

3 Port Solenoid Valve

Series VV061

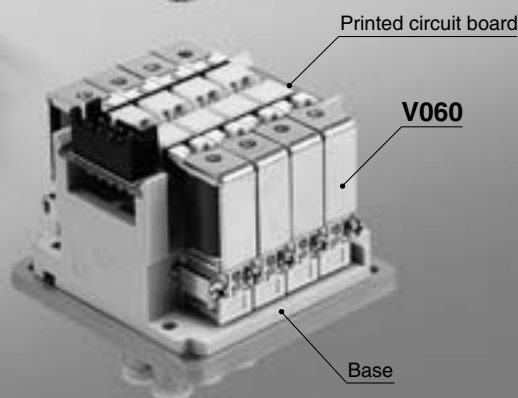
Rubber Seal

Unit Manifold Valve



* When a bracket is not included, barb fittings are included.

6 mm width valve
Mounting the V060 series



* Photo shown depicts an 8-station unit manifold.

Valve, PCB, base and fittings are fully integrated, forming a single compact unit. New concept unit manifold

VV061

V100

S070

VQD

VKF

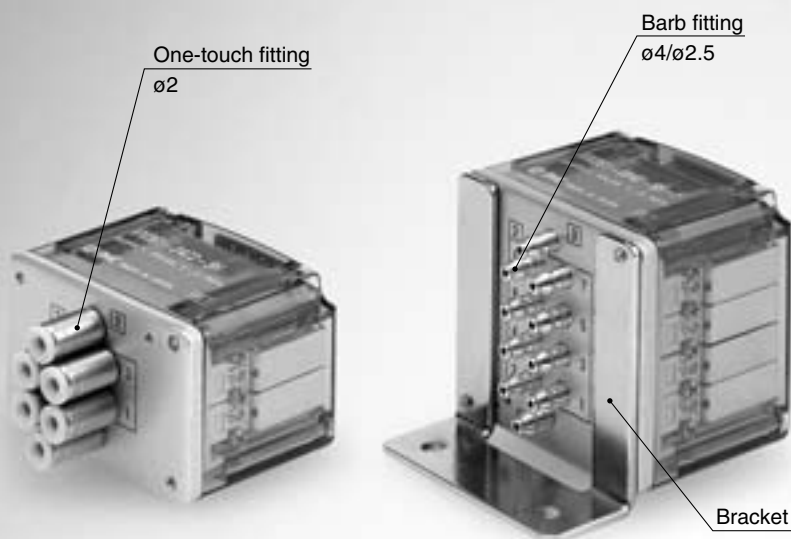
VK

VT

VS

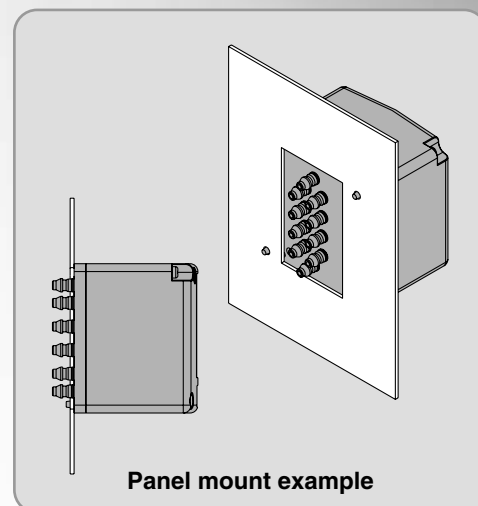
Unit Manifold

One-touch fitting and barb fitting can be selected.

