Intrinsically Safe Valve
5 Port Solenoid Valve

- UL Certified Intrinsically Safe Valve
- Designed for Use in Intrinsically Safe Environment
- UL913 & CSA157 Compliant

Series 53-SY5000/7000/9000
Compact, High Flow

Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY5120-L</td>
<td>40</td>
<td>104</td>
<td>15</td>
</tr>
<tr>
<td>53-SY5120-LL</td>
<td></td>
<td>120.8</td>
<td></td>
</tr>
<tr>
<td>53-SY5120-TT</td>
<td></td>
<td>118.2</td>
<td>18</td>
</tr>
<tr>
<td>53-SY7120-L</td>
<td></td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>53-SY7120-LL</td>
<td></td>
<td>148.3</td>
<td>23</td>
</tr>
<tr>
<td>53-SY9120-L</td>
<td></td>
<td>165.1</td>
<td></td>
</tr>
<tr>
<td>53-SY9120-LL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53-SY9120-TT</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Flow-rate Characteristics

<table>
<thead>
<tr>
<th>Series</th>
<th>Flow-rate characteristics</th>
<th>1→4/2 (P→A/B)</th>
<th>4/2→5/3 (A/B→EA/EB)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C [dm³/(s·bar)]</td>
<td>b</td>
<td>Cv</td>
</tr>
<tr>
<td>Body ported</td>
<td>53-SY5□20</td>
<td>1.9</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td>53-SY7□20</td>
<td>4.1</td>
<td>0.23</td>
</tr>
<tr>
<td></td>
<td>53-SY9□20</td>
<td>7.0</td>
<td>0.33</td>
</tr>
<tr>
<td>Base mounted</td>
<td>53-SY5□40</td>
<td>2.4</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td>53-SY7□40</td>
<td>4.1</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td>53-SY9□40</td>
<td>7.9</td>
<td>0.34</td>
</tr>
</tbody>
</table>

3 Types of Connectors

- Easily maintained by adapting connector for the lead wire (L- and LL-type)
- IP65 compliant (TT-type)

- UL Listed
- CE Certified
Intrinsically Safe Valve
5 Port Solenoid Valve
Series 53-SY5000/7000/9000
Body Ported
Single Unit

How to Order

**UL/CSA compliant**

<table>
<thead>
<tr>
<th>Series</th>
<th>53-SY5000</th>
<th>53-SY7000</th>
<th>53-SY9000</th>
</tr>
</thead>
</table>

**Type of actuation**

1. 2-position single (A) 2 (B)
   (EA) 1 2 (EB)
   (P)

2. 2-position double (A) 2 (B)
   (EA) 1 2 (EB)
   (P)

3. 3-position closed center (A) 4 (B)
   (EA) 1 3 (EB)
   (P)

4. 3-position exhaust center (A) 4 (B)
   (EA) 1 3 (EB)
   (P)

5. 3-position pressure center (A) 4 (B)
   (EA) 1 3 (EB)
   (P)

**One-touch fitting (Metric size)**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>Applicable series</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>1/8</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>02</td>
<td>1/4</td>
<td>53-SY7000</td>
</tr>
<tr>
<td>02</td>
<td>1/4</td>
<td>53-SY7000</td>
</tr>
<tr>
<td>03</td>
<td>3/8</td>
<td>53-SY9000</td>
</tr>
</tbody>
</table>

**One-touch fitting (Inch size)**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>Applicable series</th>
</tr>
</thead>
<tbody>
<tr>
<td>N3</td>
<td>ø5/32&quot;</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>N7</td>
<td>ø1/4&quot;</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>N9</td>
<td>ø5/16&quot;</td>
<td>53-SY7000</td>
</tr>
<tr>
<td>N9</td>
<td>ø5/16&quot;</td>
<td>53-SY7000</td>
</tr>
<tr>
<td>N11</td>
<td>ø3/8&quot;</td>
<td>53-SY9000</td>
</tr>
<tr>
<td>N11</td>
<td>ø3/8&quot;</td>
<td>53-SY9000</td>
</tr>
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</table>

**Electrical entry**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Electrical entry</th>
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<tbody>
<tr>
<td>NT</td>
<td>L-type plug connector</td>
</tr>
<tr>
<td>NT</td>
<td>L-type plug connector with cover</td>
</tr>
<tr>
<td>LL</td>
<td>Terminal type</td>
</tr>
</tbody>
</table>

**Lead wire length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Lead wire length</th>
<th>Note</th>
</tr>
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<tbody>
<tr>
<td>3</td>
<td>300 mm</td>
<td>—</td>
</tr>
<tr>
<td>6</td>
<td>600 mm</td>
<td>Maximum length for L-type</td>
</tr>
<tr>
<td>10</td>
<td>1000 mm</td>
<td>—</td>
</tr>
<tr>
<td>15</td>
<td>1500 mm</td>
<td>—</td>
</tr>
<tr>
<td>20</td>
<td>2000 mm</td>
<td>—</td>
</tr>
<tr>
<td>30</td>
<td>3000 mm</td>
<td>—</td>
</tr>
<tr>
<td>100</td>
<td>10000 mm</td>
<td>Semi-standard</td>
</tr>
</tbody>
</table>

**Bracket**

- Nil: Without bracket
- F1: With foot bracket
- F2: With side bracket

**Manual override**

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

**Warning**

The solenoid must be connected to a safety barrier located in a non-hazardous area. The safety barrier must meet the specifications listed in the Installation Instructions section.

Note) The lead wire of TT-type is connected to the terminal block. Use only supplied cable and nut.

Note 1) 3-position type is not available for the 53-SY9000 series.
Note 2) 4-position dual 3 port valves are available for 53-SY5000 only.

**Electrical Entry TT**

- Hazardous Location
  - Class I, II, III
  - Division 1
  - Groups A, B, C, D

- Hazardous Location
  - Class I
  - Division 1
  - Groups A, B, C

**Warning**

Do not install in Zone 0 (as defined in IEC 60079-10-1: 2008) or Zone 20 (as defined in IEC 60079-10-2: 2009)(Refer to page 40 for details)
Series 53-SY5000/7000/9000

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>53-SY5000</th>
<th>53-SY7000</th>
<th>53-SY9000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal pilot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>operating pressure</td>
<td>2-position single</td>
<td>20 to 100 psi (0.15 to 0.7 MPa)</td>
<td>20 to 100 psi (0.15 to 0.7 MPa)</td>
</tr>
<tr>
<td>range</td>
<td>2-position double</td>
<td>15 to 100 psi (0.1 to 0.7 MPa)</td>
<td>15 to 100 psi (0.1 to 0.7 MPa)</td>
</tr>
<tr>
<td>3-position</td>
<td>30 to 100 psi (0.2 to 0.7 MPa)</td>
<td>30 to 100 psi (0.2 to 0.7 MPa)</td>
<td>30 to 100 psi (0.2 to 0.7 MPa)</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>15 to 120°F (~10 to 50°C) (No freezing)</td>
<td>15 to 120°F (~10 to 50°C) (No freezing)</td>
<td>15 to 120°F (~10 to 50°C) (No freezing)</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>2-position single, double</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>4-position dual 3 port valve</td>
<td>3</td>
<td>3</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>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot exhaust method</td>
<td>Main/Pilot valve common exhaust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact/Vibration resistance (m/s²)</td>
<td>150/30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>IP30 (L-type), IP40 (LL-type), IP65 (TT-type)</td>
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</tr>
</tbody>
</table>

Note) Response time may be longer depending on the specification of barrier.

Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Terminal type (TT)</th>
<th>L-type plug connector (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient</td>
<td>L-type plug connector with cover (LL)</td>
<td></td>
</tr>
<tr>
<td>Coefficient</td>
<td></td>
<td></td>
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<tr>
<td>Coefficient</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient</td>
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</tr>
</tbody>
</table>

Hazardous Locations Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Terminal type (TT)</th>
<th>L-type plug connector (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient</td>
<td>L-type plug connector (L)</td>
<td></td>
</tr>
<tr>
<td>Coefficient</td>
<td></td>
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<tr>
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<td>Coefficient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) Warning: Do not install Zone 0 (as defined in IEC 60079-10-1: 2008) or Zone 20 (as defined in IEC 60079-10-2: 2008) (Refer to page 40 for details)

Response Time

Note) Based on dynamic performance test, JIS B 8375-1981.

<table>
<thead>
<tr>
<th>Type of actuation</th>
<th>Response time (ms) (at 0.5 MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY5000</td>
<td></td>
</tr>
<tr>
<td>53-SY7000</td>
<td></td>
</tr>
<tr>
<td>53-SY9000</td>
<td></td>
</tr>
<tr>
<td>2-position single</td>
<td>26 or less 38 or less 50 or less</td>
</tr>
<tr>
<td>2-position double</td>
<td>22 or less 30 or less 50 or less</td>
</tr>
<tr>
<td>3-position</td>
<td>38 or less 56 or less —</td>
</tr>
<tr>
<td>4-position dual 3 port valve</td>
<td>24 or less — —</td>
</tr>
</tbody>
</table>

Note) Response time may be longer depending on the specification of barrier.

Installation Instructions

Warning

To insure intrinsical safety, the valve is to be installed in an impact and vibration free environment.

Warning

Warning

This product must be connected in accordance with the +/– polarity indication.

This product must be connected to a certified intrinsically safe circuit (e.g. Zener barrier) for apparatus group IIC with the following maximum values:

Ui = 28 V  Il = 225 mA (resistively limited)

Pi = 1 W  Ci = 0 nF  L = 0 mH

Confirm the solenoid input voltage at the lead wires is 12 VDC ± 10%. The resistance of the solenoid valve is R = 20 + 278°C. ± 3% Ohm at 68°F (20°C).

Warning

Note: 1. Control equipment connected to the barrier must not use or generate more than 250 V.

2. Installation should be in accordance with Canadian Electrical Code or ANSI/ISA RP12.6 “Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations” and the National Electrical Code or ANSI/NFPA 70.

3. Barrier manufacturer’s installation drawing must be followed when installing this equipment.

4. Multiple barriers are not to be used in parallel unless specifically permitted by the barrier certification.

To insure that intrinsically safe criteria are met, use the below parameters to determine the appropriate barrier.

Note: Ccable and Lcable represents the capacitance and inductance of wire added by the consumer from the intrinsically safe equipment to the barrier. Ccable and Lcable values must be used in the system calculations.

I.S. Equipment

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Po (or Isc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ui (or Voc)</td>
<td>≥</td>
</tr>
<tr>
<td>li (or Isc)</td>
<td>≥</td>
</tr>
<tr>
<td>Pi</td>
<td>≥</td>
</tr>
<tr>
<td>Ci + Ccable</td>
<td>≤</td>
</tr>
<tr>
<td>Li + Lcable</td>
<td>≤</td>
</tr>
</tbody>
</table>

If the cable capacitance and inductance are unknown, use the following values:

Ccable = 60 pF/ft., Lcable = 0.2 µH/ft.

If the barrier Po is unknown, it may be calculated using the formula Po = (Uo x lo)/4 or (Voc x Isc)/4.
## Flow-rate Characteristics

### Series 53-SY5000

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow-rate characteristics (Note)</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY5</td>
<td>2-position</td>
<td>Single</td>
<td>1/4</td>
</tr>
<tr>
<td>-20</td>
<td>3-position</td>
<td>Dual</td>
<td>0.35 0.49 2.4 0.39 0.61</td>
</tr>
<tr>
<td>-01</td>
<td>4-position</td>
<td>Single</td>
<td>1.9 0.35 0.49 2.4 0.39 0.61</td>
</tr>
<tr>
<td></td>
<td>dual 3 port</td>
<td>Double</td>
<td>1.7 0.43 0.45 1.8 0.35 0.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed</td>
<td>1.5 0.44 0.41 2.5 0.32 0.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust</td>
<td>2.2 0.58 0.61 1.8 0.38 0.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Center</td>
<td>1.5 0.33 0.46 1.7 0.34 0.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure</td>
<td>1.5 0.41 0.48 1.5 0.28 0.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.C. N.C.</td>
<td>0.75 0.43 0.20 0.85 0.64 0.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single</td>
<td>0.74 0.40 0.19 0.84 0.57 0.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.76 0.36 0.19 0.84 0.64 0.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single</td>
<td>0.78 0.44 0.21 0.84 0.57 0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.71 0.37 0.18 0.84 0.57 0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.C. N.C.</td>
<td>0.7 0.52 0.24 0.7 0.54 0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.O. N.O.</td>
<td>0.7 0.51 0.26 0.7 0.51 0.23</td>
</tr>
</tbody>
</table>

### Series 53-SY7000

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow-rate characteristics (Note)</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY7</td>
<td>2-position</td>
<td>Single</td>
<td>1/4</td>
</tr>
<tr>
<td>-20</td>
<td>3-position</td>
<td>Dual</td>
<td>0.35 0.49 2.4 0.39 0.61</td>
</tr>
<tr>
<td>-02</td>
<td>4-position</td>
<td>Single</td>
<td>1.9 0.35 0.49 2.4 0.39 0.61</td>
</tr>
<tr>
<td></td>
<td>dual 3 port</td>
<td>Double</td>
<td>1.7 0.43 0.45 1.8 0.35 0.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed</td>
<td>1.5 0.44 0.41 2.5 0.32 0.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust</td>
<td>2.2 0.58 0.61 1.8 0.38 0.46</td>
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<tr>
<td></td>
<td></td>
<td>Pressure</td>
<td>1.5 0.33 0.46 1.7 0.34 0.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.C. N.C.</td>
<td>0.75 0.43 0.20 0.85 0.64 0.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single</td>
<td>0.74 0.40 0.19 0.84 0.57 0.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.76 0.36 0.19 0.84 0.64 0.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single</td>
<td>0.78 0.44 0.21 0.84 0.57 0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.71 0.37 0.18 0.84 0.57 0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.C. N.C.</td>
<td>0.7 0.52 0.24 0.7 0.54 0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.O. N.O.</td>
<td>0.7 0.51 0.26 0.7 0.51 0.23</td>
</tr>
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</table>

