

# SQUARE TYPE SOLENOID VACUUM VALVES

## HV030 Series



### Specifications

Item	Basic model	HV030E1	
Media		Vacuum	
Operation type		Direct acting type	
Number of positions, Number of ports		2 positions, 2, 3 ports	
Valve function		Normally closed (NC)	
Effective area [Cv]	mm <sup>2</sup>	1(P)→2(A): 0.6 [0.02], 2(A)→3(R): 0.8 [0.03]	
Port size		1(P), 2(A): 10-32 UNF, 3(R): $\phi$ 18	
Lubrication		Not required	
Operating pressure range	kPa [mmHg] [in.Hg]	-100~0 [-750.1~0] [-29.53~0]	
Response time <sup>Note</sup>	DC12V, 24V	10/25 or below	
ON/OFF	ms	AC100V, AC200V	15/40 or below
Maximum operating frequency	Hz	5	
Operating temp. range (atmosphere and media)	°C [°F]	5~50 [41~122]	
Shock resistance	Lateral direction	1373.0 {140.0}	
	Axial direction	117.7 {12.0}	
Mounting direction		Any	
Mass	g [oz.]	57 [2.01]	

Note: Values when vacuum is -100kPa [-750.1mmHg] [-29.53in.Hg].

### Solenoid Vacuum Valve Port Size

Solenoid vacuum valve model	Port specification	Port size
HV030E1	Female thread	1(P), 2(A): 10-32 UNF
	-----	3(R): $\phi$ 1.8

### Manifold Connection Port Size

Manifold model	Port	Location of piping connection	Port size
HYM□T	1(P)	Manifold	10-32 UNF
	3(R)		M6×1
	2(A)	Valve	10-32 UNF

### Manifold Mass

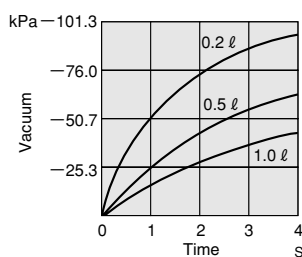
Manifold model	Mass calculation of each unit (n=Number of units)	Block-off plate
HYM□T	(11×n)-1 [(0.39×n)-0.04]	3 [0.11]

g [oz.]

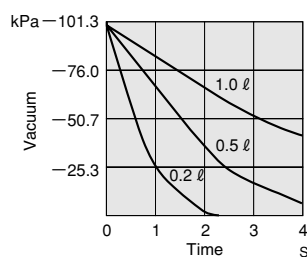
### Solenoid Specifications

Item	Rated voltage	DC12V	DC24V	AC100V	AC200V
Type		Flywheel diode incorporated for surge suppression	Flywheel diode type	Shading type	
Operating voltage range	V	10.8~13.2 (12±10%)	21.6~26.4 (24±10%)	90~132 (100±32%)	180~264 (200±32%)
Current (when rated voltage is applied)	Frequency	Hz	---	50	60
	Starting	mA (r.m.s.)	---	36	32
	Energyzing	mA (r.m.s.)	130 (1.6W) 140 (1.7W) {with LED indicator}	65 (1.6W) 75 (1.8W) {with LED indicator}	24
Allowable leakage current	mA	8	4	4	2
Insulation resistance	MΩ	Over 100			
Wiring type and lead wire length	Standard	Grommet type: 300mm [11.8in.]			
	Optional	Plug connector type: 300mm [11.8in.] See made to order on p.856.			
Color of lead wire		Brown (+), Black (-)	Red (+), Black (-)	Yellow	White
Color of LED indicator		Red		Yellow	Green
Surge suppression (as standard)		Flywheel diode		Varistor	

#### Exhaust time



#### Air supply time

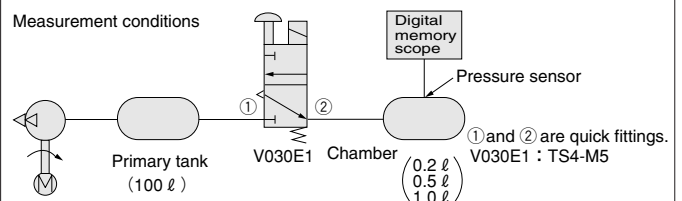


1kPa = 0.145psi.

