3 Port Solenoid Valve

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>Flow characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C [dm³/(s·bar)]</td>
</tr>
<tr>
<td>SYJ300</td>
<td>0.36</td>
</tr>
<tr>
<td>SYJ500</td>
<td>1.2</td>
</tr>
<tr>
<td>SYJ700</td>
<td>2.7</td>
</tr>
</tbody>
</table>
## Rubber Seal

### 3 Port Solenoid Valve

**Series SYJ300/500/700**

### Variations

<table>
<thead>
<tr>
<th>Series</th>
<th>Port size</th>
<th>Sonic conductance C [dm³/(s·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>SYJ300</td>
<td>M3 x 0.5</td>
<td>0.9 mm²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYJ500</td>
<td>M5 x 0.8</td>
<td>0.66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYJ700</td>
<td>1/8</td>
<td>2.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYJ300</td>
<td>M5 x 0.8</td>
<td>0.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYJ500</td>
<td>1/8</td>
<td>1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYJ700</td>
<td>1/8, 1/4</td>
<td>2.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Features

- Body ported: Grommet, L plug connector
- Base mounted: M plug connector, DIN terminal, M8 connector

**Note:** All AC voltage models have built-in surge voltage suppressor.

**Manual override:**
- Non-locking push type
- Push-turn locking slotted type
- Push-turn locking lever type

**Option:** With light/surge voltage suppressor

**Type of actuation:**
- For DC: With surge voltage suppressor, With light/surge voltage suppressor
- For AC: With light/surge voltage suppressor

**Voltage:**
- For DC: 24 VDC, 12 VDC, 6 VDC, 5 VDC, 3 VDC
- For AC: 100 VAC % Hz, 110 VAC % Hz, 200 VAC % Hz, 220 VAC % Hz
# Series SYJ300/500/700

## Manifold Variations

<table>
<thead>
<tr>
<th>Valve series</th>
<th>A port location</th>
<th>P, R ports size</th>
<th>A port size</th>
<th>M3</th>
<th>M5</th>
<th>1/8</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>o4</td>
<td>o6</td>
</tr>
<tr>
<td><strong>SYJ300</strong></td>
<td>Top</td>
<td>M5 x 0.8</td>
<td>Note 1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/8</td>
<td>Note 2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SYJ500</strong></td>
<td>Top</td>
<td>1/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SYJ700</strong></td>
<td>Top</td>
<td>1/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SYJ300</strong></td>
<td>Side</td>
<td>M5 x 0.8</td>
<td>Note 1)</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><strong>SYJ500</strong></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>Side</td>
<td>1/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SYJ700</strong></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>Side</td>
<td>1/4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) Only for internal pilot
Note 2) Only for external pilot

---

Series SYJ300  
Series SYJ500  
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 page 60.)</td>
</tr>
<tr>
<td>Response time ms (at 0.5 MPa) [Note 1]</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 (<em>M8 connector conforms to IP65.</em>)</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 with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Value in the initial state)

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

### 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)</td>
<td>DC 24, 12, 6, 5, 3 AC 50/60 Hz 100, 110, 200, 220</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage</td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>DC 0.36 (With light: 0.4) With power saving circuit 0.1 (With light only)</td>
</tr>
<tr>
<td>Apparent power (VA)</td>
<td>AC 100 V 1.4 (With light: 1.5) 110 V (115 V) 1.6 (With light: 1.7) [1.7 (With light: 1.8)] 200 V 2.3 (With light: 2.4) 220 V [230 V] 2.5 (With light: 2.6) [2.7 (With light: 2.8)]</td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode (varistor when non-polar types)</td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED</td>
</tr>
</tbody>
</table>

* Based on IEC529

Made to Order
(For details, refer to pages 57 through 58.)
Series SYJ300

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)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1x2 (Ps/A)</td>
<td>2x3 (A8iR)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C [dm³/s bar]</td>
<td>b</td>
<td>C [dm³/s bar]</td>
</tr>
<tr>
<td>Body mounted</td>
<td>SYJ312</td>
<td>N.C.</td>
<td>M3 x 0.5</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>SYJ322</td>
<td>N.O.</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Base mounted (with sub-plate)</td>
<td>SYJ314</td>
<td>N.C.</td>
<td>M5 x 0.8</td>
<td>0.41</td>
<td>0.18</td>
</tr>
<tr>
<td></td>
<td>SYJ324</td>
<td>N.O.</td>
<td>0.36</td>
<td>0.31</td>
<td>0.089</td>
</tr>
</tbody>
</table>

Note) Value for DC. Add 1 g for AC. ( ): Without sub-plate.

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 MPa</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 7.
Note 2) External pilot type body ported valves (SYJ314R, SYJ324R) can only be used on the manifold.
**Series SYJ300**

### How to Order

#### Light/surge voltage suppressor
- **Nil**: Without light/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)

- **Note**: For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.
- **Note**: For type R, U, DC voltage is only available.
- **Note**: Power saving circuit is only available in the “Z” type.

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

- **AC (50/60 Hz)**
  - 1: 100 VAC
  - 2: 200 VAC
  - 3: 110 VAC (115 VAC)
  - 4: 220 VAC (230 VAC)

#### Type of actuation
- Normally closed
- Normally open

#### Body option
- **Nil**: Individual pilot exhaust style
- **T**: With power saving circuit (24, 12 VDC only)
- **R**: External pilot style

- **Note**: For type W, DC voltage is only available.
- **Note**: Power saving circuit is not available in the case of W, type.

#### Body ported
- SYJ3
- **3 port** (For manifold type 20, 20R)

#### Base mounted
- SYJ3
- **3 port** (For sub-plate style, manifold type 41, 41R, 42, 42R, 42R)

#### Body ported
- **SYJ3**
- Body ported
- **1 2 5 M**
- **M3**

#### Base mounted
- **SYJ3**
- Base mounted
- **1 4 5 M**

#### Port size
- **Nil**: Without sub-plate
- **M5**: M5 port

#### Electrical entry

<table>
<thead>
<tr>
<th>24, 12, 6, 5, 3 VDC/100, 110, 200, 220 VAC</th>
<th>24, 12, 6, 5, 3 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>G: Lead wire length 300 mm</td>
<td>MN: Without lead wire</td>
</tr>
<tr>
<td>L: With lead wire (Length 300 mm)</td>
<td>M: With lead wire (Length 300 mm)</td>
</tr>
<tr>
<td>M: With lead wire (Length 300 mm)</td>
<td>WO: Without connector</td>
</tr>
<tr>
<td>H: Lead wire length 600 mm</td>
<td>LN: Without lead wire</td>
</tr>
<tr>
<td>LN: Without connector</td>
<td>LO: Without connector</td>
</tr>
<tr>
<td>WO: Without connector cable</td>
<td>MO: Without connector</td>
</tr>
</tbody>
</table>

- **Grommet**: Lead wire length 300 mm
- **L plug connector**: Lead wire (Length 300 mm)
- **M plug connector**: Lead wire (Length 300 mm)
- **M8 connector**: Without lead wire

- **Note**: LN, MN type: 2 sockets.
- **Note**: For connector cable of M8 connector, refer to page 67.

#### Manual override
- **Nil**: Non-locking push type
- **D**: Push-turn locking slotted type
- **E**: Push-turn locking lever type

- **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 page 8.)

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**800-999-7378**
**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</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**

V111 [5 G]

- **Coil specifications**
  - N.C.: Standard DC specifications
  - N.O.: Standard AC specifications
  - With power saving circuit (24, 12 VDC only)

- **Rated voltage**
  - S: 24 VDC
  - 6: 12 VDC
  - V: 6 VDC
  - 5: 5 VDC
  - R: 3 VDC
  - 1: 100 VAC 50/60 Hz
  - 2: 200 VAC 50/60 Hz
  - 3: 110 VAC 50/60 Hz [115 VAC 50/60 Hz]
  - 4: 220 VAC 50/60 Hz [230 VAC 50/60 Hz]

- **Light/surge voltage suppressor**
  - N.C.: Without light/surge voltage suppressor
  - N.O.: With surge voltage suppressor
  - Z: With surge voltage suppressor (Non-polar type)
  - S: With surge voltage suppressor (Non-polar type)
  - R: With surge voltage suppressor (Non-polar type)

- For type W/L, DC voltage is only available.

**How to Order M8 Connector Cable**

V100-49-1-

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

---

**Notes**

- Power saving circuit is not available in the case of W/L type.
- For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.
- For “R” and “U”, DC voltage is only available.
- Power saving circuit is only available in the “Z” type.
- Refer to page 67 for connector cable of M8 connector.
Series SYJ300

Body Ported

Grommet (G), (H): SYJ3□2-□□□□-M3

With bracket: SYJ3□2-□□□□-M3-F

L plug connector (L): SYJ3□2-□L□□-M3

M plug connector (M): SYJ3□2-□M□□-M3

M8 connector (W0): SYJ3□2-□W0□□-M3

* Refer to the page 68 for dimensions with connector cable.
Series SYJ300

Base Mounted (With Sub-plate)

Grommet (G), (H): SYJ3□4-□□□□-M5

L plug connector (L):
SYJ3□4-□□□□-M5

M plug connector (M):
SYJ3□4-□□□□-M5

M8 connector (W0):
SYJ3□4-□□□□-M5

*L Refer to the page 68 for dimensions with connector cable.
Series SYJ300
Manifold Specifications

Manifold Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>For internal pilot</th>
<th>For external pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type 20</td>
<td>Type 41, S41</td>
</tr>
<tr>
<td></td>
<td>Type 20R</td>
<td>Type 42, S42</td>
</tr>
<tr>
<td>Manifold type</td>
<td>Single base/B mount</td>
<td></td>
</tr>
<tr>
<td>P (SUP), R (EXH)</td>
<td>Common SUP/Common EXH</td>
<td></td>
</tr>
<tr>
<td>Valve stations</td>
<td>2 to 20 stations</td>
<td></td>
</tr>
</tbody>
</table>

A port
Porting specifications
Location: Base
Direction: Top
Port size:
- M5 x 0.8
- M3 x 0.5