### Series 53-SY9000

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow-rate characteristics (Note)</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY9</td>
<td>2-position</td>
<td>Single</td>
<td>1/4</td>
</tr>
<tr>
<td>-20</td>
<td>3-position</td>
<td>Dual</td>
<td>0.35 0.49 2.4 0.39 0.61</td>
</tr>
<tr>
<td>-02</td>
<td>4-position</td>
<td>Single</td>
<td>1.9 0.35 0.49 2.4 0.39 0.61</td>
</tr>
<tr>
<td></td>
<td>dual 3 port</td>
<td>Double</td>
<td>1.7 0.43 0.45 1.8 0.35 0.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed</td>
<td>1.5 0.44 0.41 2.5 0.32 0.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust</td>
<td>2.2 0.58 0.61 1.8 0.38 0.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure</td>
<td>1.5 0.33 0.46 1.7 0.34 0.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.C. N.C.</td>
<td>0.75 0.43 0.20 0.85 0.64 0.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single</td>
<td>0.74 0.40 0.19 0.84 0.57 0.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.76 0.36 0.19 0.84 0.64 0.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single</td>
<td>0.78 0.44 0.21 0.84 0.57 0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>0.71 0.37 0.18 0.84 0.57 0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.C. N.C.</td>
<td>0.7 0.52 0.24 0.7 0.54 0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N.O. N.O.</td>
<td>0.7 0.51 0.26 0.7 0.51 0.23</td>
</tr>
</tbody>
</table>

Note) [ ]: Indicates normal position
Series 53-SY5000/7000/9000

Dimensions: 53-SY5000

2-position single
L-type plug connector (L)
53-SY5120-□L□□-01□ (-F2)

With foot bracket
53-SY5120-□L□□-01□-F1

L-type plug connector with cover (LL)
53-SY5120-□LL□□-01□ (-F2)

Terminal type (TT)
53-SY5120-□TT□□-01□ (-F2)
Body Ported Series 53-SY5000/7000/9000

Dimensions: 53-SY5000

2-position double, 4-position dual 3 port L-type plug connector (L)
53-SY5\[\text{2}\]C20-□L□□-01□ (-F2)

L-type plug connector with cover (LL)
53-SY5\[\text{2}\]C20-□LL□□-01□ (-F2)

Terminal type (TT)
53-SY5\[\text{2}\]C20-□TT□□-01□ (-F2)
Series 53-SY5000/7000/9000

Dimensions: 53-SY5000

3-position closed center/exhaust center/pressure center
L-type plug connector (L)
53-SY5\(\frac{3}{5}\)20-□L□□-01□ (-F2)

L-type plug connector with cover (LL)
53-SY5\(\frac{3}{5}\)20-□LL□□-01□ (-F2)

Terminal type (TT)
53-SY5\(\frac{3}{5}\)20-□TT□□-01□ (-F2)
Dimensions: 53-SY7000

2-position single
L-type plug connector (L)
53-SY7120-L□-□-02□-□-F2

L-type plug connector with cover (LL)
53-SY7120-LL□-□-02□-□-F2

Terminal type (TT)
53-SY7120-TT□-□-02□-□-F2

With foot bracket
53-SY7120-L□-□-02□-□-F1
Series 53-SY5000/7000/9000

Dimensions: 53-SY7000

2-position double
L-type plug connector (L)
53-SY7220-□□L□□-02□ (-F2)

L-type plug connector with cover (LL)
53-SY7220-□□LL□□-02□ (-F2)

Terminal type (TT)
53-SY7220-□□TT□□-02□ (-F2)
Dimensions: 53-SY7000

3-position closed center/exhaust center/pressure center

L-type plug connector (L)
53-SY7\(^{3/5}\)20-□□□-02□ (-F2)

L-type plug connector with cover (LL)
53-SY7\(^{3/5}\)20-□□□-02□ (-F2)

Terminal type (TT)
53-SY7\(^{3/5}\)20-□□□-02□ (-F2)
Series 53-SY5000/7000/9000

Dimensions: 53-SY9000

2-position single
L-type plug connector (L)
53-SY9120-□□□□□□

L-type plug connector with cover (LL)
53-SY9120-□□□□□□□□□

Terminal type (TT)
53-SY9120-□□□□□□□□□
Dimensions: 53-SY9000

2-position double
L-type plug connector (L)
53-SY9220-L□□-□□□

L-type plug connector with cover (LL)
53-SY9220-LL□□-□□□

Terminal type (TT)
53-SY9220-TT□□-□□□
5 Port Solenoid Valve
Series 53-SY5000/7000
Body Ported Manifold
Bar Stock Type

Type 20

How to Order Manifold

53 – SS5Y 5 – 20 – 05

Manifold series
5 53-SY5000
7 53-SY7000

Stations
02 2 stations
20 20 stations

Thread type
Nil 00F 00N 00T
Rc G NPT NPTF

Example

- Single solenoid
  53-SY5120-LL3-01 (2 sets)

- Double solenoid
  53-SY5220-LL3-01 (2 sets)

- Blanking plate assembly
  SY5000-26-20A (1 set)

- Manifold base (5 stations)
  53-SSS5Y-20-05

Cylinder port size
01: 1/8”

Stations 3 2 1

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

Add the valve and option part number under the manifold base part number.
In the case of complex arrangement, specify them on the manifold specification sheet.
How to Order Valve

53-SY 5 1 20-LL 3 - 01

Series 53-SY5000
Series 53-SY7000

Type of actuation

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>Applicable series</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>1/8</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>02</td>
<td>1/4</td>
<td>53-SY7000</td>
</tr>
</tbody>
</table>

Thread type

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

A, B port size

Thread piping

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>Applicable series</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>1/8</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>02</td>
<td>1/4</td>
<td>53-SY7000</td>
</tr>
</tbody>
</table>

One-touch fitting (Metric size) (Note)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>Applicable series</th>
</tr>
</thead>
<tbody>
<tr>
<td>C4</td>
<td>ø4</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>C6</td>
<td>ø6</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>C8</td>
<td>ø8</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>C10</td>
<td>ø10</td>
<td>53-SY7000</td>
</tr>
</tbody>
</table>

One-touch fitting (Inch size) (Note)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>Applicable series</th>
</tr>
</thead>
<tbody>
<tr>
<td>N3</td>
<td>ø5/32&quot;</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>N7</td>
<td>ø1/4&quot;</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>N9</td>
<td>ø5/16&quot;</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>N9</td>
<td>ø5/16&quot;</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>N11</td>
<td>ø3/8&quot;</td>
<td>53-SY7000</td>
</tr>
</tbody>
</table>

Manual override

- Nil, D, E

Lead wire length

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Lead wire length</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>300 mm</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>600 mm</td>
<td>Maximum length for L-type</td>
</tr>
<tr>
<td>10</td>
<td>1000 mm</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>1500 mm</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>2000 mm</td>
<td>-</td>
</tr>
<tr>
<td>30</td>
<td>3000 mm</td>
<td>-</td>
</tr>
<tr>
<td>100</td>
<td>10000 mm</td>
<td>Semi-standard</td>
</tr>
</tbody>
</table>

Note: When placing an order for body ported solenoid valve as a single unit, mounting screws and gaskets for manifold are not included. Order them separately, if necessary. (For details, refer to page 18.)