#### How to read the graph

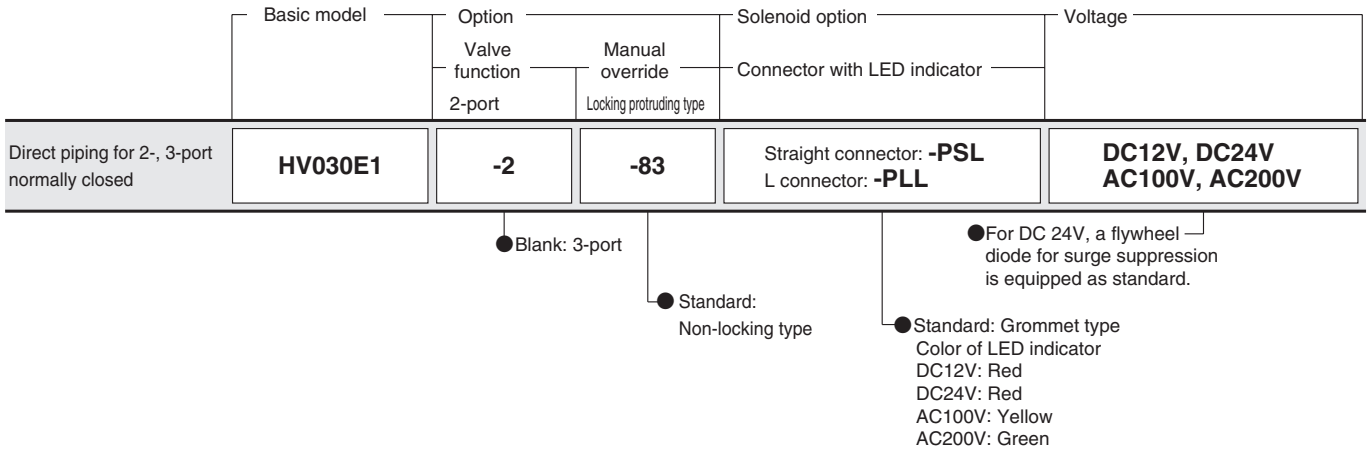
Exhaust time: Time required for chamber inside to convert from atmospheric pressure state to vacuum state.

Air supply time: Time required for chamber inside pressure from -100kPa [-14.5psi.] to atmospheric pressure state.

