-travel>**
  From free position to initial valve operating position

- **O.T. <Over Travel>**
  From initial valve operating position to total travel position

- **T.T. <Total Travel>**
  From free position to total travel position

⚠️ Warning
1. This product cannot be used for applications in which the pressure must be sealed.
   Since the VM100 and VM200 are poppet type valves, fluid flows backward when the pressure on port 2 (A) rises.
   Since the valves are subject to air leakage, they cannot be used for applications such as holding pressure (including vacuum).

2. Not suitable for use as an emergency shutoff valve
   This mechanical valve is not designed for safety applications such as an emergency shutoff valve. If the valves are used for the mentioned applications, additional safety measures should be adopted.

Mounting
⚠️ Warning
2. P.T. depends on pressure or differences between the individual product specifications. In order to ensure that the valve operates, keep the operating stroke value for the mechanical operation type within the range specified by the following formula.
   Operating stroke = (P.T. + 0.5 x O.T.) to (P.T. + O.T. – 0.1)

<table>
<thead>
<tr>
<th>Series</th>
<th>Actuator type</th>
<th>Operating stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM100</td>
<td>Basic</td>
<td>2.2 to 2.9</td>
</tr>
<tr>
<td></td>
<td>Roller lever</td>
<td>4.3 to 5.4</td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td>4.3 to 5.4</td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td>2.7 to 3.4</td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td>2.7 to 3.4</td>
</tr>
<tr>
<td></td>
<td>Cross roller plunger</td>
<td>2.7 to 3.4</td>
</tr>
<tr>
<td>VM200</td>
<td>Basic</td>
<td>4 to 4.9</td>
</tr>
<tr>
<td></td>
<td>Roller lever</td>
<td>8.7 to 10.9</td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td>9.5 to 11.9</td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td>4.5 to 5.4</td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td>4.5 to 5.4</td>
</tr>
<tr>
<td></td>
<td>Cross roller plunger</td>
<td>4.5 to 5.4</td>
</tr>
</tbody>
</table>

For straight and roller plunger types, there is a groove indicating P.T. and T.T. for stroke adjustment.

3. Do not make any alterations to the valve body, such as enlarging the body mounting holes.
   As doing so could lead to unexpected abnormal conditions such as air leakage.

Operation
⚠️ Warning
1. Operate the manual operation type mechanical valves (such as push button, twist selector and toggle lever types) with your finger.
   The use of equipment such as a cylinder, cam or hammer, can result in the actuator and the valve being damaged.
   Do not operate over the operation limit. If excessive operation force is applied over total travel position, actuator part can get deformed and lead to equipment malfunction.
**VM100/200 Series**
**Specific Product Precautions 2**

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 9 for 3/4/5 Port Solenoid Valve Precautions.

---

### Warning

2. When operating the mechanical operation type mechanical valves, select the angle and the maximum speed limit of cam and dog so that valves do not operate over the following maximum values. If operated over the maximum values, impact force from cam and dog will be applied to the actuator, leading to damage of the actuator or the valve itself.

<table>
<thead>
<tr>
<th>Cam and Dog Series</th>
<th>Actuator type</th>
<th>Angle limit of cam and dog</th>
<th>Max. speed limit of cam and dog (m/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM100</td>
<td>Roller lever</td>
<td>30°</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45°</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td>30°</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45°</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td>—</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td>30°</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Cross roller plunger</td>
<td>30°</td>
<td>0.3</td>
</tr>
<tr>
<td>VM200</td>
<td>Roller lever</td>
<td>30°</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45°</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td>30°</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45°</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td>—</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td>30°</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Cross roller plunger</td>
<td>30°</td>
<td>0.3</td>
</tr>
</tbody>
</table>

---

### Caution

1. If the operating condition is maintained for long periods of time, it may take some time for the valve to restart due to the adherence of the seals and there might be a delay for recovery.

---

### Air Supply

1. Operable fluid is either air or inert gas only. It cannot be used for corrosive gas and fluid.

### Caution

1. Grease is used for the inside of the valves. Grease may enter into the outlet port of the valve.

2. When using vacuum pressure for the VM100, supply vacuum pressure to P port.

---

### Operating Environment

1. Do not operate it in an area in which fluids such as oil, coolant, or water splash on it or dust comes in contact with it. Because it does not have a waterproof or dustproof construction, fluids or dust could enter the valve, leading to malfunction. Therefore, take measures such as providing a protective cover to prevent direct exposure.

2. Do not expose the product to direct sunlight for an extended period of time.

---

### Maintenance

1. Perform inspections on a regular basis as necessary, such as at the beginning of an operation, to make sure that the mechanical valve operates properly.

2. Do not disassemble, modify or repair the product. This may lead to malfunction of equipment, injury and equipment damage. Please contact SMC for repairs and maintenance of the product.

---

### Operation

3. Operate the roller lever type from the direction shown below.

In cases where the dog goes over the actuator, select the one way roller lever type or the roller plunger type.

---

### Cam and Dog Material

<table>
<thead>
<tr>
<th>Roller material</th>
<th>Cam and dog material</th>
<th>Surface finish of cam and dog</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polycetal</td>
<td>Steel</td>
<td>6.3 z or less</td>
</tr>
<tr>
<td>Hard steel</td>
<td>Steel, Resin</td>
<td>25 z or less</td>
</tr>
</tbody>
</table>

---

1611
How to Change the Buttons

⚠️ Caution

Replace the button in the following manner to change color of the button.

1. Push button (Flush type)
   - Installation —— Of the four colors, red, green, black, and yellow, select and align the protruding portion of the button with the recessed portion of the body and push in.
   - Removal —— Remove the fastening ring and insert the tip of a small flat head screwdriver into the groove of the button to pry it up.

2. Push button (Mushroom and Extended types)
   At the time of shipment, only 1 button of the color that you specified is attached to the body.

<table>
<thead>
<tr>
<th>Mushroom type</th>
<th>Extended type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Installation</td>
</tr>
<tr>
<td>Align the protruding portion of the button with the recessed portion of the body and push in. (Use the mark on the button as a reference to align the protruding part.)</td>
<td>Align the protruding portion of the button with the recessed portion of the body and push in.</td>
</tr>
<tr>
<td>Removal</td>
<td>Removal</td>
</tr>
</tbody>
</table>
| Placing your finger under the collar of the button on the side of the mark, tilt it upward. | Remove the fastening ring and insert the tip of a small flat head screwdriver into the groove of the button to pry it up.

Replacement Parts

1. Use the part numbers listed below to order individual mushroom, extended, or flush type buttons.

<table>
<thead>
<tr>
<th>Color</th>
<th>Mushroom type button</th>
<th>Extended type button</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>3402186R</td>
<td>3402187R</td>
</tr>
<tr>
<td>Black</td>
<td>3402186B</td>
<td>3402187B</td>
</tr>
<tr>
<td>Green</td>
<td>3402186G</td>
<td>3402187G</td>
</tr>
<tr>
<td>Yellow</td>
<td>3402186Y</td>
<td>3402187Y</td>
</tr>
</tbody>
</table>

2. Use the part number below to order individual fastening ring.

Fastening ring: 3402184
VM-X219 Series How to Mount Panel

[Task 1] Removing the push button and fastening ring
Remove them from the body turning them counterclockwise in the order of the push button and fastening ring.

[Task 2] Mounting the valve to the panel
Insert the valve to the panel and fix it with a fastening ring. Remove three spacers attached to the valve depending on the panel thickness.

[Task 3] Mounting the push button
Tighten the push button clockwise by hand and further tighten it until load is applied.

Note) When the push button is not tightened enough, the valve may not output correctly after operating the push button. In other cases, the valve outputs temporarily, but when it is in the holding state, the valve may stop outputting. In this situation, tighten the push button again.
Either N.C. or N.O. is available. Piping possible to any port.

Proper countermeasures can be taken for applications in which the noise of the exhaust could cause problems to the surroundings.

### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>–100 kPa to 1.0 MPa</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–5 to 60°C (No freezing)</td>
</tr>
<tr>
<td>Flow rate characteristics</td>
<td>C(dm³/(s·bar)) b Cv</td>
</tr>
<tr>
<td>1(NO)→2(OUT)</td>
<td>1.4 0.2 0.29</td>
</tr>
<tr>
<td>2(NO)→3(OUT)</td>
<td>1.4 0.15 0.29</td>
</tr>
</tbody>
</table>

| Lubrication          | Not required (Use turbine oil Class 1 ISO VG32, if lubricated) |
| Port size            | 1/8 |

### Model

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Model</th>
<th>Actuator part no.</th>
<th>Application</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>VM430-01-00</td>
<td>—</td>
<td>—</td>
<td>110</td>
</tr>
<tr>
<td>Roller lever</td>
<td>VM430-01-01</td>
<td>VM-01A</td>
<td>Polyacetal roller</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>VM430-01-01S</td>
<td>VM-01AS</td>
<td>Hard steel roller</td>
<td>150</td>
</tr>
<tr>
<td>One way roller lever</td>
<td>VM430-01-02</td>
<td>VM-02A</td>
<td>Polyacetal roller</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>VM430-01-02S</td>
<td>VM-02AS</td>
<td>Hard steel roller</td>
<td>160</td>
</tr>
<tr>
<td>Straight plunger</td>
<td>VM430-01-05</td>
<td>VM-05A</td>
<td>—</td>
<td>220</td>
</tr>
<tr>
<td>Roller plunger</td>
<td>VM430-01-06</td>
<td>VM-06A</td>
<td>Polyacetal roller</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>VM430-01-06S</td>
<td>VM-06AS</td>
<td>Hard steel roller</td>
<td>220</td>
</tr>
<tr>
<td>Cross roller plunger</td>
<td>VM430-01-07</td>
<td>VM-07A</td>
<td>Polyacetal roller</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>VM430-01-07S</td>
<td>VM-07AS</td>
<td>Hard steel roller</td>
<td>220</td>
</tr>
<tr>
<td>Toggle lever</td>
<td>VM430-01-08</td>
<td>VM-08A</td>
<td>—</td>
<td>200</td>
</tr>
<tr>
<td>Push button (Mushroom)</td>
<td>VM430-01-30R</td>
<td>VM-30AR</td>
<td>Red</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>VM430-01-30B</td>
<td>VM-30AB</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VM430-01-30G</td>
<td>VM-30AG</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VM430-01-30Y</td>
<td>VM-30AY</td>
<td>Yellow</td>
<td></td>
</tr>
<tr>
<td>Push button (Extended)</td>
<td>VM430-01-32R</td>
<td>VM-32AR</td>
<td>Red</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>VM430-01-32B</td>
<td>VM-32AB</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VM430-01-32G</td>
<td>VM-32AG</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VM430-01-32Y</td>
<td>VM-32AY</td>
<td>Yellow</td>
<td></td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>VM430-01-33</td>
<td>VM-33A</td>
<td>With a set of red, black, green, yellow</td>
<td>167</td>
</tr>
<tr>
<td>Twist selector (2 position)</td>
<td>VM430-01-34R</td>
<td>VM-34AR</td>
<td>Red</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>VM430-01-34B</td>
<td>VM-34AB</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VM430-01-34G</td>
<td>VM-34AG</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VM430-01-34Y</td>
<td>VM-34AY</td>
<td>Yellow</td>
<td></td>
</tr>
<tr>
<td>Key selector (2 position)</td>
<td>VM430-01-36</td>
<td>VM-36A</td>
<td>—</td>
<td>188</td>
</tr>
</tbody>
</table>

Note 1) Actuator replacement is available for all types.
Note 2) For push button (mushroom), push button (extended), push button (flush) and a single unit of fastening ring, refer to pages 1655 and 1656. The other parts are not replaceable.
Note 3) The handle of the selector (2 position) cannot be removed or replaced alone.
**Construction**

### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>ADC</td>
<td>Platinum silver</td>
</tr>
<tr>
<td>2</td>
<td>Plunger</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Upper lid</td>
<td>Brass</td>
<td>Black zinc chromated</td>
</tr>
<tr>
<td>4</td>
<td>Spool valve</td>
<td>Aluminum alloy, NBR</td>
<td>Rubber lined</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Over travel spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Retainer</td>
<td>Brass</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

**How to Order**

VM4 3 0 - 01 - 01 S

- **Port size**
  - 01: Rc 1/8
  - N01: NPT 1/4
  - F01: G 1/8

- **Number of ports**
  - 3: 3 port

- **Actuator type**
  - 00: Basic
  - 01: Roller lever
  - 02: One way roller lever
  - 05: Straight plunger
  - 06: Roller plunger
  - 07: Cross roller plunger
  - 08: Toggle lever
  - 30: Push button (Mushroom)
  - 32: Push button (Extended)
  - 33: Push button (Flush) (Note 1)
  - 34: Twist selector (2 position)
  - 36: Key selector (2 position)

- **Suffix for actuator**
  - S: Hard steel roller
  - R: Red
  - B: Black
  - G: Green
  - Y: Yellow

- **Force**
  - Alternate type, Mushroom push button
  - Push-lock turn-reset type, Mushroom push button

### Notes

- Made to Order
  (Refer to pages 1648 to 1651 for details.)

- Suffix for actuator
  - Refer to the table on page 1614 for combinations of actuator type and suffix.

Note 1) When selecting the flush type, it is not necessary to select the suffix for the actuator.
VM400 Series

Basic
VM430-01-00

Roller lever
VM430-01-01
VM430-01-01S

One way roller lever
VM430-01-02
VM430-01-02S

Straight plunger
VM430-01-05

Actuator mounting hole
4 x 4.5
mounting hole

ø17 polyacetal or hard steel roller

Hexagon nut thick 6,
across flats 27

2 x M20 x P1
Hexagon nut thick 6,
across flats 27

Panel mounting hole

Symbol

Actuator mounting hole
4 x 4.5
mounting hole

ø17 polyacetal or hard steel roller

Hexagon nut thick 6,
across flats 27

2 x M20 x P1
Hexagon nut thick 6,
across flats 27

Panel mounting hole

Symbol

VM400 Series

Basic
VM430-01-00

Roller lever
VM430-01-01
VM430-01-01S

One way roller lever
VM430-01-02
VM430-01-02S

Straight plunger
VM430-01-05

Actuator mounting hole
4 x 4.5
mounting hole

ø17 polyacetal or hard steel roller

Hexagon nut thick 6,
across flats 27

2 x M20 x P1
Hexagon nut thick 6,
across flats 27

Panel mounting hole

Symbol
**VM400 Series**

**Roller plunger**
VM430-01-06
VM430-01-06S

**Cross roller plunger**
VM430-01-07
VM430-01-07S

**Toggle lever**
VM430-01-08

**Push button (Mushroom)**
VM430-01-30R/B/G/Y

---

**Panel mounting hole**

**Symbol**

---

**F.O.F.** 30 N
**P.T.** 3.5 mm
**O.T.** 2.0 mm
**T.T.** 5.5 mm

---

**F.O.F.** 7 N
**T.T.** 60°

---

**F.O.F.** 26 N
**P.T.** 4.5 mm
**O.T.** 1.6 mm
**T.T.** 6.5 mm
VM400 Series

Push button (Extended)
VM430-01-32R/B/G/Y

Push button (Flush)
VM430-01-33

Twist selector (2 position)
VM430-01-34R/B/G/Y

Panel mounting hole

Symbol

<table>
<thead>
<tr>
<th>N.O.</th>
<th>OUT</th>
<th>N.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

Symbol

<table>
<thead>
<tr>
<th>Panel mounting hole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. 6</td>
</tr>
</tbody>
</table>

F.O.F. 26 N
P.T. 5.4 mm
O.T. 1.6 mm
T.T. 6.5 mm

F.O.F. 26 N
P.T. 4.9 mm
O.T. 1.6 mm
T.T. 6.5 mm

F.O.F. 20 N
T.T. 90°
3 Port Mechanical Valve VM400 Series

VM400 Series
Key selector (2 position)
VM430-01-36

Key can be removed at the “on” and “off” positions.

Panel mounting hole

Symbol

F.O.F. 20 N
T.T. 90°
3 Port Mechanical Valve: Heavy Duty Type

VM800 Series

Sturdy construction.
Either N.C. or N.O. is available.
Piping possible to any port.
Proper countermeasures can be taken for applications in which the noise of the exhaust could cause problems to the surroundings.

