

2/3-Port Mechanical Valve with One-touch Fitting

New

RoHS

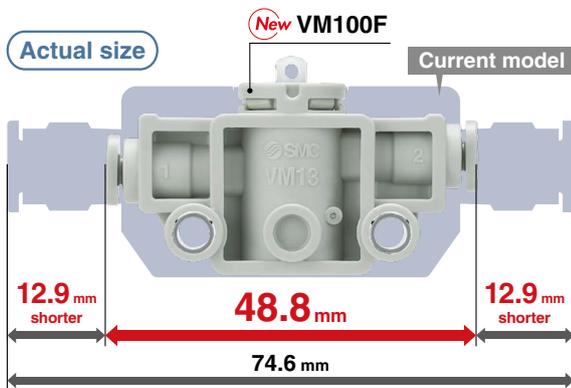
Built-in One-touch fitting reduced installation space and less piping work

Space saving

Built-in One-touch fitting

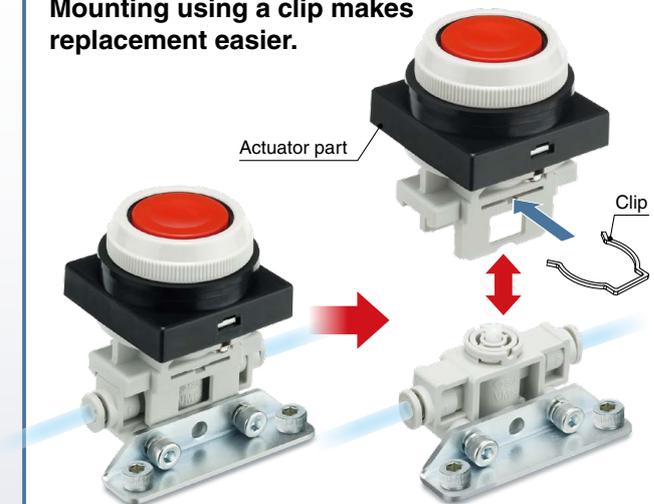
Approx. 35% reduction
(25.8 mm shorter)

48.8 mm ← 74.6 mm
(VM131F-06-00) ← (VM131-01-00A + KQ2H06-01S)



Less man-hours replacing the actuator

Mounting using a clip makes replacement easier.



Lightweight

With resin body material

80% reduction (48 g lighter)

12g (Resin body: VM131F-06-00) ← 60g (Metal body: VM131-01-00A)

Variations

| | Applicable tubing O.D. | |
|---------------|------------------------|--------------------------|
| | Metric size | Inch size |
| Side ported | ø3.2 ø4 ø6 | ø1/8" ø5/32" ø1/4" |
| Bottom ported | ø3.2 ø4 | ø1/8" ø5/32" |



VM100F Series

Actuator type

Mechanical operation: 5 types

Manual operation: 7 types



CAT.ES12-9A

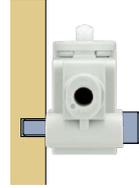
2/3-Port Mechanical Valve with One-touch Fitting VM100F Series

Mounting

Bracket mounting



Side mounting



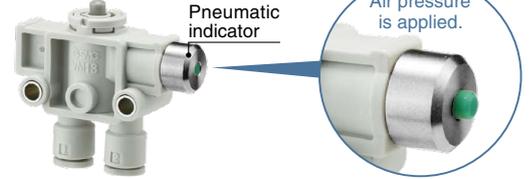
Panel mounting



With miniature indicator*1

Possible to check if air pressure is applied

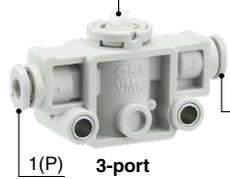
*1 Bottom ported only



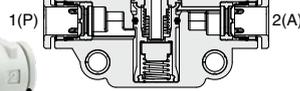
Piping direction

Side ported

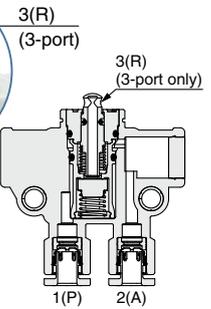
White



Gray



Bottom ported



Mounting interchangeable with the conventional model

Mounting pitch and height are the same as the current model

Available in vacuum applications

-100 kPa to 0.7 MPa

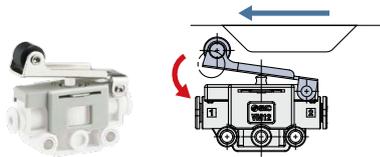
Actuator Variations

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

Mechanical Operation

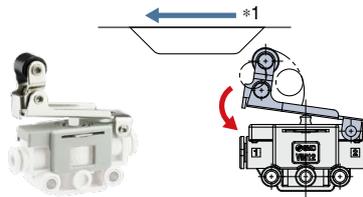
Roller lever

*2



One way roller lever

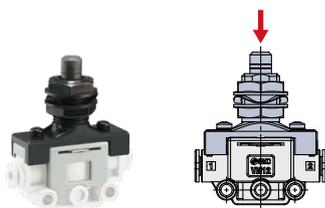
*2



*1 If operated (by cam or dog) in the opposite direction, the valve will not be opened.

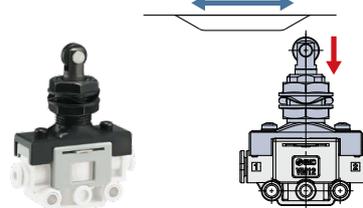
Straight plunger

*2



Roller plunger

*2



Cross roller plunger

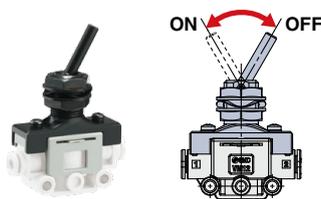
*2



Manual Operation

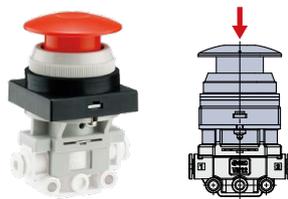
Toggle lever

*2



Push button (Mushroom)

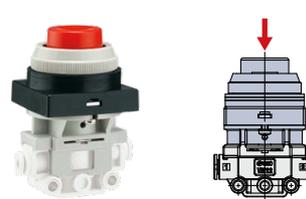
*2



Color: Red, Black, Green, Yellow

Push button (Extended)

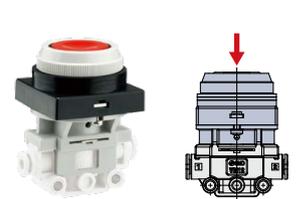
*2



Color: Red, Black, Green, Yellow

Push button (Flush)

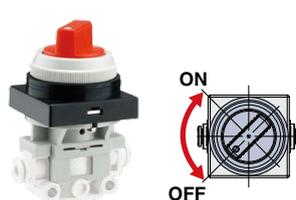
*2



Color: Red, Black, Green, Yellow

Twist selector (2-position)

*2



Color: Red, Black, Green, Yellow

Key selector (2-position)

*2



Twist selector (3-position)



Color: Red, Black, Green, Yellow

4 colors available for buttons



2/3-Port Mechanical Valve with One-touch Fitting

VM100F Series



Specifications

| | | |
|---------------------------------------|---|---------------|
| Piping | Side ported | Bottom ported |
| Fluid | Air/Inert gas | |
| Operating pressure range | -100 kPa to 0.7 MPa | |
| Ambient and fluid temperatures | -5 to 60°C (No freezing) | |
| Applicable tubing material | Nylon, Soft nylon, Polyurethane*3, FEP, PFA | |
| Lubrication*1 | Not required | |
| Weight (Basic model) | 12 g | 15 g |
| Bracket part number*2 | VM1-B | |

- *1 Use turbine oil Class 1 ISO VG32, if lubricated.
- *2 The bracket can only be used for side mounting of the side ported type.
- *3 Use caution at the max. operating pressure when using soft nylon or polyurethane tubing. (For details, refer to the [Web Catalog](#).)

Flow Rate and Sonic Conductance

| Piping | Side ported | | | | Bottom ported | | | |
|--|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | Metric size | ø3.2 | ø4 | ø6 | ø3.2 | ø4 | ø6 | ø8 |
| Tubing O.D. | Inch size | ø1/8" | ø5/32" | ø1/4" | ø1/8" | ø5/32" | ø1/4" | ø3/8" |
| Flow rate characteristics | 1(P) ⇒ 2(A) ⇒ 2(A) ⇒ 3(R) |
| C values: Sonic conductance dm ³ /(s·bar) | 0.35 | 0.35 | 0.4 | 0.4 | 0.45 | 0.4 | 0.35 | 0.35 |
| b values: Critical pressure ratio | 0.09 | 0.06 | 0.09 | 0.06 | 0.1 | 0.06 | 0.1 | 0.06 |
| Cv factor | 0.07 | 0.07 | 0.08 | 0.07 | 0.1 | 0.07 | 0.07 | 0.08 |

Model

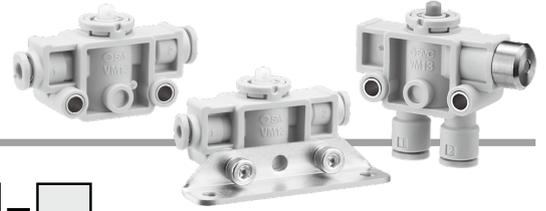
| Model | Piping | Applicable tubing O.D. | | | | | |
|--|---------------|------------------------|---|---|-----------|-------|------|
| | | Metric size | | | Inch size | | |
| | | 3.2 | 4 | 6 | 1/8" | 5/32" | 1/4" |
| VM1□ ¹ / ₈ F-□-□□□ | Side ported | ● | ● | ● | ● | ● | ● |
| VM1□ ² / ₃ F-□-□□□ | Bottom ported | ● | ● | — | ● | ● | — |