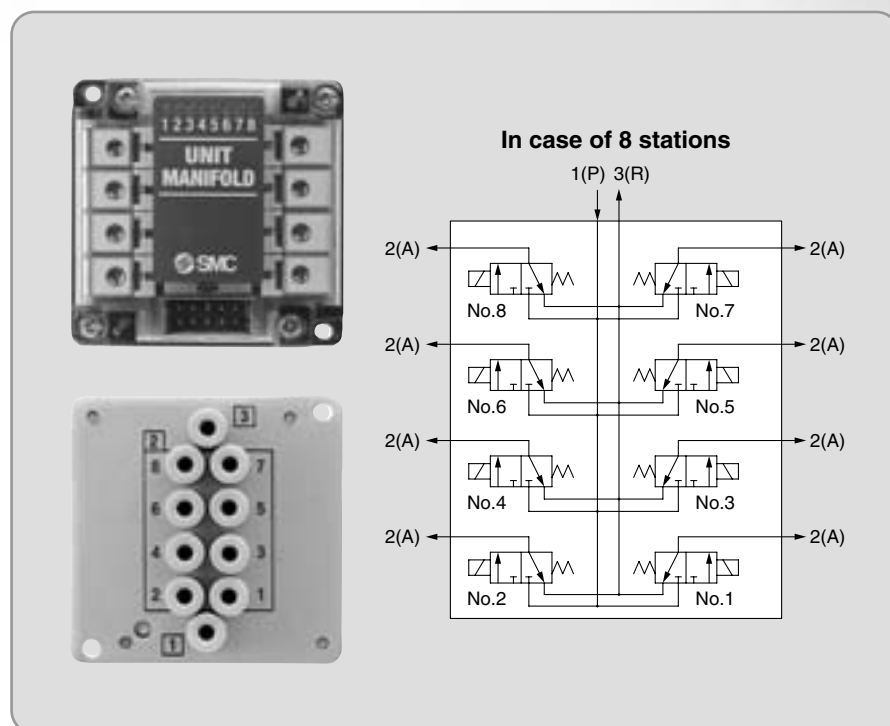
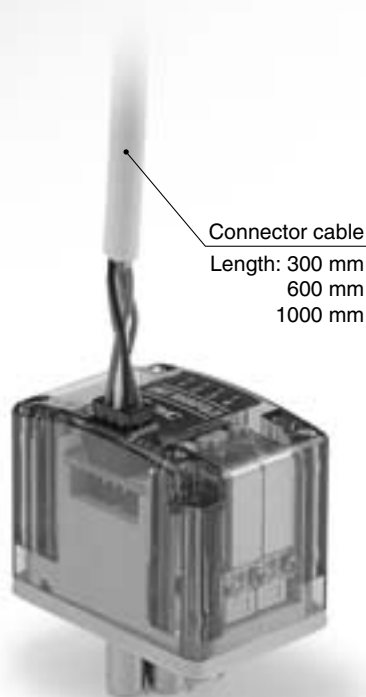


Mounting

- Bracket mount
- Panel mount



Lead wire length



Reduced environmental impact substance RoHS compliant

3 Port Solenoid Valve Unit Manifold Valve

Series VV061



How to Order

VV061-0840-5□□H-□□

Valve stations

Symbol	Stations
04	4 stations
08	8 stations

1/2/3 port size

Symbol	Port size
40	Barb fitting (Applicable tubing $\phi 4/\phi 2.5$)
C2	$\phi 2$ one-touch fitting

Note) The applicable tube of the barb fitting shows the tube outside diameter/inside diameter.

Rated voltage

5	24 VDC
6	12 VDC

Common specifications

Nil	Positive common
N	Negative common

Coil specifications

Nil	Standard (With light/surge voltage suppressor)
T	With power-saving circuit (Continuous duty type)

If the coil will be continuously energized for a long period, be sure to choose the coil with power-saving circuit. (See page 1514 for details.)

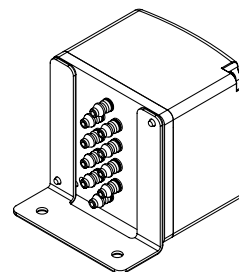
Note 1) Both the standard coil and the coil with power-saving circuit have light/surge voltage suppressor.

Note 2) The wiring specification is positive common only.

Bracket

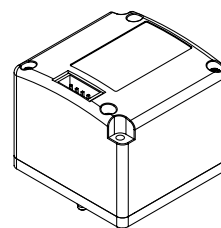
Nil: Without bracket
(2 mounting screws M2 x 27 are included.)

F: With bracket

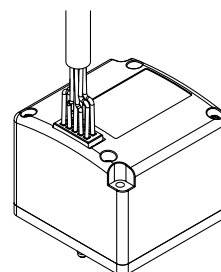


Connector cable

Nil: Without connector cable



C1: With connector cable (Length 300 mm)
C2: With connector cable (Length 600 mm)
C3: With connector cable (Length 1000 mm)



Operating pressure range

H	Standard (0 to 0.7 MPa)
L	High flow type (0 to 0.3 MPa)

