3 Port Direct Operated Solenoid Valve
Rubber Seal

**Series SY100**

### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>–10 to 50°C (No freezing. Refer to page 4-18-4.)</td>
</tr>
<tr>
<td>Response time (ms) (1)</td>
<td>10 or less</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>20</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type, Locking slotted type Push-turn locking slotted type Push-turn locking lever type +SY14, SY14A only</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Mounting position</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²) (2)</td>
<td>150/30</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof</td>
</tr>
</tbody>
</table>

### Fluid Specifications

- **Electrical entry**
  - Coil rated voltage (V): DC 100, 110, 200, 220
  - AC 50/60 Hz: 100, 110, 200, 220
- **Allowable voltage fluctuation**: –10 to +10%
- **Power consumption (W)**: DC 0.5 (With indicator light: 0.55), 0.75 W (With indicator light: 0.8 W)
  - AC: 0.9 (With indicator light: 1.0), 1.0 (With indicator light: 1.1), 1.1 (With indicator light: 1.2)
- **Apparent power (VA)**: DC 100 V: 0.9 (With indicator light: 1.0)
  - AC: 110 V: 1.0 (With indicator light: 1.1), 115 V: 1.1 (With indicator light: 1.2)
  - 200 V: 1.8 (With indicator light: 1.9)
  - 220 V: 1.9 (With indicator light: 2.0), 230 V: 2.2 (With indicator light: 2.3)

### jumper specifications

- **Grommet (G)/L plug connector (L)**
  - **Weight (g)**: SY113(A): 13, SY114(A): 24 (12) SY143(A): 15, SY144(A): 26 (14)

### Non-locking push type

- **Model**: SY113, SY114 (A)
- **N.C.**: SY112
- **N.O.**: SY123 (A)

### Locking slotted type

- **Model**: SY123, SY124 (A)
- **N.C.**: SY122
- **N.O.**: SY124

### Push-turn locking slotted type

- **Model**: SY124 (A)

### Push-turn locking lever type

- **Model**: SY14

### Manual override

- **Non-locking push type**, **Locking slotted type**
- **Push-turn locking slotted type**
- **Push-turn locking lever type** +SY14, SY14A only

### Made to Order Specifications

(For details, refer to page 4-3-17.)

### Model

- **Function**: N.C., N.O.
- **Valve model**: SY113, SY114 (A), SY123, SY124 (A)
- **Type**: Standard, Large flow
- **Operating pressure range (kPa)**: 0 to 0.7
- **Vacuum specifications (MPa)**: 2(A) port: M3 x 0.5
- **Effective area (mm²)**: 0.14
- **Weight (g)**: SY113(A): 13, SY114(A): 24 (12) SY143(A): 15, SY144(A): 26 (14)

### Note 1)

Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage, without surge 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. (Values at the initial period)

### Vibration resistance:

No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)
How to Order

**Light/Surge voltage suppressor**

<table>
<thead>
<tr>
<th>Nil</th>
<th>Without light/surge voltage suppressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>With surge voltage suppressor</td>
</tr>
<tr>
<td>Z</td>
<td>With light/surge voltage suppressor</td>
</tr>
<tr>
<td>R</td>
<td>With surge voltage suppressor (Non-polar type)</td>
</tr>
<tr>
<td>U</td>
<td>With light/surge voltage suppressor (Non-polar type)</td>
</tr>
</tbody>
</table>

* For AC voltage valves there is no “S” option. It is already built into the rectifier circuit.

* For “R” and “U”, DC voltage is only available.

**Type of actuation**

<table>
<thead>
<tr>
<th>1</th>
<th>Normally closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Normally open</td>
</tr>
</tbody>
</table>

**Rated voltage**

For DC

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

For AC (50/60 Hz)

<table>
<thead>
<tr>
<th>1</th>
<th>100 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>200 VAC</td>
</tr>
<tr>
<td>3</td>
<td>110 VAC (115 VAC)</td>
</tr>
<tr>
<td>4</td>
<td>220 VAC (230 VAC)</td>
</tr>
</tbody>
</table>

**Porting specifications**

<table>
<thead>
<tr>
<th>Nil</th>
<th>For manifold</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>For body ported type to P, R, A port</td>
</tr>
</tbody>
</table>

**Bracket**

<table>
<thead>
<tr>
<th>Nil</th>
<th>Without bracket</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>With bracket</td>
</tr>
</tbody>
</table>

*“P” piping specifications only.