Warning

The solenoid must be connected to a safety barrier located in a non-hazardous area. The safety barrier must meet the specifications listed in the Installation Instructions section.
## Manifold Specifications

<table>
<thead>
<tr>
<th>Port size</th>
<th>Valve stations</th>
<th>A, B port location</th>
<th>P, EA, EB port</th>
<th>Manifold type</th>
<th>Applicable valve</th>
<th>Manifold base weight W (g)</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>2 to 20 stations</td>
<td>Single base B mount</td>
<td>Common SUP/EXH</td>
<td>(Note 1)</td>
<td>53-SS5Y5-20</td>
<td>W = 36n + 64</td>
<td></td>
</tr>
<tr>
<td>1/4</td>
<td>2 to 20 stations</td>
<td>Common base B mount</td>
<td>Common SUP/EXH</td>
<td>(Note 1)</td>
<td>53-SS5Y7-20</td>
<td>W = 43n + 64</td>
<td></td>
</tr>
</tbody>
</table>

**Note 1)** For 10 stations or more, supply pressure to P port on both sides and exhaust from EA/EB port on both sides.

**Note 2)** Refer to “Manifold Options” on page 18.

⚠️ **Warning**  If a resin tubing is used, take precautions against static electricity.

## Flow-rate Characteristics

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>Flow-rate characteristics 1 → 4/2 (P → A/B)</th>
<th>4/2 → 5/3 (A/B → EA/EB)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>b [dm³/(s·bar)]</td>
<td>Cv [dm³/(s·bar)]</td>
</tr>
<tr>
<td>53-SS5Y5-20</td>
<td>1/4</td>
<td>C8</td>
<td>1.9</td>
</tr>
<tr>
<td>53-SS5Y7-20</td>
<td>1/4</td>
<td>C10</td>
<td>3.6</td>
</tr>
</tbody>
</table>

**Note)** The value is for manifold base with 5 stations and individually operated 2-position type.
Series 53-SY5000/7000

Dimensions: 53-SY7000

L-type plug connector (L)
53-SS5Y7-20- [Stations -]

L-type plug connector with cover (LL)
53-SS5Y7-20- [Stations -]

Terminal type (TT)
53-SS5Y7-20- [Stations -]

<table>
<thead>
<tr>
<th>Stations n</th>
<th>2 stations</th>
<th>3 stations</th>
<th>4 stations</th>
<th>5 stations</th>
<th>6 stations</th>
<th>7 stations</th>
<th>8 stations</th>
<th>9 stations</th>
<th>10 stations</th>
<th>11 stations</th>
<th>12 stations</th>
<th>13 stations</th>
<th>14 stations</th>
<th>15 stations</th>
<th>16 stations</th>
<th>17 stations</th>
<th>18 stations</th>
<th>19 stations</th>
<th>20 stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>55</td>
<td>74</td>
<td>93</td>
<td>112</td>
<td>131</td>
<td>150</td>
<td>169</td>
<td>188</td>
<td>207</td>
<td>226</td>
<td>245</td>
<td>264</td>
<td>283</td>
<td>302</td>
<td>321</td>
<td>340</td>
<td>359</td>
<td>378</td>
<td>397</td>
</tr>
<tr>
<td>L2</td>
<td>46</td>
<td>65</td>
<td>84</td>
<td>103</td>
<td>122</td>
<td>141</td>
<td>160</td>
<td>179</td>
<td>198</td>
<td>217</td>
<td>236</td>
<td>255</td>
<td>274</td>
<td>293</td>
<td>312</td>
<td>331</td>
<td>350</td>
<td>369</td>
<td>388</td>
</tr>
</tbody>
</table>
Manifold Options

■ Type 20
Blanking Plate Assembly

<table>
<thead>
<tr>
<th>Series</th>
<th>Assembly part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY5000</td>
<td>SY5000-26-20A</td>
</tr>
<tr>
<td>53-SY7000</td>
<td>SY7000-26-22A</td>
</tr>
</tbody>
</table>

■ Gasket Assembly Part No.
Round head combination screw

<table>
<thead>
<tr>
<th>Series</th>
<th>Gasket assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY5000</td>
<td>SY5000-GS-1</td>
</tr>
<tr>
<td>53-SY7000</td>
<td>SY7000-GS-1</td>
</tr>
</tbody>
</table>

Note) Gasket assembly consists of 10 sets of mounting screws and gaskets.

Caution
Mounting screw tightening torques
M3: 0.6 lbf·ft [0.8 N·m]
M4: 1.0 lbf·ft [1.4 N·m]

Warning
When mounting a valve on the manifold base or sub-plate, etc., those mounting directions are predetermined. If mounted in the wrong direction, the equipment to be connected may malfunction. Refer to external dimensions, and then mount it.
**Intrinsically Safe Valve**

**5 Port Solenoid Valve**

**Series 53-SY5000/7000/9000**

Base Mounted

Single Unit

---

**How to Order**

**Series**

- 5: 53-SY5000
- 7: 53-SY7000
- 9: 53-SY9000

**Type of actuation**

1. 2-position single
   - (A) 4
   - (B) 2
   - (E) 5
   - (P) 3

2. 2-position double
   - (A) 4
   - (B) 2
   - (E) 5
   - (P) 3

3. 3-position closed center
   - (A) 4
   - (B) 2
   - (E) 5
   - (P) 3

4. 3-position exhaust center
   - (A) 4
   - (B) 2
   - (E) 5
   - (P) 3

5. 3-position pressure center
   - (A) 4
   - (B) 2
   - (E) 5
   - (P) 3

A. 4-position dual 3 port valves (N.C./N.C.)
   - 4(A)
   - 2(B)
   - 5(E) 1
   - 3(E) 3

B. 4-position dual 3 port valves (N.O./N.O.)
   - 4(A)
   - 2(B)
   - 5(E) 1
   - 3(E) 3

C. 4-position dual 3 port valves (N.C./N.O.)
   - 4(A)
   - 2(B)
   - 5(E) 1
   - 3(E) 3

**Note 1)** 3-position type is not available for the 53-SY9000 series.

**Note 2)** 4-position dual 3 port valves are available for 53-SY5000 only.

---

**Thread type**

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

**Port size**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Port size</th>
<th>Applicable series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Without sub-plate</td>
<td>53-SY5000</td>
</tr>
<tr>
<td>02</td>
<td>1/4</td>
<td>53-SY5000</td>
</tr>
<tr>
<td></td>
<td>With sub-plate</td>
<td>53-SY7000</td>
</tr>
<tr>
<td>03</td>
<td>3/8</td>
<td>53-SY7000</td>
</tr>
<tr>
<td></td>
<td>With sub-plate</td>
<td>53-SY9000</td>
</tr>
<tr>
<td>04</td>
<td>1/2</td>
<td>53-SY9000</td>
</tr>
<tr>
<td></td>
<td>With sub-plate</td>
<td>53-SY9000</td>
</tr>
</tbody>
</table>

**Manual override**

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

**Lead wire length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Lead wire length</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>300 mm</td>
<td>—</td>
</tr>
<tr>
<td>6</td>
<td>600 mm</td>
<td>—</td>
</tr>
<tr>
<td>10</td>
<td>1000 mm</td>
<td>—</td>
</tr>
<tr>
<td>15</td>
<td>1500 mm</td>
<td>—</td>
</tr>
<tr>
<td>20</td>
<td>2000 mm</td>
<td>—</td>
</tr>
<tr>
<td>30</td>
<td>3000 mm</td>
<td>—</td>
</tr>
<tr>
<td>100</td>
<td>10000 mm</td>
<td>Semi-standard</td>
</tr>
</tbody>
</table>

**Electrical entry**

- L: L-type plug connector
- LL: L-type plug connector with cover
- TT: Terminal type

Note) External pilot is not available for 4-position dual 3-port valves.

