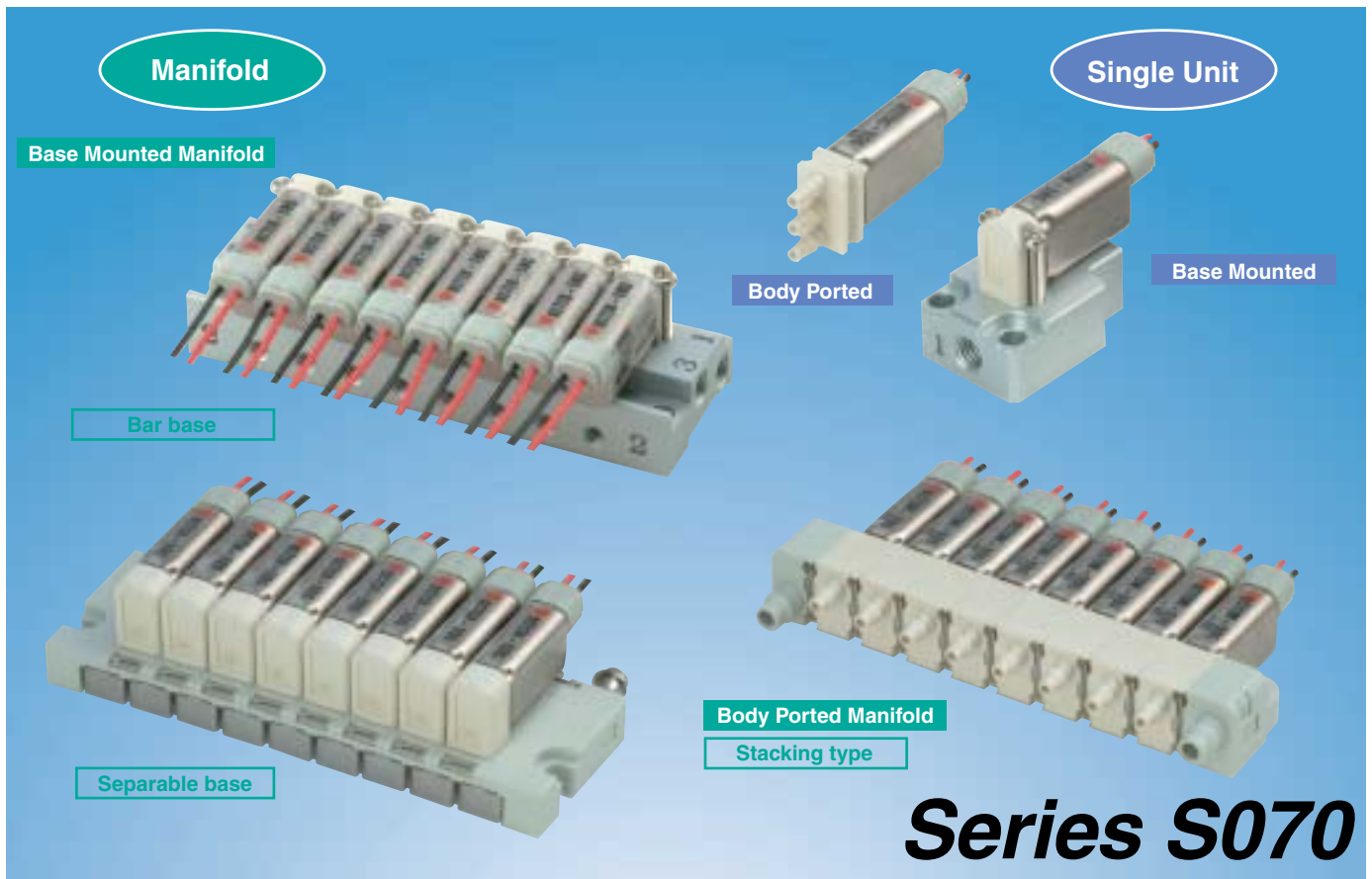
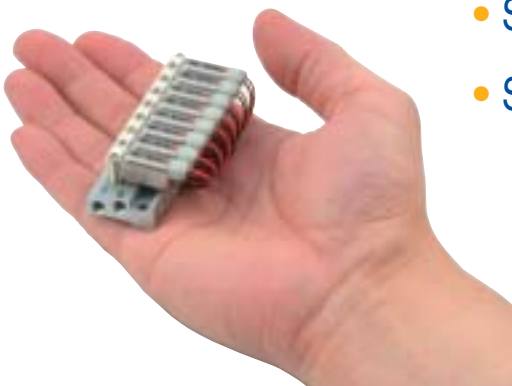




3 Port Solenoid Valve



- Valve width 7 mm
- Weight 5 g (single unit valve)
- Power consumption 0.35 W (standard),
0.1 W (with power saving circuit)
- Operation noise 38 dB (A) or less
- Sonic conductance: C 0.083 [dm³/(s·bar)]
- Stacking type manifold



Separable base

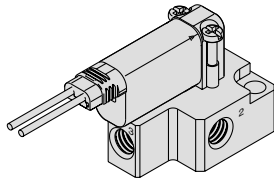


Stacking type

Compact Direct Operated 3 Port Solenoid Valve

Series S070

How to Order Valve

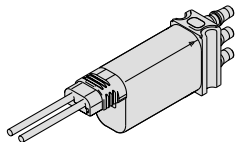


Base Mounted

S070 B - 5 B G

Body Ported

S070 C - 5 B G - 32



Body type

| Symbol | Body type |
|--------|--------------------------|
| B | Base mounted with screws |

Port size

| Symbol | Sub-plate |
|--------|-------------------|
| Nil | Without sub-plate |
| M3 | With sub-plate |
| M5 | |

Body type

| Symbol | Body type |
|--------|-------------|
| C | Body ported |

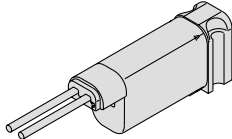
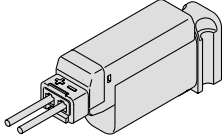
Port size

| Symbol | Connection | Applicable tubing |
|--------|--------------|-------------------|
| 32 | Barb fitting | ø3.18/ø2 |

Coil voltage

| | |
|---|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |
| V | 6 VDC |
| S | 5 VDC |
| R | 3 VDC |

Electrical entry

| G – Grommet | C – Plug lead with light/surge voltage suppressor |
|--|---|
|  |  |

Power consumption – Pressure specification – Flow rate

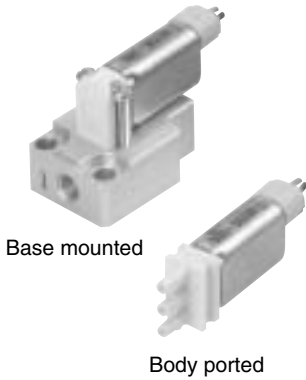
| Symbol | Power consumption (W) | Maximum operating pressure (MPa) | Cv factor |
|------------------------|---|----------------------------------|-----------|
| A | 0.35 | 0.1 | 0.021 |
| B | | 0.3 | 0.011 |
| C | | 0.3 | 0.021 |
| D | 0.5 | 0.5 | 0.011 |
| E <small>Note)</small> | 0.1 <small>(with power saving circuit)</small> | 0.1 | 0.011 |
| F <small>Note)</small> | | 0.3 | 0.006 |



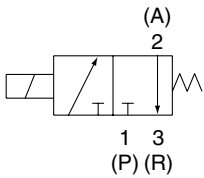
Note) An option only applicable to 24 VDC plug lead type.

Compact Direct Operated 3 Port Solenoid Valve **Series S070**

Specifications



JIS symbol



| | |
|--|---|
| Valve construction | Poppet |
| Fluid | Air / Inert gas / Low vacuum (1.33×10^2 Pa) |
| Maximum operating pressure | 0.3 MPa (0.35 W, 0.1 W), 0.5 MPa (0.5 W) |
| Proof pressure | 1 MPa |
| Ambient and fluid temperature ^{Note 1)} | -10 to 50°C |
| Lubrication | Not required |
| Impact/Vibration resistance ^{Note 2)} | 30/150 m/s ² |
| Enclosure | IP40 |
| Weight | 5 g (single unit valve) |
| Mounting orientation | Free |



Note 1) Use dry air and prevent condensation at low temperatures.

Note 2) Vibration resistance: No malfunction resulted in 45 to 2000 Hz, a one-sweep test performed in the axial and right angle directions of the main valve and armature for both energized and de-energized states.

Impact resistance: No malfunction resulted in an impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature, for both energized and de-energized states.

With the 0.1 W specification, the vibration and impact resistance is 10/50 m/s² or less.

Note 3) With the low vacuum specification, the operating pressure range is 1.33×10^2 Pa to the maximum operating pressure.

Solenoid specifications

| | |
|--|--|
| Power consumption ^{Note 1)} | 0.35 W (standard), 0.5 W (high voltage), 0.1 W (holding) |
| Rated coil voltage | 3, 5, 6, 12, 24 VDC |
| Allowable voltage fluctuation ^{Note 2)} | $\pm 10\%$ of the rated voltage |
| Coil insulation type | Equivalent to class B |



Note 1) With a light/surge voltage suppressor and power saving circuit, the light consumes a power equivalent to 2 mA.

Note 2) With a power saving circuit, keep the voltage fluctuation within 24 VDC $\pm 5\%$.

Flow specifications/Response time

| Power consumption | Maximum operating pressure | Flow characteristics | | | Response time ms ^{Note 2)} | |
|---|----------------------------|-----------------------------|------|-------|-------------------------------------|-----------|
| | | C[dm ³ /(s·bar)] | b | Cv | ON | OFF |
| 0.5 W DC | 0.5 MPa | 0.042 | 0.27 | 0.011 | 3 or less | 3 or less |
| | 0.3 MPa | 0.083 | 0.28 | 0.021 | 5 or less | 3 or less |
| 0.35 W DC | 0.3 MPa | 0.042 | 0.27 | 0.011 | 3 or less | 3 or less |
| | 0.1 MPa | 0.083 | 0.28 | 0.021 | 5 or less | 3 or less |
| 0.1 W DC (at holding) with power saving circuit ^{Note 1)} | 0.3 MPa | 0.021 | 0.27 | 0.006 | 3 or less | 6 or less |
| | 0.1 MPa | 0.042 | 0.28 | 0.011 | 5 or less | 6 or less |



Note 1) With the 0.1 W DC specification, keep the vibration/impact within 10/50 m/s².
0.35 W DC at inrush (20 ms) and 0.1 W DC at holding.