Many actuator positions and orientation options.

Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>–100 kPa to 1.0 MPa</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–5 to 60°C (No freezing)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow rate characteristics</th>
<th>C [dm³/(s·bar)]</th>
<th>b</th>
<th>Cv</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (NC) ↔ 2 (OUT)</td>
<td>1.4</td>
<td>0.2</td>
<td>0.29</td>
</tr>
<tr>
<td>2 (NO) ↔ 3 (OUT)</td>
<td>1.4</td>
<td>0.15</td>
<td>0.29</td>
</tr>
</tbody>
</table>

| Lubrication | Not required (Use turbine oil Class 1 ISO VG32, if lubricated.) |
| Port size   | 1/8 |

Model

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Model</th>
<th>Actuator part no.</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>VM830-01-00</td>
<td>VM-01F</td>
<td>180</td>
</tr>
<tr>
<td>Roller lever</td>
<td>VM830-01-01</td>
<td>VM-13F</td>
<td>280</td>
</tr>
<tr>
<td>Adjustable roller lever</td>
<td>VM830-01-13</td>
<td>VM-14F</td>
<td>300</td>
</tr>
<tr>
<td>Adjustable rod lever</td>
<td>VM830-01-14</td>
<td>VM-14F</td>
<td>276</td>
</tr>
</tbody>
</table>

How to Order

VM8 3 0 - 01 - 01

- Port size: 01 (Rc 1/8), N01 (NPT 1/8), F01 (G 1/8)
- Number of ports: 3 (3 port)
- Actuator type: 00 (Basic), 01 (Roller lever), 13 (Adjustable roller lever), 14 (Adjustable rod lever)

Application

- Movement is changeable.
- Roller can be mounted to inside of lever.
- Lever location can be changed.
- Head direction can be changed.
- Lever length adjustment.

- "Loosen the hexagon socket head cap screw to adjust through 360°."
### Construction

**Non-actuated**

- **Force**
- **Mounting holes**: 4 x M3.5 x 0.6
- **Actuator mounting hole**: 4 x M6 x 1
- **Thread depth**: 15

![Non-actuated Diagram]

**Actuated**

- **Force**

![Actuated Diagram]

### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>ADC</td>
<td>Platinum silver</td>
</tr>
<tr>
<td>2</td>
<td>Plunger</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Spool valve</td>
<td>Aluminum alloy, NBR</td>
<td>Rubber lined</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Over travel spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Retainer</td>
<td>Brass</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Spring</td>
<td>Steel</td>
<td>Zinc chromated</td>
</tr>
</tbody>
</table>

### VM800 Series

**Basic/VM830-01-00**

![VM800 Series Diagram]

**Symbol**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM</td>
<td></td>
</tr>
<tr>
<td>VMG</td>
<td></td>
</tr>
<tr>
<td>VR</td>
<td></td>
</tr>
<tr>
<td>VR51</td>
<td></td>
</tr>
<tr>
<td>VHK</td>
<td></td>
</tr>
<tr>
<td>VH</td>
<td></td>
</tr>
<tr>
<td>VHS</td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>23 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>1.0 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>2.0 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>3.0 mm</td>
</tr>
</tbody>
</table>
VM800 Series

Roller lever / VM830-01-01

Adjustable roller lever / VM830-01-13

Adjustable rod lever / VM830-01-14
5 Port Mechanical Valve
Metal Seal
VZM400 Series

Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>0.15 to 1.0 MPa (1)</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–5 to 60°C (No freezing)</td>
</tr>
<tr>
<td>Flow rate characteristics</td>
<td>C(dm³/(s·bar))</td>
</tr>
<tr>
<td></td>
<td>b</td>
</tr>
<tr>
<td>1(P)→2(B)/4(A)</td>
<td>2.0</td>
</tr>
<tr>
<td>2(B)/4(A)→4(EB)/5(EA)</td>
<td>1.7</td>
</tr>
<tr>
<td>Maximum frequency (Mechanical operation type)</td>
<td>300 c.p.m. or less</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required (Use turbine oil class ISO VG32, if lubricated.)</td>
</tr>
<tr>
<td>Port size</td>
<td>Main valve 0.1/0.8 Pilot valve (EXH)/MS x 0.8</td>
</tr>
<tr>
<td>Option</td>
<td>Foot bracket (2)</td>
</tr>
</tbody>
</table>

Note 1) External pilot type Main valve: 0 to 1.0 MPa
Note 2) The standard body cannot be retrofitted with a foot bracket.

Pilot type is selectable.
(Internal pilot and external pilot)

Compartment design,
large flow capacity,
High cycle rate,
long life/300 c.p.m. or less
Piping possible to any EXH port.
Proper countermeasures can be taken for applications in which the noise of the exhaust could cause problems to the surroundings.

Model

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Model</th>
<th>Actuator part no.</th>
<th>Application</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>VZM450-01-00</td>
<td>VM-01C</td>
<td>Polyacetal roller</td>
<td>120</td>
</tr>
<tr>
<td>Roller lever</td>
<td>VZM450-01-01</td>
<td>VM-01CS</td>
<td>Hard steel roller</td>
<td>160</td>
</tr>
<tr>
<td>One way roller lever</td>
<td>VZM450-01-02</td>
<td>VM-02C</td>
<td>Polyacetal roller</td>
<td>170</td>
</tr>
<tr>
<td>Straight plunger</td>
<td>VZM450-01-05</td>
<td>VM-05C</td>
<td></td>
<td>200</td>
</tr>
<tr>
<td>Roller plunger</td>
<td>VZM450-01-06</td>
<td>VM-06C</td>
<td>Polyacetal roller</td>
<td>200</td>
</tr>
<tr>
<td>Toggle lever</td>
<td>VZM450-01-08</td>
<td>VM-08C</td>
<td></td>
<td>190</td>
</tr>
<tr>
<td>Push button (Mushroom)</td>
<td>VZM450-01-30R</td>
<td>VM-30CR</td>
<td>Red</td>
<td>199</td>
</tr>
<tr>
<td>Push button (Extended)</td>
<td>VZM450-01-30B</td>
<td>VM-30CB</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>VZM450-01-30G</td>
<td>VM-30CG</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>VZM450-01-30Y</td>
<td>VM-30CY</td>
<td>Yellow</td>
<td></td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>VZM450-01-32R</td>
<td>VM-32CR</td>
<td>Red</td>
<td>192</td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>VZM450-01-32B</td>
<td>VM-32CB</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>VZM450-01-32G</td>
<td>VM-32CG</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>VZM450-01-32Y</td>
<td>VM-32CY</td>
<td>Yellow</td>
<td></td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>VZM450-01-33</td>
<td>VM-33C</td>
<td>with a set of red, black, green, yellow</td>
<td>197</td>
</tr>
<tr>
<td>Twist selector (2 position)</td>
<td>VZM450-01-34R</td>
<td>VM-34CR</td>
<td>Red</td>
<td>198</td>
</tr>
<tr>
<td>Twist selector (2 position)</td>
<td>VZM450-01-34B</td>
<td>VM-34CB</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>Twist selector (2 position)</td>
<td>VZM450-01-34G</td>
<td>VM-34CG</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td>Twist selector (2 position)</td>
<td>VZM450-01-34Y</td>
<td>VM-34CY</td>
<td>Yellow</td>
<td></td>
</tr>
<tr>
<td>Key selector (2 position)</td>
<td>VZM450-01-36</td>
<td>VM-36C</td>
<td></td>
<td>217</td>
</tr>
</tbody>
</table>

Note 1) Actuator replacement is available for all types.
Note 2) For push button (mushroom), push button (extended), push button (flush) and a single unit of fastening ring, refer to pages 1655 and 1656. The other parts are not replaceable.
Note 3) The handle of the selector (2 position) cannot be removed or replaced alone.
**VZM400 Series**

### How to Order

**VZM45**

- **Made to Order**
  - (Refer to pages 1648 to 1651 for details.)
  - **X207**: Alternate type, Mushroom push button
  - **X219**: Push-lock turn-reset type, Mushroom push button