---

**Warning**

The solenoid must be connected to a safety barrier located in a non-hazardous area. The safety barrier must meet the specifications listed in the Installation Instructions section.

---

**Note**

Do not install in Zone 0 (as defined in IEC 60079-10-1: 2008) or Zone 20 (as defined in IEC 60079-10-2: 2009) (Refer to page 40 for details)
Warning
To insure intrinsical safety, the valve is to be installed in an impact and vibration free environment.

### Solenoid Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Terminal type (TT) L-type plug connector (L) L-type plug connector with cover (LL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil rated voltage</td>
<td>12 VDC</td>
</tr>
<tr>
<td>Power consumption</td>
<td>0.52 W (at rated voltage)</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>–10% to +10% of rate voltage</td>
</tr>
<tr>
<td>Temperature class</td>
<td>T4 Maximum surface temperature 275°F (135°C)</td>
</tr>
</tbody>
</table>

### Hazardous Locations Specifications

<table>
<thead>
<tr>
<th>Electrical entry</th>
<th>Terminal type (TT) L-type plug connector (LL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Locations</td>
<td>Class I, II, III Division 1 Groups A, B, C, D, E, F, G</td>
</tr>
<tr>
<td></td>
<td>Class I Division 1 Groups A, B, C, D</td>
</tr>
</tbody>
</table>

Note) **Warning** Do not install in Zone 0 (as defined in IEC 60079-10-1: 2008) or Zone 20 (as defined in IEC 60079-10-2: 2009) (Refer to page 40 for details)

### Response Time

Note) Based on dynamic performance test, JIS B 8375-1981.

<table>
<thead>
<tr>
<th>Type of actuation</th>
<th>Response time (ms) at 0.5 MPa</th>
<th>53-SY5000</th>
<th>53-SY7000</th>
<th>53-SY9000</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-position single</td>
<td>26 or less</td>
<td>38 or less</td>
<td>50 or less</td>
<td></td>
</tr>
<tr>
<td>2-position double</td>
<td>22 or less</td>
<td>30 or less</td>
<td>50 or less</td>
<td></td>
</tr>
<tr>
<td>3-position</td>
<td>38 or less</td>
<td>56 or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-position dual</td>
<td>24 or less</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) Response time may be longer depending on the specification of barrier.

---

### Warning

**Installation Instructions**

1. Control equipment connected to the barrier must not use or generate more than 250 V.
2. Installation should be in accordance with Canadian Electrical Code or ANSI/I-SA RP12.6 “Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations” and the National Electrical Code or ANSI/NFPA 70.
3. Barrier manufacturer’s installation drawing must be followed when installing this equipment.
4. Multiple barriers are not to be used in parallel unless specifically permitted by the barrier certification.

To insure that intrinsically safe criteria are met, use the below parameters to determine the appropriate barrier.

- **I.S. Equipment**
  - **UI** > Uo (or Voc)
  - **li** > Io (or Isc)
  - **Pi** > Po
  - **Ci + Ccable** ≤ Co (or Ca)
  - **Li + Lcable** ≤ Lo (La)

If the cable capacitance and inductance are unknown, use the following values:
- **Ccable** = 60 pF/ft., **Lcable** = 0.2 µH/ft.
- If the barrier Po is unknown, it may be calculated using the formula Po = (Uo x Io)/4 or (Voc x Isc)/4.
## Flow-rate Characteristics

### Series 53-SY5000

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow-rate characteristics (Nks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY5000</td>
<td>2-position</td>
<td>Single</td>
<td>2.4 0.41 0.64 2.8 0.29 0.66</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>1.8 0.47 0.50 1.8 0.40 0.47</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed center</td>
<td>1.4 0.55 0.44 3.0 [1.2] 0.33 [0.48] 0.72 [0.37]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td>3.3 [0.84] 0.36 [0.60] 0.85 [0.28] 1.8 0.40 0.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td>1.8 0.39 0.56 2.2 0.32 0.64</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Single</td>
<td>2.4 0.34 0.72 1.9 0.38 0.59</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed center</td>
<td>1.8 0.39 0.56 2.2 0.32 0.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td>2.4 0.34 0.72 1.9 0.38 0.59</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure center</td>
<td>1.8 0.39 0.56 2.2 0.32 0.64</td>
</tr>
</tbody>
</table>

Note) [:] Indicates normal position

### Series 53-SY7000

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow-rate characteristics (Nks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY7000</td>
<td>2-position</td>
<td>Single</td>
<td>4.1 0.41 1.1 4.1 0.29 1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>3.0 0.43 0.80 2.6 0.41 0.72</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed center</td>
<td>2.6 0.42 0.71 4.7 [1.7] 0.35 [0.48] 1.1 [0.49]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td>5.3 [2.3] 0.39 [0.49] 1.3 [0.65] 2.2 0.49 0.63</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Single</td>
<td>4.9 0.29 1.2 4.5 0.27 1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>3.0 0.40 0.80 2.6 0.45 0.73</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed center</td>
<td>2.6 0.42 0.71 4.8 [1.7] 0.35 [0.48] 1.1 [0.49]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exhaust center</td>
<td>5.3 [2.3] 0.31 [0.51] 1.3 [0.64] 2.3 0.45 0.66</td>
</tr>
</tbody>
</table>

Note) [:] Indicates normal position

### Series 53-SY9000

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Type of actuation</th>
<th>Port size</th>
<th>Flow-rate characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY9000</td>
<td>2-position</td>
<td>Single</td>
<td>7.9 0.34 2.0 9.6 0.43 2.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double</td>
<td>8.0 0.48 2.2 10 0.29 2.5</td>
</tr>
</tbody>
</table>

Note) [:] Indicates normal position
Series 53-SY5000/7000/9000

Dimensions: 53-SY5000

2-position single
L-type plug connector (L)
53-SY5140(R)-□L□□-02□

L-type plug connector with cover (LL)
53-SY5140(R)-□LL□□-02□

Terminal type (TT)
53-SY5140(R)-□TT□□-02□
Dimensions: 53-SY5000

2-position double, 4-position dual 3 port
L-type plug connector (L)
53-SY5\(\frac{40}{40}\)(R)\(-\)L\(\frac{2}{2}\)-02\(\frac{2}{2}\)

L-type plug connector with cover (LL)
53-SY5\(\frac{40}{40}\)(R)\(-\)LL\(\frac{2}{2}\)-02\(\frac{2}{2}\)

