

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

VM100F Series



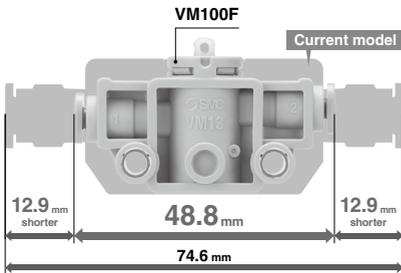
Built-in One-touch fitting reduced installation space and less piping work

Space saving

Built-in One-touch fitting

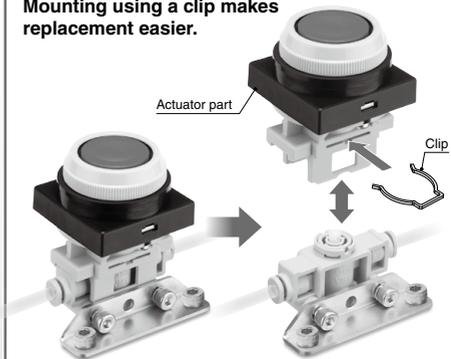
Approx. 35% reduction
(25.8 mm shorter)

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

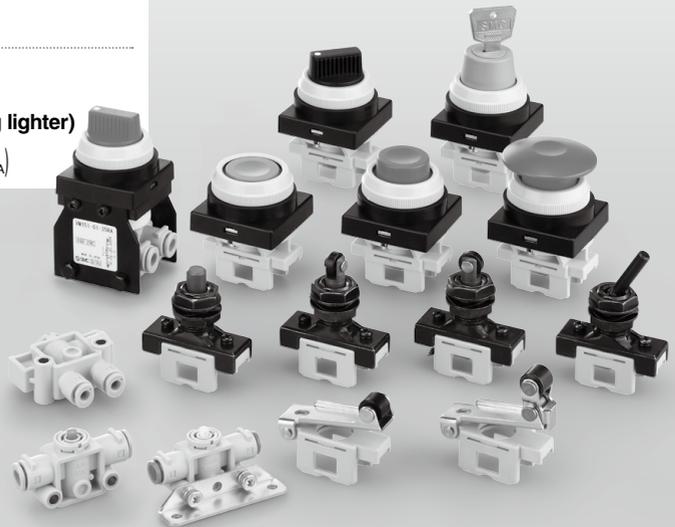
With resin body material

80% reduction (48 g lighter)

12 g (Resin body: VM131F-06-00) ← **60 g** (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"



Actuator type	Mechanical operation: 5 types
	Manual operation: 7 types



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

Mounting

Bracket mounting



Side mounting



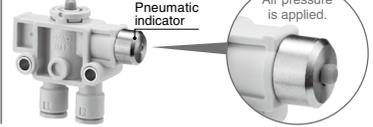
Panel mounting



With miniature indicator*1

Possible to check if air pressure is applied

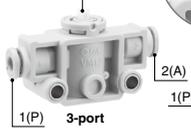
*1 Bottom ported only



Piping direction

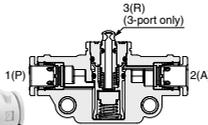
Side ported

White



3(R)
(3-port)

Gray

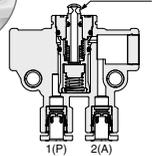


Bottom ported



3(R)
(3-port)

3(R)
(3-port only)



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

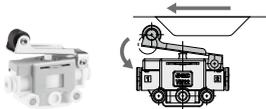
Actuator Variations

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

Mechanical Operation

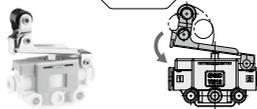
Roller lever

*2



One way roller lever

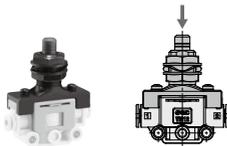
*2



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

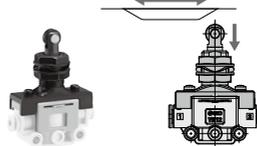
Straight plunger

*2



Roller plunger

*2



Cross roller plunger

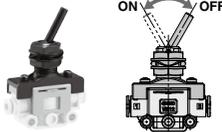
*2



Manual Operation

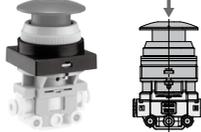
Toggle lever

*2



Push button (Mushroom)

*2



Color: Red, Black, Green, Yellow

Push button (Extended)

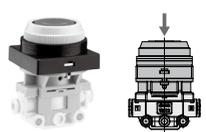
*2



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)

