3 Port Solenoid Valve

Series SYJ300/500/700

- Improved pilot valve
  Pilot valve cover is stronger using stainless steel. Mounting thread is also reinforced from size M1.7 to M2.

Flow Characteristics

<table>
<thead>
<tr>
<th>Series</th>
<th>C [dm³/(s·bar)]</th>
<th>b</th>
<th>Cv</th>
<th>φ[d/min(A NR)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYJ300</td>
<td>0.36</td>
<td>0.31</td>
<td>0.089</td>
<td>92</td>
</tr>
<tr>
<td>SYJ500</td>
<td>1.2</td>
<td>0.41</td>
<td>0.32</td>
<td>329</td>
</tr>
<tr>
<td>SYJ700</td>
<td>2.7</td>
<td>0.38</td>
<td>0.72</td>
<td>724</td>
</tr>
</tbody>
</table>
## Rubber Seal
### 3 Port Solenoid Valve
#### Series SYJ300/500/700

<table>
<thead>
<tr>
<th>Variations</th>
<th>Series</th>
<th>Port size</th>
<th>Sonic conductance $C$ $[\text{dm}^3/(\text{s} \cdot \text{bar})]$</th>
<th>Type of actuation</th>
<th>Voltage</th>
<th>Electrical entry</th>
<th>Option</th>
<th>Manual override</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body ported</strong></td>
<td>SYJ300</td>
<td>M3</td>
<td>Effective area $0.9 \text{ mm}^2$</td>
<td>For DC</td>
<td>24 VDC, 12 VDC, 6 VDC, 5 VDC, 3 VDC</td>
<td>With light/surge voltage suppressor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SYJ500</td>
<td>M5</td>
<td>$0.66 \left{ \frac{2\rightarrow3}{(A\rightarrow R)} \right}$</td>
<td>For AC</td>
<td>100 VAC% Hz, 110 VAC% Hz, 200 VAC% Hz, 220 VAC% Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SYJ700</td>
<td>1/8</td>
<td>$2.5 \left{ \frac{2\rightarrow3}{(A\rightarrow R)} \right}$</td>
<td>For DC</td>
<td>24 VDC, 12 VDC, 6 VDC, 5 VDC, 3 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Base mounted</strong></td>
<td>SYJ300</td>
<td>M5</td>
<td>$0.36 \left{ \frac{2\rightarrow3}{(A\rightarrow R)} \right}$</td>
<td>For DC</td>
<td>24 VAC, 12 VAC, 6 VAC, 5 VAC, 3 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SYJ500</td>
<td>1/8</td>
<td>$1.2 \left{ \frac{2\rightarrow3}{(A\rightarrow R)} \right}$</td>
<td>For DC</td>
<td>24 VDC, 12 VDC, 6 VDC, 5 VDC, 3 VDC</td>
<td></td>
<td></td>
<td>Non-locking push type</td>
</tr>
<tr>
<td></td>
<td>SYJ700</td>
<td>1/8, 1/4</td>
<td>$2.7 \left{ \frac{2\rightarrow3}{(A\rightarrow R)} \right}$</td>
<td>For AC</td>
<td>100 VAC% Hz, 110 VAC% Hz, 200 VAC% Hz, 220 VAC% Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: All AC voltage models have built-in surge voltage suppressor.
## Manifold Variations

<table>
<thead>
<tr>
<th>Valve series</th>
<th>A port location</th>
<th>P, R ports size</th>
<th>M3</th>
<th>M5</th>
<th>1/8</th>
<th>A port size</th>
<th>With one-touch fitting</th>
<th>Applicable tubing O.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SYJ300</strong></td>
<td>Top</td>
<td>M5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SYJ500</strong></td>
<td>Top</td>
<td>M5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Top</td>
<td>1/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SYJ700</strong></td>
<td>Top</td>
<td>M5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Top</td>
<td>1/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SYJ300</strong></td>
<td>Side</td>
<td>M5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Side</td>
<td>1/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SYJ500</strong></td>
<td>Bottom</td>
<td>M5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bottom</td>
<td>1/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SYJ700</strong></td>
<td>Bottom</td>
<td>M5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bottom</td>
<td>1/4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes

1) Only for internal pilot
2) Only for external pilot
Rubber Seal
3 Port Pilot Solenoid Valve
Series SYJ300

Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>Internal pilot</td>
</tr>
<tr>
<td>range (MPa)</td>
<td>0.15 to 0.7</td>
</tr>
<tr>
<td>Ambient and fluid</td>
<td>–10 to 50 (No freezing. Refer to back page 2.)</td>
</tr>
<tr>
<td>temperature (C)</td>
<td></td>
</tr>
<tr>
<td>Response time ms (at 0.5 MPa)</td>
<td>15 or less</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>10</td>
</tr>
<tr>
<td>Manual override (Manual operation)</td>
<td>Non-locking push type, push-turn locking slotted type, push-turn locking lever type</td>
</tr>
<tr>
<td>Pilot exhaust method</td>
<td>Individual exhaust for the pilot valve, common exhaust for the pilot and main valve</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Shock/Vibration resistance (m/s²) Note 2)</td>
<td>150/30</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dust proof (M8 connector conforms to IP65.)</td>
</tr>
</tbody>
</table>

Note 1) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage, without surge voltage suppressor.)

Note 2) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the main valve and armature in both energised and de-energised 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)

Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet (G), (H), L plug connector (L), M plug connector (M), M8 connector (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil rated voltage (V) DC</td>
<td>24, 12, 6, 5, 3</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>10% of rated voltage *</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power consumption (W) DC</th>
<th>Standard</th>
<th>With power saving circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>0.35 (With light: 0.4)</td>
<td>0.1 (With light only)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surge voltage suppressor</th>
<th>Diode (varistor when non-polar types)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator light LED</td>
<td></td>
</tr>
</tbody>
</table>

* S, Z and T type (with power saving circuit) should be used within the following allowable voltage fluctuation range due to a voltage drop caused by the internal circuit.

S and Z type: 24 VDC: –7% to +10%
12 VDC: –4% to +10%
T type: 24 VDC: –8% to +10%
12 VDC: –6% to +10%

Made to Order
(For details, refer to pages 57 through to 59.)
Flow Characteristics/Weight

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow characteristics</th>
<th>Effective area (mm²)</th>
<th>Weight (g) (Note)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body ported</td>
<td>N.C.</td>
<td>M3 x 0.5</td>
<td>1→2 (P→A)</td>
<td>0.9</td>
<td>32 33 37</td>
</tr>
<tr>
<td></td>
<td>N.O.</td>
<td></td>
<td>2→3 (A→R)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base mounted</td>
<td>N.C.</td>
<td>M5 x 0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N.O.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) ( ): Without sub-plate.
* These values have been calculated according to ISO 6358 and represent the flow rate measured in standard conditions at an upstream pressure of 0.6MPa (relative pressure) and a differential pressure of 0.1MPa.

External Pilot

SYJ300R

Pilot valve pressure is supplied separately from the main valve pressure through the use of a separate supply port. It can be used in the vacuum (up to −100 kPa) or low pressure line with 0.15 MPa or less.

Specifications

<table>
<thead>
<tr>
<th>Applicable model</th>
<th>Base mounted (SYJ314R, SYJ324R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range</td>
<td>Main pressure −100 kPa to 0.7</td>
</tr>
<tr>
<td></td>
<td>External pilot pressure 0.15 to 0.7</td>
</tr>
</tbody>
</table>

Note 1) For manifold base, refer to page 7.
Note 2) External pilot type body ported valves (SYJ314R) can only be used on the manifold.
**Series SYJ300**

### How to Order

#### Light/surge voltage suppressor
- Without light/surge voltage suppressor
- With surge voltage suppressor
- With light/surge voltage suppressor
- With surge voltage suppressor (Non-polar type)
- With light/surge voltage suppressor (Non-polar type)

### Rated voltage

<table>
<thead>
<tr>
<th>DC</th>
<th>5</th>
<th>24 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>12 VDC</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>6 VDC</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>5 VDC</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>3 VDC</td>
<td></td>
</tr>
</tbody>
</table>

### Type of actuation

1. Normally closed
2. Normally open

### Body ported

<table>
<thead>
<tr>
<th>SYJ3</th>
<th>1</th>
<th>2</th>
<th>5</th>
<th>M</th>
<th>M3</th>
<th>Q</th>
</tr>
</thead>
</table>

### Base mounted

<table>
<thead>
<tr>
<th>SYJ3</th>
<th>1</th>
<th>4</th>
<th>5</th>
<th>M</th>
<th>Q</th>
</tr>
</thead>
</table>

### Body option

#### Individual pilot exhaust type
- R: Common exhaust for the pilot and main valve
- M: Pilot valve exhaust is centralised to main valve
- E: External pilot type

#### Electrical entry

<table>
<thead>
<tr>
<th>Grommet</th>
<th>L plug connector</th>
<th>M plug connector</th>
<th>M8 connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>G: Lead wire length 300 mm</td>
<td>L: With lead wire (Length 300 mm)</td>
<td>M: Without lead wire</td>
<td>MN: Without lead wire</td>
</tr>
<tr>
<td>H: Lead wire length 600 mm</td>
<td>LN: Without lead wire</td>
<td>LO: Without connector</td>
<td>MO: Without connector</td>
</tr>
</tbody>
</table>

#### Manual override

- Non-locking push type
- Push-turn locking slotted type
- Push-turn locking lever type

### Note 1)
- When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary. (For details, refer to page 8.)
**Series SYJ300**

**Construction**

**Component Parts**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Zinc die-casted</td>
<td>White</td>
</tr>
<tr>
<td>2</td>
<td>Piston plate</td>
<td>Resin</td>
<td>White</td>
</tr>
<tr>
<td>3</td>
<td>End cover</td>
<td>Resin</td>
<td>White</td>
</tr>
<tr>
<td>4</td>
<td>Piston</td>
<td>Resin</td>
<td>–</td>
</tr>
<tr>
<td>5</td>
<td>Spool valve assembly</td>
<td>Aluminum, H-NBR</td>
<td>–</td>
</tr>
</tbody>
</table>

**Replacement Parts**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>No.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Sub-plate</td>
<td>SYJ300-9-1-Q</td>
<td>Zinc die-casted</td>
</tr>
<tr>
<td>7</td>
<td>Pilot valve</td>
<td>V111(T)</td>
<td>–</td>
</tr>
</tbody>
</table>

**How to Order Pilot Valve Assembly**

For DC:

**V111**

![Diagram](image)

- **Coil specifications**
  - Standard
  - T With power saving circuit (24, 12 VDC only)

- **Rated voltage**
  - 5 24 VDC
  - 6 12 VDC
  - S 6 VDC
  - R 3 VDC

- **Light/surge voltage suppressor**
  - Without light/surge voltage suppressor
  - With surge voltage suppressor
  - With light/surge voltage suppressor
  - With surge voltage suppressor (Non-polar type)
  - With light/surge voltage suppressor (Non-polar type)

- **Power saving circuit is only available in the “Z” type.**

**How to Order M8 Connector Cable**

**V100-49-1-**

![Diagram](image)

- **Cable length**
  - 1 300 mm
  - 2 500 mm
  - 3 1000 mm
  - 4 2000 mm
  - 7 5000 mm

---

---

**For connector cable of M8 connector, refer to back page 9.**

**Note 1)** Enter the cable length symbols in □. Please be sure to fill in the blank referring to back page 10.
Series SYJ300

Body Ported

Grommet (G), (H): SYJ3□2-□□□□□□-M3-Q

With bracket:
SYJ3□2-□□□□□□-M3-F-Q

L plug connector (L):
SYJ3□2-□L□□□□□□-M3-Q

M plug connector (M):
SYJ3□2-□M□□□□□□-M3-Q

M8 connector (WO):
SYJ3□2-□WO□□□□□□-M3-Q

*(Refer to back page 10 for dimensions with connector cable.)*
Base Mounted (With Sub-plate)

Grommet (G), (H): SYJ3□4□□□□□□□□□□□□-M5-Q

L plug connector (L): SYJ3□4□□□□□□□□□□□□-M5-Q  
M plug connector (M): SYJ3□4□□□□□□□□□□□□-M5-Q  
M8 connector (WO): SYJ3□4□□□□□□□□□□□□-M5-Q

* Refer to back page 10 for dimensions with connector cable.
## Manifold Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>For internal pilot</th>
<th>Type 20</th>
<th>Type 41, S41</th>
<th>Type 42, S42</th>
<th>Type 20R</th>
<th>Type 42R, S42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifold type</td>
<td>Single base/B mount</td>
<td>P (SUP), R (EXH)</td>
<td>Common SUP/Common EXH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve stations</td>
<td>2 to 20 stations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A port</td>
<td>Location</td>
<td>Valve</td>
<td>Base</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Porting specifications</td>
<td>Direction</td>
<td>Top</td>
<td>Side</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port size</td>
<td>P, R port</td>
<td>M5</td>
<td>M5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A port</td>
<td>M3</td>
<td>M3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>X port</td>
<td>Note</td>
<td>M5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve size</td>
<td>C4 (One-touch fitting ø4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Only for external pilot

### Flow Characteristics

- **Manifold**
  - **Type:** SS3YJ3-20
  - **Port size:** SYJ32
  - **Flow characteristics:** Effective area (mm²)
    - **1(P), 3(R) Port:** M5
    - **2(A) Port:** M3
    - **Effective area:** 0.9

- **Manifold**
  - **Type:** SS3YJ3-41, S41
  - **Port size:** SYJ34
  - **Flow characteristics:** Effective area (mm²)
    - **1(P), 3(R) Port:** M5
    - **2(A) Port:** M3
    - **Effective area:** 1.5