Terminal type (TT)
53-SY5\(\frac{40}{40}\)(R)\(-\)TT\(\frac{2}{2}\)-02\(\frac{2}{2}\)

Insulator: Red (+)
Insulator: Black (-)

0.3 mm\(^2\)

Lead wire marking
No. 1 (+), No. 2 (-)

0.75 mm\(^2\)
Series 53-SY5000/7000/9000

Dimensions: 53-SY5000

3-position closed center/exhaust center/pressure center
L-type plug connector (L)
53-SY5\(\frac{3}{4}\)40(R)-□L□□-02□

L-type plug connector with cover (LL)
53-SY5\(\frac{3}{4}\)40(R)-□LL□□-02□

Terminal type (TT)
53-SY5\(\frac{3}{4}\)40(R)-□TT□□-02□
Dimensions: 53-SY7000

2-position single
L-type plug connector (L)
53-SY7140(R)-□L□□-□□

L-type plug connector with cover (LL)
53-SY7140(R)-□LL□□-□□

Terminal type (TT)
53-SY7140(R)-□TT□□-□□
Series 53-SY5000/7000/9000

Dimensions: 53-SY7000

2-position double
L-type plug connector (L)
53-SY7240(R)-□L□□-□□□□

L-type plug connector with cover (LL)
53-SY7240(R)-□LL□□-□□□□

Terminal type (TT)
53-SY7240(R)-□TT□□-□□□□
Dimensions: 53-SY7000

3-position closed center/exhaust center/pressure center
L-type plug connector (L)
53-SY7\{3\}40(R)-□L□□-□□□

Terminal type (TT)
53-SY7\{3\}40(R)-□TT□□-□□□

L-type plug connector with cover (LL)
53-SY7\{3\}40(R)-□LL□□-□□□

Max. 10

0.75 mm²

Lead wire marking
No. 1 (+), No. 2 (–)

Insulator: Red (+)
Insulator: Black (–)

Insulator: Red (+)
Insulator: Black (–)

Lead wire marking
No. 1 (+), No. 2 (–)

0.3 mm²

Manual override

M5 x 0.8
(Pilot EXH port)

<For external pilot type>

Insulator: Red (+)
Insulator: Black (–)

Manual override

M5 x 0.8
(External pilot port)

0.3 mm²

Piping port

5 x 3/8", 1/4" (Piping port)
Series 53-SY5000/7000/9000

Dimensions: 53-SY9000

2-position single
L-type plug connector (L)
53-SY9140-L-

L-type plug connector with cover (LL)
53-SY9140-LL-

Terminal type (TT)
53-SY9140-TT-

Lead wire marking
No. 1 (+), No. 2 (–)

Insulator: Red (+)
Insulator: Black (–)

0.3 mm²

5 x 3/8", 1/2" (Piping port)

1/8" (Pilot EXH port)

For external pilot type
Dimensions: 53-SY9000

2-position double
L-type plug connector (L)
53-SY9240-□□□□-□□□□

L-type plug connector with cover (LL)
53-SY9240-□□□□-□□□□

Terminal type (TT)
53-SY9240-□□□□-□□□□
5 Port Solenoid Valve
Series 53-SY5000/7000
Base Mounted Manifold
Bar Stock Type

How to Order Manifold

**Type 41/Compact Type**

**53 – SS5Y 5 – 41 – 05 – 01**

- **Manifold series**
  - 5: 53-SY5000

- **Stations**
  - 02: 2 stations
  - 20: 20 stations

- **A, B port size**

- **Thread piping**
  - Symbol | Port size | Applicable series
  - **01** | 1/8 | 53-SY5000

- **One-touch fitting (Metric size)**
  - Symbol | Port size | Applicable series
  - **C6** | ø6 One-touch fitting | 53-SY5000
  - **C8** | ø8 One-touch fitting | 53-SY5000

- **One-touch fitting (Inch size)**
  - Symbol | Port size | Applicable series
  - **N7** | ø1/4" One-touch fitting | 53-SY5000
  - **N9** | ø5/16" One-touch fitting | 53-SY5000

**Type 42/External Pilot Capable**

**53 – SS5Y 5 – 42 – 05 – 02**

- **Manifold series**
  - 5: 53-SY5000
  - 7: 53-SY7000

- **Stations**
  - 02: 2 stations
  - 20: 20 stations

- **A, B port size**

- **Thread piping**
  - Symbol | Port size | Applicable series
  - **02** | 1/4 | 53-SY5000

- **One-touch fitting (Metric size)**
  - Symbol | Port size | Applicable series
  - **C6** | ø6 One-touch fitting | 53-SY5000
  - **C8** | ø8 One-touch fitting | 53-SY5000
  - **C10** | ø10 One-touch fitting | 53-SY7000

- **One-touch fitting (Inch size)**
  - Symbol | Port size | Applicable series
  - **N7** | ø1/4" One-touch fitting | 53-SY5000
  - **N9** | ø5/16" One-touch fitting | 53-SY7000
  - **N11** | ø3/8" One-touch fitting | 53-SY7000

---

**Warning**

If a resin tubing is used, take precautions against static electricity.

---

**Example**

- **Single solenoid**
  - 53-SY5140-LL3 (2 sets)

- **Double solenoid**
  - 53-SY5240-LL3 (2 sets)

- **Blanking plate assembly**
  - SY5000-26-20A (1 set)

Add the valve and option part number under the manifold base part number. In the case of complex arrangement, specify them on the manifold specification sheet.
How to Order Valve

**Series 53-SY5000/7000**

**Type of actuation**

- 1: 2-position single
- 2: 2-position double
- 3: 3-position closed center
- 4: 3-position exhaust center
- 5: 3-position pressure center
- **A** (Note): 4-position dual 3 port valve (N.C./N.C.)
- **B** (Note): 4-position dual 3 port valve (N.O./N.O.)
- **C** (Note): 4-position dual 3 port valve (N.C./N.O.)

**Pilot type**

- Nil: Internal pilot
- R: External pilot (Note)

**Note:** External pilot is not available for 4-position dual 3-port valves.

**Lead wire length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Lead wire length</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>300 mm</td>
<td>—</td>
</tr>
<tr>
<td>6</td>
<td>600 mm</td>
<td>Maximum length for L-type</td>
</tr>
<tr>
<td>10</td>
<td>1000 mm</td>
<td>—</td>
</tr>
<tr>
<td>15</td>
<td>1500 mm</td>
<td>—</td>
</tr>
<tr>
<td>20</td>
<td>2000 mm</td>
<td>—</td>
</tr>
<tr>
<td>30</td>
<td>3000 mm</td>
<td>—</td>
</tr>
<tr>
<td>100</td>
<td>10000 mm</td>
<td>Semi-standard</td>
</tr>
</tbody>
</table>

**Manual override**

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

**Electrical entry**

- L-type plug connector
- L-type plug connector with cover
- Terminal type

**Warning**

- The solenoid must be connected to a safety barrier located in a non-hazardous area. The safety barrier must meet the specifications listed in the Installation Instructions section.
**Manifold Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>53-SS5Y5-41</th>
<th>53-SS5Y5-42</th>
<th>53-SS5Y7-42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable valve</td>
<td>53-SY5□40</td>
<td>53-SY7□40</td>
<td></td>
</tr>
</tbody>
</table>

- **Manifold type**: Single base B mount
- **P (SUP)/R (EXH)**: Common SUP/EXH
- **Valve stations**: 2 to 20 stations (Note 1)

### A, B port location

<table>
<thead>
<tr>
<th>Location</th>
<th>Base</th>
<th>Direction</th>
<th>Side</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Port size</strong></td>
<td><strong>A, B port</strong></td>
<td><strong>1/8</strong></td>
<td><strong>C6 (ø6 One-touch fitting)</strong></td>
</tr>
</tbody>
</table>

### Manifold base weight W (g)

| n: Stations | **W = 61n + 101** | **W = 79n + 127** | **W = 100n + 151** |

**Note 1)** For 10 stations or more (5 stations or more for the 53-SS5Y7), supply pressure to P port on both sides and exhaust from EA/EB port on both sides.