| | Piping direction | | Side ported | | | | Bottom ported | | | | Actuator | |
|-----------------------------|----------------------|-------------------|---------------|---------------|---------------|---------------|---------------|--|--------|---|----------------------|--------------------------------|
| | Number of ports | | 2-port | | 3-port | | 2-port | | 3-port | | Actuator part number | Additional weight for actuator |
| Mechanical operation | Basic model | | VM120F-□-00 | VM130F-□-00 | VM122F-□-00 | VM132F-□-00 | — | — | — | — | — | — |
| | Roller lever | Polyacetal roller | VM121F-□-01 | VM131F-□-01 | VM123F-□-01 | VM133F-□-01 | VM-01J | 14 g | | | | |
| | | Hard steel roller | VM121F-□-01S | VM131F-□-01S | VM123F-□-01S | VM133F-□-01S | VM-01JS | 19 g | | | | |
| | One way roller lever | Polyacetal roller | VM121F-□-02 | VM131F-□-02 | VM123F-□-02 | VM133F-□-02 | VM-02J | 18 g | | | | |
| | | Hard steel roller | VM121F-□-02S | VM131F-□-02S | VM123F-□-02S | VM133F-□-02S | VM-02JS | 23 g | | | | |
| | Straight plunger | | VM121F-□-05 | VM131F-□-05 | VM123F-□-05 | VM133F-□-05 | VM-05J | 47 g | | | | |
| | Roller plunger | Polyacetal roller | VM121F-□-06 | VM131F-□-06 | VM123F-□-06 | VM133F-□-06 | VM-06J | 47 g | | | | |
| | | Hard steel roller | VM121F-□-06S | VM131F-□-06S | VM123F-□-06S | VM133F-□-06S | VM-06JS | 49 g | | | | |
| | Cross roller plunger | Polyacetal roller | VM121F-□-07 | VM131F-□-07 | VM123F-□-07 | VM133F-□-07 | VM-07J | 47 g | | | | |
| | | Hard steel roller | VM121F-□-07S | VM131F-□-07S | VM123F-□-07S | VM133F-□-07S | VM-07JS | 49 g | | | | |
| Toggle lever | | VM121F-□-08 | VM131F-□-08 | VM123F-□-08 | VM133F-□-08 | VM-08J | 46 g | | | | | |
| Push button (Mushroom) | Red | VM121F-□-30R | VM131F-□-30R | VM123F-□-30R | VM133F-□-30R | VM-30JR | 39 g | | | | | |
| | Black | VM121F-□-30B | VM131F-□-30B | VM123F-□-30B | VM133F-□-30B | VM-30JB | | | | | | |
| | Green | VM121F-□-30G | VM131F-□-30G | VM123F-□-30G | VM133F-□-30G | VM-30JG | | | | | | |
| | Yellow | VM121F-□-30Y | VM131F-□-30Y | VM123F-□-30Y | VM133F-□-30Y | VM-30JY | | | | | | |
| Push button (Extended) | Red | VM121F-□-32R | VM131F-□-32R | VM123F-□-32R | VM133F-□-32R | VM-32JR | 34 g | | | | | |
| | Black | VM121F-□-32B | VM131F-□-32B | VM123F-□-32B | VM133F-□-32B | VM-32JB | | | | | | |
| | Green | VM121F-□-32G | VM131F-□-32G | VM123F-□-32G | VM133F-□-32G | VM-32JG | | | | | | |
| | Yellow | VM121F-□-32Y | VM131F-□-32Y | VM123F-□-32Y | VM133F-□-32Y | VM-32JY | | | | | | |
| Push button (Flush) | Red | VM121F-□-33R | VM131F-□-33R | VM123F-□-33R | VM133F-□-33R | VM-33JR | 33 g | | | | | |
| | Black | VM121F-□-33B | VM131F-□-33B | VM123F-□-33B | VM133F-□-33B | VM-33JB | | | | | | |
| | Green | VM121F-□-33G | VM131F-□-33G | VM123F-□-33G | VM133F-□-33G | VM-33JG | | | | | | |
| | Yellow | VM121F-□-33Y | VM131F-□-33Y | VM123F-□-33Y | VM133F-□-33Y | VM-33JY | | | | | | |
| Twist selector (2-position) | Red | VM121F-□-34R | VM131F-□-34R | VM123F-□-34R | VM133F-□-34R | VM-34JR | 39 g | | | | | |
| | Black | VM121F-□-34B | VM131F-□-34B | VM123F-□-34B | VM133F-□-34B | VM-34JB | | | | | | |
| | Green | VM121F-□-34G | VM131F-□-34G | VM123F-□-34G | VM133F-□-34G | VM-34JG | | | | | | |
| | Yellow | VM121F-□-34Y | VM131F-□-34Y | VM123F-□-34Y | VM133F-□-34Y | VM-34JY | | | | | | |
| Key selector (2-position) | | VM121F-□-36 | VM131F-□-36 | VM123F-□-36 | VM133F-□-36 | VM-36J | 57 g | | | | | |
| Twist selector (3-position) | | | 3-port | 5-port | 3-port | 5-port | — | 126 g (Add to 2 basic model units.) | | | | |
| | Red | VM131F-□-35R | VM151F-□-35R | VM133F-□-35R | VM153F-□-35R | | | | | | | |
| | Black | VM131F-□-35B | VM151F-□-35B | VM133F-□-35B | VM153F-□-35B | | | | | | | |
| | Green | VM131F-□-35G | VM151F-□-35G | VM133F-□-35G | VM153F-□-35G | | | | | | | |
| | | Yellow | VM131F-□-35Y | VM151F-□-35Y | VM133F-□-35Y | VM153F-□-35Y | | | | | | |

- * It is possible to change the actuator assembly and mount to basic model when an actuator part number is specified in the column.
- * For the push button (mushroom), push button (flush), push button (extended) and individual fastening ring replacement, refer to page 16.
- * The selector (2-position and 3-position) knob cannot be removed or replaced.
- * Color of plunger: Gray (2-port), White (3-port)
- * □ indicates the applicable tube outside diameter.

VM100F Series

How to Order



VM1 3 1 F - 06 - 30 R - -

Number of ports

| | |
|---|--|
| 2 | 2-port |
| 3 | 3-port |
| 5 | 5-port (Twist selector 3-position only) |

Piping direction and the height of plunger

| | Side ported | Long (Basic model only) |
|---|---------------|-------------------------|
| 0 | Side ported | Long (Basic model only) |
| 1 | Side ported | Short |
| 2 | Bottom ported | Long (Basic model only) |
| 3 | Bottom ported | Short |

With One-touch fitting

Applicable tubing O.D.

| Metric size | | Inch size | |
|-------------|------|-----------|--------|
| 23 | ø3.2 | 01 | ø1/8" |
| 04 | ø4 | 03 | ø5/32" |
| 06 | ø6 | 07 | ø1/4" |

* For selecting applicable tubing O.D., refer to the "Model" on page 2.
Metric size and inch size types can be visually identified by color of the release button.
Metric size: Light gray
Inch size: Orange

Suffix for indicator

| | |
|-----|--------------------------|
| Nil | None |
| Z | With miniature indicator |

* Applicable only to bottom ported

Bracket option

| | |
|-----|-------------------------|
| Nil | None |
| B | With bracket (included) |

* Applicable only to side ported
Twist selector (3-position), plunger (straight, roller, cross roller), toggle lever type cannot be mounted. These are only for panel mount type. Refer to page 15 for details.

Actuator type*1

| | |
|----|-----------------------------|
| 00 | Basic model |
| 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) |
| 36 | Key selector (2-position) |
| 35 | Twist selector (3-position) |

Suffix for actuator*1

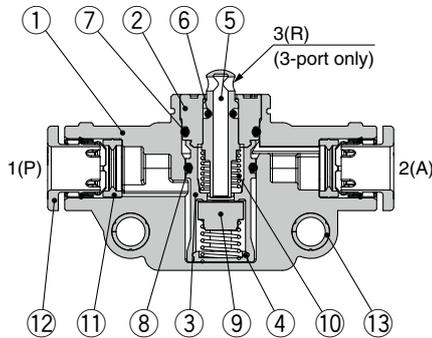
| | | |
|---|-------------------|--------------------------------|
| S | Hard steel roller | |
| R | Red | Color of push button, selector |
| B | Black | |
| G | Green | |
| Y | Yellow | |

*1 Refer to the table on page 2 for combinations of actuator type and suffix.

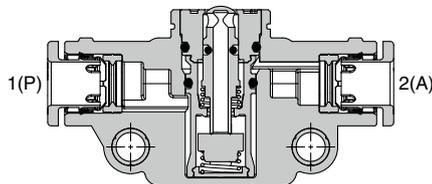
Construction

Side ported

Non-actuated

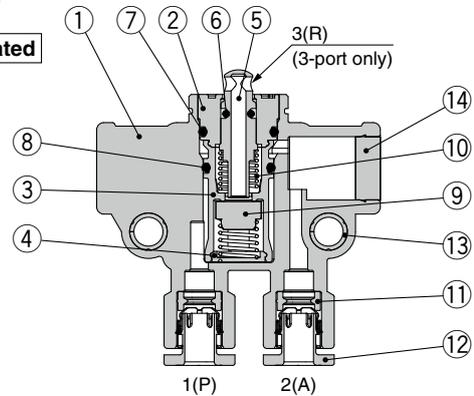


Actuated

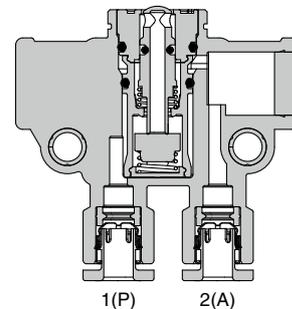


Bottom ported

Non-actuated



Actuated



Component Parts

| No. | Description | Material | Note | |
|-----|---------------|----------|-------|--------|
| 1 | Valve | PBT | | |
| 2 | Valve sheet A | PBT | | |
| 3 | Valve sheet B | PBT | | |
| 4 | Valve sheet C | PBT | | |
| 5 | Plunger | POM | White | 3-port |
| | | | Gray | 2-port |
| 6 | O-ring | NBR | | |
| 7 | O-ring | NBR | | |

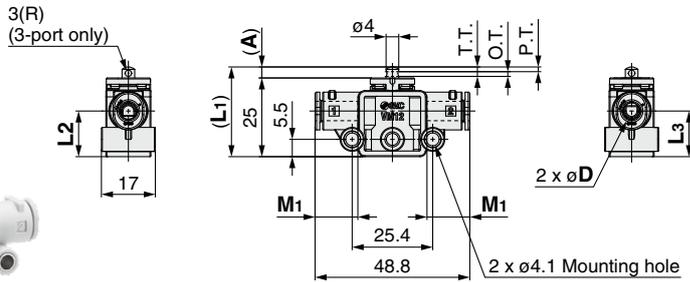
| No. | Description | Material | Note |
|-----|-------------|-----------------|----------------------------|
| 8 | O-ring | NBR | |
| 9 | Valve | NBR | |
| 10 | Spring | Stainless steel | |
| 11 | Seal | NBR | |
| 12 | Cassette | — | |
| 13 | Spacer | Steel | |
| 14 | Plug | Brass | Electroless nickel plating |