- **Manifold**
  - **Type:** SS3YJ3-42-M5
  - **Port size:** SYJ34
  - **Flow characteristics:** Effective area (mm²)
    - **1(P), 3(R) Port:** M5
    - **2(A) Port:** M5
    - **Effective area:** 0.9

### How to Order Manifold (Example)

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

(Example)

- **SS3YJ3-20-03-Q** 1 set (manifold base)
- **SS3YJ3-42R-03-C4-Q** 1 set (manifold base)
- **SYJ312-5LZ-M3Q** 2 sets (valve)
- **SYJ314R-5G-Q** 2 sets (valve)
- **SYJ300-10-1A-Q** 1 set (blanking plate assembly)
- **SYJ300-10-2A-Q** 1 set (blanking plate assembly)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.
Combinations of Solenoid Valve, Manifold Gasket and Manifold Base

**Body ported** (Type SYJ3-2(R)-Q)

- Manifold gasket
- Applicable base
  - SS3YJ3-20-Q
  - SS3YJ3-20R-Q

**Base mounted** (Type SYJ3-4(R)-Q)

- Manifold gasket
- Round head combination screw
  - SY100-33-3
    - (M1.7 x 17, Matt nickel plated)
- Applicable base
  - SS3YJ3-20-Q
  - SS3YJ3-20R-Q
  - SS3YJ3-41-Q
  - SS3YJ3-41R-Q
  - SS3YJ3-42-Q
  - SS3YJ3-42R-Q
  - SS3YJ3-S41-Q
  - SS3YJ3-S41R-Q
  - SS3YJ3-S42-Q
  - SS3YJ3-S42R-Q

Blanking Plate Assembly

**Model no.:** SYJ300-10-1A-Q

- Round head combination screw
- Blanking plate
- Manifold gasket

**Model no.:** SYJ300-10-2A-Q

- Round head combination screw
- Blanking plate
- Manifold gasket

**Applicable base**
- SS3YJ3-20-Q
- SS3YJ3-20R-Q
- SS3YJ3-41-Q
- SS3YJ3-41R-Q
- SS3YJ3-42-Q
- SS3YJ3-42R-Q
- SS3YJ3-S41-Q
- SS3YJ3-S41R-Q
- SS3YJ3-S42-Q
- SS3YJ3-S42R-Q

---

⚠️ **Caution**

**Mounting screw tightening torques**

- M1.7: 0.12 N·m

Use caution to the assembly orientation for solenoid valves, gasket, and optional parts.
Series SYJ300

Manifold for Internal Pilot Type

**Type 20**

![Image of Type 20 manifold](image)

**How to Order**

SS3YJ3-20 -05 -Q

- **Stations**: 02 (2 stations)
- **Bracket**: Without bracket

**Applicable solenoid valve**
SYJ321R-M3-Q
SYJ312R-M3-Q
SYJ322R-M3-Q
SYJ322M-M3-Q

**Applicable blanking plate assembly**
SYJ300-10-1A-Q

**Note**: For more than 10 stations, supply air to both sides of P port and exhaust air from both sides of R port.

**Type 41**

![Image of Type 41 manifold](image)

**How to Order**

SS3YJ3-41 -05 -M3-Q

- **Stations**: 02 (2 stations)
- **Bracket**: Without bracket

**Applicable solenoid valve**
SYJ314R-M3-Q
SYJ314M-M3-Q
SYJ324R-M3-Q
SYJ324M-M3-Q

**Applicable blanking plate assembly**
SYJ300-10-2A-Q

**Note**: For more than 10 stations, supply air to both sides of P port and exhaust air from both sides of R port.

**Type 42**

![Image of Type 42 manifold](image)

**How to Order**

SS3YJ3-42 -05 -M5-Q

- **Stations**: 02 (2 stations)
- **A port size**: M5, C4, N3
- **P, R port thread type**: - Rc, F, G, N, NPT, T, NPTF

**Applicable solenoid valve**
SYJ314R-M5-Q
SYJ314M-M5-Q
SYJ324R-M5-Q
SYJ324M-M5-Q

**Applicable blanking plate assembly**
SYJ300-10-2A-Q

**Manifold for External Pilot Type**

Pilot valve pressure is supplied separately from the main valve pressure through the use of a separate supply port.

It can be used in the vacuum (up to –100 kPa) or low pressure line with 0.15 MPa or less.

**Type 20R**

![Image of Type 20R manifold](image)

**How to Order**

SS3YJ3-20R -05 -Q

- **Stations**: 02 (2 stations)
- **P, R port thread type**: - Rc, 00F, 00N, 00T, NPT, NPTF

**Applicable solenoid valve**
SYJ312R-M3-Q
SYJ322R-M3-Q

**Applicable blanking plate assembly**
SYJ300-10-1A-Q

**Note**: For more than 10 stations, supply exhaust air to/from both sides of P port and R port.

**Type 42R**

![Image of Type 42R manifold](image)

**How to Order**

SS3YJ3-42R -05 -M5-Q

- **Stations**: 02 (2 stations)
- **A port size**: M5, C4, N3
- **P, R port thread type**: - Rc, 00F, 00N, 00T, NPT, NPTF

**Applicable solenoid valve**
SYJ314R-M5-Q
SYJ324R-M5-Q

**Applicable blanking plate assembly**
SYJ300-10-2A-Q

**Note**: For more than 8 stations, supply exhaust air to/from both sides of P port and R port.
**Type 20 Manifold: Top Ported/SS3YJ3-20-Stations-00 (F)-Q**

**Grommet (G)**

![Diagram of Grommet (G)](image)

**Approx. 300 (Lead wire length)**

**L plug connector (L)**

![Diagram of L plug connector (L)](image)

**M plug connector (M)**

![Diagram of M plug connector (M)](image)

**M8 connector (WO)**

![Diagram of M8 connector (WO)](image)

*Refer to back page 10 for dimensions with connector cable.*

---

<table>
<thead>
<tr>
<th>Station n</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>35.5</td>
<td>46</td>
<td>56.5</td>
<td>67</td>
<td>77.5</td>
<td>88</td>
<td>98.5</td>
<td>109</td>
<td>119.5</td>
<td>130</td>
<td>140.5</td>
<td>151</td>
<td>161.5</td>
<td>172</td>
<td>182.5</td>
<td>193</td>
<td>203.5</td>
<td>214</td>
<td>224.5</td>
</tr>
<tr>
<td>L2</td>
<td>28.5</td>
<td>39</td>
<td>49.5</td>
<td>60</td>
<td>70.5</td>
<td>81</td>
<td>91.5</td>
<td>102</td>
<td>112.5</td>
<td>123</td>
<td>133.5</td>
<td>144</td>
<td>154.5</td>
<td>165</td>
<td>175.5</td>
<td>186</td>
<td>196.5</td>
<td>207</td>
<td>217.5</td>
</tr>
</tbody>
</table>
**Series SYJ300**

**Type 41 Manifold: Side Ported/SS3YJ3-41-Stations-M3-Q**

**Grommet (G)**

**Type 41 Manifold: Side Ported**

(Pilot valve is on the A port side)

**SS3YJ3-S41-Stations-M3-Q**

**L plug connector (L)**

**M plug connector (M)**

**M8 connector (WO)**

<table>
<thead>
<tr>
<th>Station n</th>
<th>Station 2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>35.5</td>
<td>46</td>
<td>56.5</td>
<td>67</td>
<td>77.5</td>
<td>88</td>
<td>98.5</td>
<td>109</td>
<td>119.5</td>
<td>130</td>
<td>140.5</td>
<td>151</td>
<td>161.5</td>
<td>172</td>
<td>182.5</td>
<td>193</td>
<td>203.5</td>
<td>214</td>
<td>224.5</td>
</tr>
<tr>
<td>L2</td>
<td>28.5</td>
<td>39</td>
<td>49.5</td>
<td>60</td>
<td>70.5</td>
<td>81</td>
<td>91.5</td>
<td>102</td>
<td>112.5</td>
<td>123</td>
<td>133.5</td>
<td>144</td>
<td>154.5</td>
<td>165</td>
<td>175.5</td>
<td>186</td>
<td>196.5</td>
<td>207</td>
<td>217.5</td>
</tr>
</tbody>
</table>

* Refer to back page 10 for dimensions with connector cable.
Type 42 Manifold: Side Ported/SS3YJ3-42- Stations -M5, C4 N3 -Q

Grommet (G)
For M5

For C4 N3 (Built-in one-touch fitting)

L plug connector (L)
M plug connector (M)
M8 connector (WO)

Type 42 Manifold: Side Ported (Pilot valve is on the A port side) / SS3YJ3-S42- Stations -M5, C4 N3 -Q

Grommet (G)
For M5

For C4 N3 (Built-in one-touch fitting)
Series SYJ300

Type 20R Manifold: Top Ported (External Pilot Type)/SS3YJ3-20R-[Stations]-00□-Q

Grommet (G)

L plug connector (L) M plug connector (M) M8 connector (WO)

Refer to back page 10 for dimensions with connector cable.
Type 42R Manifold: Side Ported (External Pilot Type)/SS3YJ3-42R-Stations-M5, C4 N3 □-Q

Grommet (G)
For M5

M plug connector (M)

M8 connector (WO)

Type S42R Manifold: Side Ported (Pilot valve is on the A port side) / SS3YJ3-S42R-Stations-M5, C4 N3 □-Q

Grommet (G)
For M5

For C4 N3 □ (Built-in one-touch fitting)

| Station n | Station 1 | L1 | L2 | L3 | L4 | L5 | L6 | L7 | L8 | L9 | L10 | L11 | L12 | L13 | L14 | L15 | L16 | L17 | L18 | L19 | L20 |
|-----------|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| L1        | 47.5      | 58 | 68.5| 79  | 89.5| 100 | 110.5| 121 | 131.5| 142  | 152.5| 163 | 173.5| 184  | 194.5| 205 | 215.5| 226 | 236.5|    |
| L2        | 39.5      | 50 | 60.5| 71  | 81.5| 92  | 102.5| 113 | 123.5| 134  | 144.5| 155 | 165.5| 176  | 186.5| 197 | 207.5| 218 | 228.5|    |
# Rubber Seal

## 3 Port Pilot Solenoid Valve

**Series SYJ500**

![Diagram of SYJ500 valves](image)

### JIS Symbol

<table>
<thead>
<tr>
<th>Internal pilot</th>
<th>External pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYJ51</td>
<td>SYJ51R</td>
</tr>
<tr>
<td>SYJ52</td>
<td>SYJ52R</td>
</tr>
</tbody>
</table>

**Body ported**

**Base mounted**

### Made to Order

(For details, refer to pages 57 through to 59.)

### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range (MPa)</td>
<td>Internal pilot</td>
</tr>
<tr>
<td></td>
<td>0.15 to 0.7</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 50 (No freezing. Refer to back page 2.)</td>
</tr>
<tr>
<td>Response time ms (at 0.5 MPa) <strong>(Note 1)</strong></td>
<td>25 or less</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>5</td>
</tr>
</tbody>
</table>

**Manual override (Manual operation)**

- Non-locking push type, push-turn locking slotted type, push-turn locking lever type
- Individual exhaust for the pilot valve, common exhaust for the pilot and main valve

<table>
<thead>
<tr>
<th>Pilot exhaust method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not required</td>
</tr>
<tr>
<td>Unrestricted</td>
</tr>
</tbody>
</table>

**Lubrication**

- Dust proof (+ DIN terminal, M8 connector conforms to IP65.)

**Enclosure**

- Based on IEC60529

**Note 1** Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage, without surge voltage suppressor.)

**Note 2** Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the main valve and armature in both energised and de-energised states every once for each condition.

<table>
<thead>
<tr>
<th>Shock/Vibration resistance (m/s²) <strong>(Note 2)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>150/30</td>
</tr>
</tbody>
</table>

### Solenoid Specifications

#### Electrical entry

- G, H, L, M, W
- D
- 24, 12, 6, 5, 3
- 100, 110, 200, 220
- ±10% of rated voltage *

#### Power consumption (W)

- DC 0.35 (With light: 0.4 (DIN terminal with light: 0.45))
- 0.1 (With light only)

#### Apparent power (VA) *

- 100 V 0.78 (With light: 0.87)
- 110 V 0.86 (With light: 0.97) [0.94 (With light: 1.07)]
- 200 V 1.15 (With light: 1.30)
- 220 V [230 V] 1.27 (With light: 1.46) [1.39 (With light: 1.60)]

**Surge voltage suppressor**

- Diode (DIN terminal, varistor when non-polar types)
- LED (Neon light when AC with DIN terminal)

**Note**

- In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.
- For 115 VAC and 230 VAC, the allowable voltage is –15% to +5% of rated voltage.
- S, Z and T type (with power saving circuit) should be used within the following allowable voltage fluctuation range due to a voltage drop caused by the internal circuit.
  - S and Z type: 24 VDC: –7% to +10%
  - 12 VDC: –4% to +10%
  - T type: 24 VDC: –8% to +10%
  - 12 VDC: –6% to +10%

[Refer to www.smcworld.com for details of products compatible with overseas standards.]
**Flow Characteristics/Weight**

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow characteristics</th>
<th>Weight (g) (Note)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYJ512</td>
<td>N.C.</td>
<td>M5</td>
<td>1→2 (P→A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C [dm³/(s bar)] b</td>
<td>b</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.53</td>
<td>0.45</td>
</tr>
<tr>
<td>Base mounted</td>
<td>Base mounted</td>
<td>M5</td>
<td>2→3 (A→R)</td>
<td></td>
</tr>
<tr>
<td>SYJ514</td>
<td>N.C.</td>
<td>1/8</td>
<td>b, Cv, Q[m³/min][AR]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.45</td>
<td>0.66</td>
</tr>
<tr>
<td>SYJ524</td>
<td>N.O.</td>
<td>1/8</td>
<td>0.66</td>
<td>0.66</td>
</tr>
</tbody>
</table>

*These values have been calculated according to ISO 6358 and represent the flow rate measured in standard conditions at an upstream pressure of 0.6MPa (relative pressure) and a differential pressure of 0.1MPa.