*2



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 Tubing O.D.	Metric size Inch size	Side ported			Bottom ported		
		ø3.2	ø4	ø6	ø3.2	ø4	ø6
		ø1/8"	ø5/32"	ø1/4"	ø1/8"	ø5/32"	
Flow rate characteristics		1(P) → 2(A)	2(A) → 3(R)	1(P) → 2(A) → 3(R)	1(P) → 2(A)	2(A) → 3(R)	1(P) → 2(A) → 3(R)
C values: Sonic conductance dm³/(s·bar)		0.35	0.35	0.4	0.4	0.45	0.4
b values: Critical pressure ratio		0.09	0.06	0.09	0.06	0.1	0.06
Cv factor		0.07	0.07	0.08	0.07	0.1	0.07

Model

Model	Piping	Applicable tubing O.D.					
		Metric size			Inch size		
		3.2	4	6	1/8"	5/32"	1/4"
VM1□□F□□□□	Side ported	●	●	●	●	●	●
VM1□□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	Polyacetal roller	VM121F□□05	VM131F□□05	VM123F□□05	VM133F□□05	VM-05J	47 g
		Hard steel roller	VM121F□□05S	VM131F□□05S	VM123F□□05S	VM133F□□05S	VM-05JS	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	
Manual operation	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	
	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 1405.
- * 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

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 1391.
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 1404 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

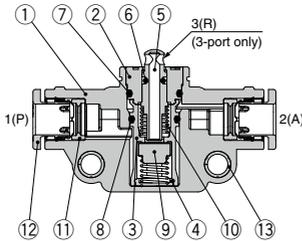
S	Hard steel roller	
R	Red	Color of push button, selector
B	Black	
G	Green	
Y	Yellow	

*1 Refer to the table on page 1391 for combinations of actuator type and suffix.

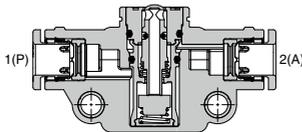
Construction

Side ported

Non-actuated

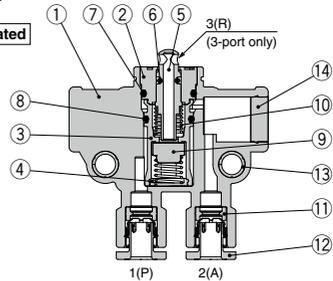


Actuated

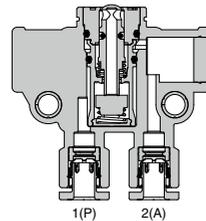


Bottom ported

Non-actuated



Actuated



Component Parts

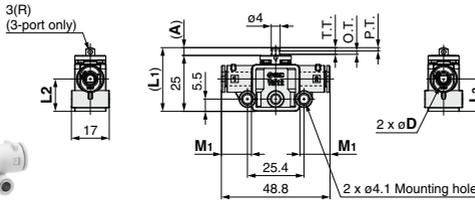
No.	Description	Material	Note	
1	Valve	PBT		
2	Valve sheet A	PBT		
3	Valve sheet B	PBT		
4	Valve sheet C	PBT		
5	Plunger	POM	White	3-port
			Gray	2-port
6	O-ring	NBR		
7	O-ring	NBR		

No.	Description	Material	Note
8	O-ring	NBR	
9	Valve	NBR	
10	Spring	Stainless steel	
11	Seal	---	
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

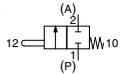


For ø3.2, ø4, ø6
 ø1/8", ø5/32"

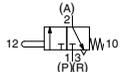
For ø1/4"

Symbol

2-port



3-port

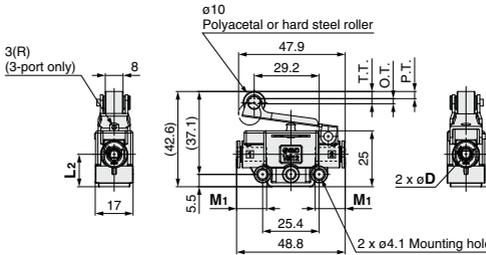


Model	Applicable tubing O.D. øD	Release button dimensions		A	L1	L2	L3	M1
		øX(X)	Y					
VM1□0F-23-00	3.2	6.7	9.5	7.5	32.5	13.5	15.5	13.5
VM1□0F-04-00	4	7.7	10.0			14.5	14.5	
VM1□0F-06-00	6	9.7	12.0			13.5	15.5	
VM1□0F-01-00	1/8"	6.7	9.5			14.5	14.5	
VM1□0F-03-00	5/32"	7.7	10.0			13.5	15.5	
VM1□0F-07-00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

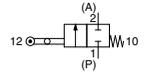
F.O.F.*1	20 N
P.T.	1.5 mm
O.T.	1.5 mm
T.T.	3 mm