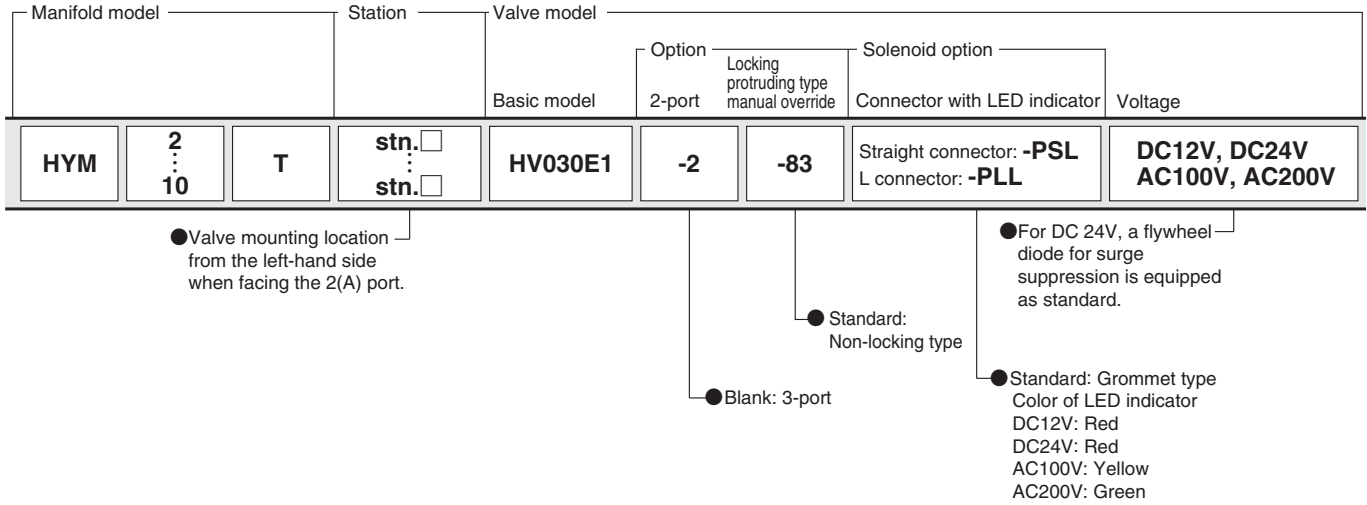


# Order Codes

## Solenoid Vacuum Valve Order Codes



## Manifold Order Codes



## Additional Parts

Muffler



● For manifold only

Mounting base



Block-off plate



● **YM** **T** **-BP**  
 T—For T type manifold  
 YM—For YM

## Options

Locking protruding type manual override



Straight connector with LED indicator



L connector with LED indicator



## Made to Order

For details, see the Solenoid Valves 030 Series.

Straight connector with LED indicator



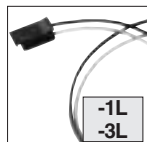
● Without lead wire  
 ● Connector and contacts included

L connector with LED indicator



● Without lead wire  
 ● Connector and contacts included

Lead wire length



● For plug connector  
 ● Length **-1L**: 1000 [39in.]  
**-3L**: 3000 [118in.]

