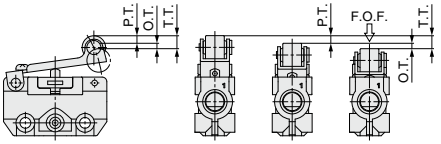
VM100/200 Series
Specific Product Precautions 1

Be sure to read this before handling the products.
Refer to page 8 for safety instructions and pages 9 to 15 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

Design

⚠ 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

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.

Mounting

⚠ Warning

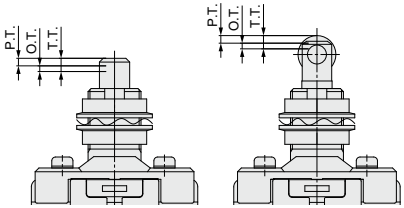
2. P.T. depends on pressure or differences between the individual product specifications. In order to ensure that the valve opens, keep the operating stroke value for the mechanical operation type within the range specified by the following formula.

Operating stroke = (P.T. + 0.5 x O.T.) to (P.T. + O.T. – 0.1)

Operating Stroke Range

Series	Actuator type	Operating stroke (mm)
VM100	Basic	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
VM200	Basic	4 to 4.9
	Roller lever	8.7 to 10.9
	One way roller lever	9.5 to 11.9
	Straight plunger	4.5 to 5.4
	Roller plunger	4.5 to 5.4
	Cross roller plunger	4.5 to 5.4

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.

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

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Operation

⚠ Warning

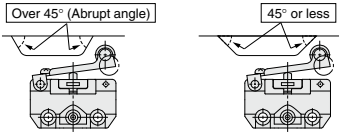
2. When operating the mechanical operation type mechanical valves, select the angle and the maximum speed limit of cam and dog so that valves do not operate over the following maximum values.

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.

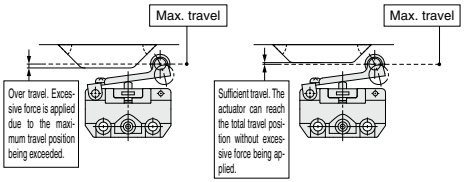
Cam and Dog

Series	Actuator type	Angle limit of cam and dog	Max. speed limit of cam and dog (m/s)
VM100	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
VM200	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] **[Acceptable]**



[Not acceptable] **[Acceptable]**



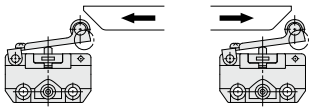
Cam and Dog Material

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. 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.

[Not acceptable] **[Acceptable]**



Operation

⚠ 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 VM100, 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.

VM100/200 Series
Specific Product Precautions 3

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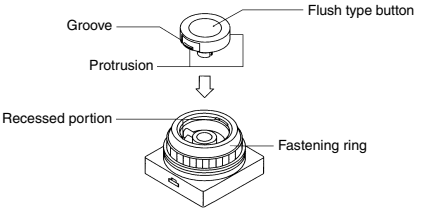
How to Change the Buttons

⚠ Caution

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

1. Push button (Flush type)

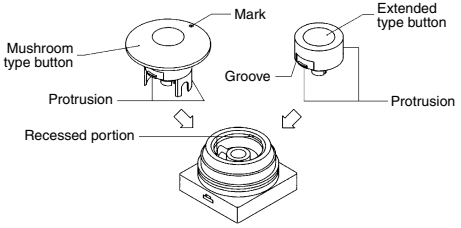
- Installation —— Of the four colors, red, green, black, and yellow, select and align the protruding portion of the button with the recessed portion of the body and push in.
- Removal ——— Remove the fastening ring and insert the tip of a small flat head screwdriver into the groove of the button to pry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



2. Push button (Mushroom and Extended types)

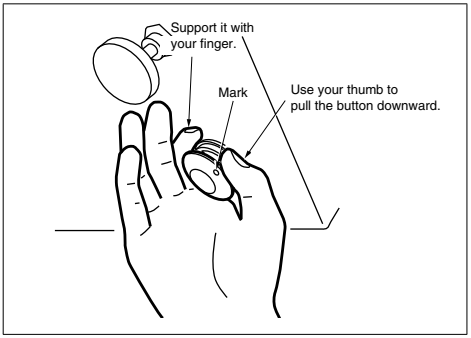
At the time of shipment, only 1 button of the color that you specified is attached to the body.

	Mushroom type	Extended type
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 head screwdriver into the groove of the button to pry it up.

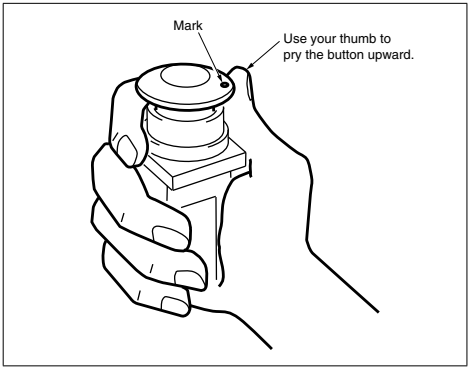


How to remove a mushroom type button

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 type buttons.

Color	Mushroom type button	Extended type button
Red	3402186R	3402187R
Black	3402186B	3402187B
Green	3402186G	3402187G
Yellow	3402186Y	3402187Y

Color	Flush type button
Red	3402188R
Black	3402188B
Green	3402188G
Yellow	3402188Y

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

VM100/200 Series
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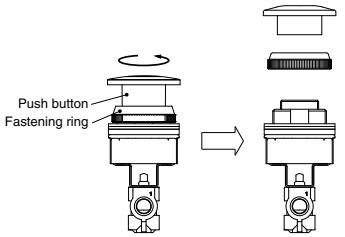
X207A, X219A Series How to Mount Panel

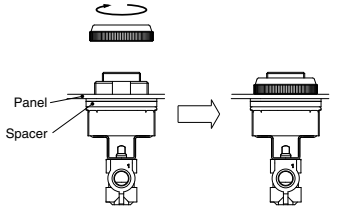
[Task 1] Removing the push button and fastening ring

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.