2/3-Port Mechanical Valve with One-touch Fitting **VM100F Series**

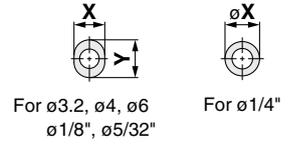
Dimensions / Side Ported

Basic model

- VM120F-□-00
- VM130F-□-00
- VM121F-□-00
- VM131F-□-00

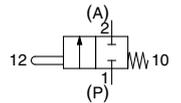


Release button dimensions

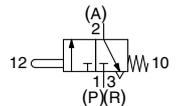


Symbol

2-port



3-port



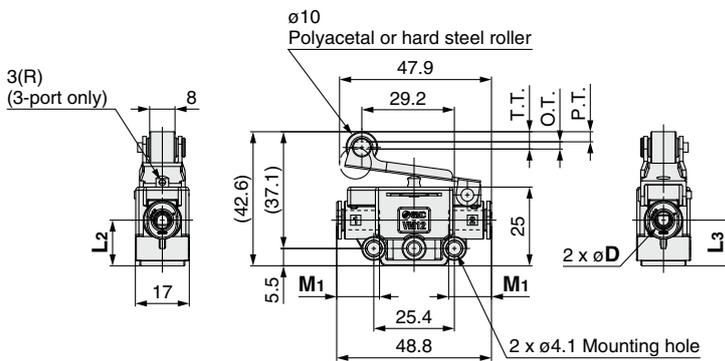
| Model | Applicable tubing O.D. ϕD | Release button dimensions | | A | L1 | L2 | L3 | M1 |
|--------------|---------------------------------|---------------------------|------|------|------|------|------|------|
| | | $\phi X(X)$ | Y | | | | | |
| VM1□0F-23-00 | 3.2 | 6.7 | 9.5 | 7.5 | 32.5 | 13.5 | 15.5 | 13.5 |
| VM1□0F-04-00 | 4 | 7.7 | 10.0 | | | 14.5 | 14.5 | |
| VM1□0F-06-00 | 6 | 9.7 | 12.0 | | | 13.5 | 15.5 | |
| VM1□0F-01-00 | 1/8" | 6.7 | 9.5 | | | 14.5 | 14.5 | |
| VM1□0F-03-00 | 5/32" | 7.7 | 10.0 | | | 13.5 | 15.5 | |
| VM1□0F-07-00 | 1/4" | 10.9 | — | 14.5 | 14.5 | | | |
| VM1□1F-23-00 | 3.2 | 6.7 | 9.5 | 3.5 | 28.5 | 13.5 | 15.5 | |
| VM1□1F-04-00 | 4 | 7.7 | 10.0 | | | 14.5 | 14.5 | |
| VM1□1F-06-00 | 6 | 9.7 | 12.0 | | | 13.5 | 15.5 | |
| VM1□1F-01-00 | 1/8" | 6.7 | 9.5 | | | 14.5 | 14.5 | |
| VM1□1F-03-00 | 5/32" | 7.7 | 10.0 | | | 13.5 | 15.5 | |
| VM1□1F-07-00 | 1/4" | 10.9 | — | 14.5 | 14.5 | | | |

*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 20 N |
| P.T. | 1.5 mm |
| O.T. | 1.5 mm |
| T.T. | 3 mm |

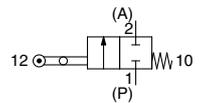
Roller lever

- VM121F-□-01
- VM131F-□-01
- VM121F-□-01S
- VM131F-□-01S

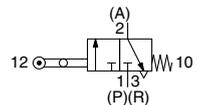


Symbol

2-port



3-port



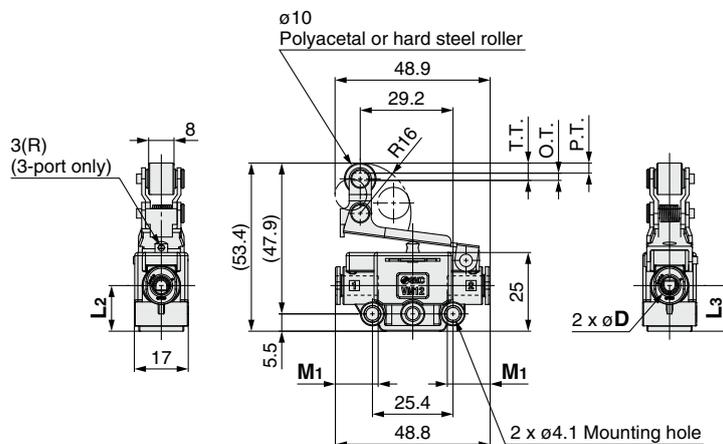
*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 10 N |
| P.T. | 3.2 mm |
| O.T. | 2.3 mm |
| T.T. | 5.5 mm |

ϕD , dimensions L2, L3 and M1 are the same as basic models.

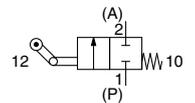
One way roller lever

- VM121F-□-02
- VM131F-□-02
- VM121F-□-02S
- VM131F-□-02S

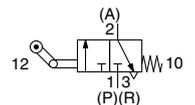


Symbol

2-port



3-port



*1 0.5 MPa supply

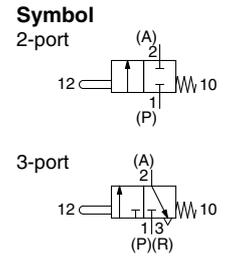
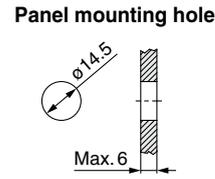
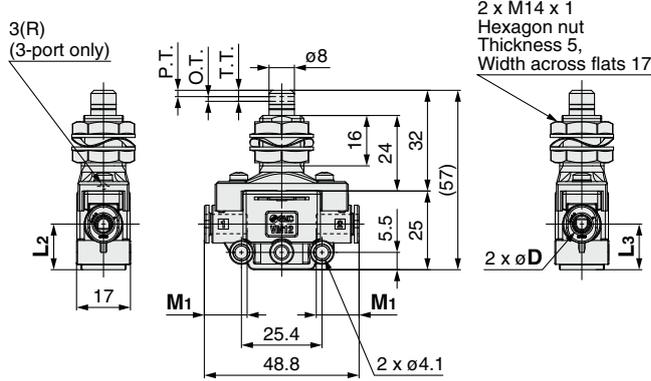
| | |
|----------|--------|
| F.O.F.*1 | 10 N |
| P.T. | 3.2 mm |
| O.T. | 2.3 mm |
| T.T. | 5.5 mm |

ϕD , dimensions L2, L3 and M1 are the same as basic models.

VM100F Series

Dimensions / Side Ported

Straight plunger
VM121F-□-05
VM131F-□-05

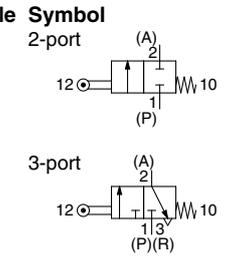
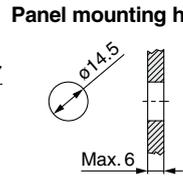
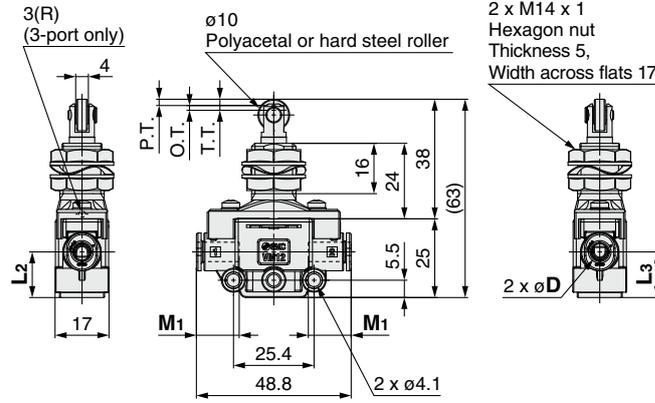


*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 23 N |
| P.T. | 2 mm |
| O.T. | 1.5 mm |
| T.T. | 3.5 mm |

øD, dimensions L2, L3 and M1 are the same as basic models.

Roller plunger
VM121F-□-06
VM131F-□-06
VM121F-□-06S
VM131F-□-06S

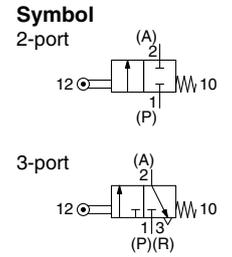
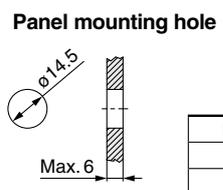
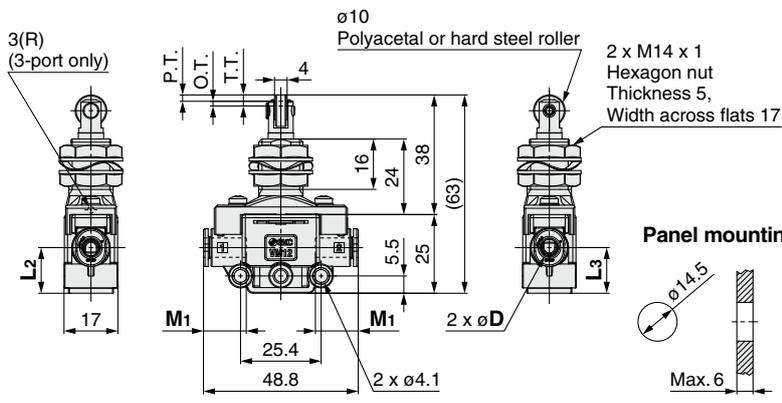


*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 23 N |
| P.T. | 2 mm |
| O.T. | 1.5 mm |
| T.T. | 3.5 mm |

øD, dimensions L2, L3 and M1 are the same as basic models.

Cross roller plunger
VM121F-□-07
VM131F-□-07
VM121F-□-07S
VM131F-□-07S

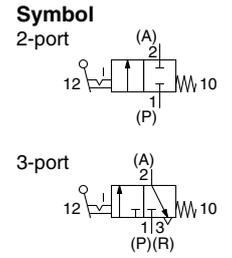
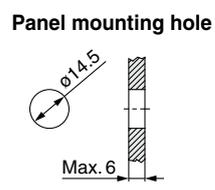
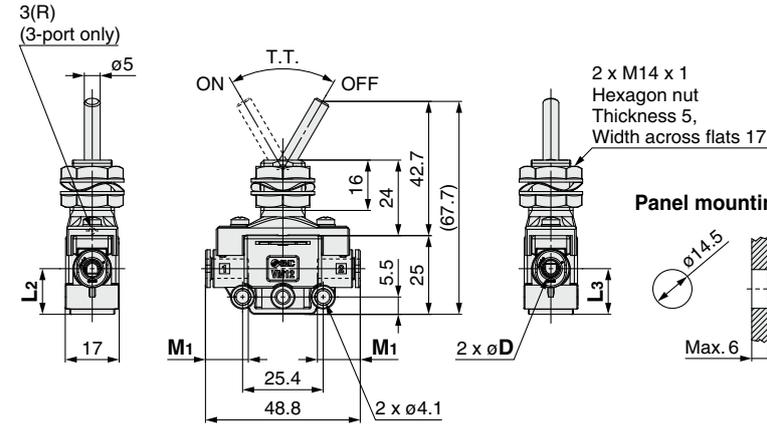


*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 23 N |
| P.T. | 2 mm |
| O.T. | 1.5 mm |
| T.T. | 3.5 mm |

øD, dimensions L2, L3 and M1 are the same as basic models.