VV061

V100

S070

VQD

VKF

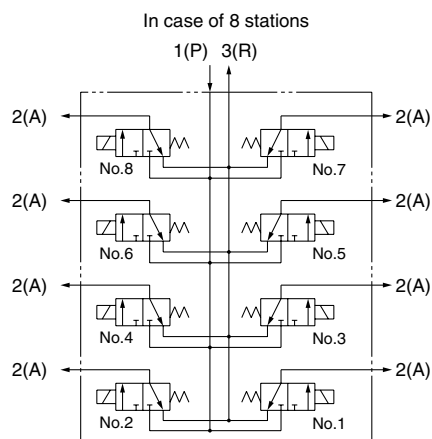
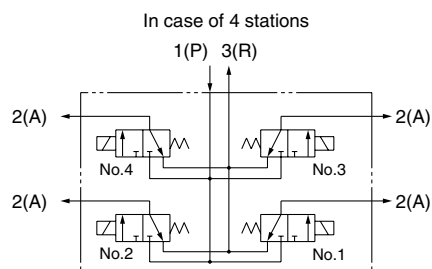
VK

VT

VS



Symbol



Unit Manifold Specifications

Fluid		Air	
Operating pressure range (MPa)	Standard	0 to 0.7	
	High flow type	0 to 0.3	
Vacuum specification (MPa)	Standard	1(P) port	3(R) port
	High flow type	–100 kPa to 0.6	–100 kPa to 0
Ambient and fluid temperature (°C)		–10 to 50 (No freezing)	
Response speed (ms) ^{Note 1)}		10 ms or less	
Max. operating frequency (Hz)		20	
Lubrication		Not required	
Mounting orientation		Unrestricted	
Impact/Vibration resistance (m/s ²) ^{Note 2)}		150/30	
Enclosure		Dustproof	

Note 1) Based on dynamic performance test, JIS B8374-1981. (Standard type: Coil temperature 20°C, at rated voltage.

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Value in the initial state)

Vibration resistance: No malfunction occurred in one sweep test between 45 and 2000 Hz. Test was performed to axis and right angle directions of the main valve and armature when pilot signal is ON and OFF. (Value in the initial state)

The impact/vibration resistance is 50/10 [m/s²] for the manifold with a power-saving circuit (0.23 W).

Solenoid Specifications

Coil rated voltage		12, 24 VDC	
Allowable voltage fluctuation ^{Note)}	Standard	24 VDC	12 VDC
	Power-saving type	–7% to +10%	–4% to +10%
Power consumption (W)		Standard: 0.55	
		With power-saving circuit (Continuous duty type): 0.23	
Surge voltage suppressor		Diode	
Indicator light		LED	

Note) The voltage fluctuation should be within the above range because the internal circuit can cause voltage drop.

Flow Characteristics

Type	Effective area (mm ²)	
	1(P)→2(A)	2(A)→3(R)
Standard	0.07	0.11
High flow type	0.16	0.21

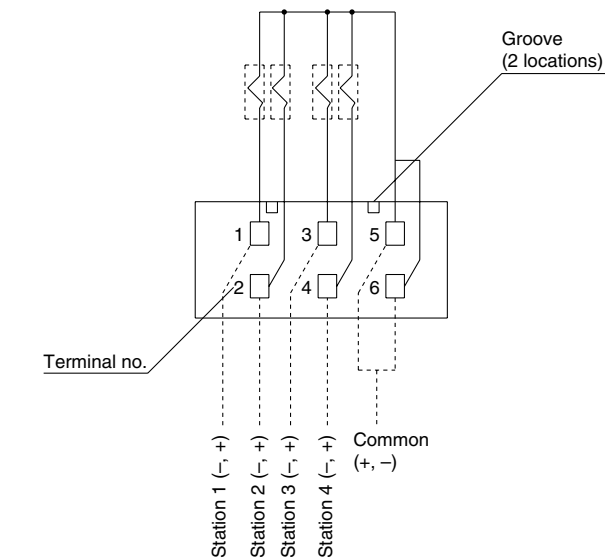
Mass

Stations	Port size	Mass (g) ^{Note)}
4 stations	Barb fitting	47 (56)
	ø2 one-touch fitting	53 (62)
8 stations	Barb fitting	75 (85)
	ø2 one-touch fitting	84 (94)

