

# Mechanical Valve Series VM

Model	VM1000	VM100	VM200
Dimensions (mm)	Side piping 11 X 36 X 16 Bottom piping 11 X 28 X 25		

	VM1000	VM100	VM200
Basic			
Roller Lever		●	●
One Way Roller Lever		●	●
Straight Plunger		●	●
Roller Plunger		●	●
Cross Roller Plunger		●	●
Toggle Lever		●	●
Push Button (Mushroom)		●	●
Push Button (Extended)		●	●
Push Button (Flush)		●	●
Twist Selector (2 position)		●	●
Key Selector (2 position)		●	●
Twist Selector (3 position)		●	●
Foot Pedal			●
Push-Pull			

Effective Area (Nl/min)	1 (49.03)
Number of Ports	2, 3
Function	Poppet 

For details about VM100 Series refer to [www.smc.eu](http://www.smc.eu)

For details about VM200 Series refer to [www.smc.eu](http://www.smc.eu)

## Mechanical Valve

**VM400**

21 X 35 X 53



**VZM500**

18 X 28 X 87



**VZM400**

18 X 30 X 91



**VFM300**

26 X 35 X 94



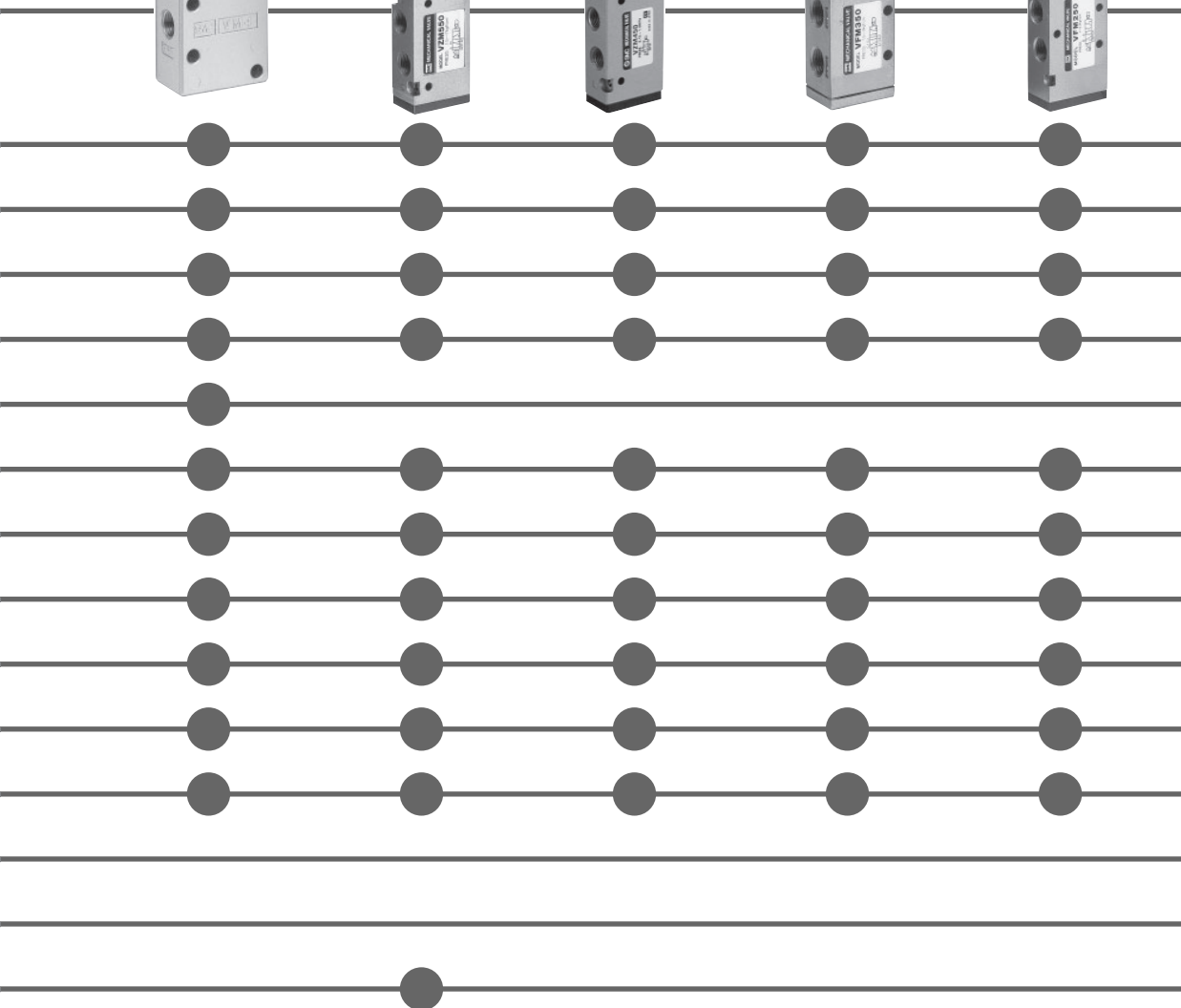
**VFM200**

23 X 40 X 115



**VM800**

30 X 40 X 57



**Roller Lever**



**Adjustable Roller Lever**



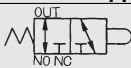
**Adjustable Rod Lever**



7 (338.77)

3

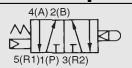
**Balanced Poppet**



10.8 (534.90)

5

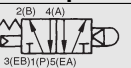
**Rubber Spool**



9.9 (490.33)

5

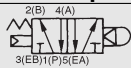
**Metal Spool**



18 (891.50)

5

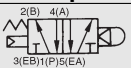
**Rubber Spool**



18 (891.50)

5

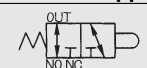
**Metal Spool**



6 (294.20)


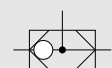

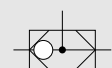

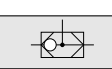

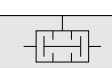

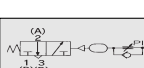





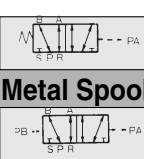

3

**Balanced Poppet**



Dual pressure available only on external pilot.

## Related Products

			Effective Area (mm <sup>2</sup> ) (NI/min)	No. of Ports	Function
<b>Shuttle Valve</b> Dimensions (mm) VR1210: 17.2 X 38 X 29 VR1220: 21.2 X 50 X 38	<b>VR1210</b>		7 (338.77)	3	
	<b>VR1220</b>		15 (722.12)	3	
<b>Shuttle valve</b> With One-Touch Fittings	<b>VR12□0F</b>			3	
<b>AND valve</b> With One-Touch Fittings	<b>VR1211F</b>			3	
<b>Time Delay Valve</b> Dimensions (mm) 70 X 68 X 66	<b>VR2110</b>		2.5 (124.81)	3	
<b>Pneumatic Indicator</b> Dimensions (mm) ø26 X 66	<b>VR3100</b>		-	-	
<b>Miniature Pneumatic Indicator</b> Dimensions (mm) ø12 X 17	<b>VR3110</b>		-	-	
<b>Relay Valve</b> Dimensions (mm) Side piping: 30 X 53 X 91 Bottom piping: 30 X 48 X 91	<b>VR4151</b>		7 (338.77)	5	<b>Metal Spool</b> 
	<b>VR4152</b>				

## ⚠ Precautions

### Mounting

#### ⚠ Warning

##### ① Conditions for mechanical operation

Do not move the mechanical operation beyond the operating limit position, as this could damage the mechanical valve itself and lead to equipment malfunction.

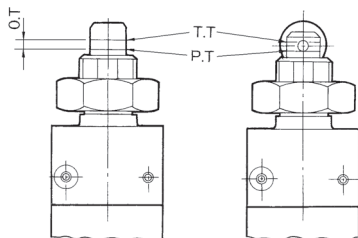
##### • Actuator Stroke

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

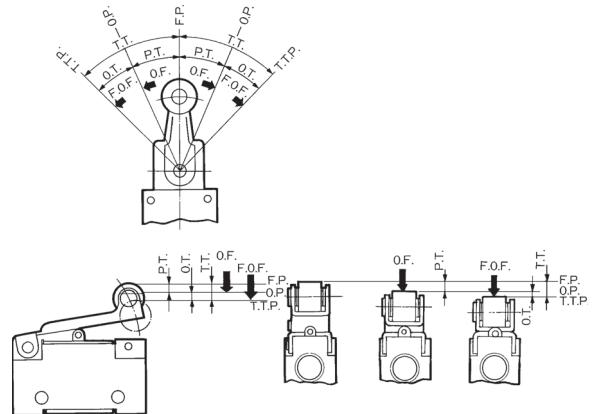
Operating stroke: P.T. + 0.5 X O.T.

Series	Actuator	Actuator Stroke (mm)
VM1000	Basic	T.T.=4.8mm (T.T.=2.5mm)
	Roller lever	3.5 to 4.4
	One way roller lever	3.5 to 4.4
VM100	Basic	2.2 to 2.9
	Roller lever	4.3 to 5.3
	One way roller lever	4.3 to 5.3
	Straight plunger	2.7 to 3.4
	Roller plunger	2.7 to 3.4
	Cross roller plunger	2.7 to 3.4
VM200	Basic	4.0 to 4.9
	Roller lever	8.7 to 10.7
	One way roller lever	9.5 to 11.7
	Straight plunger	4.5 to 5.4
	Roller plunger	4.5 to 5.4
VM400	Basic	2.5 to 3.4
	Roller lever	6.2 to 8.2
	One way roller lever	6.5 to 8.7
	Straight plunger	4.5 to 5.4
	Roller plunger	4.5 to 5.4
VZM500 VZM400 VFM300 VFM200	Basic	2.0 to 2.9
	Roller lever	4.2 to 6.0
	One way roller lever	4.7 to 6.7
	Straight plunger	2.5 to 3.4
	Roller plunger	2.5 to 3.4

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



### Definition of Symbols



- F.P. (Free Position)..... No external force applied.
- O.P. (Operating Position) ..... Internal valve opening position.
- T.T.P. (Total Travel Position)..... Includes over travel.
- O.F. (Operating Force) ..... Operating force required to initial valve opening position.
- 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.

### Air Flow Calculation

Refer to the p.0-36 for air flow calculations.

$$Q = 22.2S \sqrt{P_L(P_H - P_L)} \sqrt{\frac{273}{\square + 273}} \dots\dots\dots(1 \text{ formula})$$

### Cautions

This product cannot be used for applications in which the pressure must be sealed because there will be a slight leakage. Consult SMC for this type of application.

## ⚠ Precautions

### Mounting

#### ⚠ Warning

##### ② Conditions for mechanical operation

##### ● Cam and dog angle and maximum speed

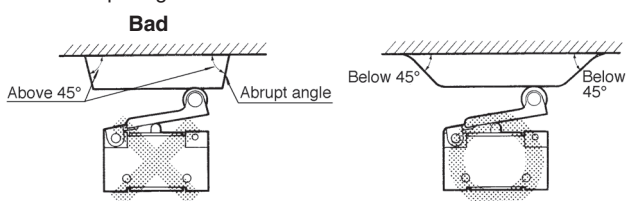
Select the angle and the maximum speed of the operating cam and the dog of the mechanism from within the selection range given in the table below.

If they are operated beyond the selection range, the cam and the dog could apply impact shocks to the actuator, leading to damage.

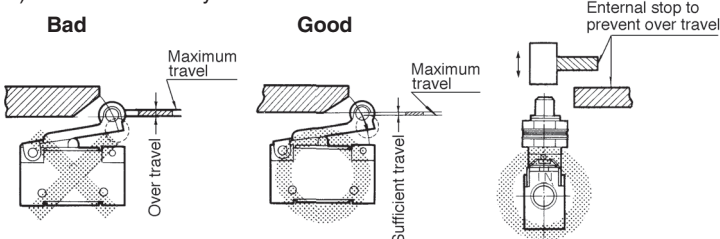
Series	Actuator	Angle limit switch actuator	Max. speed limit switch actuator m/s
VM1000	Roller lever	30°	0.7
		45°	0.3
	One way roller lever	30°	0.7
		45°	0.3
VM100 VM200 VM400	Roller lever	30°	0.7
		45°	0.3
	One way roller lever	30°	0.7
		45°	0.3
	Straight plunger	—	0.2
	Roller plunger	30°	0.3
	Cross roller plunger	30°	0.3
VZM500 VZM400 VFM300 VFM200	Roller lever	30°	1.5
		45°	0.7
	One way roller lever	30°	0.7
		45°	0.3
	Straight plunger	—	0.4
Roller plunger	30°	0.7	
VM800	Roller lever	30°	0.5
		45°	0.2
	Adjustable roller lever	30°	0.2
		45°	0.1
Adjustable rod lever	—	0.2	

#### Installation recommendations

1) Avoid abrupt angles on limit switch actuator.



2) Avoid unnecessary travel.



Roller material	Plunger material	Plunger surface finish
Polyacetal	Steel	▽▽▽
Steel	Steel, Resin	▽▽

③ Never perform additional machining such as enlarging the body mounting holes, as doing so could lead to abnormal conditions such as air leakage.

④ Operate all manual valves such as the push pin styles, the selector styles, and the flip toggle styles with your finger.

If a hammer or other tools are used, or it is operated mechanically through the use of a cylinder or the like, damage could result.

### Environment

#### ⚠ Cautions

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 dust proof construction, fluids or dust could enter the valve, leading to malfunction. Therefore, take measures such as providing a protective cover to prevent direct exposure.

### 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.

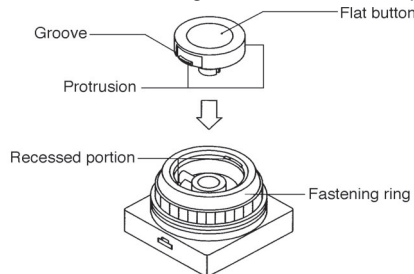
Failure to observe this precaution could lead to unsafe operation, such as unintended operation or malfunction.

#### How to Change the Button

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

##### ① Push button (Flush style)

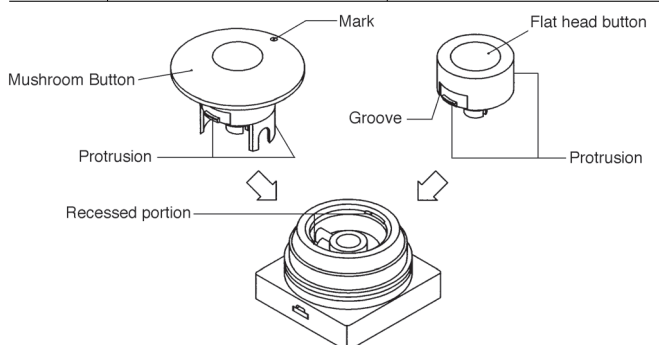
- Installation— Of the four colors, red, green, black, and yellow, select and align the protruding portion of the button with the recessed portion of the body and push in.
- Removal— Remove the fastening ring and insert the tip of a small flat screwdriver into the groove of the button to pry it up.



##### ② Push Button (Mushroom and extended styles)

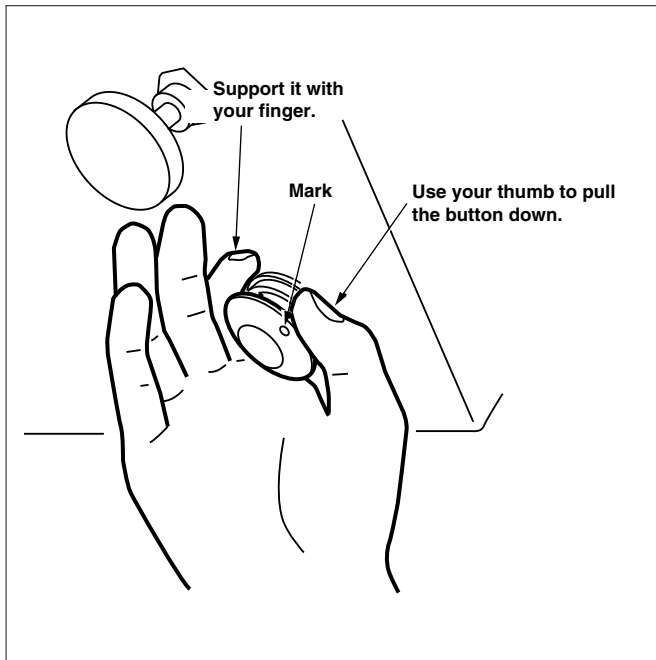
At the time of shipment, only 1 button of the color that you specified is attached to the body.

	Mushroom style	Extended style
Mounting	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 button 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 screwdriver into the groove of the button to pry it up.



## How to Remove a Mushroom Button

How to remove at panel mount

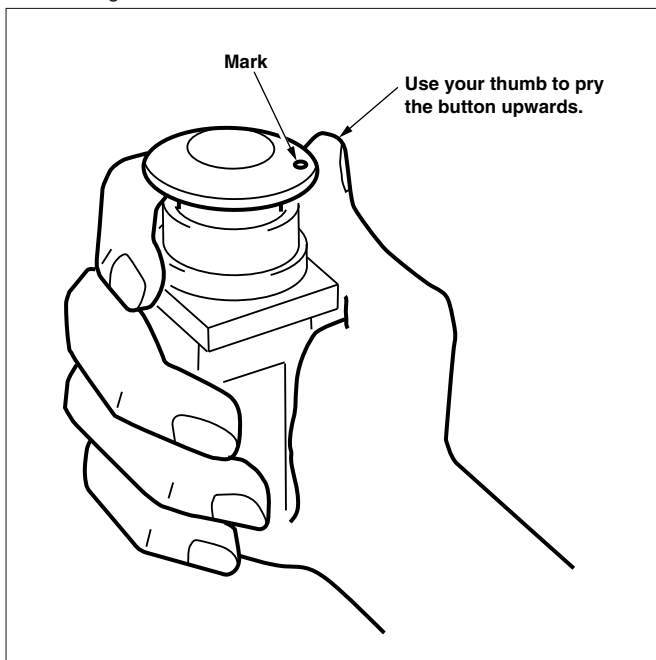


## Replacement Parts

Use the part numbers listed below to order individual mushroom head or flat head buttons.

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

Removing the valve as a unit.



## Micro Mechanical Valve

# Series VM1000

Miniature structure requires little mounting space.

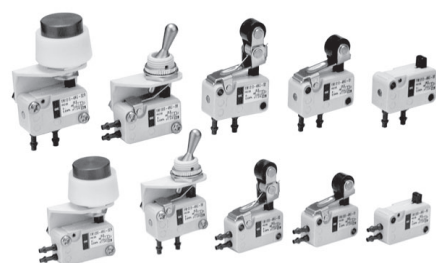
Built-in hose nipple connection.

Porting options: Side Porting

Bottom Porting

Over Travel after actuation

(mechanical operated styles).



### Specifications

Style of valve	N.C. poppet
Number of ports	2 or 3
Total travel	4.8mm (Basic)
Piping	Side or bottom
Fluid	Air
Operating pressure	0 to 0.8MPa
Ambient and fluid temperature	-5 to 60°C (No freezing)
Effective area (Nl/min)	1mm <sup>2</sup> (49.03)
Lubrication	Not required/Turbine oil #1 (ISO VG32)
Fitting	With hose nipple
Weight (Basic)	6g

### Options

Total travel (T.T.)	2.5mm (Basic)
---------------------	---------------

- A commercially available actuator for the V microswitch can be installed.
- However, be aware that there are different microswitches, such as the P.T./O.T. or F.O.F. styles.
- T.T. 2.5mm is available for basic style only.

### Model

	Actuator	Piping	No. of ports	Applicable tube		Notes	
				T0425	TU0425/T0403		
Mechanical operation	Basic	Side	3	VM1000-4N-00	VM1000-4NU-00		
			2	VM1100-4N-00	VM1100-4NU-00		
		Bottom	3	VM1010-4N-00	VM1010-4NU-00		
			2	VM1110-4N-00	VM1110-4NU-00		
	Roller lever	Side	3	VM1000-4N-01	VM1000-4NU-01		
			2	VM1100-4N-01	VM1100-4NU-01		
		Bottom	3	VM1010-4N-01	VM1010-4NU-01		
			2	VM1110-4N-01	VM1110-4NU-01		
	One way roller lever	Side	3	VM1000-4N-02	VM1000-4NU-02		
			2	VM1100-4N-02	VM1100-4NU-02		
		Bottom	3	VM1010-4N-02	VM1010-4NU-02		
			2	VM1110-4N-02	VM1110-4NU-02		
Manual operation	Toggle lever	Side	3	VM1000-4N-08	VM1000-4NU-08		
			2	VM1100-4N-08	VM1100-4NU-08		
		Bottom	3	VM1010-4N-08	VM1010-4NU-08		
			2	VM1110-4N-08	VM1110-4NU-08		
	Push button	Side	3	VM1000-4N-32R	VM1000-4NU-32R	Red	
			2	VM1100-4N-32R	VM1100-4NU-32R	Red	
			Bottom	3	VM1010-4N-32R	VM1010-4NU-32R	Red
				2	VM1110-4N-32R	VM1110-4NU-32R	Red
		Side	3	VM1000-4N-32B	VM1000-4NU-32B	Black	
			2	VM1100-4N-32B	VM1100-4NU-32B	Black	
			Bottom	3	VM1010-4N-32B	VM1010-4NU-32B	Black
				2	VM1110-4N-32B	VM1110-4NU-32B	Black
		Side	3	VM1000-4N-32G	VM1000-4NU-32G	Green	
			2	VM1100-4N-32G	VM1100-4NU-32G	Green	
			Bottom	3	VM1010-4N-32G	VM1010-4NU-32G	Green
				2	VM1110-4N-32G	VM1110-4NU-32G	Green



## How To Order

VM1 0 0 0 - 4N - 00 R

• Applicable tube (Material/Size)		• Actuator		• Colour of push button	
4N	Nylon ø4/2.5 (T0425)	00	Basic	R	Red
	Nylon ø4/3 (T0403)	01	Roller lever	G	Green
4NU	Soft Nylon ø4/2.5 (TS0425)	02	One way roller lever	B	Black
	Polyurethane ø/2.5 (TU0425)	08	Toggle lever		
		32	Push button		

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

\*Basic only.

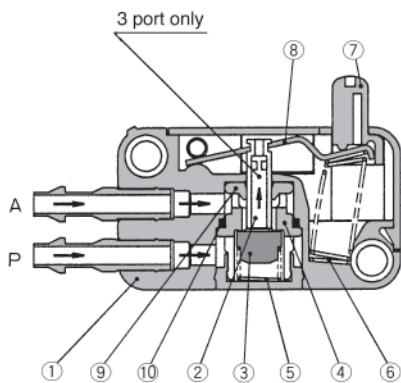
• Piping	
0	Side
1	Bottom

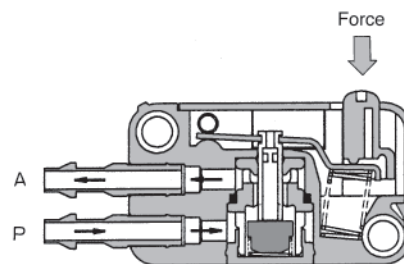
• Number of ports	
0	3 ports
1	2 ports

## Construction

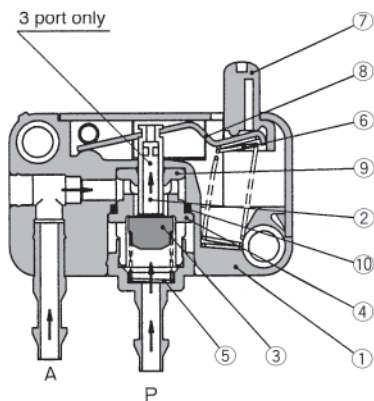
Side Piping/Non-actuated



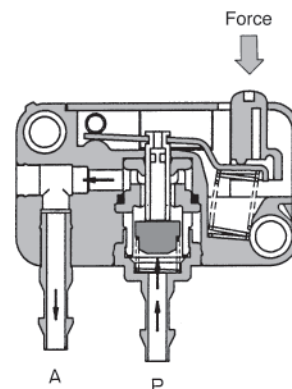
Side Piping/Actuated



Bottom Piping



Bottom Piping/Actuated



### Component Parts

No.	Description	Material	Notes
①	Body	PBT	
②	Valve rod	Polyacetal	
③	Valve	NBR	
④	Retainer	Polyacetal	
⑤	Spring	Stainless steel	

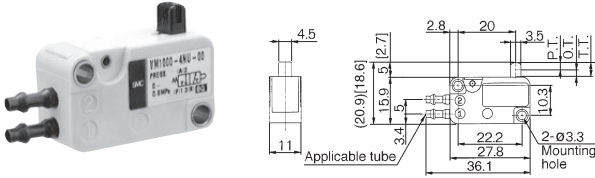
No.	Description	Material	Notes
⑥	Spring	Stainless steel	
⑦	Plunger	Polyacetal	T.T.=2.5mm only, w/threads
⑧	Lever	Stainless steel	
⑨	Packing	NBR	
⑩	O ring	NBR	



# VM1000

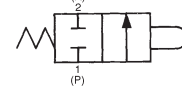
## Series VM1000/Side Piping

**Basic/VM1000-4N-00, VM1000-4NU-00**  
**VM1100-4N-00, VM1100-4NU-00**

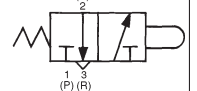


[ ]: T.T.=2.5mm

**JIS Symbol/2 port**



**3 port**

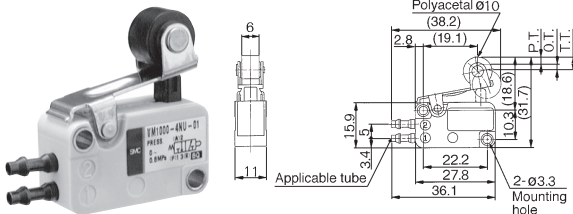


□ 0.5MPa supply

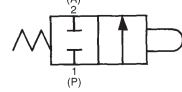
		Applicable tube	
		T0425	TU0425, T0403, TS0425
Side piping	3 ports	<b>VM1000-4N-00</b>	<b>VM1000-4NU-00</b>
	2 ports	<b>VM1100-4N-00</b>	<b>VM1100-4NU-00</b>
F.O.F.□		6N	
P.T.		2.5mm[2mm]	
O.T.		2.3mm[0.5mm]	
T.T.		4.8mm[2.5mm]	

**Roller Lever/VM1000-4N-01, VM1000-4NU-01**

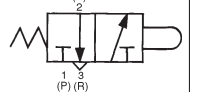
**VM1100-4N-01, VM1100-4NU-01**



**JIS Symbol/2 port**



**3 port**

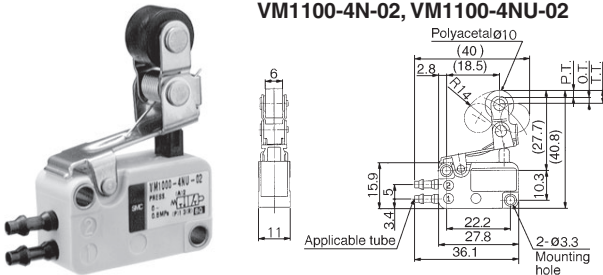


□ 0.5MPa supply

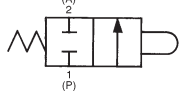
		Applicable tube	
		T0425	TU0425, T0403, TS0425
Side piping	3 ports	<b>VM1000-4N-01</b>	<b>VM1000-4NU-01</b>
	2 ports	<b>VM1100-4N-01</b>	<b>VM1100-4NU-01</b>
F.O.F.□		6N	
P.T.		2.5mm	
O.T.		2mm	
T.T.		4.5mm	

**One Way Roller Lever/VM1000-4N-02, VM1000-4NU-02**

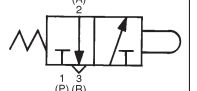
**VM1100-4N-02, VM1100-4NU-02**



**JIS Symbol/2 port**



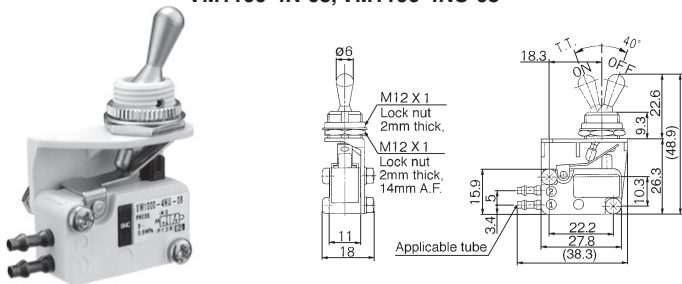
**3 port**



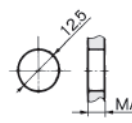
□ 0.5MPa supply

		Applicable tube	
		T0425	TU0425, T0403, TS0425
Side piping	3 ports	<b>VM1000-4N-02</b>	<b>VM1000-4NU-02</b>
	2 ports	<b>VM1100-4N-02</b>	<b>VM1100-4NU-02</b>
F.O.F.□		6N	
P.T.		2.5mm	
O.T.		2mm	
T.T.		4.5mm	