Toggle lever
VM121F-□-08
VM131F-□-08



*1 0.5 MPa supply

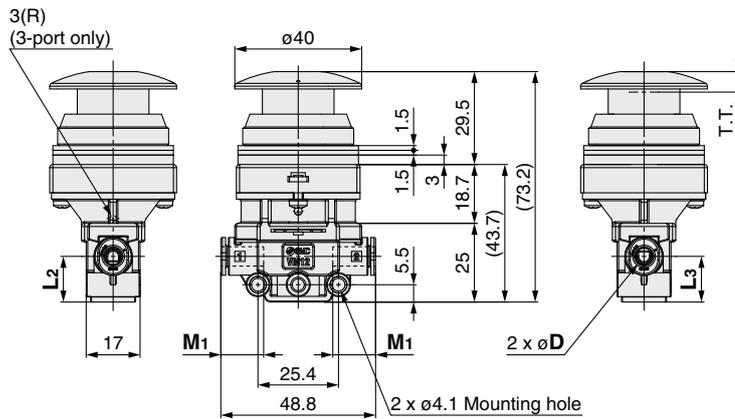
| | |
|----------|------|
| F.O.F.*1 | 10 N |
| T.T. | 60° |

øD, dimensions L2, L3 and M1 are the same as basic models.

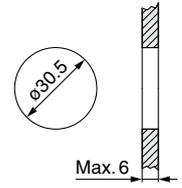
2/3-Port Mechanical Valve with One-touch Fitting **VM100F Series**

Dimensions / Side Ported

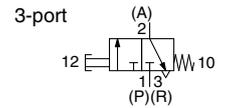
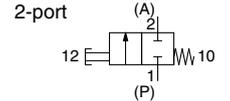
Push button (Mushroom)
VM121F-□-30 (R, B, G, Y)
VM131F-□-30 (R, B, G, Y)



Panel mounting hole



Symbol

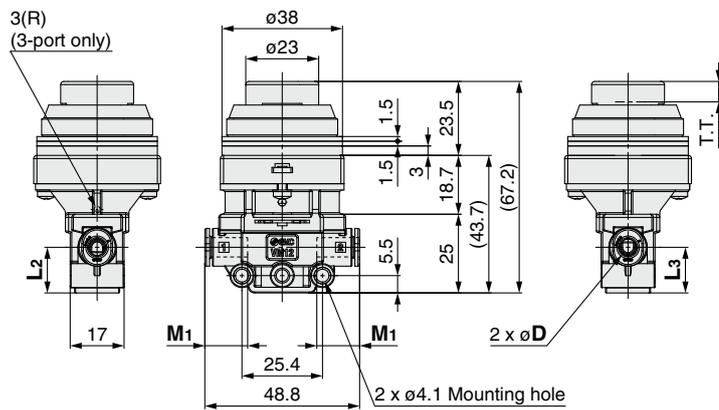


*1 0.5 MPa supply

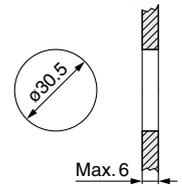
| | |
|----------|--------|
| F.O.F.*1 | 21 N |
| T.T. | 6.5 mm |

øD, dimensions L2, L3 and M1 are the same as basic models.

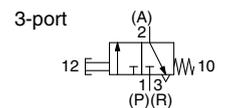
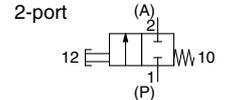
Push button (Extended)
VM121F-□-32 (R, B, G, Y)
VM131F-□-32 (R, B, G, Y)



Panel mounting hole



Symbol

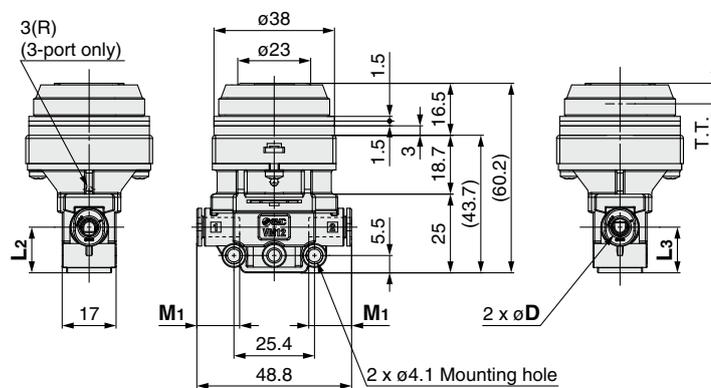


*1 0.5 MPa supply

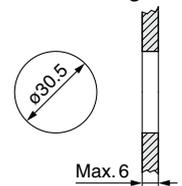
| | |
|----------|--------|
| F.O.F.*1 | 21 N |
| T.T. | 6.5 mm |

øD, dimensions L2, L3 and M1 are the same as basic models.

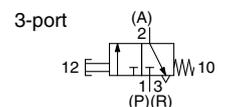
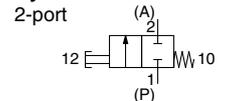
Push button (Flush)
VM121F-□-33 (R, B, G, Y)
VM131F-□-33 (R, B, G, Y)



Panel mounting hole



Symbol



*1 0.5 MPa supply

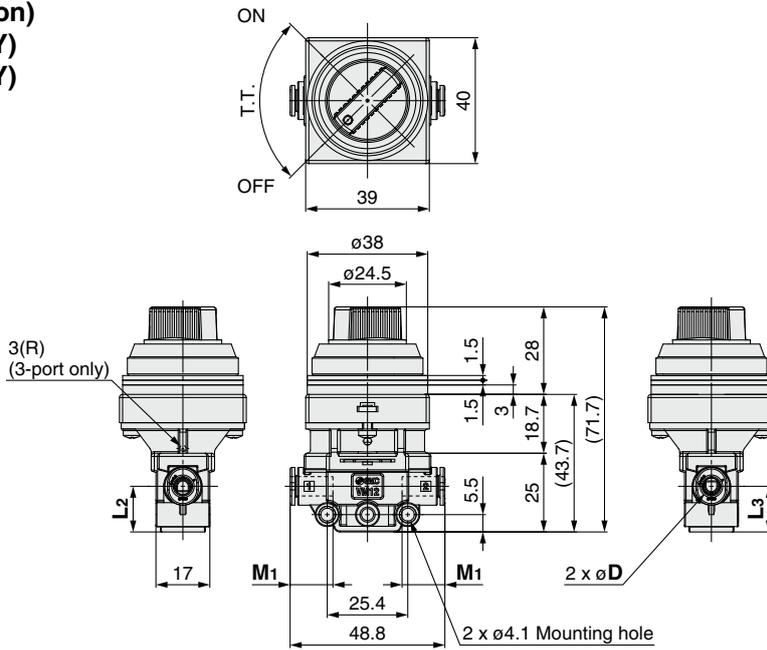
| | |
|----------|--------|
| F.O.F.*1 | 21 N |
| T.T. | 6.5 mm |

øD, dimensions L2, L3 and M1 are the same as basic models.

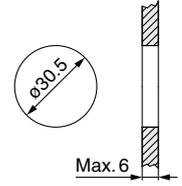
VM100F Series

Dimensions / Side Ported

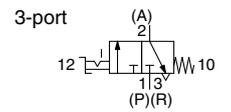
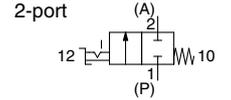
Twist selector (2-position)
 VM121F-□-34 (R, B, G, Y)
 VM131F-□-34 (R, B, G, Y)



Panel mounting hole



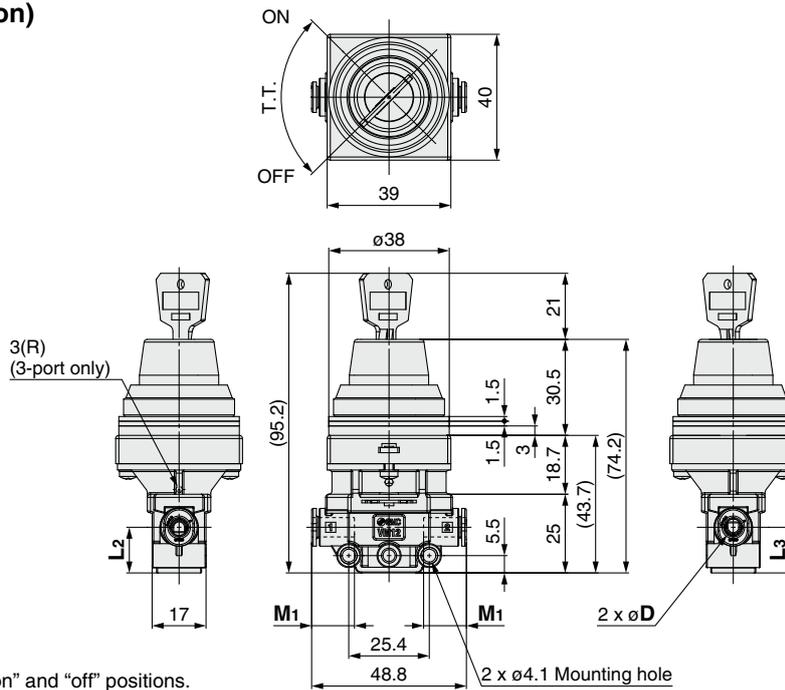
Symbol



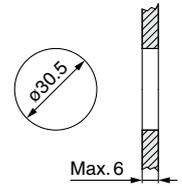
ϕD , dimensions L_2 , L_3 and M_1 are the same as basic models.

| | |
|-------------------|------|
| *1 0.5 MPa supply | |
| F.O.F.*1 | 15 N |
| T.T. | 90° |

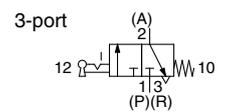
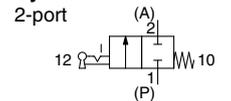
Key selector (2-position)
 VM121F-□-36
 VM131F-□-36



Panel mounting hole



Symbol



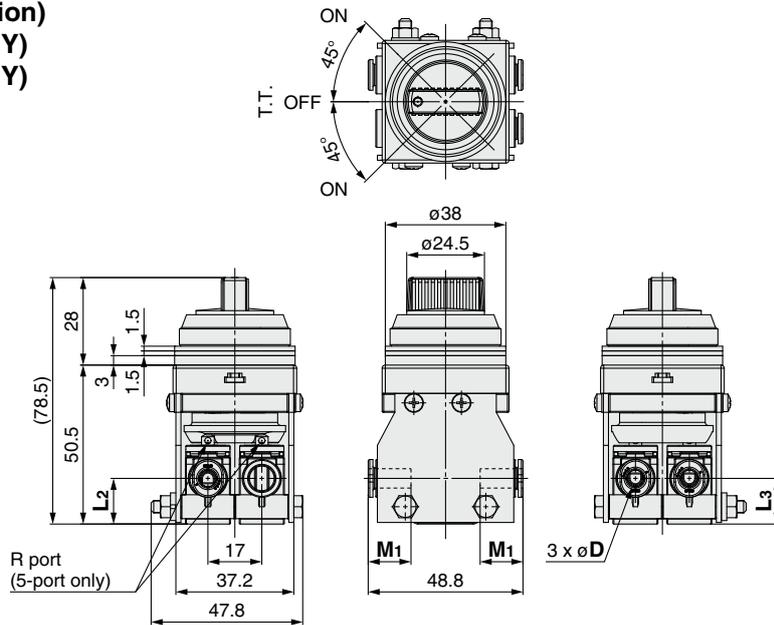
A key can be removed at the "on" and "off" positions.
 One spare key is included.