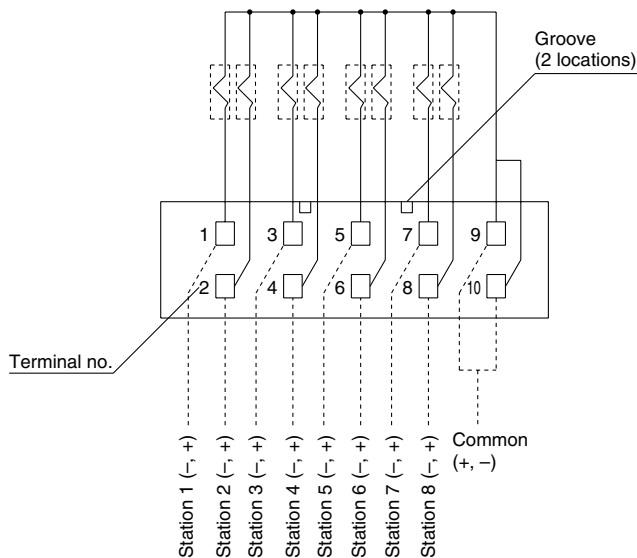
Note) (): values with bracket

Unit Manifold Internal Wiring

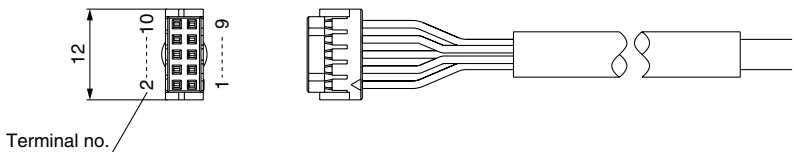
In case of 4 stations



In case of 8 stations



Connector Cable Specifications



Connector Cable Color List of Each Terminal No.

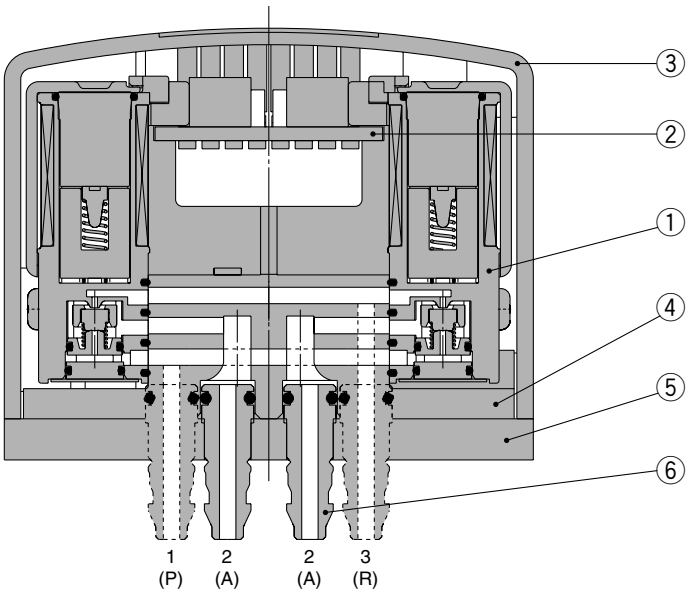
In case of 4 stations

Terminal no.	Lead wire color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue

In case of 8 stations

Terminal no.	Lead wire color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Purple
8	Gray
9	White
10	Black

Construction



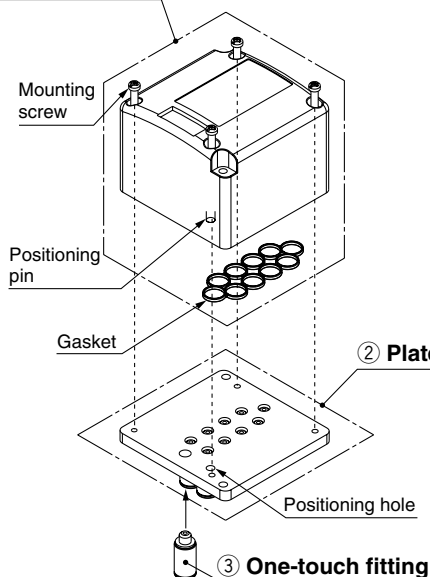
Component Parts

No.	Description	Material	Note
1	Solenoid valve	—	Unit assembly (4 mounting screws M2 x 27 L are included.)
2	PCB assembly	—	
3	Cover	Resin	
4	Base	Resin	
5	Plate	Aluminum	Plate assembly
6	Barb fitting	Aluminum	

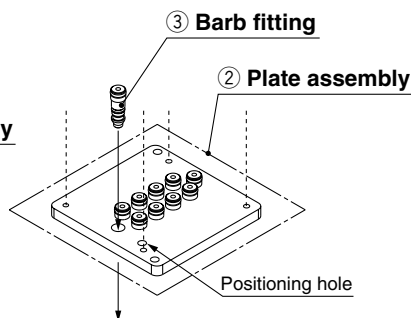
Note) As this drawing shows the internal construction, it is different from the actual product.