Valve:
- M3 x 0.5
- M5 x 0.8

Note) Only for external pilot

Flow Characteristics

<table>
<thead>
<tr>
<th>Manifold</th>
<th>Port size</th>
<th>Flow characteristics</th>
<th>Effective area (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1(P), 3(R)</td>
<td>2(A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>b</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cv</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2×3 (AxB)</td>
<td>b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2×3 (AxB)</td>
<td>Cv</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1(P), 3(R)</td>
<td>2(A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body ported for internal pilot</td>
<td>Type SS3YJ3-20</td>
<td>SYJ3×2</td>
<td>M5 x 0.8</td>
</tr>
<tr>
<td>Base mounted for internal pilot</td>
<td>Type SS3YJ3-41</td>
<td>SYJ3×4</td>
<td>M5 x 0.8</td>
</tr>
<tr>
<td>Type SS3YJ3-42-M5</td>
<td>SYJ3×4</td>
<td>1/8</td>
<td>M5 x 0.8</td>
</tr>
<tr>
<td>Type SS3YJ3-42-C4</td>
<td>SYJ3×4</td>
<td>1/8</td>
<td>M5 x 0.8</td>
</tr>
<tr>
<td>Type SS3YJ3-42-M5</td>
<td>SYJ3×4</td>
<td>1/8</td>
<td>C4</td>
</tr>
<tr>
<td>Body ported for internal pilot</td>
<td>Type SS3YJ3-20R</td>
<td>SYJ3×2R</td>
<td>M3 x 0.5</td>
</tr>
<tr>
<td>Base mounted for internal pilot</td>
<td>Type SS3YJ3-42R-M5</td>
<td>SYJ3×4R</td>
<td>M5 x 0.8</td>
</tr>
<tr>
<td>Type SS3YJ3-42R-C4</td>
<td>SYJ3×4R</td>
<td>1/8</td>
<td>M5 x 0.8</td>
</tr>
<tr>
<td>Type SS3YJ3-42R-M5</td>
<td>SYJ3×4R</td>
<td>1/8</td>
<td>C4</td>
</tr>
</tbody>
</table>

Note) Value at manifold base mounted, 2 position single acting

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 1 set (manifold base)
- SS3YJ3-42R-03-C4 1 set (manifold base)
- *SYJ1312-SLZ-M3 2 sets (valve)
- SYJ314R-5G 2 sets (valve)
- *SYJ300-10-1A 1 set (blanking plate assembly)
- SYJ300-10-2A 1 set (blanking plate assembly)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.
Series SYJ300

Combinations of Solenoid Valve, Manifold Gasket and Manifold Base

<table>
<thead>
<tr>
<th>Body ported (Type SYJ3œ2(R))</th>
<th>Base mounted (Type SYJ3œ4(R))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable base</td>
<td>Manifold gasket SYJ300-5-6</td>
</tr>
<tr>
<td>SS3YJ3-20</td>
<td>SS3YJ3-20R</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sub-plate</th>
<th>Manifold base</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS3YJ3-41</td>
<td>SS3YJ3-42</td>
</tr>
<tr>
<td>SS3YJ3-S41</td>
<td>SS3YJ3-S42</td>
</tr>
<tr>
<td>SS3YJ3-42R</td>
<td>SS3YJ3-S42R</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Round head combination screw</th>
<th>SY100-33-3 (M1.7 x 17, Matt nickel plated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blanking plate</td>
<td>SYJ300-10-1</td>
</tr>
<tr>
<td>Manifold gasket</td>
<td>SYJ300-5-6</td>
</tr>
</tbody>
</table>

Blanking Plate Assembly

<table>
<thead>
<tr>
<th>Model no.: SYJ300-10-1A</th>
<th>Model no.: SYJ300-10-2A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Round head combination screw</td>
<td>SY100-33-2 (M1.7 x 7, Matt nickel plated)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blanking plate</th>
<th>SYJ300-10-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifold gasket</td>
<td>SYJ300-5-4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Applicable base</th>
<th>Manifold base</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS3YJ3-20</td>
<td>SS3YJ3-20R</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sub-plate</th>
<th>Manifold base</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS3YJ3-41</td>
<td>SS3YJ3-42</td>
</tr>
<tr>
<td>SS3YJ3-S41</td>
<td>SS3YJ3-S42</td>
</tr>
<tr>
<td>SS3YJ3-42R</td>
<td>SS3YJ3-S42R</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Port</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M3 x 0.5</td>
<td>External pilot type</td>
</tr>
<tr>
<td>R</td>
<td>M5 x 0.8</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>M5 x 0.8</td>
<td></td>
</tr>
</tbody>
</table>

### Type 41

<table>
<thead>
<tr>
<th>Port</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M3 x 0.5</td>
<td>External pilot type</td>
</tr>
<tr>
<td>R</td>
<td>M5 x 0.8</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>M5 x 0.8</td>
<td></td>
</tr>
</tbody>
</table>

### Type 42

<table>
<thead>
<tr>
<th>Port</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M5 x 0.8, C4</td>
<td>External pilot type</td>
</tr>
<tr>
<td>R</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>1/8</td>
<td></td>
</tr>
</tbody>
</table>

### How to Order

**SYJ300-20-05**

- **Stations:** 2 stations
- **Bracket:** Without bracket
- **Applicable solenoid valve:** SYJ312-R-05-M3, SYJ312-M-02-R
- **Applicable blanking plate assembly:** SYJ300-10-1A

**SYJ300-41-05-M3**

- **Stations:** 2 stations
- **Bracket:** With bracket
- **Applicable solenoid valve:** SYJ314-R-05-M3, SYJ314-M-02-R
- **Applicable blanking plate assembly:** SYJ300-10-2A

### Notes

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

## 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

<table>
<thead>
<tr>
<th>Port</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M3 x 0.5</td>
<td>External pilot type</td>
</tr>
<tr>
<td>X</td>
<td>M5 x 0.8</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>P port 1/8</td>
<td></td>
</tr>
</tbody>
</table>

### Type 42R

<table>
<thead>
<tr>
<th>Port</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M5 x 0.8, C4</td>
<td>External pilot type</td>
</tr>
<tr>
<td>X</td>
<td>M5 x 0.8</td>
<td></td>
</tr>
</tbody>
</table>

### How to Order

**SYJ300-20R-05**

- **Stations:** 2 stations
- **Bracket:** Without bracket
- **Applicable solenoid valve:** SYJ312-R-05-M3, SYJ312-M-02-R
- **Applicable blanking plate assembly:** SYJ300-10-1A

**SYJ300-42R-05-M5**

- **Stations:** 2 stations
- **Bracket:** With bracket
- **Applicable solenoid valve:** SYJ314-R-05-M3, SYJ314-M-02-R
- **Applicable blanking plate assembly:** SYJ300-10-2A

### Notes

- For more than 10 stations, supply/exhaust air to/from both sides of P port and R port.
Type 20 Manifold: Top Ported/SS3YJ3-20-[Stations]-00 (-F)

Grommet (G)

Approx. 300

(Light/surge voltage suppressor)

M3 x 0.5
(For mounting)

M3 x 0.5
(Pitch: P=10.5)

(Station n) ———— (Station 1)

M5 x 0.8
(P, R port)

Approx. 300

(Lead wire length)

M8 connector (W0)

M plug connector (M)

L plug connector (L)

41.5 [48.5]

26.1

58.5 [60.7]

41.5 [48.5]

Approx. 300

(Lead wire length)

57.6

50.2

28.5

52.6 [59.6]

Approx. 300

(Lead wire length)

Refer to the page 68 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></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></td>
</tr>
</tbody>
</table>

[ ] for AC
Series SYJ300

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

Grommet (G)

Type 41 Manifold: Side Ported
(Pilot valve is on the A port side)

SS3YJ3-S41- Stations-M3

L plug connector (L)       M plug connector (M)       M8 connector (W0)

- Refer to the page 68 for dimensions with connector cable.
Series SYJ300

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

Grommet (G)

Refer to the page 68 for dimensions with connector cable.
### Type 42R Manifold: Side Ported (External Pilot Type)/SS3YJ3-42R-Manifold Stations-M5, C4 N3

#### Grommet (G)
- **For M5**
- **For C4 N3** (Built-in one-touch fitting)

#### L plug connector (L)
- Approx. 300 (Lead wire length)
- Light/surge voltage suppressor

#### M plug connector (M)
- M5 x 0.8 (A port)
- (Pitch) P=10.5

#### M8 connector (W0)
- M8 x 1

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

#### Grommet (G)
- **For M5**
- **For C4 N3** (Built-in one-touch fitting)

#### One-touch fitting
- (A port)
- Applicable tubing O.D.: ø4, ø5/32"
Rubber seal
3 Port Pilot Solenoid Valve
Series SYJ500

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 page 60.)</td>
</tr>
<tr>
<td>Response time ms (at 0.5 MPa)</td>
<td>25 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>150/30</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dust proof (DIN terminal, M8 connector conforms to IP65)</td>
</tr>
</tbody>
</table>

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 24, 12, 6, 5, 3 AC 50/60 Hz 100, 110, 200, 220</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage</td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>DC Standard 0.35 (With light: 0.4 (DIN terminal with light: 0.45)) With power saving circuit 0.1 (With light only)</td>
</tr>
<tr>
<td>Apparent power (VA)</td>
<td>AC 100 V 1.4 (With light: 1.5) 110 V [115 V] 1.6 (With light: 1.7) 200 V 2.3 (With light: 2.4) 220 V [230 V] 2.5 (With light: 2.6) [2.7 (With light: 2.8)]</td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode (DIN terminal, varistor when non-polar types)</td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED (Neon light when AC with DIN terminal)</td>
</tr>
</tbody>
</table>

* Based on IEC529
* 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.