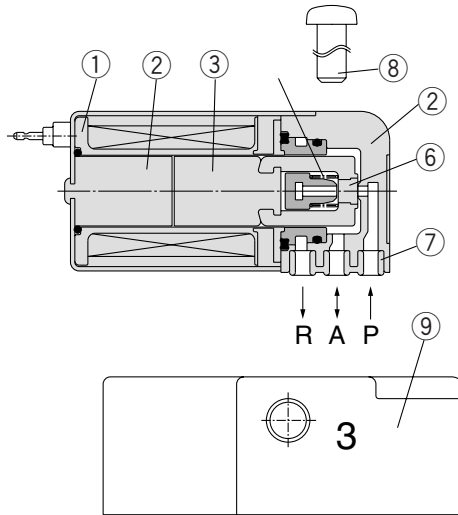
Note 2) The response time is the value at the rated voltage and maximum operating pressure.

Series S070

Construction

Component Parts

| Number | Description | Material |
|--------|------------------------------|------------------------|
| 1 | Solenoid coil | — |
| 2 | Body | Resin |
| 3 | Core | Stainless steel |
| 4 | Armature assembly | Stainless steel, resin |
| 5 | Return spring | Stainless steel |
| 6 | Poppet | FKM |
| 7 | Interface gasket | FKM |
| 8 | Round head combination screw | Carbon steel |
| 9 | Sub-plate | Aluminum |



* The above figure is an example of S070B-□□G base piping type (mounted with screws).

Replacement Parts

Plug connector assembly (for plug lead)

S070-14A-

• Lead wire length

| | |
|-----|---------|
| Nil | 150 mm |
| 3 | 300 mm |
| 6 | 600 mm |
| 10 | 1000 mm |

Sub-plate

S070-S- M3

• Port size

| | |
|----|------------------|
| M3 | M3 female thread |
| M5 | M5 female thread |

Gasket

| Valve model | Gasket No. |
|-------------|-------------|
| S070A | S070A-80A-1 |
| S070B | S070B-80A-1 |
| S070M | S070M-80A-1 |

Note) Order is accepted in 10 units.

Mounting screw

| Valve model | Mounting screw No. |
|-------------|--------------------|
| S070B | AXT632-106A-1 |
| S070C | AXT632-106A-2 |

Note) Each of the above part numbers is for two screws, which are to be ordered by 10 units. Order is accepted in 10 units.

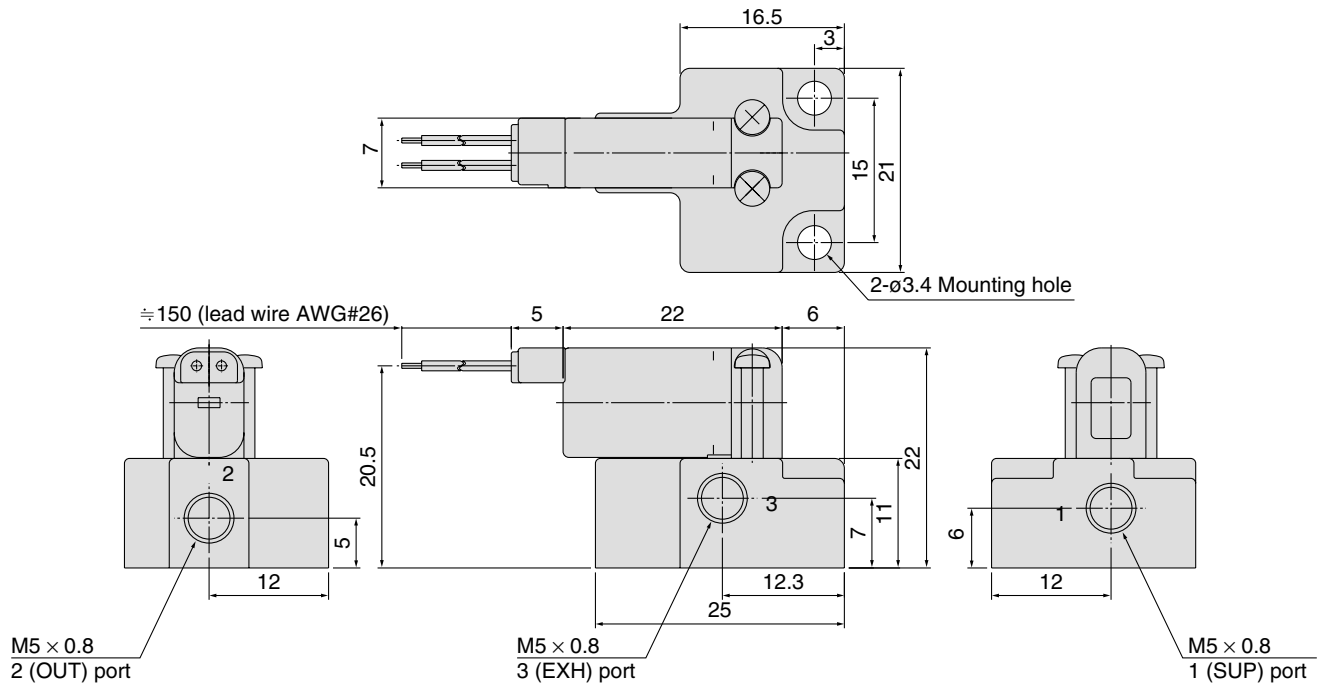
Series S070

Dimensions

Base mounted with screws

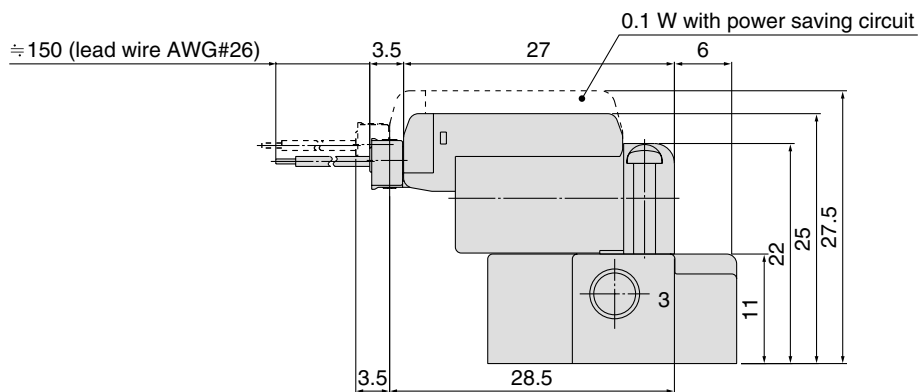
S070B-□□G-M5

Grommet type



S070B-□□C-M5

Plug lead type

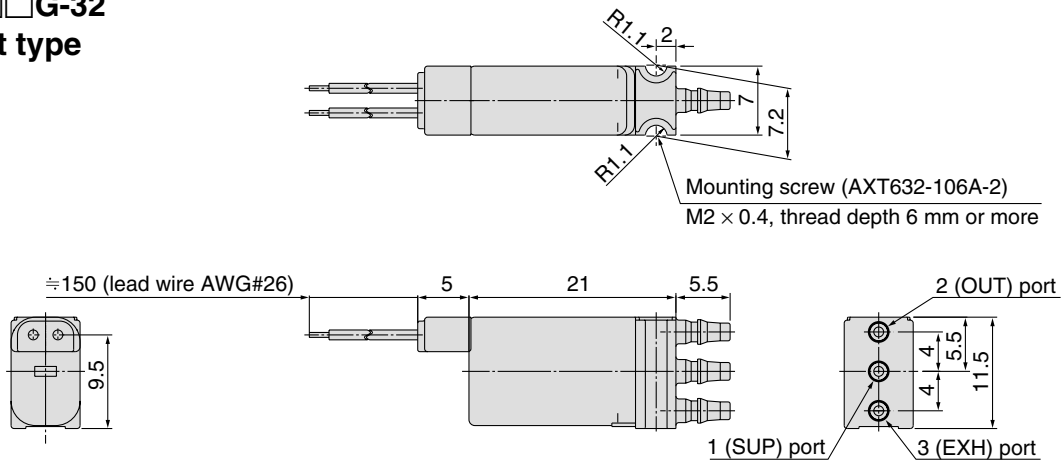


Compact Direct Operated
3 Port Solenoid Valve **Series S070**

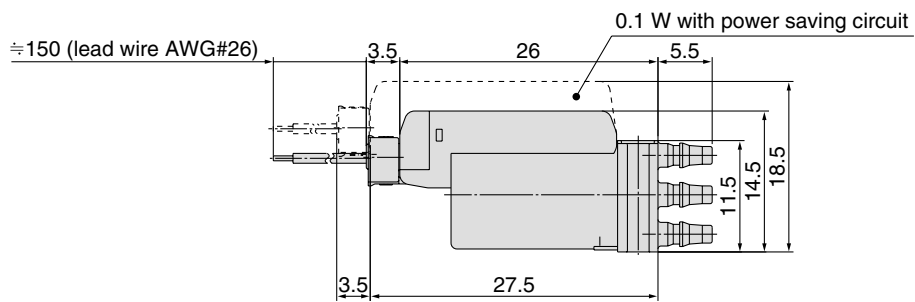
Dimensions

Body ported

S070C-□□G-32
Grommet type



S070C-□□C-32
Plug lead type



3 Port Solenoid Valve

Series S070/Base Mounted Manifold

Stacking Base Type

How to Order Manifold

Base Mounted Manifold Stacking Base

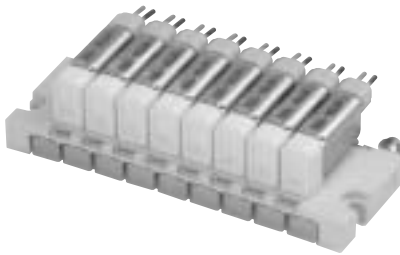
SS07 3 A01-08 C

Ports
3 3 port

Port size

| Symbol | SUP/EXH port (Applicable tubing) | | OUT port |
|--------|--------------------------------------|--|--|
| | Barb fittings ($\phi 6/\phi 4$) | | Barb fittings $\phi 3.18/\phi 2$ $\phi 4/\phi 2.5$ |
| A01 | Barb fittings ($\phi 6/\phi 4$) | | Barb fittings $\phi 3.18/\phi 2$ $\phi 4/\phi 2.5$ |
| A02 | Barb fittings ($\phi 6/\phi 4$) | | Barb fittings $\phi 3.18/\phi 2$ $\phi 4/\phi 2.5$ |

Note) The outside and inside diameters of the "applicable tubing" are indicated for the barb fitting.