**Note 2)** Refer to “Manifold Options” on page 37.

---

**Flow-rate Characteristics**

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>Flow-rate characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1, 5, 3 (P, EA, EB)</td>
<td>4, 2 (A, B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C [dm³/(s·bar)]</td>
</tr>
<tr>
<td>53-SS5Y5-41</td>
<td>1/4</td>
<td>C8</td>
</tr>
<tr>
<td>53-SS5Y5-42</td>
<td>1/4</td>
<td>C8</td>
</tr>
<tr>
<td>53-SS5Y7-42</td>
<td>1/4</td>
<td>C10</td>
</tr>
</tbody>
</table>

**Note)** The value is for manifold base with 5 stations and individually operated 2-position type.
Series 53-SY5000/7000

Dimensions: 53-SY5000

L-type plug connector (L)
53-SS5Y5-42-

Terminal type (TT)
53-SS5Y5-42-

L-type plug connector with cover (LL)
53-SS5Y5-42-

<table>
<thead>
<tr>
<th>Stations</th>
<th>2 stations</th>
<th>3 stations</th>
<th>4 stations</th>
<th>5 stations</th>
<th>6 stations</th>
<th>7 stations</th>
<th>8 stations</th>
<th>9 stations</th>
<th>10 stations</th>
<th>11 stations</th>
<th>12 stations</th>
<th>13 stations</th>
<th>14 stations</th>
<th>15 stations</th>
<th>16 stations</th>
<th>17 stations</th>
<th>18 stations</th>
<th>19 stations</th>
<th>20 stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>59.5</td>
<td>77</td>
<td>94.5</td>
<td>112</td>
<td>129.5</td>
<td>147</td>
<td>164.5</td>
<td>182</td>
<td>199.5</td>
<td>217</td>
<td>234.5</td>
<td>252</td>
<td>269.5</td>
<td>287</td>
<td>304.5</td>
<td>322</td>
<td>339.5</td>
<td>357</td>
<td>374.5</td>
</tr>
<tr>
<td>L2</td>
<td>49.5</td>
<td>67</td>
<td>84.5</td>
<td>102</td>
<td>119.5</td>
<td>137</td>
<td>154.5</td>
<td>172</td>
<td>189.5</td>
<td>207</td>
<td>224.5</td>
<td>242</td>
<td>259.5</td>
<td>277</td>
<td>294.5</td>
<td>312</td>
<td>329.5</td>
<td>347</td>
<td>364.5</td>
</tr>
</tbody>
</table>
Dimensions: 53-SY7000

L-type plug connector (L)
53-SS5Y7-42

<table>
<thead>
<tr>
<th>Stations</th>
<th>2 stations</th>
<th>3 stations</th>
<th>4 stations</th>
<th>5 stations</th>
<th>6 stations</th>
<th>7 stations</th>
<th>8 stations</th>
<th>9 stations</th>
<th>10 stations</th>
<th>11 stations</th>
<th>12 stations</th>
<th>13 stations</th>
<th>14 stations</th>
<th>15 stations</th>
<th>16 stations</th>
<th>17 stations</th>
<th>18 stations</th>
<th>19 stations</th>
<th>20 stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>61</td>
<td>80</td>
<td>99</td>
<td>118</td>
<td>137</td>
<td>156</td>
<td>175</td>
<td>194</td>
<td>213</td>
<td>232</td>
<td>251</td>
<td>270</td>
<td>289</td>
<td>308</td>
<td>327</td>
<td>346</td>
<td>365</td>
<td>384</td>
<td>403</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>
<td>372</td>
<td>391</td>
</tr>
</tbody>
</table>

Terminal type (TT)
53-SS5Y7-42
Series 53-SY5000/7000

Manifold Options

■ Type 41, 42
  Blanking Plate Assembly

<table>
<thead>
<tr>
<th>Series</th>
<th>Assembly part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY5000</td>
<td>SY5000-26-20A</td>
</tr>
<tr>
<td>53-SY7000</td>
<td>SY7000-26-22A</td>
</tr>
</tbody>
</table>

■ Gasket Assembly Part No.

<table>
<thead>
<tr>
<th>Series</th>
<th>Gasket assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY5000</td>
<td>SY5000-GS-2</td>
</tr>
<tr>
<td>53-SY7000</td>
<td>SY7000-GS-2</td>
</tr>
</tbody>
</table>

Note) Gasket assembly consists of 10 sets of mounting screws and gaskets.

⚠️ Caution

Mounting screw tightening torques
M3: 0.6 lbf·ft [0.8 N·m]
M4: 1.0 lbf·ft [1.4 N·m]

⚠️ Warning

When mounting a valve on the manifold base or sub-plate, etc., those mounting directions are predetermined. If mounted in the wrong direction, the equipment to be connected may malfunction. Refer to external dimensions, and then mount it.
Series 53-SY5000/7000/9000
Specific Product Precautions 1

Be sure to read before handling.
Refer to back cover for Safety Precautions and “Handling Precautions for SMC Products” (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

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

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

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

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 problems such as air leakage, etc.

Caution
- The 53-SY series pilot valve and main valve share a common exhaust inside the valve. Therefore, do not block the exhaust port when arranging the piping.

Caution
- When operating the locking type D with a screwdriver, turn it gently using a watchmaker’s screwdriver.
  [Torque: Less than 0.074 lbf·ft (0.1 N·m)]

Caution
- When operating the locking type D with a screwdriver, turn it gently using a watchmaker’s screwdriver.
  [Torque: Less than 0.074 lbf·ft (0.1 N·m)]

Caution
- In case of using a 5-port valve as a 3-port valve
  The 53-SY5000/7000/9000 series can be used as normally closed (N.C.) or normally open (N.O.) 3-port valves by closing one of the cylinder ports (A or B) with a plug. However, they should be used with the exhaust ports kept open.

How to Use Plug Connector

1. Connector attachment/detachment
   - To attach a connector, hold the connector between your fingers and insert straight onto the pins of the solenoid valve so that the lever is pushed into the groove and locks.
   - To detach a connector, push the lever downward with your thumb, and pull the connector straight out.