**External Pilot**

**SYJ500R**

Pilot valve pressure is supplied separately from the main valve pressure through the use of a separate supply port. It can be used in the vacuum (up to −100 kPa) or low pressure line with 0.15 MPa or less.

**Specifications**

<table>
<thead>
<tr>
<th>Applicable model</th>
<th>Base mounted (SYJ514R, SYJ524R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range</td>
<td>Main pressure</td>
</tr>
<tr>
<td></td>
<td>External pilot pressure</td>
</tr>
</tbody>
</table>

*Note 1* For manifold base, refer to page 21.
*Note 2* External pilot type body ported valves (SYJ5□2R) can only be used on the manifold. For body ported models with the external pilot option, please refer to page 59.
### How to Order

#### Series SYJ500

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>DC</th>
<th>24 VDC</th>
<th>12 VDC</th>
<th>6 VDC</th>
<th>5 VDC</th>
<th>3 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>6</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>R</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- *DC specifications of type D and DO is only available with 12 and 24 VDC.*

<table>
<thead>
<tr>
<th>AC (V/Hz)</th>
<th>100 VAC</th>
<th>200 VAC</th>
<th>110 VAC [115 VAC]</th>
<th>220 VAC [230 VAC]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- *AC specification is only available with D, DO type.*

#### Type of actuation

- Normally closed
- Normally open

#### Light/surge voltage suppressor

- Without light/surge voltage suppressor
- With surge voltage suppressor (Non-polar type)

- Power saving circuit is only available in the “Z” type.

#### Electrical entry for D

- Without light/surge voltage suppressor
- With surge voltage suppressor (Non-polar type)

- *DOZ is not available.*
- *For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.*

#### Bracket

- Without bracket
- F: With bracket

- *Bracket is mounted.*
- *External pilot type is not available.*

#### Made to Order

- (page 59)
- Body ported external pilot

### Body ported

**SYJ5** 1 2 5 M M5 Q

### Base mounted

**SYJ5** 1 4 5 M 01 Q

#### Thread type

- Rc
- F: G
- N: NPT
- T: NPTF

#### Electrical entry

**24, 12, 6, 5, 3 VDC**

<table>
<thead>
<tr>
<th>Grommet</th>
<th>L plug connector</th>
<th>M plug connector</th>
<th>DIN terminal</th>
<th>M8 connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>G: Lead wire length 300 mm</td>
<td>L: With lead wire (Length 300 mm)</td>
<td>M: With lead wire (Length 300 mm)</td>
<td>MN: Without lead wire</td>
<td>D: With connector</td>
</tr>
<tr>
<td>H: Lead wire length 600 mm</td>
<td>LN: Without lead wire</td>
<td>LO: Without connector</td>
<td>MO: Without connector</td>
<td>DO: Without connector</td>
</tr>
<tr>
<td>LN: With connector cable</td>
<td>W: With connector cable</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- LN, MN type: with 2 sockets.
- DIN terminal type “Y” which conforms to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 57.
- For connector cable of M8 connector, refer to back page 9.
- Connector M8 type “WA” conforming to IEC 60947-5-2 standard, is also available. For details, see page 58.

### Manual override

- Non-locking push type
- Without sub-plate
- 01: 1/8 port
- With sub-plate

- Push-turn locking slotted type
- Push-turn locking lever type

### Port size

- 01: 1/8 port
- With sub-plate
- (With gasket and screws)

### How to Order

- For sub-plate style, manifold type 40, 40R, 41, 41R
- For manifold type 20, 21R

### Body option

- Individual pilot exhaust type
- R port: Common exhaust for the pilot and main valve
- P, E port: External pilot type

- + SYJ5:2R is only for manifold use.

---

*Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary. (For details, refer to catalogue on page 22.)

*Note 1) Enter the cable length symbols in /L50132. Please be sure to fill in the blank referring to back page 10.

* LN, MN type: with 2 sockets.
* DIN terminal type “Y” which conforms to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 57.
* For connector cable of M8 connector, refer to back page 9.
* Connector M8 type “WA” conforming to IEC 60947-5-2 standard, is also available. For details, see page 58.
**Series SYJ500**

### Construction

![Diagram of Series SYJ500 construction](image)

### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum die-casted</td>
<td>White</td>
</tr>
<tr>
<td>2</td>
<td>Piston plate</td>
<td>Resin</td>
<td>White</td>
</tr>
<tr>
<td>3</td>
<td>End cover</td>
<td>Aluminum die-casted</td>
<td>White</td>
</tr>
<tr>
<td>4</td>
<td>Piston</td>
<td>Resin</td>
<td>—</td>
</tr>
<tr>
<td>5</td>
<td>Spool valve assembly</td>
<td>With surge voltage suppressor (Non-polar type)</td>
<td>—</td>
</tr>
<tr>
<td>6</td>
<td>Spool spring</td>
<td>Stainless steel</td>
<td>—</td>
</tr>
</tbody>
</table>

### Replacement Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Sub-plate</td>
<td>SYJ500-9-1-Q</td>
<td>Aluminum die-casted</td>
</tr>
<tr>
<td>8</td>
<td>Pilot valve</td>
<td>V111(T)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Bracket assembly</td>
<td>SYJ5000-13-3A</td>
<td>—</td>
</tr>
</tbody>
</table>

### How to Order Pilot Valve Assembly

**V111**

Coil specifications:
- **G**: Power saving circuit (24, 12 VDC only)
- **T**: Standard
- **S**: Without surge voltage suppressor
- **Z**: With surge voltage suppressor
- **R**: With light/surge voltage suppressor
- **U**: With light/surge voltage suppressor (Non-polar type)

**Light/surge voltage suppressor**
- **G**: Grommet, 300 mm lead wire
- **H**: Grommet, 600 mm lead wire
- **L**: L plug connector with lead wire
- **LN**: L plug connector without lead wire
- **LO**: L plug connector without connector
- **M**: M plug connector with lead wire
- **MN**: M plug connector without lead wire
- **MO**: M plug connector without connector
- **WO**: M8 connector with connector cable
- **W**: M8 connector without connector cable

**Electrical entry**
- **D**: DIN terminal with connector
- **DO**: DIN terminal

**Rated voltage**
- **5**: 24 VDC
- **6**: 12 VDC
- **V**: 6 VDC
- **S**: 5 VDC
- **R**: 3 VDC

### How to Order M8 Connector Cable

**V115**

Coil specifications:
- **D**: DIN terminal with connector
- **DO**: DIN terminal

**Light/surge voltage suppressor**
- **G**: Without surge voltage suppressor
- **S**: With surge voltage suppressor
- **Z**: With light/surge voltage suppressor (Non-polar type)
- **U**: With light/surge voltage suppressor (Non-polar type)

**Electrical entry**
- **D**: DIN terminal with connector
- **DO**: DIN terminal

**Rated voltage**
- **5**: 24 VDC
- **6**: 12 VDC
- **1**: 100 VAC 50/60 Hz
- **2**: 200 VAC 50/60 Hz
- **3**: 110 VAC 50/60 Hz
- **4**: 220 VAC 50/60 Hz
- **5**: 230 VAC 50/60 Hz

**Cable length**
- **1**: 300 mm
- **2**: 500 mm
- **3**: 1000 mm
- **4**: 2000 mm
- **7**: 5000 mm

* Do not replace V111 (G, H, L, M, W) to V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.

### How to Order Connector Assembly for L/M Plug Connector

**V100-49-1**

**Cable length**
- **1**: 300 mm
- **2**: 500 mm
- **3**: 1000 mm
- **4**: 2000 mm
- **7**: 5000 mm

* Do not replace V111 (G, H, L, M, W) to V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.

* DC specifications of type D and DO is only available with 12 and 24 VDC.
* Power saving circuit is not available in the case of D or DO type.
Series SYJ500

Body Ported

Grommet (G), (H): SYJ5□2-□□□□□□□□□□□□□□□-M5-Q

With bracket:
SYJ5□2-□□□□□□□□□□□□□□□-M5-F-Q

M5 (P, R port)

G: Approx. 300
H: Approx. 600
(Lead wire length)

Manual override
2-ø2.6
(For mounting)

2-ø3.5
(For mounting)

Approx. 300
(Lead wire length)

Approx. 300
(Light/surge voltage suppressor)

With bracket:

(Light/surge voltage suppressor)

Approx. 300
(Lead wire length)

M8 connector (WO):
SYJ5□2-□□□□□□□□□□□□□□□-M5-F-Q

L plug connector (L):
SYJ5□2-□□□□□□□□□□□□□□□-M5-Q

M plug connector (M):
SYJ5□2-□□□□□□□□□□□□□□□-M5-Q

DIN terminal (D):
SYJ5□2-□□□□□□□□□□□□□□□-M5-Q

Applicable cable O.D.: ø3.5 to ø7
60.9

Max: 10

M8 x 1
32.6

* Refer to back page 10 for dimensions with connector cable.
Base Mounted (With Sub-plate)

Grommet (G), (H): SYJ5□4-□□-01□-Q

L plug connector (L): SYJ5□4-L□-01□-Q
M plug connector (M): SYJ5□4-M□-01□-Q
DIN terminal (D): SYJ5□4-D□-01□-Q
M8 connector (WO): SYJ5□4-WO□-01□-Q

Approx. 300
(Lead wire length)

Approx. 300
(Applicable cable O.D.
ø3.5 to ø7)

(Light/surge voltage suppressor)

Manual override

Refer to back page 10 for dimensions with connector cable.
**Manifold Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>For internal pilot</th>
<th>Type 20</th>
<th>Type 40</th>
<th>Type 41</th>
</tr>
</thead>
<tbody>
<tr>
<td>For external pilot</td>
<td>Type 21R</td>
<td>Type 40R</td>
<td>Type 41R</td>
<td></td>
</tr>
</tbody>
</table>

- **Manifold type**: Single base/B mount
- **P (SUP), R (EXH)**: Common SUP, common EXH
- **Valve stations**: 2 to 20 stations

**A port Porting specifications**

<table>
<thead>
<tr>
<th>Location</th>
<th>Valve</th>
<th>Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction</td>
<td>Top</td>
<td>Bottom</td>
</tr>
<tr>
<td>P, R port</td>
<td>$\frac{1}{8}$</td>
<td>$\frac{1}{8}$</td>
</tr>
<tr>
<td>A port</td>
<td>M5</td>
<td>M5</td>
</tr>
<tr>
<td>X port (Note)</td>
<td>M5</td>
<td>M5</td>
</tr>
</tbody>
</table>

**Note)** Only for external pilot

### Flow Characteristics

<table>
<thead>
<tr>
<th>Manifold</th>
<th>Port size</th>
<th>Flow characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1→2 (P→A)</strong></td>
<td>C [dm³/(s•bar)]</td>
<td>b</td>
</tr>
<tr>
<td><strong>2→3 (A→R)</strong></td>
<td>C [dm³/(l•bar)]</td>
<td>b</td>
</tr>
</tbody>
</table>

#### Body ported for internal pilot

- **Type SS3YJ5-20**: SYJ542
- **Type SS3YJ5-40-M5**: SYJ544
- **Type SS3YJ5-41-M5**: SYJ544
- **Type SS3YJ5-41-C4**: SYJ544

#### Base mounted for internal pilot

- **Type SS3YJ5-21R**: SYJ544
- **Type SS3YJ5-41R-M5**: SYJ544
- **Type SS3YJ5-41R-01**: SYJ544
- **Type SS3YJ5-41R-C4**: SYJ544

#### Base mounted for external pilot

- **Type SS3YJ5-21R**: SYJ544
- **Type SS3YJ5-41R-M5**: SYJ544
- **Type SS3YJ5-41R-01**: SYJ544
- **Type SS3YJ5-41R-C4**: SYJ544

**Note)** Value at manifold base mounted, 2 position single operating.

* These values have been calculated according to ISO 6358 and represent the flow rate measured in standard conditions at an upstream pressure of 0.6MPa (relative pressure) and a differential pressure of 0.1MPa.

### How to Order Manifold (Example)

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

(Example)

- **SS3YJ5-20-03-Q**.............1 set (manifold base)
- **SS3YJ5-41R-03-C6-Q**........1 set (manifold base)
- **SYJ512-5LZ-M5-Q**...........2 sets (valve)
- **SYJ514R-5G-Q**..............2 sets (valve)
- **SYJ500-10-1A-Q**.............1 set (blanking plate assembly)
- **SYJ500-10-3A-Q**.............1 set (blanking plate assembly)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.
### Combinations of Solenoid Valve, Manifold Gasket and Manifold Base

<table>
<thead>
<tr>
<th>Body ported (Type SYJ5□2(R))-Q</th>
<th>Base mounted (Type SYJ5□4(R))-Q</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Applicable base</em> SS3YJ5-20-Q</td>
<td><em>Manifold base</em> SS3YJ5-40-Q</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Manifold gasket</em> SYJ500-5-4</td>
<td><em>Manifold gasket</em> SS3YJ5-40-Q</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Applicable base</em> SS3YJ5-21R-Q</td>
<td><em>Manifold gasket</em> SS3YJ5-41-Q</td>
</tr>
<tr>
<td><strong>Round head combination screw</strong></td>
<td></td>
</tr>
<tr>
<td>M2.5 x 25, Matt nickel plated</td>
<td></td>
</tr>
</tbody>
</table>

### Blanking Plate Assembly

**Model no.:** SYJ500-10-3A-Q

![Diagram]

**Model no.:** SYJ500-10-1A-Q

![Diagram]

### Caution

**Mounting screw tightening torques**

| M2.5: 0.45 N-m |

Use caution to the assembly orientation for solenoid valves (blanking plate) and manifold gasket.
Manifold for Internal Pilot Type

Type 20

Type 40

Type 41

Manifold for External Pilot Type

Pilot valve pressure is supplied separately from the main valve pressure through the use of a separate supply port.