Replacement Parts

① Unit assembly



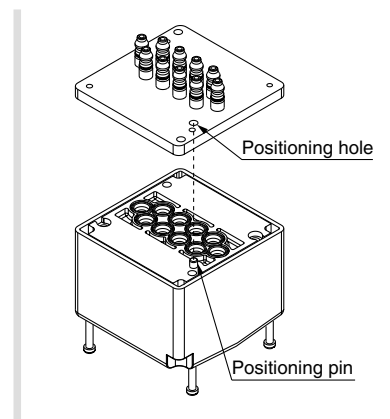
② Plate assembly



③ Barb fitting

② Plate assembly

Positioning hole



How to Mount Unit Assembly

Fit the positioning pin on the unit assembly to the positioning hole on the plate, and assemble them.

⚠ Caution

Tightening torque: 0.12 N·m

① Unit Assembly Part No.

VV061-08 00-5 H

Valve stations

Symbol	Stations
04	4 stations
08	8 stations

1/2/3 port size

Symbol	Port size
00	Without plate assembly

Rated voltage

5	24 VDC
6	12 VDC

Coil specifications

Nil	Standard (With light/surge voltage suppressor)
T	With power-saving circuit (Continuous duty type)

* If the coil will be continuously energized for a long period, be sure to choose the coil with power-saving circuit.

Operating pressure range

H	Standard (0 to 0.7 MPa)
L	High flow type (0 to 0.3 MPa)

* 4 mounting screws (M2 x 27 L) and one gasket are included.

② Plate Assembly Part No.

Stations \ Fitting	Barb fitting	One-touch fitting
4 stations	PV060-72-8A	PV060-72-10A
8 stations	PV060-72-7A	PV060-72-9A
Note	Barb fitting is included.	One-touch fitting is mounted on the plate.

③ Fitting Part No.

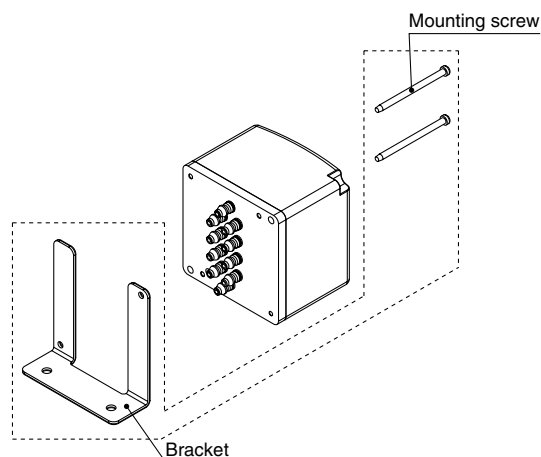
If only the fitting is needed, order with one of the part numbers below.

Description	Barb fitting	One-touch fitting
Part no.	PV060-73-1A	KJS02-M3

* The minimum ordering quantity is 10 pcs.

④ Bracket Assembly Part No.

Description	Part no.
Bracket (for 4 stations)	PV060-80-2A (Mounting screw included)
Bracket (for 8 stations)	PV060-80-1A (Mounting screw included)



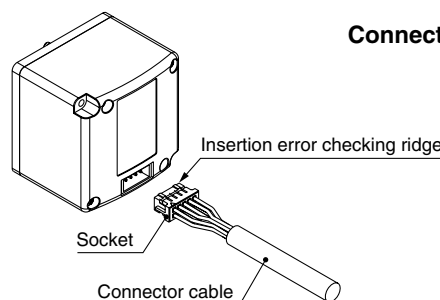
⑤ Connector Cable Part No.

For 4 stations **PV060-40-4A-**

For 8 stations **PV060-40-3A-**

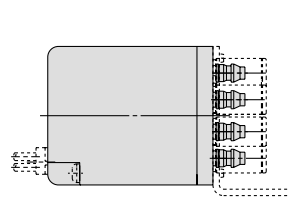
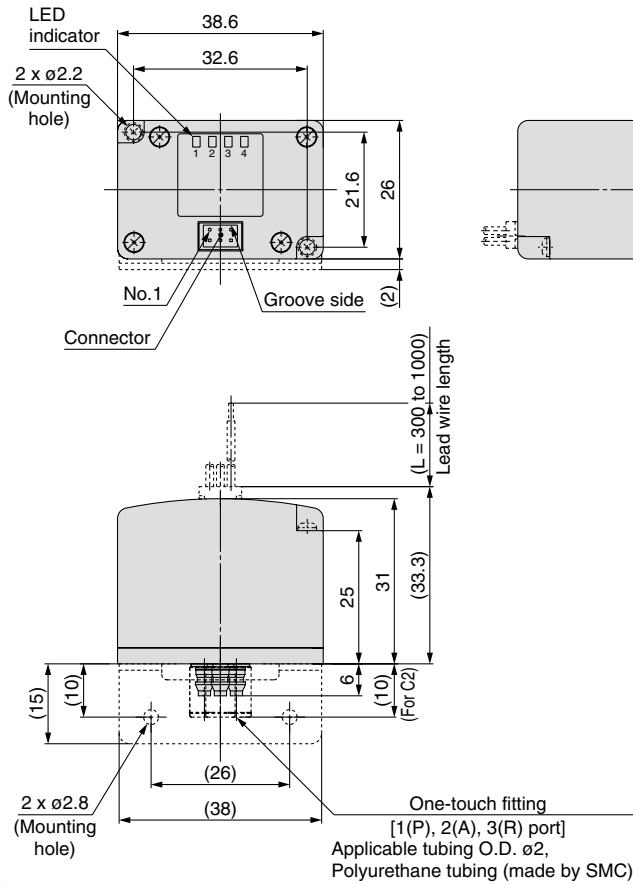
Connector cable length