ϕD , dimensions L_2 , L_3 and M_1 are the same as basic models.

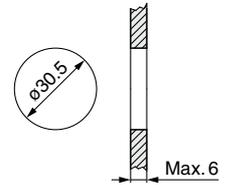
| | |
|-------------------|------|
| *1 0.5 MPa supply | |
| F.O.F.*1 | 15 N |
| T.T. | 90° |

Dimensions / Side Ported

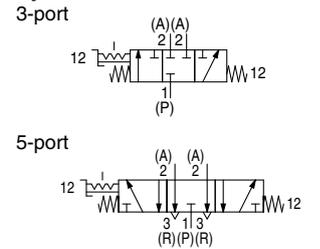
Twist selector (3-position)
 VM131F-□-35 (R, B, G, Y)
 VM151F-□-35 (R, B, G, Y)



Panel mounting hole



Symbol



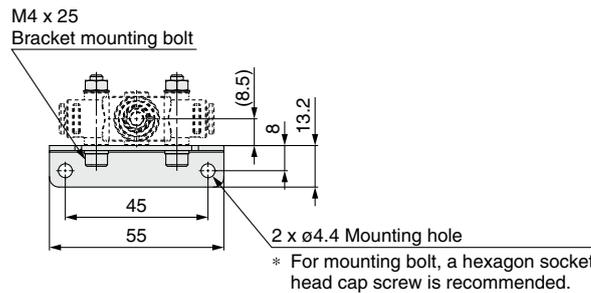
*1 0.5 MPa supply

| | |
|----------|------|
| F.O.F.*1 | 20 N |
| T.T. | 45° |

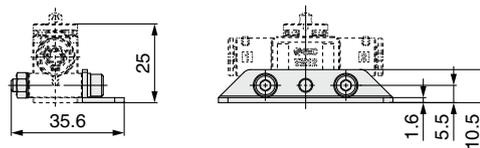
øD, dimensions L2, L3 and M1 are the same as basic models.

With bracket

VM120F-□-□□□-B
 VM130F-□-□□□-B
 VM121F-□-□□□-B
 VM131F-□-□□□-B



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



VM1-B

| Component parts | Qty. |
|---------------------------------------|------|
| Bracket | 1 |
| Hexagon socket head cap screw M4 x 25 | 2 |
| Hexagon nut M4 | 2 |

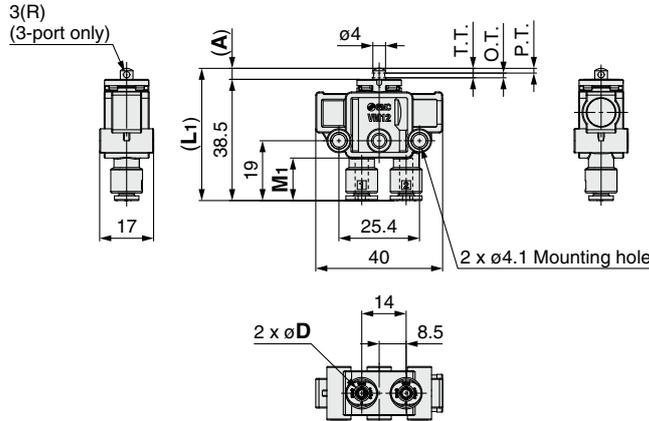
VM100F Series

Dimensions / Bottom Ported

Basic model
 VM122F-□-00
 VM132F-□-00
 VM123F-□-00
 VM133F-□-00



With miniature indicator

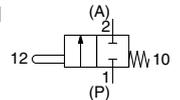


Release button dimensions

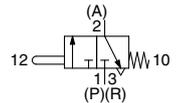


Symbol

2-port

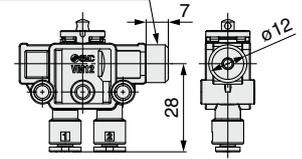


3-port



With miniature indicator

Pneumatic indicator

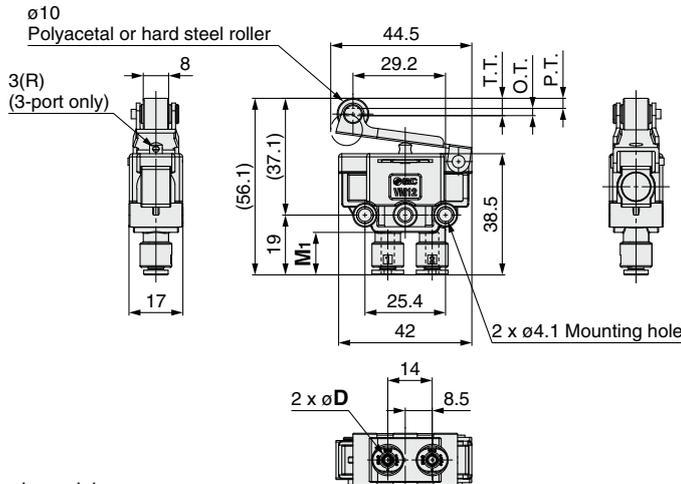


*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 20 N |
| P.T. | 1.5 mm |
| O.T. | 1.5 mm |
| T.T. | 3 mm |

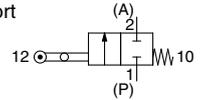
| Model | Applicable tubing O.D. øD | Release button dimensions | | A | L1 | M1 |
|--------------|------------------------------|---------------------------|------|-----|----|------|
| | | X | Y | | | |
| VM1□2F-23-00 | 3.2 | 6.7 | 9.5 | 7.5 | 46 | 13.5 |
| VM1□2F-04-00 | 4 | 7.7 | 10.0 | | | |
| VM1□2F-01-00 | 1/8" | 6.7 | 9.5 | | | |
| VM1□2F-03-00 | 5/32" | 7.7 | 10.0 | 3.5 | 42 | |
| VM1□3F-23-00 | 3.2 | 6.7 | 9.5 | | | |
| VM1□3F-04-00 | 4 | 7.7 | 10.0 | | | |
| VM1□3F-01-00 | 1/8" | 6.7 | 9.5 | | | |
| VM1□3F-03-00 | 5/32" | 7.7 | 10.0 | | | |

Roller lever
 VM123F-□-01
 VM133F-□-01
 VM123F-□-01S
 VM133F-□-01S

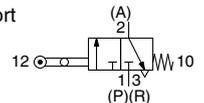


Symbol

2-port



3-port

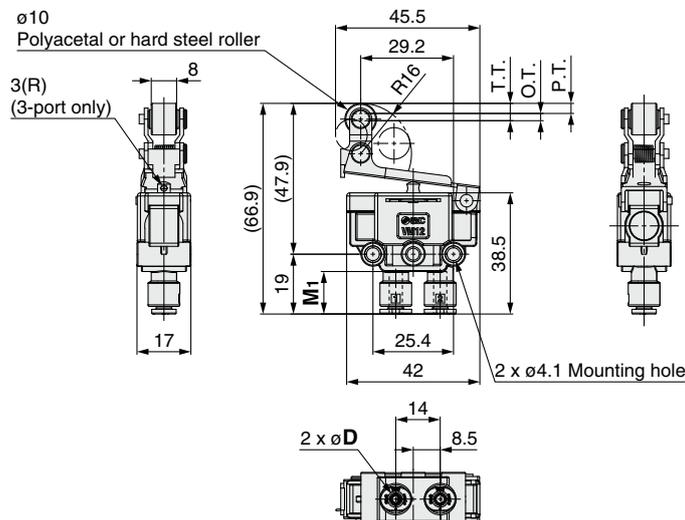


*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 10 N |
| P.T. | 3.2 mm |
| O.T. | 2.3 mm |
| T.T. | 5.5 mm |

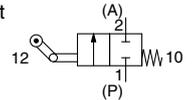
øD and dimension M1 are the same as basic models.

One way roller lever
 VM123F-□-02
 VM133F-□-02
 VM123F-□-02S
 VM133F-□-02S

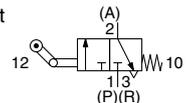


Symbol

2-port



3-port



*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 10 N |
| P.T. | 3.2 mm |
| O.T. | 2.3 mm |
| T.T. | 5.5 mm |

øD and dimension M1 are the same as basic models.

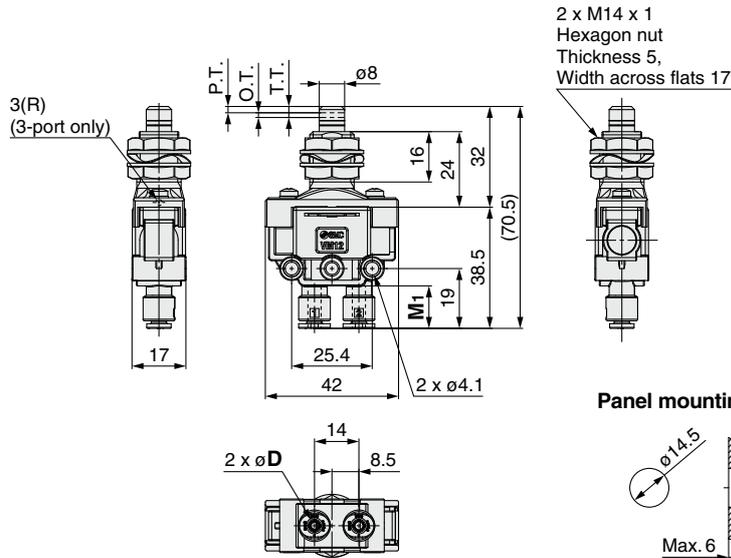
2/3-Port Mechanical Valve with One-touch Fitting **VM100F Series**

Dimensions / Bottom Ported

Straight plunger

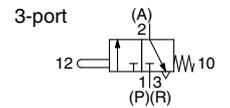
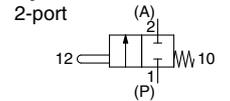
VM123F-□-05

VM133F-□-05



øD and dimension M1 are the same as basic models.