Type 21R

Type 40R

Type 41R

How to Order

How to Order

How to Order

How to Order

How to Order

How to Order

Stations

Stations

Stations

Stations

Stations

Stations

02 2 stations

02 2 stations

02 2 stations

02 2 stations

02 2 stations

02 2 stations

P, R port thread type

P, R port thread type

P, R port thread type

P, R port thread type

P, R port thread type

P, R port thread type

Bracket

Bracket

Bracket

Bracket

Bracket

Bracket

Applicable blanking plate assembly

Applicable blanking plate assembly

Applicable blanking plate assembly

Applicable blanking plate assembly

Applicable blanking plate assembly

Applicable blanking plate assembly

Note) For more than 9 stations, supply air to both sides of P port and exhaust air from both sides of R port.
Type 20 Manifold: Top Ported/SS3YJ5-20-Stations-00□(-F)-Q

Grommet (G)

L plug connector (L)  M plug connector (M)  DIN terminal (D)  M8 connector (WO)

Refer to back page 10 for dimensions with connector cable.
**Series SYJ500**

**Type 40 Manifold: Bottom Ported/SS3YJ5-40—Stations-M5, 01□-Q**

**Grommet (G)**

For M5

For 1/8

**L plug connector (L)**

**M plug connector (M)**

**DIN terminal (D)**

**M8 connector (WO)**

<table>
<thead>
<tr>
<th>Port size</th>
<th>Station n</th>
<th>Station 2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>Station 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>L1</td>
<td>52</td>
<td>68</td>
<td>84</td>
<td>100</td>
<td>116</td>
<td>132</td>
<td>148</td>
<td>164</td>
<td>180</td>
<td>196</td>
<td>212</td>
<td>228</td>
<td>244</td>
<td>260</td>
<td>276</td>
<td>292</td>
<td>308</td>
<td>324</td>
<td>340</td>
</tr>
<tr>
<td></td>
<td>L2</td>
<td>43</td>
<td>59</td>
<td>75</td>
<td>91</td>
<td>107</td>
<td>123</td>
<td>139</td>
<td>155</td>
<td>171</td>
<td>187</td>
<td>203</td>
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<td>235</td>
<td>251</td>
<td>267</td>
<td>283</td>
<td>299</td>
<td>315</td>
<td>331</td>
</tr>
<tr>
<td>1/8</td>
<td>L1</td>
<td>63</td>
<td>80</td>
<td>97</td>
<td>114</td>
<td>131</td>
<td>148</td>
<td>165</td>
<td>182</td>
<td>199</td>
<td>216</td>
<td>233</td>
<td>250</td>
<td>267</td>
<td>284</td>
<td>301</td>
<td>318</td>
<td>335</td>
<td>352</td>
<td>369</td>
</tr>
<tr>
<td></td>
<td>L2</td>
<td>54</td>
<td>71</td>
<td>88</td>
<td>105</td>
<td>122</td>
<td>139</td>
<td>156</td>
<td>173</td>
<td>190</td>
<td>207</td>
<td>224</td>
<td>241</td>
<td>258</td>
<td>275</td>
<td>292</td>
<td>309</td>
<td>326</td>
<td>343</td>
<td>360</td>
</tr>
</tbody>
</table>

* Refer to back page 10 for dimensions with connector cable.
Type 41 Manifold: Side Ported/SS3YJ5-41- Stations C4, N3 C6, N7 -Q

Grommet (G)

L plug connector (L)  M plug connector (M)  DIN terminal (D)  M8 connector (WO)

<table>
<thead>
<tr>
<th>Port size</th>
<th>Station</th>
<th>Station 2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>Station 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-touch fitting</td>
<td>L1</td>
<td>50</td>
<td>66</td>
<td>82</td>
<td>98</td>
<td>114</td>
<td>130</td>
<td>146</td>
<td>162</td>
<td>178</td>
<td>194</td>
<td>210</td>
<td>226</td>
<td>242</td>
<td>258</td>
<td>274</td>
<td>290</td>
<td>306</td>
<td>322</td>
<td>338</td>
</tr>
<tr>
<td></td>
<td>L2</td>
<td>41</td>
<td>57</td>
<td>73</td>
<td>89</td>
<td>105</td>
<td>121</td>
<td>137</td>
<td>153</td>
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<td>185</td>
<td>201</td>
<td>217</td>
<td>233</td>
<td>249</td>
<td>265</td>
<td>281</td>
<td>297</td>
<td>313</td>
<td>329</td>
</tr>
</tbody>
</table>

* Refer to back page 10 for dimensions with connector cable.
Series SYJ500

Type 41 Manifold: Side Ported/SS3YJ5-41-M5, 01□-Q

Grommet (G)
For M5

<table>
<thead>
<tr>
<th>Port size</th>
<th>Station</th>
<th>Station 2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>Station 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>L1</td>
<td>52</td>
<td>68</td>
<td>84</td>
<td>100</td>
<td>116</td>
<td>132</td>
<td>148</td>
<td>164</td>
<td>180</td>
<td>196</td>
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<td>244</td>
<td>260</td>
<td>276</td>
<td>292</td>
<td>308</td>
<td>324</td>
<td>340</td>
</tr>
<tr>
<td></td>
<td>L2</td>
<td>43</td>
<td>59</td>
<td>75</td>
<td>91</td>
<td>107</td>
<td>123</td>
<td>139</td>
<td>155</td>
<td>171</td>
<td>187</td>
<td>203</td>
<td>219</td>
<td>235</td>
<td>251</td>
<td>267</td>
<td>283</td>
<td>299</td>
<td>315</td>
<td>331</td>
</tr>
<tr>
<td>1/8</td>
<td>L1</td>
<td>53</td>
<td>70</td>
<td>87</td>
<td>104</td>
<td>121</td>
<td>138</td>
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<td>257</td>
<td>274</td>
<td>291</td>
<td>308</td>
<td>325</td>
<td>342</td>
<td>359</td>
</tr>
<tr>
<td></td>
<td>L2</td>
<td>44</td>
<td>61</td>
<td>78</td>
<td>95</td>
<td>112</td>
<td>129</td>
<td>146</td>
<td>163</td>
<td>180</td>
<td>197</td>
<td>214</td>
<td>231</td>
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<td>265</td>
<td>282</td>
<td>299</td>
<td>316</td>
<td>333</td>
<td>350</td>
</tr>
</tbody>
</table>

For 1/8

| Port size | Station | Station 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | Station 20 |
|-----------|---------|-----------|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|------------|
| M5        | L1      | 52        | 68 | 84 | 100| 116| 132| 148| 164| 180| 196| 212| 228| 244| 260| 276| 292| 308| 324| 340         |
|           | L2      | 43        | 59 | 75 | 91 | 107| 123| 139| 155| 171| 187| 203| 219| 235| 251| 267| 283| 299| 315| 331         |
| 1/8       | L1      | 53        | 70 | 87 | 104| 121| 138| 155| 172| 189| 206| 223| 240| 257| 274| 291| 308| 325| 342| 359         |
|           | L2      | 44        | 61 | 78 | 95 | 112| 129| 146| 163| 180| 197| 214| 231| 248| 265| 282| 299| 316| 333| 350         |

(Light/surge voltage suppressor)

(AAA)
Grommet (G)

Type 21R Manifold: Top Ported (External Pilot Type)/SS3YJ5-21R-Stations-00□-Q

L plug connector (L)  M plug connector (M)  DIN terminal (D)  M8 connector (WO)

<table>
<thead>
<tr>
<th>Station n</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>62</td>
<td>85</td>
<td>63</td>
</tr>
<tr>
<td>2</td>
<td>78</td>
<td>117</td>
<td>79</td>
</tr>
<tr>
<td>3</td>
<td>94</td>
<td>133</td>
<td>95</td>
</tr>
<tr>
<td>4</td>
<td>110</td>
<td>133</td>
<td>111</td>
</tr>
<tr>
<td>5</td>
<td>126</td>
<td>149</td>
<td>127</td>
</tr>
<tr>
<td>6</td>
<td>142</td>
<td>159</td>
<td>143</td>
</tr>
<tr>
<td>7</td>
<td>158</td>
<td>175</td>
<td>159</td>
</tr>
<tr>
<td>8</td>
<td>174</td>
<td>175</td>
<td>159</td>
</tr>
<tr>
<td>9</td>
<td>190</td>
<td>191</td>
<td>159</td>
</tr>
<tr>
<td>10</td>
<td>206</td>
<td>207</td>
<td>159</td>
</tr>
<tr>
<td>11</td>
<td>222</td>
<td>223</td>
<td>159</td>
</tr>
<tr>
<td>12</td>
<td>238</td>
<td>239</td>
<td>159</td>
</tr>
<tr>
<td>13</td>
<td>254</td>
<td>255</td>
<td>159</td>
</tr>
<tr>
<td>14</td>
<td>270</td>
<td>271</td>
<td>159</td>
</tr>
<tr>
<td>15</td>
<td>286</td>
<td>287</td>
<td>159</td>
</tr>
<tr>
<td>16</td>
<td>302</td>
<td>303</td>
<td>159</td>
</tr>
<tr>
<td>17</td>
<td>318</td>
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<tr>
<td>18</td>
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<td>335</td>
<td>159</td>
</tr>
<tr>
<td>19</td>
<td>350</td>
<td>351</td>
<td>159</td>
</tr>
</tbody>
</table>

+ Refer to back page 10 for dimensions with connector cable.
Type 41R Manifold: Side Ported (External Pilot Type)/SS3YJ5-41R- Stations

C4, N3
C6, N7 □-Q

Grommet (G)

(Light/surge voltage suppressor)

One-touch fitting

(Pitch)

P=16

21

Approx. 300

(Lead wire length)

M plug connector (M)

DIN terminal (D)

M8 connector (WO)

Refer to back page 10 for dimensions with connector cable.

| Port size | Station 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | Station 20 |
|-----------|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--------|
| One-touch fitting | | | | | | | | | | | | | | | | | | |
| L1        | 58        | 74 | 90 | 106| 122|138 |154 |170 |186 |202 |218 |234 |250 |266 |282 |298 |314 |330    |346    |
| L2        | 49        | 65 | 81 | 97 |113|129 |145 |161 |177 |193 |209 |225 |241 |257 |273 |289 |305 |321    |337    |
| L3        | 43        | 59 | 75 | 91 |107|123 |139 |155 |171 |187 |203 |219 |235 |251 |267 |283 |299 |315    |331    |
**Series SYJ500**

**Type 41R Manifold: Side Ported (External Pilot Type)/SS3YJ5-41R**

### Stations M5, 01-0-Q

#### For M5

<table>
<thead>
<tr>
<th>Port size</th>
<th>Station n</th>
<th>Station 1</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>Station 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>L1</td>
<td>62</td>
<td>78</td>
<td>94</td>
<td>110</td>
<td>126</td>
<td>142</td>
<td>158</td>
<td>174</td>
<td>190</td>
<td>206</td>
<td>222</td>
<td>238</td>
<td>254</td>
<td>270</td>
<td>286</td>
<td>302</td>
<td>318</td>
<td>334</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>L2</td>
<td>53</td>
<td>69</td>
<td>85</td>
<td>101</td>
<td>117</td>
<td>133</td>
<td>149</td>
<td>165</td>
<td>181</td>
<td>197</td>
<td>213</td>
<td>229</td>
<td>245</td>
<td>261</td>
<td>277</td>
<td>293</td>
<td>309</td>
<td>325</td>
<td>341</td>
</tr>
<tr>
<td></td>
<td>L3</td>
<td>47</td>
<td>63</td>
<td>79</td>
<td>95</td>
<td>111</td>
<td>127</td>
<td>143</td>
<td>159</td>
<td>175</td>
<td>191</td>
<td>207</td>
<td>223</td>
<td>239</td>
<td>255</td>
<td>271</td>
<td>287</td>
<td>303</td>
<td>319</td>
<td>335</td>
</tr>
<tr>
<td>1/8</td>
<td>L1</td>
<td>63</td>
<td>80</td>
<td>97</td>
<td>114</td>
<td>131</td>
<td>148</td>
<td>165</td>
<td>182</td>
<td>199</td>
<td>216</td>
<td>233</td>
<td>250</td>
<td>267</td>
<td>284</td>
<td>301</td>
<td>318</td>
<td>335</td>
<td>352</td>
<td>369</td>
</tr>
<tr>
<td></td>
<td>L2</td>
<td>54</td>
<td>71</td>
<td>88</td>
<td>105</td>
<td>122</td>
<td>139</td>
<td>156</td>
<td>173</td>
<td>190</td>
<td>207</td>
<td>224</td>
<td>241</td>
<td>258</td>
<td>275</td>
<td>292</td>
<td>309</td>
<td>326</td>
<td>343</td>
<td>360</td>
</tr>
<tr>
<td></td>
<td>L3</td>
<td>48</td>
<td>65</td>
<td>82</td>
<td>99</td>
<td>116</td>
<td>133</td>
<td>150</td>
<td>167</td>
<td>184</td>
<td>201</td>
<td>218</td>
<td>235</td>
<td>252</td>
<td>269</td>
<td>286</td>
<td>303</td>
<td>320</td>
<td>337</td>
<td>354</td>
</tr>
</tbody>
</table>

**Light/surge voltage suppressor**

- For M5: `+-` for stations 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
- For 1/8: `+-` for stations 62, 78, 94, 110, 126, 142, 158, 174, 190, 206, 222, 238, 254, 270, 286, 302, 318, 334, 350