Stations

| | |
|----|-------------|
| 02 | 2 stations |
| 03 | 3 stations |
| ⋮ | ⋮ |
| 20 | 20 stations |

Note) Maximum of 20 stations

Electrical entry

C Grommet/Plug lead

How to Order Manifold Assembly

Enter the part numbers of the valves and options to be mounted below the manifold base part number.

<Example>

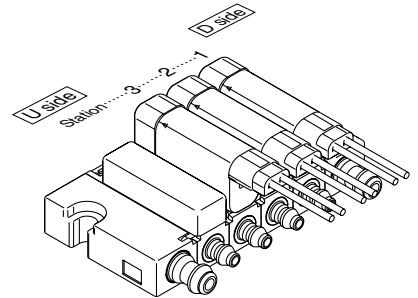
SS073A01-04C 1 set ——— Manifold Base no.

*S070A-5BG 3 set ——— Valve no.

*SS070A-10A 1 set ——— Blanking plate assembly no.

→ Prefix the symbol "*" to the solenoid valve part number.

Write sequentially from the 1st station on the D side.



How to Order Valve

S070 A-5 B G

Body type

| Symbol | Body type |
|--------|-------------------------|
| A | Base mounted with clips |

Electrical entry

| | |
|---|---|
| G | Grommet |
| C | Plug lead with light/surge voltage suppressor |

Coil voltage

| | |
|---|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |
| V | 6 VDC |
| S | 5 VDC |
| R | 3 VDC |

Power consumption – Pressure specification – Flow rate

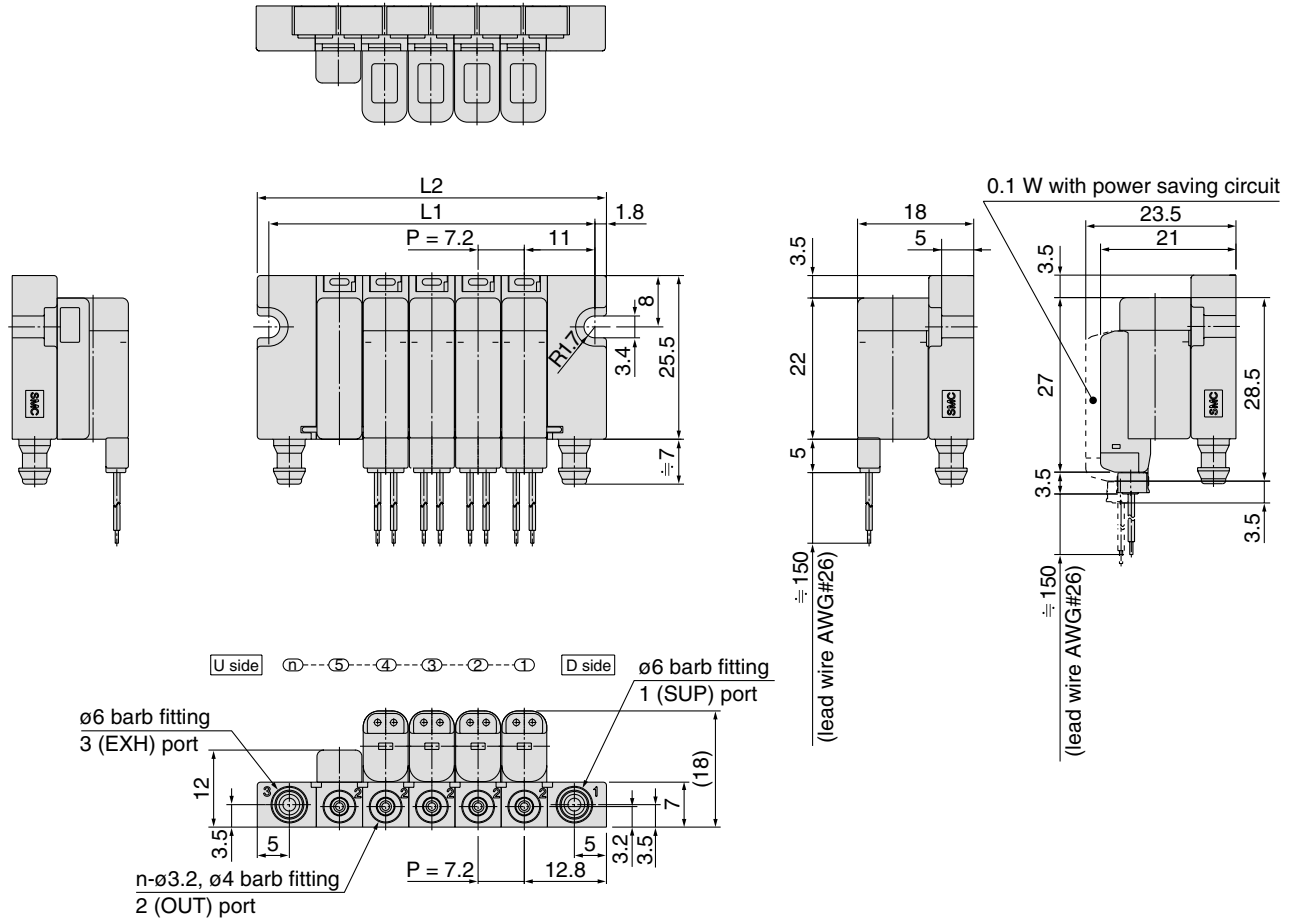
| Symbol | Power consumption (W) | Maximum operating pressure (MPa) | Cv factor |
|---------|------------------------------------|----------------------------------|-----------|
| A | 0.35 | 0.1 | 0.021 |
| B | | 0.3 | 0.011 |
| C | 0.5 | 0.3 | 0.021 |
| D | | 0.5 | 0.011 |
| E Note) | 0.1 (with power saving circuit) | 0.1 | 0.011 |
| F Note) | | 0.3 | 0.006 |

Note) An option only applicable to 24 VDC plug lead type.

Dimensions

Base mounted manifold / Separable base

SS073A⁰¹/₀₂ - Stations **C**



Dimensions

Formulas: $L1 = n \times 7.2 + 14.8$, $L2 = n \times 7.2 + 18.4$, n: Stations (maximum 20 stations)

| L \ n | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| L1 | 29.2 | 36.4 | 43.6 | 50.8 | 58 | 65.2 | 72.4 | 79.6 | 86.8 | 94 | 101.2 | 108.4 | 115.6 | 122.8 | 130 | 137.2 | 144.4 | 151.6 | 158.8 |
| L2 | 32.8 | 40 | 47.2 | 54.4 | 61.6 | 68.8 | 76 | 83.2 | 90.4 | 97.6 | 104.8 | 112 | 119.2 | 126.4 | 133.6 | 140.8 | 148 | 155.2 | 162.4 |

3 Port Solenoid Valve

Series S070/Base Mounted Manifold

Bar Base Specification

How to Order Manifold

Base Mounted Manifold Bar Base

SS07 3 B01-08 C

Ports
3 3 port

Port size

| Symbol | SUP/EXH port (Applicable tubing) | OUT port Applicable tubing | |
|--------|-------------------------------------|-------------------------------|-----------------|
| | B01 | M5 female screw | M3 female screw |

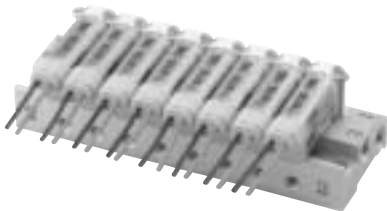
Stations

| | |
|-----------|-------------|
| 02 | 2 stations |
| 03 | 3 stations |
| ⋮ | ⋮ |
| 20 | 20 stations |

Note) Maximum of 20 stations

Electrical entry

| | |
|----------|-------------------|
| C | Grommet/Plug lead |
|----------|-------------------|



How to Order Manifold Assembly

Enter the part numbers of the valves and options to be mounted below the manifold base part number.

<Example>

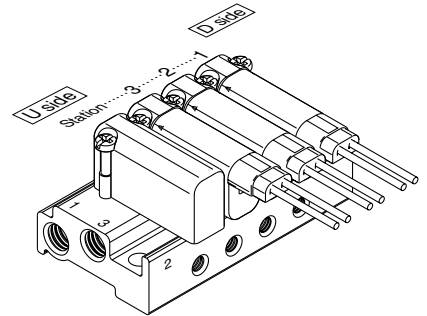
SS073B01-04C 1 set ——— Manifold Base no.

***S070B-5BG** 3 set ——— Valve no.

***SS070B-10A** 1 set ——— Blanking plate assembly no.

→ Prefix the symbol "*" to the solenoid valve part number.

Write sequentially from the 1st station on the D side.