Symbol



*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 23 N |
| P.T. | 2 mm |
| O.T. | 1.5 mm |
| T.T. | 3.5 mm |

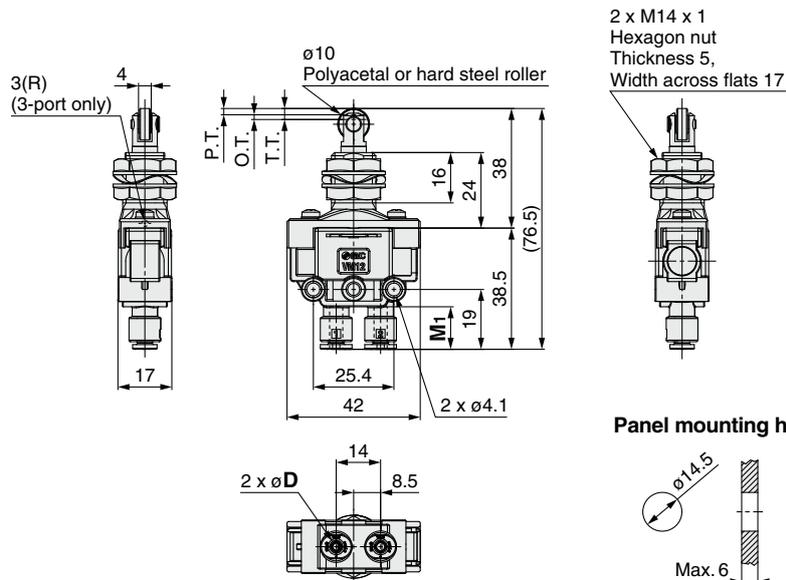
Roller plunger

VM123F-□-06

VM133F-□-06

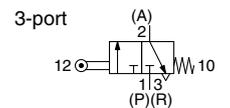
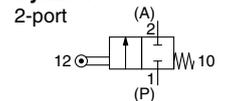
VM123F-□-06S

VM133F-□-06S



øD and dimension M1 are the same as basic models.

Symbol



*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 23 N |
| P.T. | 2 mm |
| O.T. | 1.5 mm |
| T.T. | 3.5 mm |

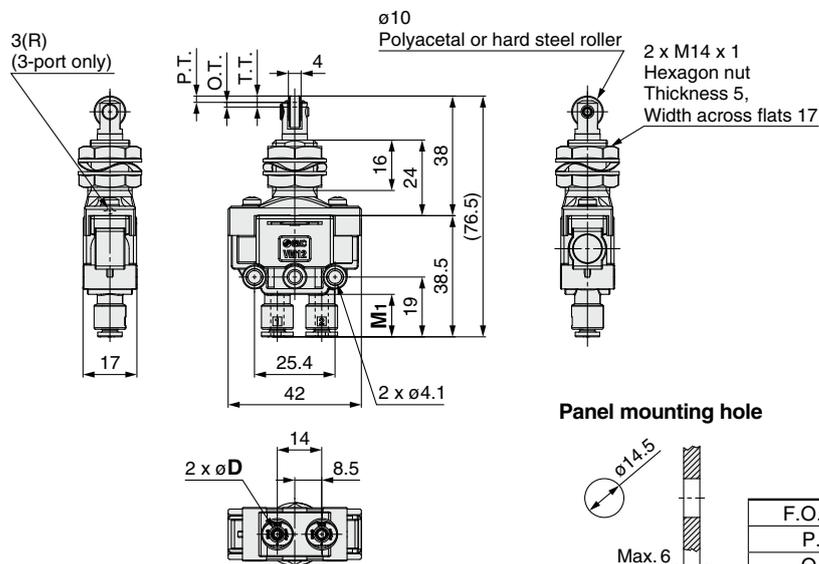
Cross roller plunger

VM123F-□-07

VM133F-□-07

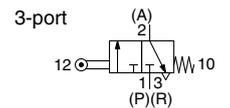
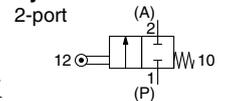
VM123F-□-07S

VM133F-□-07S



øD and dimension M1 are the same as basic models.

Symbol



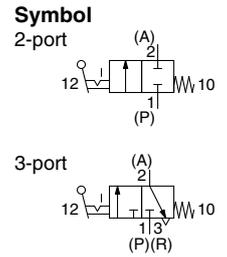
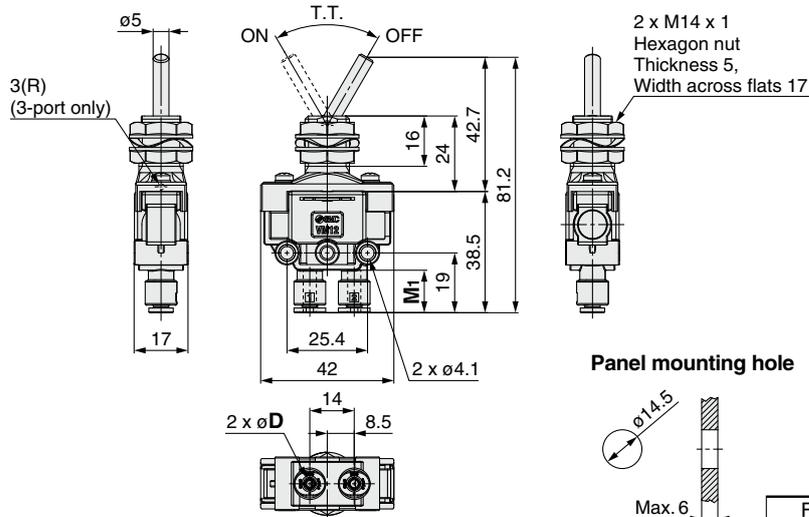
*1 0.5 MPa supply

| | |
|----------|--------|
| F.O.F.*1 | 23 N |
| P.T. | 2 mm |
| O.T. | 1.5 mm |
| T.T. | 3.5 mm |

VM100F Series

Dimensions / Bottom Ported

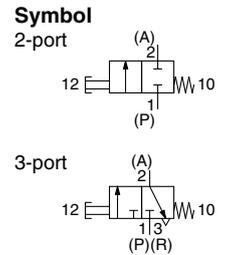
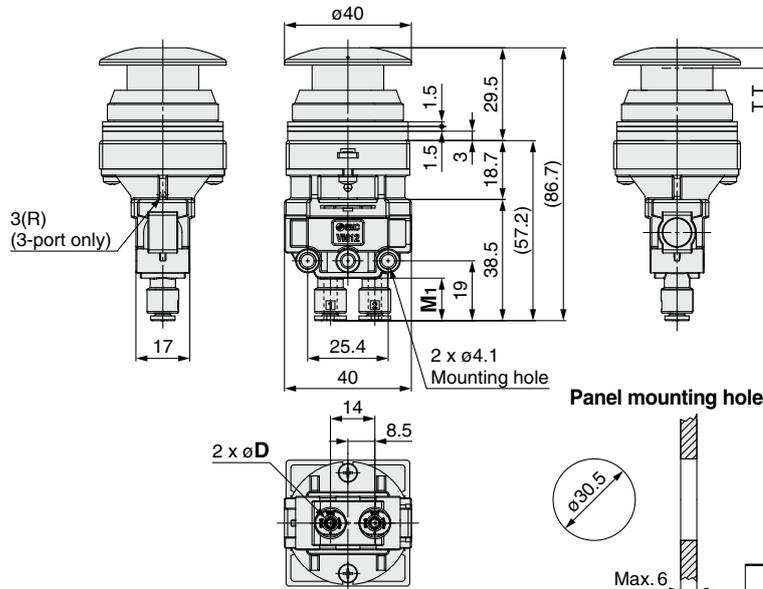
Toggle lever
 VM123F-□-08
 VM133F-□-08



ϕD and dimension **M1** are the same as basic models.

| | |
|-------------------|------|
| *1 0.5 MPa supply | |
| F.O.F.*1 | 10 N |
| T.T. | 60° |

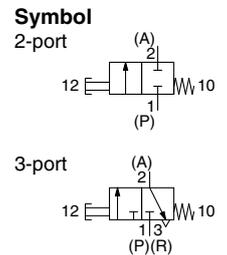
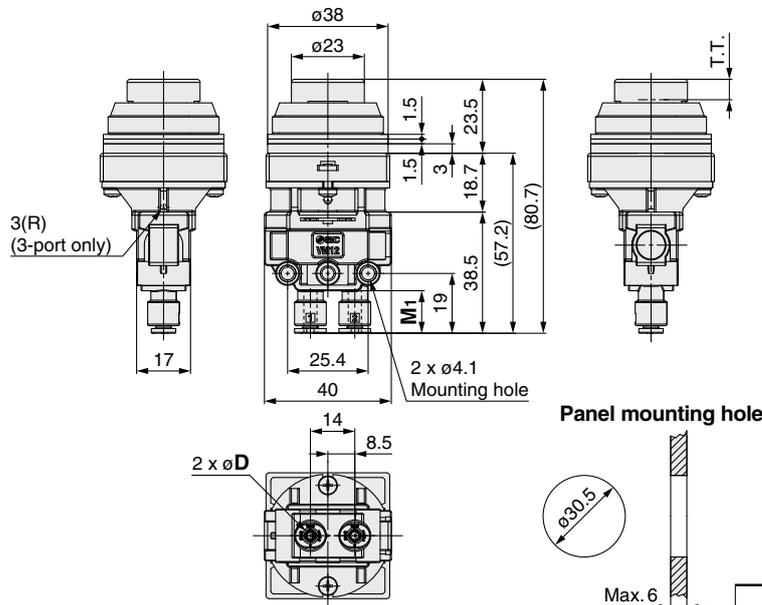
Push button (Mushroom)
 VM123F-□-30 (R, B, G, Y)
 VM133F-□-30 (R, B, G, Y)



ϕD and dimension **M1** are the same as basic models.

| | |
|-------------------|--------|
| *1 0.5 MPa supply | |
| F.O.F.*1 | 21 N |
| T.T. | 6.5 mm |

Push button (Extended)
 VM123F-□-32 (R, B, G, Y)
 VM133F-□-32 (R, B, G, Y)