**Manual override**

- For M5: 2-ø5.5
- For 1/8: 2-ø5.5

**For 1/8**

- (Station n) - (Station 1)
- (Light/surge voltage suppressor)

**Approx. 300 (Lead wire length)**

- M5 (A port)
  - Pitch: P=16
  - Diameter: 57.1
  - Width: 4.5

- M5 (X port)
  - Pitch: P=17
  - Diameter: 57.1
  - Width: 4.5

- L1
  - Diameter: 57.1
  - Width: 23

- L2
  - Diameter: 57.1
  - Width: 23

- L3
  - Diameter: 57.1
  - Width: 23

**For M5**

- (Station n) - (Station 1)
- (Light/surge voltage suppressor)

**Approx. 300 (Lead wire length)**

- M5 (A port)
  - Pitch: P=16
  - Diameter: 57.1
  - Width: 4.5

- M5 (X port)
  - Pitch: P=17
  - Diameter: 57.1
  - Width: 4.5

- L1
  - Diameter: 57.1
  - Width: 23

- L2
  - Diameter: 57.1
  - Width: 23

- L3
  - Diameter: 57.1
  - Width: 23

**For M5**

- (Station n) - (Station 1)
- (Light/surge voltage suppressor)

**Approx. 300 (Lead wire length)**

- M5 (A port)
  - Pitch: P=16
  - Diameter: 57.1
  - Width: 4.5

- M5 (X port)
  - Pitch: P=17
  - Diameter: 57.1
  - Width: 4.5

- L1
  - Diameter: 57.1
  - Width: 23

- L2
  - Diameter: 57.1
  - Width: 23

- L3
  - Diameter: 57.1
  - Width: 23

**For M5**

- (Station n) - (Station 1)
- (Light/surge voltage suppressor)

**Approx. 300 (Lead wire length)**

- M5 (A port)
  - Pitch: P=16
  - Diameter: 57.1
  - Width: 4.5

- M5 (X port)
  - Pitch: P=17
  - Diameter: 57.1
  - Width: 4.5

- L1
  - Diameter: 57.1
  - Width: 23

- L2
  - Diameter: 57.1
  - Width: 23

- L3
  - Diameter: 57.1
  - Width: 23
Rubber Seal
3 Port Pilot Solenoid Valve
Series SYJ700

Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range (MPa)</td>
<td>Internal pilot</td>
</tr>
<tr>
<td></td>
<td>0.15 to 0.7</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 50 (No freezing. Refer to back page 2.)</td>
</tr>
<tr>
<td>Response time ms (at 0.5 MPa)</td>
<td>30 or less</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>5</td>
</tr>
<tr>
<td>Manual override (Manual operation)</td>
<td>Non-locking push type, push-turn locking slotted type, push-turn locking lever type</td>
</tr>
<tr>
<td>Pilot exhaust method</td>
<td>Individual exhaust for the pilot valve, common exhaust for the pilot and main valve</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Shock/Vibration resistance (m/s²)</td>
<td>Note 2</td>
</tr>
<tr>
<td></td>
<td>150/30</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dust proof (+ DIN terminal, M8 connector: IP65)</td>
</tr>
</tbody>
</table>

Note 1) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20 °C, at rated voltage, without surge voltage suppressor.)

Note 2) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the main valve and armature in both energised and de-energised 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)

Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Grommet (G), (H), L plug connector (L), M plug connector (M), DIN terminal (D), M8 connector (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil rated voltage (V)</td>
<td>DC, AC 50/60 Hz</td>
</tr>
<tr>
<td></td>
<td>24, 12, 6, 5, 3, 24, 12</td>
</tr>
<tr>
<td></td>
<td>- 100, 110, 200, 220</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power consumption (W)</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard with power saving circuit</td>
</tr>
<tr>
<td></td>
<td>0.35 (With light: 0.4 (DIN terminal with light: 0.45))</td>
</tr>
<tr>
<td></td>
<td>0.1 (With light only)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apparent power (VA)</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100 V - 0.78 (With light: 0.87)</td>
</tr>
<tr>
<td></td>
<td>110 V [115 V] - 0.86 (With light: 0.97) [0.94 (With light: 1.07)]</td>
</tr>
<tr>
<td></td>
<td>200 V - 1.15 (With light: 1.30)</td>
</tr>
<tr>
<td></td>
<td>220 V [230 V] - 1.27 (With light: 1.46) [1.39 (With light: 1.60)]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surge voltage suppressor</th>
<th>Diode (DIN terminal, varistor when non-polar types)</th>
</tr>
</thead>
</table>

| Indicator light | LED (Neon light when AC with DIN terminal) |

* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.
* For 115 VAC and 230 VAC, the allowable voltage is –15% to +5% of rated voltage.
* S, Z and T type (with power saving circuit) should be used within the following allowable voltage fluctuation range due to a voltage drop caused by the internal circuit.
  S and Z type: 24 VDC: –7% to +10% 12 VDC: –4% to +10%
  T type: 24 VDC: –8% to +10% 12 VDC: –6% to +10%
## External Pilot

**SYJ700R**

Pilot valve pressure is supplied separately from the main valve pressure through the use of a separate supply port. It can be used in the vacuum (up to –100 kPa) or low pressure line with 0.15 MPa or less.

**Specifications**

<table>
<thead>
<tr>
<th>Applicable model</th>
<th>Base mounted (SYJ714R, SYJ724R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range</td>
<td>Main pressure</td>
</tr>
<tr>
<td>MPa</td>
<td>–100 kPa to 0.7</td>
</tr>
</tbody>
</table>

---

Note 1) For manifold base, refer to page 39.
Note 2) External pilot type body ported valves (SYJ7□2R) can only be used on the manifold. For body ported models with the external pilot option, please refer to page 59.

---

### Flow Characteristics/Weight

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow characteristics</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1→2 (P→A)</td>
<td>2→3 (A→R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C [dm³/(s bar)] b</td>
<td>Cv</td>
</tr>
<tr>
<td>Body ported</td>
<td>SYJ712</td>
<td>N.C.</td>
<td>1/8</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>SYJ722</td>
<td>N.O.</td>
<td>1/8</td>
<td>2.7</td>
</tr>
<tr>
<td>Base mounted (with sub-plate)</td>
<td>SYJ714</td>
<td>N.C.</td>
<td>1/8</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>SYJ724</td>
<td>N.O.</td>
<td>1/8</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>SYJ714</td>
<td>N.C.</td>
<td>1/4</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>SYJ724</td>
<td>N.O.</td>
<td>1/4</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Note) Value for DC. Add 3 g for AC. ( ) Without sub-plate.

* These values have been calculated according to ISO 6358 and represent the flow rate measured in standard conditions at an upstream pressure of 0.6MPa (relative pressure) and a differential pressure of 0.1MPa.
How to Order

Series SYJ700

Rated voltage

<table>
<thead>
<tr>
<th>DC</th>
<th>24 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>12 VDC</td>
</tr>
<tr>
<td>6</td>
<td>6 VDC</td>
</tr>
<tr>
<td>V</td>
<td>5 VDC</td>
</tr>
<tr>
<td>S</td>
<td>3 VDC</td>
</tr>
</tbody>
</table>

Type of actuation

1. Normally closed
2. Normally open

Light/surge voltage suppressor

Electrical entry for G, H, L, M and W

- Without light/surge voltage suppressor
  - S: With surge voltage suppressor
  - Z: With light/surge voltage suppressor
  - R: With surge voltage suppressor (Non-polar type)
  - U: With light surge voltage suppressor (Non-polar type)

- With light/surge voltage suppressor
  - S: With surge voltage suppressor (Non-polar type)

Electrical entry for D

- Without light/surge voltage suppressor
  - S: With surge voltage suppressor (Non-polar type)

- With light/surge voltage suppressor (Non-polar type)

Bracket

- Without bracket
- With bracket

Bracket is mounted.

* External pilot type is not available.

Body ported

SYJ7 1 2 5 M 01 Q

Base mounted

SYJ7 1 4 5 M 01 Q

Coil specifications

- Standard
- With power saving circuit (24, 12 VDC only)

Power saving circuit is only available in the "Z" type.

Manual override

- Non-locking push type
- Push-turn locking slotted type
- Push-turn locking lever type

- Without sub-plate
  - 01: 1/8 port
  - 02: 1/4 port

- With bracket

Port size

- Standard
- With power saving circuit (24, 12 VDC only)

Electrical entry

24, 12, 6, 5, 3 VDC

24, 12 VDC/100, 110, 200, 220 VAC

24, 12, 6, 5, 3 VDC

Grommet L plug connector M plug connector DIN terminal

G: Lead wire length 300 mm
H: Lead wire length 600 mm
J: With lead wire (Length 300 mm)
K: Without lead wire
L: With lead wire (Length 300 mm)
M: Without lead wire
N: With connector
O: Without connector
P: Without connector cable
Q: Without connector cable
R: Without connector cable
S: Without connector cable

Note: When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary. (For details, refer to catalogue on page 40.)

LD, MN type: with 2 sockets.

* DIN terminal type "V" which conforms to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 57.

* For connector cable of M8 connector, refer to page 58.

* Connector M8 type "WA" conforming to IEC 60947-5-2 standard, is also available. For details, see page 58.

* Enter the cable length symbols in /L50132. Please be sure to fill in the blank referring to back page 10.
## Construction

### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum die-casted</td>
<td>White</td>
</tr>
<tr>
<td>2</td>
<td>Piston plate</td>
<td>Resin</td>
<td>White</td>
</tr>
<tr>
<td>3</td>
<td>End cover</td>
<td>Aluminum die-casted</td>
<td>White</td>
</tr>
<tr>
<td>4</td>
<td>Piston</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Spool valve assembly</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Spool spring</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Replacement Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>No.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Sub-plate</td>
<td>SYJ700-9-1-O</td>
<td>1/8</td>
</tr>
<tr>
<td>8</td>
<td>Pilot valve</td>
<td>V111(T)</td>
<td></td>
</tr>
</tbody>
</table>

## How to Order Pilot Valve Assembly

**V111**

- **Coil specifications**
  - T: With power saving circuit (24, 12 VDC only)
  - Power saving circuit is not available in the case of W3 type.
- **Rated voltage**
  - 5: 24 VDC
  - 6: 12 VDC
  - V: 6 VDC
  - S: 5 VDC
  - H: 3 VDC
- **Light/surge voltage suppressor**
  - Without light/surge voltage suppressor
  - With surge voltage suppressor
  - With light/surge voltage suppressor
  - With surge voltage suppressor (Non-polar type)
  - With light/surge voltage suppressor (Non-polar type)
  - Power saving circuit is only available in the "T" type.
- **Electrical entry**
  - G: Grommet, 300 mm lead wire
  - H: Grommet, 600 mm lead wire
  - L: L plug connector
    - With lead wire
    - Without lead wire
  - LN: L plug connector
  - LG: L plug connector
    - Without connector
  - M: M plug connector
    - With lead wire
    - Without lead wire
  - MN: M plug connector
  - MO: M plug connector
  - WO: M8 connector
    - Without connector cable
  - W: M8 connector
    - With connector cable

For connector cable of M8 connector, refer to back page 9.

## How to Order Connector Assembly for L/M Plug Connector

**V100-49-1-**

- **Cable length**
  - 1: 300 mm
  - 2: 500 mm
  - 3: 1000 mm
  - 4: 2000 mm
  - 7: 5000 mm

For DC: **SY100-30-4A-**

- **Lead wire length**
  - 5: 300 mm
  - 6: 600 mm
  - 10: 1000 mm
  - 15: 1500 mm
  - 20: 2000 mm
  - 25: 2500 mm
  - 30: 3000 mm
  - 50: 5000 mm

**SY100-30-A**

Without lead wire: (with connector and 2 of sockets only)

### Electrical entry

- D: DIN terminal
  - With connector
  - Without connector

- DO: DIN terminal
  - With connector
  - Without connector

- Note: Do not replace V111 (G, H, L, M, W) to V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.
Series SYJ700

Body Ported

Grommet (G), (H): SYJ7□2-□□□-01□-Q

With bracket: SYJ7□2-□□□-01□-F-Q

L plug connector (L): SYJ7□2-□□□-01□-(-F)-Q

M plug connector (M): SYJ7□2-□□□-01□-(-F)-Q

DIN terminal (D): SYJ7□2-□□□-01□-(-F)-Q

M8 connector (WO): SYJ7□2-□□□-01□-(-F)-Q

Applicable cable O.D.: ø3.5 to ø7

+, Refer to back page 10 for dimensions with connector cable.
Base Mounted (With Sub-plate)

Grommet (G), (H): SYJ7□4□□□□-○1 □-Q

L plug connector (L): SYJ7□4□□□□-○1 □-Q
M plug connector (M): SYJ7□4□□□□-○1 □-Q
DIN terminal (D): SYJ7□4□□□□-○1 □-Q
M8 connector (WO): SYJ7□4□□□□-○1 □-Q

* Refer to back page 10 for dimensions with connector cable.
**Manifold Specifications**

### Model

<table>
<thead>
<tr>
<th>Model</th>
<th>For internal pilot</th>
<th>Type 20</th>
<th>Type 21</th>
<th>Type 40</th>
<th>Type 41</th>
<th>Type 42</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For external pilot</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

### Manifold type

- Single base/B mount
- P (SUP), R (EXH)

### Valve stations

- A port

### Porting specifications

<table>
<thead>
<tr>
<th>Port size</th>
<th>Direction</th>
<th>Base</th>
<th>Base</th>
<th>Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>P, R port</td>
<td>1/8</td>
<td>1/4</td>
<td>1/8</td>
<td>1/4</td>
</tr>
<tr>
<td>A port</td>
<td>1/8</td>
<td>1/8</td>
<td>1/8</td>
<td>1/4</td>
</tr>
<tr>
<td>X port</td>
<td>—</td>
<td>M5</td>
<td>—</td>
<td>M5</td>
</tr>
</tbody>
</table>

### Valve specifications

- Location: Top, Valve: SUP, Base: EXH
- Direction: Top, Base: Bottom, Side: Bottom
- Base: 1/8, M5, 1/4
- Side: 1/8, C6, 1/4, C8

### Note

- Only for external pilot

### Flow Characteristics

<table>
<thead>
<tr>
<th>Manifold</th>
<th>Port size</th>
<th>Flow characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1(P), 3(R)</td>
<td>2(A) port</td>
</tr>
<tr>
<td></td>
<td>C [dm³/(s·bar)]</td>
<td>b</td>
</tr>
<tr>
<td>Body ported for internal pilot</td>
<td>SYJ7□2</td>
<td>1/8</td>
</tr>
<tr>
<td>Base mounted for internal pilot</td>
<td>SYJ7□4</td>
<td>1/8</td>
</tr>
<tr>
<td>Body ported for external pilot</td>
<td>SYJ7□2R</td>
<td>1/4</td>
</tr>
<tr>
<td>Base mounted for external pilot</td>
<td>SYJ7□4R</td>
<td>1/4</td>
</tr>
</tbody>
</table>

### Note

- Value at manifold base mounted, 2 position single operating.
- These values have been calculated according to ISO 6358 and represent the flow rate measured in standard conditions at an upstream pressure of 0.6MPa (relative pressure) and a differential pressure of 0.1MPa.