How to Order Valve

S070 B-5 B G

Body type

| Symbol | Body type |
|----------|--------------------------|
| B | Base mounted with screws |

Electrical entry

| | |
|----------|---|
| G | Grommet |
| C | Plug lead with light/surge voltage suppressor |

Coil voltage

| | |
|----------|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |
| V | 6 VDC |
| S | 5 VDC |
| R | 3 VDC |

Power consumption – Pressure specification – Flow rate

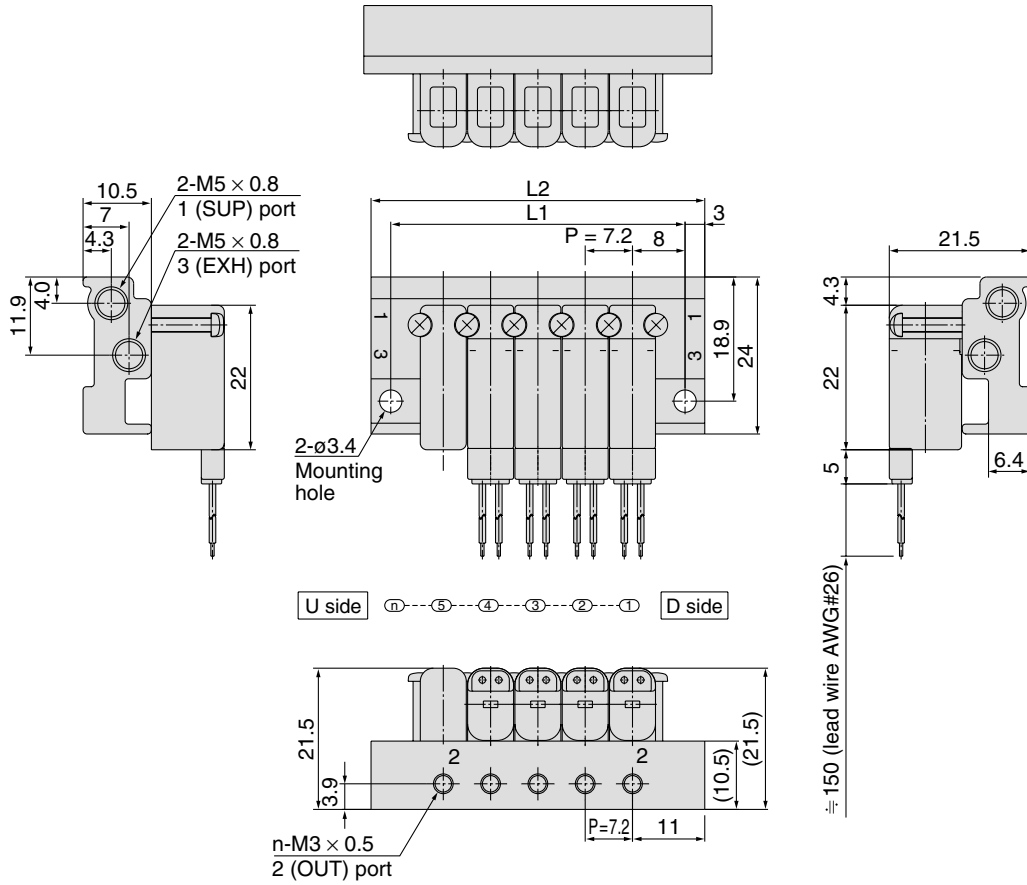
| Symbol | Power consumption (W) | Maximum operating pressure (MPa) | Cv factor |
|----------------|------------------------------------|----------------------------------|-----------|
| A | 0.35 | 0.1 | 0.021 |
| B | | 0.3 | 0.011 |
| C | 0.5 | 0.3 | 0.021 |
| D | | 0.5 | 0.011 |
| E Note) | 0.1 (with power saving circuit) | 0.1 | 0.011 |
| F Note) | | 0.3 | 0.006 |

Note) An option only applicable to 24 VDC plug lead type.

Dimensions

Base mounted manifold / Bar base

SS073B01- Stations C



Dimensions

Formulas: $L1 = n \times 7.2 + 8.8$, $L2 = n \times 7.2 + 14.8$, n: Stations (maximum 20 stations)

| L | n | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|----|---|------|------|------|------|----|------|------|------|------|----|-------|-------|-------|-------|-----|-------|-------|-------|-------|
| L1 | | 23.2 | 30.4 | 37.6 | 44.8 | 52 | 59.2 | 66.4 | 73.6 | 80.8 | 88 | 95.2 | 102.4 | 109.6 | 116.8 | 124 | 131.2 | 138.4 | 145.6 | 152.8 |
| L2 | | 29.2 | 36.4 | 43.6 | 50.8 | 58 | 65.2 | 72.4 | 79.6 | 86.8 | 94 | 101.2 | 108.4 | 115.6 | 122.8 | 130 | 137.2 | 144.4 | 151.6 | 158.8 |

3 Port Solenoid Valve

Series S070/Body Ported Manifold

Stacking Type Specifications

How to Order Manifold

Body Ported Manifold Stacking type

SS07 3 M01-08 C

Ports
3 3 port

Port size

| Symbol | SUP/EXH port (Applicable tubing) | OUT port | |
|--------|-------------------------------------|---------------|-------------------|
| | | Barb fittings | Applicable tubing |
| M01 | Barb fittings (ø6/ø4) | Barb fittings | ø3.18/ø2 |
| M02 | | Barb fittings | ø4/ø2.5 |



Note) The outside and inside diameters of the "applicable tubing" are indicated for the barb fitting.

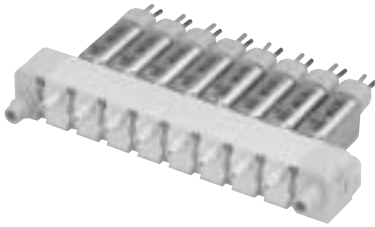
Stations

| | |
|----|-------------|
| 02 | 2 stations |
| 03 | 3 stations |
| ⋮ | ⋮ |
| 20 | 20 stations |

Note) Maximum of 20 stations

Electrical entry

C Grommet/Plug lead



How to Order Manifold Assembly

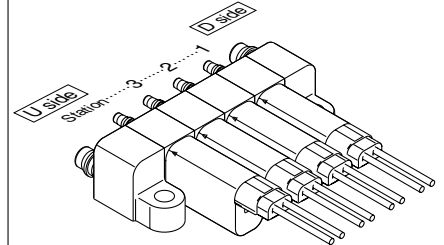
Enter the part numbers of the valves and options to be mounted below the manifold base part number.

<Example>

SS073M01-04C 1 set ——— Manifold Base no.
***S070M-5BG-32** 4 set ——— Valve no.

→ Prefix the symbol "*" to the solenoid valve part number.

Write sequentially from the 1st station on the D side.



How to Order Valve

S070 M-5 B G-32

Body type

| Symbol | Body type |
|--------|------------------------------------|
| M | Body ported stacking manifold type |

Port size

| Symbol | Connection | Applicable tubing |
|--------|--------------|-------------------|
| 32 | Barb fitting | ø3.18/ø2 |
| 40 | | ø4/ø2.5 |

Electrical entry

| | |
|----------|---|
| G | Grommet |
| C | Plug lead with light/surge voltage suppressor |

Coil voltage

| | |
|---|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |
| V | 6 VDC |
| S | 5 VDC |
| R | 3 VDC |

Power consumption – Pressure specification – Flow rate

| Symbol | Power consumption (W) | Maximum operating pressure (MPa) | Cv factor |
|-----------------|------------------------------------|----------------------------------|-----------|
| A | 0.35 | 0.1 | 0.021 |
| B | | 0.3 | 0.011 |
| C | 0.5 | 0.3 | 0.021 |
| D | | 0.5 | 0.011 |
| E (Note) | 0.1 (with power saving circuit) | 0.1 | 0.011 |
| F (Note) | | 0.3 | 0.006 |

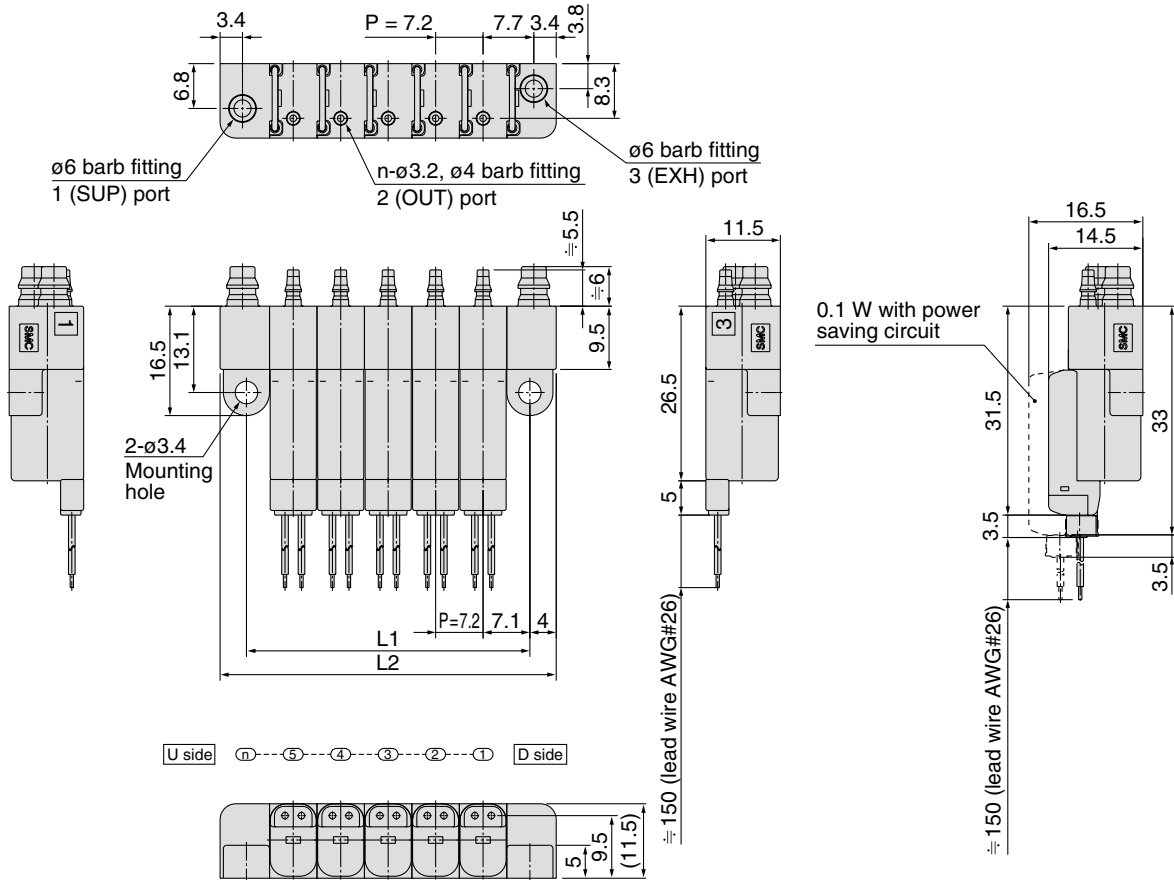


Note) An option only applicable to 24 VDC plug lead type.