Nil	300 mm
6	600 mm
10	1000 mm



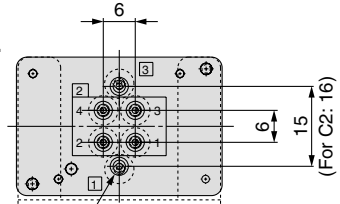
Dimensions

VV061-04



Solenoid valve No.

No. 4
No. 2



Solenoid valve No.

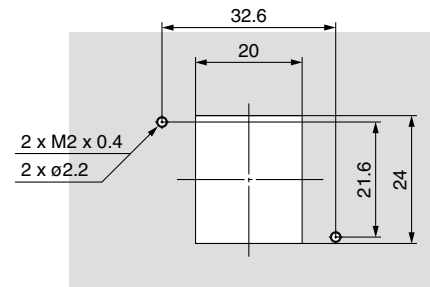
No. 3
No. 1

Barb fitting

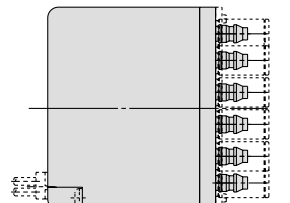
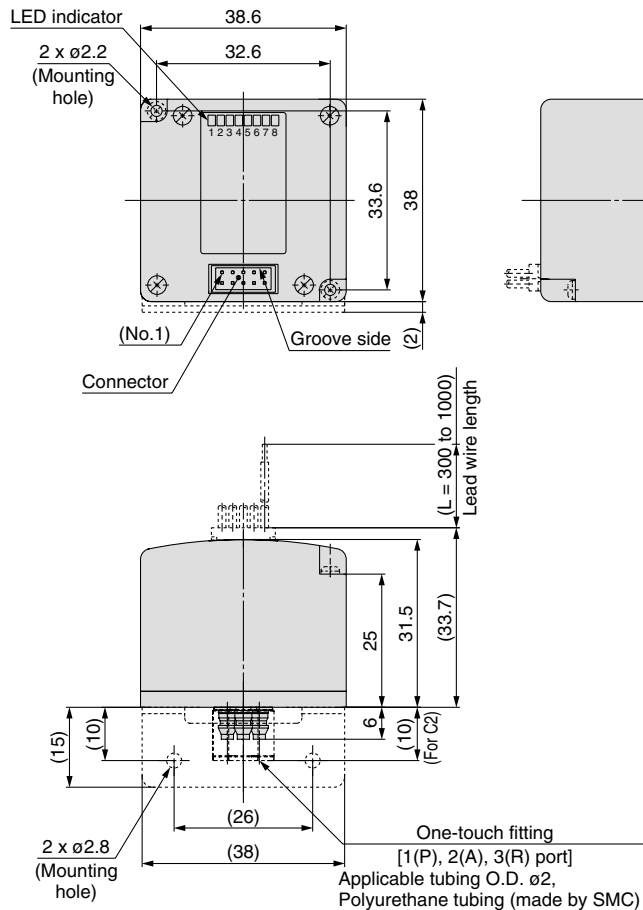
[1(P), 2(A), 3(R) port]

Applicable tubing O.D. $\phi 4$, I.D. $\phi 2.5$,
Polyurethane tubing (made by SMC)
Soft nylon tubing (made by SMC)

Cut dimension for panel mount (mounting surface)

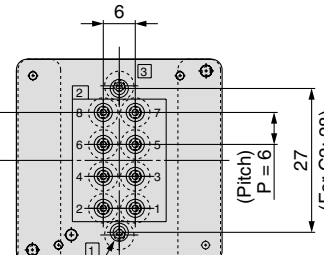


VV061-08



Solenoid valve No.