### How to Order Manifold (Example)

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

**Example**

- SS3YJ7-20-03-Q —— 1 set (manifold base)
- SS3YJ7-42R-03-01-Q —— 1 set (manifold base)
- SYJ714R-5G-Q —— 2 sets (valve)
- SYJ714R-5LZ-01-Q —— 2 sets (valve)
- SYJ700-10-2A-Q —— 1 set (blanking plate assembly)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.
Combinations of Solenoid Valve, Manifold Gasket and Manifold Base

Body ported (Type SYJ7□-2-Q) Base mounted (Type SYJ7□-4-Q)

Applicable base
SS3YJ7-20-Q
SS3YJ7-21-Q
SS3YJ7-21R-Q

Manifold base
Gasket
SYJ700-5-3

Round head combination screw
M3 x 31, Matt nickel plated

Applicable base
Sub-plate
SS3YJ7-40-Q
SS3YJ7-41-Q
SS3YJ7-42-Q
SS3YJ7-41R-Q
SS3YJ7-42R-Q

Manifold base
Gasket
SYJ700-5-4

Round head combination screw
M3 x 31, Matt nickel plated

Caution
Mounting screw tightening torques
M3: 0.8 N·m

Use caution to the assembly orientation for solenoid valves, gasket, and optional parts.

Blanking Plate Assembly

Model no.: SYJ700-10-2A-1-Q
(In common for body ported type and base mounted type)

Applicable base
SS3YJ7-20-Q
SS3YJ7-21-Q
SS3YJ7-21R-Q

Manifold base
Gasket
Blanking plate

Applicable base
Sub-plate:
SS3YJ7-40-Q
SS3YJ7-41-Q
SS3YJ7-42-Q
SS3YJ7-41R-Q
SS3YJ7-42R-Q

Model no.: SYJ700-10-2A-2-Q
Manifold for Internal Pilot Type

Type 20/Type 21

How to Order

SS3YJ7-20-05-Q

Manifold type

20 Type 20
21 Type 21

P, R port thread type

02 2 stations
00F G
00N NPT
00T NPTF

Note) If there are more than 6 stations for type 20, or more than 9 stations for 21 type, supply air to both sides of P port and exhaust air from both sides of R port.

Applicable blanking plate assembly

SYJ700-10-2A-1-Q

Type 40/Type 41

How to Order

SS3YJ7-40-05-Q

Manifold type

40 Type 40
41 Type 41

P, R port thread type

02 2 stations
00F G
00N NPT
00T NPTF

Note) If there are more than 6 stations for type 40, or more than 9 stations for 41 type, supply air to both sides of P port and exhaust air from both sides of R port.

Applicable blanking plate assembly

SYJ700-10-2A-2-Q

Type 42

How to Order

SS3YJ7-42-05-Q

Manifold type

C6 ø8 one-touch fitting
N7 1/4" one-touch fitting
N9 ø5/16" one-touch fitting

P, R port thread type

01 1/8
00F G
00N NPT
00T NPTF

Note) For more than 9 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Applicable blanking plate assembly

SYJ700-10-2A-2-Q

Manifold for External Pilot Type

Pilot valve pressure is supplied separately from the main valve pressure through the use of a separate supply port. It can be used in the vacuum (up to –100 kPa) or low pressure line with 0.15 MPa or less.

Type 21R

How to Order

SS3YJ7-21R-05-Q

Manifold type

21 R port (External pilot type) M6

P, R port thread type

02 2 stations
00F G
00N NPT
00T NPTF

Note) For more than 9 stations, supply/exhaust air to/from both sides of P and R port.

Applicable blanking plate assembly

SYJ700-10-2A-1-Q

Type 41R

How to Order

SS3YJ7-41R-05-Q

Manifold type

41 R port (External pilot type) M6

P, R port thread type

02 2 stations
00F G
00N NPT
00T NPTF

Note) For more than 9 stations, supply/exhaust air to/from both sides of P and R port.

Applicable blanking plate assembly

SYJ700-10-2A-2-Q

Type 42R

How to Order

SS3YJ7-42R-05-Q

Manifold type

N9 ø8 one-touch fitting
N7 ø5/16" one-touch fitting
C6 ø6 one-touch fitting

P, R port thread type

01 1/8
00F G
00N NPT
00T NPTF

Note) For more than 9 stations, supply/exhaust air to/from both sides of P and R port.

Applicable blanking plate assembly

SYJ700-10-2A-2-Q
**Type 20 Manifold: Top Ported/SS3YJ7-20- Stations (-00□)-Q**

**Grommet (G)**

*(Light/surge voltage suppressor)*

<table>
<thead>
<tr>
<th>Station n</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<th>Station 20</th>
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<tbody>
<tr>
<td>L1</td>
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<td>78</td>
<td>97</td>
<td>116</td>
<td>135</td>
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<td>334</td>
<td>353</td>
<td>372</td>
<td>391</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**L plug connector (L)**  **M plug connector (M)**  **DIN terminal (D)**  **M8 connector (WO)**

+ Refer to back page 10 for dimensions with connector cable.
Series SYJ700

Type 21 Manifold: Top Ported/SS3YJ7-21- Stations (-00□)-Q

Grommet (G)

L plug connector (L)  M plug connector (M)  DIN terminal (D)  M8 connector (WO)

* Refer to back page 10 for dimensions with connector cable.

<table>
<thead>
<tr>
<th>Station n</th>
<th>Station 2</th>
<th>3</th>
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<th>Station 20</th>
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<tbody>
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<td>327</td>
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<td>L2</td>
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</tr>
</tbody>
</table>
Type 40 Manifold: Bottom Ported/SS3YJ7-40- Stations-01□-Q

Grommet (G)

L plug connector (L)  M plug connector (M)  DIN terminal (D)  M8 connector (WO)

<table>
<thead>
<tr>
<th>Station n</th>
<th>L1</th>
<th>L2</th>
</tr>
</thead>
<tbody>
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<td>20</td>
<td>382</td>
<td>372</td>
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</tbody>
</table>

- Refer to back page 10 for dimensions with connector cable.
**Series SYJ700**

**Type 42 Manifold: Side Ported/SS3YJ7-42-\textsuperscript{Stations-01, C8 N7, N9 -Q}

Grommet (G)
For (Built-in one-touch fitting)

For 1/8

(Light/surge voltage suppressor)

(Station n) \hspace{1cm} (Station 1)

For 1/8

(Light/surge voltage suppressor)

(Applicable tubing O.D.: φ6, φ1/4", φ8, φ5/16")

(Applicable cable O.D.: ø3.5 to ø7)

### L plug connector (L)

### M plug connector (M)

### DIN terminal (D)

### M8 connector (WO)

* Refer to back page 10 for dimensions with connector cable.

---

<table>
<thead>
<tr>
<th>Station n</th>
<th>Station 2</th>
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<th>Station 20</th>
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</tbody>
</table>
Type 41 Manifold: Bottom Ported/SS3YJ7-41-Stations-01-Q

Grommet (G)
Series SYJ700

Type 21R Manifold: Top Ported (External Pilot Type)/SS3YJ7-21R- Stations (-00□)-Q

Grommet (G)

---

**L plug connector (L)**

**M plug connector (M)**

**DIN terminal (D)**

**M8 connector (WO)**

---

<table>
<thead>
<tr>
<th>Station n</th>
<th>Station 2</th>
<th>3</th>
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<th>5</th>
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<td>372</td>
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</tbody>
</table>
Grommet (G)

For 1/8

<table>
<thead>
<tr>
<th>Station n</th>
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<th>4</th>
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<td>334</td>
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<td>391</td>
</tr>
</tbody>
</table>

* Refer to back page 10 for dimensions with connector cable.
Series SYJ700

Type 41R Manifold: Bottom Ported (External Pilot Type)/SS3YJ7-41R- Stations-01□-Q

Grommet (G)
How to Order

3 Port/Air Operated Valve

Series SYJA300

How to Order

<table>
<thead>
<tr>
<th>Body ported</th>
<th>SYJA3</th>
<th>Type of actuation</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2 - M3 -</td>
<td></td>
</tr>
<tr>
<td>Base mounted</td>
<td>SYJA3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Bracket
  - Without bracket
  - With bracket

- Port size
  - Without sub-plate
  - M5 port with sub-plate

How to Order Manifold Base

Same manifolds as series SYJ300 are prepared.

SS3YJA3 — Fill the same as SS3YJ3.

- Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

(Ex.) SS3YJA3-41-03-M3 —— 1 set
SYJA314 ———— 1 set
SYJA324 ———— 1 set
SYJ300-10-2A ———— 1 set

- The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.
Compact and lightweight

**JIS Symbol**

<table>
<thead>
<tr>
<th>SYJA312</th>
<th>SYJA322</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) 2</td>
<td>(A) 2</td>
</tr>
</tbody>
</table>

- **N.C.**
- **N.O.**

**Specifications**

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range (MPa)</td>
<td>0.15 to 0.7</td>
</tr>
<tr>
<td>Pilot pressure range (MPa) Note 1</td>
<td>Operating pressure range to 0.7</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 50 (No freezing. Refer to back page 2.)</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²) Note 2</td>
<td>150/30</td>
</tr>
</tbody>
</table>

Note 1) Be certain that pressure within operating pressure range be supplied to supply port, because return pressure is introduced from supply port (1(P)) for activation.

Note 2) Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle directions of the main valve, when pilot signal is ON and OFF. (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 when pilot signal is ON and OFF. (Value in the initial state)

**With Bracket**

| Air operated valve type | SYJA3½ 2-M3-F |

**Pilot Pressure Range**

- **Caution**
- Refer to back page 1 through to 4 for Safety Instructions and Common Precautions.

**Flow Characteristics/Weight**

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow characteristics 1→2 (P→A)</th>
<th>Flow characteristics 2→3 (A→R)</th>
<th>Pilot port size</th>
<th>Weight (g)</th>
<th>Effective area (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mounted</td>
<td>N.C.</td>
<td>M3</td>
<td>a</td>
<td>b</td>
<td>C [dm³/(s bar)]</td>
<td>0.1</td>
<td>0.18</td>
</tr>
<tr>
<td>Base mounted</td>
<td>N.C.</td>
<td>M5</td>
<td>0.41</td>
<td>0.18</td>
<td>0.086</td>
<td>97</td>
<td>0.35</td>
</tr>
</tbody>
</table>

Note 1) Model No. for base mounted style without sub-plate is SYJA3½.

*These values have been calculated according to ISO 6358 and represent the flow rate measured in standard conditions at an upstream pressure of 0.6MPa (relative pressure) and a differential pressure of 0.1MPa.
Series SYJA300

Dimensions

Body ported: SYJA3□2-M3(-F)

Base mounted: SYJA3□4-M5
3 Port/Air Operated Valve
Series SYJA500/700

How to Order

How to Order Manifold Base

Same manifolds as series SYJ500/700 are prepared.

(For SYJA500) SS3YJA5 — Fill the same as SS3YJ5.
(For SYJA700) SS3YJA7 — Fill the same as SS3YJ7.

* Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

(Ex.) SS3YJA5-40-03-01.......... 1 set  (Ex.) SS3YJA7-41-03-01.......... 1 set
≠ SYJ514.......................... 2 sets  ≠ SYJ714.......................... 2 sets
≠ SYJ500-10-3A...................... 1 set  ≠ SYJ700-10-2A...................... 1 set

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.
### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range (MPa)</td>
<td>0.15 to 0.7</td>
</tr>
<tr>
<td>Pilot pressure range (MPa) &lt;sup&gt;Note 1&lt;/sup&gt;</td>
<td>(0.4 x P + 0.1) to 0.7 P; Operating pressure range</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>−10 to 60 (No freezing)</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²) &lt;sup&gt;Note 2&lt;/sup&gt;</td>
<td>300/50</td>
</tr>
</tbody>
</table>

<sup>Note 1</sup> Be certain that pressure within operating pressure range be supplied to supply port, because return pressure is introduced from supply port (1(P)) for activation.

<sup>Note 2</sup> Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle directions of the main valve, when pilot signal is ON and OFF. (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 when pilot signal is ON and OFF. (Value in the initial state)

### With Bracket

| Air operated valve type | SYJA5<sup>2</sup>1-2-M5-F, SYJA7<sup>2</sup>1-2-01-F |

Note) Bracket is not mounted.