DIN connector



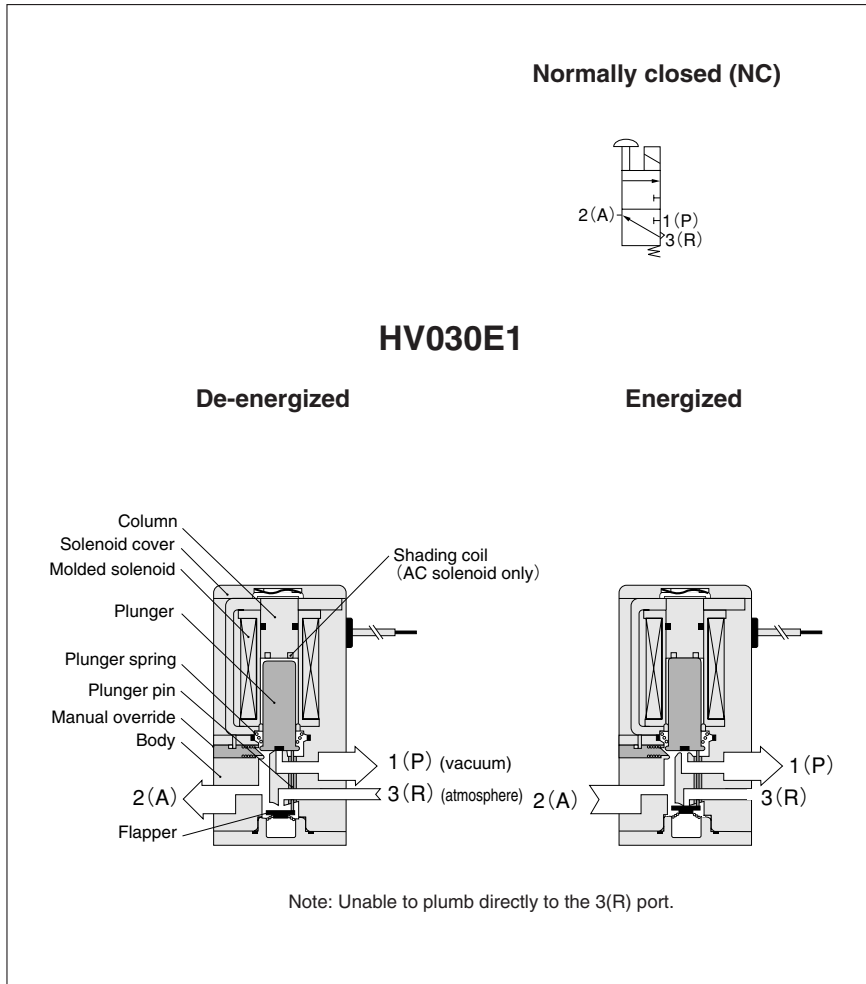
● Cannot be used with -L

LED indicator with built-in varistor



● Cannot be used with -39

# Operating Principles and Symbol



## Valve functions and connection port configurations

### HV030

		De-energized	Energized
2-port	Normally closed (NC)		
	Normally closed (NC)		

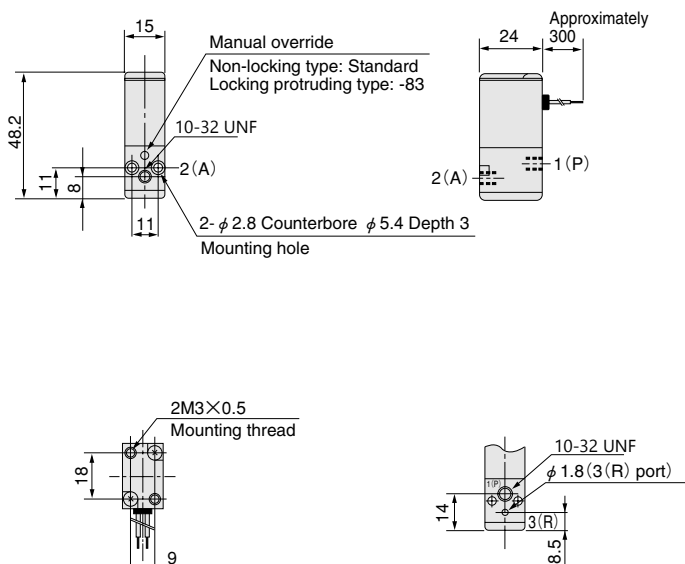
## Major Parts and Materials

	Parts	Materials
Valve	Body	Aluminum alloy (anodized)
	O-ring	Synthetic rubber
	Flapper	
	Plunger	Magnetic stainless steel
	Column	steel
	Spring	Stainless steel
Manifold	Mounting base	Mild steel (zinc plated)
	Body	Aluminum alloy (anodized)
	Block-off plate	
	Bracket	Mild steel (zinc plated)
	Seal	Synthetic rubber

Remark: Materials that generate copper ions are not used for the non-ion specification.

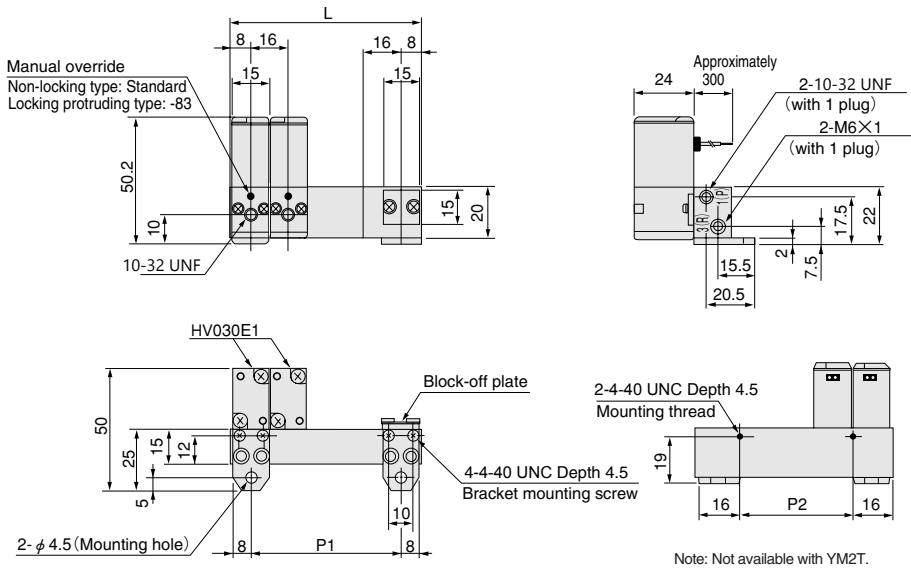
## Dimensions of Solenoid Vacuum Valve (mm)