- **Suffix for actuator**
  - **F**: Foot bracket (Only internal pilot)

- **Actuator type**
  - **S**: Hard steel roller
  - **R**: Red
  - **B**: Black
  - **G**: Green
  - **Y**: Yellow

- **Option**
  - **Color of push button selector**
  - **Roller lever**
  - **One Way Roller Lever**
  - **Straight plunger**
  - **Roller plunger**
  - **Toggle lever**
  - **Push button (Mushroom)**
  - **Push button (Extended)**
  - **Push button (Flush)**
  - **Twist selector (2 position)**
  - **Key selector (2 position)**

#### Port size
- **01**: Rc 1/8
- **N01**: NPT 1/8
- **F01**: G 1/8

#### Body option
- **0**: Internal pilot type
- **1**: External pilot type

### Construction

#### Non-actuated

#### Actuated

<table>
<thead>
<tr>
<th>Component Parts</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Body</td>
<td>ADC</td>
<td>Platinum silver</td>
<td></td>
</tr>
<tr>
<td>2 Pilot body</td>
<td>PBT</td>
<td>ZDC only for external pilot type</td>
<td></td>
</tr>
<tr>
<td>3 Head cover</td>
<td>ZDC</td>
<td>Black zinc chromated</td>
<td></td>
</tr>
<tr>
<td>4 Spool/sleeve</td>
<td>Stainless steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 End cover</td>
<td>POM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Piston A</td>
<td>POM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Plunger</td>
<td>POM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Valve seat (A)</td>
<td>POM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Valve seat (B)</td>
<td>POM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Parts</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Valve</td>
<td>NBR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Piston guide B</td>
<td>Aluminum alloy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Return spring</td>
<td>Stainless steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Cushion</td>
<td>Rubber</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 Cushion</td>
<td>Rubber</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Valve spring</td>
<td>Stainless steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 Return spring</td>
<td>Stainless steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 Piston B</td>
<td>POM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note 1)** When selecting the flush type, it is not necessary to select the suffix for the actuator.
VZM400 Series

Basic / VZM450-01-00

Roller lever / VZM450-01-01 · VZM450-01-01S

One way roller lever / VZM450-01-02 · VZM450-01-02S
VZM400 Series

Straight plunger / VZM450-01-05

Panel mounting hole

2 x 3.5 mounting hole

ø12 polyacetal or head steel roller

M14 x 1
Hexagon nut thick 8, across flats 22

M5 x 0.8
(Pilot exhaust port)

Hexagon nut thick 8, across flats 22

M14 x 1

Roller plunger / VZM450-01-06 • VZM450-01-06S

Panel mounting hole

2 x 3.5 mounting hole

ø12 polyacetal or head steel roller

M14 x 1
Hexagon nut thick 8, across flats 22

M5 x 0.8
(Pilot exhaust port)

Hexagon nut thick 5, across flats 17

M5 x 0.8
(Pilot exhaust port)

Toggle lever / VZM450-01-08

T.T. (Total Travel)

2 x M14 x 1
Hexagon nut thick 5, across flats 17

M5 x 0.8
(Pilot exhaust port)

Symbol

Panel mounting hole

Min. 2.5
Max. 9.5

Symbol

Panel mounting hole

Min. 2.5
Max. 9.5

Symbol

Panel mounting hole

Min. 2.5
Max. 9.5

+ 0.5 MPa supply

F.O.F. * 18 N
P.T. 1.5 mm
O.T. 2.0 mm
T.T. 3.5 mm

F.O.F. * 18 N
P.T. 1.5 mm
O.T. 2.0 mm
T.T. 3.5 mm

+ 0.5 MPa supply

F.O.F. * 15 N
T.T. 40°
VZM400 Series

Push button (Mushroom) / VZM450-01-30R/B/G/Y

Push button (Extended) / VZM450-01-32R/B/G/Y

Push button (Flush) / VZM450-01-33

Panel mounting hole

Symbol

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F. *</th>
<th>21 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>4.8 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>1.7 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>6.5 mm</td>
</tr>
</tbody>
</table>

Panel mounting hole

Symbol

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F. *</th>
<th>21 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>4.8 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>1.7 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>6.5 mm</td>
</tr>
</tbody>
</table>

Panel mounting hole

Symbol

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F. *</th>
<th>21 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>4.8 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>1.7 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>6.5 mm</td>
</tr>
</tbody>
</table>
VZM400 Series

Twist selector (2 position) / VZM450-01-34R/B/G/Y

External pilot type
VZM451 type

With foot bracket
VZM450-01-□-F

Key selector (2 position) / VZM450-01-36

Panel mounting hole

Symbol

Key can be removed at the “on” and “off” positions.

F.O.F. * 23 N
T.T. 90°

T.T. 26 NF.O.F.

F.O.F. * 28 N
T.T. 90°

0.5 MPa supply
Compact design, large flow capacity
High cycle rate, long life/300 c.p.m. or less
Piping possible to any EXH port.
Proper countermeasures can be taken for applications in which the noise of the exhaust could cause problems to the surroundings.

Pilot type is selectable.
(Internal pilot and external pilot)
Foot bracket and manifold mounting possible.

### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>0.15 to 0.7 MPa (1)</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–5 to 60°C (No freezing)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow rate characteristics</th>
<th>C(dm³/(s·bar))</th>
<th>b</th>
<th>Cv</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(P)→2(B)/4(A)</td>
<td>2.2</td>
<td>0.36</td>
<td>0.58</td>
</tr>
<tr>
<td>2(B)/4(A)→4(R2)/5(R1)</td>
<td>2.4</td>
<td>0.34</td>
<td>0.63</td>
</tr>
</tbody>
</table>

| Maximum frequency (Mechanical operation type) | 300 c.p.m. or less |

| Lubrication | Not required (Use turbine oil Class 1 ISO VG32, if lubricated) |

| Port size | Pilot valve (EXH)/MS x 0.8 |

| Option    | Foot bracket (2) |

*Please contact SMC for manifold mounting type.

Note 1) Actuator replacement is available for all types. (Except push-pull)
Note 2) For push button (mushroom), push button (extended), push button (flush) and a single unit of fastening ring, refer to pages 1655 and 1656. The other parts are not replaceable.
Note 3) The handle of the selector (2 position) cannot be removed or replaced alone.
**How to Order**

**VZM55**

- **Option**
  - Foot bracket

- **Actuator type**
  - 00: Basic
  - 01: Roller lever
  - 02: One way roller lever
  - 05: Straight plunger
  - 06: Roller plunger
  - 08: Toggle lever
  - 30: Push button (Mushroom)
  - 32: Push button (Extended)
  - 33: Push button (Flush)
  - 34: Twist selector (2 position)
  - 36: Key selector (2 position)
  - 37: Push-pull

- **Suffix for actuator**
  - S: Hard steel roller
  - R: Red
  - B: Black
  - G: Green
  - Y: Yellow

- **Body option**
  - 0: Standard
  - 1*: External pilot type
  - * Except VZM550-01-37

- **Port size**
  - 01: Rc 1/8
  - N01: NPT 1/8
  - F01: G 1/8

- **Made to Order**
  - Refer to pages 1648 to 1651 for details.
  - X207: Alternate type, Mushroom push button
  - X219: Push-lock turn-reset type, Mushroom push button

**Construction**

**Component Parts**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>ADC</td>
<td>Platinum silver</td>
</tr>
<tr>
<td>2</td>
<td>Pilot body</td>
<td>PBT</td>
<td>ZDC only for external pilot type</td>
</tr>
<tr>
<td>3</td>
<td>Head cover</td>
<td>ZDC</td>
<td>Black zinc chromated</td>
</tr>
<tr>
<td>4</td>
<td>Spool valve assembly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>End cover</td>
<td>ZDC</td>
<td>Matt-black</td>
</tr>
<tr>
<td>6</td>
<td>Piston</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Plunger</td>
<td>POM</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Valve seat (A)</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Valve seat (B)</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Valve assembly</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Valve spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Return spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Spool spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

*Note 1) When selecting the flush type, it is not necessary to select the suffix for the actuator.*
VZM500 Series