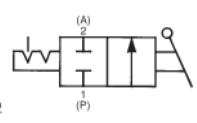
**Toggle Lever/VM1000-4N-08, VM1000-4NU-08**  
**VM1100-4N-08, VM1100-4NU-08**



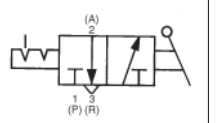
Panel mounted hole



**JIS Symbol/2 port**



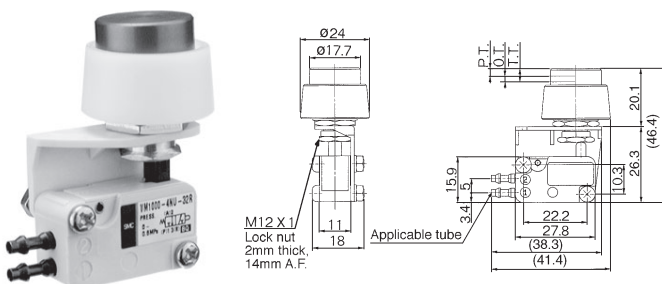
**3 port**



□ 0.5MPa supply

		Applicable tube	
		T0425	TU0425, T0403, TS0425
Side piping	3 ports	<b>VM1000-4N-08</b>	<b>VM1000-4NU-08</b>
	2 ports	<b>VM1100-4N-08</b>	<b>VM1100-4NU-08</b>
F.O.F.□		4N	
P.T.		40°	

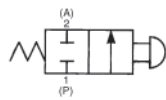
**Push Button/VM1000-4N-32, VM1000-4NU-32**  
**VM1100-4N-32, VM1100-4NU-32**



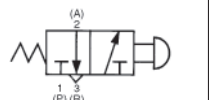
Panel mounted hole



**JIS Symbol/2 port**



**3 port**

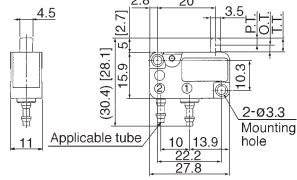


□ 0.5MPa supply

		Applicable tube	
		T0425	TU0425, T0403, TS0425
Side piping	3 ports	<b>VM1000-4N-32</b>	<b>VM1000-4NU-32</b>
	2 ports	<b>VM1100-4N-32</b>	<b>VM1100-4NU-32</b>
F.O.F.□		6N	
P.T.		2.5mm	
O.T.		2mm	
T.T.		4.5mm	

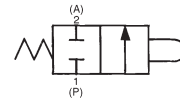
## Series VM1000/Bottom Piping

**Basic/VM1010-4N-00, VM1010-4NU-00**  
**VM1110-4N-00, VM1110-4NU-00**

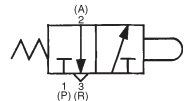


[ ]: T.T.=2.5mm

**JIS Symbol/2 port**



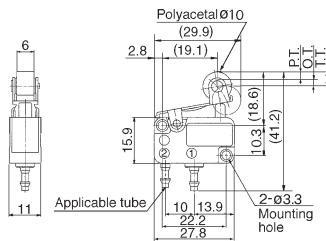
**3 port**



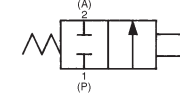
□ 0.5MPa supply

		Applicable tube	
		T0425	TU0425, T0403, TS0425
Bottom piping	3 ports	<b>VM1010-4N-00</b>	<b>VM1010-4NU-00</b>
	2 ports	<b>VM1110-4N-00</b>	<b>VM1110-4NU-00</b>
F.O.F.□		6N	
P.T.		2.5mm	
O.T.		2.3mm[0.5mm]	
T.T.		4.8mm[2.5mm]	

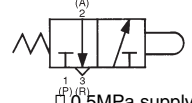
**Roller Lever/VM1010-4N-01, VM1010-4NU-01**  
**VM1110-4N-01, VM1110-4NU-01**



**JIS Symbol/2 port**



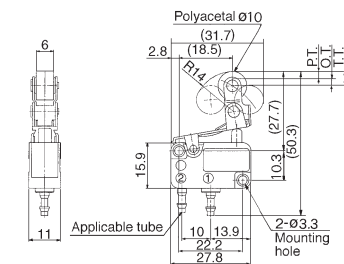
**3 port**



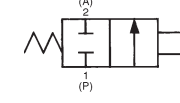
□ 0.5MPa supply

		Applicable tube	
		T0425	TU0425, T0403, TS0425
Bottom piping	3 ports	<b>VM1010-4N-01</b>	<b>VM1010-4NU-01</b>
	2 ports	<b>VM1110-4N-01</b>	<b>VM1110-4NU-01</b>
F.O.F.□		6N	
P.T.		2.5mm	
O.T.		2mm	
T.T.		4.5mm	

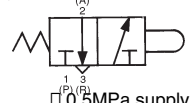
**One Way Roller Lever/VM1010-4N-02, VM1010-4NU-02**  
**VM1110-4N-02, VM1110-4NU-02**



**JIS Symbol/2 port**



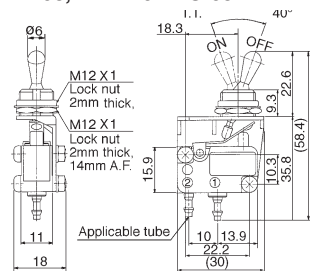
**3 port**



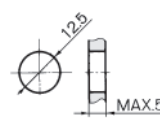
□ 0.5MPa supply

		Applicable tube	
		T0425	TU0425, T0403, TS0425
Bottom piping	3 ports	<b>VM1010-4N-02</b>	<b>VM1010-4NU-02</b>
	2 ports	<b>VM1110-4N-02</b>	<b>VM1110-4NU-02</b>
F.O.F.□		6N	
P.T.		2.5mm	
O.T.		2mm	
T.T.		4.5mm	

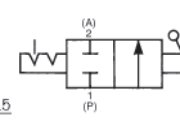
**Toggle Lever/VM1010-4N-08, VM1010-4NU-08**  
**VM1110-4N-08, VM1110-4NU-08**



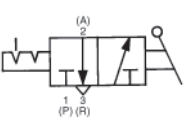
**Panel mounted hole**



**JIS Symbol/2 port**



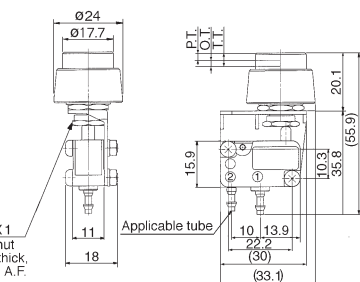
**3 port**



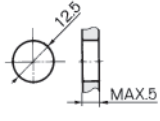
□ 0.5MPa supply

		Applicable tube	
		T0425	TU0425, T0403, TS0425
Bottom piping	3 ports	<b>VM1010-4N-08</b>	<b>VM1010-4NU-08</b>
	2 ports	<b>VM1110-4N-08</b>	<b>VM1110-4NU-08</b>
F.O.F.□		4N	
T.T.		40°	

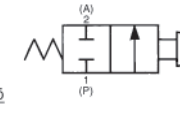
**Push Button/VM1010-4N-32, VM1010-4NU-32**  
**VM1110-4N-32, VM1110-4NU-32**



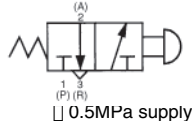
**Panel mounted hole**



**JIS Symbol/2 port**



**3 port**



□ 0.5MPa supply

		Applicable tube	
		T0425	TU0425, T0403, TS0425
Bottom piping	3 ports	<b>VM1010-4N-32</b>	<b>VM1010-4NU-32</b>
	2 ports	<b>VM1110-4N-32</b>	<b>VM1110-4NU-32</b>
F.O.F.□		6N	
P.T.		2.5mm	
O.T.		2mm	
T.T.		4.5mm	

## 3 Port Mechanical Valve

# Series VM400

NC or NO models available.

Piping possible to any port.

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



### Specifications

Fluid	Air
Operating pressure	-100kPa to 1.0MPa
Ambient and fluid temperature	-5 to 60°C (No freezing)
Effective area (N <sub>e</sub> /min)	7mm <sup>2</sup> (338.77)
Lubrication	Not required/Turbine oil #1 (ISO VG32)
Port size	1/8
Weight (Basic)	110g

### Model

	Actuator	Model	Actuator part No.	Application
Mechanical operation	Basic	<b>VM430-01-00</b>	—	—
	Roller lever	<b>VM430-01-01</b>	VM-01A	Polyacetal roller
		<b>VM430-01-01S</b>	VM-01AS	Hard steel roller
	One way roller lever	<b>VM430-01-02</b>	VM-02A	Polyacetal roller
		<b>VM430-01-02S</b>	VM-02AS	Hard steel roller
	Straight plunger	<b>VM430-01-05</b>	VM-05A	—
	Roller plunger	<b>VM430-01-06</b>	VM-06A	Polyacetal roller
		<b>VM430-01-06S</b>	VM-06AS	Hard steel roller
	Cross roller plunger	<b>VM430-01-07</b>	VM-07A	Polyacetal roller
		<b>VM430-01-07S</b>	VM-07AS	Hard steel roller
Manual operation	Toggle lever	<b>VM430-01-08</b>	VM-08A	—
	Push button (Mushroom)	<b>VM430-01-30R</b>	VM-30AR	Red
		<b>VM430-01-30B</b>	VM-30AB	Black
		<b>VM430-01-30G</b>	VM-30AG	Green
		<b>VM430-01-30Y</b>	VM-30AY	Yellow
	Push button (Extended)	<b>VM430-01-32R</b>	VM-32AR	Red
		<b>VM430-01-32B</b>	VM-32AB	Black
		<b>VM430-01-32G</b>	VM-32AG	Green
		<b>VM430-01-32Y</b>	VM-32AY	Yellow
	Push button (Flush)	<b>VM430-01-33</b>	VM-33A	With a set of red, black, green, yellow
	Twist selector (2 position)	<b>VM430-01-34R</b>	VM-34AR	Red
		<b>VM430-01-34B</b>	VM-34AB	Black
		<b>VM430-01-34G</b>	VM-34AG	Green
<b>VM430-01-34Y</b>		VM-34AY	Yellow	
Key selector (2 position)	<b>VM430-01-36</b>	VM-36A	—	



Note) Actuator replacement is available for all styles.

## How To Order

**E** VM4 **3** **0** - **01** - **01** **S**

**Area code**

-	Japan, Asia, Australia, England
<b>E</b>	Europe
<b>N</b>	North America

**Number of ports**

<b>3</b>	3 ports
----------	---------

**Thread**

-	Rc(PT)
<b>F</b>	G(PF)
<b>N</b>	NPT
<b>T</b>	NPTF

**Port size**

<b>01</b>	1/8
-----------	-----

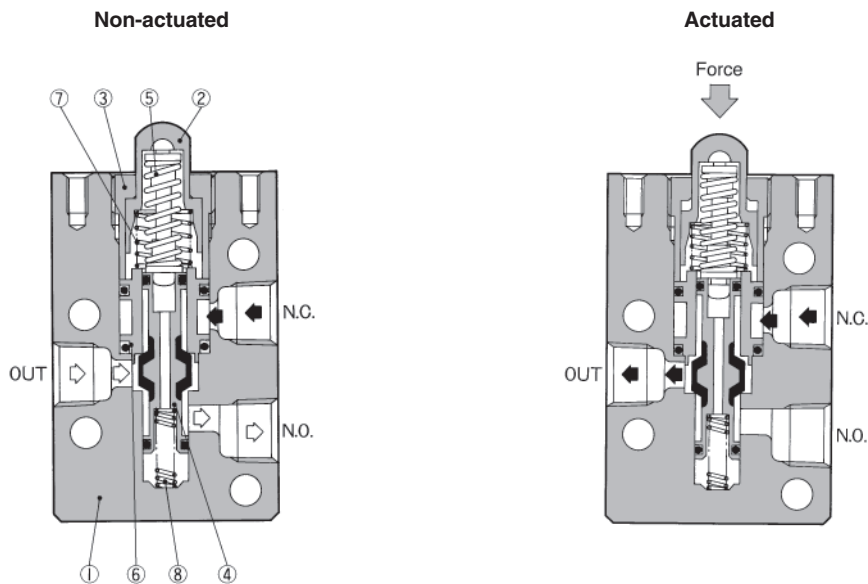
**Actuator**

<b>00</b>	Basic
<b>01</b>	Roller lever
<b>02</b>	One way roller lever
<b>05</b>	Straight plunger
<b>06</b>	Roller plunger
<b>07</b>	Cross roller plunger
<b>08</b>	Toggle lever
<b>30</b>	Push button (Mushroom)
<b>32</b>	Push button (Extended)
<b>33</b>	Push button (Flush)
<b>34</b>	Twist selector (2 position)
<b>36</b>	Key selector (2 position)

**Suffix of actuator**

<b>S</b>	Hard steel roller	Colour of push button
<b>R</b>	Red	
<b>B</b>	Black	
<b>G</b>	Green	
<b>Y</b>	Yellow	

## Construction



### Component Parts

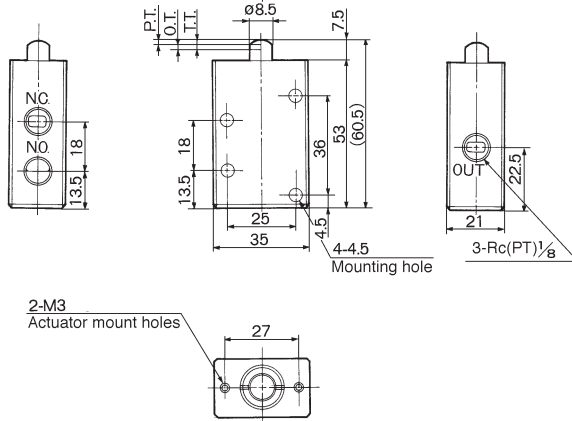
No.	Description	Material	Notes
①	Body	Aluminum alloy	Metallic plated
②	Plunger	Polyacetal	
③	Plunger retainer	Brass	Black zinc chromate treated
④	Spool valve	Aluminum alloy	Rubber lined

No.	Description	Material	Notes
⑤	Over travel spring	Stainless steel	
⑥	Retainer	Brass	
⑦	Spring	Stainless steel	
⑧	Spring	Stainless steel	

# VM400

## Series VM400

### Basic/VM430-01-00

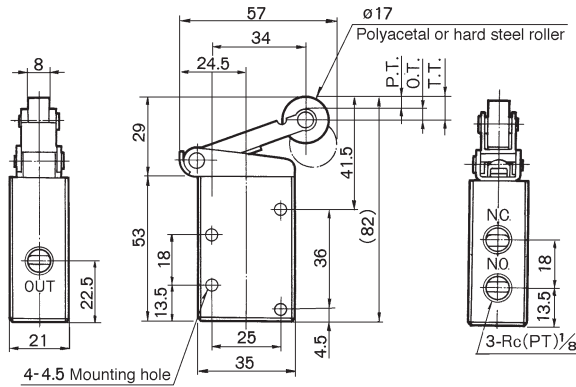


### JIS Symbol



F.O.F.	26N
P.T.	1.5mm
O.T.	2mm
T.T.	3.5mm

### Roller Lever/VM430-01-01, VM430-01-01S

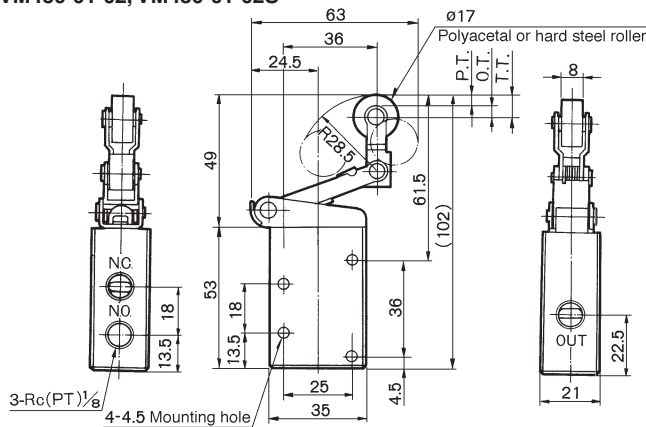


### JIS Symbol



F.O.F.	12N
P.T.	4mm
O.T.	4.5mm
T.T.	8.5mm

### One Way Roller Lever/VM430-01-02, VM430-01-02S

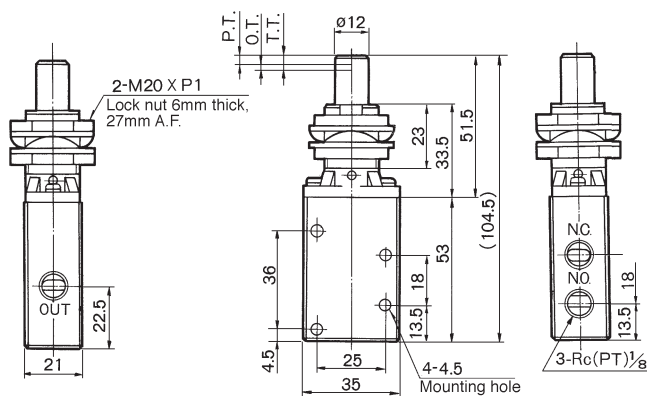


### JIS Symbol

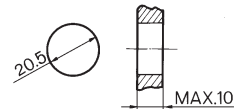


F.O.F.	11N
P.T.	4mm
O.T.	5mm
T.T.	9mm

### Straight Plunger/VM430-01-05



### Panel mounted hole



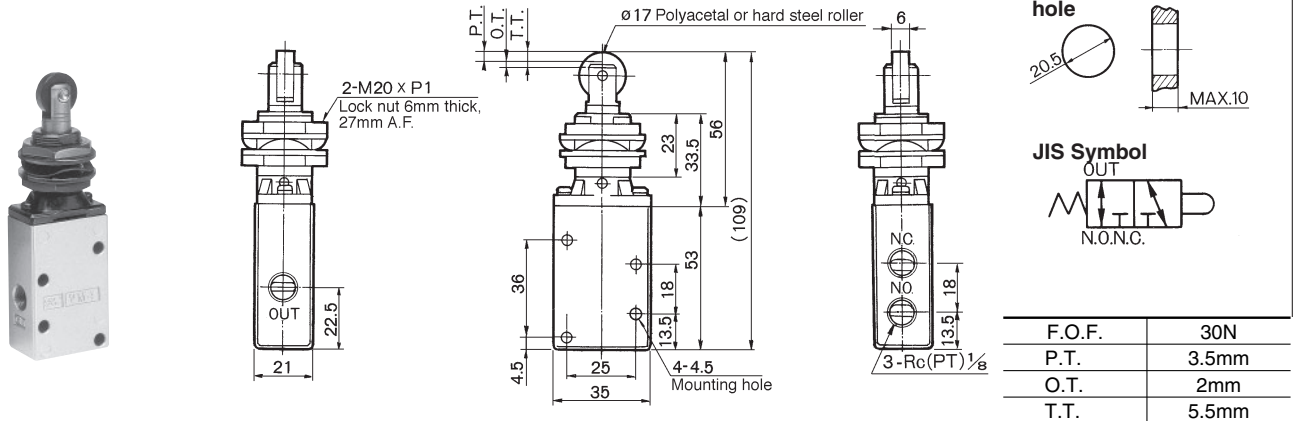
### JIS Symbol



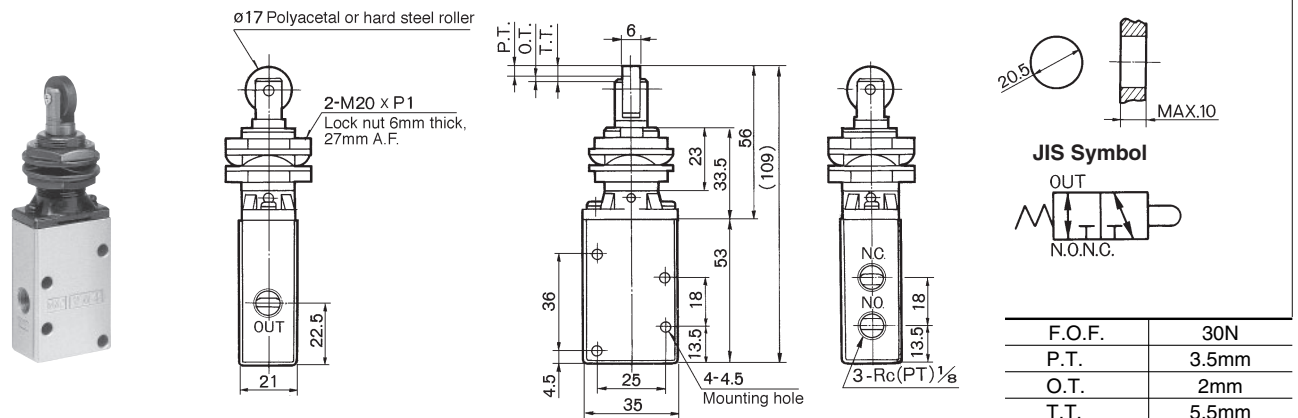
F.O.F.	30N
P.T.	3.5mm
O.T.	2mm
T.T.	5.5mm

## Series VM400

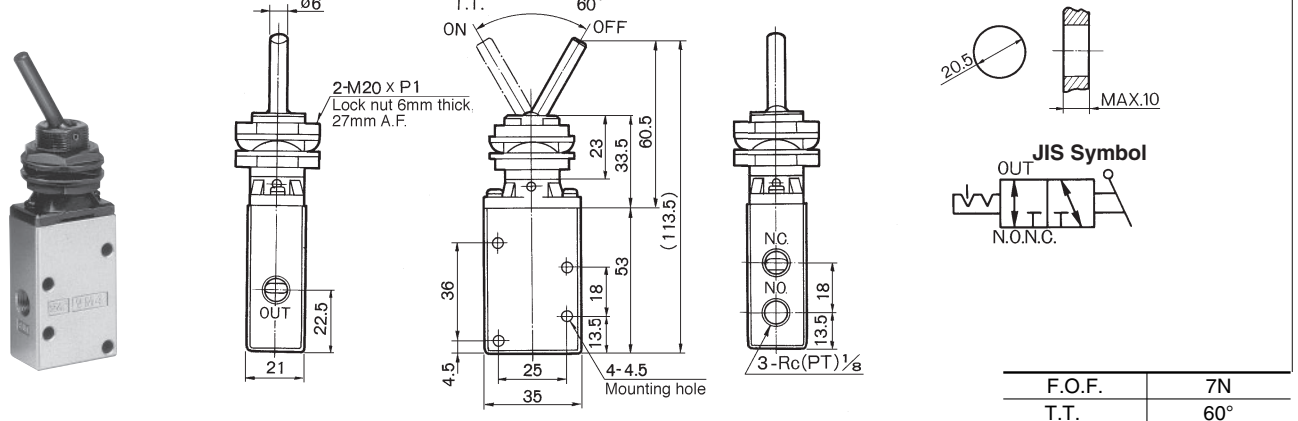
### Roller Plunger/VM430-01-06, VM430-01-06S



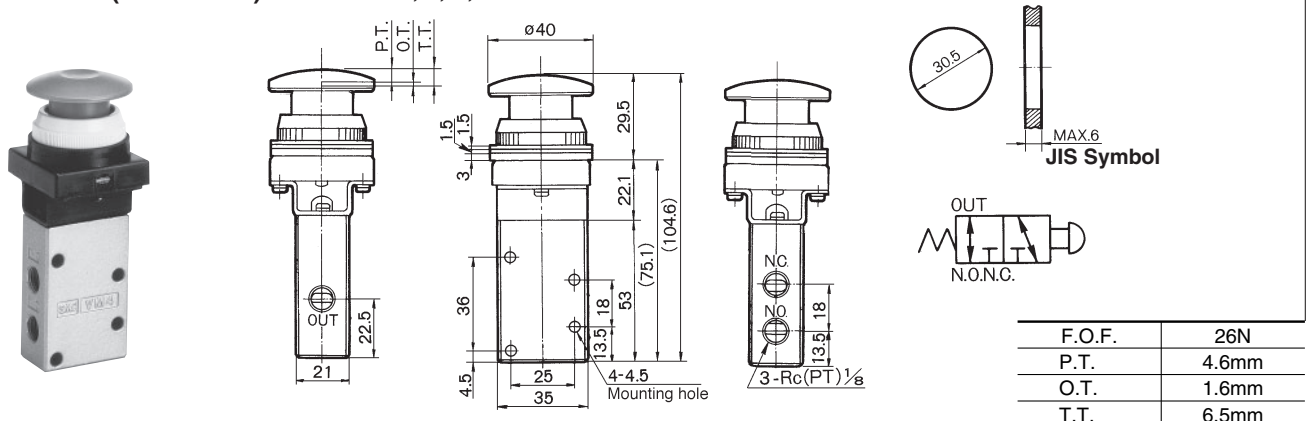
### Cross Roller Plunger/VM430-01-07, VM430-01-07S



### Toggle Lever/VM430-01-08



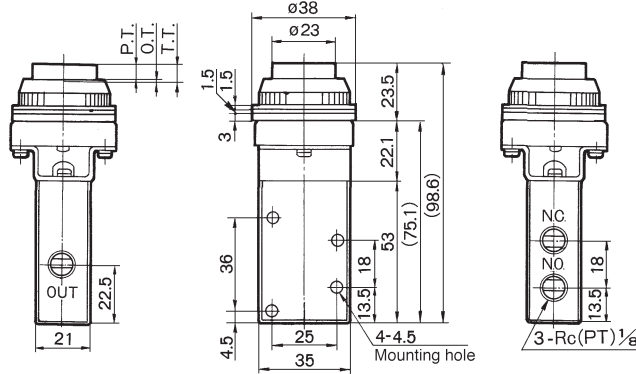
### Push Button (Mushroom)/VM430-01-30R, B, G, Y



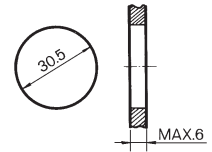
# VM400

## Series VM400

### Push Button (Extended)/VM430-01-32R, B, G, Y



#### Panel mounted hole

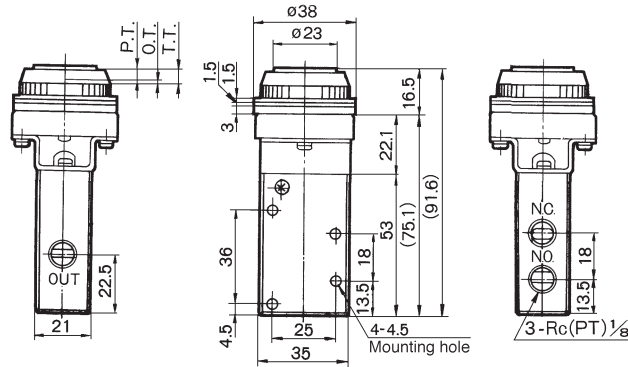


#### JIS Symbol

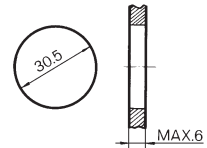


F.O.F.	26N
P.T.	5.4mm
O.T.	1.6mm
T.T.	6.5mm

### Push Button (Flush)/VM430-01-33



#### Panel mounted hole

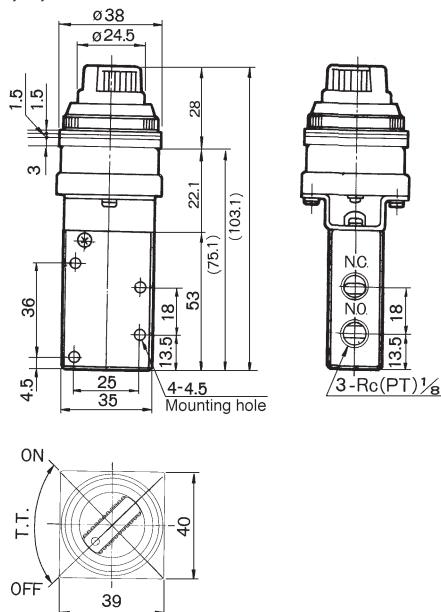


#### JIS Symbol

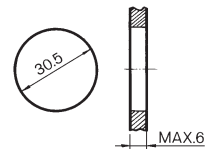


F.O.F.	26N
P.T.	4.9mm
O.T.	1.6mm
T.T.	6.5mm

### Twist Selector (2 position)/VM430-01-34R, B, G, Y



#### Panel mounted hole



#### JIS Symbol

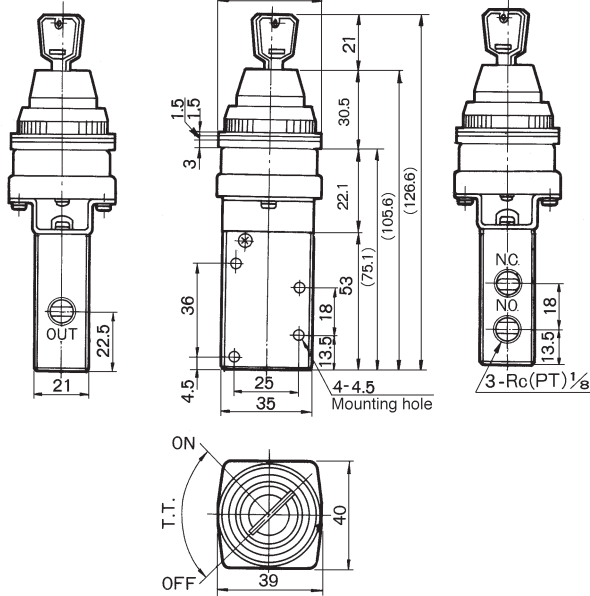


F.O.F.	20N
T.T.	90°

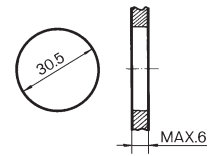


## Series VM400

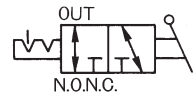
### Key Selector (2 position)/VM430-01-36



### Panel mounted hole



### JIS Symbol



Key can be removed in "on" and "off" positions.