### Flow Characteristics/Weight

#### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range (MPa)</td>
<td>0.15 to 0.7</td>
</tr>
<tr>
<td>Pilot pressure range (MPa) &lt;sup&gt;Note 1&lt;/sup&gt;</td>
<td>(0.4 x P + 0.1) to 0.7 P; Operating pressure range</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>−10 to 60 (No freezing)</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²) &lt;sup&gt;Note 2&lt;/sup&gt;</td>
<td>300/50</td>
</tr>
</tbody>
</table>

<sup>Note 1</sup> Be certain that pressure within operating pressure range be supplied to supply port, because return pressure is introduced from supply port (1(P)) for activation.

<sup>Note 2</sup> Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle directions of the main valve, when pilot signal is ON and OFF. (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 when pilot signal is ON and OFF. (Value in the initial state)

#### Valve model

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of action</th>
<th>Port size</th>
<th>Flow characteristics</th>
<th>Pilot port size</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYJA512-M5</td>
<td>N.C.</td>
<td>M5 x 0.8</td>
<td>0.53; 0.45; 0.14; 150; 0.47; 0.39; 0.12</td>
<td>M5 x 0.8</td>
<td>34</td>
</tr>
<tr>
<td>SYJA522-M5</td>
<td>N.O.</td>
<td></td>
<td>0.66; 0.45; 0.18; 186; 0.66; 0.45; 0.18</td>
<td></td>
<td>64</td>
</tr>
<tr>
<td>SYJA514-01</td>
<td>Rc 1/8</td>
<td>N.C.</td>
<td>1.2; 0.41; 0.32; 329; 1.1</td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>SYJA524-01</td>
<td>N.O.</td>
<td></td>
<td>1.3; 0.37; 0.33; 346; 1.2</td>
<td></td>
<td>111</td>
</tr>
<tr>
<td>SYJA712-01</td>
<td>N.C.</td>
<td>Rc 1/8</td>
<td>2.8; 0.43; 0.77; 779; 2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYJA722-01</td>
<td>N.O.</td>
<td></td>
<td>2.7; 0.38; 0.72; 724; 2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYJA714-01</td>
<td>N.C.</td>
<td>Rc 1/8</td>
<td>2.9; 0.32; 0.71; 747; 2.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYJA724-01</td>
<td>N.O.</td>
<td></td>
<td>3.0; 0.31; 0.74; 768; 2.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYJA714-02</td>
<td>N.C.</td>
<td>Rc 1/8</td>
<td>2.8; 0.21; 0.70; 674; 2.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYJA724-02</td>
<td>N.O.</td>
<td></td>
<td>2.7; 0.31; 0.68; 691; 2.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) Model No. for base mounted style without sub-plate is SYJA5<sup>2</sup>4, SYJA7<sup>2</sup>4.

*These values have been calculated according to ISO 6358 and represent the flow rate measured in standard conditions at an upstream pressure of 0.6MPa (relative pressure) and a differential pressure of 0.1MPa.
### Dimensions

#### Series SYJA500

**Body ported: SYJA5□2-M5(-F)**

- M5 x 0.8 (P, A, R port)
- ø1.3 (Breathing hole)

**Base mounted: SYJA5□4-01□**

- ø1.3 (Breathing hole)
- (P, A, R port)

#### Series SYJA700

**Body ported: SYJA7□2-01□ (-F)**

- 2 x ø3.5 (For mounting)
- 2 x ø2.6 (For manifold mounting)
- M5 x 0.8 (Pilot port)

**Base mounted: SYJA7□4-□-□**

- ø1.8 (Breathing hole)
- 1/8, 1/4 (P, R port)

---

**SMC**

56
Series **SYJ500/700**  
Made to Order  
DIN Connector Conforming to EN-175301-803C (former DIN 43650C)

DIN connector type that conforms to the 8 mm pitch standards between DIN terminals.

## How to Order Valve

<table>
<thead>
<tr>
<th>Series</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Body option</th>
<th>Thread type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYJ500</td>
<td>Normally closed</td>
<td>M5</td>
<td>Y: With connector</td>
<td>-</td>
</tr>
<tr>
<td>SYJ700</td>
<td>Normally open</td>
<td>M5</td>
<td>Y: Without connector</td>
<td>-</td>
</tr>
</tbody>
</table>

### Specifications

- **Rated voltage**
  - DC: 5 24 VDC, 6 12 VDC
  - AC (%/o Hz): 1 100 VAC, 2 200 VAC, 3 110 VAC (115 VAC), 4 220 VAC (230 VAC)

### Light/surge voltage suppressor

- **Without light/surge voltage suppressor**
- **With surge voltage suppressor**
- **With light/surge voltage suppressor**

### Manual override

- **Non-locking push type**
- **Push-turn locking slotted type**
- **Push-turn locking lever type**

## How to Order Pilot Valve Assembly

### Specifications

- **Rated voltage**
  - 5 24 VDC, 6 12 VDC
  - AC (%/o Hz): 1 100 VAC, 2 200 VAC, 3 110 VAC (115 VAC), 4 220 VAC (230 VAC)

### Light/surge voltage suppressor

- **Without light/surge voltage suppressor**
- **With surge voltage suppressor**
- **With light/surge voltage suppressor**

### Electrical entry

- **Y**: DIN With connector
- **YO**: Without connector

### DIN Connector Part No.

- **Without light**: SY100-82-1
- **With light**: SY100-82-3-05
  - 24 VDC 24 VN
  - 12 VDC 12 VN
  - 100 VDC 100 VN
  - 200 VDC 200 VN
  - 110 VAC (115 VAC) 110 VN
  - 220 VAC (230 VAC) 220 VN

### Caution

1. Use caution in wiring because it won’t meet the IP65 (enclosure) standard if you use the other cord than prescribed heavy-duty cord of size (ø3.5 to ø7.5). Also be sure to tighten the ground nut and holding screw with the prescribed torque range. For how to use DIN terminal (wiring procedures, procedures for changing electrical entries, precautions, applicable cable, circuit diagram), refer to page 66.
2. D type DIN connector with 9.4 mm pitch between terminals is not interchangeable.
3. DIN connector except D type has the “N” indication in the end of voltage symbol. In case of DIN connector without light, “S” option is not indicated. Please refer to the name plate to distinguish.
4. Dimensions are completely the same as D type connector.
5. When exchanging the pilot valve assembly only, “V115□□□□” is interchangeable with “V115□□□□□□”. Do not replace V111 (G, H, L, M, W) to V115□□□□□□ (DIN terminal), and vice versa.
### How to Order Valve

#### Series SYJ300/500/700
- Made to Order
- M8 Connector Conforming to IEC60947-5-2

#### How to Order Valve

<table>
<thead>
<tr>
<th>Rated voltage (DC)</th>
<th>M</th>
<th>Z</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 24 VDC</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>6 12 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 6 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 5 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 3 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Type of actuation**
  - 3 SYJ300
  - 5 SYJ500
  - 7 SYJ700

- **Port size**
  - M3 (SYJ300 only)
  - M5
  - 01 1/8 (SYJ700 only)

- **Body ported options**
  - SYJ 5 1 2
  - SYJ 5 WAO
  - M5
  - Q

- **Base mounted options**
  - SYJ 5 1 4
  - SYJ 5 WAO
  - 01
  - Q

- **Body option**
  - Pilot valve individual exhaust (M)
  - Common exhaust type for main and pilot valve (R)
  - External pilot (SYJ33/2R, SYJ55/2R, SYJ77/2R, are only for manifold use)

- **Electrical entry**
  - WA O: Without connector cable
  - WA A: With connector cable (Length 0.3 m)
  - WA 2: With connector cable (Length 0.5 m)
  - WA 4: With connector cable (Length 1 m)
  - WA 6: With connector cable (Length 2 m)
  - WA 7: With connector cable (Length 5 m)

- **Light/surge voltage suppressor**
  - Without light/surge voltage suppressor (S)
  - With light/surge voltage suppressor (Z)
  - With surge voltage suppressor (Non-polar type) (U)

- **Bracket**
  - Without bracket (F)
  - With bracket (M5)

- **Thread type**
  - Rc
  - N
  - G
  - NPT

- **Port size**
  - Without sub-plate (M5)
  - With sub-plate (SYJ300 only)
  - 1/8 port (SYJ700 only)

- **Manual override**
  - Non-locking push type (D)
  - Push-turn locking slotted type (E)

#### How to Order Pilot Valve Assembly

<table>
<thead>
<tr>
<th>Rated voltage (DC)</th>
<th>WAO</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 24 VDC</td>
<td></td>
</tr>
<tr>
<td>6 12 VDC</td>
<td></td>
</tr>
<tr>
<td>6 6 VDC</td>
<td></td>
</tr>
<tr>
<td>5 5 VDC</td>
<td></td>
</tr>
<tr>
<td>3 3 VDC</td>
<td></td>
</tr>
</tbody>
</table>

- **Light/surge voltage suppressor**
  - Without light/surge voltage suppressor (S)
  - With light/surge voltage suppressor (Z)
  - With surge voltage suppressor (Non-polar type) (U)

- **Electrical entry**
  - WA O: Without connector cable
  - WA L: With connector cable

**Note:** □ is for cable length. Please refer to Specific Product Precautions 6.
Series **SYJ500/700**
Made to Order
(For detailed specifications, delivery and pricing, please contact SMC.)

**Body Ported External Pilot**

**How to Order**  Applicable solenoid valve series/SYJ5□2R, SYJ7□2R

SYJ 5\(^7\) □ 2R □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ \(^\text{A})\)

**Operating Pressure Range MPa**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range</td>
<td>-100 kPa to 0.7</td>
</tr>
<tr>
<td>Pilot pressure range</td>
<td>0.15 to 0.7</td>
</tr>
</tbody>
</table>

**Dimensions**
SYJ500: 8 mm longer in total length
SYJ700: 8 mm longer in total length

**External Pilot Port**

<table>
<thead>
<tr>
<th>Series</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYJ500, SYJ700</td>
<td>M5</td>
</tr>
</tbody>
</table>

**JIS Symbol**

Body ported
N.C. (P) (R) 1 3 (A) 2

N.O. (P) (R) 1 3 (A) 2

Entry is the same as standard products.
These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels 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.

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 catalogue 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 an operator is unfamiliar with it. 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 once measures to prevent falling or runaway of the driver objects have been confirmed.
   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.

Note 1) ISO 4414: Pneumatic fluid power--General rules relating to systems.
Note 2) JIS B 8370: General Rules for Pneumatic Equipment
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 manifold
   Use caution when valves are used on a manifold, as actuator malfunction due to back-pressure may occur.
   Note: Extra care should be taken when driving a single acting cylinder. Take measures to prevent potential malfunction.

3. Holding of 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. Cannot be used as an emergency shut off valve, etc.
   The valves presented in this catalogue are not designed for safety applications such as an emergency shut off 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 purpose.

7. Vacuum applications
   When a valve is used for vacuum switching, etc., take measures against the suction of external dust or other contaminants from vacuum pads and exhaust ports, etc. Moreover, an external pilot type valve should be used in this case. Contact SMC in case of an internal pilot type or air operated valve, etc.

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

🎉 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:
   - With DC coil: 3% or less of rated voltage
   - With AC coil: 8% or less of rated voltage

2. Solenoid valve drive for AC with solid state output (SSR, TRIAC output, etc.)
   1) Current leakage
      When using a snubber circuit (C-R element) for surge protection of the output element, a very small electric current will still continue to flow in spite of the OFF state. This results in the valve not returning. In the cases when exceeding the tolerance as shown above, take measures to install a bleeder resistor.
   2) Minimum load allowable amount (Min. load current)
      When the consumption current of a valve is less than the output element’s minimum load allowable volume or the margin is small, the output element may not be switched normally. Please confirm SMC.

3. Surge voltage suppressor
   If a surge protection circuit contains non-ordinary diodes such as Varistor, 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. In the case of diodes, the residual voltage is approximately 1 V.

4. Use in low temperature environments
   Unless otherwise indicated in the specifications for each valve, operation is possible to –10°C, but appropriate measures should be taken to avoid solidification or freezing of drainage and moisture, etc.
3 Port Solenoid Valves/Common Precautions 2

Be sure to read before handling.

### Selection

**5. Operation for air blowing**
When using a solenoid valve for air blow, use an external pilot type. Take note that when internal pilots and external pilots are used on the same manifold, the pressure drop caused by the air blowing can have an effect on the internal pilot type valves. Moreover, when compressed air within the pressure range of the established specifications is supplied to the external pilot port, and a double solenoid valve is used for air blowing, the solenoids should normally be energised when air is being blown.

**6. Mounting orientation**
Rubber seal: Refer to the specifications of each series.

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

### Piping

3. **Screwing in fittings**
   When connecting fittings to valves, tighten as indicated below.
   1) For M5 type
      (1) When using SMC fittings, follow the guidelines below. M5: After tightening by hand, tighten an additional 1/6 turn with a tightening tool. However, if miniature fittings are used, tighten an additional 1/4 turn with a tightening tool after tightening by hand. For fittings with gaskets in 2 locations, e.g., universal elbow or universal tee, tighten an additional 1/2 turn.
      Note) If fittings are over-tightened, air leakage may result due to breaking of fitting threads or deformation of the gaskets. However, if fittings are not tightened sufficiently, loosening of the threads and air leakage and may occur.
      (2) When fittings other than SMC fittings are used, follow the instructions of the respective fitting manufacturer.
   2) For threads

<table>
<thead>
<tr>
<th>Connection threads</th>
<th>Proper tightening torque N·m</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
<td>7 to 9</td>
</tr>
<tr>
<td>1/4</td>
<td>12 to 14</td>
</tr>
</tbody>
</table>

4. **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

**1. Polarity**
When connecting power to a DC specification solenoid valve equipped with (indicator light) surge voltage suppressor, confirm whether or not there is polarity.
If there is polarity, take note of the following points.
Without built-in diode to protect polarity (including power saving circuit):
   If a mistake is made regarding polarity, the diode in the valve, the control device switching element or power supply equipment, etc., may burn out.
With diode to protect polarity:
   If a mistake is made regarding polarity, it will not be possible to switch the valve.