Basic
VZM550-01-00

Roller lever
VZM550-01-01
VZM550-01-01S

One way roller lever
VZM550-01-02
VZM550-01-02S

Symbol

F.O.F. 16 N
P.T. 1.0 mm
O.T. 2.0 mm
T.T. 3.0 mm

Symbol

F.O.F. 8 N
P.T. 2.2 mm
O.T. 4.0 mm
T.T. 6.2 mm

Symbol

F.O.F. 7 N
P.T. 2.4 mm
O.T. 4.6 mm
T.T. 7.0 mm
VZM500 Series

Straight plunger
VZM550-01-05

Roller plunger
VZM550-01-06
VZM550-01-06S

Toggle lever
VZM550-01-08

Panel mounting hole

M14 x 1
Hexagon nut thick 8, across flats 22

M5 x 0.8
(Pilot exhaust port)

Symbol

Min. 2.5
Max. 9.5

Panel mounting hole

F.O.F. *
18 N
P.T.
1.5 mm
O.T.
2.0 mm
T.T.
3.5 mm

Panel mounting hole

F.O.F. *
18 N
P.T.
1.5 mm
O.T.
2.0 mm
T.T.
3.5 mm

Panel mounting hole

Max. 4.5

Symbol

F.O.F. *
15 N
T.T.
40°

2 x 3.2 mounting hole

ø5

2 x 3.2 mounting hole

2 x 3.2 mounting hole

ø12 (Polyacetal or hard steel roller)

(V1)

(V1)
VZM500 Series

Selector (2 position)
VZM550-01-34R/B/G/Y

Key selector (2 position)
VZM550-01-36

Push pull
VZM550-01-37

Panel mounting hole

Symbol

Key can be removed at the "on" and "off" positions.

Panel mounting hole

Symbol

Panel mounting hole

Symbol

Panel mounting hole

Symbol

Panel mounting hole

Symbol
5 Port Mechanical Valve  **VZM500 Series**

External pilot type  
VZM551 type

With foot bracket  
VZM55□-01-□-F

- **External pilot port**
  - M5 x 0.8
- **Mounting hole**
  - 2 x 4.5
5 Port Mechanical Valve
Rubber Seal
VFM300 Series

Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>0.15 to 0.9 MPa (1)</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–5 to 60°C (No freezing)</td>
</tr>
<tr>
<td>Flow rate characteristics</td>
<td>C(dm³/(s·bar))</td>
</tr>
<tr>
<td>1(P)–2(C2)/4(C1)</td>
<td>4.0</td>
</tr>
<tr>
<td>2(C2)/4(C1)–3(E2)/5(E1)</td>
<td>3.1</td>
</tr>
<tr>
<td>Maximum frequency [Mechanical operation type]</td>
<td>300 c.p.m. or less</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)</td>
</tr>
<tr>
<td>Port size</td>
<td>Main valve/1P, 4A, 2B port 1/4, 5EA/3EB port 1/8</td>
</tr>
<tr>
<td>Option</td>
<td>Pilot valve (EXH)/MS x 0.8</td>
</tr>
</tbody>
</table>

Notes:
1) Actuator replacement is available for all types.
2) For push button (mushroom), push button (extended), push button (flush) and a single unit of fastening ring, refer to pages 1655 and 1656. The other parts are not replaceable.
3) The handle of the selector (2 position) cannot be removed or replaced alone.

Model

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Model</th>
<th>Actuator part no.</th>
<th>Application</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>VFM350-02-00</td>
<td>—</td>
<td>—</td>
<td>190</td>
</tr>
<tr>
<td>Roller lever</td>
<td>VFM350-02-01</td>
<td>VM-01C</td>
<td>Polycetal roller</td>
<td>270</td>
</tr>
<tr>
<td>One way roller lever</td>
<td>VFM350-02-02</td>
<td>VM-02C</td>
<td>Polycetal roller</td>
<td>280</td>
</tr>
<tr>
<td>Straight plunger</td>
<td>VFM350-02-05</td>
<td>VM-05D</td>
<td>Hard steel roller</td>
<td>290</td>
</tr>
<tr>
<td>Roller plunger</td>
<td>VFM350-02-06</td>
<td>VM-06D</td>
<td>Polycetal roller</td>
<td>370</td>
</tr>
<tr>
<td>Toggle lever</td>
<td>VFM350-02-08</td>
<td>VM-08D</td>
<td>—</td>
<td>360</td>
</tr>
<tr>
<td>Push button (Mushroom)</td>
<td>VFM350-02-30R</td>
<td>VM-30CR</td>
<td>Red</td>
<td>309</td>
</tr>
<tr>
<td>Push button (Extended)</td>
<td>VFM350-02-32R</td>
<td>VM-32CR</td>
<td>Red</td>
<td>302</td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>VFM350-02-33</td>
<td>VM-33C</td>
<td>With a set of red, black, green, yellow</td>
<td>307</td>
</tr>
<tr>
<td>Twist selector (2 position)</td>
<td>VFM350-02-34R</td>
<td>VM-34CR</td>
<td>Red</td>
<td>308</td>
</tr>
<tr>
<td>Key selector (2 position)</td>
<td>VFM350-02-36</td>
<td>VM-36C</td>
<td>—</td>
<td>327</td>
</tr>
</tbody>
</table>

Note 1) External pilot type Main valve: 0 to 0.9 MPa
Note 2) Pilot valve: 0.15 to 0.9 MPa

Compact design, large flow capacity
High cycle rate, long life/300 c.p.m. or less
Piping possible to any EXH port.
Proper countermeasures can be taken for applications in which the noise of the exhaust could cause problems to the surroundings.

Pilot type is selectable. (Internal pilot and external pilot)
5 Port Mechanical Valve
Rubber Seal VFM300 Series

How to Order

VFM35 0 - 02 - 01 S - -

- Made to Order
  (Refer to pages 1648 to 1651 for details.)
  - X207 Alternate type, Mushroom push button
  - X219 Push-lock turn-reset type, Mushroom push button

- Suffix for actuator
  - S Hard steel roller
  - R Red
  - B Black
  - G Green
  - Y Yellow

- Option
  - F Foot bracket
    (Only internal pilot)

- Actuator type
  - 00 Basic
  - 01 Roller lever
  - 02 One way roller lever
  - 05 Straight plunger
  - 06 Roller plunger
  - 08 Toggle lever
  - 30 Push button (Mushroom)
  - 32 Push button (Extended)
  - 33 Push button (Flush) [Note 1]
  - 34 Twist selector (2 position)
  - 36 Key selector (2 position)

- Port size
  - 02 Rc 1/4
  - N02 NPT 1/4
  - F02 G 1/4

- Body option
  - 0 internal pilot type
  - 1 External pilot type

Note 1) When selecting the flush type, it is not necessary to select the suffix for the actuator.

Construction

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>ADC</td>
<td>Platinum silver</td>
</tr>
<tr>
<td>2</td>
<td>Pilot body</td>
<td>PBT</td>
<td>ZDC only for external pilot type</td>
</tr>
<tr>
<td>3</td>
<td>Head cover</td>
<td>ZDC</td>
<td>Black zinc chromated</td>
</tr>
<tr>
<td>4</td>
<td>Spool valve assembly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>End cover</td>
<td>ADC</td>
<td>Matt-black</td>
</tr>
<tr>
<td>6</td>
<td>Piston</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Plunger</td>
<td>POM</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Valve seat (A)</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Valve seat (B)</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Valve</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Valve spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Return spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Spool spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
</tbody>
</table>

Note: Refer to the table on page 1636 for combinations of actuator type and suffix.
VFM300 Series

Basic
VFM350-02-00

Roller lever
VFM350-02-01
VFM350-02-01S

One way roller lever
VFM350-02-02
VFM350-02-02S
VFM300 Series

Straight plunger
VFM350-02-05

Roller plunger
VFM350-02-06
VFM350-02-06S

Toggle lever
VFM350-02-08
VFM300 Series

Push button (Mushroom)
VFM350-02-30R/B/G/Y

Push button (Extended)
VFM350-02-32R/B/G/Y

Push button (Flush)
VFM350-02-33

Panel mounting hole

Symbol

+ 0.5 MPa supply

F.O.P. * 21 N
P.T. 4.8 mm
O.T. 1.7 mm
T.T. 6.5 mm

F.O.P. * 21 N
P.T. 4.8 mm
O.T. 1.7 mm
T.T. 6.5 mm

F.O.P. * 21 N
P.T. 4.8 mm
O.T. 1.7 mm
T.T. 6.5 mm

* 0.5 MPa supply

6.5 mm T.T.
1.7 mm O.T.
4.8 mm P.T.
21 NF.O.F.
VFM300 Series

Twist selector (2 position)
VFM350-02-34R/B/G/Y

Key selector (2 position)
VFM350-02-36

External pilot type
VFM351 type
With foot bracket
VFM350-02-F

Panel mounting hole

Symbol

Key can be removed at the “on” and “off” positions.