F.O.F.	20N
T.T.	90°

# 3 Port Mechanical Valve/Heavy Duty Style

## Series VM800

**Sturdy Construction.**  
**NC and NO models available.**  
**Piping possible to any port.**  
**Many actuator positions and orientation options.**



### Specifications

Fluid	Air
Operating pressure	-100kPa to 1.0MPa
Ambient and fluid temperature	-5 to 60°C (No freezing)
Effective area (Nl/min)	6mm <sup>2</sup> (294.20)
Lubrication	Not required/Turbine oil #1 (ISO VG32)
Port size	1/8
Weight (Basic)	180g

### Model

Actuator	Model	Actuator part No.
Basic	VM830-01-00	—
Roller lever	VM830-01-01	VM-01F
Adjustable roller lever	VM830-01-13	VM-13F
Adjustable rod lever	VM830-01-14	VM-14F

Actuator replacement is available.

### How to Order

**E** VM8 3 0 - [ ] 01 - 01

**Area code**

-	Japan, Asia, Australia, England
<b>E</b>	Europe
<b>N</b>	North America

**Number of ports**

<b>3</b>	3 ports
----------	---------

**Thread**

-	Rc(PT)
<b>F</b>	G(PF)
<b>N</b>	NPT
<b>T</b>	NPTF

**Port size**

<b>01</b>	1/8
-----------	-----

**Actuator**

<b>00</b>	Basic
<b>01</b>	Roller lever
<b>13</b>	Adjustable roller lever
<b>14</b>	Adjustable rod lever

### Applications

**Movement is changeable**

Standard movements: Actuated, Actuated, Free travel, Actuated. Stepped plunger.

Roller can be mounted to inside of lever. Undo screw to reverse lever.

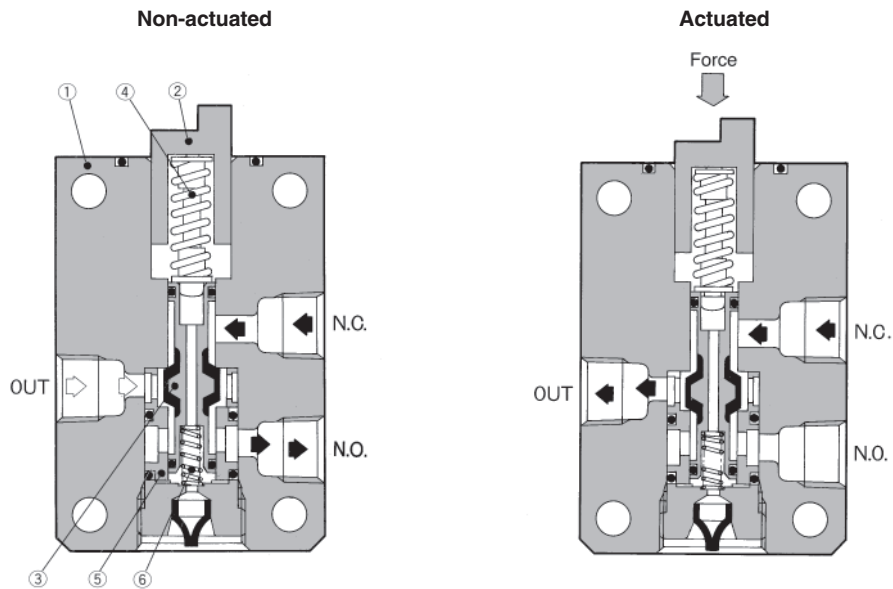
**Lever length adjustment**

Lever location can be changed. Undo screw to adjust through.

Head direction can be changed. Loosen the hexagon socket bolt to adjust the lever. MAX180 MIN120.

Undo screw to adjust rod length. It can be operated by bending the rod. In this case, make sure that the minimum bending radius of the rod is 10R or more. MAX1412.

## Construction



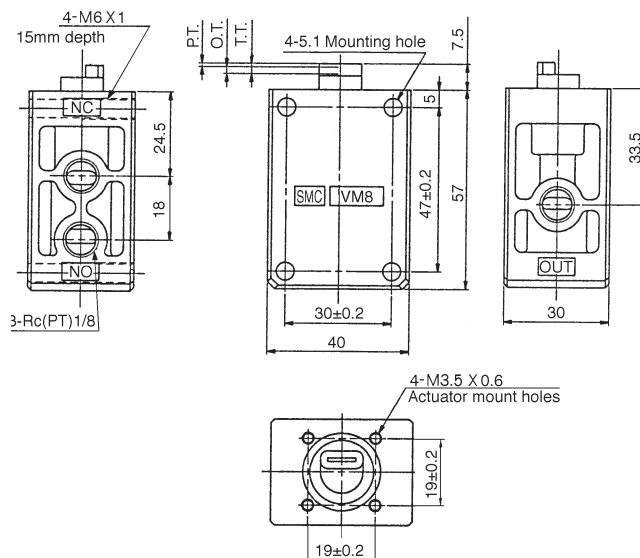
### Component Parts

No.	Description	Material	Notes
①	Body	Aluminum alloy	Metallic plated
②	Plunger	Polyacetal	
③	Spool valve	Aluminum alloy, NBR	Rubber lined

No.	Description	Material	Notes
④	Over travel spring	Stainless steel	
⑤	Retainer	Brass	
⑥	Spring	Steel	Zinc chromate

## Series VM800

### Basic/VM830-01-00

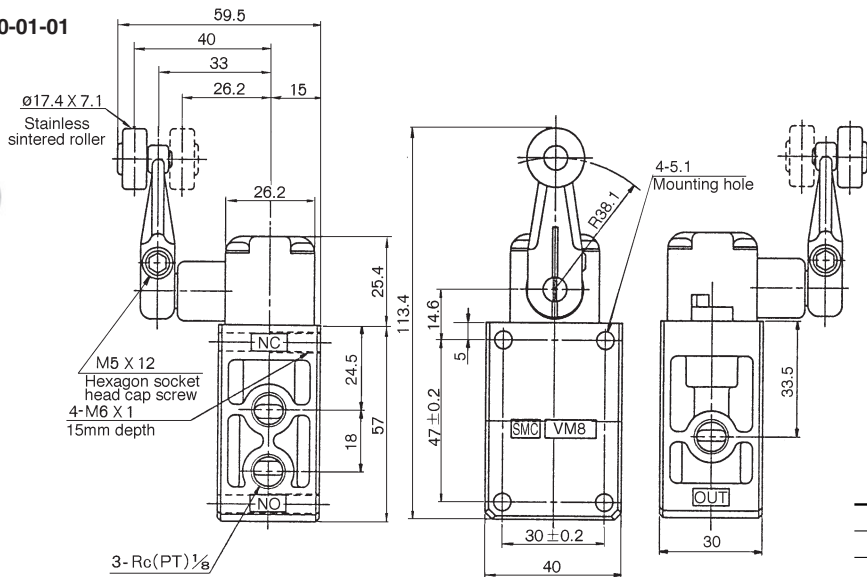


F.O.F.	23N
P.T.	1mm
O.T.	2mm
T.T.	3mm

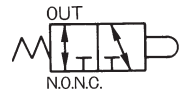
# VM800

## Series VM800

### Roller Lever/VM830-01-01

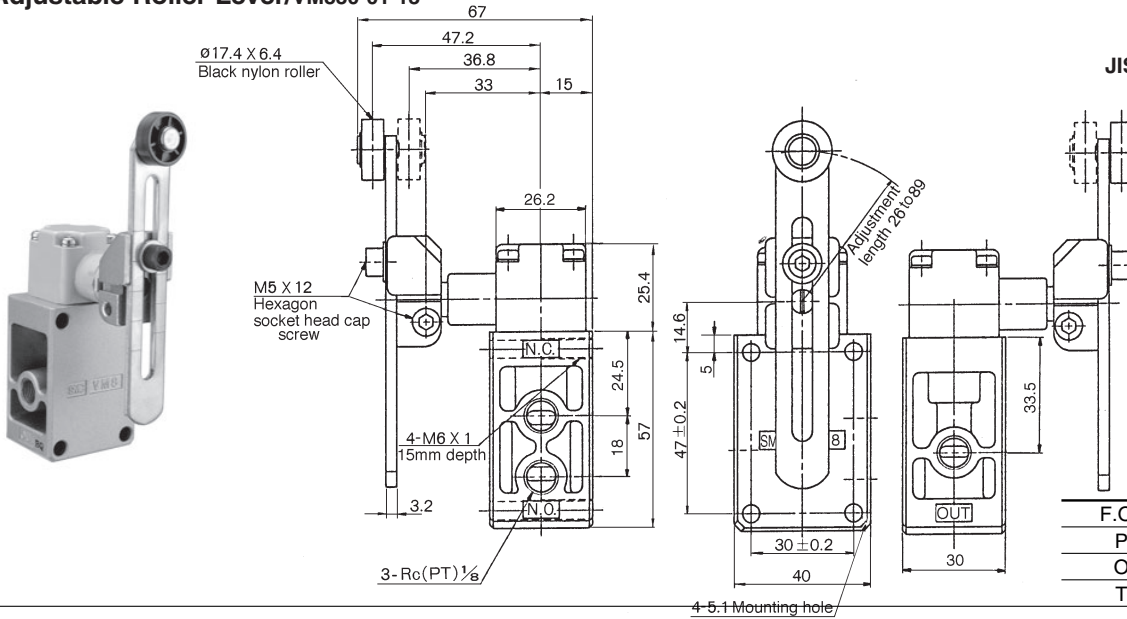


#### JIS Symbol

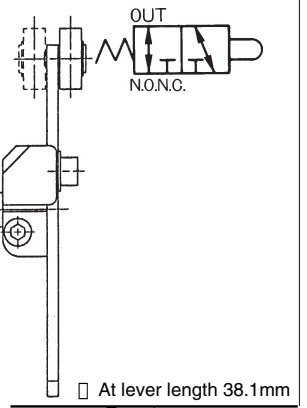


F.O.F.	20N
P.T.	20°
O.T.	30°
T.T.	50°

### Adjustable Roller Lever/VM830-01-13

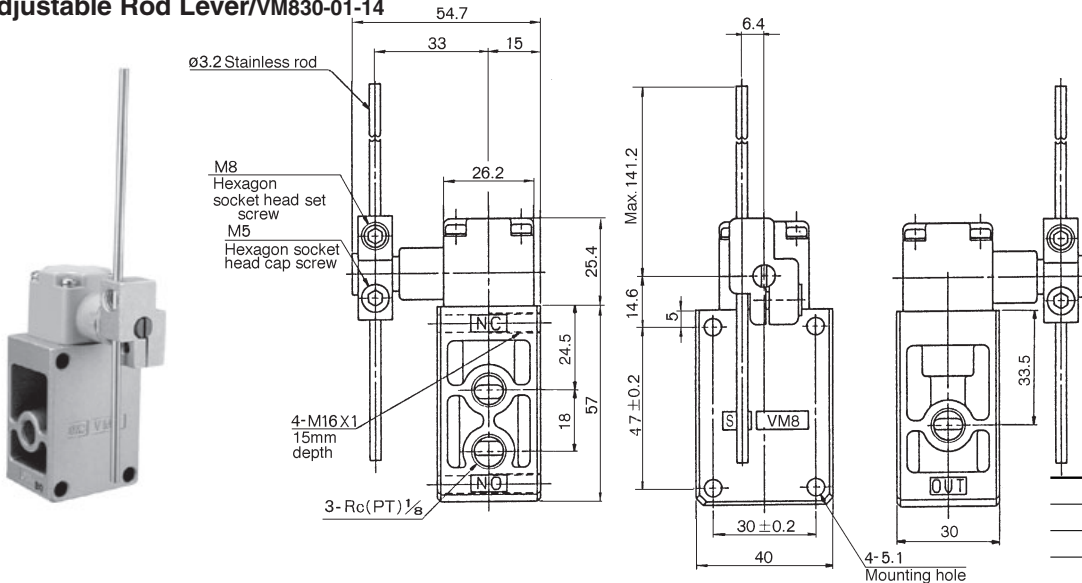


#### JIS Symbol



F.O.F. □	20N
P.T.	20°
O.T.	30°
T.T.	50°

### Adjustable Rod Lever/VM830-01-14



#### JIS Symbol



F.O.F. □	2.3N
P.T.	20°
O.T.	30°
T.T.	50°

## 5 Port Mechanical Valve/Metal Seal

# Series **VZM400**

**Compact design,  
Large flow capacity  
High cycle rate,  
Long life/300c.p.m.**

**Piping possible to any EXH port.**

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

**External pilot model available. (Option)**

**Foot bracket and manifold mounting possible.**



### Specifications

Fluid	Air, Inert gas
Operating pressure	0.15 to 1.0MPa <sup>(1)</sup>
Ambient and fluid temperature	-5 to 60°C (No freezing)
Effective area (Nl/min)	9.9mm <sup>2</sup> (490.33)
Maximum frequency (Mechanical operation style)	300 c.p.m or less
Lubrication	Not required/Turbine oil #1 (ISO VG32)
Port size	Main valve 1/8
	Pilot valve (EXH)/M5
Option	Foot bracket <sup>(2)</sup>
Weight (Basic)	150g



□ Contact SMC for manifold mounting style.

Note 1) External pilot Main valve: 0 to 1.0MPa

Pilot valve: 0.15 to 1.0MPa

Note 2) The standard body can not be retrofitted with a foot bracket.

### Model

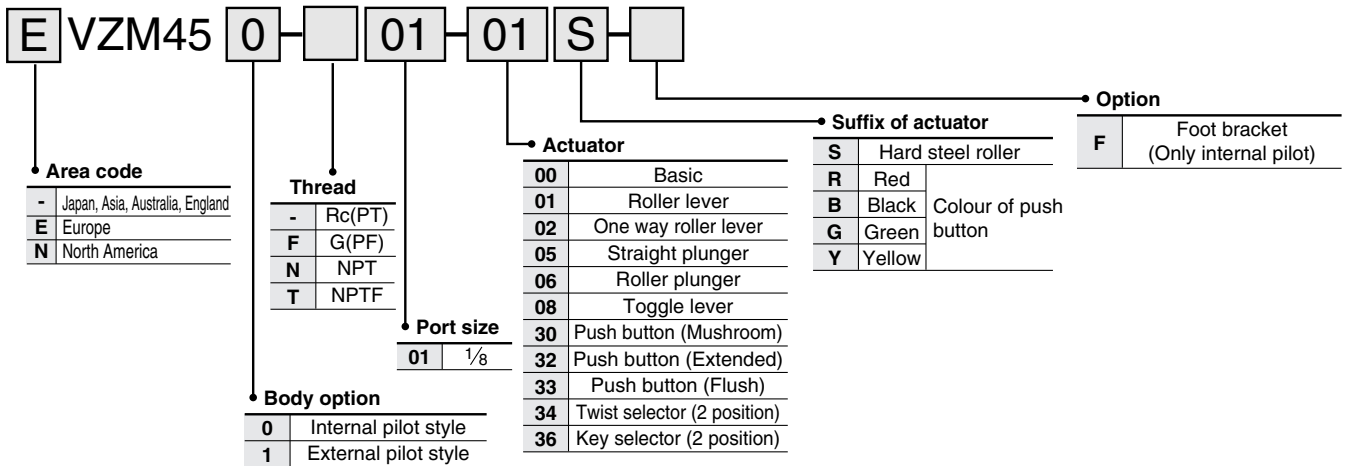
	Actuator	Model	Actuator part No.	Application
Mechanical operation	Basic	<b>VZM450-01-00</b>	—	—
	Roller lever	<b>VZM450-01-01</b>	VM-01C	Polyacetal roller
		<b>VZM450-01-01S</b>	VM-01CS	Hard steel roller
	One way roller lever	<b>VZM450-01-02</b>	VM-02C	Polyacetal roller
		<b>VZM450-01-02S</b>	VM-02CS	Hard steel roller
	Straight plunger	<b>VZM450-01-05</b>	VM-05C	—
Roller plunger	<b>VZM450-01-06</b>	VM-06C	Polyacetal roller	
	<b>VZM450-01-06S</b>	VM-06CS	Hard steel roller	
Manual operation	Toggle lever	<b>VZM450-01-08</b>	VM-08C	—
		<b>VZM450-01-30R</b>	VM-30CR	Red
		<b>VZM450-01-30B</b>	VM-30CB	Black
		<b>VZM450-01-30G</b>	VM-30CG	Green
	Push button (Mushroom)	<b>VZM450-01-30Y</b>	VM-30CY	Yellow
		<b>VZM450-01-32R</b>	VM-32CR	Red
		<b>VZM450-01-32B</b>	VM-32CB	Black
		<b>VZM450-01-32G</b>	VM-32CG	Green
	Push button (Extended)	<b>VZM450-01-32Y</b>	VM-32CY	Yellow
		<b>VZM450-01-33</b>	VM-33C	With a set of red, black, green, yellow
		Push button (Flush)	<b>VZM450-01-34R</b>	VM-34CR
	<b>VZM450-01-34B</b>		VM-34CB	Black
	<b>VZM450-01-34G</b>		VM-34CG	Green
<b>VZM450-01-34Y</b>	VM-34CY		Yellow	
Key selector (2 position)	<b>VZM450-01-36</b>	VM-36C	—	



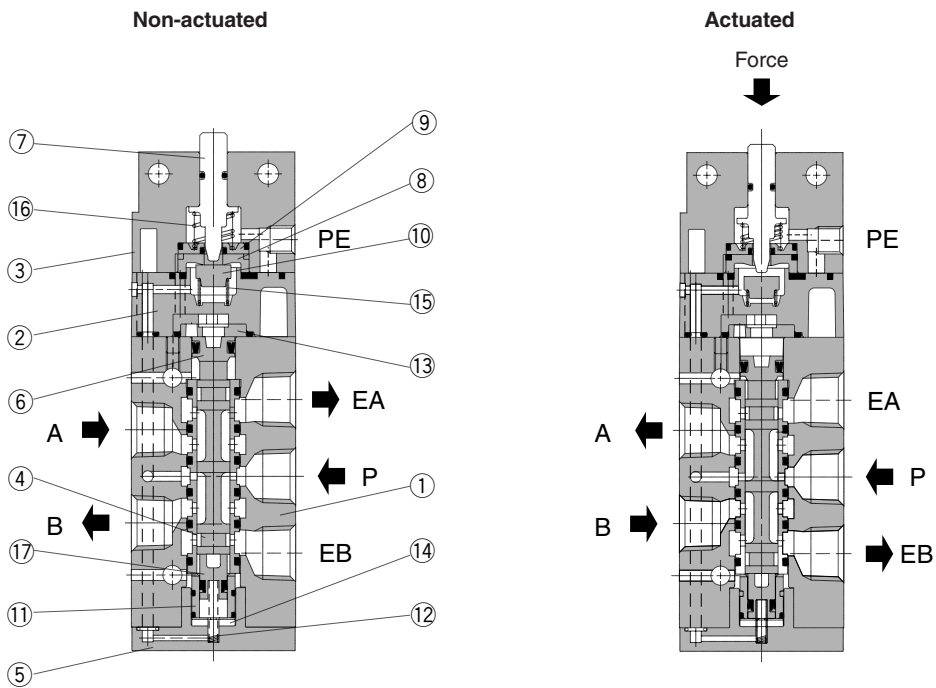
Note) Actuator replacement is available for all styles.

# VZM400

## How to Order



## Construction



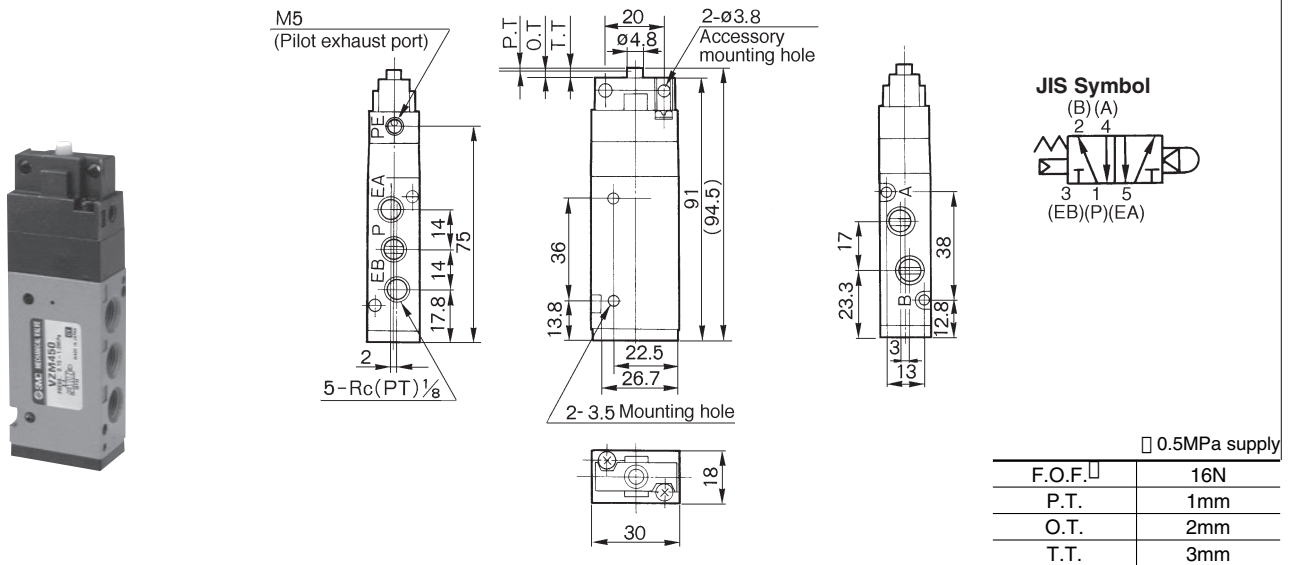
### Component Parts

No.	Description	Material	Notes
①	Body	ADC	Metallic plated
②	Pilot body	PBT	Only external pilot style: ZDC
③	Head cover	ZDC	Black zinc chromated
④	Spool sleeve	Stainless steel	
⑤	End cover	POM	
⑥	Piston A	POM	
⑦	Plunger	POM	
⑧	Valve seat (A)	POM	
⑨	Valve seat (B)	POM	

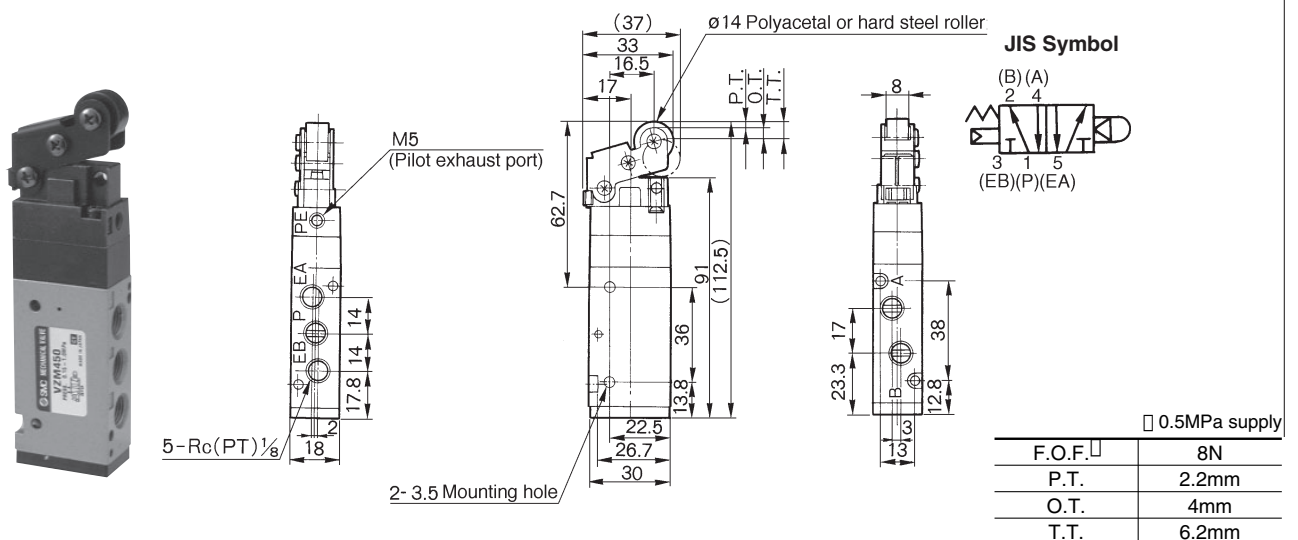
No.	Description	Material	Notes
⑩	Valve	NBR	
⑪	Piston guide B	Aluminum alloy	
⑫	Return spring	Stainless steel	
⑬	Cushion	Rubber	
⑭	Cushion	Rubber	
⑮	Valve spring	Stainless steel	
⑯	Return spring	Stainless steel	
⑰	Piston B	POM	