Dimensions

Body ported stacking type manifold

SS073M⁰¹/₀₂ - Stations **C**



Dimensions

Formulas: $L1 = n \times 7.2 + 7$, $L2 = n \times 7.2 + 15$, n: Stations (maximum 20 stations)

| L \ n | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-------|------|------|------|----|------|------|------|------|----|------|-------|-------|-------|-----|-------|-------|-------|-------|-----|
| L1 | 21.4 | 28.6 | 35.8 | 43 | 50.2 | 57.4 | 64.6 | 71.8 | 79 | 86.2 | 93.4 | 100.6 | 107.8 | 115 | 122.2 | 129.4 | 136.6 | 143.8 | 151 |
| L2 | 29.4 | 36.6 | 43.8 | 51 | 58.2 | 65.4 | 72.6 | 79.8 | 87 | 94.2 | 101.4 | 108.6 | 115.8 | 123 | 130.2 | 137.4 | 144.6 | 151.8 | 159 |

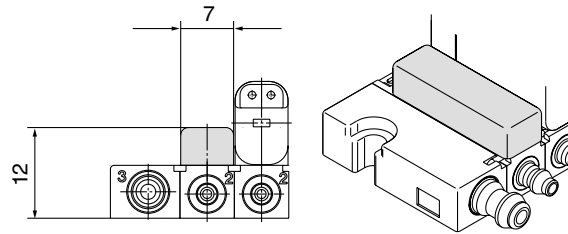
Series S070

Manifold Options

Blanking plate assembly (for SS073A)

SS070A-10A (for separable base)

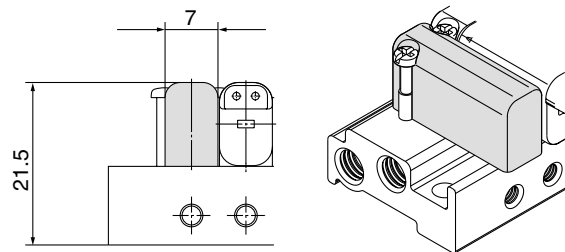
This assembly is mounted on a manifold block where the valve is removed for maintenance or a replacement valve is going to be mounted.



Blanking plate assembly (for SS073B)

SS070B-10A (for bar base)

This assembly is mounted on a manifold block where the valve is removed for maintenance or a replacement valve is going to be mounted.

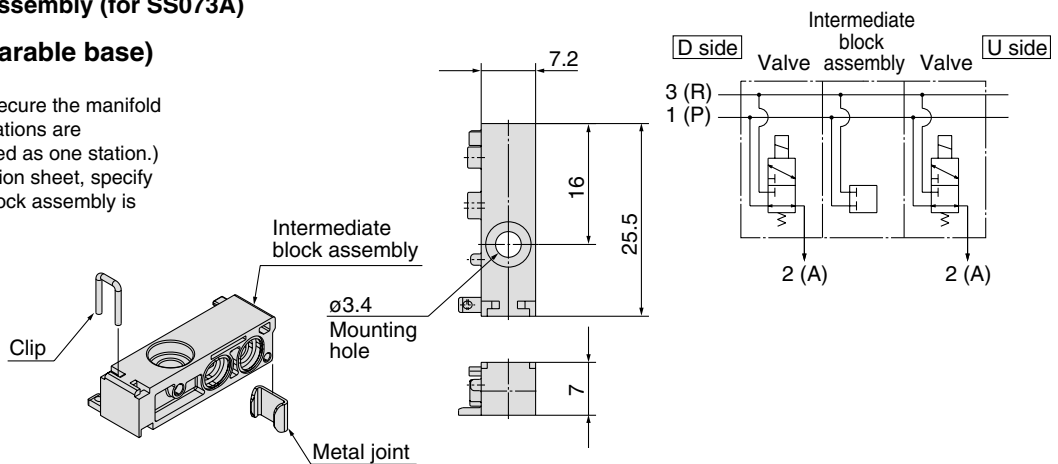


Intermediate block assembly (for SS073A)

SS070A-B (for separable base)

This assembly is used to secure the manifold when a large number of stations are manifolded. (Accommodated as one station.)

* In the manifold specification sheet, specify the position where the block assembly is mounted.

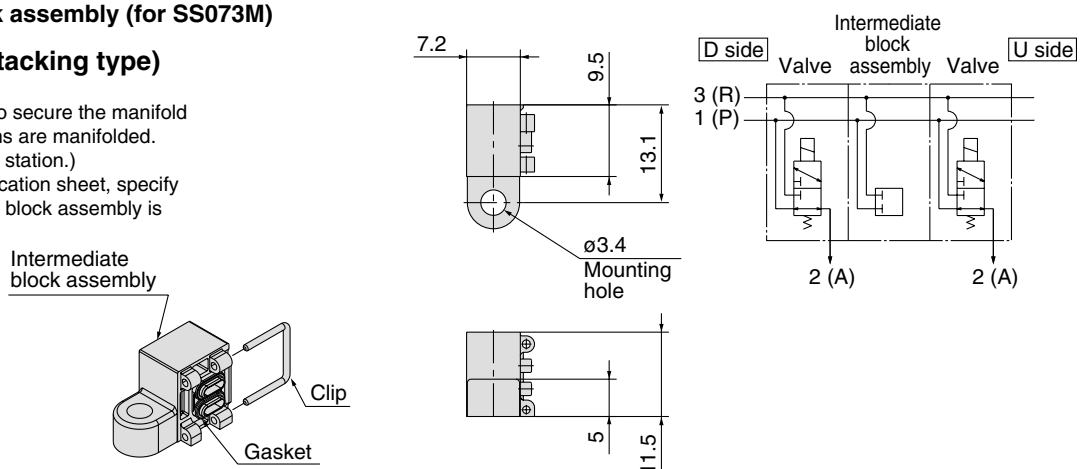


Intermediate block assembly (for SS073M)

SS070M-B (for stacking type)

This assembly is used to secure the manifold when 20 or more stations are manifolded. (Accommodated as one station.)

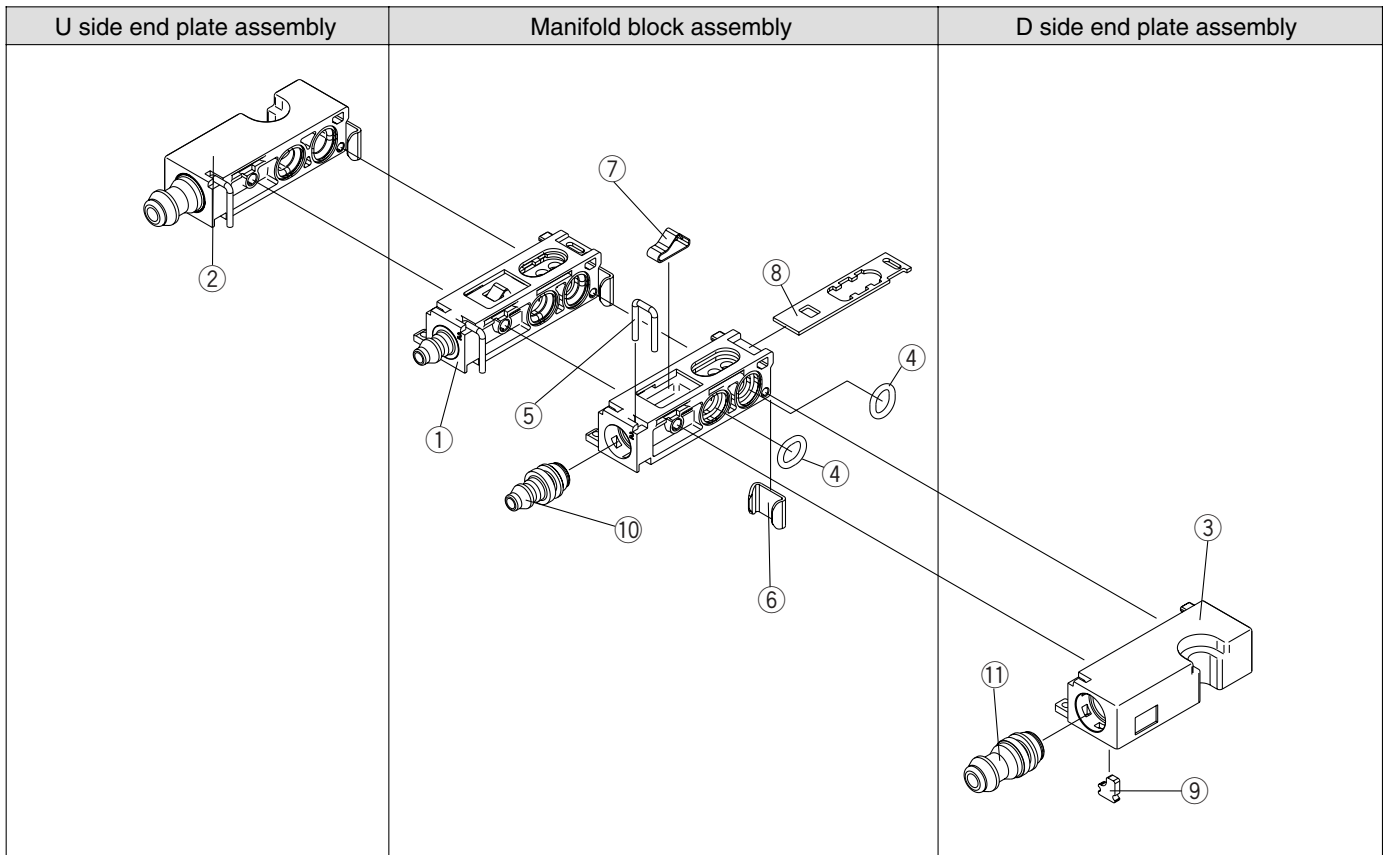
* In the manifold specification sheet, specify the position where the block assembly is mounted.