**2. 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.

**3. Confirm the connections.**
After completing the wiring, confirm that the connections are correct.

---

Back page 3
3 Port Solenoid Valves/Common Precautions 3
Be sure to read before handling.

Lubrication

⚠️ Caution
1. Lubrication
   1) The valve has been lubricated for life at the factory, and does not require any further lubrication.
   2) In the event that it is lubricated, use class 1 turbine oil (without additives), ISO VG32.
      However, once lubrication is applied it must be continued, as loss of the original lubricant may lead to malfunction.
      Contact SMC regarding class 2 turbine oil (with 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 Drain Catch (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 Best Pneumatics” catalogue for compressed air quality.

Operating Environment

⚠️ Warning
1. Do not use valves in atmospheres of corrosive gases, chemicals, salt water, water or steam or where there is direct contact with any of these.
2. Products with IP65 enclosures (based on IEC60529) are protected against dust and water, however, these products cannot be used in water.
   Take measures to prevent water and dust from coming from the exhaust port.
3. Products compliant to IP65 satisfy the specifications by mounting each product properly. Be sure to read the Specific Product Precautions for each product.
4. Do not use in an explosive atmosphere.

⚠️ Caution
5. Do not use in locations subject to vibration or impact. Confirm the specifications in the main section of the catalogue.
6. A protective cover, etc., should be used to shield valves from direct sunlight.
7. Shield valves from radiated heat generated by nearby heat sources.
8. Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.
9. When solenoid valves are mounted in a control panel or are energised 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. Equipment removal and supply/exhaust of compressed air
   When equipment is removed, 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.)
4. Manual override operation
   When the manual override is operated, connected equipment will be actuated. Confirm safety before operating.

⚠️ Caution
1. Drain flushing
   Remove drainage from air filters regularly.
Series SYJ300/500/700
Specific Product Precautions 1
Be sure to read before handling.
Refer to back page 1 through to 4 for Safety Instructions and Common Precautions.

## Manual Override Operation

### Warning
When the manual override is operated, connected equipment will be actuated. Confirm safety before operating.

■ Non-locking push type [Standard]
Press in the direction of the arrow

■ Push-turn slotted locking type [Type D]
While pressing, turn in the direction of the arrow. If it is not turned, it can be operated the same way as the non-locking type.

### Caution
When operating the locking type D with a screw driver, turn it gently using a watchmakers screw driver. [Torque: Less than 0.1 N-m]

■ Push-turn locking lever type [Type E]
While pressing, turn in the direction of the arrow. If it is not turned, it can be operated the same way as the non-locking type.

### Caution
When locking the manual override on the push-turn locking types (D, E), be sure to push it down before turning. Turning without first pushing it down can cause damage to the manual override and trouble such as air leakage, etc.

---

## Solenoid Valve for 200 V, 220 VAC Specifications

### Warning
Solenoid valves with DIN terminal connector AC specifications have a built-in rectifier circuit in the pilot section to operate the DC coil.
With 200 V, 220 VAC specification pilot valves, this built-in rectifier generates heat when energised. The surface may become hot depending on the energised condition; therefore, do not touch the solenoid valves.

### Caution
- Pilot air is exhausted through the main valve body rather than directly to atmosphere.
- Suitable for applications where exhausting the pilot valve to atmosphere would be detrimental to the surrounding working environment.
- For use in extremely dirty environments where there is the possibility that dust could enter the pilot exhaust and damage the valve.
Ensure that the piping of exhaust air is not too restrictive.

---

## Common Exhaust Type for Main and Pilot Valve

### Caution
For bracket attached styles of SYJ300, do not use it without bracket.


### 1. Attaching and detaching connectors

- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever’s pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.

### 2. Crimping of lead wires and sockets

Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area.

Use an exclusive crimping tool for crimping. (Contact SMC for special crimping tools.)

### 3. Attaching and detaching sockets with lead wires

- **Attaching**
  Insert the sockets into the square holes of the connector (+, − indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

- **Detaching**
  To detach a socket from a connector, pull out the lead wire while pressing the socket’s hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.

---

### How to Order Connector Assembly

For **DC**:

- **SY100-30-4A-20** (with connector and 2 of sockets only)

For **SYJ312-5LO-M3**

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

<table>
<thead>
<tr>
<th>Lead wire length</th>
<th>300 mm</th>
<th>600 mm</th>
<th>1000 mm</th>
<th>1500 mm</th>
<th>2000 mm</th>
<th>2500 mm</th>
<th>3000 mm</th>
<th>5000 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
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<td>30</td>
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<td></td>
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<tr>
<td>50</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**How to Order**
Include the connector assembly part number together with the part number for the plug connector’s solenoid valve without connector.

EX.) In case of 2000 mm of lead wire

**For DC**

- **SYJ312-5LO-M3**
- **SY100-30-4A-20**
**Series SYJ300/500/700**

Specific Product Precautions 3

Be sure to read before handling. Refer to back page 1 through to 4 for Safety Instructions and Common Precautions.

---

**Surge Voltage Suppressor**

### Caution

*For DC*

Grommet, L/M Plug Connector

- **Standard type (with polarity)**
  - Surge voltage suppressor (S)
  - Polarity protection diode
  - Red (+) \(\rightarrow\) \(\bigcirc\)
  - Black \(\leftarrow\)
  - With light/surge voltage suppressor (Z)
  - Polarity protection diode
  - Red (+) \(\rightarrow\) \(\bigcirc\)
  - Black \(\leftarrow\)

- **Non-polar type**
  - With surge voltage suppressor (R)
  - (-) \(\rightarrow\) \(\bigcirc\)
  - (+) \(\leftarrow\)
  - With light/surge voltage suppressor (U)
  - (-) \(\rightarrow\) \(\bigcirc\)
  - (+) \(\leftarrow\)

- **With power saving circuit**
  - Power consumption is decreased by 1/4 by reducing the wattage required to hold the valve in an energised state. (Effective energising time is over 62 ms at 24 VDC.)

### Operating Principle

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

- **With power saving circuit**
  - Electric circuit (with power saving circuit)
    - LED \(\bigcirc\)
    - Timer circuit
    - Diode \(\bigcirc\)
    - Red (+) \(\rightarrow\)
    - Black (-) \(\leftarrow\)

- **Applied voltage**
  - 24 V
  - 20 V
  - 16 V
  - 0.4 W
  - 0.1 W
  - 0 W
  - 62 ms

**Operating Principle**

- In the case of standard type, connect + to 1 and - to 3 for W type, and connect + to 4 and - to 3 for WA type, according to the polarity.
- For DC voltages other than 12 V and 24 V, incorrect wiring will case damage to the surge suppressor circuit.
- 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.)
Series SYJ300/500/700

Specific Product Precautions 4
Be sure to read before handling.
Refer to back page 1 through to 4 for Safety Instructions and Common Precautions.

**Surge Voltage Suppressor**

<For AC>
(There is no “S” type because the generation of surge voltage is prevented by a rectifier.)

**Caution**

DIN Terminal

With light (D2)

Note) Surge voltage suppressor of varistor has residual voltage corresponding to the protective element and rated voltage; therefore, protect the controller side from the surge. The residual voltage of the diode is approximately 1 V.

**How to Use DIN Terminal**

**Caution**

Connection
1. Loosen the holding screw and pull the connector out of the solenoid valve terminal block.
2. After removing the holding screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3. Loosen the terminal screws (slotted screws) on the terminal block, insert the cores of the lead wires into the terminals according to the connection method, and fasten them securely with the terminal screws.
4. Secure the cord by fastening the ground nut.

**Caution**

When making connections, take note that using other than the supported size (ø3.5 to ø7) heavy duty cord will not satisfy IP65 (enclosure) standards. Also, be sure to tighten the ground nut and holding screw within their specified torque ranges.

Changing the entry direction
After separating the terminal block and housing, the cord entry can be changed by attaching the housing in the desired direction (4 directions at 90° intervals).
* When equipped with a light, be careful not to damage the light with the cord’s lead wires.

**Compatible cable**

Cord O.D.: ø3.5 to ø7
(Reference) 0.5 mm², 2-core or 3-core, equivalent to JIS C 3306

**Solenoid Valve Mounting**

**Caution**

Mount it so that there is no slippage or deformation in gaskets, and tighten with the tightening torque as shown below.

<table>
<thead>
<tr>
<th>Model</th>
<th>Thread size</th>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYJ300</td>
<td>M1.7</td>
<td>0.12 N·m</td>
</tr>
<tr>
<td>SYJ500</td>
<td>M2.5</td>
<td>0.45 N·m</td>
</tr>
<tr>
<td>SYJ700</td>
<td>M3</td>
<td>0.8 N·m</td>
</tr>
</tbody>
</table>

**DIN Connector Part No.**

**Caution**

Without light | SY100-61-1
With light

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Voltage symbol</th>
<th>Model no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VDC</td>
<td>24 V</td>
<td>SY100-61-3-05</td>
</tr>
<tr>
<td>12 VDC</td>
<td>12 V</td>
<td>SY100-61-3-06</td>
</tr>
<tr>
<td>100 VAC</td>
<td>100 V</td>
<td>SY100-61-2-01</td>
</tr>
<tr>
<td>200 VAC</td>
<td>200 V</td>
<td>SY100-61-2-02</td>
</tr>
<tr>
<td>110 VAC</td>
<td>110 V</td>
<td>SY100-61-2-03</td>
</tr>
<tr>
<td>220 VAC</td>
<td>220 V</td>
<td>SY100-61-2-04</td>
</tr>
</tbody>
</table>

**Circuit Diagram with Light**

Note) Refer to page 57 for DIN connector (Y) conforming to EN-175301-803C (former DIN 43650C).
**Series SYJ300/500/700**

Specific Product Precautions 5

Be sure to read before handling.
Refer to back page 1 through to 4 for Safety Instructions and Common Precautions.

---

### Connector Assembly with Cover

**Caution**

Connector assembly with dust proof protective cover.

- Effective to prevention of short circuit failure due to the entry of foreign matter into the connector.
- Chloroprene rubber for electrical use, which provides outstanding weather resistance and electrical insulation, is used for the cover material. However, do not allow contact with cutting oil, etc.
- Simple and unencumbered appearance by adopting round-shaped cord.

#### How to Order

**SY100-68-A**

<table>
<thead>
<tr>
<th>Lead wire length</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>300 mm</td>
</tr>
<tr>
<td>6</td>
<td>600 mm</td>
</tr>
<tr>
<td>10</td>
<td>1000 mm</td>
</tr>
<tr>
<td>15</td>
<td>1500 mm</td>
</tr>
<tr>
<td>20</td>
<td>2000 mm</td>
</tr>
<tr>
<td>25</td>
<td>2500 mm</td>
</tr>
<tr>
<td>30</td>
<td>3000 mm</td>
</tr>
<tr>
<td>50</td>
<td>5000 mm</td>
</tr>
</tbody>
</table>

---

### M8 Connector

**Caution**

1. M8 connector types have an IP65 (enclosure) rating, offering protection from dust and water. However please note: these products are not intended for use in water. Select a SMC connector cable (V100-49-1-□/L50132) or a FA sensor type connector, with M8 threaded 3 pin specifications conforming to Nippon Electric Control Equipment Association Standard, NECA4202 (IEC60947-5-2). Make sure the connector O.D. is 10.5 mm or less when used with the Series SYJ300 manifold. If more than 10.5 mm, it cannot be mounted due to the size.

2. Do not use a tool to mount the connector, as this may cause damage. Only tighten by hand. (0.4 to 0.6 Nm)

3. The excessive stress on the cable connector will not be able to satisfy the IP65 rating. Please use caution and do not apply a stress of 30 N or greater.

**Caution**

Failure to meet IP65 performance may result if using alternative connectors than those shown above, or when insufficiently tightened.

- Connector cable mounting

---

**Connector Assembly with Cover: Dimensions**

![Connector Assembly with Cover Diagram]

**How to Order**

Enter the part number for a plug connector solenoid valve without connector together with the part number for a connector assembly with cover.

Ex. 1) Lead wire length of 2000 mm
SYJ312-5LOZ-M3-Q
SY100-68-A-20

Ex. 2) Lead wire length of 300 mm (standard)
SYJ312-5LPZ-M3-Q

*In this case, the part number for the connector assembly with cover is not required.*
How to Measure the Flow Rate

Caution
Refer to pages 69 and 70: How to measure the flow rate.

Replacement of Pilot Valve

Caution
Pilot valves in this series are improved to provide excellent energy saving results. However following this improvement, these new valves are no longer compatible with the conventional pilot valve used at the interface. Consult with SMC when you need to exchange these pilot valves, in the case of manual override (marked in orange) of the adapter plate.

New type

Conventional type

M8 Connector

Connector cable
- M8 connector cable for M8 can be ordered as follows:

How to Order
1. To order solenoid valve and connector cable at the same time. (Connector cable will be included in the shipment of the solenoid valve.)

2. To order connector cable only

Ex. 1) Cable length: 300 mm
SYJ312-SW1ZE-M3-Q
Symbol for electrical entry

Ex. 2) Cable length: 300 mm
SYJ300/312-5W1ZE-M3-Q
Symbol for electrical entry

How to Order
1. To order solenoid valve and connector cable at the same time. (Connector cable will be included in the shipment of the solenoid valve.)

2. To order connector cable only

Ex. 1) Cable length: 300 mm
SYJ312-SW1ZE-M3-Q
Symbol for electrical entry

Ex. 2) Cable length: 300 mm
SYJ300/312-5W1ZE-M3-Q
Symbol for electrical entry