Roller lever
VM121F-□-01
VM131F-□-01
VM121F-□-01S
VM131F-□-01S

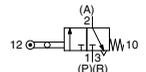


Symbol

2-port



3-port

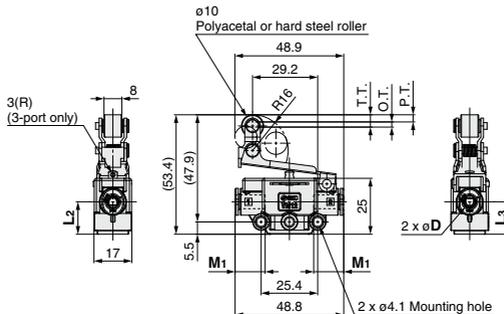


*1 0.5 MPa supply

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

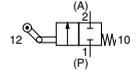
øD, dimensions L2, L3 and M1 are the same as basic models.

One way roller lever
VM121F-□-02
VM131F-□-02
VM121F-□-02S
VM131F-□-02S

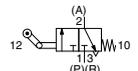


Symbol

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

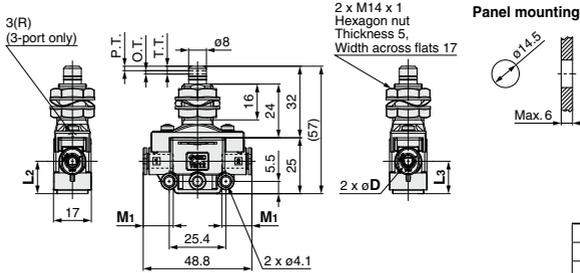
øD, dimensions L2, L3 and M1 are the same as basic models.

VM100F Series

Dimensions / Side Ported

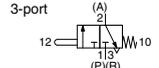
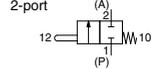
Straight plunger

VM121F-□-05
VM131F-□-05



Panel mounting hole

Symbol



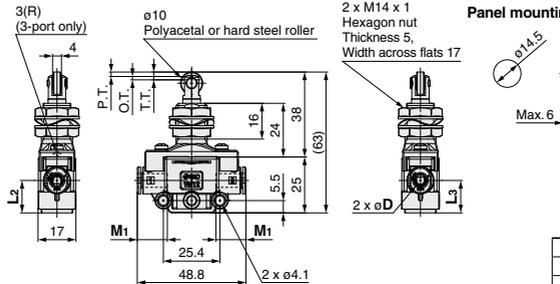
*1 0.5 MPa supply

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

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

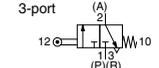
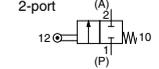
Roller plunger

VM121F-□-06
VM131F-□-06
VM121F-□-06S
VM131F-□-06S



Panel mounting hole

Symbol



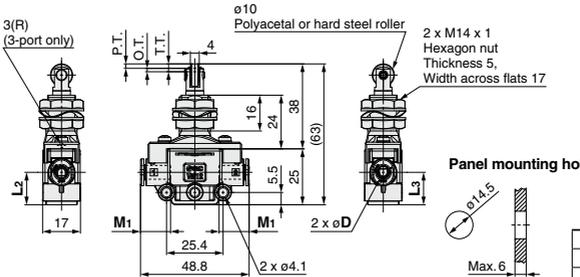
*1 0.5 MPa supply

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

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

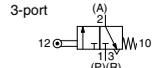
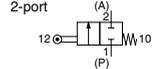
Cross roller plunger

VM121F-□-07
VM131F-□-07
VM121F-□-07S
VM131F-□-07S



Panel mounting hole

Symbol



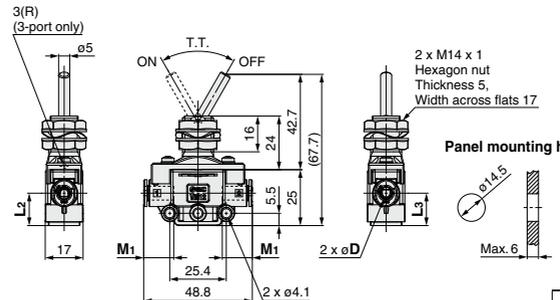
*1 0.5 MPa supply

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

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

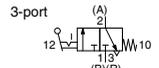
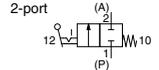
Toggle lever

VM121F-□-08
VM131F-□-08



Panel mounting hole

Symbol



*1 0.5 MPa supply

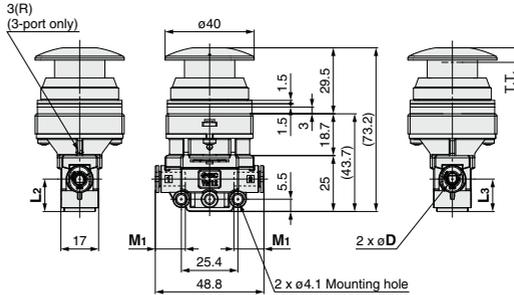
F.O.F.*1	10 N
T.T.	60°

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

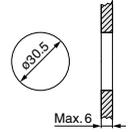
2/3-Port Mechanical Valve with One-touch Fitting **VM100F Series**