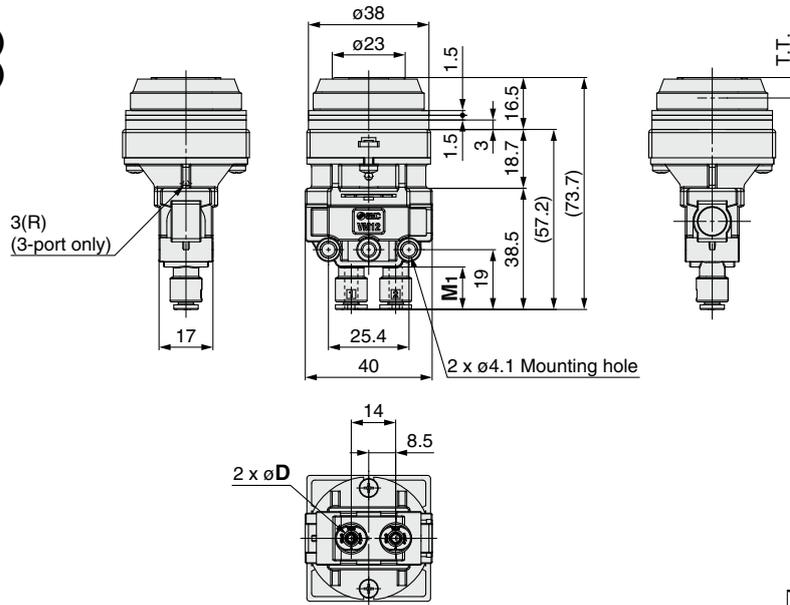
ϕD and dimension **M1** are the same as basic models.

| | |
|-------------------|--------|
| *1 0.5 MPa supply | |
| F.O.F.*1 | 21 N |
| T.T. | 6.5 mm |

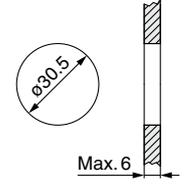
2/3-Port Mechanical Valve with One-touch Fitting **VM100F Series**

Dimensions / **Bottom Ported**

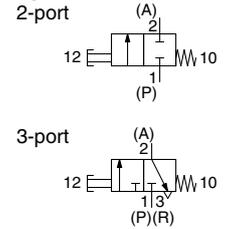
Push button (Flush)
VM123F-□-33 (R, B, G, Y)
VM133F-□-33 (R, B, G, Y)



Panel mounting hole



Symbol

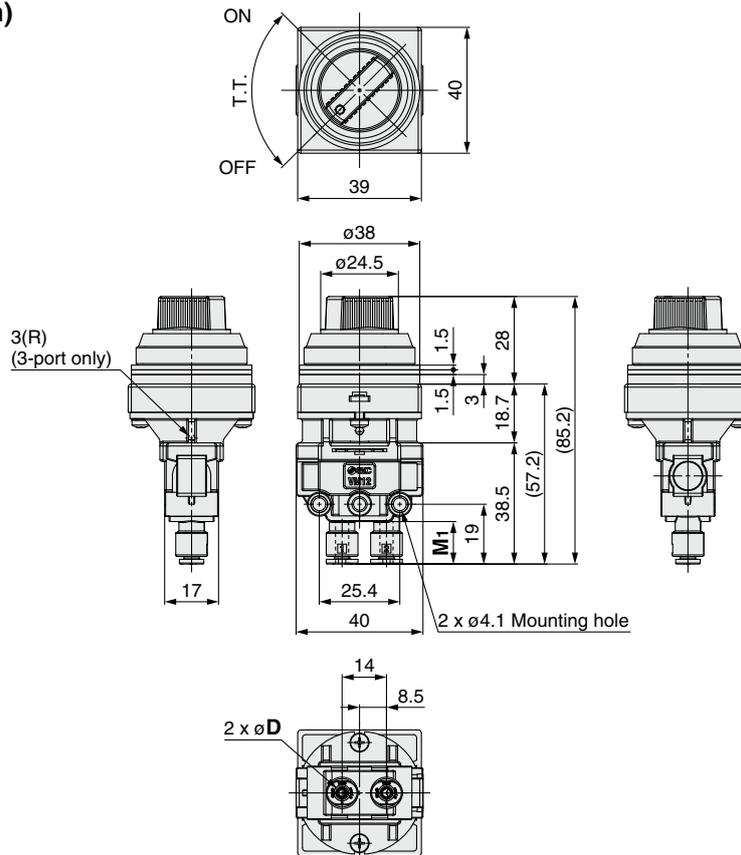


*1 0.5 MPa supply

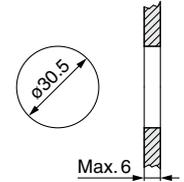
| | |
|----------|--------|
| F.O.F.*1 | 21 N |
| T.T. | 6.5 mm |

ϕD and dimension **M1** are the same as basic models.

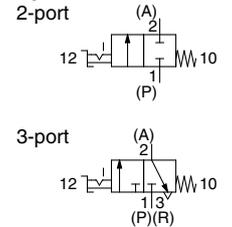
Twist selector (2-position)
VM123F-□-34 (R, B, G, Y)
VM133F-□-34 (R, B, G, Y)



Panel mounting hole



Symbol



*1 0.5 MPa supply

| | |
|----------|------|
| F.O.F.*1 | 15 N |
| T.T. | 90° |

ϕD and dimension **M1** are the same as basic models.

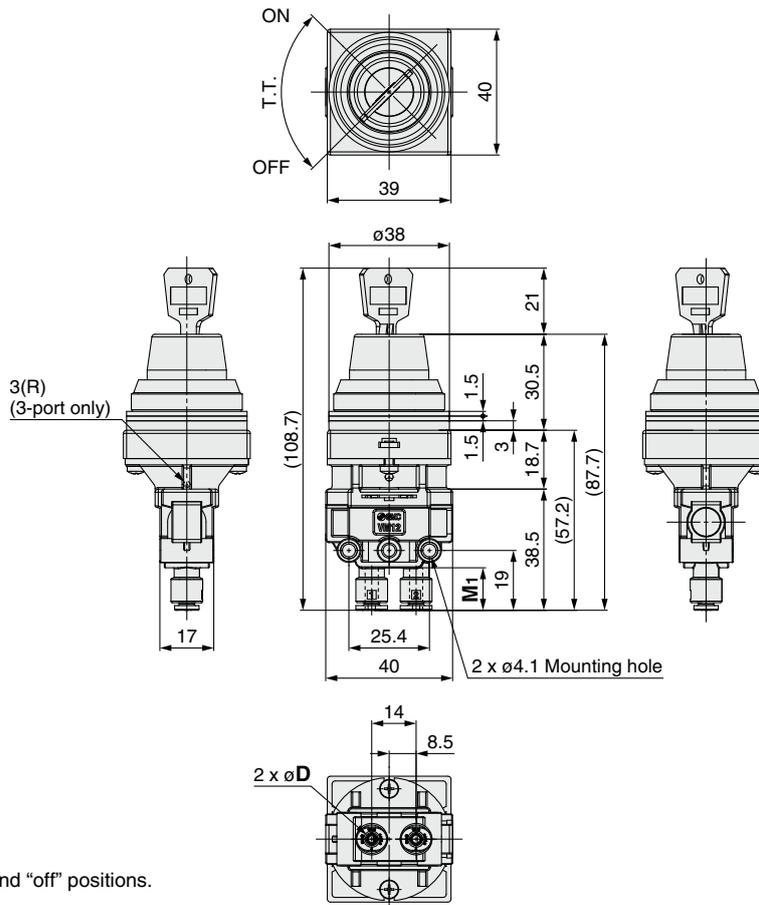
VM100F Series

Dimensions / Bottom Ported

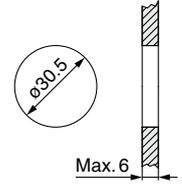
Key selector (2-position)

VM123F-□-36

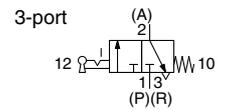
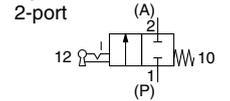
VM133F-□-36



Panel mounting hole



Symbol



A key can be removed at the "on" and "off" positions.
One spare key is included.
øD and dimension M1 are the same as basic models.

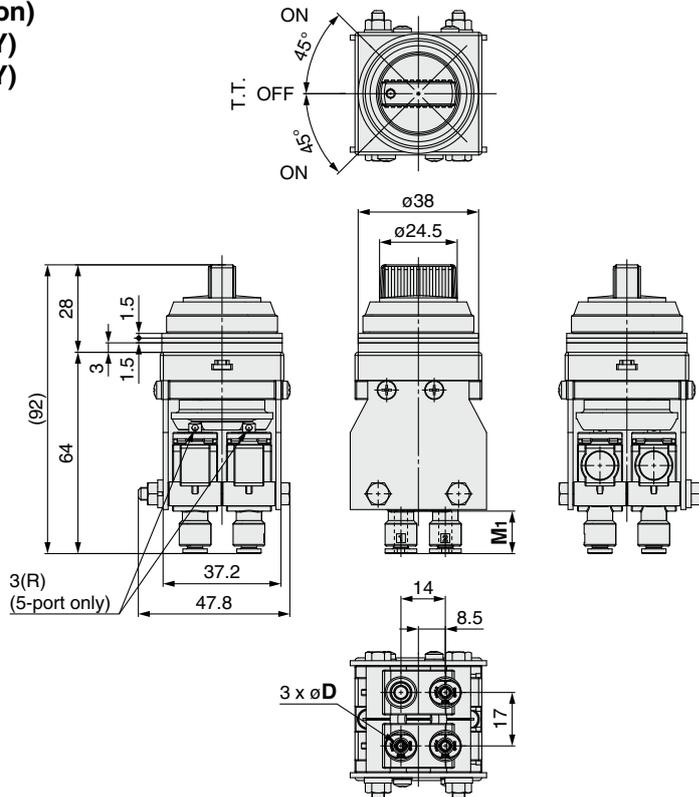
*1 0.5 MPa supply

| | |
|----------|------|
| F.O.F.*1 | 15 N |
| T.T. | 90° |

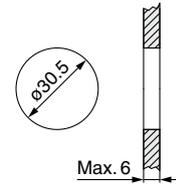
Twist selector (3-position)

VM133F-□-35 (R, B, G, Y)

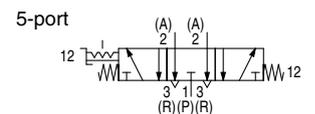
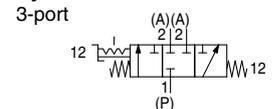
VM153F-□-35 (R, B, G, Y)



Panel mounting hole



Symbol



øD and dimension M1 are the same as basic models.