**Port size**

<table>
<thead>
<tr>
<th>Nil</th>
<th>Without sub-plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>With sub-plate</td>
</tr>
</tbody>
</table>

(With gasket and screws)

**Manual override**

<table>
<thead>
<tr>
<th>Nil</th>
<th>Non-locking push type</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Push-turn locking slotted type</td>
</tr>
</tbody>
</table>

**Electrical entry**

- **G**: 300 mm lead wire
- **L**: With lead wire (Length 300 mm)
- **M**: With lead wire (Length 300 mm)
- **MN**: Without lead wire
- **H**: 600 mm lead wire
- **LN**: Without lead wire
- **LO**: Without connector
- **MO**: Without connector

* “LN” and “MN” types are with 2 sockets.
**Series SY100**

**How to Order**

**Type of actuation**
- Normally closed
- Normally open

**Rated voltage**
- 5 VDC
- 6 VDC
- 12 VDC
- 24 VDC

**Porting specifications**
- P: For body ported type to P, R, A port

**Bracket**
- F: With bracket

**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)

**How to Order**

**Large flow type**
(Cv: 0.012)

**Body ported**

**SY1 1 3 A 5 L M3**

**Base mounted**

**SY1 1 4 A 5 M**

**3 port**

**For manifold type 30, 31**

**Sub-plate type**
For manifold type S41

**Electrical entry**

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

- “LN” and “MN” types are with 2 sockets.

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

**SY1; 4, SY1; 4A only**
### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Resin</td>
<td>Gray</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cover</td>
<td>Resin</td>
<td>Gray</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Push rod</td>
<td>Resin</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Movable iron core assembly</td>
<td>HNBR/Stainless steel</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Fixed iron core</td>
<td>Stainless steel</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Exhaust poppet</td>
<td>HNBR</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Return spring</td>
<td>Stainless steel</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Poppet spring</td>
<td>Stainless steel</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Coil assembly</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

### Replacement Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Part no.</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Sub-plate</td>
<td>SY100-74-1</td>
<td>Zinc die-casted</td>
</tr>
<tr>
<td>11</td>
<td>Gasket</td>
<td>VJ100-6-8</td>
<td>HNBR</td>
</tr>
</tbody>
</table>

### How to Order Connector Assembly

- **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:** SY100-30-A

**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
**Series SY100**

**Body Ported**

Grommet (G), (H): \text{SY}1_2^1 3 (A)-\text{G}\text{H}-\text{PM3}(-F)

\begin{center}
\includegraphics[width=\textwidth]{diagram.png}
\end{center}

\textbf{L plug connector (L): SY}1_2^1 3(A)-\text{L}-\text{PM3}(F)

\begin{center}
\includegraphics[width=0.4\textwidth]{diagram_l.png}
\end{center}

\textbf{M plug connector (M): SY}1_2^1 3(A)-\text{M}-\text{PM3}(-F)

\begin{center}
\includegraphics[width=0.4\textwidth]{diagram_m.png}
\end{center}

\* Other dimensions are same as grommet type.

\* Other dimensions are same as grommet type.
Base Mounted (With sub-plate)

Grommet (G), (H): SY1\frac{1}{2}(A)-□G□□-M3

L plug connector (L): SY1\frac{1}{2}(A)-□L□□-M3

M plug connector (M): SY1\frac{1}{2}(A)-□M□□-M3

* Other dimensions are same as grommet type.
Series **SY**

**Made to Order Specifications:**
Please contact SMC for detailed specifications, delivery and pricing.

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**Energy-saving Type**

Power consumption is decreased by 1/3 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 62 ms at 24 VDC.)

<table>
<thead>
<tr>
<th>Specifications</th>
<th>SY1___T</th>
<th>SY1___AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil rated voltage (V)</td>
<td>24 DC, 12 DC</td>
<td>24 DC, 12 DC</td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>Inrush: 0.55, Holding: 0.22</td>
<td>Inrush: 0.8, Holding: 0.3</td>
</tr>
</tbody>
</table>

Specifications other than above are the same as standard models.

**How to Order**

**Body ported**

- SY1 1 3 T 5 L Z M3

**Base mounted**

- SY1 1 4 T 5 M Z

**Type of actuation**

1. Normally closed
2. Normally open

**Body option**

- Null: Standard
- A: Large flow capacity

**Rated voltage**

- 5: 24 VDC
- 6: 12 VDC

**Working Principle**

The circuit shown below reduces current consumption at holding which reduces the overall power consumption. Refer to electrical power waveform as shown below.

**Electrical circuit (With energy-saving circuit)**

1: Starting current, 2: Holding current

**<Energy-saving Type, Electrical Power Waveform for SY1\_\_\_T>**

Applied voltage

- 24 V
- 0 V
- 0.55 W
- 0.22 W
- 0 W
- 62 ms

**<Energy-saving Type, Electrical Power Waveform for SY1\_\_\_AT>**

Applied voltage

- 24 V
- 0 V
- 0.8 W
- 0.3 W
- 0 W
- 62 ms

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**Low Wattage Specifications (0.45 W)**

**How to Order**

SY1 X200

- Entry is the same as standard products.