Dimensions / Side Ported

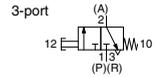
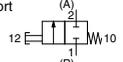
Push button (Mushroom)
VM121F-□-30 (R, B, G, Y)
VM131F-□-30 (R, B, G, Y)



Panel mounting hole



Symbol

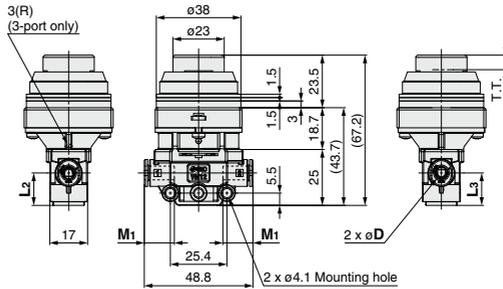


*1 0.5 MPa supply

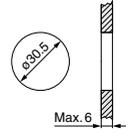
F.O.F.*1	21 N
T.T.	6.5 mm

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

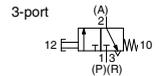
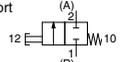
Push button (Extended)
VM121F-□-32 (R, B, G, Y)
VM131F-□-32 (R, B, G, Y)



Panel mounting hole



Symbol

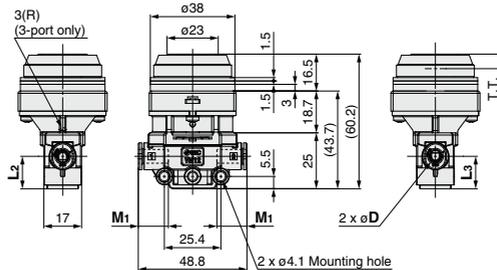


*1 0.5 MPa supply

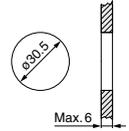
F.O.F.*1	21 N
T.T.	6.5 mm

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

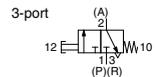
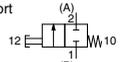
Push button (Flush)
VM121F-□-33 (R, B, G, Y)
VM131F-□-33 (R, B, G, Y)



Panel mounting hole



Symbol



*1 0.5 MPa supply

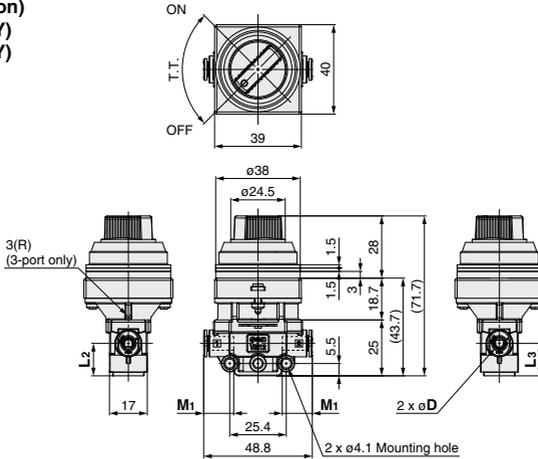
F.O.F.*1	21 N
T.T.	6.5 mm

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

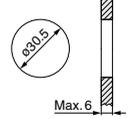
VM100F Series

Dimensions / Side Ported

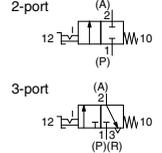
Twist selector (2-position)
VM121F-□-34 (R, B, G, Y)
VM131F-□-34 (R, B, G, Y)



Panel mounting hole



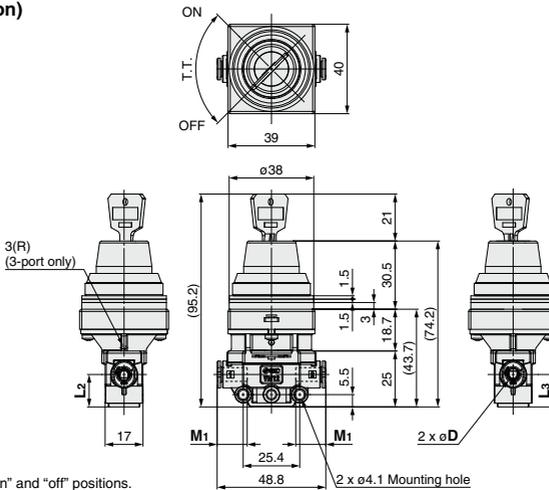
Symbol



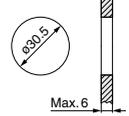
ϕD , dimensions L_2 , L_3 and M_1 are the same as basic models.