Made to Order
(For details, refer to pages 57 through 58.)
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>Base mounted (with sub-plate)</td>
<td>SYJ514</td>
<td>N.O.</td>
<td>1/8</td>
<td>0.53</td>
</tr>
<tr>
<td>Base mounted (with sub-plate)</td>
<td>SYJ524</td>
<td>N.O.</td>
<td>1/8</td>
<td>0.66</td>
</tr>
<tr>
<td>Body mounted</td>
<td>SYJ512</td>
<td>N.C.</td>
<td>M5 x 0.8</td>
<td>0.53</td>
</tr>
<tr>
<td>Body mounted</td>
<td>SYJ522</td>
<td>N.O.</td>
<td>M5 x 0.8</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Note) Value for DC. Add 1 g for AC. ( ) Without sub-plate.

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 MPa</td>
<td>Main pressure</td>
</tr>
<tr>
<td></td>
<td>–100 kPa to 0.7</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 58.
### Series SYJ500

#### How to Order

<table>
<thead>
<tr>
<th>Body ported</th>
<th>SYJ5</th>
<th>1</th>
<th>2</th>
<th>5</th>
<th>M</th>
<th>M5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base mounted</td>
<td>SYJ5</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>M</td>
<td>01</td>
</tr>
</tbody>
</table>

#### Rated voltage

<table>
<thead>
<tr>
<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>S, V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S, R</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.

#### Light/surge voltage suppressor

- For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.
- For type “R” and “U”, DC voltage is only available.
- Power saving circuit is only available in the “Z” type.

#### Electrical entry for G, H, L, W

<table>
<thead>
<tr>
<th>Nil</th>
<th>Without light/surge voltage suppressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>With light/surge voltage suppressor</td>
</tr>
<tr>
<td>Z</td>
<td>With light/surge voltage suppressor</td>
</tr>
</tbody>
</table>

#### Electrical entry for D

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

#### Bracket

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

#### Type of actuation

- Normally closed
- Normally open

#### Electric entry

- 24, 12, 6, 5, 3 VDC/100, 110, 200, 220 VAC
- 24, 12 VDC/100, 110, 200, 220 VAC
- 24, 12, 6, 5, 3 VDC

#### Light/surge voltage suppressor

- For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.
- For type “R” and “U”, DC voltage is only available.
- Power saving circuit is only available in the “Z” type.

#### Body option

- Nil: Individual pilot exhaust style
- M: Common exhaust for the pilot and main valve
- R: External pilot style

#### Coil specifications

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

- Power saving circuit is not available in the case of D, DO, WC type.

#### Manual override

- Nil: Non-locking push type
- D: Push-turn locking slotted type
- E: Push-turn locking lever type

#### Port size

- 01: 1/8 port

#### Thread type

- Nil, Rc
- N: G
- T: NPT
- NPTF

#### Electrical entry for G, H, L, W

- G: Lead wire length 300 mm
- L: Lead wire length 300 mm
- H: Lead wire length 600 mm
- LN: Without lead wire
- LO: Without connector

#### Electrical entry for D

- DO: Without connector

#### 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 catalog on page 22.)

- LN, MN type: with 2 sockets.
- DIN terminal “Type Y” conforming to DIN43650C standard is also available. For details, refer to catalog on page 57.
- For connector cable of M8 connector, refer to page 67.
## 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>–</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>Zinc die-casted</td>
<td></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**
- **Nil**: Standard DC specifications
- **A**: Standard AC specifications
- **T**: With power saving circuit (24, 12 VDC only)

**Rated voltage**
- S: 24 VDC
- 6: 12 VDC
- V: 8 VDC
- 1: 5 VDC
- R: 3 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

**Light/surge voltage suppressor**
- **Nil**: 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)

**Electrical entry**
- **G**: Grommet, 300 mm lead wire
- **H**: Grommet, 600 mm lead wire
- **L**: L plug connector
- **M**: M plug connector
- **W**: M8 connector

**How to Order Connector Assembly for L and M Plug Connector**

- For DC: **SY100-30-4A**
- For 100 VAC: **SY100-30-1A**
- For 200 VAC: **SY100-30-2A**
- For other voltages of AC: **SY100-30-3A**

**How to Order M8 Connector Cable**

- **V100-49-1**

**Cable length**
- 1: 300 mm
- 2: 500 mm
- 3: 1000 mm
- 4: 2000 mm
- 5: 5000 mm

**Do not replace V111 (G, H, L, M, W) to V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.**
**Series SYJ500**

**Body Ported**

Grommet (G), (H): SYJ5□□-□□□□-M5

With bracket: SYJ5□□-□□□□-M5-F

G: Approx. 300 (Lead wire length)

H: Approx. 600

Approx. 300 (Lead wire length)

**L plug connector (L):** SYJ5□□-□□□□-M5 (-F)

**M plug connector (M):** SYJ5□□-□□□□-M5 (-F)

**DIN terminal (D):** SYJ5□□-□□□□-M5 (-F)

**M8 connector (M0):** SYJ5□□-□□□□-M5 (-F)

* Refer to the page 68 for dimensions with connector cable.
### Series SYJ500

**Base Mounted (With Sub-plate)**

**Grommet (G), (H):** SYJ5□4-□□□-01□

- **L plug connector (L):** SYJ5□4-□L□-01□
- **M plug connector (M):** SYJ5□4-□M□-01□
- **DIN terminal (D):** SYJ5□4-□D□-01□
- **M8 connector (W0):** SYJ5□4-□W0□-01□

- **Applicable cable O.D.:** ø3.5 to ø7
- **Max. voltage (dc):** 50.7
- **Max. voltage (ac):** 60.7

---

**Dimensions:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>33.5 [57.8]</td>
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<tr>
<td>H</td>
<td>55.6 [57.8]</td>
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<tr>
<td>Manual override</td>
<td>2-ø4.5 (For mounting)</td>
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<tr>
<td>L plug connector</td>
<td>49.6 [56.6]</td>
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<tr>
<td>M plug connector</td>
<td>65.5 [67.7]</td>
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<td>DIN terminal</td>
<td>59.7 [57.9]</td>
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<tr>
<td>M8 connector</td>
<td>54.1 [56.6]</td>
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</tbody>
</table>

* Refer to page 68 for dimensions with connector cable.

---

**Notes:**

- **(A port):** 1/8
- **(P, R port):** 1/8
- **(Light/surge voltage suppressor):** X
- **(For mounting):** M5 x 0.8
- **(Lead wire length):** Approx. 300
- **(For AC):** Refer to the page 68 for dimensions with connector cable.

---

**Contact:**

SHOP ONLINE at www.airlinehyd.com

800-999-7378
Series SYJ500
Manifold Specifications

### 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></td>
<td>For external pilot</td>
<td>Type 21R</td>
<td>Type 40R</td>
<td>Type 41R</td>
</tr>
<tr>
<td>Manifold type</td>
<td>Single base/B mount</td>
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<tr>
<td>P (SUP), R (EXH)</td>
<td>Common SUP, common EXH</td>
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<td>Valve stations</td>
<td>2 to 20 stations</td>
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#### Porting specifications

<table>
<thead>
<tr>
<th>A port Location</th>
<th>Valve Direction</th>
<th>Base Location</th>
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<tbody>
<tr>
<td>P, R port</td>
<td>Top</td>
<td>M5 x 0.8</td>
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<tr>
<td>A port</td>
<td>Bottom</td>
<td>M5 x 0.8</td>
</tr>
<tr>
<td>X port</td>
<td>Side</td>
<td>M5 x 0.8</td>
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</tbody>
</table>

#### Port size

- For internal pilot: Type 20
- For external pilot: Type 21R
- Type 40
- Type 41

- M5 x 0.8
- 1/8
- C4
- C6

### Flow Characteristics

<table>
<thead>
<tr>
<th>Manifold</th>
<th>Port size</th>
<th>Flow characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYJ500-20</td>
<td>1/8 M5 x 0.8</td>
<td>0.47 0.43 0.13 0.74 0.32 0.19</td>
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<tr>
<td>SYJ500-40-M5</td>
<td>1/8 M5 x 0.8</td>
<td>0.71 0.52 0.21 0.61 0.28 0.20</td>
</tr>
<tr>
<td>SYJ500-40-01</td>
<td>1/8 1/8</td>
<td>0.98 0.36 0.25 0.92 0.24 0.22</td>
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<tr>
<td>SYJ500-41-M5</td>
<td>1/8 M5 x 0.8</td>
<td>0.71 0.37 0.26 0.96 0.25 0.24</td>
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<tr>
<td>SYJ500-41-01</td>
<td>1/8 C4</td>
<td>0.68 0.35 0.17 1.0 0.25 0.24</td>
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<tr>
<td>SYJ500-41-C4</td>
<td>1/8 C6</td>
<td>1.0 0.27 0.25 1.0 0.30 0.26</td>
</tr>
</tbody>
</table>

### 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)

- SSJYJ5-20-03: 1 set (manifold base)
- SSJYJ5-41R-03-C6: 1 set (manifold base)
- SYJ512-5LZ: 2 sets (valve)
- SYJ514R-5G: 2 sets (valve)
- SYJ500-10-1A: 1 set (blanking plate assembly)
- SYJ500-3A: 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 SYJ5□2(R))**

- Round head combination screw M2.5 x 25, Matt nickel plated
- Manifold gasket SYJ500-5-4

**Base mounted (Type SYJ5□4(R))**

- Applicable base
  - SS3YJ5-20
  - SS3YJ5-21R
  - SS3YJ5-40
  - SS3YJ5-41R

- Manifold base

---

Blanking Plate Assembly

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

- Round head combination screw M2.5 x 7, Matt nickel plated
- Blanking plate SYJ500-10-3
- Manifold gasket DXT200-9-8

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

- Round head combination screw M2.5 x 7, Matt nickel plated
- Blanking plate SYJ500-10-3
- Manifold gasket SYJ500-5-4

**Applicable base**

- Sub-plate
  - SS3YJ5-40
  - SS3YJ5-41
  - SS3YJ5-40R
  - SS3YJ5-41R

- Manifold base

---

**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.
**Series SYJ500**

**Manifold for Internal Pilot Type**

**Type 20**

![Diagram of Type 20 manifold]