Exhaust Side

<table>
<thead>
<tr>
<th>Plug position</th>
<th>B port</th>
<th>A port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of actuation</td>
<td>N.C.</td>
<td>N.O.</td>
</tr>
<tr>
<td>Single</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of solenoids</td>
<td>(A)4</td>
<td>2(B)</td>
</tr>
<tr>
<td>(EA)5</td>
<td>3(EB)</td>
<td></td>
</tr>
<tr>
<td>(P)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of solenoids</td>
<td>(A)4</td>
<td>2(B)</td>
</tr>
<tr>
<td>(EA)5</td>
<td>3(EB)</td>
<td></td>
</tr>
<tr>
<td>(P)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cover
Lever
Groove
DC polar indication
Plug connector with cover
Plug connector
Warning
1. Please take anti-static precautions appropriate to the use of resin tubing.

Caution
The pitch determined for each of the 53-SY series piping ports (P, A, B, etc.) is based on the assumption that KJ series One-touch fittings will be used. For this reason, other pipe fittings may interfere with each other depending on their type and size. Dimensions should be confirmed in a pipe fitting catalog before they are used.

• Tubing attachment/detachment for One-touch fittings

1) Tubing attachment
1. Take tubing having no flaws on its periphery and cut it off at a right angle. When cutting the tubing, use tube cutters TK-1, 2 or 3. Do not use pinchers, nippers or scissors, etc. If cutting is done with tools other than tube cutters, the tubing may be cut diagonally or become flattened, etc., making a secure installation impossible, and causing problems such as the tubing pulling out after installation or air leakage. Allow some extra length in the tubing.
2. Grasp the tubing and push it in slowly, inserting it securely all the way into the fitting.
3. After inserting the tubing, pull on it lightly to confirm that it will not come out. If it is not installed securely all the way into the fitting, this can cause problems such as air leakage or the tubing pulling out.

2) Tubing detachment
1. While applying equal pressure when pushing in the collar of the fitting, pull out the tubing. If the collar is not pressed down sufficiently, there will be increased bite on the tubing and it will become more difficult to remove.
2. If the removed tubing is to be used again, cut off the portion which the fitting was attached before reusing. If the tubing is used as is, problems can occur such as air leakage or difficulty in removing the tubing.

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

- Nylon tubing within ±0.1 mm
- Soft nylon tubing within ±0.1 mm
- Polyurethane tubing within +0.15 mm and within −0.2 mm

Do not use tubing that does not meet the above outside diameter tolerances. It may not be possible to connect the tubing and other problems may occur, such as air leakage or the tubing pulling out after being connected.

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Thread size</th>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-SY5000</td>
<td>M3</td>
<td>0.6 lbf·ft [0.8 N·m]</td>
</tr>
<tr>
<td>53-SY7000</td>
<td>M4</td>
<td>1.0 lbf·ft [1.4 N·m]</td>
</tr>
<tr>
<td>53-SY9000</td>
<td>M3</td>
<td>0.6 lbf·ft [0.8 N·m]</td>
</tr>
</tbody>
</table>
Series 53-SY5000/7000/9000
Specific Product Precautions 3

Be sure to read before handling.
Refer to back cover for Safety Precautions and “Handling Precautions for SMC Products” (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

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

Note 1) ISO 4414: Pneumatic fluid power – Recommendations for the application of equipment to transmission and control systems.
Note 2) JIS B 8370: Pneumatic system axiom.

Caution: Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
Warning: Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
Danger: Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

2. Specific recommendations

Warning
1. This product enclosure is made of Aluminum alloy. Care must be taken to avoid ignition hazards due to impact or friction.
2. The valves within the scope of this document must not be used with plastic manifolds.
3. Electrical entry TT is approved for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G.
4. Do not install in Zone 0 (as defined in IEC 60079-10-1:2008) or Zone 20 (as defined in IEC 60079-10-2:2009).
Zone 0 area classification: An area in which an explosive gas atmosphere is present continuously or for long periods or frequently.
Zone 20 area classification: A place in which an explosive dust atmosphere, in the form of a cloud of dust in air, is present continuously, or for long periods or frequently.

Caution
1. When DC power is connected to a solenoid valve equipped with light and/or surge voltage suppressor, check for polarity indications.
2. For polarity indications:
   - No diode to protect polarity: if polarity connection is wrong, the diode in the valve or switching device at control equipment or power supply may be damaged.
   - With diode to protect polarity: if polarity connection is wrong, the valve does not switch.

Warning
1. Do not install unless the safety instructions have been read and understood.
2. The valves within the scope of this document must not be used with plastic manifolds.
3. Electrical entry TT is approved for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G.
4. Do not install in Zone 0 (as defined in IEC 60079-10-1:2008) or Zone 20 (as defined in IEC 60079-10-2:2009).

Installation

1. Control equipment connected to the barrier must not use or generate more than 250 V.
2. Installation should be in accordance with Canadian Electrical Code or ANSI/ISA RP12.6 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code or ANSI/NFPA 70.
3. Barrier manufacturer’s installation drawing must be followed when installing this equipment.
4. Multiple barriers are not to be used in parallel unless specifically permitted by the barrier certification.

To insure that intrinsically safe criteria are met, use the below parameters to determine the appropriate barrier.

Note) Ccable and Lcable represents the capacitance and inductance of wire added by the consumer from the intrinsically safe equipment to the barrier. Ccable and Lcable values must be used in the system calculations.

\[
\begin{align*}
\text{I.S. Equipment} & \quad \text{Barrier} \\
U_i & \geq U_o (\text{or Voc}) \\
I_i & \geq I_o (\text{or Isc}) \\
P_i & \geq P_o \\
\text{Cl + Ccable} & \leq C_o (\text{or Ca}) \\
L_i + Lcable & \leq L_o (\text{La})
\end{align*}
\]

If the cable capacitance and inductance are unknown, use the following values: Ccable = 60 pF/ft, Lcable = 0.2 μH/ft.
If the barrier Po is unknown, it may be calculated using the formula Po = (Uo x Io)/4 or (Voc x Isc)/4.

Warning
1. Do not make any modification to the product.
2. Substitution of components may impair intrinsic safety.
3. To prevent a potential ESD hazard, clean with only a damp cloth.

Limitation of Use

Warning
1. Do not exceed any of the specifications laid out in the “Installation” section of this document or the specific product catalog.
2. Refer to “Specific recommendations” section for additional, product specific information.

Installation Diagram
These Safety Precautions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution," "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC), and other safety regulations.

**Safety Precautions**

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

**Caution:** Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

**Warning:** Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

**Danger:** Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

**Warning**

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.
   Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.
   The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.
   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

**Caution**

1. The product is provided for use in manufacturing industries.
   The product herein described is basically provided for peaceful use in manufacturing industries.
   If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

**Limited Warranty and Disclaimer/Compliance Requirements**

The product used is subject to the following “Limited Warranty and Disclaimer” and “Compliance Requirements.”

**Limited Warranty and Disclaimer**

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

**Compliance Requirements**

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

**Caution**

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordered by the metrology (measurement) laws of each country.
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SMC Corporation of America
10100 SMC Blvd., Noblesville, IN 46060
www.smcusa.com

SMC Pneumatics (Canada) Ltd.
www.smcpneumatics.ca

(800) SMC.SMC1 (762-7621)
E-mail: sales@smcusa.com

International inquiries: www.smcworld.com

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