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

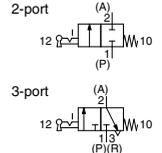
Key selector (2-position)
VM121F-□-36
VM131F-□-36



Panel mounting hole



Symbol



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

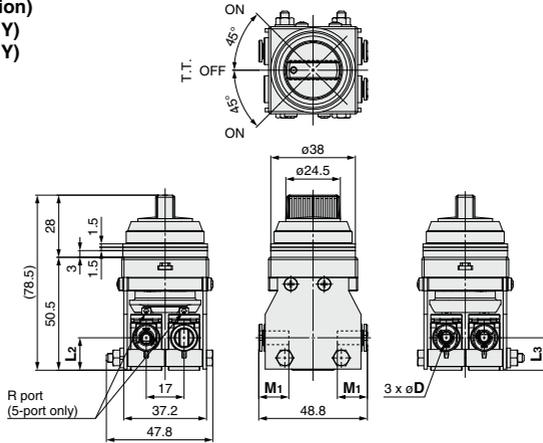
ϕD , dimensions L_2 , L_3 and M_1 are the same as basic models.

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

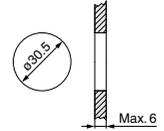
2/3-Port Mechanical Valve with One-touch Fitting **VM100F Series**

Dimensions / **Side Ported**

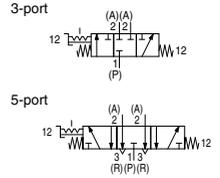
Twist selector (3-position)
VM131F-□-35 (R, B, G, Y)
VM151F-□-35 (R, B, G, Y)



Panel mounting hole



Symbol



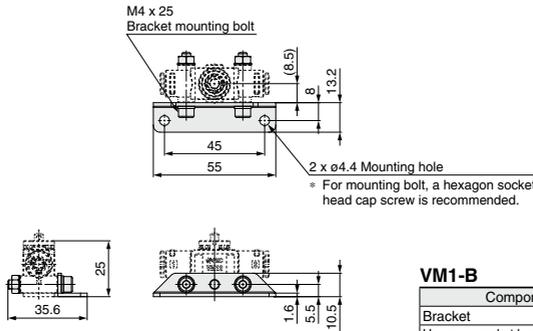
※ 1.0 MPa supply

F.O.F.*1	20 N
T.T.	45°

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

With bracket

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



VM1-B

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

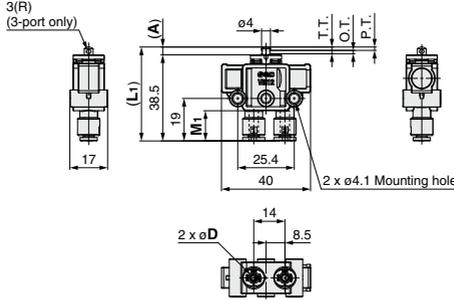
VM100F Series

Dimensions / Bottom Ported

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



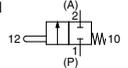
With miniature indicator



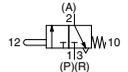
Release button dimensions



Symbol
2-port

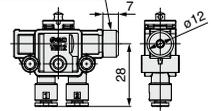


3-port



With miniature indicator

Pneumatic indicator

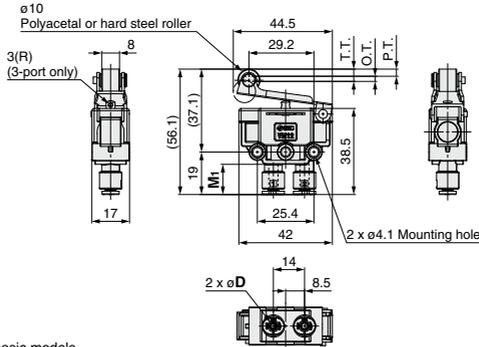


*1 0.5 MPa supply

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

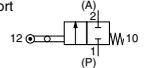
Model	Applicable tubing O.D. øD	Release button dimensions		A	L1	M1	
		X	Y				
VM1□2F-23-00	3.2	6.7	9.5	7.5	46	13.5	
VM1□2F-04-00	4	7.7	10.0				
VM1□2F-01-00	1/8"	6.7	9.5				
VM1□2F-03-00	5/32"	7.7	10.0				
VM1□3F-23-00	3.2	6.7	9.5	3.5	42		13.5
VM1□3F-04-00	4	7.7	10.0				
VM1□3F-01-00	1/8"	6.7	9.5			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

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

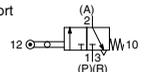


Symbol

2-port



3-port

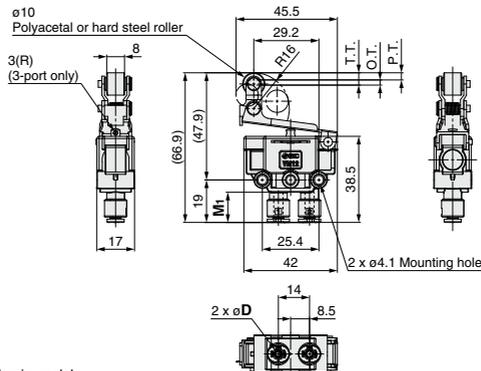


*1 0.5 MPa supply

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

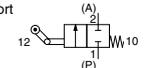
øD and dimension M1 are the same as basic models.