Series S070

Exploded View of Separable Base

Base mounted / SS073A□-□C Exploded view of separable base



< Manifold Block Assembly >

① Manifold block assembly No.

SS070A 01-1A

● Port size

| | |
|----|--------------------------------------|
| 01 | With $\phi 3.18/\phi 2$ barb fitting |
| 02 | With $\phi 4/\phi 2.5$ barb fitting |

< U Side End Plate Assembly >

② U side end plate assembly No.

SS070A01-2A

< D Side End Plate Assembly >

③ D side end plate assembly No.

SS070A01-3A

< Replacement Parts for Manifold Block >

Replacement Parts

| No. | No. | Description | Material | Number |
|-----|--------------|------------------|-----------------|--------|
| ④ | SS070A-80A-1 | O-ring | FKM | 10 |
| ⑤ | SS070A-80A-2 | Clip | Stainless steel | 10 |
| ⑥ | SS070A-80A-3 | Metal joint | Stainless steel | 10 |
| ⑦ | SS070A-80A-4 | Leaf spring | Stainless steel | 10 |
| ⑧ | SS070A-80A-5 | Mounting bracket | Stainless steel | 10 |

< Replacement Parts for U/D End Plate >

Replacement Parts

| No. | No. | Description | Material | Number |
|-----|--------------|---------------|-----------------|--------|
| ⑨ | SS070A-80A-6 | Stopper plate | Stainless steel | 10 |

< Barb Fitting Assembly >

⑩ Barb fitting assembly (for cylinder port)

SS070-50A-32

● Port size

| | |
|----|------------------------------------|
| 32 | Applicable tube $\phi 3.18/\phi 2$ |
| 40 | Applicable tube $\phi 4/\phi 2.5$ |

🔍 Note) Order is accepted in 10 units.

⑪ Barb fitting assembly (for 1(P), 3(R) ports)

SS070-51A-60

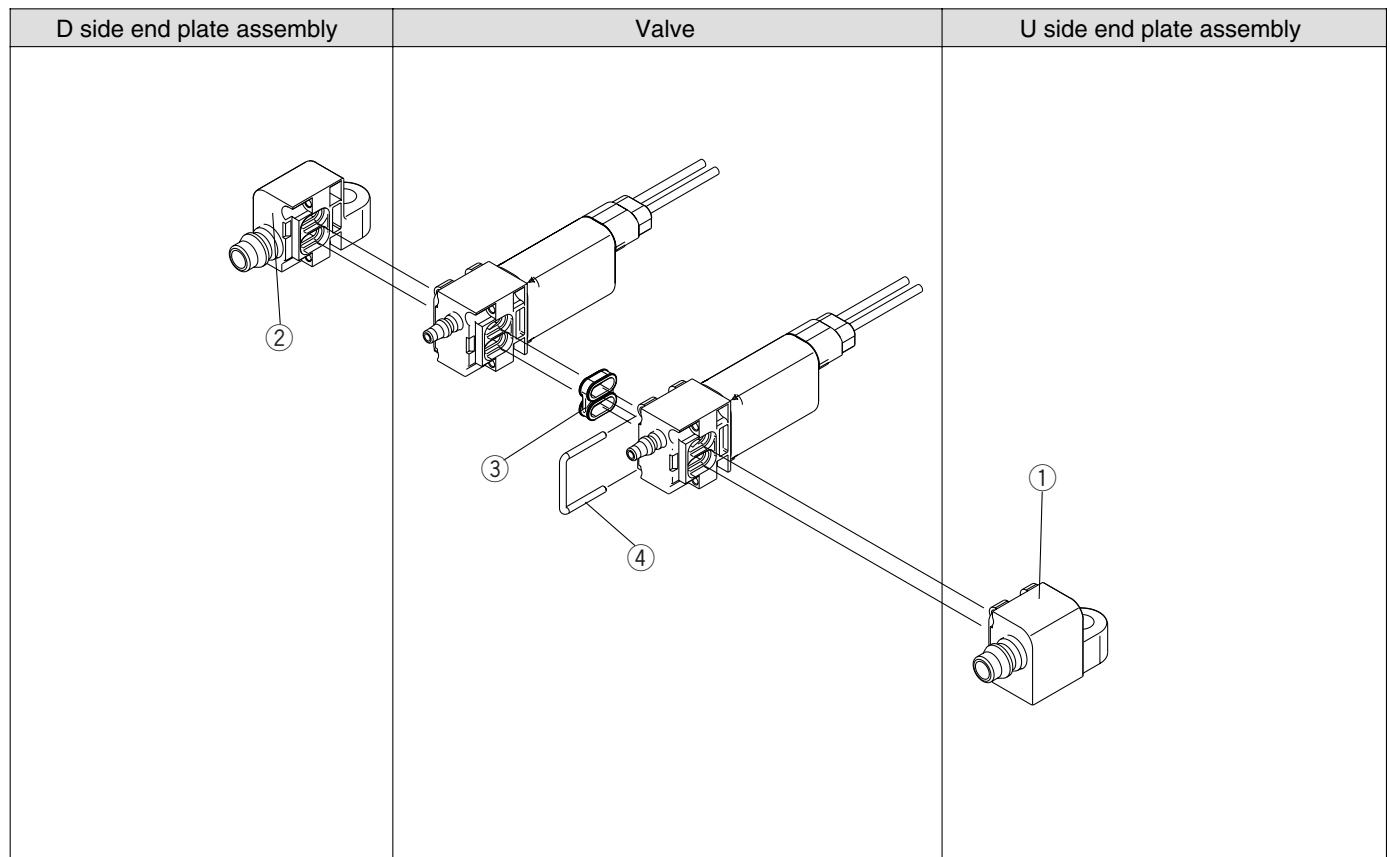
● Applicable tubing $\phi 6/\phi 4$

🔍 Note) Order is accepted in 10 units.

Series S070

Exploded View of Stacking Type

Body ported type / SS073M01-□C Exploded view of stacking type



< U End Plate Assembly >

① U end plate assembly No.

SS070M01-2A

< D End Plate Assembly >

② D end plate assembly No.

SS070M01-3A


Replacement Parts


| No. | No. | Description | Material | Number |
|-----|--------------|-------------|-----------------|--------|
| ③ | SS070M-80A-1 | Gasket | FKM | 10 |
| ④ | SS070M-80A-2 | Clip | Stainless steel | 10 |




Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by a label of "**Caution**", "**Warning**" or "**Danger**". To ensure safety, be sure to observe ISO 4414 Note 1), JIS B 8370 Note 2) and other safety practices.

 **Caution** : Operator error could result in injury or equipment damage.

 **Warning** : Operator error could result in serious injury or loss of life.

 **Danger** : In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414: Pneumatic fluid power – General Rules for Pneumatic Equipment

Note 2) JIS B 8370: Pneumatic system axiom

Warning

1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalog information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

2. Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if handled incorrectly. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.

1. Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
2. When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.
3. Before machinery/equipment is restarted, take measures to prevent shooting-out of cylinder piston rod, etc.

4. Contact SMC if the product is to be used in any of the following conditions:

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, clutch and brake circuits in press applications, or safety equipment.
3. An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.



3 Port Solenoid Valve/Common Precautions 1

Be sure to read before handling.

Design

⚠ Warning

1. Actuator drive

When an actuator, such as a cylinder, is to be driven using a valve, take appropriate measures to prevent potential danger caused by actuator operation.

2. Effect of back pressure when using a valve

Use caution when valves are manifolded because actuator malfunction due to back-pressure may occur.

3. Holding pressure (including vacuum)

Since valves are subject to air leakage, they cannot be used for applications such as holding pressure (including vacuum) in a pressure vessel.

4. The valve cannot be used as an emergency shutoff valve, etc.

The valves presented in this catalog are not designed for safety applications such as an emergency shutoff valve. If the valves are used in this type of system, other reliable safety assurance measures should also be adopted.

5. Maintenance space

The installation should allow sufficient space for maintenance activities (removal of valve, etc.).

6. Release of residual pressure

Provide a residual pressure release function for maintenance purposes.

7. Vacuum applications

When a valve is used for vacuum switching, take appropriate measures against the suction of external dust or other contaminants through vacuum pads and exhaust ports.

8. Ventilation

When a valve is used inside a sealed control panel, etc., provide ventilation to prevent a pressure increase caused by exhausted air inside the control panel or temperature rise caused by the heat generated by the valve.

Selection

⚠ Warning

1. Confirm the specification.

The products presented in this catalog are designed only for use in compressed air systems (including vacuum). Do not operate at pressures or temperatures, etc., beyond the range of specifications, as this can cause damage or malfunction. (Refer to specifications.)

Contact SMC when using a fluid other than compressed air (including vacuum).

2. Extended periods of continuous energization

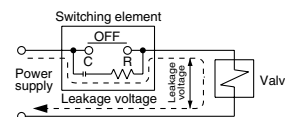
• Continuous energization of the valve for extended periods of time may have an adverse effect on the solenoid valve performance and the peripheral equipment due to temperature rises caused by the heat generation of the coil. Please consult SMC if valves will be continuously energized for extended periods of time or the energized period per day will be longer than the de-energized period. It is also possible to shorten the energization period by using valves of the N.O. (normally open) type.

• When solenoid valves are mounted in a control panel, employ measures to radiate excess heat, so that temperatures remain within the valve specification range. Use special caution when three or more stations sequentially aligned on the manifold are continuously energized since this will cause a drastic temperature rise.