0.5 MPa supply

F.O.F. * 23 N
T.T. 90°

F.O.F. * 26 N
T.T. 90°
5 Port Mechanical Valve
Metal Seal

VFM200 Series

Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Operating pressure</th>
<th>Ambient and fluid temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0.1 to 1.0 MPa</td>
<td>–5 to 60°C (No freezing)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow rate characteristics</th>
<th>C(dm³/(s·bar))</th>
<th>b</th>
<th>Cv</th>
</tr>
</thead>
<tbody>
<tr>
<td>T(P)→2(B)/4(A)</td>
<td>4.0</td>
<td>0.2</td>
<td>0.9</td>
</tr>
<tr>
<td>2(B)/4(A)→4(EB)/5(EA)</td>
<td>3.5</td>
<td>0.32</td>
<td>0.85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum frequency</th>
<th>300 c.p.m. or less</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Lubrication</th>
<th>Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Port size</th>
<th>Main valve Rc 1/2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pilot valve (EXH)/M5 x 0.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Foot bracket (2)</th>
</tr>
</thead>
</table>

Model

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Model</th>
<th>Actuator part no.</th>
<th>Application</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>VFM250-02-00</td>
<td>—</td>
<td>—</td>
<td>300</td>
</tr>
<tr>
<td>Roller lever</td>
<td>VFM250-02-01</td>
<td>VM-01C</td>
<td>Polyacetal roller</td>
<td>310</td>
</tr>
<tr>
<td></td>
<td>VFM250-02-01S</td>
<td>VM-01CS</td>
<td>Hard steel roller</td>
<td>320</td>
</tr>
<tr>
<td>One way roller lever</td>
<td>VFM250-02-02</td>
<td>VM-02C</td>
<td>Polyacetal roller</td>
<td>320</td>
</tr>
<tr>
<td></td>
<td>VFM250-02-02S</td>
<td>VM-02CS</td>
<td>Hard steel roller</td>
<td>330</td>
</tr>
<tr>
<td>Straight plunger</td>
<td>VFM250-02-05</td>
<td>VM-05D</td>
<td>—</td>
<td>420</td>
</tr>
<tr>
<td>Roller plunger</td>
<td>VFM250-02-06</td>
<td>VM-06D</td>
<td>Polyacetal roller</td>
<td>410</td>
</tr>
<tr>
<td></td>
<td>VFM250-02-06S</td>
<td>VM-06DS</td>
<td>Hard steel roller</td>
<td>420</td>
</tr>
<tr>
<td>Toggle lever</td>
<td>VFM250-02-08</td>
<td>VM-08D</td>
<td>—</td>
<td>400</td>
</tr>
<tr>
<td>Push button (Mushroom)</td>
<td>VFM250-02-30R</td>
<td>VM-30CR</td>
<td>Red</td>
<td>349</td>
</tr>
<tr>
<td></td>
<td>VFM250-02-30B</td>
<td>VM-30CB</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VFM250-02-30G</td>
<td>VM-30CG</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VFM250-02-30Y</td>
<td>VM-30CY</td>
<td>Yellow</td>
<td></td>
</tr>
<tr>
<td>Push button (Extended)</td>
<td>VFM250-02-32R</td>
<td>VM-32CR</td>
<td>Red</td>
<td>342</td>
</tr>
<tr>
<td></td>
<td>VFM250-02-32B</td>
<td>VM-32CB</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VFM250-02-32G</td>
<td>VM-32CG</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VFM250-02-32Y</td>
<td>VM-32CY</td>
<td>Yellow</td>
<td></td>
</tr>
<tr>
<td>Push button (Flush)</td>
<td>VFM250-02-33</td>
<td>VM-33C</td>
<td>With a set of red, black, green, yellow</td>
<td>347</td>
</tr>
<tr>
<td>Twist selector (2 position)</td>
<td>VFM250-02-34R</td>
<td>VM-34CR</td>
<td>Red</td>
<td>348</td>
</tr>
<tr>
<td></td>
<td>VFM250-02-34B</td>
<td>VM-34CB</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VFM250-02-34G</td>
<td>VM-34CG</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VFM250-02-34Y</td>
<td>VM-34CY</td>
<td>Yellow</td>
<td></td>
</tr>
<tr>
<td>Key selector (2 position)</td>
<td>VFM250-02-36</td>
<td>VM-36C</td>
<td>—</td>
<td>367</td>
</tr>
</tbody>
</table>

Note 1) Actuator replacement is available for all types.

Note 2) For push button (mushroom), push button (extended), push button (flush) and a single unit of fastening ring, refer to pages 1655 and 1656. The other parts are not replaceable.

Note 3) The handle of the selector (2 position) cannot be removed or replaced alone.
5 Port Mechanical Valve
Metal Seal

**VFM200 Series**

**How to Order**

| VFM25 | 0 - 02 - 01 S - |

**Component Parts**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>ADC</td>
<td>Platinum silver</td>
</tr>
<tr>
<td>2</td>
<td>Pilot body</td>
<td>ZDC</td>
<td>Platinum silver</td>
</tr>
<tr>
<td>3</td>
<td>Head cover</td>
<td>Zinc chromated</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Spool/sleeve</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>End cover</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Piston guide</td>
<td>Brass</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Piston guide for end cover</td>
<td>Brass</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Piston</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Piston for end cover</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Guide bushing</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Cushion</td>
<td>Urethane rubber</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Cushion for end cover</td>
<td>Urethane rubber</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Plunger</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Valve seat (A)</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Valve seat (B)</td>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Valve</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Return spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Return spring</td>
<td>Stainless steel</td>
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</tr>
<tr>
<td>19</td>
<td>Valve spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Mini Y packing</td>
<td>NBR</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Mini Y packing</td>
<td>NBR</td>
<td></td>
</tr>
</tbody>
</table>
VFM200 Series

Basic
VFM250-02-00

Accessory mounting hole (Pilot exhaust port)
M5 x 0.8 x ø3.8
5 x Rc
1 43 x 4.5 mounting hole
(Pilot exhaust port)
M5 x 0.8
5 x Rc
1 4
3 x 4.5 mounting hole
ø14 polyacetal or head steel roller

Roller lever
VFM250-02-01
VFM250-02-01S

Symbol

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>16 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>1.0 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>2.0 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>3.0 mm</td>
</tr>
</tbody>
</table>

One way roller lever
VFM250-02-02
VFM250-02-02S

Symbol

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>8 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>2.2 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>4.0 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>6.2 mm</td>
</tr>
</tbody>
</table>

Symbol

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>7 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.T.</td>
<td>2.4 mm</td>
</tr>
<tr>
<td>O.T.</td>
<td>4.6 mm</td>
</tr>
<tr>
<td>T.T.</td>
<td>7.0 mm</td>
</tr>
</tbody>
</table>

1644
### VFM200 Series

#### Straight plunger
VFM250-02-05

- Hexagon nut thick 11, across flats 27
- M x 18 x 1
- M5 x 0.8
- Pilot exhaust port
- 3 x 4.5 mounting hole
- 5 x Rc 1/4

#### Panel mounting hole
- Min. 3
- Max. 11

#### Symbol
- 14
- (A)
- (B)
- W
- M12

#### Roller plunger
VFM250-02-06
VFM250-02-06S

- ø15 polyacetal or head steel roller
- M18 x 1
- Hexagon nut thick 11, across flats 27
- M5 x 0.8
- Pilot exhaust port
- 3 x 4.5 mounting hole
- 5 x Rc 1/4