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

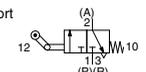


Symbol

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

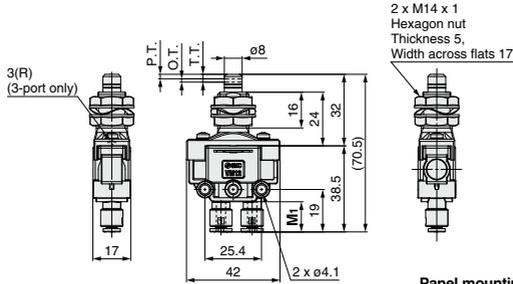
øD and dimension M1 are the same as basic models.

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

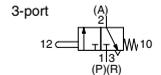
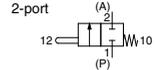
Dimensions / Bottom Ported

Straight plunger

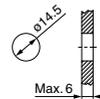
VM123F-□-05
VM133F-□-05



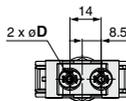
Symbol



Panel mounting hole



øD and dimension M1 are the same as basic models.

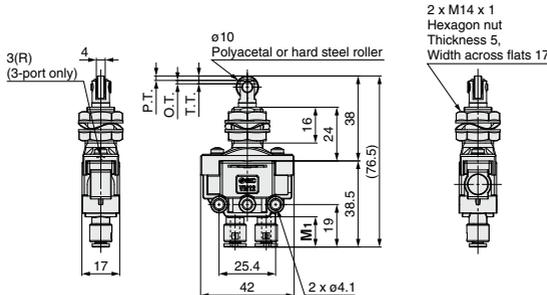


*1 0.5 MPa supply

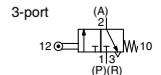
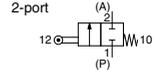
F.O.F.*1	23 N
P.T.	2 mm
O.T.	1.5 mm
T.T.	3.5 mm

Roller plunger

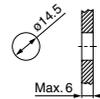
VM123F-□-06
VM133F-□-06
VM123F-□-06S
VM133F-□-06S



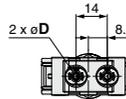
Symbol



Panel mounting hole



øD and dimension M1 are the same as basic models.

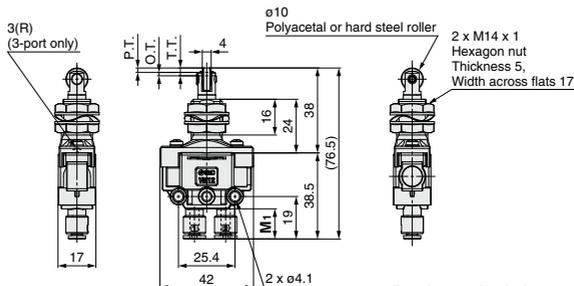


*1 0.5 MPa supply

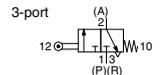
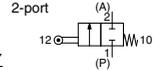
F.O.F.*1	23 N
P.T.	2 mm
O.T.	1.5 mm
T.T.	3.5 mm

Cross roller plunger

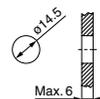
VM123F-□-07
VM133F-□-07
VM123F-□-07S
VM133F-□-07S



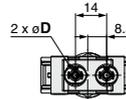
Symbol



Panel mounting hole



øD and dimension M1 are the same as basic models.



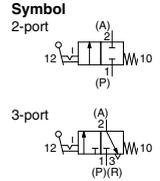
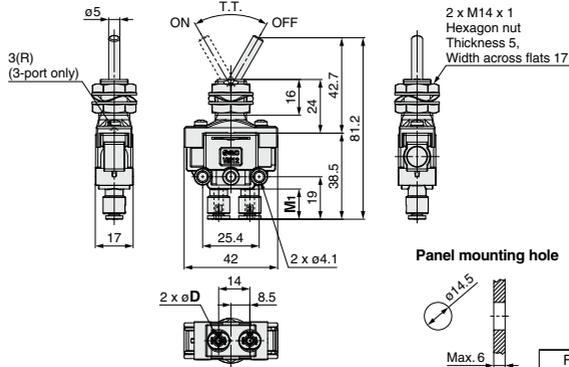
*1 0.5 MPa supply