⚠ Caution

1. Leakage voltage

When using a resistor in parallel with the switching element or using a C-R element (surge voltage suppressor) for protection of the switching element, note that leakage voltage will increase due to leakage current flowing through the resistor or C-R element. Limit the amount of residual leakage voltage to the following value: 2% or less the rated voltage



2. Surge voltage suppressor

If a surge protection circuit contains diodes other than ordinary types of diodes such as Zener diodes or ZNRs, a residual voltage that is in proportion to the protective elements and the rated voltage will remain. Therefore, give consideration to surge voltage protection of the controller.

3. Low temperature operation

Valve use is possible to temperature extremes to -10°C . Take appropriate measures to avoid freezing of drainage, moisture etc.

4. Mounting orientation

Refer to the specifications.



3 Port Solenoid Valve/Common Precautions 2

Be sure to read before handling.

Mounting

Warning

1. If air leakage increases or equipment does not operate properly, stop operation.

Check mounting conditions when air and power supplies are connected. Initial function and leakage tests should be performed after installation.

2. Instruction manual

Mount and operate the product after reading the manual carefully and understanding its contents.

Also keep the manual where it can be referred to as necessary.

3. Painting and coating

Warnings or specifications printed or pasted on the product should not be erased, removed or covered up.

Consult SMC if paint is to be applied to resinous parts, as this may have an adverse effect due to the paint solvent.

Piping

Caution

1. Preparation before piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

2. Screwing in fittings

When screwing fittings into valves, tighten as follows.

1) M3, M5

(1) When installing SMC fittings, etc., follow the procedures below.

After tightening by hand, tighten an additional 1/4 rotation for M3 and 1/6 rotation for M5 with a tool. However, when using a miniature fitting, tighten an additional 1/4 rotation with a tool after tightening by hand. Also, when there are 2 gaskets such as in case of a universal elbow or universal tee, tighten an additional 1/2 rotation.

Note) If overtightened, threaded part may be broken or gasket deformed. If tightened insufficiently, thread part may be loosened. In either case, air leakage could occur.

(2) When using a fitting brand other than SMC, follow the instruction by the manufacturer of the fittings.

3. Connection of piping to products

When connecting piping to a product, refer to its instruction manual to avoid mistakes regarding the supply port, etc.

Wiring

Caution

1. Applied voltage

When electric power is connected to a solenoid valve, be careful to apply the proper voltage. Improper voltage may cause malfunction or coil damage.

2. Confirm the connections.

After completing the wiring, confirm that the connections are correct.

Lubrication

Caution

1. Lubrication

1) The valve has been lubricated for life at the manufacturer, and does not require further lubrication in service.

2) If a lubricant is applied in the system, use turbine oil class 1 (no additives), ISO VG32.

Air Supply

Warning

1. Use clean air.

Do not use compressed air which contains chemicals, synthetic oils containing organic solvents, salts or corrosive gases, etc., as this can cause damage or malfunction.

Caution

1. Install air filters.

Install air filters close to valves at their upstream side. A filtration degree of 5 μm or less should be selected.

2. Install an air dryer, after-cooler or water separator, etc.

Air that includes excessive drainage may cause malfunction of valves and other pneumatic equipment. To prevent this, install an air dryer, after-cooler or water separator, etc.

3. If excessive carbon dust is generated, eliminate it by installing mist separators at the upstream side of valves.

If excessive carbon dust is generated by the compressor, it may adhere to the inside of valves and cause malfunction.

Refer to SMC's "Best Pneumatics Vol. 4" catalog for compressed air quality.



3 Port Solenoid Valve/Common Precautions 3

Be sure to read before handling.

Operating Environment

Warning

1. Do not use in atmospheres where the valve is in direct contact with corrosive gases, chemicals, salt water, water or steam.
2. Do not use in an explosive atmosphere.
3. Do not use in locations subject to vibration or impact. Confirm the specifications in the main section of the catalog.
4. Use a protective cover, etc., to shield valves from direct sunlight.
5. Shield valves from radiated heat generated by nearby heat sources.
6. Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.
7. When solenoid valves are mounted in a control panel or are energized for extended periods of time, employ measures to radiate excess heat, so that temperatures remain within the valve specification range.

Maintenance

Warning

1. Perform maintenance procedures as shown in the instruction manual.

If handled improperly, malfunction or damage of machinery or equipment may occur.

2. Removal of equipment maintenance and supply/exhaust of compressed air

When equipment is serviced, first confirm that measures are in place to prevent dropping of work pieces and run-away of equipment, etc. Then cut the supply pressure and power, and exhaust all compressed air from the system using its residual pressure release function.

When the equipment is to be started again after remounting or replacement, first confirm that measures are in place to prevent lurching of actuators, etc., and then confirm that the equipment is operating normally.

3. Low frequency operation

Valves should be switched at least once every 30 days to prevent malfunction. (Use caution regarding the air supply.)

Caution

1. Drain flushing

Remove drainage from air filters regularly.

2. Lubrication

Once lubrication has been started, it must be continued. And use turbine oil Class 1 (no additives), VG32. If other lubricant oil is used, it may cause malfunction. Contact us for suggested turbine oil Class 2 (with additive), VG32.



Series S070/Specific Product Precautions 1

Be sure to read before handling.

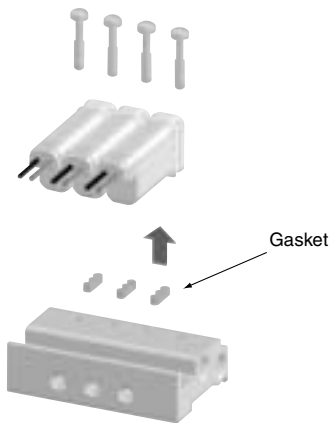
Refer to pages 16 through 19 for safety instructions, precautions.

⚠ Caution

Valve mounting / Removal

1. Base mounted with screws

With the base mounted type fixed with screws, confirm the installation of the gasket mounted on the body interface and fasten the dedicated mounting screws (AXT632-106-1) at an appropriate torque (0.10 to 0.14 Nm). (Fasten equally so that the valve will not tilt.)

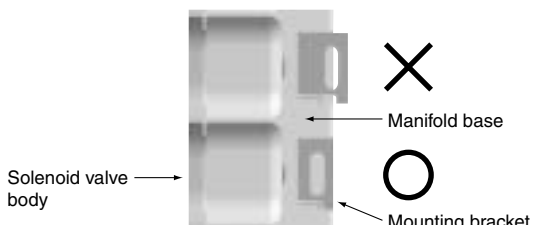
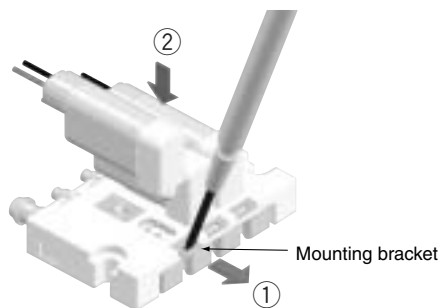


2. Base mounted with clips

1 Hook a flat head watchmakers screwdriver into the hole of the metal bracket and pull it approximately 1 mm in the direction indicated by the arrow. 2 Insert the solenoid valve from above. After confirming that the bottom surface of the solenoid valve contacts the top surface of the manifold, detach the flat head screwdriver from the mounting bracket while holding the solenoid valve body. (Before mounting, confirm the installation of the interface gasket on the solenoid valve body.)

The built-in leaf spring returns the mounting bracket to its original position. (Then confirm that the end of the mounting bracket is aligned with the side of the manifold block. Refer to the figure below.)

Similarly, to remove the valve, pull the mounting bracket and pull up the solenoid valve vertically. Use caution so that no excessive force is applied to the lead wire in mounting and removal.



⚠ Caution

Screwing in M5/M3 thread

After tightening by hand, tighten an additional 1/4 rotation for M3 and 1/6 rotation for M5. Overtightening may cause bending of the thread or air leakage due to deformation of the gasket. Insufficient screwing may cause loosening of the thread or air leakage.

Applicable Tubing Size

Stacking manifold

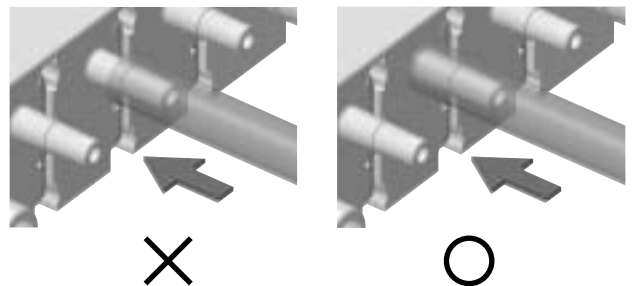
| Port | Applicable tubing | Recommended tubing |
|------------------|-------------------|--------------------|
| 1 (SUP), 3 (EXH) | ø6/ø4 | TS0604/TU0604 |
| 2 (OUT) | ø4/ø2.5 | TS0425/TU0425 |
| | ø3.18/ø2 | TIUB01 |

Note) In case of a body ported single unit valve, the applicable tubing size is ø3.18/ø2 for all 1 (SUP), 2 (OUT), and 3 (EXH) ports.

If fittings of a brand other than SMC are used, follow the specifications of the fittings to be mounted.

Tubing installation (with barb fitting)

- Using tubing cutters TK-1, 2, or 3, cut the tubing perpendicularly to the tubing axis while allowing for sufficient margin to the required length.
- Insert the tubing and push it all the way to the barb end. If the tubing is not installed securely to the end, problems such as leakage or disconnection of the tubing can occur.
- When the tubing is inserted into the barb fitting, push it in the direction of the tubing axis to prevent excessive lateral loads being applied to the barb fitting.



- To remove the tubing from the barb fitting, use caution so that no excessive lateral load will be applied to the barb fitting. When using a cutter to remove the tubing, sufficient care should be taken so as not to make any flaws on the barb fitting.
- After tubing installation, avoid excessive loads, such as tensile, compressive, or bending strength, being applied to the tubing.