## Series VZM400

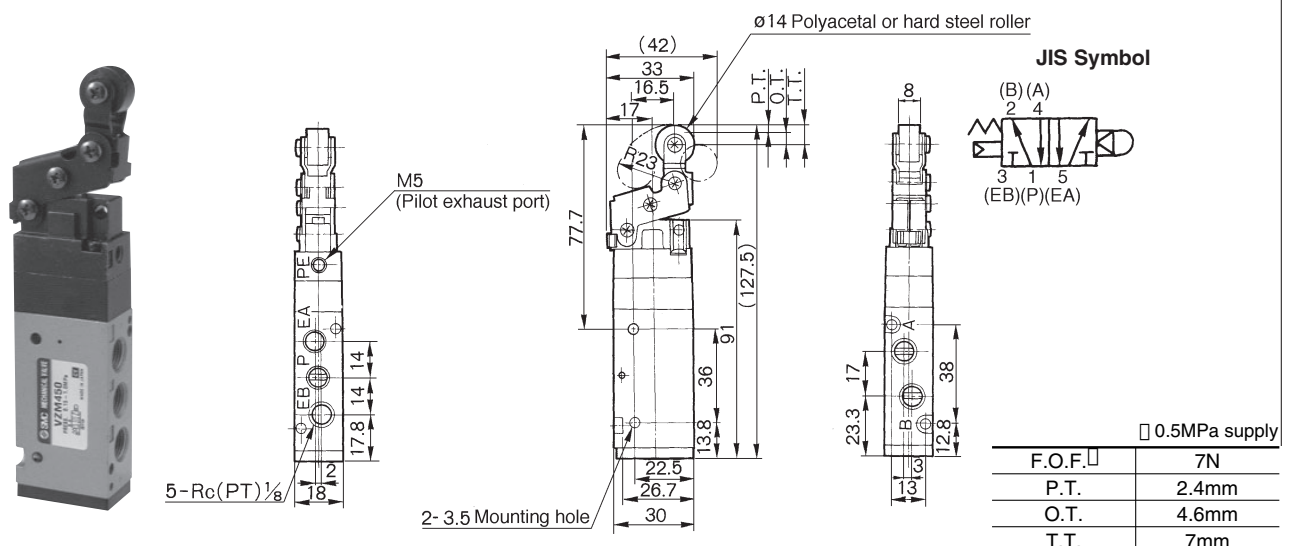
### Basic/VZM450-01-00



### Roller Lever/VZM450-01-01, VZM450-01-01S



### One Way Roller Lever/VZM450-01-02, VZM450-01-02S

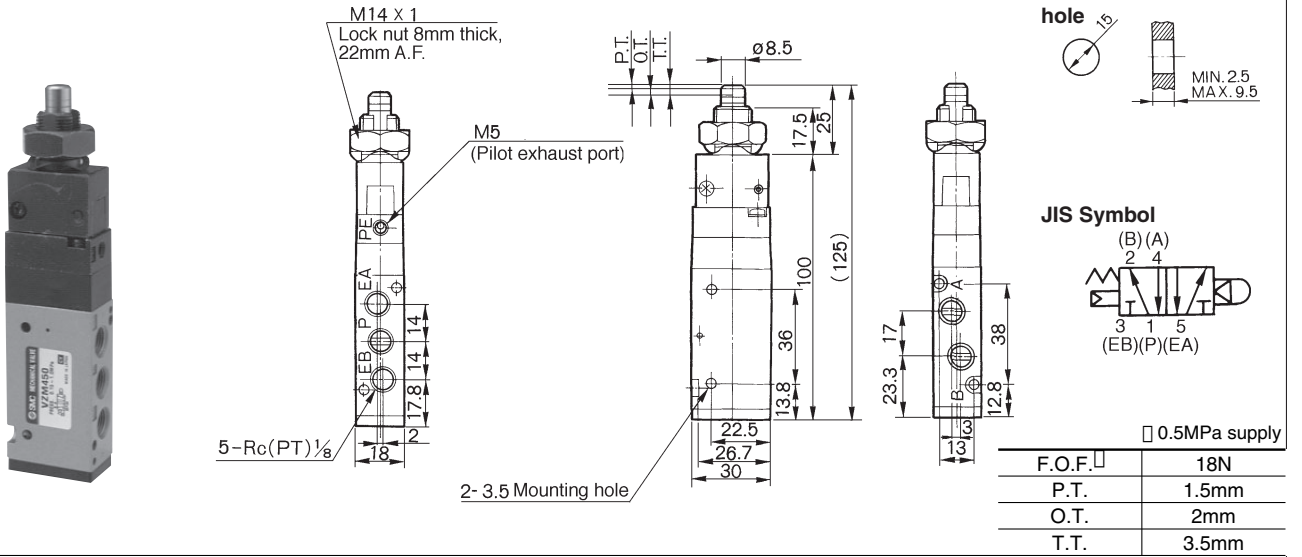




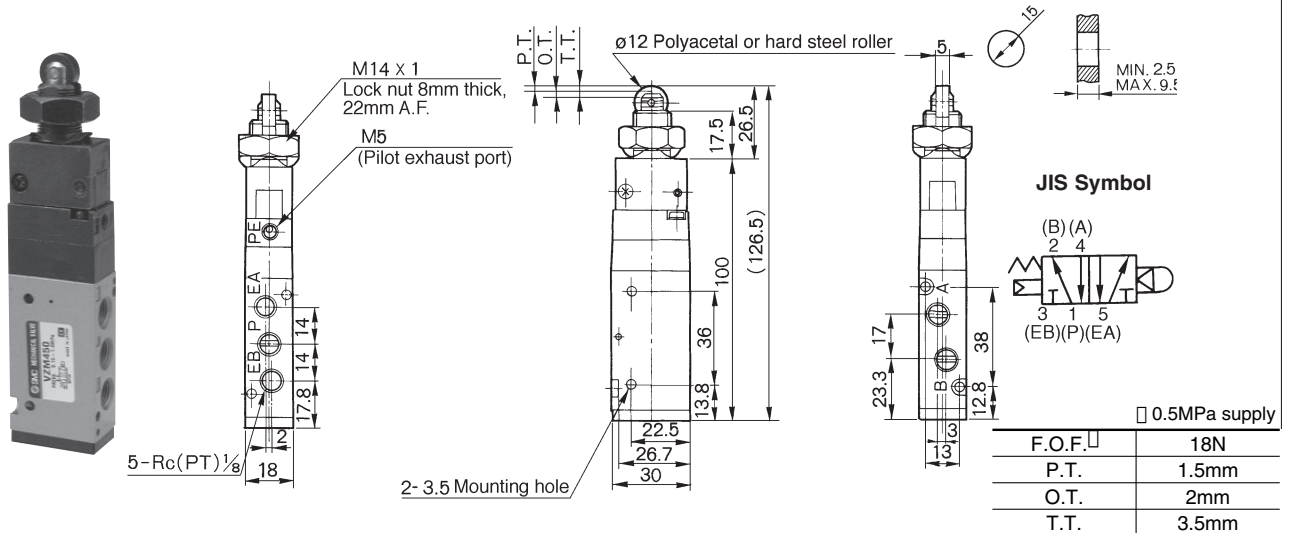
# VZM400

## Series VZM400

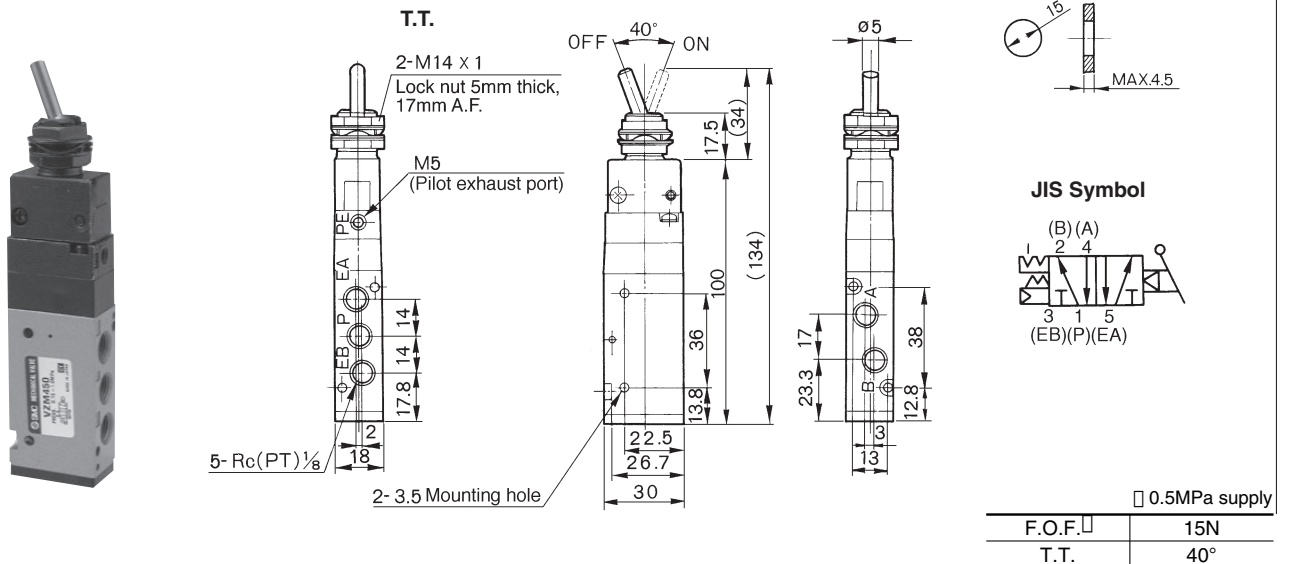
### Straight Plunger/VZM450-01-05



### Roller Plunger/VZM450-01-06, VZM450-01-06S

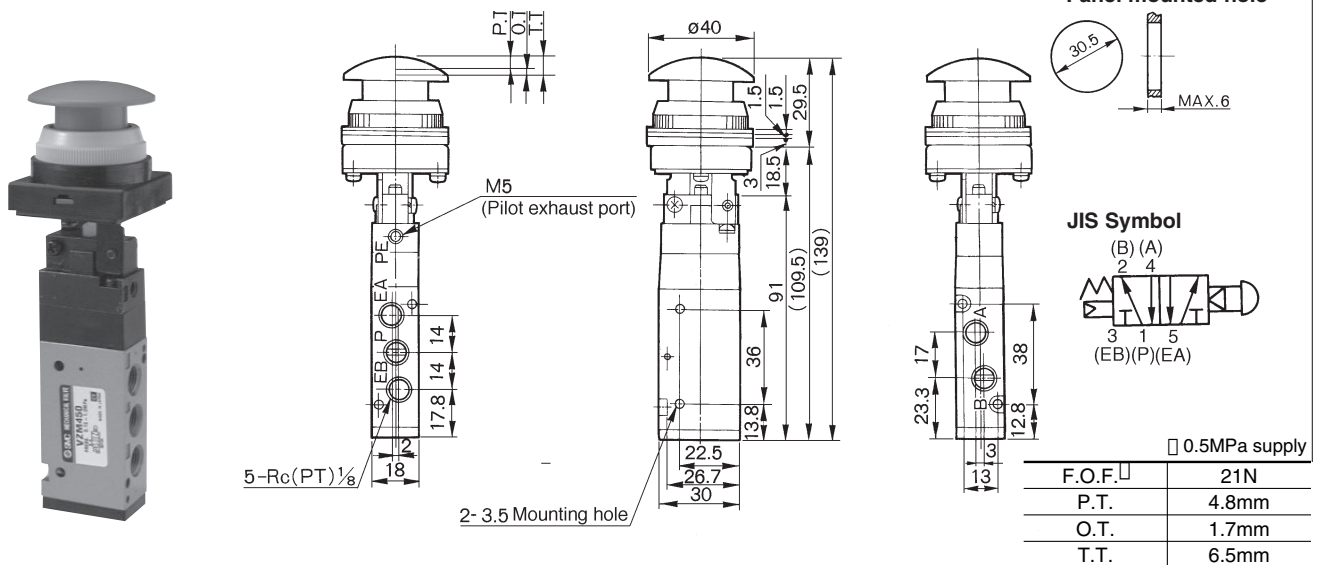


### Toggle Lever/VZM450-01-08

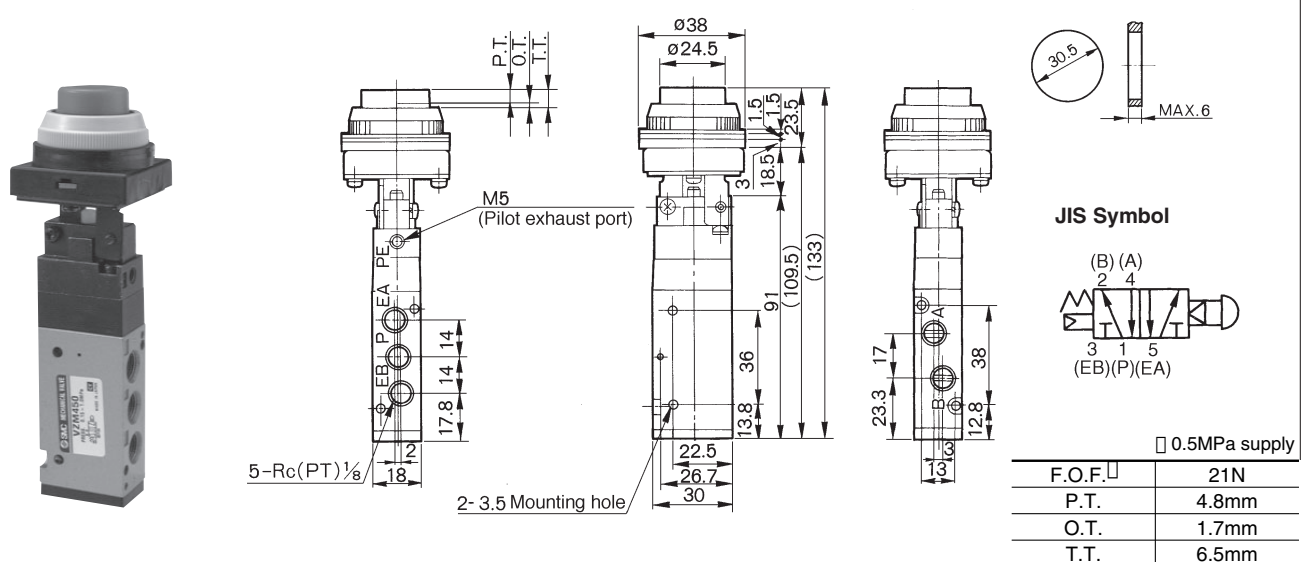


## Series VZM400

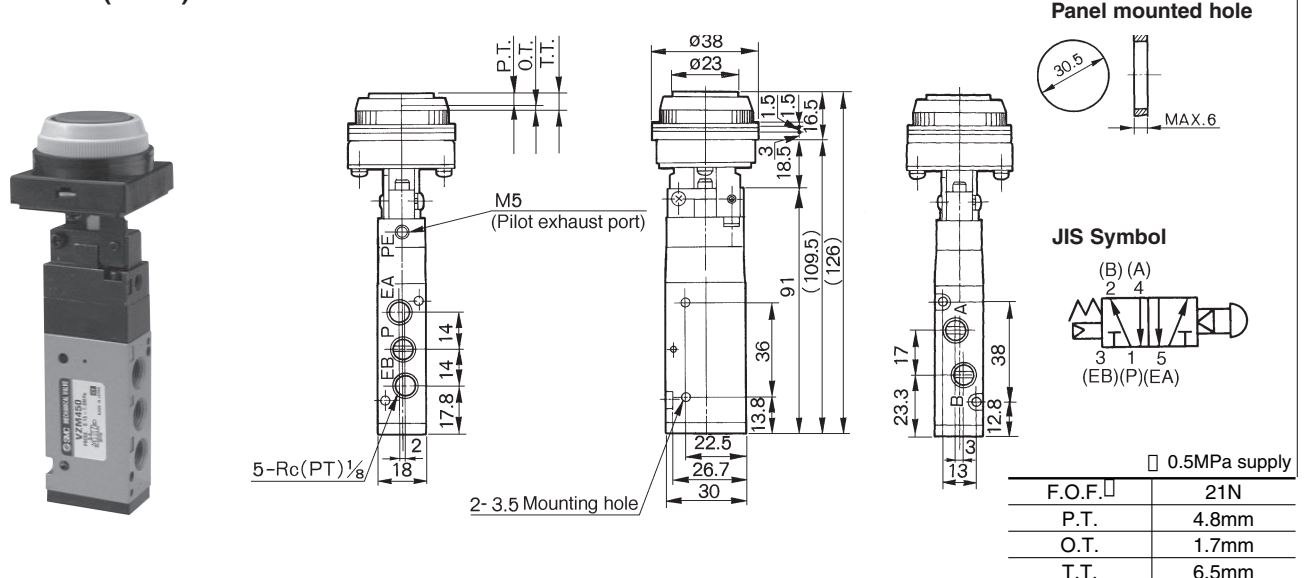
### Push Button (Mushroom)/VZM450-01-30R, B, G, Y



### Push Button (Extended)/VZM450-01-32R, B, G, Y



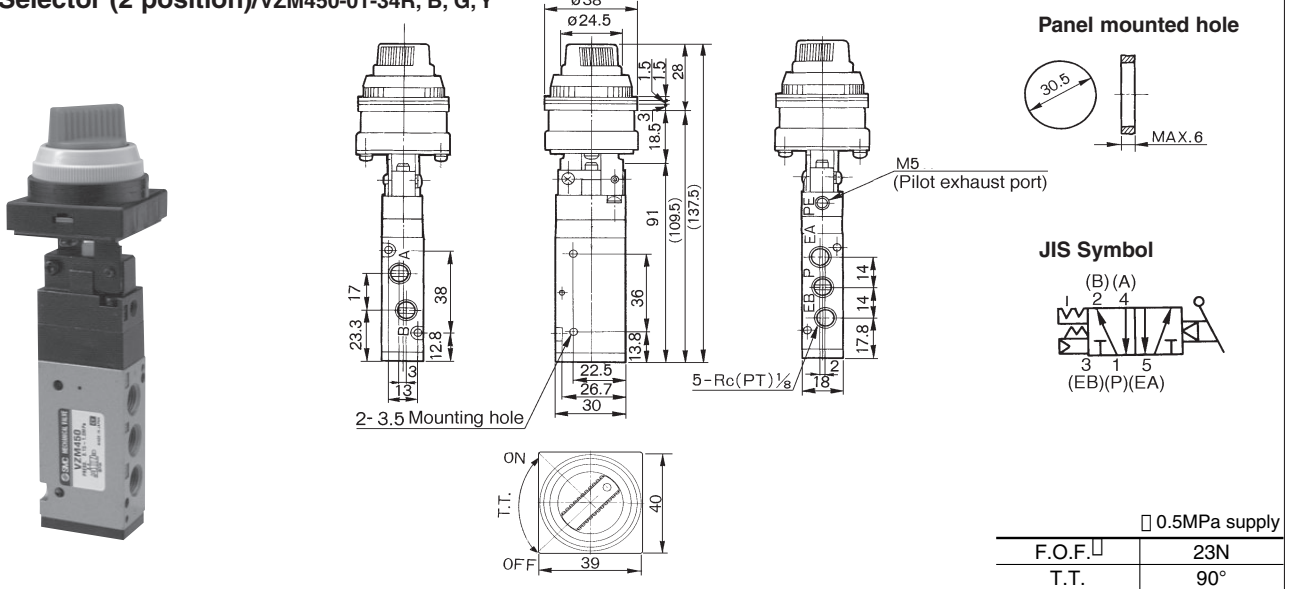
### Push Button (Flush)/VZM450-01-33



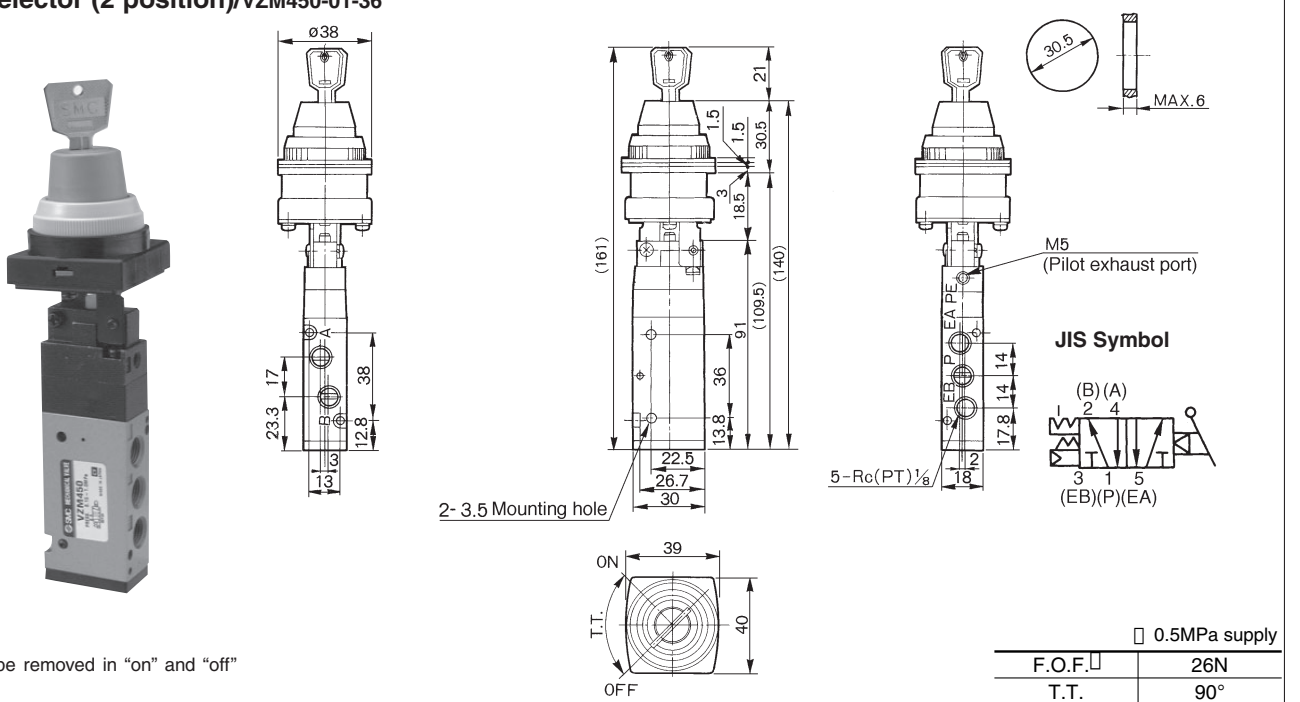
# VZM400

## Series VZM400

### Twist Selector (2 position)/VZM450-01-34R, B, G, Y

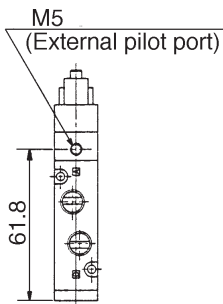


### Key Selector (2 position)/VZM450-01-36

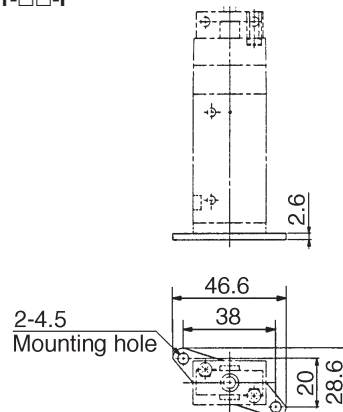


Key can be removed in "on" and "off" positions.

### External Pilot Style VZM451 Type



### With Foot Bracket VZM450-01-□□-F



## 5 Port Mechanical Valve

# Series *VZM500*

**Compact design,  
Large flow capacity/N<sub>d</sub>/min: 589**

**High cycle rate,  
Long life/300c.p.m.**

**Piping possible to any EXH port.**

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

**External pilot model available.  
(Option)**

**Foot bracket and manifold mounting possible.**



PAT. PEND.

### Specifications

Fluid	Air, Inert gas
Operating pressure	0.15 to 0.7MPa <sup>(1)</sup>
Ambient and fluid temperature	-5 to 60°C (No freezing)
Effective area (N <sub>d</sub> /min)	10.8mm <sup>2</sup> (534.90)
Maximum frequency (Mechanical operation style)	300 c.p.m or less
Lubrication	Not required/Turbine oil #1 (ISO VG32)
Port size	Main valve 1/8
	Pilot valve (EXH)/M5
Option	Foot bracket <sup>(2)</sup>
Weight (Basic)	130g

Contact SMC for manifold mounting style.  
Note 1) External pilot style Main valve: 0 to 0.7MPa  
Pilot valve: 0.15 to 0.7MPa

Note 2) The standard body can not be retrofitted with a foot bracket.

### Model

	Actuator	Model	Actuator part No.	Application
Mechanical operation	Basic	<b>VZM550-01-00</b>	—	—
	Roller lever	<b>VZM550-01-01</b>	VM-01C	Polyacetal roller
		<b>VZM550-01-01S</b>	VM-01CS	Hard steel roller
	One way roller lever	<b>VZM550-01-02</b>	VM-02C	Polyacetal roller
		<b>VZM550-01-02S</b>	VM-02CS	Hard steel roller
	Straight plunger	<b>VZM550-01-05</b>	VM-05C	—
	Roller plunger	<b>VZM550-01-06</b>	VM-06C	Polyacetal roller
		<b>VZM550-01-06S</b>	VM-06CS	Hard steel roller
Toggle lever	<b>VZM550-01-08</b>	VM-08C	—	
Manual operation	Push button (Mushroom)	<b>VZM550-01-30R</b>	VM-30CR	Red
		<b>VZM550-01-30B</b>	VM-30CB	Black
		<b>VZM550-01-30G</b>	VM-30CG	Green
		<b>VZM550-01-30Y</b>	VM-30CY	Yellow
	Push button (Extended)	<b>VZM550-01-32R</b>	VM-32CR	Red
		<b>VZM550-01-32B</b>	VM-32CB	Black
		<b>VZM550-01-32G</b>	VM-32CG	Green
	Push button (Flush)	<b>VZM550-01-32Y</b>	VM-32CY	Yellow
		<b>VZM550-01-33</b>	VM-33C	With a set of red, black, green, yellow
		Twist selector (2 position)	<b>VZM550-01-34R</b>	VM-34CR
	<b>VZM550-01-34B</b>		VM-34CB	Black
	<b>VZM550-01-34G</b>		VM-34CG	Green
	<b>VZM550-01-34Y</b>		VM-34CY	Yellow
Key selector (2 position)	<b>VZM550-01-36</b>	VM-36C	—	
Push-pull	<b>VZM550-01-37</b>	—	Black	

Note) Actuator replacement is available for all styles. (Except for push-pull)

# VZM500

## How to Order

**E** VZM55 **0** **01** **01** **S** **F**

**Area code**

-	Japan, Asia, Australia, England
<b>E</b>	Europe
<b>N</b>	North America

**Thread**

-	Rc(PT)
<b>F</b>	G(PF)
<b>N</b>	NPT
<b>T</b>	NPTF

**Port size**

<b>01</b>	1/8
-----------	-----

**Actuator**

<b>00</b>	Basic
<b>01</b>	Roller lever
<b>02</b>	One way roller lever
<b>05</b>	Straight plunger
<b>06</b>	Roller plunger
<b>08</b>	Toggle lever
<b>30</b>	Push button (Mushroom)
<b>32</b>	Push button (Extended)
<b>33</b>	Push button (Flash)
<b>34</b>	Twist selector (2 position)
<b>36</b>	Key selector (2 position)
<b>37</b>	Push-pull

**Suffix of actuator**

<b>S</b>	Hard steel roller
<b>R</b>	Red
<b>B</b>	Black
<b>G</b>	Green
<b>Y</b>	Yellow

**Option**

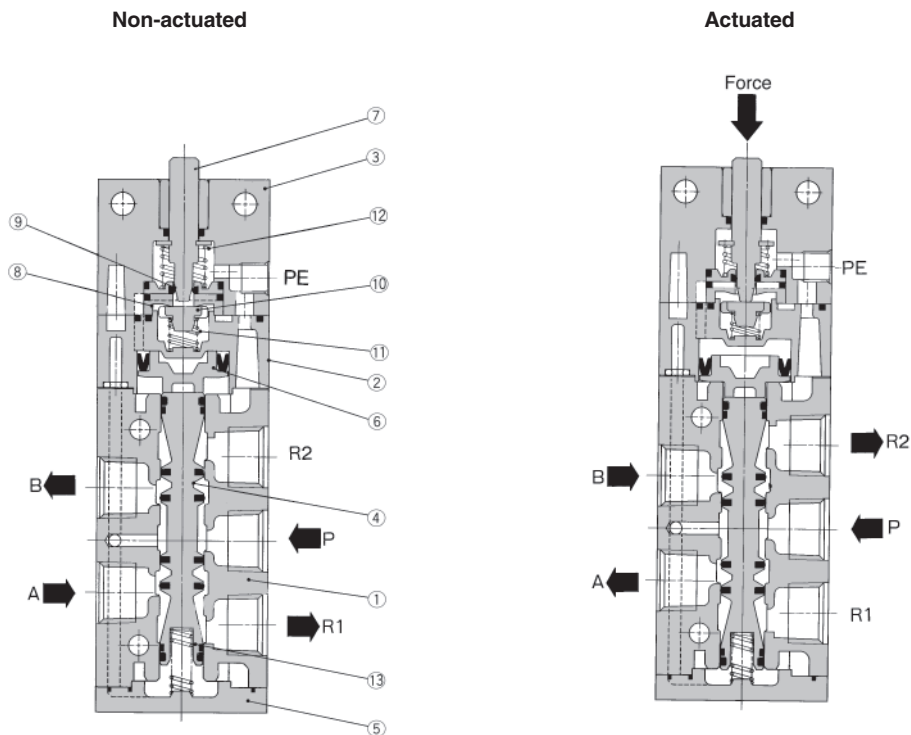
<b>F</b>	Foot bracket
----------	--------------

**Body option**

<b>0</b>	Standard
<b>1*</b>	External pilot style

\* Except for VZM550-01-37

## Construction



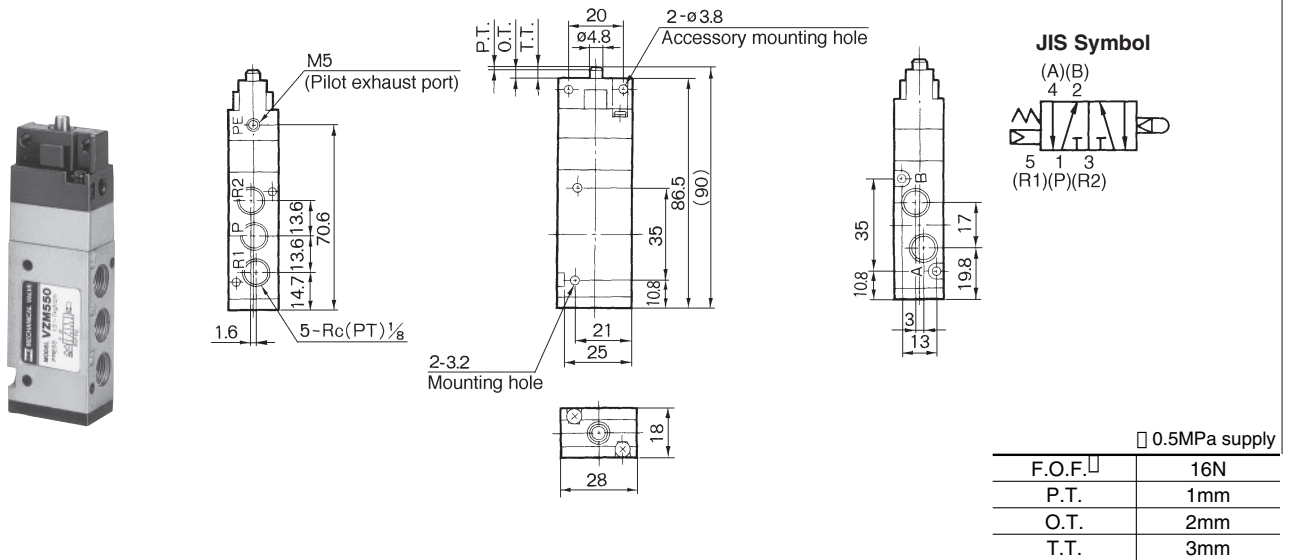
### Component Parts

No.	Description	Material	Notes
①	Body	ADC	Platinum silver
②	Pilot body	PBT	ZDC only for external pilot type
③	Head cover	ZDC	Black zinc chromate
④	Spool assembly		
⑤	End cover	ZDC	Matt-black
⑥	Piston	POM	
⑦	Plunger	POM	