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

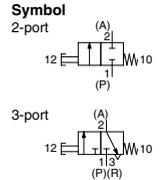
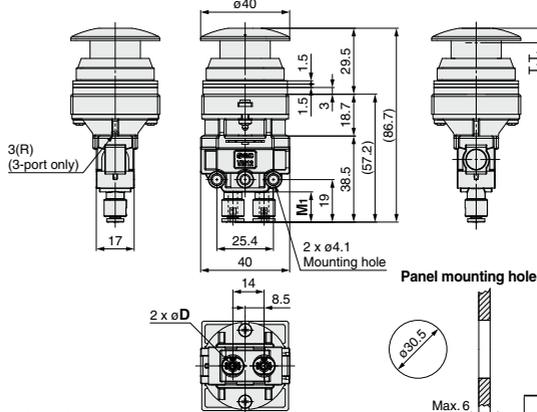
Toggle lever
VM123F-□-08
VM133F-□-08



øD and dimension M1 are the same as basic models.

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

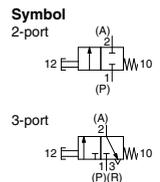
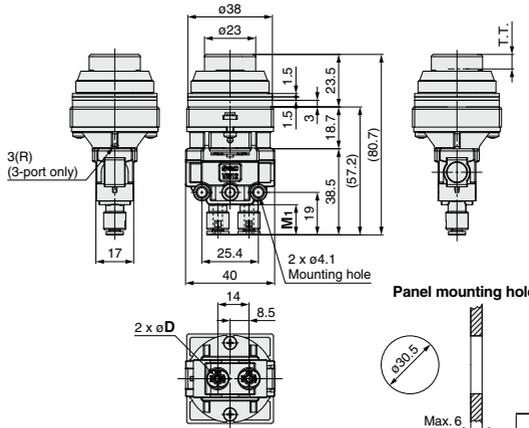
Push button (Mushroom)
VM123F-□-30 (R, B, G, Y)
VM133F-□-30 (R, B, G, Y)



øD 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)



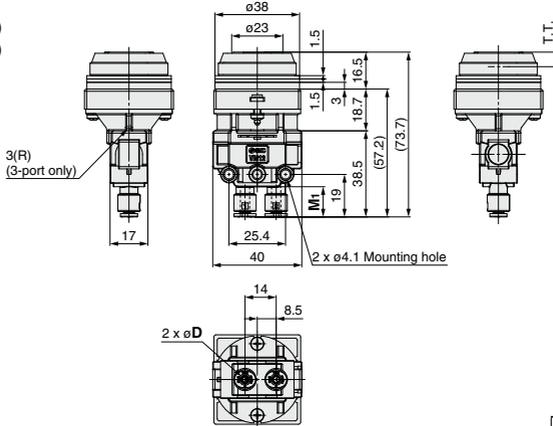
øD and dimension M1 are the same as basic models.

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

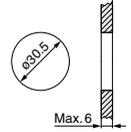
2/3-Port Mechanical Valve with One-touch Fitting **VM100F Series**

Dimensions / **Bottom Ported**

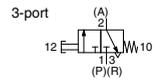
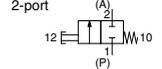
Push button (Flush)
VM123F-□-33 (R, B, G, Y)
VM133F-□-33 (R, B, G, Y)



Panel mounting hole



Symbol

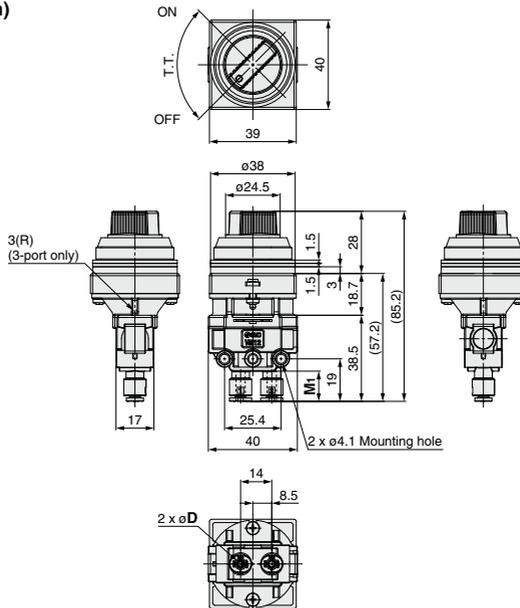


*1 0.5 MPa supply

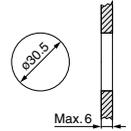
F.O.F.*1	21 N
T.T.	6.5 mm

øD and dimension M1 are the same as basic models.