*1 0.5 MPa supply

| | |
|----------|------|
| F.O.F.*1 | 20 N |
| T.T. | 45° |

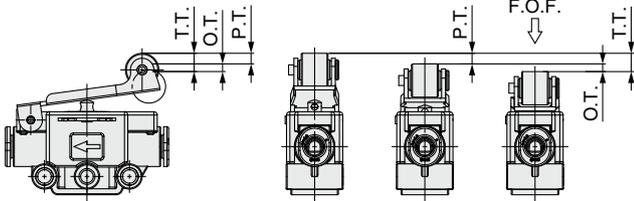


VM100F Series Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For 3/4/5-port solenoid valve precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <http://www.smcworld.com>

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

Design

⚠ Warning

1. This product cannot be used for applications in which the pressure must be sealed.

Since the VM100F 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

1. When installing the mechanical operation type mechanical valves, adjust the position so that the valves do not operate over the operating limit range.

Operating over the limit could damage the mechanical valve or actuator, and lead to equipment malfunction.

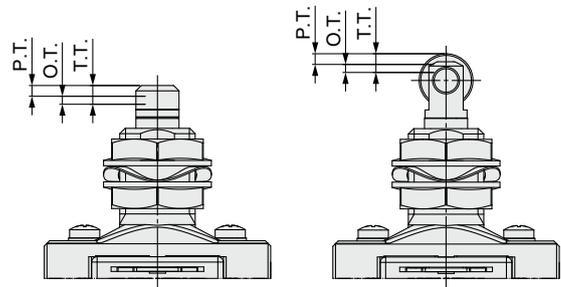
2. P.T. depends on pressure or differences between the individual product specifications. In order to ensure that the valve opens, keep the operating stroke value for the mechanical operation type within the range specified by the following formula.

$$\text{Operating stroke range} = (\text{P.T.} + 0.5 \times \text{O.T.}) \text{ to } (\text{P.T.} + \text{O.T.} - 0.1)$$

Operating Stroke Range

| Series | Actuator type | Operating stroke [mm] |
|--------|----------------------|-----------------------|
| VM100F | Basic model | 2.2 to 2.9 |
| | Roller lever | 4.3 to 5.4 |
| | One way roller lever | 4.3 to 5.4 |
| | Straight plunger | 2.7 to 3.4 |
| | Roller plunger | 2.7 to 3.4 |
| | Cross roller plunger | 2.7 to 3.4 |

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.

4. Refer to the Fittings and Tubing Precautions in the catalog available on the SMC website for handling One-touch fittings.



VM100F Series Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For 3/4/5-port solenoid valve precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <http://www.smcworld.com>

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.

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.

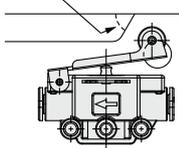
If operated over the maximum values, impact force from cam and dog will be applied to the actuator, leading to damage of the actuator or the valve itself.

Cam and Dog

| Series | Actuator type | Angle limit of cam and dog | Max. speed limit of cam and dog [m/s] |
|----------------------|----------------------|----------------------------|---------------------------------------|
| VM100F | Roller lever | 30° | 0.7 |
| | | 45° | 0.3 |
| | One way roller lever | 30° | 0.7 |
| | | 45° | 0.3 |
| | Straight plunger | — | 0.2 |
| | Roller plunger | 30° | 0.3 |
| Cross roller plunger | 30° | 0.3 | |

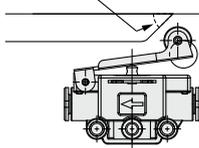
[Not acceptable]

Over 45° (Abrupt angle)



[Acceptable]

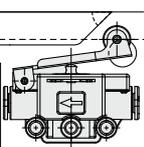
45° or less



[Not acceptable]

Max. travel

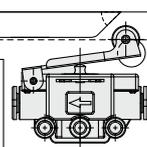
Over travel. Excessive force is applied due to the maximum travel position being exceeded.



[Acceptable]

Max. travel

Sufficient travel. The actuator can reach the total travel position without excessive force being applied.

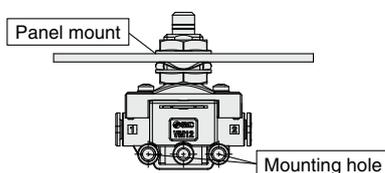


Cam and Dog Material

| Roller material | Cam and dog material | Surface finish of cam and dog |
|-----------------|----------------------|-------------------------------|
| Polyacetal | Steel | 6.3 z or less |
| Hard steel | Steel, Resin | 25 z or less |

3. Mount the plunger (straight, roller, cross roller) and toggle lever type using the panel mount.

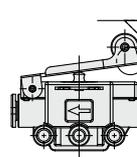
Do not use the mounting hole for side mounting or bracket mounting. If excessive torque is applied to the valve, it can cause breakage.



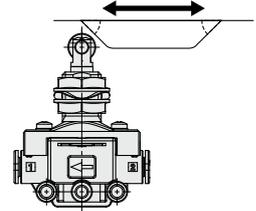
4. Do not use the roller lever type in the direction shown in the drawings below.

Select the roller plunger type when the dog goes over the actuator.

[Not acceptable]



[Acceptable]



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

Warning

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 VM100F, supply vacuum pressure to P port.

Operating Environment

Warning

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

Warning

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.



VM100F Series Specific Product Precautions 3

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For 3/4/5-port solenoid valve precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <http://www.smcworld.com>

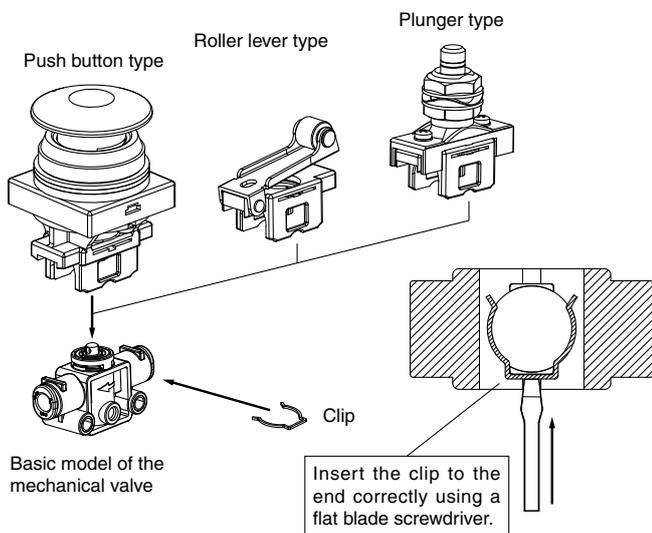
Change of the Actuator and Button

⚠ Caution

Refer to the procedure below for the mounting and removal of the actuator.

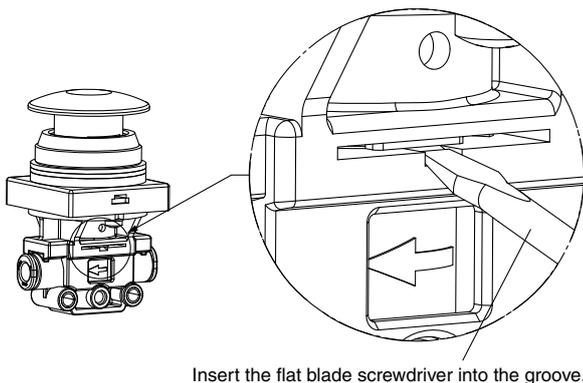
1. Installation

Mount the actuator onto the basic model. Insert the clip into the groove of the body to fix them together. Push the clip to the end using a flat blade screwdriver. After the clip is inserted, check if the clip is fixed correctly. Perform the change according to the procedure indicated in the Operation Manual.



2. Removal

Insert the flat blade screwdriver into the groove on the side of the actuator to remove the clip. Do not reuse the removed clip.



Change of the Button

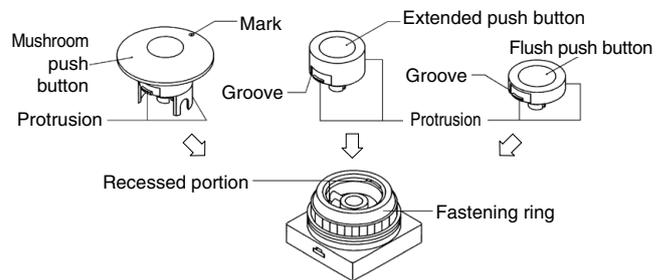
⚠ Caution

Follow the procedure below to mount and remove the button for changing the type and color. One specified button is set when the product is shipped.

Change of the Button

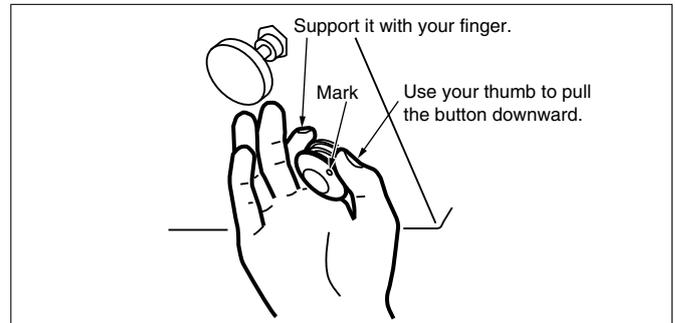
⚠ Caution

| | Mushroom push button | Extended/Flush push button |
|--------------|---|--|
| Installation | 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.) | Align the protruding portion of the button with the recessed portion of the body and push in. |
| Removal | 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 blade screwdriver into the groove of the button to pry it up. |

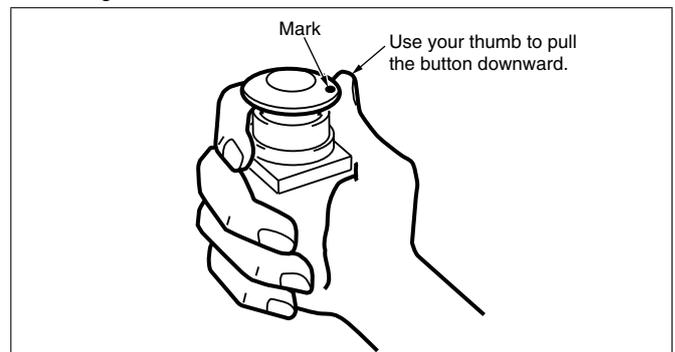


How to remove a mushroom push button

How to remove at panel mount



Removing the valve as a unit



Replacement Parts

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

| Color | Mushroom push button | Extended push button | Flush push button |
|--------|----------------------|----------------------|-------------------|
| Red | 3402186R | 3402187R | 3402188R |
| Black | 3402186B | 3402187B | 3402188B |
| Green | 3402186G | 3402187G | 3402188G |
| Yellow | 3402186Y | 3402187Y | 3402188Y |

2. Use the part number below to order individual fastening ring.
Fastening ring: 3402184

Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

 **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

 **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

 **Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots – Safety.
etc.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Safety Instructions

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.