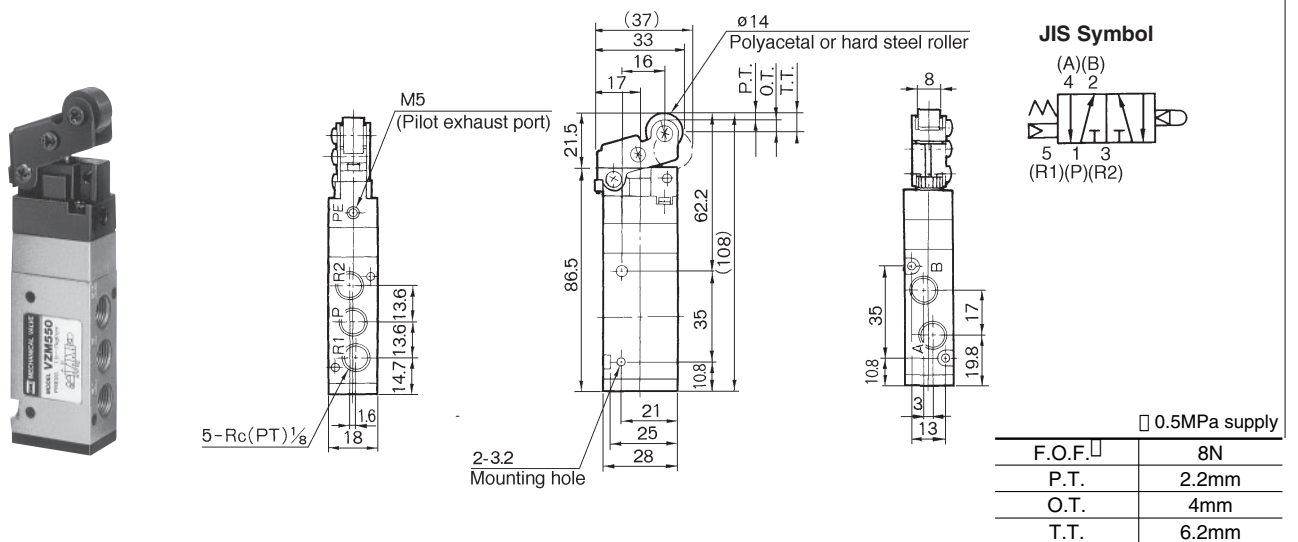
No.	Description	Material	Notes
⑧	Valve seat (A)	POM	
⑨	Valve seat (B)	POM	
⑩	Valve assembly	NBR	
⑪	Valve spring	Stainless steel	
⑫	Return spring	Stainless steel	
⑬	Spool spring	Stainless steel	

## Series VZM500

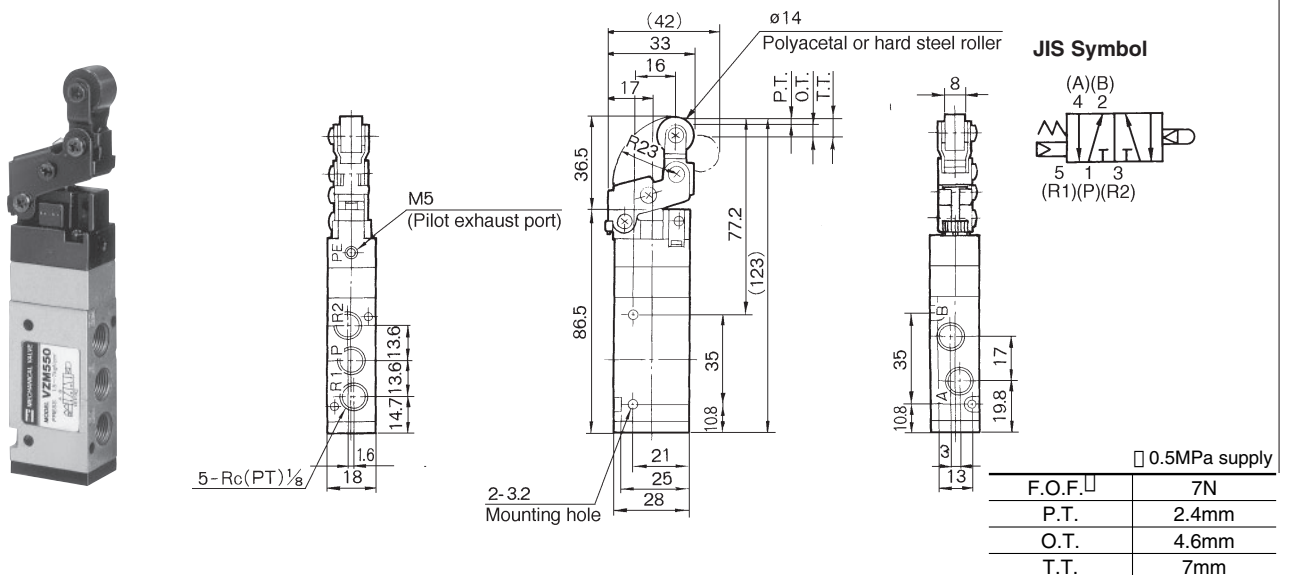
### Basic/VZM550-01-00



### Roller Lever/VZM550-01-01, VZM550-01-01S



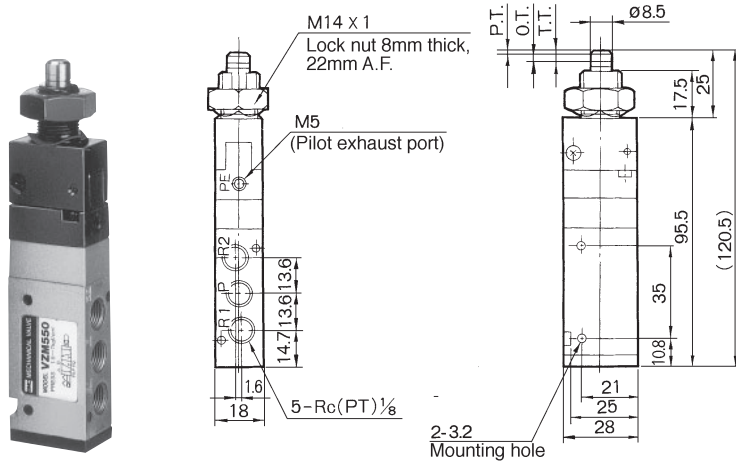
### One Way Roller Lever/VZM550-01-02, VZM550-01-02S



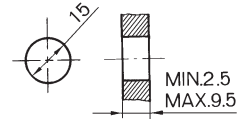
# VZM500

## Series VZM500

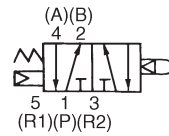
### Straight Plunger/VZM550-01-05



#### Panel mounted hole



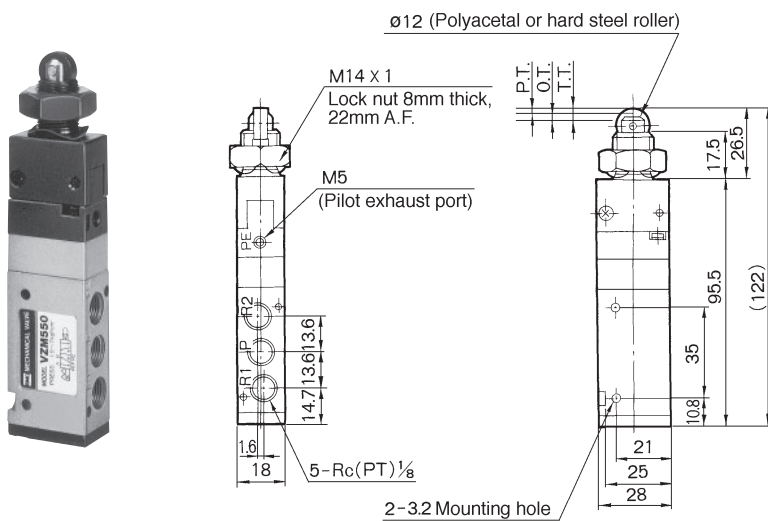
#### JIS Symbol



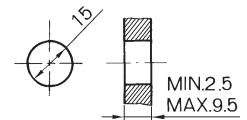
□ 0.5MPa supply

F.O.F. □	18N
P.T.	1.5mm
O.T.	2mm
T.T.	3.5mm

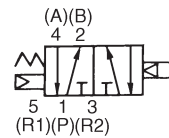
### Roller Plunger/VZM550-01-06, VZM550-01-06S



#### Panel mounted hole



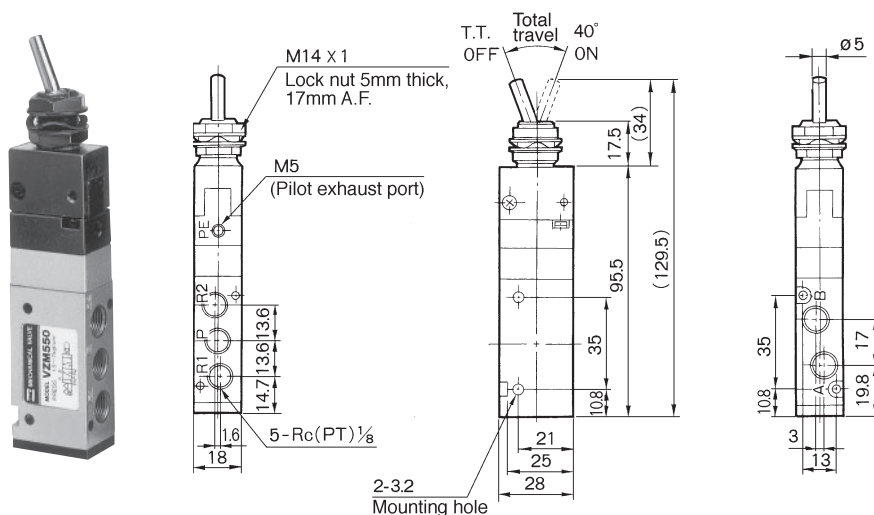
#### JIS Symbol



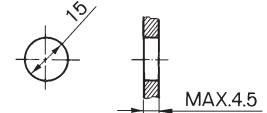
□ 0.5MPa supply

F.O.F. □	18N
P.T.	1.5mm
O.T.	2mm
T.T.	3.5mm

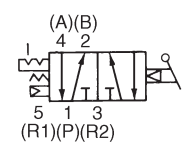
### Toggle Lever/VZM550-01-08



#### Panel mounted hole



#### JIS Symbol



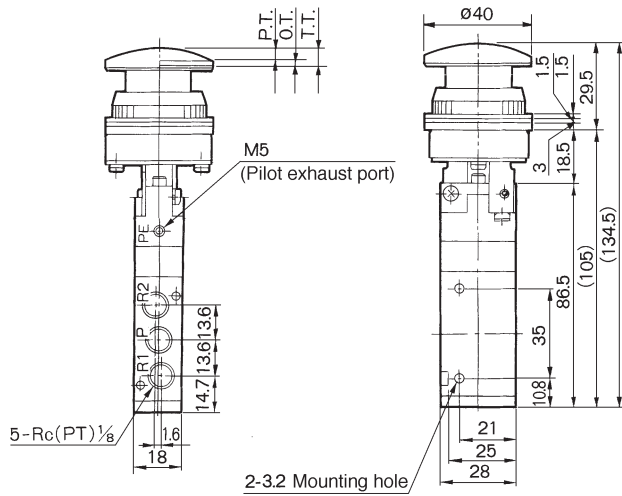
□ 0.5MPa supply

F.O.F. □	15N
T.T.	40°

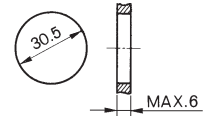


## Series VZM500

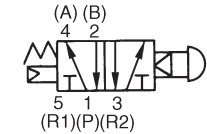
### Push Button (Mushroom)/VZM550-01-30R, B, G, Y



#### Panel mounted hole



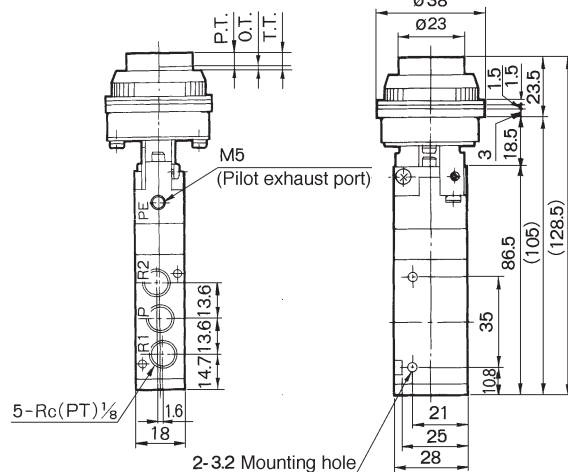
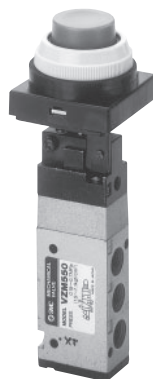
#### JIS Symbol



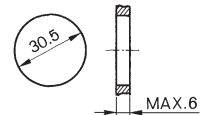
□ 0.5MPa supply

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

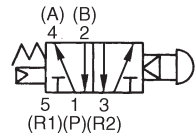
### Push Button (Extended)/VZM550-01-32R, B, G, Y



#### Panel mounted hole



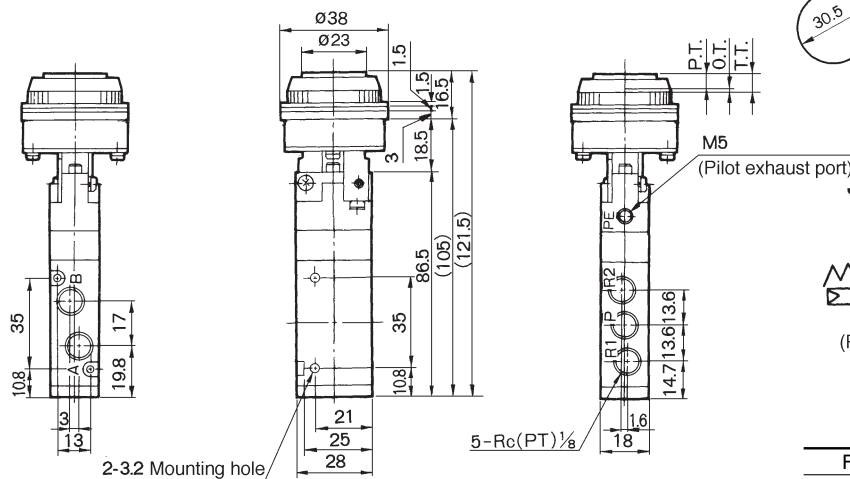
#### JIS Symbol



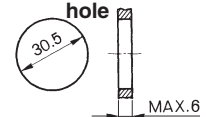
□ 0.5MPa supply

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

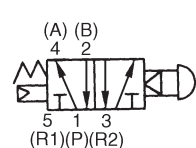
### Push Button (Flush)/VZM550-01-33



#### Panel mounted hole



#### JIS Symbol



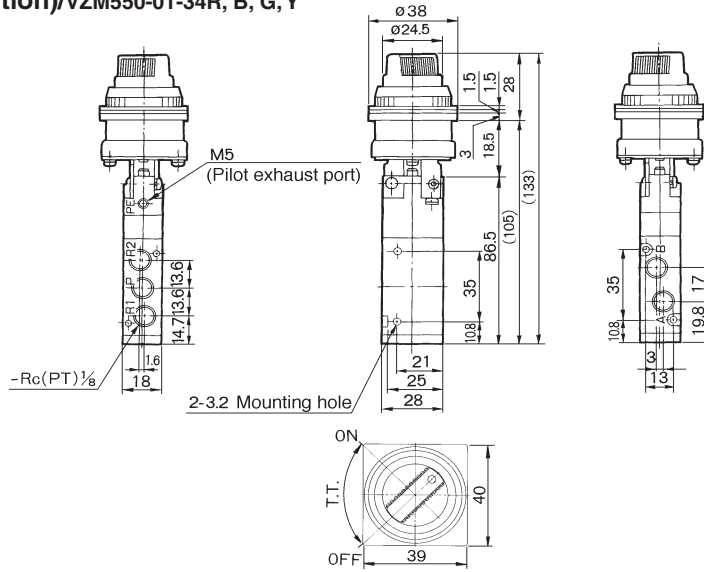
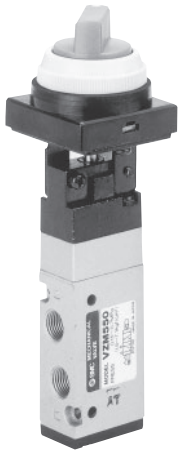
□ 0.5MPa supply

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

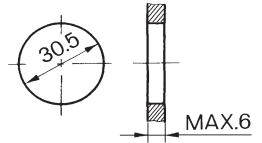
# VZM500

## Series VZM500

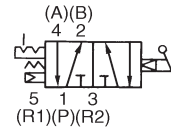
### Twist Selector (2 position)/VZM550-01-34R, B, G, Y



#### Panel mounted hole



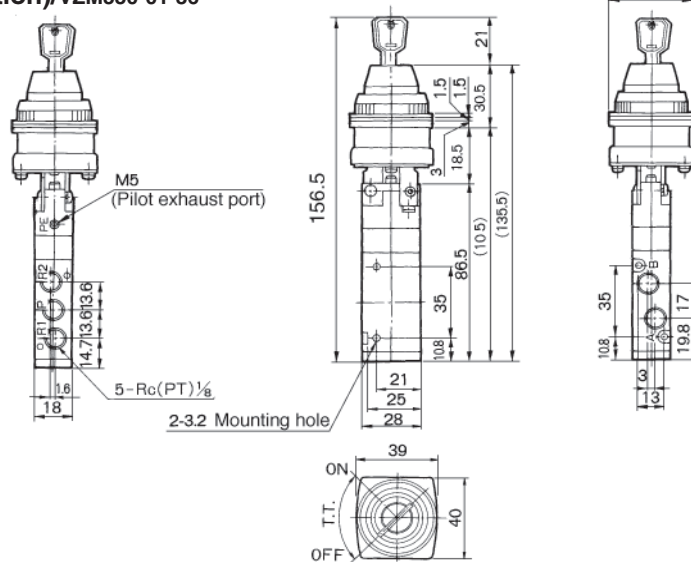
#### JIS Symbol



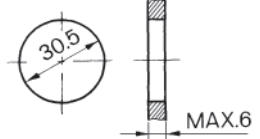
□ 0.5MPa supply

F.O.F. □	23N
T.T.	90°

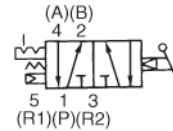
### Key Selector (2 position)/VZM550-01-36



#### Panel mounted hole



#### JIS Symbol

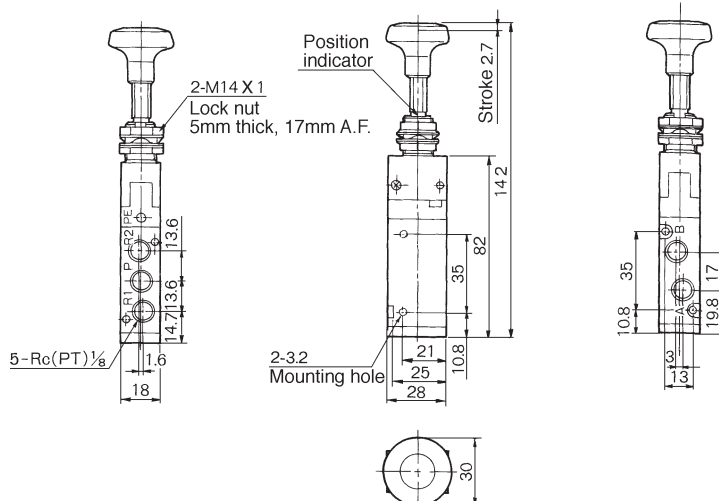


□ 0.5MPa supply

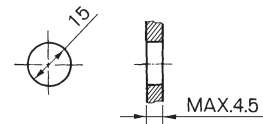
F.O.F. □	26N
T.T.	90°

Key can be removed in "on" and "off" positions.

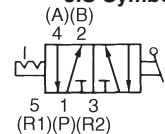
### Push-pull/VZM550-01-37



#### Panel mounted hole

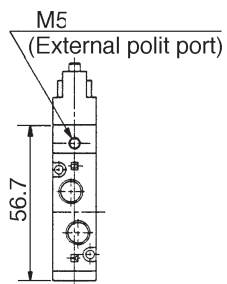


#### JIS Symbol

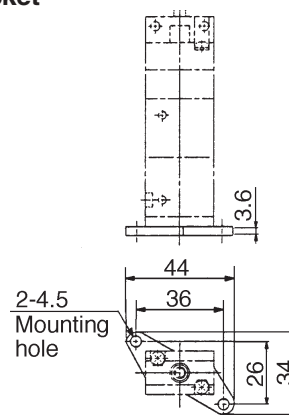


F.O.F.	20N
T.T.	2.7mm

## External Pilot Style VZM551 Type



## With Foot Bracket VZM55□-01-□□-F



## 5 Port Mechanical Valve/Rubber Seal

# Series VFM300

RoHS

**Compact design,  
large flow capacity  
High cycle rate,  
long life/300 c.p.m. or less  
Piping possible to any EXH  
port.**

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

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



### Specifications

<b>Fluid</b>	Air/Inert gas				
<b>Operating pressure</b>	0.15 to 0.9 MPa <sup>(1)</sup>				
<b>Ambient and fluid temperature</b>	-5 to 60°C (No freezing)				
<b>Flow characteristics</b>	C[dm <sup>3</sup> /(s·bar)]	b	Cv	Q [l/min] (ANR) <sup>(2)</sup>	
	1(P)→2(C2)/4(C1)	4.0	0.36	1.0	1058
	2(C2)/4(C1)→3(E2)/5(E1)	3.1	0.32	0.75	798
<b>Maximum frequency (Mechanical operation type)</b>	300 c.p.m. or less				
<b>Lubrication</b>	Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)				
<b>Port size</b>	Main valve/1P, 4A, 2B port 1/4, 5EA/3EB port 1/8				
	Pilot valve (EXH)/M5 x 0.8				
<b>Option</b>	Foot bracket <sup>(3)</sup>				

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

Note 2) These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

Note 3) The standard body can not be retrofitted with a foot bracket.

### Model

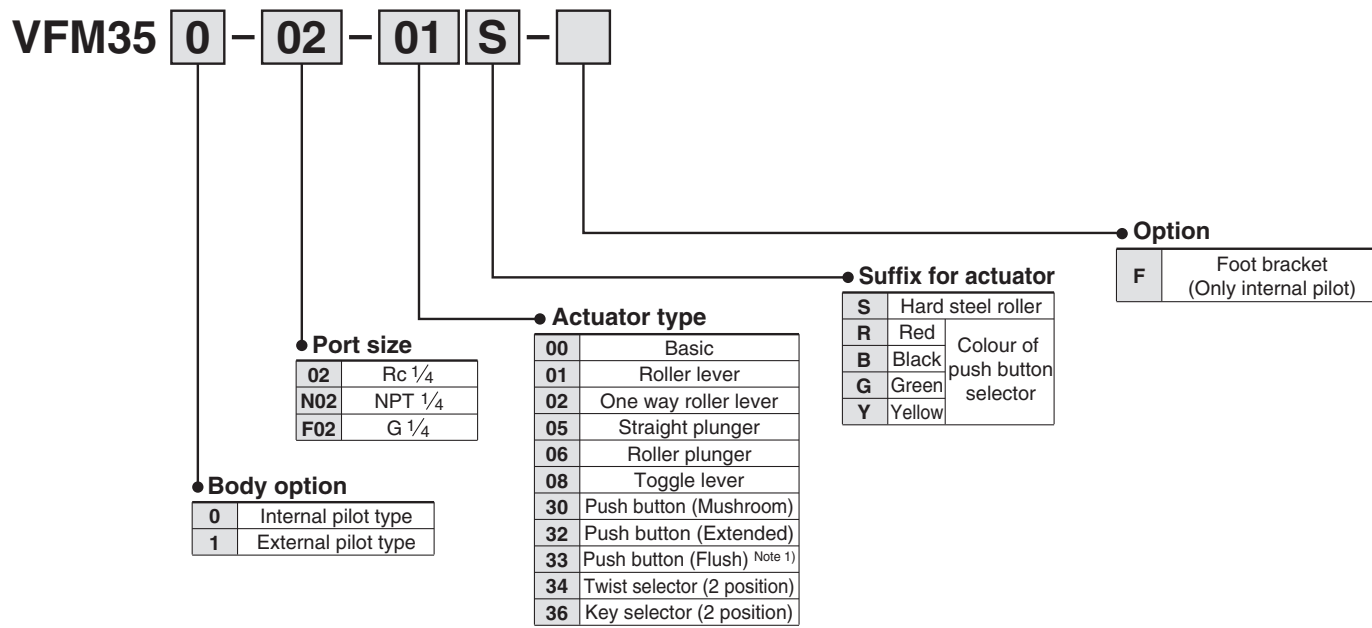
	Actuator	Model	Actuator part no.	Application	Weight (g)
Mechanical operation	Basic	VFM350-02-00	—	—	190
	Roller lever	VFM350-02-01	VM-01C	Polyacetal roller	270
		VFM350-02-01S	VM-01CS	Hard steel roller	280
	One way roller lever	VFM350-02-02	VM-02C	Polyacetal roller	280
		VFM350-02-02S	VM-02CS	Hard steel roller	290
	Straight plunger	VFM350-02-05	VM-05D	—	380
Roller plunger	VFM350-02-06	VM-06D	Polyacetal roller	370	
	VFM350-02-06S	VM-06DS	Hard steel roller	380	
Manual operation	Toggle lever	VFM350-02-08	VM-08D	—	360
	Push button (Mushroom)	VFM350-02-30R	VM-30CR	Red	309
		VFM350-02-30B	VM-30CB	Black	
		VFM350-02-30G	VM-30CG	Green	
		VFM350-02-30Y	VM-30CY	Yellow	
	Push button (Extended)	VFM350-02-32R	VM-32CR	Red	302
		VFM350-02-32B	VM-32CB	Black	
		VFM350-02-32G	VM-32CG	Green	
	Push button (Flush)	VFM350-02-32Y	VM-32CY	Yellow	307
		VFM350-02-33	VM-33C	With a set of red, black, green, yellow	
	Twist selector (2 position)	VFM350-02-34R	VM-34CR	Red	308
		VFM350-02-34B	VM-34CB	Black	
		VFM350-02-34G	VM-34CG	Green	
VFM350-02-34Y		VM-34CY	Yellow		
Key selector (2 position)	VFM350-02-36	VM-36C	—	327	

Note 1) Actuator replacement is available for all types.

Note 2) For push button (mushroom), push button (extended), push button (flush) and a single unit of fastening ring, refer to pages 2347 and 2348. The other parts are not replaceable.

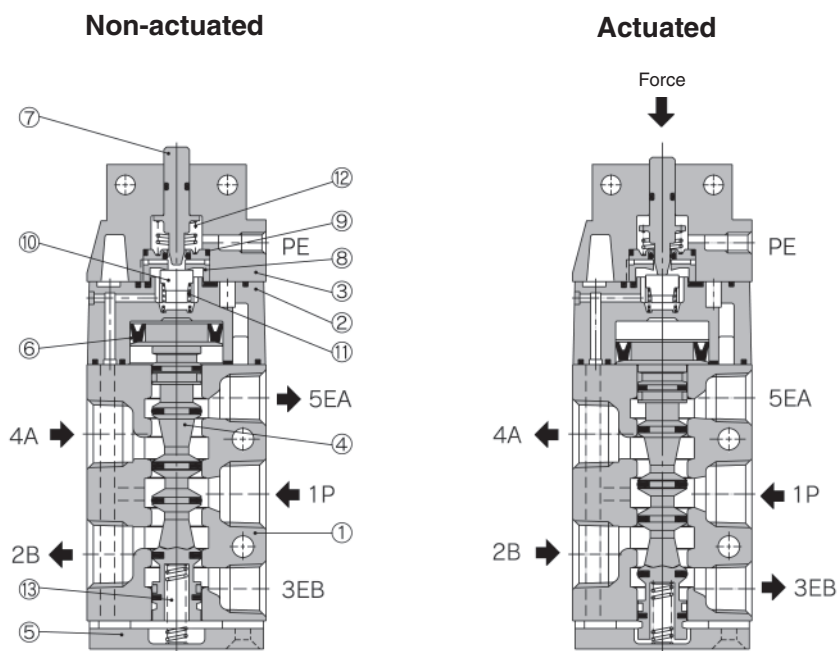
Note 3) The handle of the selector (2 position) cannot be removed or replaced alone.