#### Panel mounting hole
- Min. 3
- Max. 11

#### Symbol
- 14
- (A)
- (B)
- W
- M12

#### Toggle lever
VFM250-02-08

- T.T. (Total Travel) 40°
- 2 x M18 x 1
- Hexagon nut thick 5.5, across flats 24
- M5 x 0.8
- Pilot exhaust port
- 3 x 4.5 mounting hole
- 5 x Rc 1/4

#### Panel mounting hole
- Max. 7.5

#### Symbol
- 14
- (A)
- (B)
- W
- M12

---

**VM**

**VMG**

**VR**

**VR51**

**VHK**

**VH**

**VHS**
VFM200 Series

Push button (Mushroom)
VFM250-02-30R/B/G/Y

Panel mounting hole

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>Symbol</th>
<th>F.O.F.</th>
<th>P.T.</th>
<th>O.T.</th>
<th>T.T.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21 N</td>
<td>4.8 mm</td>
<td>1.7 mm</td>
<td>6.5 mm</td>
</tr>
</tbody>
</table>

Push button (Extended)
VFM250-02-32R/B/G/Y

Panel mounting hole

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>Symbol</th>
<th>F.O.F.</th>
<th>P.T.</th>
<th>O.T.</th>
<th>T.T.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21 N</td>
<td>4.8 mm</td>
<td>1.7 mm</td>
<td>6.5 mm</td>
</tr>
</tbody>
</table>

Push button (Flush)
VFM250-02-33

Panel mounting hole

+ 0.5 MPa supply

<table>
<thead>
<tr>
<th>Symbol</th>
<th>F.O.F.</th>
<th>P.T.</th>
<th>O.T.</th>
<th>T.T.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21 N</td>
<td>4.8 mm</td>
<td>1.7 mm</td>
<td>6.5 mm</td>
</tr>
</tbody>
</table>
VFM200 Series

Twist selector (2 position)
VFM250-02-34R/B/G/Y

Key selector (2 position)
VFM250-02-36

External pilot type
VFM251 type

With foot bracket
VFM250-02-□□-F

Key can be removed at the “on” and “off” positions.

1647
Alternate Type, Mushroom Push Button

Alternate type: When pushing the push button, the valve actuates and will hold its position even after the button is released. Pushing the button again will return the button and valve to their previous position.

VM430-01-30R/B/G/Y-X207

VZM450-01-30R/B/G/Y-X207

VZM550-01-30R/B/G/Y-X207

Please contact SMC for detailed dimensions, specifications and lead times.
Alternate Type, Mushroom Push Button

VFM350-02-30R/B/G/Y-X207

VFM250-02-30R/B/G/Y-X207

Panel mounting hole

0.8 to 7.5

Symbol

+ 0.5 MPa supply

F.O.F. * 21 N
T.T. 6.7 mm

VM Series
Made to Order 2
Please contact SMC for detailed dimensions, specifications and lead times.

Alternate Type, Mushroom Push Button

VFM350-02-30R/B/G/Y-X207

VFM250-02-30R/B/G/Y-X207

Panel mounting hole

0.8 to 7.5

Symbol

+ 0.5 MPa supply

F.O.F. * 21 N
T.T. 6.7 mm

VM Series
Made to Order 2
Please contact SMC for detailed dimensions, specifications and lead times.

Alternate Type, Mushroom Push Button

VFM350-02-30R/B/G/Y-X207

VFM250-02-30R/B/G/Y-X207

Panel mounting hole

0.8 to 7.5

Symbol

+ 0.5 MPa supply

F.O.F. * 21 N
T.T. 6.7 mm

VM Series
Made to Order 2
Please contact SMC for detailed dimensions, specifications and lead times.

Alternate Type, Mushroom Push Button

VFM350-02-30R/B/G/Y-X207

VFM250-02-30R/B/G/Y-X207

Panel mounting hole

0.8 to 7.5

Symbol

+ 0.5 MPa supply

F.O.F. * 21 N
T.T. 6.7 mm

VM Series
Made to Order 2
Please contact SMC for detailed dimensions, specifications and lead times.

Alternate Type, Mushroom Push Button

VFM350-02-30R/B/G/Y-X207

VFM250-02-30R/B/G/Y-X207

Panel mounting hole

0.8 to 7.5

Symbol

+ 0.5 MPa supply

F.O.F. * 21 N
T.T. 6.7 mm

VM Series
Made to Order 2
Please contact SMC for detailed dimensions, specifications and lead times.

Alternate Type, Mushroom Push Button

VFM350-02-30R/B/G/Y-X207

VFM250-02-30R/B/G/Y-X207

Panel mounting hole

0.8 to 7.5

Symbol

+ 0.5 MPa supply

F.O.F. * 21 N
T.T. 6.7 mm

VM Series
Made to Order 2
Please contact SMC for detailed dimensions, specifications and lead times.

Alternate Type, Mushroom Push Button

VFM350-02-30R/B/G/Y-X207

VFM250-02-30R/B/G/Y-X207

Panel mounting hole

0.8 to 7.5

Symbol

+ 0.5 MPa supply

F.O.F. * 21 N
T.T. 6.7 mm

VM Series
Made to Order 2
Please contact SMC for detailed dimensions, specifications and lead times.

Alternate Type, Mushroom Push Button

VFM350-02-30R/B/G/Y-X207

VFM250-02-30R/B/G/Y-X207

Panel mounting hole

0.8 to 7.5

Symbol

+ 0.5 MPa supply

F.O.F. * 21 N
T.T. 6.7 mm

VM Series
Made to Order 2
Please contact SMC for detailed dimensions, specifications and lead times.
VM Series
Made to Order 3
Please contact SMC for detailed dimensions, specifications and lead times.

Push-lock Turn-reset Type, Mushroom Push Button

Push-lock turn-reset type: When pressing the push button, it is locked in this status. Turning the button clockwise will reset it.

VM430-01R/B/G/Y-X219

VZM450-01R/B/G/Y-X219

VZM550-01R/B/G/Y-X219

Panel mounting hole

Symbol

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Panel mounting hole</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel mounting hole</th>
<th>0.8 to 7.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.O.F. *</td>
<td>26 N</td>
</tr>
<tr>
<td>T.T.</td>
<td>5.8 mm</td>
</tr>
</tbody>
</table>

* 0.5 MPa supply

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Panel mounting hole</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel mounting hole</th>
<th>0.8 to 7.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.O.F. *</td>
<td>21 N</td>
</tr>
<tr>
<td>T.T.</td>
<td>5.8 mm</td>
</tr>
</tbody>
</table>

* 0.5 MPa supply

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Panel mounting hole</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel mounting hole</th>
<th>0.8 to 7.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.O.F. *</td>
<td>21 N</td>
</tr>
<tr>
<td>T.T.</td>
<td>5.8 mm</td>
</tr>
</tbody>
</table>

* 0.5 MPa supply
VM Series
Made to Order 4
Please contact SMC for detailed dimensions, specifications and lead times.

Push-lock Turn-reset Type, Mushroom Push Button

VFM350-02-30R/B/G/Y-X219

Panel mounting hole

Symbol

VFM250-02-30R/B/G/Y-X219

Panel mounting hole

Symbol

<table>
<thead>
<tr>
<th>F.O.F.</th>
<th>21 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.T.</td>
<td>5.8 mm</td>
</tr>
</tbody>
</table>

* 0.5 MPa supply
**VM Series**

**Made to Order 5**

Please contact SMC for detailed dimensions, specifications and lead times.

---

**Foot Pedal Type 5 Port Mechanical Valve**

- 5 port is added to the foot pedal type mechanical valve.
- Models with lock and without lock are available.

### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air/Inert gas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating pressure</strong></td>
<td>0.15 to 0.9 MPa</td>
</tr>
<tr>
<td><strong>Ambient and fluid temperature</strong></td>
<td>−5 to 60°C (No freezing)</td>
</tr>
</tbody>
</table>

#### Flow rate characteristics

<table>
<thead>
<tr>
<th>C (dm³/(s·bar))</th>
<th>b</th>
<th>Cv</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(P) → 2(B)/4(A)</td>
<td>0.76</td>
<td>0.22</td>
</tr>
<tr>
<td>2(B)/4(A) → 4(EB)/5(EA)</td>
<td>0.53</td>
<td>0.28</td>
</tr>
</tbody>
</table>

- **Lubrication**: Not required (Use turbine oil Class 1 ISO VG32, if lubricated)

#### Port size

- Port 1(P), Port 2(B), Port 4(A): Rc1/8
- Port 3(EB), Port 5(EA): M5 x 0.8

---

**XT34-60/67**

#### XT34-60 (With lock)

**Symbol**

- **Lock position**
- **Unlock position**
- **Max. deflection position**

3 x 6.5 mounting hole

**Operation**

- **Locked**: When stepping on the pedal, it is locked by the lock lever, and held in a locked state.
- **Unlocked**: When pushing the lock lever with the toe, the lock is released, and the pedal returns to its original position.

---

**XT34-60**

- **Lock**: With lock
- **Weight**: 0.8 kg

**XT34-67**

- **Lock**: Without lock
- **Weight**: 0.5 kg

---

**XT34-60**

- **Lock**: With lock
- **Weight**: 0.8 kg

---

**XT34-67**

- **Lock**: Without lock
- **Weight**: 0.5 kg
XT34-67 (Without lock)

Symbol

3 x 6.5 mounting hole

2 x M5 x 0.8 (Port 3, 5)

2 x Rc1/8 (Port 2, 4)

Total Travel (T.T.) 2.5°

Full Operating Force (Reference value) (F.O.F) 55 N (at 0.5 MPa)
**Warning**

1. Mount the mechanical operation type mechanical valve so that the valve does not operate over the operating limit range.

   Failure to do so may result in damage to the mechanical valve itself or lead to equipment malfunction.

2. Operate the mechanism within the stroke range that has been obtained through the formula given below.
   (Do not move beyond the operating limit position.)

   \[
   \text{Actuator stroke} = (\text{P.T.} + 0.5 \times \text{O.T.}) \text{ to } (\text{P.T.} + \text{O.T.} - 0.1)
   \]

<table>
<thead>
<tr>
<th>Series</th>
<th>Actuator</th>
<th>Actuator stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM1000</td>
<td>Basic T.T. = 4.8 mm (T.T. = 2.5 mm)</td>
<td>3.7 to 4.7 (2.2 to 2.4)</td>
</tr>
<tr>
<td></td>
<td>Roller lever</td>
<td>3.5 to 4.4</td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td>3.5 to 4.4</td>
</tr>
<tr>
<td></td>
<td>Basic</td>
<td>2.5 to 3.4</td>
</tr>
<tr>
<td></td>
<td>Roller lever</td>
<td>6.2 to 8.2</td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td>6.5 to 8.7</td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td>4.5 to 5.4</td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td>4.5 to 5.4</td>
</tr>
<tr>
<td></td>
<td>Cross roller plunger</td>
<td>4.5 to 5.4</td>
</tr>
<tr>
<td>VM400</td>
<td>Basic</td>
<td>2.0 to 2.9</td>
</tr>
<tr>
<td></td>
<td>Roller lever</td>
<td>4.2 to 6.0</td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td>4.7 to 6.7</td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td>2.5 to 3.4</td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td>2.5 to 3.4</td>
</tr>
<tr>
<td>VZM500</td>
<td>Basic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roller lever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td></td>
</tr>
<tr>
<td>VZM400</td>
<td>Basic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roller lever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td></td>
</tr>
<tr>
<td>VFM300</td>
<td>Basic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roller lever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td></td>
</tr>
<tr>
<td>VFM200</td>
<td>Basic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roller lever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One way roller lever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td></td>
</tr>
</tbody>
</table>

For the straight plunger and roller plunger, there are grooves indicating P.T. and T.T. for stroke adjustment.

3. Never perform additional machining such as enlarging the body mounting holes.

   As doing so could lead to unexpected abnormal conditions such as air leakage.

---

For specific product precautions of the VM100/200 series, refer to pages 1610 to 1613.
Warning

1. When using a mechanical operation type mechanical valve, select the angle and the maximum speed limit of the cam and dog so that the valve does not exceed the following maximum values.

If operated over the maximum values, impact force from the cam and dog will be applied to the actuator, resulting in damage.

<table>
<thead>
<tr>
<th>Series</th>
<th>Actuator</th>
<th>Angle limit</th>
<th>Max. speed limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM1000</td>
<td>Roller lever</td>
<td>30°</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>One way roller</td>
<td>45°</td>
<td>0.7</td>
</tr>
<tr>
<td>VM400</td>
<td>Roller lever</td>
<td>30°</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>One way roller</td>
<td>45°</td>
<td>0.3</td>
</tr>
<tr>
<td>VM800</td>
<td>Roller lever</td>
<td>30°</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>One way roller</td>
<td>45°</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Straight plunger</td>
<td>—</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td>30°</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Cross roller plunger</td>
<td>30°</td>
<td>0.3</td>
</tr>
<tr>
<td>VZM500</td>
<td>Roller lever</td>
<td>30°</td>
<td>1.5</td>
</tr>
<tr>
<td>VZM400</td>
<td>One way roller</td>
<td>45°</td>
<td>0.7</td>
</tr>
<tr>
<td>VF300</td>
<td>One way roller</td>
<td>30°</td>
<td>0.7</td>
</tr>
<tr>
<td>VF200</td>
<td>Straight plunger</td>
<td>—</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Roller plunger</td>
<td>30°</td>
<td>0.7</td>
</tr>
<tr>
<td>VM800</td>
<td>Roller lever</td>
<td>30°</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Adjustable roller lever</td>
<td>30°</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Adjustable rod lever</td>
<td>—</td>
<td>0.2</td>
</tr>
</tbody>
</table>

2. Be sure to always operate push button type, twist selector type, and toggle lever type mechanical valves with your finger.

The use of tools such as hammers and equipment such as cylinders and cams to operate the product can damage the actuator and the valve body.

For specific product precautions of the VM100/200 series, refer to pages 1610 to 1613.
How to Change the Buttons

Caution

Replace the button in the following manner to change color of the button.

1. Push button (Flush type)
   • Installation — Of the four colors, red, green, black, and yellow, select and align the protruding portion of the button with the recessed portion of the body and push in.
   • Removal — Remove the fastening ring and insert the tip of a small flat screwdriver into the groove of the button to pry it up.

2. Push button (Mushroom and extended types)
   At the time of shipment, only 1 button of the color that you specified is attached to the body.

<table>
<thead>
<tr>
<th>Mushroom type button</th>
<th>Extended type button</th>
<th>Flush type button</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>3402186R</td>
<td>3402187R</td>
</tr>
<tr>
<td>Black</td>
<td>3402186B</td>
<td>3402187B</td>
</tr>
<tr>
<td>Green</td>
<td>3402186G</td>
<td>3402187G</td>
</tr>
<tr>
<td>Yellow</td>
<td>3402186Y</td>
<td>3402187Y</td>
</tr>
</tbody>
</table>

2. To order single fastening ring, use the part number below.
   Fastening ring: 3402184

3. To order a single push button for VM1000 series and a single cover use the part number below.

<table>
<thead>
<tr>
<th>Color</th>
<th>Push button</th>
<th>Cover for push button</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>3410701-R</td>
<td>3410703</td>
</tr>
<tr>
<td>Black</td>
<td>3410701-B</td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>3410701-G</td>
<td></td>
</tr>
</tbody>
</table>

VM-X219, VZM-X219, VFM-X219 Series How to Mount Panel

(Task 1) Removal of the push button and fastening ring
   Remove them from the body turning them counterclockwise in the order of the pushbutton and fastening ring.

(Task 2) Mounting the valve to the panel
   Insert the valve to the panel and fix it with a fastening ring. Remove three spacers attached to the valve depending on the panel thickness.

(Task 3) Mounting the push button
   Tighten the push button clockwise by hand and further tighten it until load is applied.
   Note: When the push button is not tightened enough, the valve may not output correctly after operating the push button. In other cases, the valve outputs temporarily, but when it is in the holding state, the valve may stop outputting. In this situation, please tighten the push button again.

For specific product precautions of the VM100/200 series, refer to pages 1610 to 1613.