### HV030E1



# Dimensions of Manifold (mm)

## HYM□T

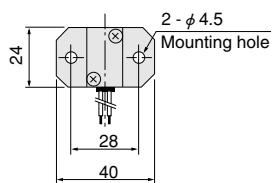
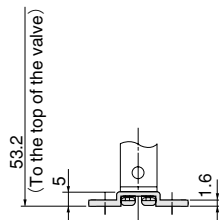


### Unit dimensions

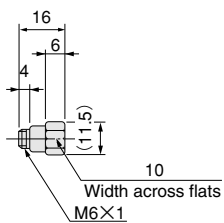
Model	L	P1	P2
HYM2T	32	16	—
HYM3T	48	32	16
HYM4T	64	48	32
HYM5T	80	64	48
HYM6T	96	80	64
HYM7T	112	96	80
HYM8T	128	112	96
HYM9T	144	128	112
HYM10T	160	144	128

### Additional Parts (To be ordered separately)

- Mounting base: 030-21

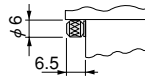


- Muffler: -75  
For manifold only

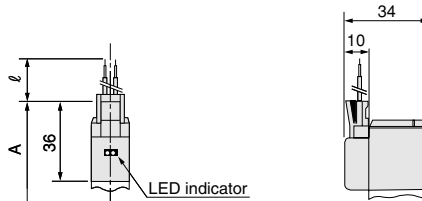


### Options

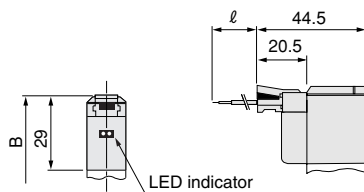
- Locking protruding type manual override: -83



- Solenoid with straight connector: -PSL

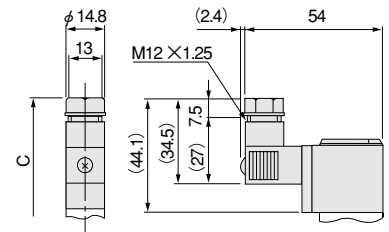


- Solenoid with L connector: -PLL

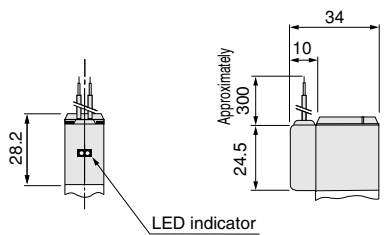


### Made to Order

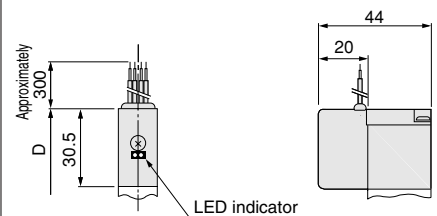
- Solenoid with DIN connector: -39



- Solenoid with LED indicator: -L



- Built-in interface unit: -FA



Model	Code	A	B	C	D	ℓ (lead wire length)	Remark
HV030E1		56	49	64.1	50.5	-PSL, -PLL: 300 Made to order: -1L; 1000 -3L; 3000	Overall length to the end of the valve

# HV030 Series Handling Instructions and Precautions

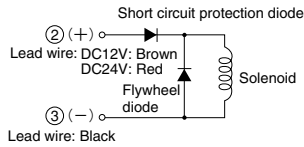


## Solenoid

### Internal circuit

#### ● DC12V, DC24V

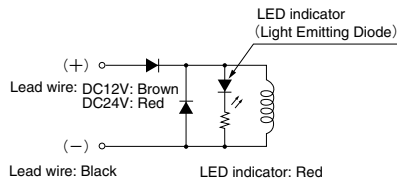
#### Standard solenoid (Surge suppression)



② and ③ are for with DIN connector (Order code: -39).