## How to Order



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

## Construction



## Component Parts

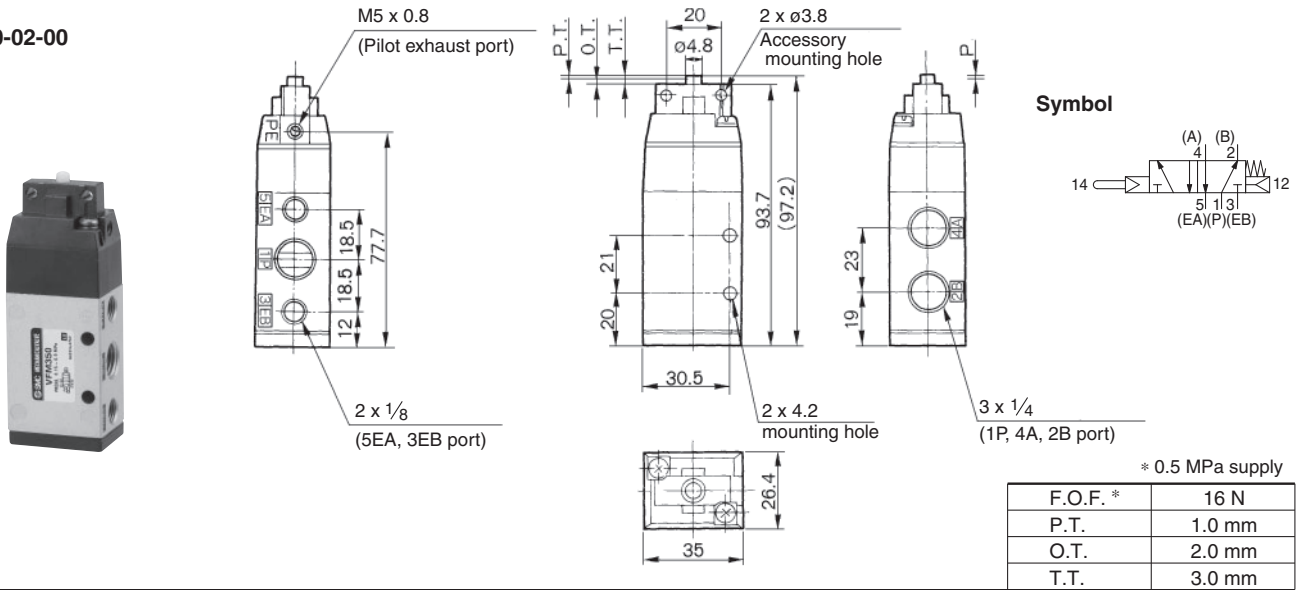
No.	Description	Material	Note
1	Body	ADC	Platinum silver
2	Pilot body	PBT	ZDC only for external pilot type
3	Head cover	ZDC	Black zinc chromated
4	Spool valve assembly		
5	End cover	ADC	Matt-black
6	Piston	POM	
7	Plunger	POM	

No.	Description	Material	Note
8	Valve seat (A)	POM	
9	Valve seat (B)	POM	
10	Valve	NBR	
11	Valve spring	Stainless steel	
12	Return spring	Stainless steel	
13	Spool spring	Stainless steel	

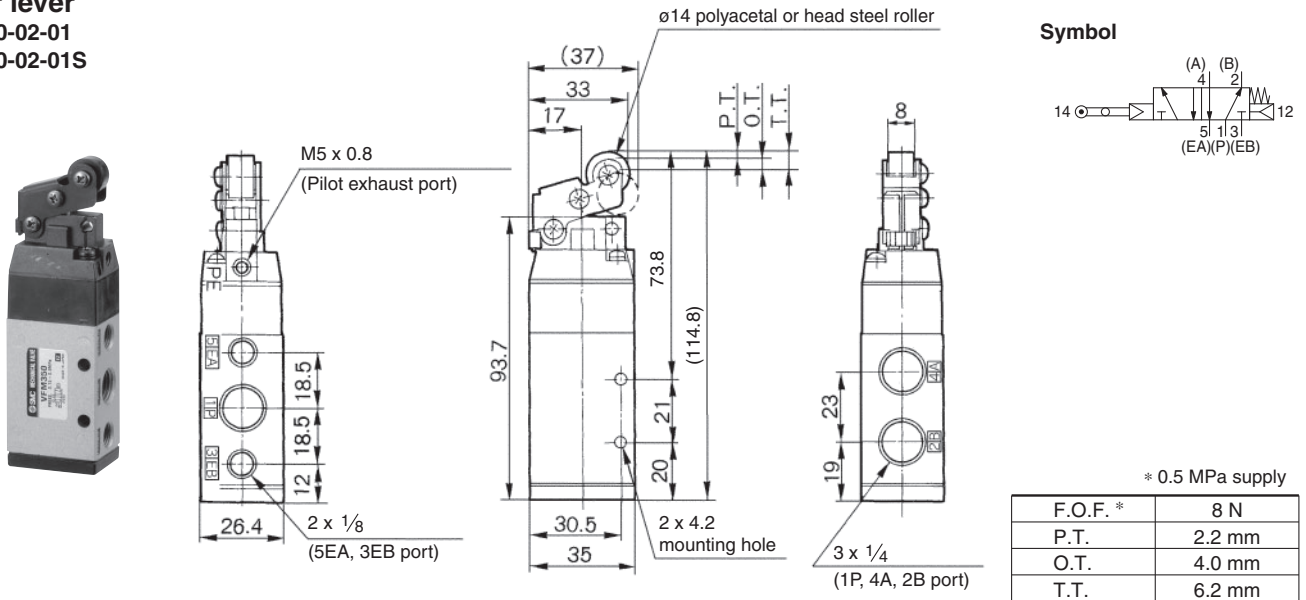
# VFM300

## Series VFM300

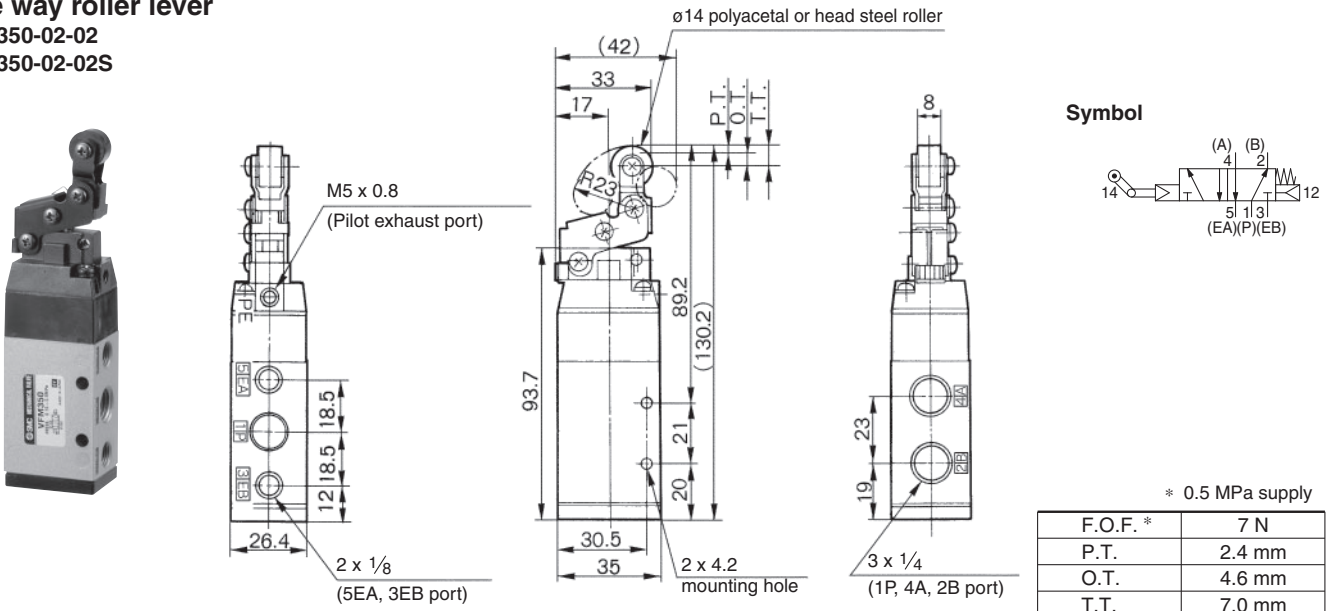
### Basic VFM350-02-00



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

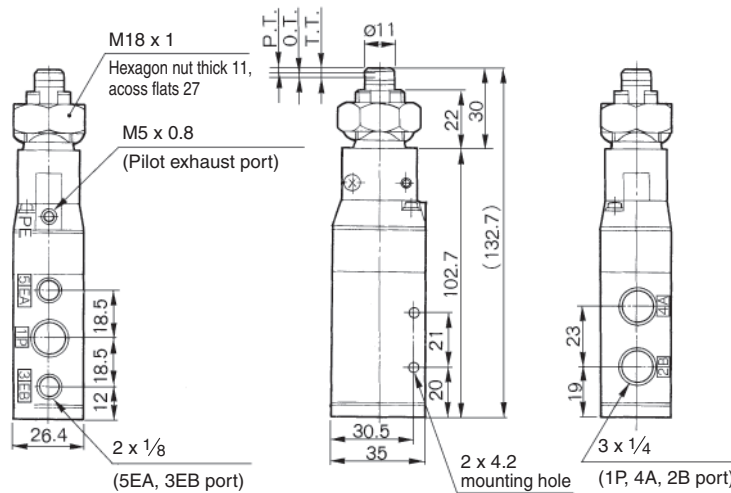


### One way roller lever VFM350-02-02 VFM350-02-02S

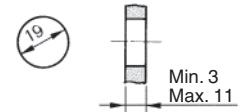


## Series VFM300

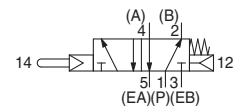
### Straight plunger VFM350-02-05



#### Panel mounting hole



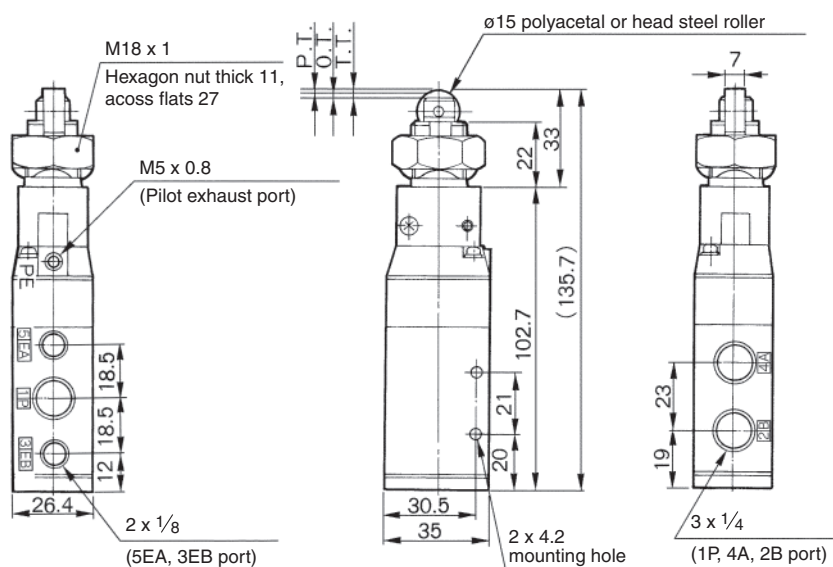
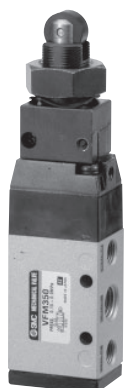
#### Symbol



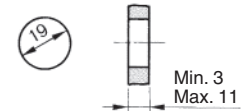
\* 0.5 MPa supply

F.O.F. *	20 N
P.T.	1.5 mm
O.T.	2.0 mm
T.T.	3.5 mm

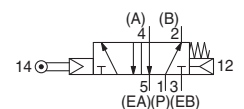
### Roller plunger VFM350-02-06 VFM350-02-06S



#### Panel mounting hole



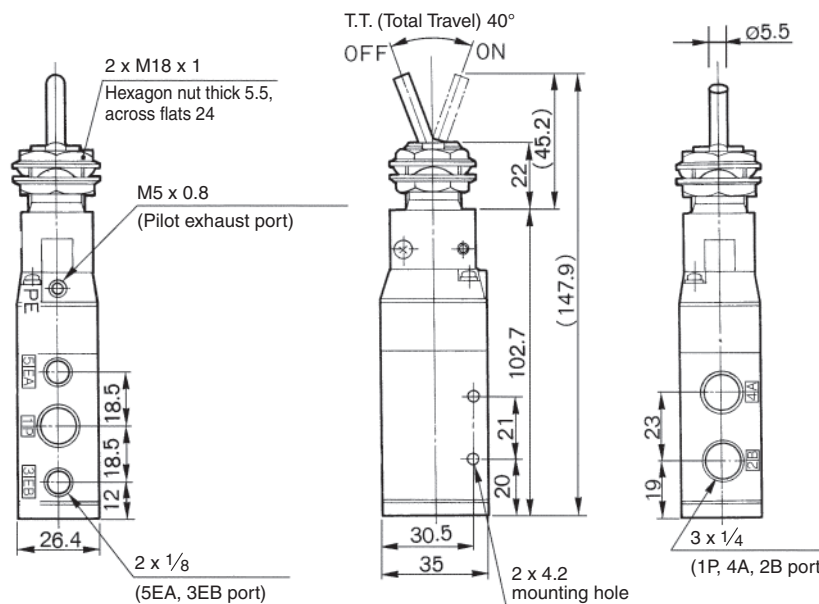
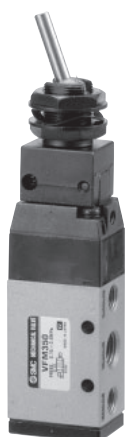
#### Symbol



\* 0.5 MPa supply

F.O.F. *	20 N
P.T.	1.5 mm
O.T.	2.0 mm
T.T.	3.5 mm

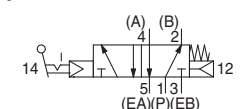
### Toggle lever VFM350-02-08



#### Panel mounting hole



#### Symbol



\* 0.5 MPa supply

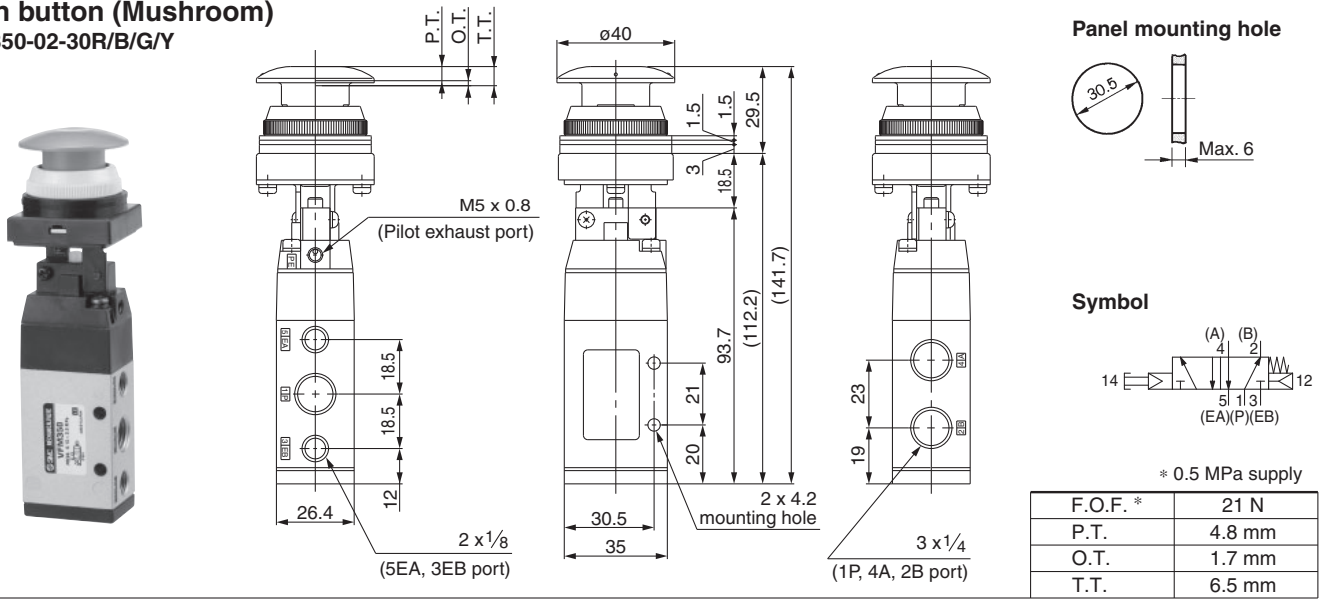
F.O.F. *	15 N
T.T.	40°



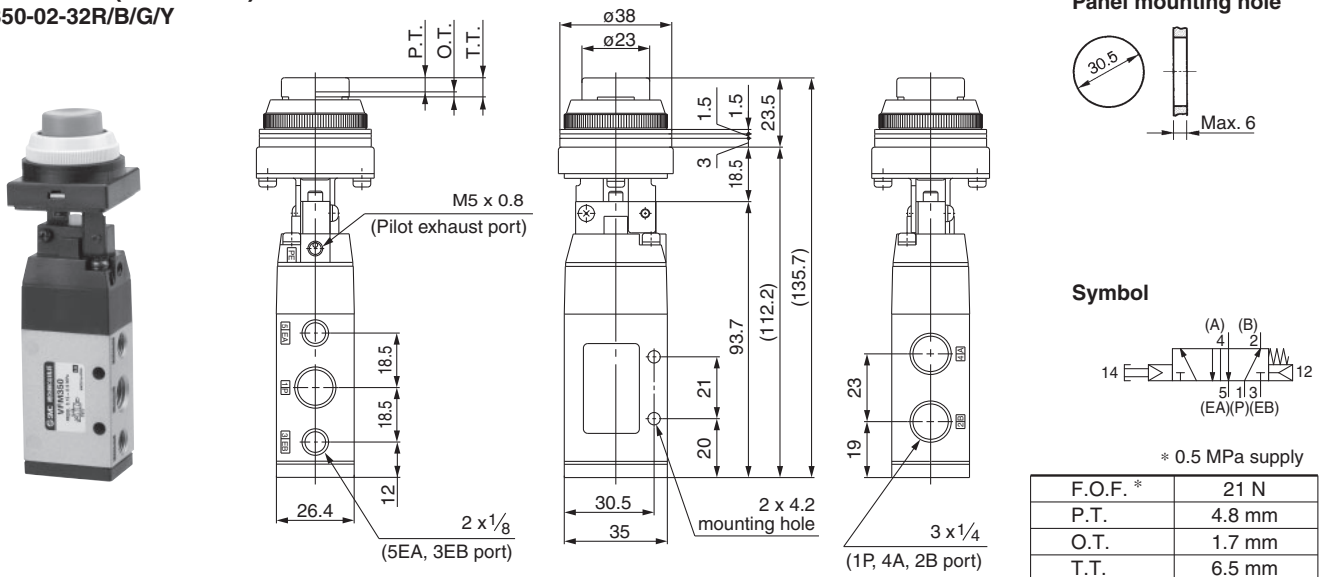
# VFM300

## Series VFM300

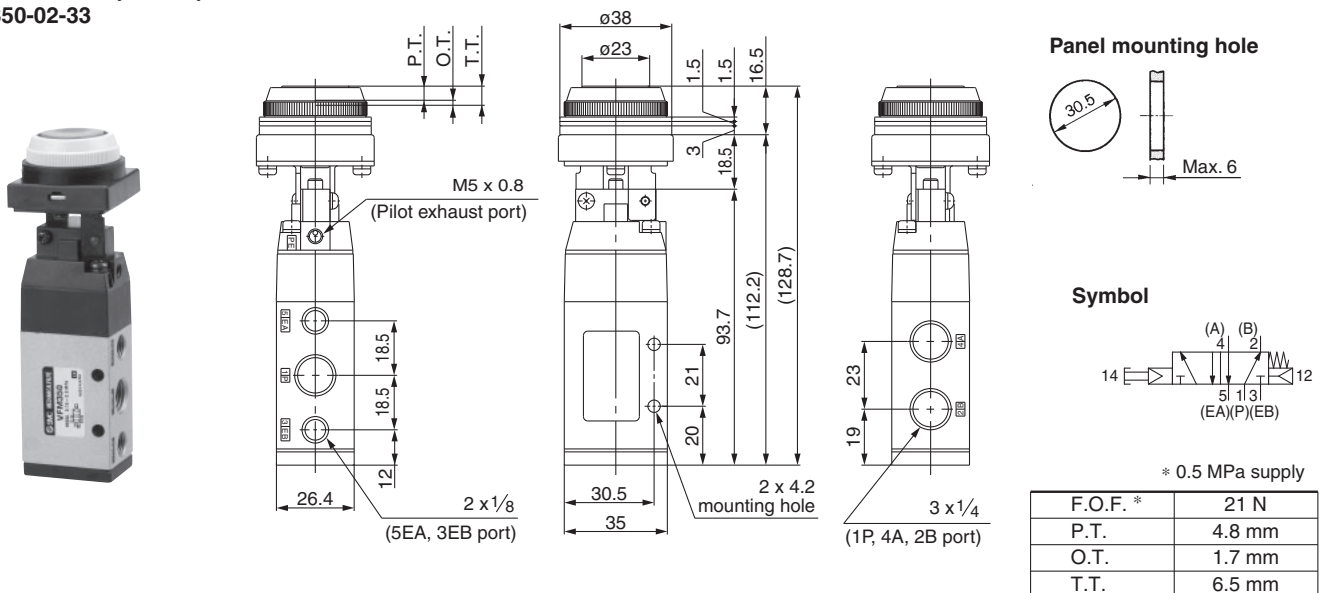
### Push button (Mushroom) VFM350-02-30R/B/G/Y



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

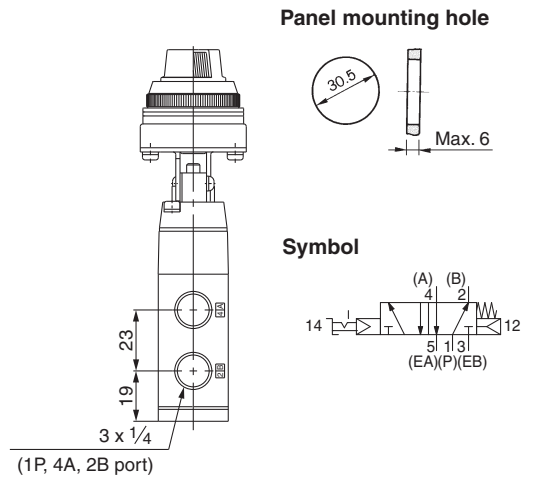
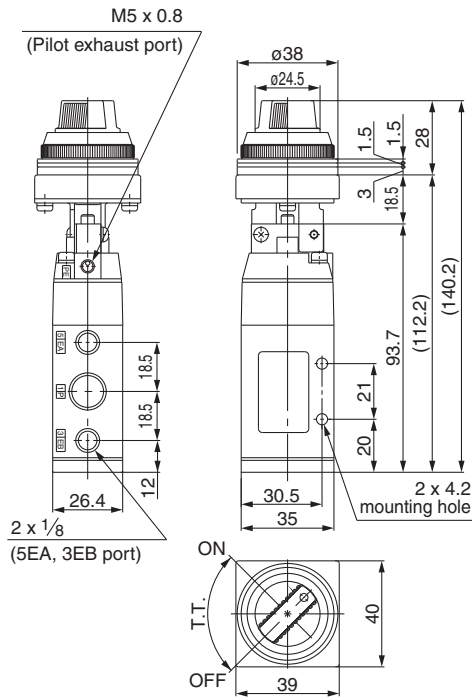


### Push button (Flush) VFM350-02-33



## Series VFM300

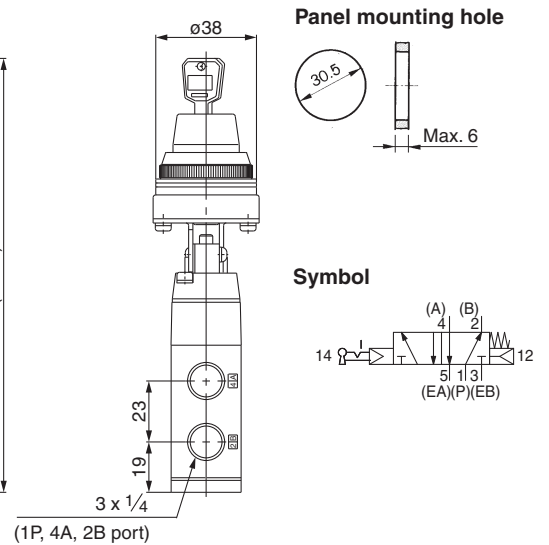
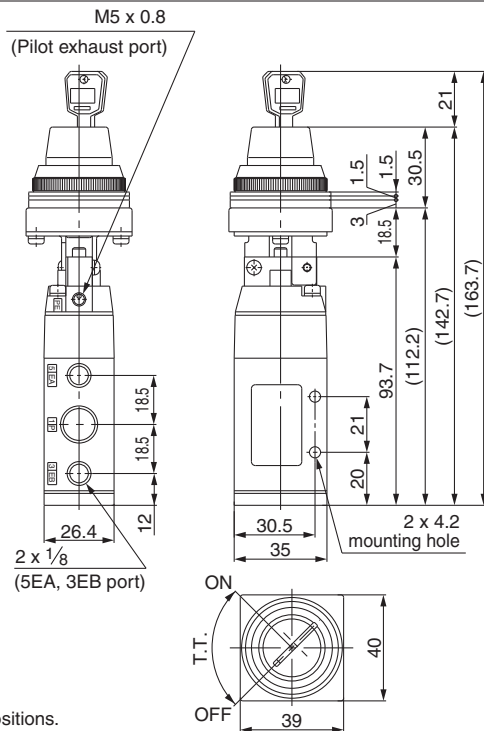
### Twist selector (2 position) VFM350-02-34R/B/G/Y



\* 0.5 MPa supply

F.O.F.*	23 N
T.T.	90°

### Key selector (2 position) VFM350-02-36

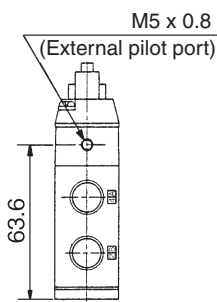


\* 0.5 MPa supply

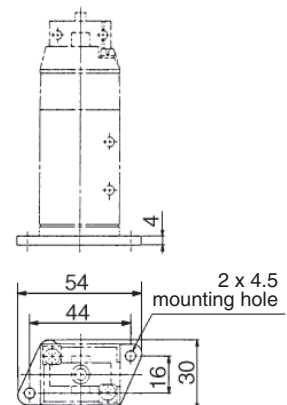
F.O.F.*	26 N
T.T.	90°

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

### External pilot type VFM351 type



### With foot bracket VFM350-02-□□-F



## 5 Port Mechanical Valve/Metal Seal

# Series **VFM200**

**Compact design,  
Large flow capacity/  
N<sub>d</sub>/min: 982**

**High cycle rate,  
Long life/300c.p.m.**

**Piping possible to any EXH port.**

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

**External pilot model available.  
(Option)**

**Foot bracket and manifold mounting possible.**



### Specifications

Fluid	Air, Inert gas
Operating pressure	0.1 to 1.0MPa <sup>(1)</sup>
Ambient and fluid temperature	-5 to 60°C (No freezing)
Effective area (N <sub>d</sub> /min)	18mm <sup>2</sup> (891.50)
Maximum frequency (Mechanical operation style)	300 c.p.m or less
Lubrication	Not required/Turbine oil #1 (ISO VG32)
Port size	Main valve 1/4
	Pilot valve (EXH)/M5
Option	Foot bracket <sup>(2)</sup>
Weight (Basic)	300g



□ Contact SMC for manifold mounting style.

Note 1) External pilot style Main valve: 0 to 1.0MPa  
Pilot valve: 0.1 to 1.0MPa

Note 2) The standard body can not be retrofitted with a foot bracket.