- **How to Order**
  - **SS3YJ5-20-05**
  - **Stations**: 02, 04, 20
  - **P, R port thread type**: M5, M5 x 0.8
  - **Bracket**: Nil, Rc
  - **Applicable solenoid valve**: SYJ514R--00N, SYJ524R--00N
  - **Applicable blanking plate assembly**: SYJ500-10-3A

**Type 40**

![Diagram of Type 40 manifold]

- **How to Order**
  - **SS3YJ5-40-05**
  - **Stations**: 02, 04, 20
  - **A port size**: M5 x 0.8
  - **Bracket**: Nil, Rc
  - **Applicable solenoid valve**: SYJ514R--00N, SYJ524R--00N
  - **Applicable blanking plate assembly**: SYJ500-10-3A

**Type 41**

![Diagram of Type 41 manifold]

- **How to Order**
  - **SS3YJ5-41-05**
  - **Stations**: 02, 04, 20
  - **M5 x 0.8, C4, C6
  - **Bracket**: Nil, Rc
  - **Applicable solenoid valve**: SYJ514R--00N, SYJ524R--00N
  - **Applicable blanking plate assembly**: SYJ500-10-3A

**Manifold for External Pilot Type**

- **Type 21R**
  - **How to Order**
    - **SS3YJ5-21R-05**
    - **Stations**: 02, 04, 20
    - **P, R port thread type**: M5, M5 x 0.8
    - **Bracket**: Nil, Rc
    - **Applicable solenoid valve**: SYJ512R--00N, SYJ522R--00N
    - **Applicable blanking plate assembly**: SYJ500-10-1A

- **Type 40R**
  - **How to Order**
    - **SS3YJ5-40R-05**
    - **Stations**: 02, 04, 20
    - **P, R port thread type**: M5, M5 x 0.8
    - **Bracket**: Nil, Rc
    - **Applicable solenoid valve**: SYJ514R--00N, SYJ524R--00N
    - **Applicable blanking plate assembly**: SYJ500-10-3A

- **Type 41R**
  - **How to Order**
    - **SS3YJ5-41R-05**
    - **Stations**: 02, 04, 20
    - **M5 x 0.8, C4, C6
    - **Bracket**: Nil, Rc
    - **Applicable solenoid valve**: SYJ514R--00N, SYJ524R--00N
    - **Applicable blanking plate assembly**: SYJ500-10-3A

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

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.
**Series SYJ500**

**Type 20 Manifold: Top Ported/SS3YJ5-20-[Stations]-00(-F)**

**Grommet (G)**

(Light/surge voltage suppressor)

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<th>Station n</th>
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<td>296</td>
</tr>
</tbody>
</table>

**L plug connector (L)**

**M plug connector (M)**

**DIN terminal (D)**

**M8 connector (W0)**

---

* Refer to the page 68 for dimensions with connector cable.
**Series SYJ500**

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

**Grommet (G)**

For M5

- Port size: M5
- 2-ø5.5 (For mounting)
- Manual override
- Approx. 300 (Lead wire length)
- L plug connector (L)
- M plug connector (M)
- DIN terminal (D)
- M8 connector (W0)

**For 1/8**

- Port size: 1/8
- 2-ø5.5 (For mounting)
- Manual override
- Approx. 300 (Lead wire length)
- L plug connector (L)
- M plug connector (M)
- DIN terminal (D)
- M8 connector (W0)

---

**Applicable cable O.D.**

ø3.5 to ø7

**Pg7**

0.43

0.41

0.38

0.31

0.35

0.41

0.44

0.47

0.51

0.55

0.59

0.63

0.67

0.71

0.75

0.8

**Refer to the page 68 for dimensions with connector cable.**
**Series SYJ500**

**Type 41 Manifold: Side Ported/SS3YJ5-41-Stations**

**Grommet (G)**

![Diagram of Grommet (G)]

**L plug connector (L)**

![Diagram of L plug connector (L)]

**M plug connector (M)**

![Diagram of M plug connector (M)]

**DIN terminal (D)**

![Diagram of DIN terminal (D)]

**M8 connector (W0)**

![Diagram of M8 connector (W0)]

---

**Applicable tubing O.D.:**

- ø4, ø5/32" (Station 1)
- ø4, ø5/32" (Station n)

**Applicable cable O.D.:**

- ø3.5 to ø7

**Port size**

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**For dimensions with connector cable:**

Refer to page 68.
**Series SYJ500**

**Type 41 Manifold: Side Ported/SS3YJ5-41- Stations M5, 01**

**Grommet (G) For M5**

For 1/8

<table>
<thead>
<tr>
<th>Port size</th>
<th>Stations</th>
<th>Station 1</th>
<th>3</th>
<th>4</th>
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<th>Station 2</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>
<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>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>
<td>248</td>
<td>265</td>
<td>282</td>
<td>299</td>
<td>316</td>
<td>333</td>
<td>350</td>
</tr>
</tbody>
</table>

**Manual override**

(Pitch) 
P=16

L1 L2

(Pitch) 
P=17

L1 L2

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

57.1 [59.2] (DIN 36.2)

1/8 (A port)

8.5

25.5

**Light/surge voltage suppressor**

+ -

54.1 [61.1]

38.7

M5 x 0.8 (A port)

35 [38]

**Port size**

M5

1/8

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

57.1 [59.2] (DIN 36.2)
Grommet (G)

L plug connector (L)  M plug connector (M)  DIN terminal (D)  M8 connector (W0)

Refer to the page 68 for dimensions with connector cable.
Series SYJ500

Type 40R Manifold: Bottom Ported (External Pilot Type)/SS3YJ5-40R- Stations-M5, 01

Grommet (G)

For M5

1. Reference page 68 for dimensions with connector cable.

<table>
<thead>
<tr>
<th>Port size</th>
<th>Station n</th>
<th>Station 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>62</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>78</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>94</td>
<td>5</td>
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<tr>
<td></td>
<td>110</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>126</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>142</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>158</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>174</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>190</td>
<td>11</td>
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<tr>
<td></td>
<td>206</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>222</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>238</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>254</td>
<td>15</td>
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<td></td>
<td>270</td>
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<td></td>
<td>286</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>302</td>
<td>18</td>
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<tr>
<td></td>
<td>318</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>334</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>21</td>
</tr>
<tr>
<td>1/8</td>
<td>54</td>
<td>22</td>
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<tr>
<td></td>
<td>71</td>
<td>23</td>
</tr>
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<td></td>
<td>86</td>
<td>24</td>
</tr>
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<td></td>
<td>105</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>122</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>139</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>156</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>173</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>190</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>207</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>224</td>
<td>32</td>
</tr>
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<td></td>
<td>241</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>258</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>275</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>292</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>309</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>326</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>343</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>360</td>
<td>40</td>
</tr>
</tbody>
</table>

L plug connector (L)  M plug connector (M)  DIN terminal (D)  M8 connector (W0)
Series SYJ500

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

Grommet (G)

L plug connector (L)  M plug connector (M)  DIN terminal (D)  M8 connector (W0)

| Port size | Station 1 | Station 2 | Station 3 | Station 4 | Station 5 | Station 6 | Station 7 | Station 8 | Station 9 | Station 10 | Station 11 | Station 12 | Station 13 | Station 14 | Station 15 | Station 16 | Station 17 | Station 18 | Station 19 | Station 20 |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 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        | 49        | 59        | 75        | 91        | 107       | 123       | 139       | 155       | 171       | 187       | 203       | 219       | 235       | 251       | 267       | 283       | 299       | 315       | 331       |

Approx. 300 (Lead wire length)

Refer to the page 68 for dimensions with connector cable.
Series SYJ500

Type 41R Manifold: Side Ported (External Pilot Type)/SS3YJ5-41R- Stations -M5, 01

For M5

<table>
<thead>
<tr>
<th>Port size</th>
<th>Station 1</th>
<th>Station 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>L1 62 78 94 110 126 142 158 174 190 206 222 238 254 270 286 302 318 334 350</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L2 53 69 85 101 117 133 149 165 181 197 213 229 245 261 277 293 309 325 341</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L3 47 63 79 95 111 127 143 159 175 191 207 223 239 255 271 287 303 319 335</td>
<td></td>
</tr>
<tr>
<td>1/8</td>
<td>L1 63 80 97 114 131 148 165 182 199 216 233 250 267 284 301 318 335 352 369</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L2 54 71 88 105 122 139 156 173 190 207 224 241 258 275 292 309 326 343 360</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L3 48 65 82 99 116 133 150 167 184 201 218 235 252 269 286 303 320 337 354</td>
<td></td>
</tr>
</tbody>
</table>

For 1/8

<table>
<thead>
<tr>
<th>Port size</th>
<th>Station 1</th>
<th>Station 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>L1 62 78 94 110 126 142 158 174 190 206 222 238 254 270 286 302 318 334 350</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L2 53 69 85 101 117 133 149 165 181 197 213 229 245 261 277 293 309 325 341</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L3 47 63 79 95 111 127 143 159 175 191 207 223 239 255 271 287 303 319 335</td>
<td></td>
</tr>
<tr>
<td>1/8</td>
<td>L1 63 80 97 114 131 148 165 182 199 216 233 250 267 284 301 318 335 352 369</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L2 54 71 88 105 122 139 156 173 190 207 224 241 258 275 292 309 326 343 360</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L3 48 65 82 99 116 133 150 167 184 201 218 235 252 269 286 303 320 337 354</td>
<td></td>
</tr>
</tbody>
</table>
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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ambient and fluid temperature (°C)</th>
<th>−10 to 50 (No freezing. Refer to page 60.)</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manual override (Manual operation)</th>
<th>Non-locking push type, push-turn locking slotted type, push-turn locking lever type</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Pilot exhaust method</th>
<th>Individual exhaust for the pilot valve, common exhaust for the pilot and main valve</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Lubrication</th>
<th>Not required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Shock/Vibration resistance (m/s²)</td>
<td>150/30</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dust proof (⁻DIN terminal, M8 connector: IP65)</td>
</tr>
</tbody>
</table>

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 24, 12, 6, 5, 3 AC 50 Hz 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 Standard 0.35 (With light: 0.4 (DIN terminal with light: 0.45))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With power saving circuit 0.1 (With light only)</td>
</tr>
<tr>
<td>Apparent power (VA)</td>
<td>AC 100 V 1.4 (With light: 1.5)</td>
</tr>
<tr>
<td></td>
<td>110 V [115 V] 1.6 (With light: 1.7)</td>
</tr>
<tr>
<td></td>
<td>[17 (With light: 1.8)]</td>
</tr>
<tr>
<td></td>
<td>200 V 2.3 (With light: 2.4)</td>
</tr>
<tr>
<td></td>
<td>220 V [230 V] 2.5 (With light: 2.6)</td>
</tr>
<tr>
<td></td>
<td>[2.7 (With light: 2.8)]</td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
<td>Diode (DIN terminal, varistor when non-polar types)</td>
</tr>
<tr>
<td>Indicator light</td>
<td>LED (Neon light when AC with DIN terminal)</td>
</tr>
</tbody>
</table>

* 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.