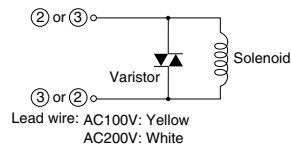
#### Solenoid with LED indicator (Surge suppression)

Order code: -PSL, -PLL



#### ● AC100V, AC200V

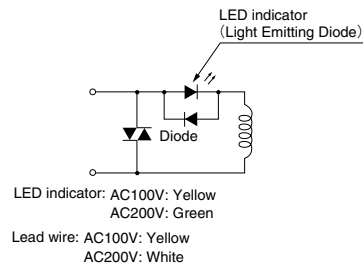
#### Standard solenoid (Surge suppression)



② and ③ are for with DIN connector (Order code: -39).

#### Solenoid with LED indicator (Surge suppression)

Order code: -PSL, -PLL



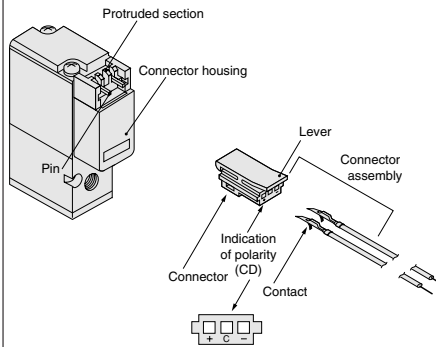
- Cautions:**
1. Do not apply megger between the lead wires.
  2. The DC12V and DC24V solenoids will not short circuit even if the wrong polarity is applied, but the valve will not operate.
  3. Leakage current inside the circuit could result in failure of the solenoid valve to return, or in other erratic operation. Always use it within the range of the allowable leakage current. When circuit conditions, etc. cause the leakage current to exceed the allowable leakage current, consult us.



## Plug connector

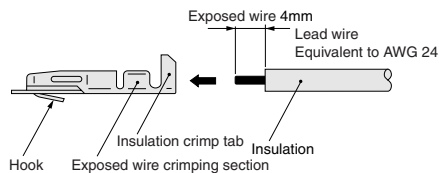
### Attaching and removing plug connector

Use fingers to insert the connector into the pin, push it in until the lever claw latches onto the protruded section of the connector housing, and complete the connection. To remove the connector, squeeze the lever along with the connector, lift the lever claw up from the protruded section of the connector housing, and pull it out.



### Crimping of connecting lead wire and contact

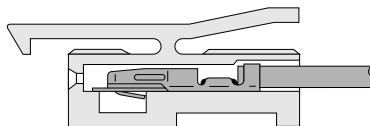
To crimp lead wires into contacts, strip off 4mm [0.16in.] of the insulation from the end of the lead wire, insert it into the contact, and crimp it. Be sure to avoid catching the insulation on the exposed wire crimping section.



- Cautions:**
1. Do not pull hard on the lead wire.
  2. For crimping of connecting lead wire and contact, always use a dedicated crimping tool.  
Contact: Model 702062-2M  
Manufactured by Sumiko Tech, Inc.  
Crimping tool: Model F1-702062  
Manufactured by Sumiko Tech, Inc.

### Attaching and removing contact and connector

Insert the contact with lead wire into a plug connector □ hole until the contact hook latches on the connector and is secured to the plug connector. Confirm that the lead wire cannot be easily pulled out. To remove it, insert a tool with a fine tip (such as a small screwdriver) into the rectangular hole on the side of the plug connector to push up on the hook, and then pull out the lead wire.

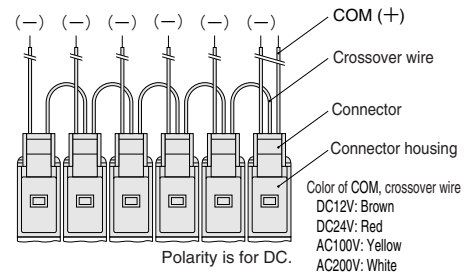


- Cautions:**
1. Do not pull hard on the lead wire. It could result in defective contacts, breaking wires, etc.
  2. When the pin is bent, use a small screwdriver, etc. to gently straighten out the pin, and then complete the connection to the plug connector.