No. 8
No. 6
No. 4
No. 2



Solenoid valve No.

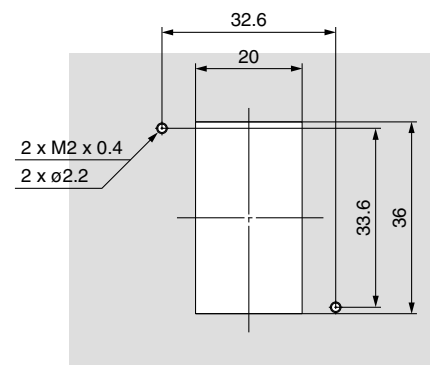
No. 7
No. 5
No. 3
No. 1

Barb fitting

[1(P), 2(A), 3(R) port]

Applicable tubing O.D. $\phi 4$, I.D. $\phi 2.5$,
Polyurethane tubing (made by SMC)
Soft nylon tubing (made by SMC)

Cut dimension for panel mount (mounting surface)





Series VV061

Specific Product Precautions 1

Be sure to read before handling.

Refer to front matters 58 and 59 for Safety Instructions and pages 3 to 7 for 3/4/5 Port Solenoid Valve Precautions.

Selection

Warning

1. Extended period of continuous energization

- If a valve will be continuously energized for an extended period of time, the temperature of the valve will increase due to the heat generated by the coil. This will likely adversely affect the performance of the solenoid valve and any nearby peripheral equipment. Therefore, when it is continuously energized or the energized period per day is longer than the de-energized period, use the valves with power-saving circuit.
- For applications such as mounting a valve on a control panel, incorporate measure to limit the heat radiation so that it is within the operating temperature range.

How to Use Plug Connector

Caution

1. Attaching and detaching connectors

- 1) To attach a connector
Insert the connector cable to the end of the socket with the insertion error checking ridge facing upward.
Then gently pull the connector cable and check that it does not come out.
- 2) To detach a connector
Remove the socket from the unit manifold by gripping the socket of the connector cable.
If excessive force is applied to the connector cable, the connector may come off. Do not apply a force of 20 N or more to the lead wire.

Connector Cable Length

Caution

1. Standard length is 300 mm, but the following lengths are also available.

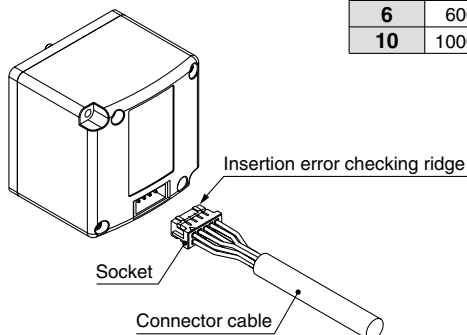
How to Order Connector Assembly

For 4 stations PV060-40-4A-

For 8 stations PV060-40-3A-

Connector cable length

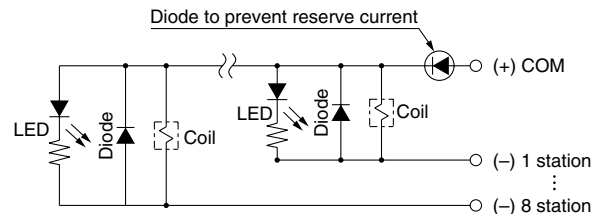
Nil	300 mm
6	600 mm
10	1000 mm



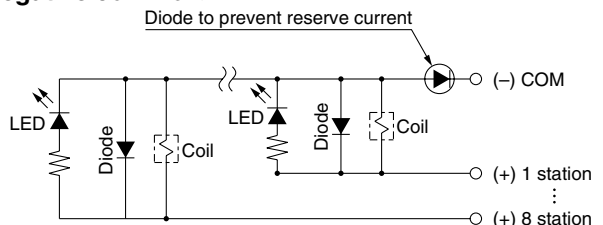
Surge Voltage Suppressor

Caution

<Positive common>



<Negative common>

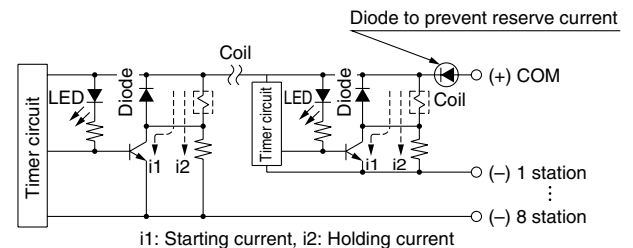


- Since 12 VDC voltage specification does not have diodes for polarity protection, be careful not to make errors in the polarity.
- Please use caution regarding the allowable voltage fluctuation because there is about a 1 volt drop for a valve with polarity protection. (For details, refer to the solenoid specifications for the individual valve.)