Made to Order
(For details, refer to pages 57 through 58.)
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 MPa</td>
<td>Main pressure –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 58.
**Series SYJ700**

### How to Order

#### Body ported

<table>
<thead>
<tr>
<th>Type of actuation</th>
<th>Rated voltage</th>
<th>Light/surge voltage suppressor</th>
<th>Electrical entry for D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Normally closed</td>
<td>DC</td>
<td>Nil: Without light/surge voltage suppressor</td>
<td>S: With surge voltage suppressor</td>
</tr>
<tr>
<td>2: Normally open</td>
<td>1: 24 VDC</td>
<td>S: With surge voltage suppressor</td>
<td>Z: With surge voltage suppressor</td>
</tr>
<tr>
<td></td>
<td>2: 12 VDC</td>
<td>Z: With surge voltage suppressor</td>
<td>U: With surge voltage suppressor (Non-polar type)</td>
</tr>
<tr>
<td></td>
<td>3: 6 VDC</td>
<td>R: With surge voltage suppressor</td>
<td>R: With surge voltage suppressor (Non-polar type)</td>
</tr>
<tr>
<td></td>
<td>4: 5 VDC</td>
<td>D: With surge voltage suppressor</td>
<td>(Non-polar type)</td>
</tr>
<tr>
<td></td>
<td>5: 3 VDC</td>
<td><em>(For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.)</em></td>
<td><em>(For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.)</em></td>
</tr>
</tbody>
</table>

#### Base mounted

<table>
<thead>
<tr>
<th>Type of actuation</th>
<th>Rated voltage</th>
<th>Light/surge voltage suppressor</th>
<th>Electrical entry for D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Normally closed</td>
<td>DC</td>
<td>Nil: Without light/surge voltage suppressor</td>
<td>S: With surge voltage suppressor</td>
</tr>
<tr>
<td>2: Normally open</td>
<td>1: 24 VDC</td>
<td>S: With surge voltage suppressor</td>
<td>Z: With surge voltage suppressor</td>
</tr>
<tr>
<td></td>
<td>2: 12 VDC</td>
<td>Z: With surge voltage suppressor</td>
<td>U: With surge voltage suppressor (Non-polar type)</td>
</tr>
<tr>
<td></td>
<td>3: 6 VDC</td>
<td>R: With surge voltage suppressor</td>
<td>R: With surge voltage suppressor (Non-polar type)</td>
</tr>
<tr>
<td></td>
<td>4: 5 VDC</td>
<td>D: With surge voltage suppressor</td>
<td>(Non-polar type)</td>
</tr>
<tr>
<td></td>
<td>5: 3 VDC</td>
<td><em>(For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.)</em></td>
<td><em>(For AC voltage valves there is no “S” option. It is already built-in to the rectifier circuit.)</em></td>
</tr>
</tbody>
</table>

### Electrical entry

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

<table>
<thead>
<tr>
<th>Body ported</th>
<th>Electrical entry for D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil: Without light/surge voltage suppressor</td>
<td>S: With surge voltage suppressor</td>
</tr>
</tbody>
</table>

#### Electrical entry for D

<table>
<thead>
<tr>
<th>Body ported</th>
<th>Electrical entry for D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil: Without light/surge voltage suppressor</td>
<td>S: With surge voltage suppressor</td>
</tr>
</tbody>
</table>

### 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 catalog on page 40.)
- LN, MN type: with 2 sockets.
- 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 catalog on page 40.)
- MN type: with 2 sockets.
- DIN terminal “Type Y” conforming to DIN43650C standard is also available. For details, refer to catalog on page 57.
- For connector cable of M8 connector, refer to page 67.
Series SYJ700

Construction

How to Order Pilot Valve Assembly

V111 5 G

Coil specifications
- Nil: Standard DC specifications
- A: Standard AC specifications
- T: With power saving circuit (24, 12 VDC only)

Rated voltage
- 5: 24 VDC
- 6: 12 VDC
- V: 6 VDC
- S: 5 VDC
- R: 3 VDC
- 1: 100 VAC 50/60 Hz
- 2: 200 VAC 50/60 Hz
- 3: 110 VAC 50/60 Hz [115 VAC 50/60 Hz]
- 4: 220 VAC 50/60 Hz [230 VAC 50/60 Hz]

Light/surge voltage suppressor
- Nil: 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)

Electrical entry
- 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
- MN: M plug connector
- MO: M plug connector
- W0: M8 connector Without connector cable

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>–</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>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Sub-plate</td>
<td>SYJ700-9-1 1/8 Aluminum die-casted</td>
</tr>
<tr>
<td>8</td>
<td>Pilot valve</td>
<td>V111(T)-xxxxx</td>
</tr>
</tbody>
</table>

How to Order Connector Assembly for L and M Plug Connector

For DC: SY100-30-4A-
For 100 VAC: SY100-30-1A-
For 200 VAC: SY100-30-2A-
For other voltages of AC: SY100-30-3A-
Without lead wire: (with connector and 2 of sockets only)

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

How to Order M8 Connector Cable

V100-49-1-

Cable length
- 1: 300 mm
- 2: 500 mm
- 3: 1000 mm
- 4: 2000 mm
- 7: 5000 mm
Series SYJ700

Body Ported

Grommet (G), (H): SYJ7□2-□□□□-01□

With bracket:
SYJ7□2-□□□□-01□-F

L plug connector (L): SYJ7□2-□□□□-01□-F
M plug connector (M): SYJ7□2-□□□□-01□-F
DIN terminal (D): SYJ7□2-□□□□-01□-F
M8 connector (M0): SYJ7□2-□□□□-01□-F

Applicable cable O.D. ø3.5 to ø7

* Refer to page 68 for dimensions with connector cable.
Base Mounted (With Sub-plate)

Grommet (G), (H): SYJ7□-□□.□□.□□

L plug connector (L): SYJ7□-□□.□□.□□
M plug connector (M): SYJ7□-□□.□□.□□
DIN terminal (D): SYJ7□-□□.□□.□□
M8 connector (W0): SYJ7□-□□.□□.□□

Manual override
(Light/surge voltage suppressor)

Applicable cable O.D.
φ3.5 to φ7

* Refer to the page 68 for dimensions with connector cable.
## Series SYJ700
### Manifold Specifications

**Manifold Specifications**

<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></td>
<td>P (SUP)</td>
<td>R (EXH)</td>
<td>Common SUP</td>
<td>common EXH</td>
<td></td>
</tr>
<tr>
<td>Valve stations</td>
<td></td>
<td>2 to 20 stations</td>
<td></td>
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</tr>
<tr>
<td>A port</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Porting specifications</td>
<td></td>
<td>Top</td>
<td>Top</td>
<td>Bottom</td>
<td>Bottom</td>
<td>Side</td>
</tr>
<tr>
<td>P, R port</td>
<td></td>
<td>1/8</td>
<td>1/4</td>
<td>1/8</td>
<td>1/4</td>
<td>1/4</td>
</tr>
<tr>
<td>A port</td>
<td></td>
<td>1/8</td>
<td>1/8</td>
<td>1/8</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>X port</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M3 x 0.8</td>
</tr>
<tr>
<td>Note) Only for external pilot</td>
<td></td>
<td></td>
<td></td>
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<td>M5 x 0.8</td>
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### Flow Characteristics

<table>
<thead>
<tr>
<th>Manifold</th>
<th>Port size</th>
<th>Flow characteristics</th>
<th>1/2 (P)</th>
<th>1/2 (A)</th>
<th>2/3 (A:R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYJ7/12</td>
<td>1/8 1/8</td>
<td>C [dm³/(s•bar)]</td>
<td>b</td>
<td>Cv</td>
<td>2/3 [dm³/(s•bar)]</td>
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<tr>
<td>SYJ7/20</td>
<td>1/8 1/8</td>
<td>2.2 0.34 0.55</td>
<td>2.3</td>
<td>0.27</td>
<td>0.59</td>
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<tr>
<td>SYJ7/21</td>
<td>1/4 1/8</td>
<td>2.2 0.39 0.59</td>
<td>2.4</td>
<td>0.32</td>
<td>0.62</td>
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<tr>
<td>SYJ7/21R</td>
<td>1/4 1/8</td>
<td>2.1 0.35 0.59</td>
<td>2.3</td>
<td>0.27</td>
<td>0.54</td>
</tr>
<tr>
<td>SYJ7/40</td>
<td>1/8 1/8</td>
<td>2.2 0.35 0.59</td>
<td>2.4</td>
<td>0.36</td>
<td>0.66</td>
</tr>
<tr>
<td>SYJ7/40C4</td>
<td>1/4 1/8</td>
<td>2.0 0.27 0.47</td>
<td>2.2</td>
<td>0.32</td>
<td>0.56</td>
</tr>
<tr>
<td>SYJ7/40C8</td>
<td>1/4 C6</td>
<td>2.1 0.32 0.39</td>
<td>2.2</td>
<td>0.27</td>
<td>0.54</td>
</tr>
<tr>
<td>SYJ7/41</td>
<td>1/4 1/8</td>
<td>2.2 0.34 0.55</td>
<td>2.4</td>
<td>0.32</td>
<td>0.62</td>
</tr>
<tr>
<td>SYJ7/42</td>
<td>1/4 1/8</td>
<td>2.0 0.27 0.47</td>
<td>2.2</td>
<td>0.32</td>
<td>0.56</td>
</tr>
<tr>
<td>SYJ7/42C6</td>
<td>1/4 C6</td>
<td>2.1 0.32 0.39</td>
<td>2.2</td>
<td>0.27</td>
<td>0.54</td>
</tr>
<tr>
<td>SYJ7/42R</td>
<td>1/4 1/8</td>
<td>2.1 0.24 0.51</td>
<td>2.3</td>
<td>0.31</td>
<td>0.59</td>
</tr>
</tbody>
</table>