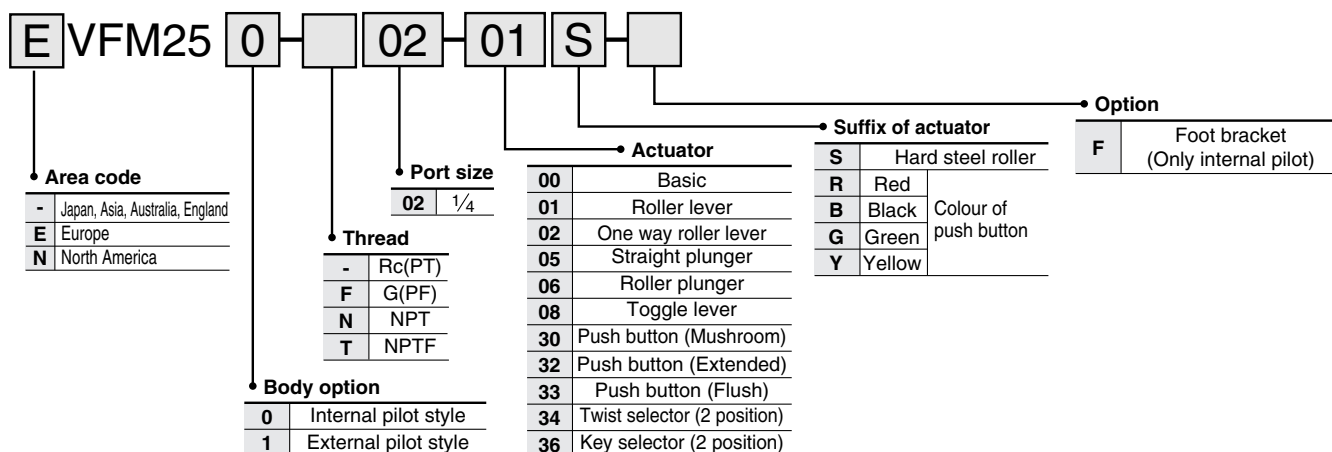
### Model

	Actuator	Model	Actuator part No.	Application
Mechanical operation	Basic	<b>VFM250-02-00</b>	—	—
	Roller lever	<b>VFM250-02-01</b>	VM-01C	Polyacetal roller
		<b>VFM250-02-01S</b>	VM-01CS	Hard steel roller
	One way roller lever	<b>VFM250-02-02</b>	VM-02C	Polyacetal roller
		<b>VFM250-02-02S</b>	VM-02CS	Hard steel roller
	Straight plunger	<b>VFM250-02-05</b>	VM-05D	—
Roller plunger	<b>VFM250-02-06</b>	VM-06D	Polyacetal roller	
	<b>VFM250-02-06S</b>	VM-06DS	Hard steel roller	
Manual operation	Toggle lever	<b>VFM250-02-08</b>	VM-08D	—
	Push button (Mushroom)	<b>VFM250-02-30R</b>	VM-30CR	Red
		<b>VFM250-02-30B</b>	VM-30CB	Black
		<b>VFM250-02-30G</b>	VM-30CG	Green
		<b>VFM250-02-30Y</b>	VM-30CY	Yellow
	Push button (Extended)	<b>VFM250-02-32R</b>	VM-32CR	Red
		<b>VFM250-02-32B</b>	VM-32CB	Black
		<b>VFM250-02-32G</b>	VM-32CG	Green
		<b>VFM250-02-32Y</b>	VM-32CY	Yellow
	Push button (Flush)	<b>VFM250-02-33</b>	VM-33C	With a set of red, black, green, yellow
	Twist selector (2 position)	<b>VFM250-02-34R</b>	VM-34CR	Red
		<b>VFM250-02-34B</b>	VM-34CB	Black
		<b>VFM250-02-34G</b>	VM-34CG	Green
		<b>VFM250-02-34Y</b>	VM-34CY	Yellow
	Key selector (2 position)	<b>VFM250-02-36</b>	VM-36C	—

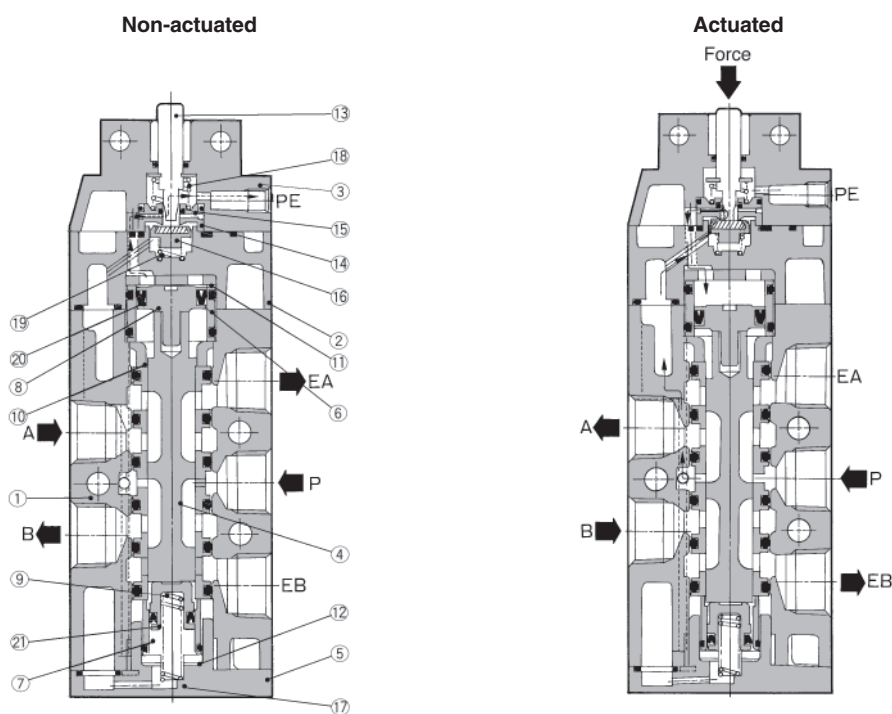


Note) Actuator replacement is available for all styles.

## How to Order



## Construction



### Component Parts

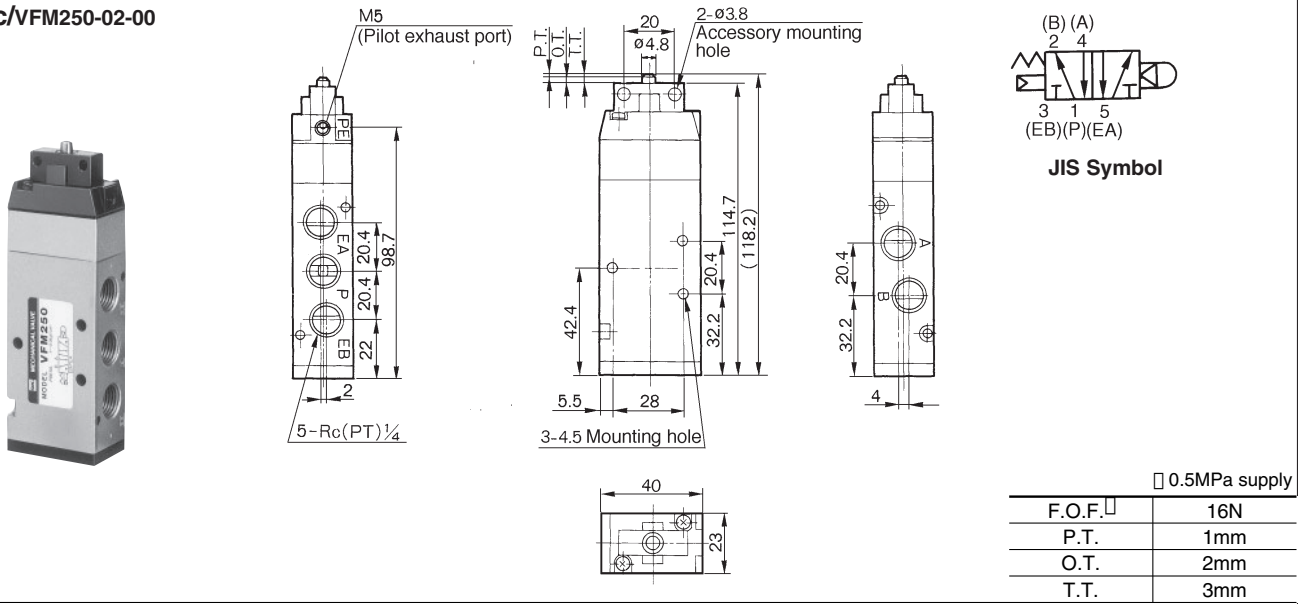
No.	Description	Material	Notes
①	Body	Aluminum alloy	Metallic plated
②	Pilot body	Zinc alloy	Metallic plated
③	Head cover	Zinc alloy	Black zinc chromate
④	Spool/sleeve	Stainless steel	
⑤	End cover	Polyacetal	
⑥	Piston guide	Brass	
⑦	Piston guide for end cover	Brass	
⑧	Piston	Polyacetal	
⑨	Piston for end cover	Polyacetal	
⑩	Guide bushing	Polyacetal	
⑪	Cushion	Urethane rubber	

No.	Description	Material	Notes
⑫	Cushion for end cover	Urethane rubber	
⑬	Plunger	Stainless steel	
⑭	Valve seat (A)	Brass	
⑮	Valve seat (B)	Brass	
⑯	Valve	NBR, Brass	
⑰	Return spring	Stainless steel	
⑱	Return spring	Stainless steel	
⑲	Valve spring	Stainless steel	
⑳	Mini Y packing	NBR	
㉑	Mini Y packing	NBR	

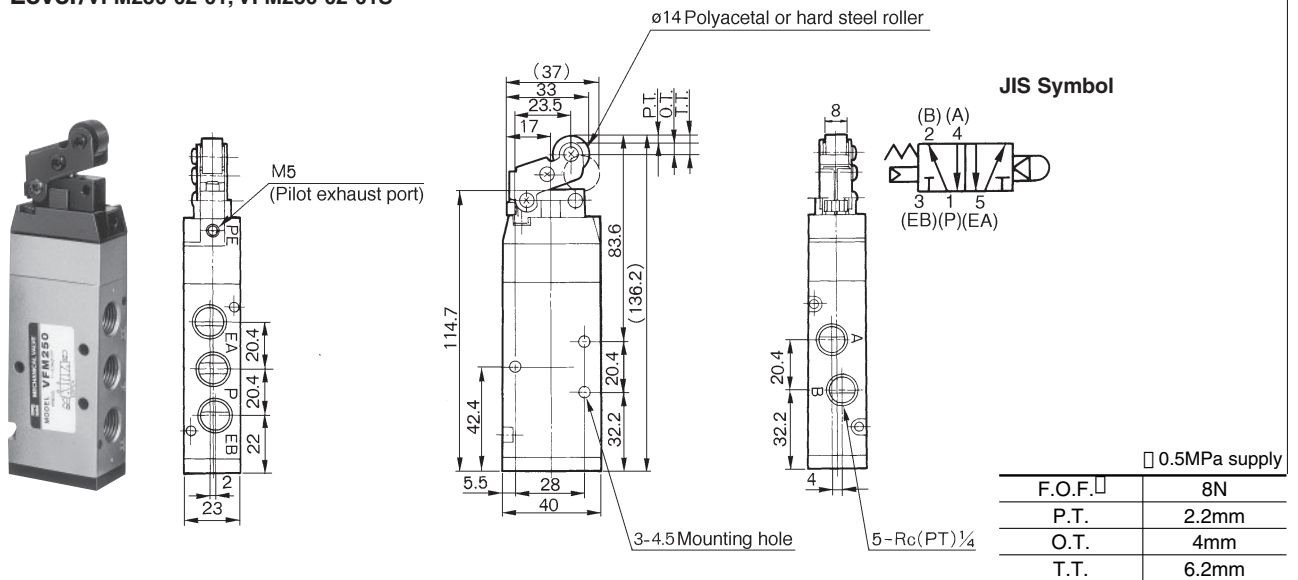
# VFM200

## Series VFM200

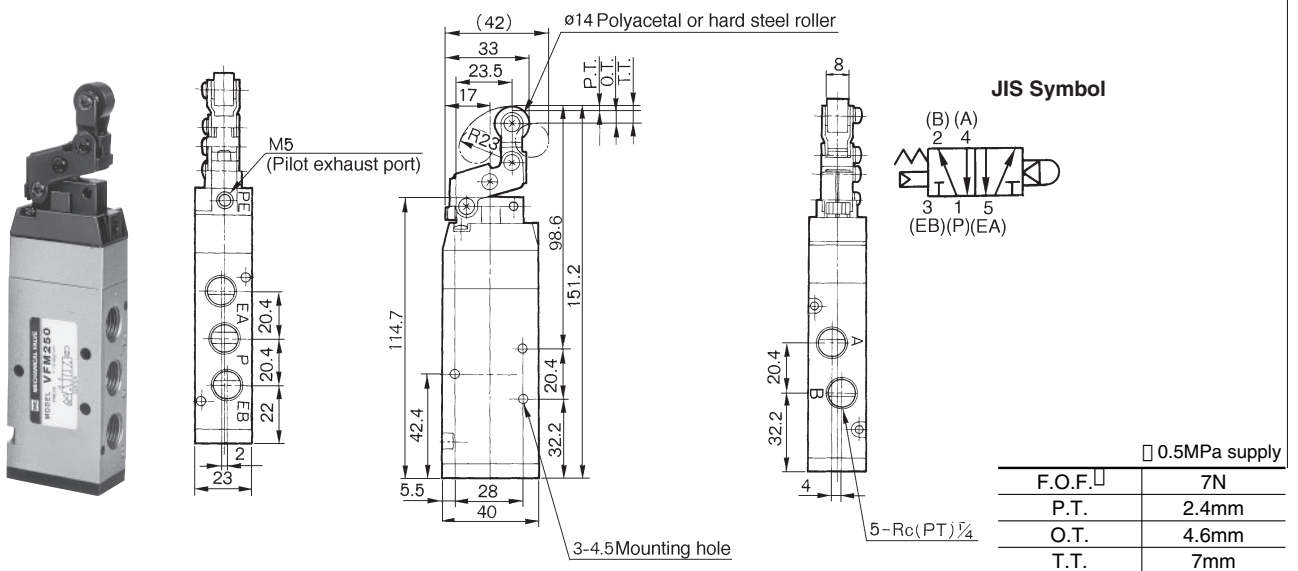
### Basic/VFM250-02-00



### Roller Lever/VFM250-02-01, VFM250-02-01S

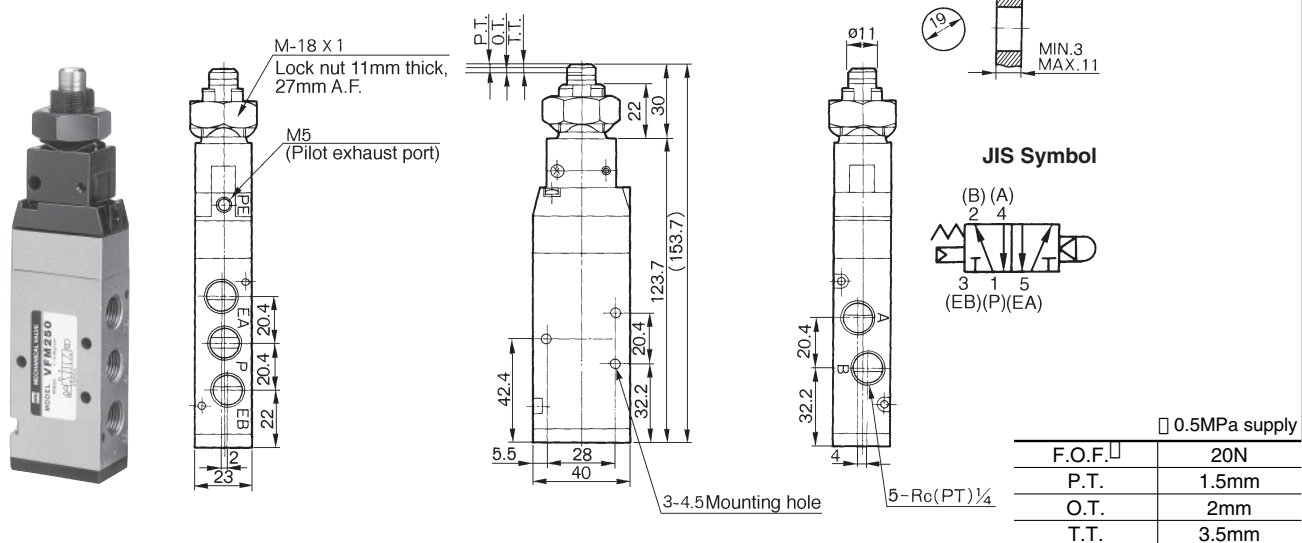


### One Way Roller Lever/VFM250-02-02, VFM250-02-02S

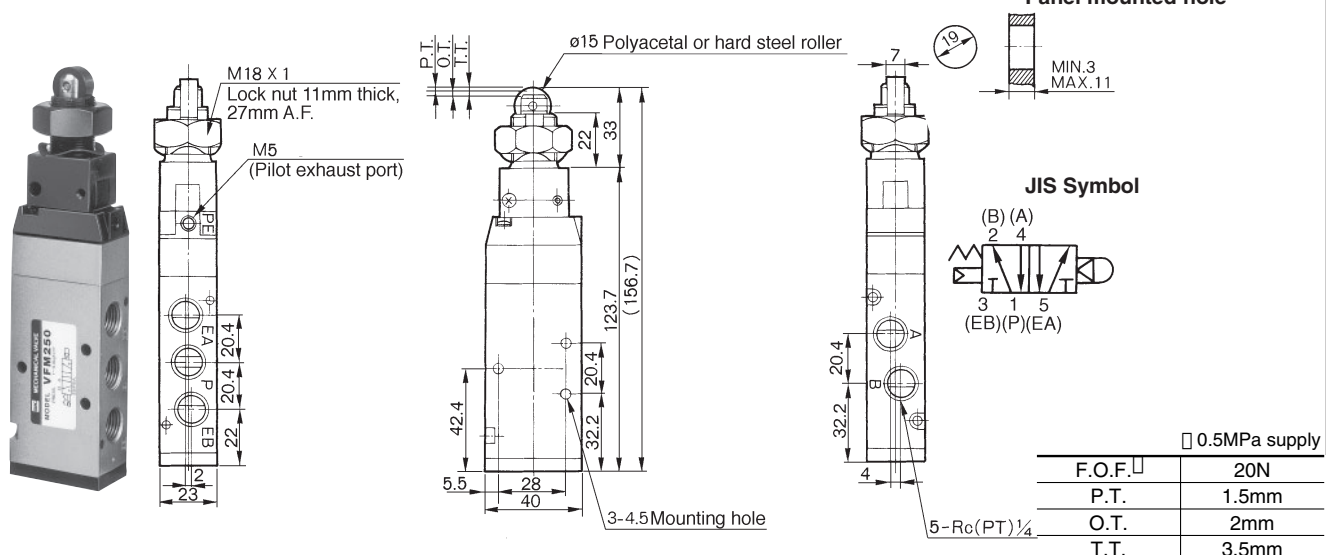


## Series VFM200

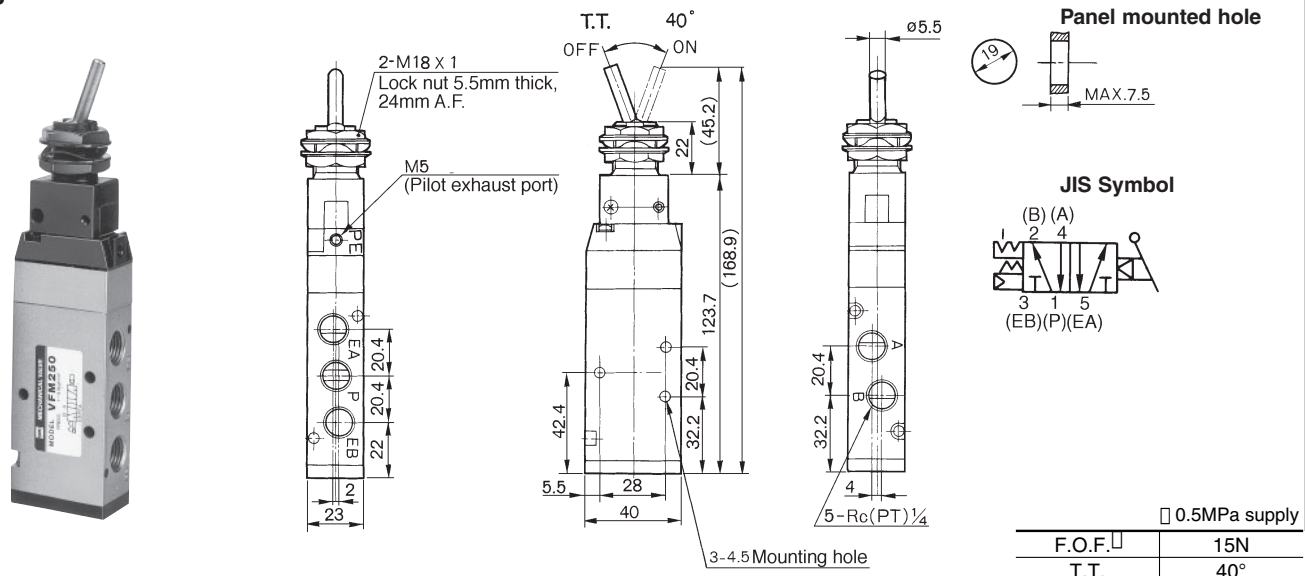
### Straight Plunger/VFM250-02-05



### Roller Plunger/VFM250-02-06, VFM250-02-06S



### Toggle Lever/VFM250-02-08



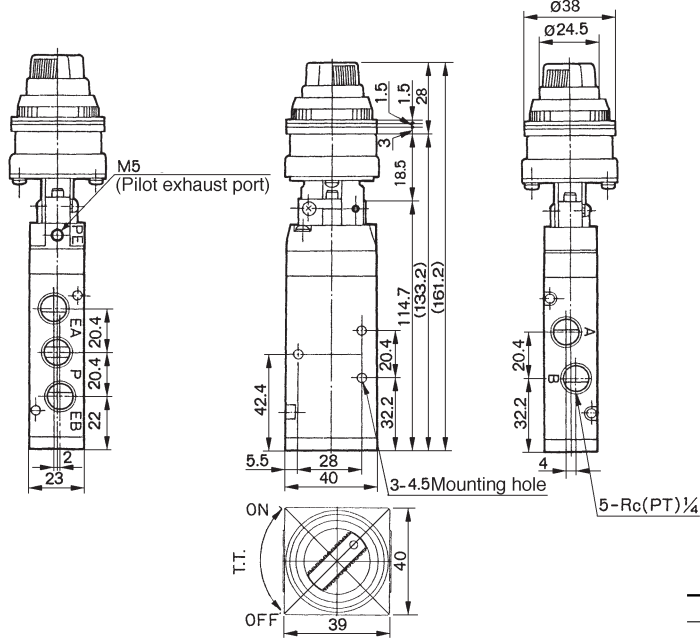




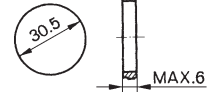


## Series VFM200

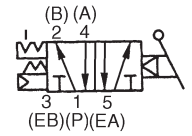
### Twist Selector (2 position)/ VFM250-02-34R, B, G, Y



Panel mounted hole



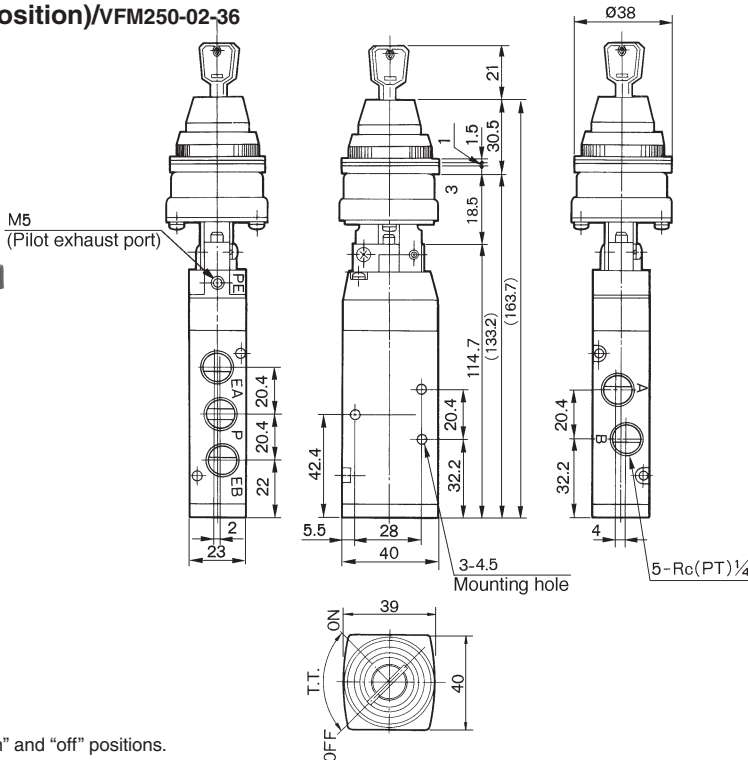
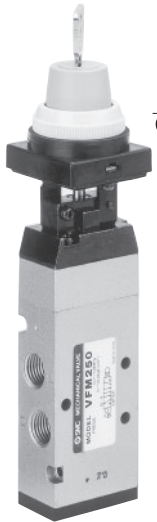
JIS Symbol



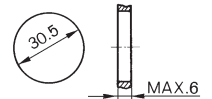
□ 0.5MPa supply

F.O.F. □	23N
T.T.	90°

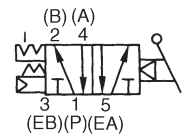
### Key Selector (2 position)/VFM250-02-36



Panel mounted hole



JIS Symbol

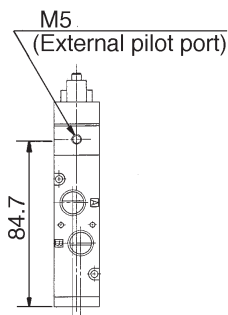


□ 0.5MPa supply

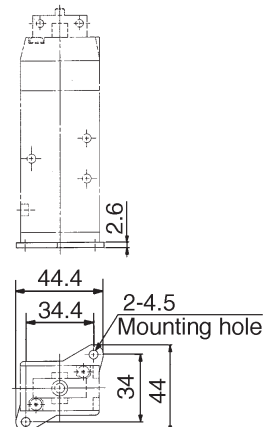
F.O.F. □	26N
T.T.	90°

Key can be removed in "on" and "off" positions.

### External Pilot Style VFM251 Type



### With Foot Bracket VFM250-02-□□-F



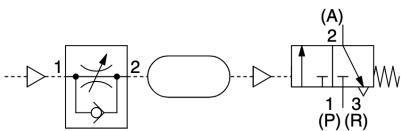
# Related Products *VR2110*

## Time Delay Valve

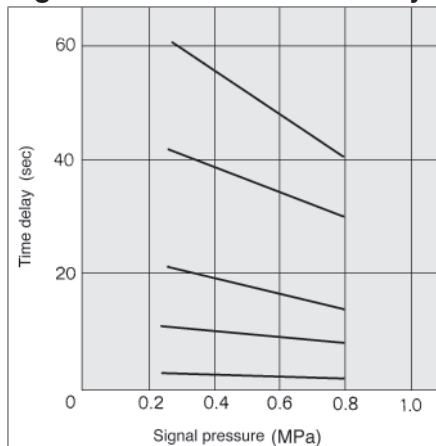
Combination of adjustable orifice and fixed flow allows transmission of a pneumatic signal after a fixed time period.