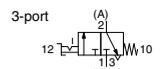
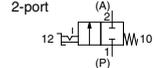
Twist selector (2-position)
VM123F-□-34 (R, B, G, Y)
VM133F-□-34 (R, B, G, Y)



Panel mounting hole



Symbol



*1 0.5 MPa supply

F.O.F.*1	15 N
T.T.	90°

øD and dimension M1 are the same as basic models.



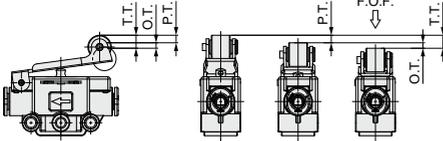
VM100F Series

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 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.

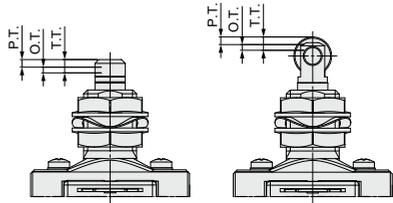
2. P.T. depends on pressure or differences between the individual product specifications. In order to ensure that the valve opens, keep the operating stroke value for the mechanical operation type within the range specified by the following formula.

Operating stroke range = (P.T. + 0.5 x O.T.) to (P.T. + 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 page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

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.

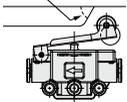
If operated over the maximum values, impact force from cam and dog will be applied to the actuator, leading to damage of the actuator or the valve itself.

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	

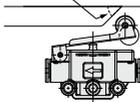
[Not acceptable]

Over 45° (Abrupt angle)



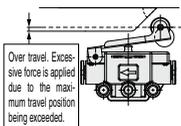
[Acceptable]

45° or less



[Not acceptable]

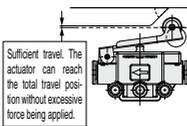
Max. travel



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

[Acceptable]

Max. travel



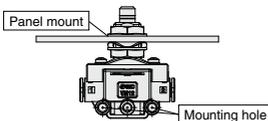
Sufficient travel. The actuator can reach the total travel position without excessive force being applied.

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.

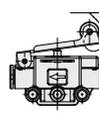
Do not use the mounting hole for side mounting or bracket mounting. If excessive torque is applied to the valve, it can cause breakage.



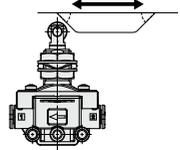
4. Do not use the roller lever type in the direction shown in the drawings below.

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 page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

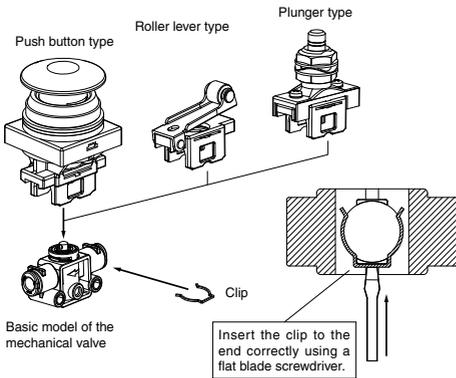
Change of the Actuator and Button

⚠ Caution

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

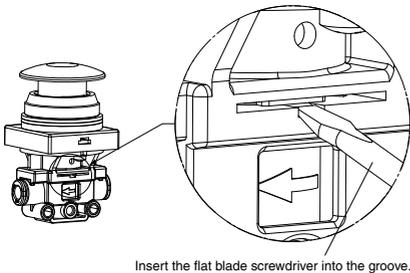
1. Installation

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

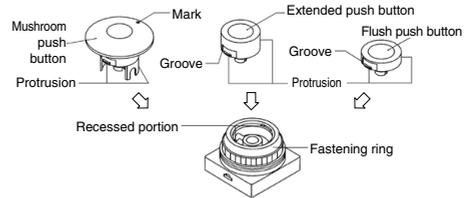
⚠ Caution

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

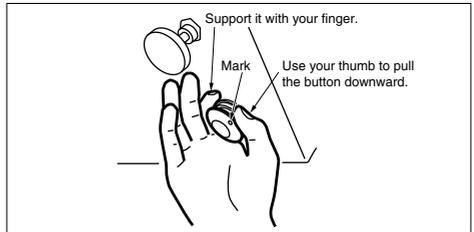
⚠ Caution

	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.

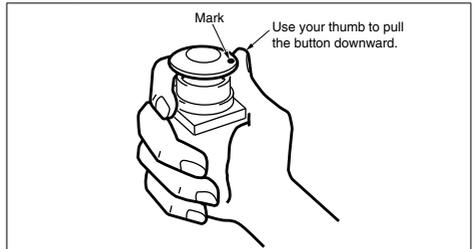


How to remove a mushroom push button

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