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

### 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)
- SS3Y7-20-03 1 set (manifold base)
- SS3Y7-42R-03-01 1 set (manifold base)
- SYJ712-SZ-01 2 sets (valve)
- SYJ714R-05 2 sets (valve)
- SYJ700-10-1A 1 set (blanking plate assembly)
- SYJ700-10-2A 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)**

- Round head combination screw
  - M3 x 31, Matt nickel plated
- Gasket
  - SYJ700-5-3

**Base mounted (Type SYJ7-4)**

- Round head combination screw
  - M3 x 31, Matt nickel plated
- Gasket
  - SYJ700-5-4

### Applicable base

- Sub-plate
  - SS3YJ7-40
  - SS3YJ7-41
  - SS3YJ7-42
  - SS3YJ7-41R
  - SS3YJ7-42R

### Manifold base

**Blanking Plate Assembly**

**Model no.: SYJ700-10-2A**

(In common for body ported type and base mounted type)

- Round head combination screw
  - M3 x 8, Matt nickel plated
- Blanking plate
  - SYJ700-10-2
- Gasket
  - SYJ700-5-1

### Caution

**Mounting screw tightening torques**

- M3: 0.8 N·m

Use caution to the assembly orientation for solenoid valves, gasket, and optional parts.
**Series SYJ700**

### Manifold for Internal Pilot Type

**Type 20/Type 21**

- **Manifold for Internal Pilot Type**
- **How to Order**
  - SS3YJ7-20-05
  - Manifold type 20: 2 stations
  - Notes:
    - If there are more than 6 stations for type 20, or more than 9 stations for type 21, supply air to both sides of P and exhaust air from both sides of R port.
- **Applicable solenoid valve**
  - SYJ712-
  - SYJ712M-
  - SYJ722-
  - SYJ722M-

**Type 40/Type 41**

- **Manifold for Internal Pilot Type**
- **How to Order**
  - SS3YJ7-40-05-01
  - Manifold type 40: 2 stations
  - Notes:
    - If there are more than 6 stations for type 40, or more than 9 stations for type 41, supply air to both sides of P and exhaust air from both sides of R port.
- **Applicable solenoid valve**
  - SYJ714-
  - SYJ714M-
  - SYJ724-
  - SYJ724M-

**Type 42**

- **Manifold for Internal Pilot Type**
- **How to Order**
  - SS3YJ7-42-05-C6
  - Notes:
    - For more than 9 stations, supply air to both sides of P port and exhaust air from both sides of R port.
- **Applicable solenoid valve**
  - SYJ714-
  - SYJ714M-
  - SYJ724-
  - SYJ724M-

### 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**

- **Manifold for External Pilot Type**
- **How to Order**
  - SS3YJ7-21R-05
- Notes:
  - For more than 9 stations, supply/exhaust air to/from both sides of P and R port.

**Type 41R**

- **Manifold for External Pilot Type**
- **How to Order**
  - SS3YJ7-41R-05-01
- Notes:
  - For more than 9 stations, supply/exhaust air to/from both sides of P and R port.

**Type 42R**

- **Manifold for External Pilot Type**
- **How to Order**
  - SS3YJ7-42R-05-01
- Notes:
  - For more than 9 stations, supply/exhaust air to/from both sides of P and R port.
**Series SYJ700**

Type 20 Manifold: Top Ported/SS3YJ7-20- Stations (-00□)

Grommet (G)

---

**L** plug connector (L)  **M** plug connector (M)  **DIN** terminal (D)  **M8** connector (W0)

---

<table>
<thead>
<tr>
<th>Station n</th>
<th>L1</th>
<th>L2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>59</td>
<td>59</td>
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<tr>
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<td>20</td>
<td>382</td>
<td>382</td>
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</tbody>
</table>

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* Refer to the page 68 for dimensions with connector cable.
**Series SYJ700**

**Type 21 Manifold: Top Ported/SS3YJ7-21-**

<table>
<thead>
<tr>
<th>Stations (-00)</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>9</th>
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<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
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<tbody>
<tr>
<td>L1</td>
<td>61</td>
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<td>365</td>
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<tr>
<td>L2</td>
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<td>315</td>
<td>334</td>
<td>353</td>
<td>372</td>
<td>391</td>
</tr>
</tbody>
</table>

**Grommet (G)**

Approx. 300 (Lead wire length)

(Approximately 300 (Lead wire length))

(Light/surge voltage suppressor)

Type 21 Manifold: Top Ported/SS3YJ7-21-

L plug connector (L)  |  M plug connector (M)  |  DIN terminal (D)  |  M8 connector (W0)  |
|----------------------|------------------------|--------------------|---------------------|

Approx. 300 (Lead wire length)

(Approximately 300 (Lead wire length))

* Refer to the page 68 for dimensions with connector cable.
Series SYJ700

Type 40 Manifold: Bottom Ported/SS3YJ7-40-[Stations]-01

Grommet (G)

<table>
<thead>
<tr>
<th>Station n</th>
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<th>6</th>
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<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>Station 20</th>
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<td>106</td>
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<td>353</td>
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<tr>
<td>L2</td>
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<td>126</td>
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<td>278</td>
<td>297</td>
<td>316</td>
<td>335</td>
<td>354</td>
<td>373</td>
<td>392</td>
</tr>
</tbody>
</table>

L plug connector (L)  M plug connector (M)  DIN terminal (D)  M8 connector (W0)

- Refer to the page 68 for dimensions with connector cable.

Page dimensions: 595.0x841.0

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800-999-7378
Series SYJ700

Type 42 Manifold: Side Ported/SS3YJ7-42 Stations-01, C6, N7, C8, N8 (Built-in one-touch fitting)

Grommet (G)
For C6, N7, C8, N8 (Built-in one-touch fitting)

L plug connector (L)
M plug connector (M)
DIN terminal (D)
M8 connector (W0)

Approx. 300 (Lead wire length)
67 [74]

Approx. 300 (Lead wire length)
63.5

Approx. 300 (Lead wire length)
63.5

Approx. 300 (Lead wire length)
63.5

Application tubing O.D.: ø6, ø1/4", ø8, ø5/16"

Application cable O.D. ø3.5 to ø7

+ -

Max. 10

Refer to the page 68 for dimensions with connector cable.
Type 41 Manifold: Bottom Ported/SS3YJ7-41-[Stations]-01

Grommet (G)

(Light/surge voltage suppressor)

67/4 H
51.6
35

8 27
1/8 (A port)
P=19
21

AA

67 [74]
51.6
35

8 27
1/8 (A port)
P=19
21

AA

Grommet (G) for AC

Series SYJ700

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**Series SYJ700**

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

Grommet (G)

---

**L plug connector (L)**

**M plug connector (M)**

**DIN terminal (D)**

**M8 connector (W0)**

---

<table>
<thead>
<tr>
<th>Station</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>L1</td>
<td>61</td>
<td>80</td>
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<td>346</td>
<td>365</td>
</tr>
<tr>
<td>L2</td>
<td>49</td>
<td>68</td>
<td>87</td>
<td>106</td>
<td>125</td>
<td>144</td>
<td>163</td>
<td>182</td>
<td>201</td>
<td>220</td>
<td>239</td>
<td>258</td>
<td>277</td>
<td>296</td>
<td>315</td>
<td>334</td>
<td>353</td>
</tr>
</tbody>
</table>

---

*Refer to the page 68 for dimensions with connector cable.*
### Series SYJ700

**Type 42R Manifold: Side Ported/SS3YJ7-42R-Stations-01, C6 N7 C8 N5**

#### Grommet (G)

For 1/8

#### L plug connector (L)  M plug connector (M)  DIN terminal (D)  M8 connector (W0)

<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>
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<th>Station 20</th>
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<td>334</td>
<td>353</td>
<td>372</td>
<td>391</td>
</tr>
</tbody>
</table>

* Refer to the page 68 for dimensions with connector cable.
Series SYJ700

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

Grommet (G)

(Light/surge voltage suppressor)

Pitch: P=19

(A port)
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
SYJA31 attempted
SYJA32 attempted

With Bracket

Air operated valve type | SYJA3\(\frac{3}{4}\) 2-M3-F

Pilot Pressure Range

Flow Characteristics/Weight

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow characteristics</th>
<th>Pilot port size</th>
<th>Weight (g)</th>
<th>Effective area (mm(^2))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body ported</td>
<td>SYJA312-M3</td>
<td>N.C. M3 x 0.5</td>
<td>(\frac{1}{8}) (Pr)/A: 0.18 (\frac{1}{8}) (Ar)/R: 0.35</td>
<td>M3 x 0.5</td>
<td>18</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>SYJA322-M3</td>
<td>N.O. M3 x 0.5</td>
<td>(\frac{1}{8}) (Pr)/A: 0.18 (\frac{1}{8}) (Ar)/R: 0.35</td>
<td>M3 x 0.5</td>
<td>39</td>
<td>(Without sub-plate 18)</td>
</tr>
<tr>
<td>Base mounted</td>
<td>SYJA314-M5</td>
<td>N.C. M5 x 0.8</td>
<td>(\frac{1}{8}) (Pr)/A: 0.36 (\frac{1}{8}) (Ar)/R: 0.36</td>
<td>M3 x 0.5</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SYJA324-M5</td>
<td>N.O. M5 x 0.8</td>
<td>(\frac{1}{8}) (Pr)/A: 0.36 (\frac{1}{8}) (Ar)/R: 0.36</td>
<td>M3 x 0.5</td>
<td>39</td>
<td></td>
</tr>
</tbody>
</table>

Note: Model No. for base mounted style without sub-plate is SYJA3\(\frac{3}{4}\)4.
Series SYJA300

Dimensions

Body ported: SYJA3□2-M3(-F)

Base mounted: SYJA3□4-M5
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
# SYJA514 — 2 sets
# SYJA714 — 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.
Series SYJA500/700

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 $P_R$ (Note 1)</td>
<td>$(0.4 \times P + 0.1)$ to 0.7 $P$: Operating pressure range</td>
</tr>
<tr>
<td>Ambient and fluid temperature ($^\circ$C)</td>
<td>$-10$ to 50 (No freezing. Refer to page 60.)</td>
</tr>
</tbody>
</table>

Lubrication: Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)

Mounting orientation: Unrestricted

Impact/Vibration resistance (m/s²) (Note 2) | 300/50 |

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 | SYJAS\(\frac{3}{4}\)-M5-F, SYJA7\(\frac{3}{4}\)-01-F

Note) Bracket is not mounted.