### Common terminal pre-wired plug connector

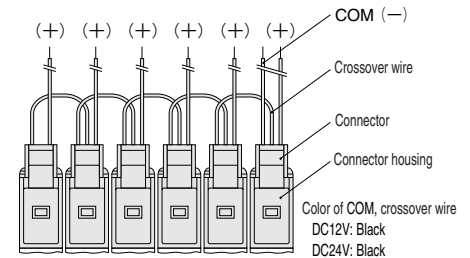
#### 1. Pre-wired common terminal at DC positive side or AC.

Order code With straight connector: -CPSL  
With L connector: -CPLL



#### 2. Pre-wired common terminal at DC negative side

Order code With straight connector: -CMSL  
With L connector: -CMLL



- Cautions:**
1. The diagrams show a straight connector configuration. While the connector's orientation is different in the case of the L connector, in every case the COM lead wire comes from the last station's mounted valve.
  2. Since the COM terminal is connected to a crossover terminal inside the connector housing, the connector cannot be switched between a positive common and a negative common by changing the connectors.

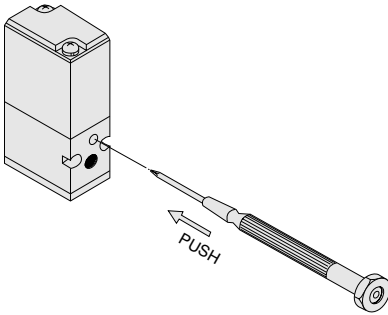


## Manual override

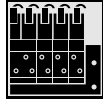
### Non-locking type, locking protruding type

For the non-locking type manual override, use an object with a fine tip to push the manual override down all the way. The valve works the same as when in the energized state as long as the manual override is pushed down, and returns to the rest position upon release.

To lock the locking protruding type manual override, use a finger tip or a small screwdriver to push down on the manual override all the way and turn it 45 degrees. Either turning direction at this time is acceptable. When locked, turning the manual override from the locking position releases a spring on the manual override, returns it to its normal position, and releases the lock. When the manual override is not turned, this type acts just like the non-locking type. The valve works the same as in an energized state as long as the manual override is pushed down, and returns to the normal position upon release.



**Caution:** Always release the lock of the locking protruding type manual override before commencing normal operations.



## Manifold

### Piping

The 1(P) port and 3(R) port are located on both end surfaces of the manifold, and the mounting location determines selection of piping direction. At shipping, ports on one side are plugged. Remove them, and then use sealing tape or other sealing agent, and then tighten .

### Block-off plate

To close the unused stations, use a block-off plate (Order code: **-BP**).

**Caution:** For the 1(P) port piping, use a size that matches the manifold's piping connection port. Insufficient flow rate or vacuum could result in defective valve operation or in insufficient picking capacity with the vacuum pad.



## General precautions

### Mounting

1. While any mounting direction is acceptable, using the mounting base (Order Code: **030-21**) for installation, make sure to avoid applying strong shocks in the lateral direction.
2. When using in locations subject to dripping water or oil, or in extremely dusty locations, use a cover, etc. to protect the unit. In addition, install a muffler (Order Code: **KM-06**), etc. to the 3(R) port to prevent dust from entering the unit.
3. Before piping with valves, always thoroughly blow off foreign materials (blow by compressed air) in the piping interior. Entering machining chips or sealing tape, rust, etc., generated during plumbing could result in air leaks and other defective operations.
4. When mounting a valve unit inside the control panels or when the operation requires long energizing periods, provide heat radiation measures.

### Media

Use air for the media. For use of any other media, consult us.

### Atmosphere

Cannot be used when the substances listed below are found in the media and atmosphere. Organic solvents, phosphate ester type hydraulic oil, sulphur dioxide, chlorine gas, or other acids, etc.