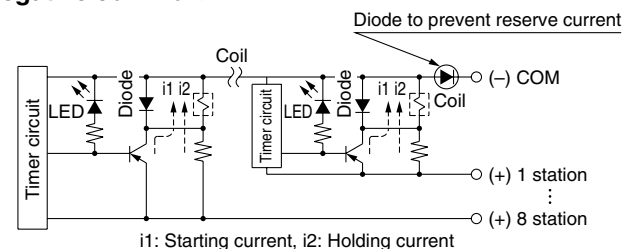
■ With power-saving circuit

Power consumption is decreased by approx. 1/2 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 62 ms.)

<Positive common>



<Negative common>



- 1) Impact and vibration should not be more than 50/10 [m/s²].
- 2) Voltage fluctuation for 24 VDC should be within the range of -5% to +10% of the rated voltage, and for 12 VDC should be within the range of -6% to +10% of the rated voltage.



Series VV061

Specific Product Precautions 2

Be sure to read before handling.

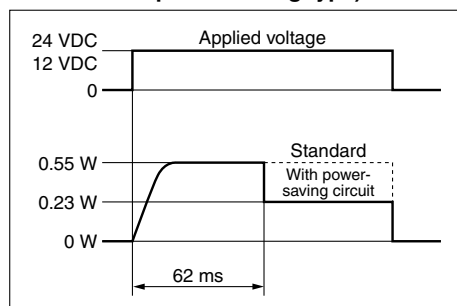
Refer to front matters 58 and 59 for Safety Instructions and pages 3 to 7 for 3/4/5 Port Solenoid Valve Precautions.

Working Principle

⚠ Caution

1. With the above circuit, the current consumption when holding is reduced to save energy. Please refer to the electric wave data below.

(In case of VV061-□□□□-□T, the electric wave form of power-saving type)



- Please be careful not to reverse the polarity, since a diode to prevent the reversed current is not provided for the 12 VDC specification.
- Please use caution regarding the allowable voltage fluctuation because there is about a 0.5 volt drop due to the transistor.

Mounting

⚠ Caution

1. Tightening the threaded portion of an M3 fitting

For KJS02-M3 (One-touch fitting), tighten it with a tightening tool by approx. 1/6 rotation after screwing it in by hand. Screwing the fitting in too far will cause air leakage due to thread breakage and gasket deformation. Screwing the fitting not far enough will also cause air leakage due to the loose screw.

One-touch Fittings Precautions

⚠ Caution

1. Tubing insertion and removal from One-touch fittings

1) Attaching of tubing

- (1) Cut the tubing perpendicularly, being careful not to damage the outside surface. Use an SMC tubing cutter "TK-1", "TK-2" or "TK-3". Do not cut the tube with pliers, nippers, scissors, etc. If cutting is done with tools other than tube cutters, there is the danger that the tube may be cut diagonally or become flattened, etc., making a secure installation impossible, and causing problems such as the tube pulling out after installation or air leakage. Also allow some extra length in the tube.

- (2) Grasp the tube, slowly push it into the One-touch fittings until it comes to a stop.

- (3) Pull the tubing back gently to make sure it has a positive seal. Insufficient installation may cause air to leak or the tube to release.

2) Removing of tubing

- (1) Push flange evenly and push the release bushing sufficiently.

- (2) Pull out the tube while keeping the release button depressed. If the release bushing is not held down sufficiently, the tube cannot be withdrawn.

- (3) To reuse the tubing, remove the previously lodged portion of the tube. If the lodged portion is left on without being removed, it may result in air leakage and difficulty in removal of the tube.

Other Tubing Brands

⚠ Caution

1. When using other than SMC brand tubing, confirm that the following specifications are satisfied with respect to the outside diameter tolerance of the tubing.

- | | |
|------------------------|---|
| 1) Soft nylon tubing | within ± 0.1 mm |
| 2) Polyurethane tubing | within $+0.15$ mm,
within -0.2 mm. |

Do not use tubing which does not meet these outside diameter tolerances. It may not be possible to connect them, or they may cause other trouble, such as air leakage or the tubing pulling out after connection.

VV061

V100

S070

VQD

VKF

VK

VT

VS