Pilot Pressure Range

Flow Characteristics/Weight

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow characteristics 1s:2 (PsA)</th>
<th>2s:3 (AsR)</th>
<th>Pilot port size</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body ported</td>
<td>SYJA512-M5</td>
<td>N.C.</td>
<td>M5 x 0.8</td>
<td>0.53</td>
<td>0.45</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>SYJA522-M5</td>
<td>N.O.</td>
<td></td>
<td>0.66</td>
<td>0.45</td>
<td>0.18</td>
</tr>
<tr>
<td>Base mounted</td>
<td>SYJA514-01</td>
<td>N.C.</td>
<td>Rc 1/8</td>
<td>1.2</td>
<td>0.41</td>
<td>0.32</td>
</tr>
<tr>
<td>(with sub-plate)</td>
<td>SYJA524-01</td>
<td>N.O.</td>
<td></td>
<td>1.3</td>
<td>0.37</td>
<td>0.33</td>
</tr>
<tr>
<td>Body ported</td>
<td>SYJA712-01</td>
<td>N.C.</td>
<td>Rc 1/8</td>
<td>2.8</td>
<td>0.43</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>SYJA722-01</td>
<td>N.O.</td>
<td></td>
<td>2.7</td>
<td>0.38</td>
<td>0.72</td>
</tr>
<tr>
<td>Base mounted</td>
<td>SYJA714-01</td>
<td>N.C.</td>
<td>Rc 1/8</td>
<td>2.9</td>
<td>0.32</td>
<td>0.71</td>
</tr>
<tr>
<td>(with sub-plate)</td>
<td>SYJA714-02</td>
<td>N.C.</td>
<td>Rc 1/4</td>
<td>3.0</td>
<td>0.31</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>SYJA724-01</td>
<td>N.O.</td>
<td></td>
<td>2.8</td>
<td>0.21</td>
<td>0.70</td>
</tr>
<tr>
<td></td>
<td>SYJA724-02</td>
<td>N.O.</td>
<td></td>
<td>2.7</td>
<td>0.31</td>
<td>0.68</td>
</tr>
</tbody>
</table>

Note) Model No. for base mounted style without sub-plate is SYJAS\(\frac{3}{4}\), SYJA7\(\frac{3}{4}\).
## Series SYJA500/700

### Dimensions

#### Series SYJA500

**Body ported: SYJA5□2-M5(-F)**

- **Manual override** (Non-locking)
- **With filter (80 mesh)**

#### Base mounted: SYJA5□4-01□

- **Manual override** (Non-locking)
- **With filter (80 mesh)**

#### Series SYJA700

**Body ported: SYJA7□2-01□ (-F)**

- **Manual override** (Non-locking)
- **With filter (80 mesh)**

#### Base mounted: SYJA7□4-01□

- **Manual override** (Non-locking)
- **With filter (80 mesh)**
Series SYJ500/700
Made to Order
DIN Connector Conformed to DIN 43650C
DIN terminal type conforming to DIN 43650C (DIN pitch 8 mm) standard.

How to Order Valve

<table>
<thead>
<tr>
<th>Rated voltage (V/Hz)</th>
<th>Light/surge voltage suppressor</th>
<th>Bracket</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>Without light/surge voltage suppressor</td>
<td>Without bracket</td>
</tr>
<tr>
<td>S 24 VDC</td>
<td>With surge voltage suppressor</td>
<td>(With bracket)</td>
</tr>
<tr>
<td>6 12 VDC</td>
<td>1 100 VAC</td>
<td></td>
</tr>
<tr>
<td>V 6 VDC</td>
<td>2 200 VAC</td>
<td></td>
</tr>
<tr>
<td>S 5 VDC</td>
<td>3 110 VAC [115 VAC]</td>
<td></td>
</tr>
<tr>
<td>R 3 VDC</td>
<td>4 220 VAC [230 VAC]</td>
<td></td>
</tr>
</tbody>
</table>

Type of actuation

<table>
<thead>
<tr>
<th>SYJ500</th>
<th>SYJ700</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Port size

<table>
<thead>
<tr>
<th>Base mounted</th>
<th>Body option</th>
<th>Electrical entry</th>
<th>Manual override</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYJ 5125Y</td>
<td>Nil</td>
<td>Y: With connector</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Body ported

How to Order Pilot Valve Assembly

<table>
<thead>
<tr>
<th>Rated voltage (V/Hz)</th>
<th>V115-5Y</th>
<th>DIN Connector part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td></td>
<td>SY100-82-1</td>
</tr>
<tr>
<td>S 24 VDC</td>
<td></td>
<td>SY100-82-3-05</td>
</tr>
<tr>
<td>6 12 VDC</td>
<td></td>
<td>SY100-82-3-06</td>
</tr>
<tr>
<td>V 6 VDC</td>
<td></td>
<td>SY100-82-3-01</td>
</tr>
<tr>
<td>S 5 VDC</td>
<td></td>
<td>SY100-82-3-02</td>
</tr>
<tr>
<td>R 3 VDC</td>
<td></td>
<td>SY100-82-3-03</td>
</tr>
</tbody>
</table>

DIN Connector part no.

<table>
<thead>
<tr>
<th>With light</th>
<th>Voltage symbol</th>
<th>Model no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VDC</td>
<td>24 VN</td>
<td>SY100-82-3-05</td>
</tr>
<tr>
<td>12 VDC</td>
<td>12 VN</td>
<td>SY100-82-3-06</td>
</tr>
<tr>
<td>100 VDC</td>
<td>100 VN</td>
<td>SY100-82-3-01</td>
</tr>
<tr>
<td>200 VDC</td>
<td>200 VN</td>
<td>SY100-82-3-02</td>
</tr>
<tr>
<td>110 VAC [115 VAC]</td>
<td>110 VN</td>
<td>SY100-82-3-03</td>
</tr>
<tr>
<td>220 VAC [230 VAC]</td>
<td>220 VN</td>
<td>SY100-82-3-04</td>
</tr>
</tbody>
</table>

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, "N" 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, “V115-5Y” is interchangeable with “V115-7Y”. Do not replace V111 (G, H, L, M, W) to V115-CD/LY (DIN terminal), and vice versa.

SHOP ONLINE at www.airlinehyd.com

800-999-7378
Series SYJ300/500/700
Made to Order
(For detailed specifications, delivery and pricing, please contact SMC.)

Body Ported External Pilot

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

SYJ 5□2 — — — — — X20

Entry is the same as standard products.

Operating pressure range MPa

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating range</td>
<td>–100 kPa to 0.7</td>
</tr>
<tr>
<td>Pilot 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 x 0.8</td>
</tr>
</tbody>
</table>

JIS Symbol

Body ported

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

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

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.

---

**Warning**

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

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

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

   Compressed air can be dangerous if 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.
### 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 catalog 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

**Warning**

1. **Confirm the specification**
   The products presented in this catalog are designed only for use in compressed air systems (including vacuum). Do not operate at pressures or temperatures, etc., beyond the range of specifications, as this can cause damage or malfunction. (Refer to specifications.) Contact SMC when using a fluid other than compressed air (including vacuum).

2. **Extended periods of continuous energization**
   - Continuous energization of the valve for extended periods of time may have an adverse effect on the solenoid valve performance and the peripheral equipment due to temperature rises caused by the heat generation of the coil. Please consult SMC if valves will be continuously energized for extended periods of time or the energized period per day will be longer than the de-energized period. It is also possible to shorten the energization period by using valves of the N.O. (normally open) type.
   - When solenoid valves are mounted in a control panel, employ measures to radiate excess heat, so that temperatures remain within the valve specification range. Use special caution when three or more stations sequentially aligned on the manifold are continuously energized since this will cause a drastic temperature rise.

   **Caution**

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

5. **Mounting orientation**
   Rubber seal: Refer to the specifications of each series.
**3 Port Solenoid Valve/Common Precautions 2**

Be sure to read before handling.

---

### Warning

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

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

2. Instruction manual

Mount and operate the product after reading the manual carefully and understanding its contents. Also keep the manual where it can be referred to as necessary.

3. Painting and coating

Warnings or specifications printed or pasted on the product should not be erased, removed or covered up. Consult SMC if paint is to be applied to resinous parts, as this may have an adverse effect due to the paint solvent.

---

### Piping

#### 1. Preparation before piping

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

#### 2. Wrapping of sealant tape

When connecting pipes and fittings, etc., be sure that chips from the pipe thread and sealing materials do not get inside the valve. Furthermore, when pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

---

### 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:**
  - If a mistake is made regarding polarity, the diode in the valve, the control device switching element or power supply equipment, etc., may turn 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.

---

### Lubrication

#### 1. Lubrication

1) The valve has been lubricated for life at the factory, and does not require any further lubrication.

2) When fittings other than SMC fittings are used, follow the instructions of the respective fitting manufacturer.

---

### Table: Tightening torque for piping

<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>

---

### Important Notes

- **Expanding the instruction manuals of the respective manufacturers for further details on installation and usage.**
3 Port Solenoid Valve/Common Precautions

Be sure to read before handling.