Series S070/Specific Product Precautions 2

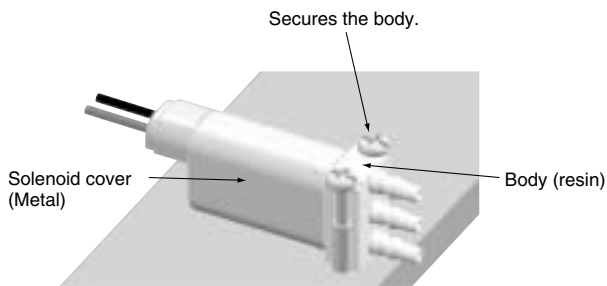
Be sure to read before handling.

Refer to pages 16 through 19 for safety instructions, precautions.

⚠ Caution Mounting

1. Solenoid valve fixing procedure (body ported single unit)

When mounting a body ported type single unit valve, tighten the dedicated mounting screw (AXT632-106A-2) at an appropriate torque (0.05 to 0.07 Nm) to firmly secure the valve body. (Tighten equally so that the valve will not tilt.) If the coil is fixed, the coil joint may break due to application of an excessive load to the tubing body, for example, when the tubing is inserted. With a base mounted type solenoid valve also, use caution to avoid excessive loads.

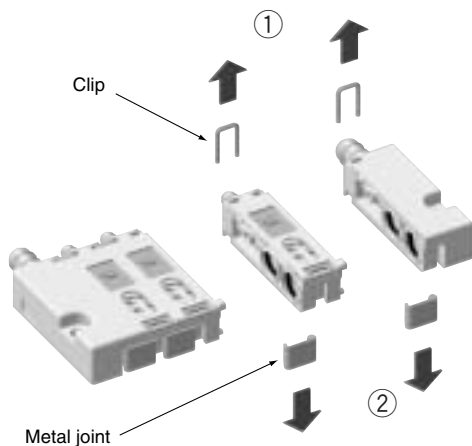


⚠ Caution Adding and removing manifold stations

1. Base mounted stacking type

- 1 Remove the clip and metal joint from the position where the new station is to be mounted by pulling them in the directions indicated by the arrows.
- 2 Place the additional manifold block assembly and mount the metal joint and clip by reversing the assembly order. Securely insert the clip and the metal joint so that they will not protrude from the top and bottom surfaces respectively.

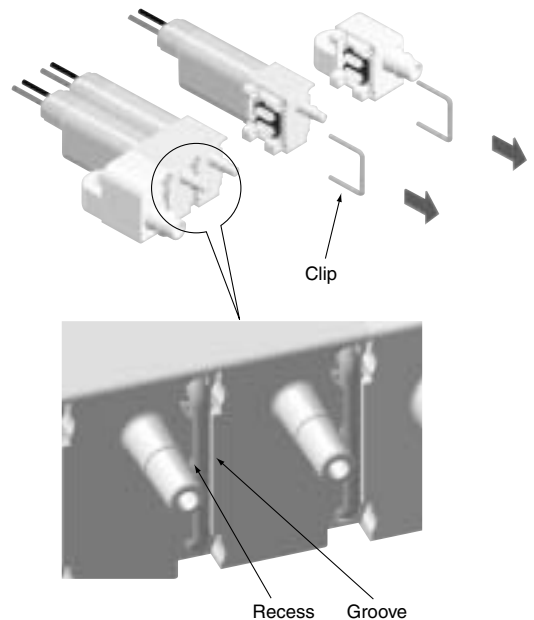
The clip is commonly used to secure the manifold block and fittings.



To remove the station, follow the same procedure for assembly and disassembly.

2. Body ported manifold type

- 1 Remove the clip on the position where the station is to be added by pulling it in the direction indicated by the arrow. (Insert a flat head screwdriver in the recess indicated in the figure to remove the clip.)
- 2 Place the additional solenoid valve into the separation and insert the clip. Insert the clip until it fits in the groove on the body side.

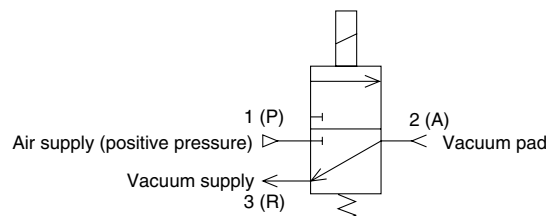


⚠ Caution Vacuum application

An N.C. type valve pressurized at 1 (SUP) port can be used within the maximum operating pressure differential specified for the product. If the valve is to be used in the following applications, however, care should be taken about the piping ports, maximum operating pressure differential and allowable leakage.

1) Vacuum release application

Use 3 (R) port for vacuum pressure and 1 (P) port for vacuum release pressure. The pressure differential between 3 (R) and 1 (P) is the maximum operating pressure differential for each type.



2) Vacuum retention

Please consult SMC if the allowable leakage is limited when the valve is used for vacuum retention of a vessel, even within the low vacuum range (1.33×10^2 Pa or above).



Series S070/Specific Product Precautions 3

Be sure to read before handling.

Refer to pages 16 through 19 for safety instructions, precautions.

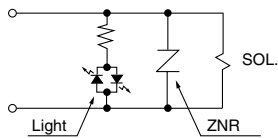
⚠ Caution Wiring

1) Internal wiring

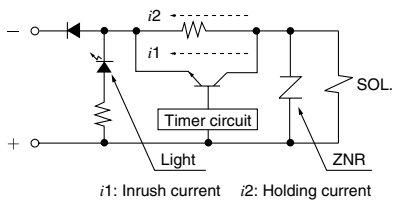
- Grommet
(This solenoid valve has no polarity.)



- With light/surge voltage suppressor
(This solenoid valve has no polarity.)

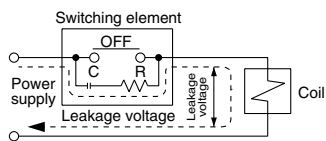


- With 0.1 W power saving circuit



2) Electrical circuit

- (1) Adopt an electrical circuit with no chattering generated at the contact.
- (2) Keep the voltage within the $\pm 10\%$ range of the rated voltage.
Care should be taken about the voltage drop when the rated voltage is 6 VDC or less or when the response speed is important.
- (3) When using a C-R element (surge voltage suppressor) for protection of the switching element, please keep in mind that leakage voltage will increase due to leakage current flowing through the C-R element.



Keep the residual leakage voltage with 2% of the rated voltage.

- (4) Be sure to confirm the applied voltage. If a wrong voltage is applied, it can lead to malfunction or coil burning.
- (5) In wiring, use caution to avoid application of excessive force to the lead wire. It can cause malfunction or break the coil.

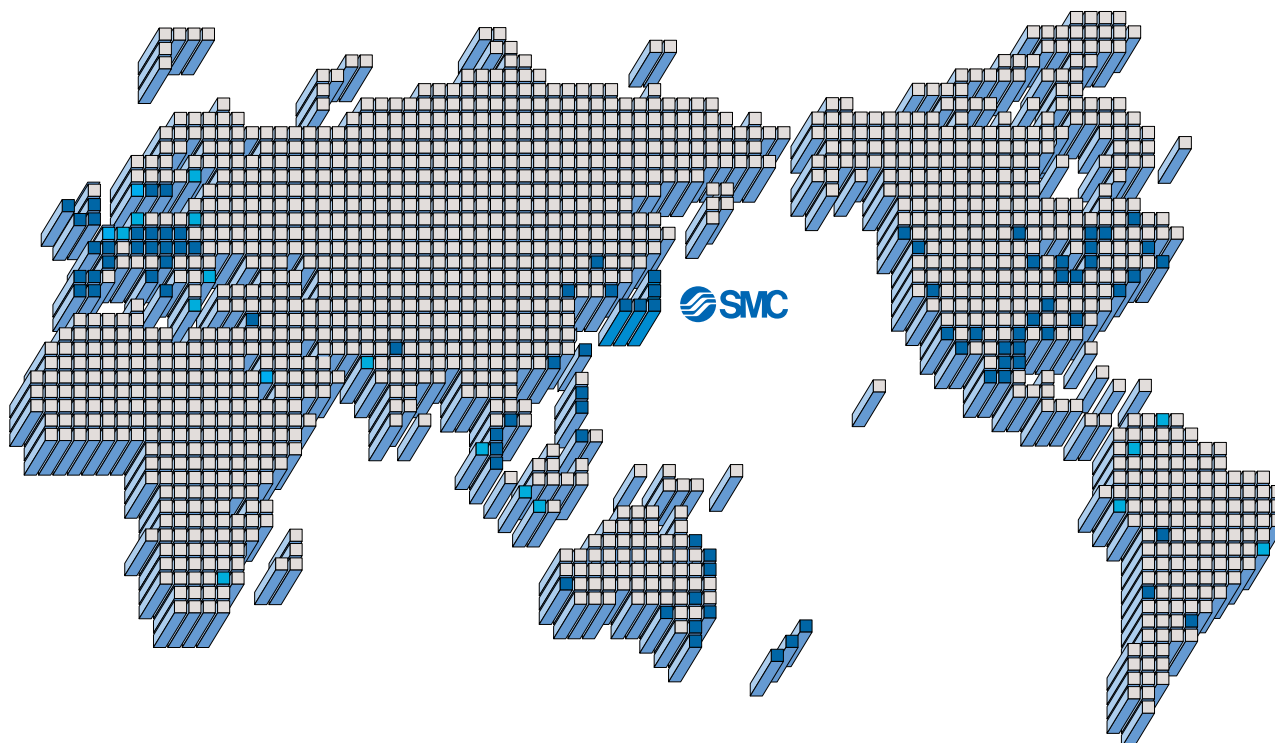
⚠ Caution

Power saving circuit of 0.1 W DC (at holding)

- 1) Keep the vibration and impact within 10/50 m/s².
- 2) Keep the voltage fluctuations within 24 VDC $\pm 5\%$.
- 3) The power consumption is 0.35 W DC at inrush (20 ms) and 0.1 W DC at holding.



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1st printing April, 2003 D-DN P-120 (DN)

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Printed in Japan.