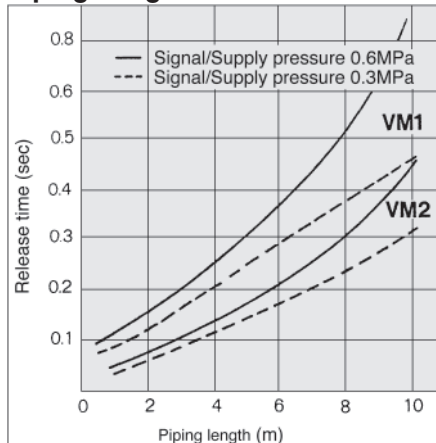
Symbol



### Signal Pressure vs. Time Delay



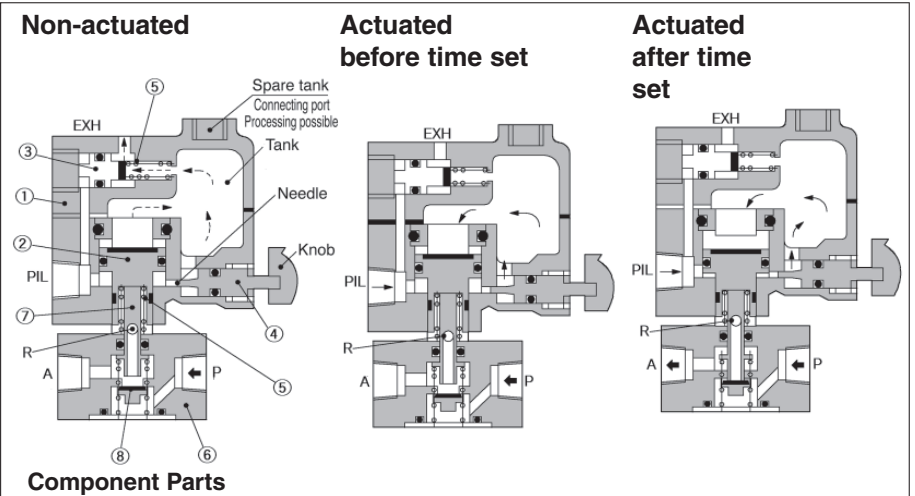
### Piping Length vs. Release Time



### Model/Specifications

VR2110-01	
Supply pressure	0 to 1.0MPa
Signal pressure	0.25 to 0.8MPa
Time delay	0.5 to 60s
Repeatability	10% F.S.
Operating and fluid temperature	-5 to 60°C (No freezing)
Effective area(Nl/min)	2.5mm <sup>2</sup> (124.81)
Port size	1/8
Weight	480g

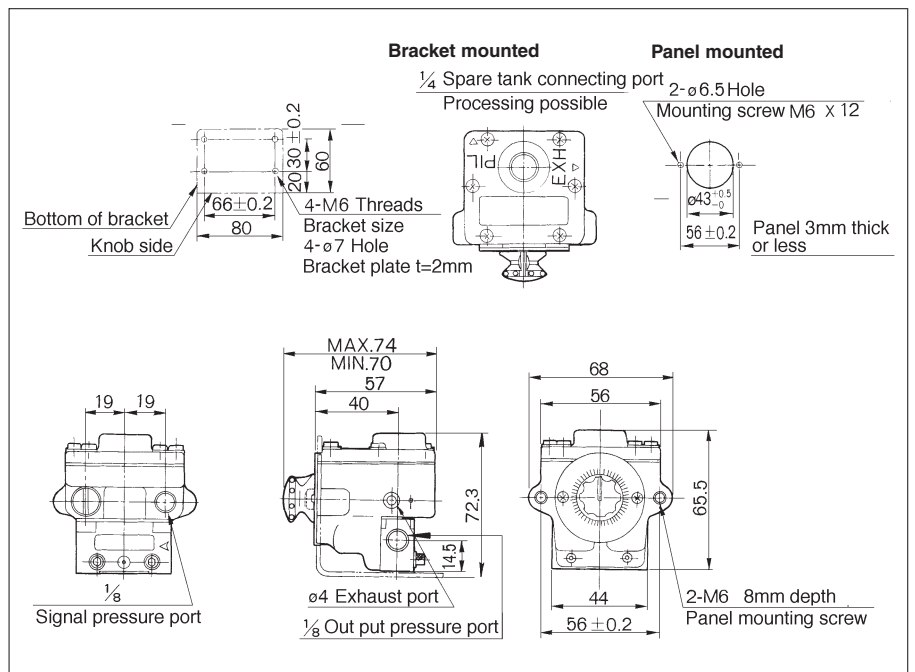
### Construction



### Component Parts

No.	Description	Material	Notes	No.	Description	Material	Notes
①	Body	Aluminum alloy	Metallic plated	⑤	Spring	Steel	
②	Piston	Brass, NBR	Rubber lined	⑥	Body	Zinc alloy	Metallic plated
③	Piston	Brass, NBR	Rubber lined	⑦	Plunger	Stainless steel	
④	Needle	Brass		⑧	Valve	Brass, NBR	Rubber lined

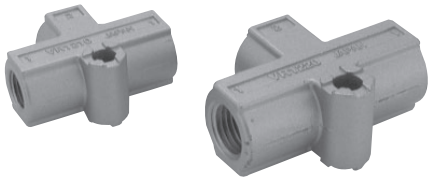
### Dimensions



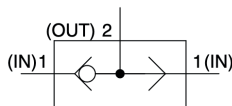
# Related Products *VR1210/1220*

## Shuttle Valve

3 ported check valve with one output and 2 pneumatic signal input ports. Output always supplied by high pressure inlet.



Symbol



### Model/Specifications

	VR1210-01	VR1220-02
Max. operating pressure	1.0MPa	
Min. operating pressure	0.05MPa	
Min. pressure differential	0.05MPa	
Ambient and fluid temperature	-5 to 60°C (No freezing)	
Effective area(Nl/min)	7mm <sup>2</sup> (338.77)	15mm <sup>2</sup> (722.12)
Port size	1/8	1/4
Weight	48g	95g

### How to Order

VR12 1 0-   - 01

• Port size

Port size	Applicable model
01	1/8 VR 1210
02	1/4 VR 1220

• Thread

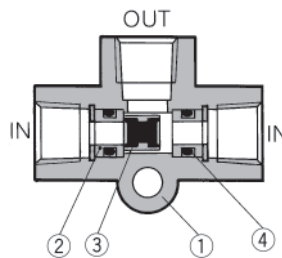
-	Rc
N	NPT
F	G

• Body size

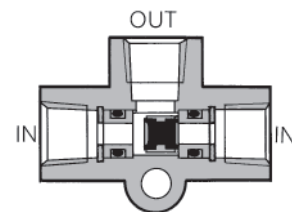
1	1/8 standard
2	1/4 standard

### Construction

When right port has higher pressure



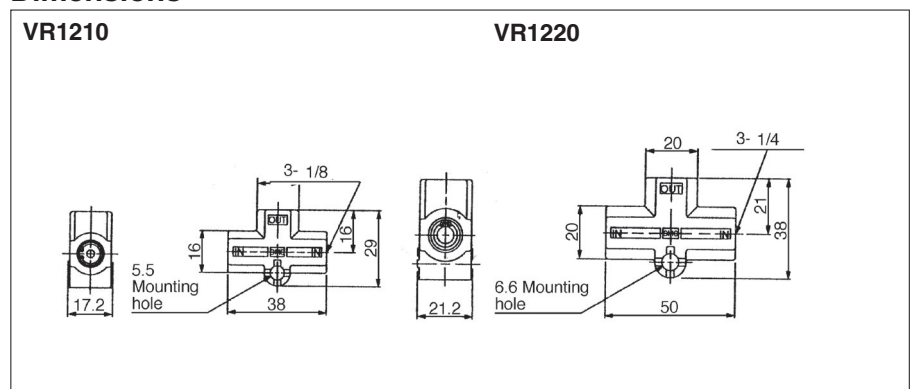
When left port has higher pressure



### Component Parts

No.	Description	Material	Notes	No.	Description	Material	Notes
①	Body	Aluminum alloy	Metallic alloy	③	Valve	Brass, NBR	
②	Valve seat	Brass		④	O ring	NBR	

### Dimensions

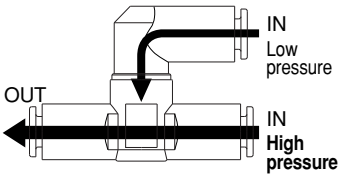
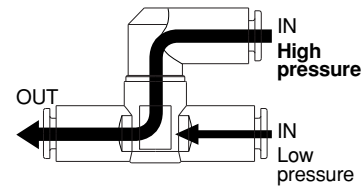


# Shuttle Valve with One-Touch Fittings Series VR1210F, VR1220F

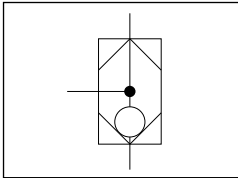


## Shuttle valve/VR12□0F

The high pressure air is always output to the OUT side.



### Symbol



## Models

Model	Applicable tubing outside diameter									
	Metric size					Inch size				
	3.2	4	6	8	10	1/8"	5/32"	1/4"	5/16"	3/8"
VR1210F	●	●	●	●		●	●	●	●	
VR1220F			●	●	●			●	●	●

## Specifications

Proof pressure	1.5MPa
Maximum operating pressure	1MPa
Minimum operating pressure	0.05MPa
Ambient and fluid temperature	-5 to 60°C (with no freezing)
Applicable tubing material <sup>Note 1)</sup>	Nylon, Soft nylon, Polyurethane

Note 1) Use caution regarding the maximum operating pressure with soft nylon and polyurethane.

Note 2) On standard products all brass parts are electroless nickel plated.  
(Suitable for copper free applications.)

## Flow Rate and Effective Area

Applicable tubing O.D.	Model	VR1210F				VR1220F		
	Metric size	ø3.2	ø4	ø6	ø8	ø6	ø8	ø10
	Inch size	ø1/8"	ø5/32"	ø1/4"	ø5/16"	ø1/4"	ø5/16"	ø3/8"
IN□OUT	Flow rate Nl/min	150	210	420	480	440	680	1000
	Effective area mm <sup>2</sup>	2.3	3.2	6.4	7.3	6.7	10.4	15.2

Note 1) Flow rate values are at a pressure of 0.5MPa and temperature of 20°C.

## How to Order

VR 12 1 0 F — 06

### Body size

1	1/8 standard
2	1/4 standard

### Applicable tubing outside diameter

Metric sizes		Inch sizes	
23	ø3.2 □	01	ø1/8"
04	ø4	03	ø5/32"
06	ø6	07	ø1/4"
08	ø8	09	ø5/16"
10	ø10	11	ø3/8"

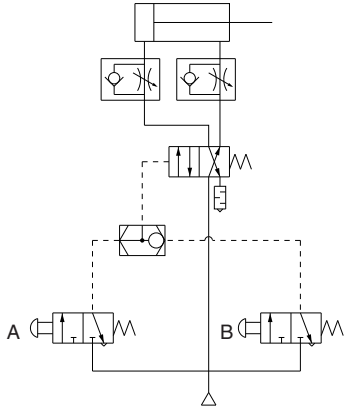
□ Use ø1/8" tubing for ø3.2.

With One-touch fitting

## Application Circuit Examples

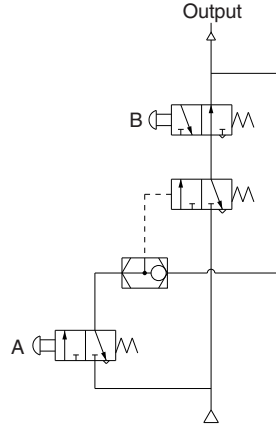
### OR circuit

- The cylinder operates if either "A" or "B" is ON.



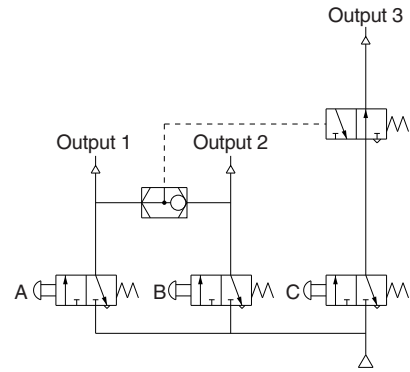
### Self holding circuit

- When "A" is turned ON, output goes ON.
- The output ON state is maintained even if "A" is turned OFF.
- The output goes OFF when "B" is turned ON in condition 2.

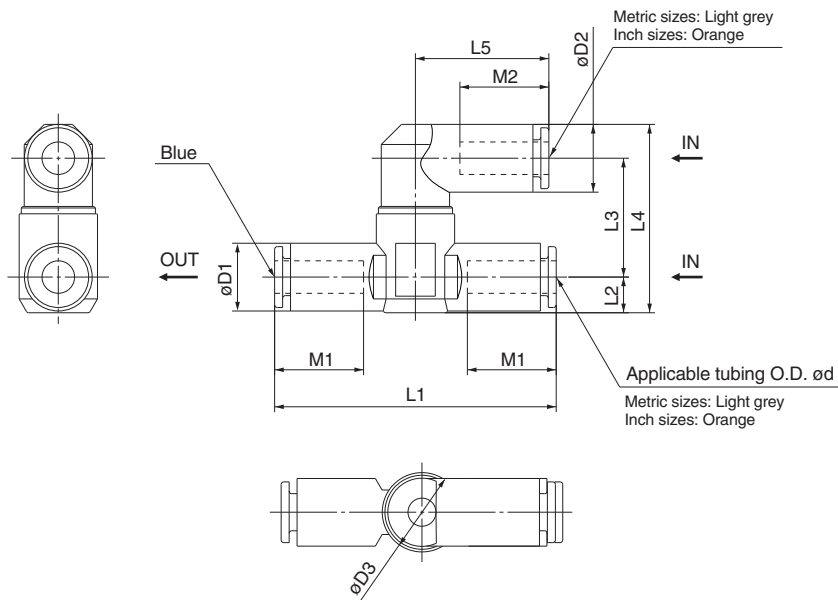


### Interlock circuit

- When either "A" or "B" are ON, output 3 does not go ON even if "C" is turned ON.
- Output 3 goes ON if "C" is turned ON, only when both "A" and "B" are OFF.



## Dimensions



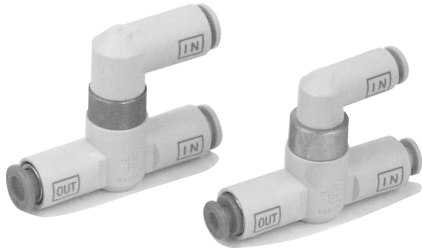
### Metric sizes

Model	d	D1	D2	D3	L1	L2	L3	L4	L5	M1	M2	Weight g
VR1210F-23	3.2	11.4	8.4	14.8	52	6.2	19.4	29.8	17.5	12.7	12.9	21.4
VR1210F-04	4	11	10.4		53	6.8	20.3	31.5	21.9	15.7	15.8	15.6
VR1210F-06	6	12.8	12.8		53.2	8.1	22.5	35.6	25.2	16.8	16.8	23.0
VR1210F-08	8	15.2	15.2		60.4			38.2	28.2	18.7	18.7	24.0
VR1220F-06	6	12.8	12.8	19.8	59	7.4	23.9	37.7	25.2	16.8	16.8	27.2
VR1220F-08	8	15.2	15.2		65	8.2		39.7	28.2	18.7	18.7	31.9
VR1220F-10	10	18.5	18.5		71.6	9.8	25.8	44.8	31	20.8	20.8	43.2

### Inch sizes

Model	d	D1	D2	D3	L1	L2	L3	L4	L5	M1	M2	Weight g
VR1210F-01	1/8"	11.4	8.4	14.8	52	6.2	19.4	29.8	17.5	12.7	12.9	21.4
VR1210F-03	5/32"	11	10.4		53	6.8	20.3	31.5	21.9	15.7	15.8	15.6
VR1210F-07	1/4"	13.2	13.2		54.4	7.1	22.5	36.2	25.6	16.8	16.8	23.5
VR1210F-09	5/16"	15.2	15.2		60.4	8.1		38.2	28.2	18.7	18.7	24.0
VR1220F-07	1/4"	13.2	13.2	19.8	59	7.4	23.9	37.9	25.6	16.8	16.8	31.4
VR1220F-09	5/16"	15.2	15.2		65	8.2		39.7	28.2	18.7	18.7	31.9
VR1220F-11	3/8"	17.9	18.5		69.8	9.5	25.8	44.5	31	20.8	20.8	53.0

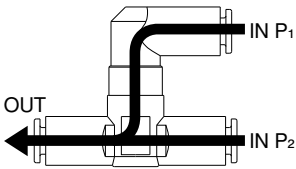
# AND Valve with One-Touch Fittings Series VR1211F



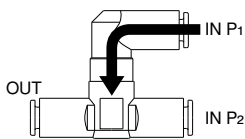
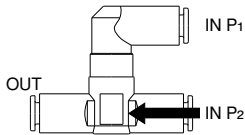
## AND valve/VR1211F

There is output to the OUT side only when air is supplied to both P<sub>1</sub> and P<sub>2</sub>.

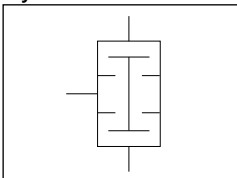
In case of different pressures, the lower pressure is output to the OUT side.



There is no output to the OUT side if air is supplied to only one of P<sub>1</sub> and P<sub>2</sub>.



Symbol



## Models

Model	Applicable tubing outside diameter					
	Metric size			Inch size		
	3.2	4	6	1/8"	5/32"	1/4"
VR1211F	●	●	●	●	●	●

## Specifications

Proof pressure	1.5MPa
Maximum operating pressure	1MPa
Minimum operating pressure	0.05MPa
Ambient and fluid temperature	-5 to 60°C (with no freezing)
Applicable tubing material <sup>Note 1)</sup>	Nylon, Soft nylon, Polyurethane

Note 1) Use caution regarding the maximum operating pressure with soft nylon and polyurethane.

Note 2) On standard products all brass parts are electroless nickel plated.

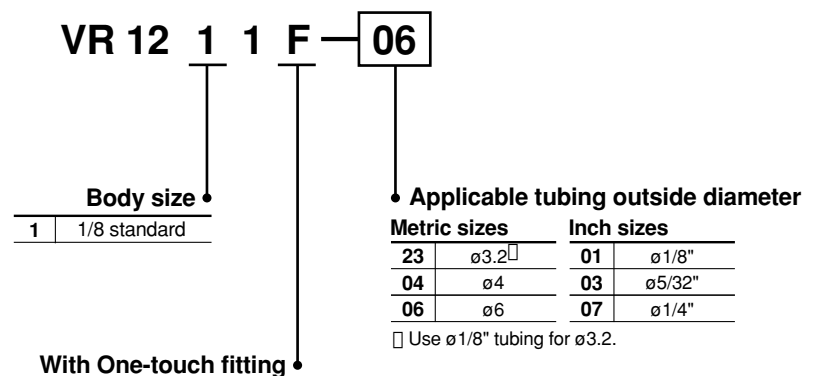
(Suitable for copper free applications.)

## Flow Rate and Effective Area

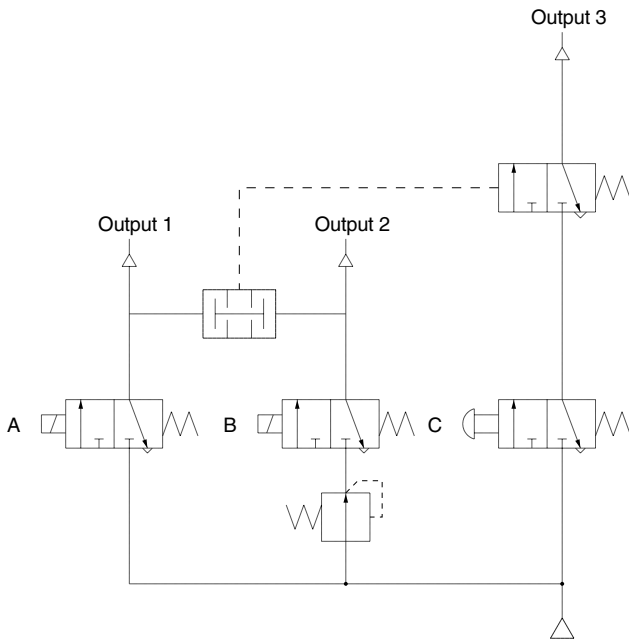
Model	VR1211F				
	Metric size	ø3.2	ø4	ø6	-
Applicable tubing O.D.	Inch size	ø1/8"	ø5/32"	-	ø1/4"
	Flow rate Nl/min	100	120	150	170
IN□OUT	Effective area mm <sup>2</sup>	1.5	1.8	2.3	2.6

Note 1) Flow rate values are at a pressure of 0.5MPa and temperature of 20°C.

## How to Order

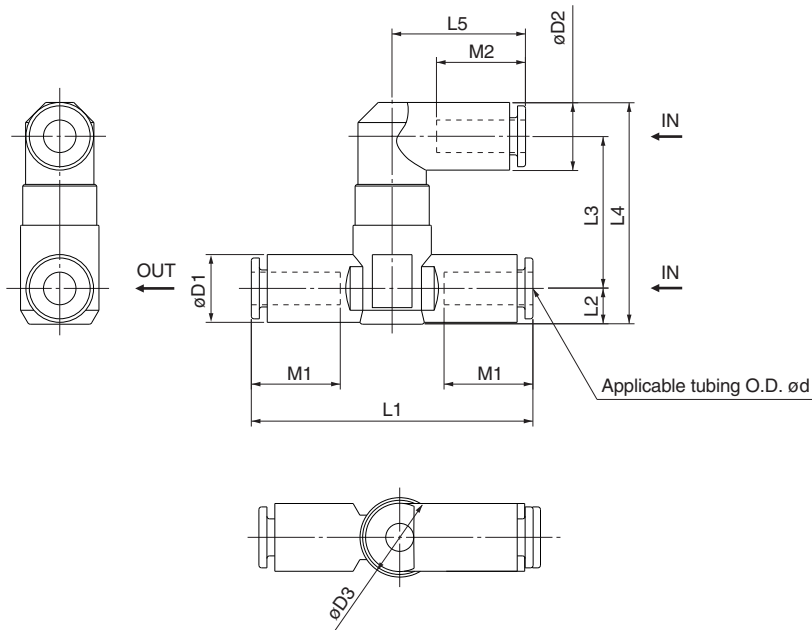


## Application Circuit Example



- When "A" and "B" having different pressure conditions are turned ON, output 1 and output 2 go ON.
- Output 3 goes ON if "C" is turned ON, only when output 1 and output 2 are in an ON state.
- If either "A" or "B" is OFF, output 3 does not go ON even if "C" is turned ON.

## Dimensions



### Metric sizes

Model	d	D1	D2	D3	L1	L2	L3	L4	L5	M1	M2	Weight g
VR1211F-23	3.2	11.4	8.4	14.8	52	6.2	25.7	36.1	17.5	12.7	12.9	26.4
VR1211F-04	4	11	10.4		53							
VR1211F-06	6	12.8	12.8		53.2							
							28.8	41.9	25.2	16.8	16.8	25.0

### Inch sizes

Model	d	D1	D2	D3	L1	L2	L3	L4	L5	M1	M2	Weight g							
VR1211F-01	1/8"	11.4	8.4	14.8	52	6.2	25.7	36.1	17.5	12.7	12.9	26.4							
VR1211F-03	5/32"	11	10.4		53								6.8	26.6	37.8	21.9	15.7	15.8	20.8
VR1211F-07	1/4"	13.2	13.2		54.4								7.1	28.8	42.5	25.6	16.8	16.8	27.0

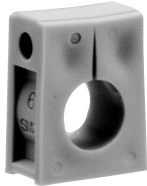


# Related Products

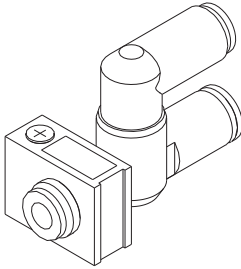
## Holder Series TMH

This holder is used to secure the AND valve and shuttle valve with One-touch fittings.

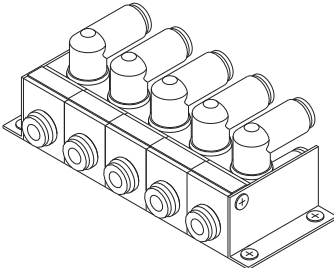
Allows highly flexible mounting.



Single unit secured using holder

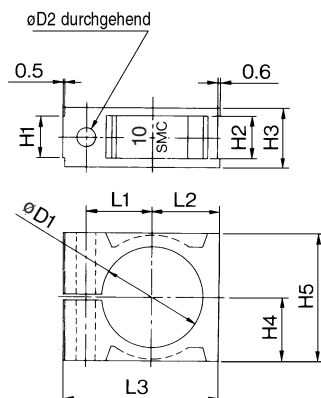


Manifolding is possible



Note) Mounting brackets are not available. This is an application example only.

### Dimensions



### Specifications

Ambient temperature	-20 to 60°C
Material	Polypropylene
Color	White
Accessories/Round head Phillips mounting screw (black zinc chromated)	

Model		Size (nominal size x length)	Qty.
Metric size	Inch size		
—	TMH-05	M3 x 20	1
TMH-06	TMH-07	M4 x 25	
TMH-08	TMH-09		
TMH-10	TMH-11	M4 x 35	

### Shuttle Valve/AND Valve and Holder Compatibility

#### Metric sizes

Model		Applicable tubing outside diameter				
Shuttle valve	AND valve	$\phi 3.2$	$\phi 4$	$\phi 6$	$\phi 8$	$\phi 10$
VR1210F	VR1211F	TMH-05	TMH-06J	TMH-06	TMH-08	—
VR1220F	—	—	—			TMH-10

#### Inch sizes

Model		Applicable tubing outside diameter				
Shuttle valve	AND valve	$\phi 1/8"$	$\phi 5/32"$	$\phi 1/4"$	$\phi 5/16"$	$\phi 3/8"$
VR1210F	VR1211F	TMH-05	TMH-06	TMH-07	—	—
VR1220F	—	—	—		TMH-09	TMH-11

Model		D1	D2	H1	H2	H3	H4	H5	L1	L2	L3
Metric size	Inch size										
TMH-06J	TMH-05	11.7	3.3	6.3	6.4	9.3	7.7	15.4	8.5	8.3	21
TMH-06	—	13.1	4.3	7.1	7.2	11	10	20	11	10.6	26.5
	TMH-07	13.5									
TMH-08	TMH-09	15.5	4.3	9.5	9.6	14	14	28	14.2	14.6	34
TMH-10	—	18.5									
—	TMH-11	18.8									

# Related Products VR3100 Pneumatic Indicator

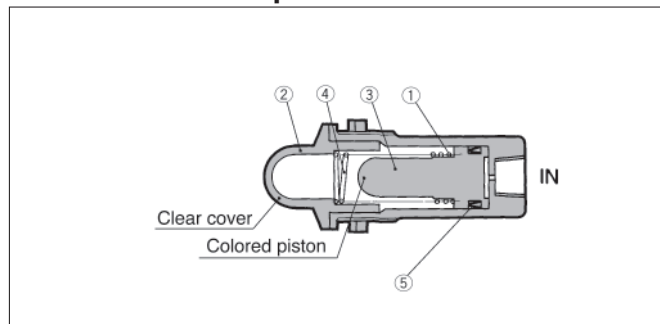
Indicates the presence of pneumatic pressure. It is equivalent to the pilot lamp of an electrical system.



## Model/Specifications

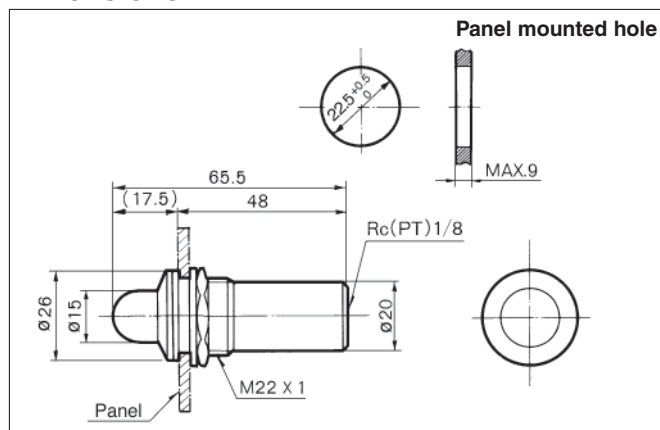
	VR3100-01R	VR3100-01G	VR3100-01O
Operating pressure	0.1 to 0.8MPa		
Ambient and fluid temp.	-5 to 60°C (No freezing)		
Frequency	100 c.p.m or less		
Color of indicator	Red	Green	Orange
Port size (Nominal size)	Rc(PT) 1/8 (6A)		
Weight	40g		

## Construction/Component Parts



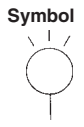
No.	Description	Material	Notes
①	Body	Aluminum alloy	
②	Indicator window	Acrylic	
③	Piston	Polyacetal	
④	Spring	Stainless steel	
⑤	Packing	NBR	

## Dimensions



# Related Products VR3110 Miniature Pneumatic Indicator

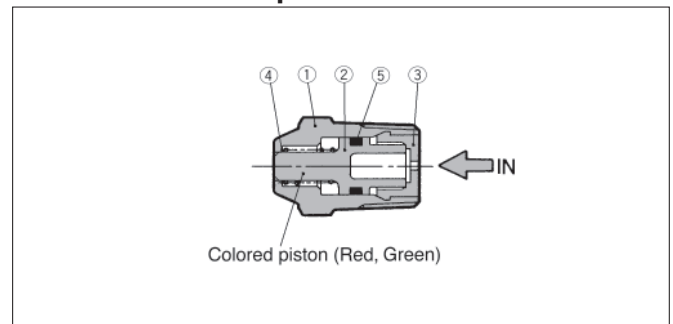
This is an ultra-compact air indicator light to monitor the presence of air pressure. It is equivalent to the pilot lamp of an electrical system.



## Model/Specifications

	VR3110-01R	VR3110-01G
Color of indicator	Red	Green
Operation	Piston style	
Operating pressure	0.15 to 1.0MPa	
Ambient and fluid temp.	-5 to 60°C (No freezing)	
Frequency	300 c.p.m or less	
Port size (Nominal size)	R(PT) 1/8 (6A)	
Weight	6g	

## Construction/Component Parts



No.	Description	Material	Notes
①	Body	Brass	
②	Piston A	Polyacetal	
③	Plug	Polyethelene	
④	Spring	Stainless steel	
⑤	O ring	NBR	

## Dimensions