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 catalog vol. 4” for compressed air quality.

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.

2. Lubrication
   In the case of rubber seals, once lubrication has been started, it must be continued. And use turbine oil Class 1 (no additives) VG32. If other lubricant oil is used, it may cause malfunction. Contact SMC for suggested turbine oil Class 2 (with additives) VG32.

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 IEC529) are protected against dust and water, however, these products cannot be used in water.

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.

5. Do not use in locations subject to vibration or impact. Confirm the specifications in the main section of the catalog.

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 energized for extended periods of time, employ measures to radiate excess heat, so that temperatures remain within the valve specification range.
Series SYJ300/500/700
Specific Product Precautions 1
Be sure to read before handling.
For Safety Instructions and Common Precautions, refer to pages 59 through 62.

**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.

- **Push-turn lever locking 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 grommet and L/M type plug 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 energized. The surface may become hot depending on the energized condition; therefore, do not touch the solenoid valves.

**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.

**Common Exhaust Type for Main and Pilot Valve**

**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.

**Bracket**
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.
   (Please 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.

Caution
For Safety Instructions and Common Precautions, refer to pages 59 through 62.
Series SYJ300/500/700
Specific Product Precautions 3
Be sure to read before handling.
For Safety Instructions and Common Precautions, refer to pages 59 through 60.

Surge Voltage Suppressor

**Caution**

<For DC>
Grommet, L and M plug connector

- Standard type (with polarity)
  - Surge voltage suppressor (S)
  - Polarity protection diodes
    - Red (+)
    - Black
  - With light/surge voltage suppressor (Z)
    - Red (+)
    - Black

- Non-polar type
  - Surge voltage suppressor (R)
    - (-) (+)
  - With light/surge voltage suppressor (U)
    - (-) (+)

- Standard type (with polarity)
  - Surge voltage suppressor (S)

DIN terminal

- With surge voltage suppressor (DS)
  - (-) (+)

- With light/surge voltage suppressor (DZ)
  - (-) (+)

- Non-polar type
  - Surge voltage suppressor (R)
  - (-) (+)

M8 Connector Type

- Standard type (with polarity)
  - Surge voltage suppressor (S)

- Non-polar type
  - Surge voltage suppressor (R)

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.

*In the case of SYJ<sup>3T</sup>, the electric wave form of energy saving type

**Surge Voltage Suppressor**

### DIN terminal

- With surge voltage suppressor (DS)
  - (-) (+)

- With light/surge voltage suppressor (DZ)
  - (-) (+)

- Non-polar type
  - Surge voltage suppressor (R)
  - (-) (+)

**M8 Connector Type**

- Standard type (with polarity)
  - Surge voltage suppressor (S)

- Non-polar type
  - Surge voltage suppressor (R)
Series SYJ300/500/700
Specific Product Precautions 4
Be sure to read before handling.
For Safety Instructions and Common Precautions, refer to pages 59 through 62.

Surge Voltage Suppressor
<For AC>
(There is no "S" type because the generation of surge voltage is prevented by a rectifier.)

Caution
Grommet, L and M plug connector
With light (L2)
Note) Surge voltage suppressor other than diode 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.

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.

Caution
How to Use DIN Terminal
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.

How to Use DIN Terminal
Caution
Precautions
Plug in and pull out the connector vertically without tilting to one side.

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

DIN Connector Part Nos.
Without light SY100-61-1
With light

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

Model | Thread size | Tightening torque
-------|-------------|------------------
SYJ300 | M1.7        | 0.12 Nm
SYJ500 | M2.5        | 0.45 Nm
SYJ700 | M3          | 0.8 Nm

Circuit diagram with light
Note) Refer to page 57 for DIN connector (Y) conforming to DIN 43650C.
Series SYJ300/500/700
Specific Product Precautions 5

Be sure to read before handling.
For Safety Instructions and Common Precautions, refer to pages 59 through 62.

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-□/L52408) 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)

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

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.

Connector assembly with cover: Dimensions

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
SY100-68-A-20

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

* In this case, the part number for the connector assembly with cover is not required.

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-□) 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)

Caution

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

• Connector cable mounting

Note) Connector cable should be mounted in the correct direction. Make sure that the arrow symbol on the connector is facing the triangle symbol on the valve when using SMC connector cable (V100-49-1-□). Be careful not to squeeze it in the wrong direction, as problems such as pin damage may occur.
**Series SYJ300/500/700**

**Specific Product Precautions 6**

Be sure to read before handling. For Safety Instructions and Common Precautions, refer to pages 59 through 62.

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**How to Measure the Flow Rate**

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

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**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 SMC when you need to exchange these pilot valves, in the case of manual override (marked in orange) of the adapter plate.

---

**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.)

   SYJ300/500/700 - Cable length 300 mm
   SYJ312-SW1ZB-M3 - Symbol for electrical entry

2. To order connector cable only

   (Ground)
   
   Symbol for electrical entry

---

**M8 Connector**

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

---

**How to Measure the Flow Rate**

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**Replacement of Pilot Valve**

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**How to Measure the Flow Rate**

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**Replacement of Pilot Valve**

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**How to Measure the Flow Rate**

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**Replacement of Pilot Valve**

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**How to Measure the Flow Rate**

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**Replacement of Pilot Valve**

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**How to Measure the Flow Rate**

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**Replacement of Pilot Valve**
Flow Characteristics of Solenoid Valve
(How to Express Flow Characteristics)

1. Express of Flow Characteristics
   Table 1 shows the applicable International designation of flow characteristics in the specification section of a solenoid valve or any other types of equipment.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Designation based on international standards</th>
<th>Other designation</th>
<th>Applicable standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatics equipment</td>
<td>C, b</td>
<td>S</td>
<td>ISO 6358: 1989</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>JIS B 8390: 2000</td>
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<td>JIS B 8390: 2000</td>
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<td></td>
<td>Equipment: JIS B 8373, 8374, 8375, 8379, 8381</td>
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<td></td>
<td></td>
<td></td>
<td>Cv</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ANSI/(NFPA)T3.21.3: 1990</td>
</tr>
</tbody>
</table>

2. Pneumatic Equipment
   2-1 Calculating flow rate according to International Standards

   (1) Flow rate calculation formula
   The flow rate calculation formula is defined as follows:

   If \( \frac{P_2 + 0.1}{P_1 + 0.1} \leq b \), a choke flow results.

   \[
   Q = 600X\left(\frac{P_1 + 0.1}{273+t}\right) \left(\frac{P_2 + 0.1}{P_1 + 0.1}\right)^{b/2} \]

   If \( \frac{P_2 + 0.1}{P_1 + 0.1} > b \), a subsonic flow results.

   \[
   Q = 600X\left(\frac{P_1 + 0.1}{273+t}\right) \left(1 - \frac{P_2 + 0.1}{P_1 + 0.1} \frac{1 - b}{1 - b}\right)^{b/2} \]

   - \( Q \): Air flow rate [dm³/min(ANR)]
   - \( P_1 \): Upstream pressure [MPa]
   - \( P_2 \): Downstream pressure [MPa]
   - \( t \): Temperature [°C]
   - \( b \): Critical pressure ratio
   - \( C \): Sonic conductance [dm³/(s·bar)]

   Note) The formula for subsonic flow is that of an elliptic approximate curve.

   Figure 1 is the flow characteristic diagram. For more information, please see Energy Saving Programs by SMC.

![Flow characteristic diagram](image_url)
Flow Characteristics of Solenoid Valve

(2) Test method
Pipe the test equipment to the test circuit shown in Figure 2. Keep the upstream pressure at a constant level above 0.3MPa. First measure the maximum flow rate in saturation. Then, measure the flow rate, upstream pressure and downstream pressure each at 80%, 60%, 40% and 20% points of the flow rate. Calculate the sonic conductance C from the maximum flow rate. Also, substitute other data for variables in the formula for subsonic flow and obtain the critical pressure rate b by averaging the critical pressure rates at those points.

2.2 Effective sectional area S

(1) Calculation with subsonic conductance C:

\[ S = 5.0 \times C \]

(2) Test method
Pipe the test equipment to the test circuit shown in Figure 3. Fill the air tank with compressed air and keep the pressure at a constant level above 0.6MPa. Then discharge the air until the pressure in the tank drops to 0.25 MPa. Measure the time required to discharge the air and the residual pressure in the air tank after leaving it until the pressure becomes stable in order to calculate the effective sectional area S by the following formula. Select the capacity of the air tank according to the effective sectional area of the test equipment.

\[ S = 12.1 \times \frac{V}{t} \left( \log_{10} \left( \frac{P_s + 0.1}{P_s} \right) \right) \]

\[ \frac{293}{T} \]

S: Effective sectional area [mm²]
V: Air tank capacity [dm³]
t: Discharge time [s]
Pₛ: Pressure in the air tank before discharge [MPa]
P: Residual pressure in the air tank after discharge [MPa]
T: Temperature in the air tank before discharge [K]

2.3 Flow coefficient Cv factor

The flow coefficient Cv factor is defined with the following formula in the U.S. standard ANSI/(NFPA)T3.21.3: 1990: Pneumatic fluid power - Flow rating test procedure and reporting method - For fixed orifice components

\[ Cv = \frac{Q}{114.5} \sqrt{\frac{\Delta P (P_2 + P_a)}{T_1}} \]

\[ \Delta \]: Pressure drop between static pressure output ports [bar]
Q : Flow rate [dm³/s standard atmosphere]
P₁ : Pressure at upstream output port [bar gauge]
Pa : Atmospheric pressure [bar absolute]
P₂ : Pressure at downstream output port [bar gauge]: \( P_2 = P_1 - \Delta P \)
T₁ : Upstream absolute temperature [K]

Test conditions are \( P_1 + P_a = 6.5 \pm 0.2 \) bar absolute, \( T_1 = 297 \pm 5 \) K, \( 0.07 \text{ bar} \leq P_a \leq 0.14 \) bar.

This concept is similar to the effective area in ISO 6358, which is described to be applicable only if the pressure drop is so small compared with the upstream pressure that air compression is negligible.