## Stainless Steel Pilot Piston Solenoid Valve 2MS Series
for High Temperature & High Pressure

To Order, Please Specify:

1. Model No,
2. Voltage,
3. Pressure Option

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Voltage Option</th>
<th>Port Size (NPT or Flange)</th>
<th>Orifice (MM)</th>
<th>Cv</th>
<th>Power (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2MS120 - 3/8</td>
<td>1 = 12 VDC 2 = 24 VDC 3A = 24VAC 4 = 420VAC</td>
<td>3/8</td>
<td>12</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>2MS150 - 1/2</td>
<td>1 = 12 VDC 2 = 24 VDC 3A = 24VAC 4 = 420VAC</td>
<td>1/2</td>
<td>15</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>2MS200 - 1/4</td>
<td>1 = 12 VDC 2 = 24 VDC 3A = 24VAC 4 = 420VAC</td>
<td>3/4</td>
<td>20</td>
<td>7.6</td>
<td></td>
</tr>
<tr>
<td>2MS250 - 1/4</td>
<td>1 = 12 VDC 2 = 24 VDC 3A = 24VAC 4 = 420VAC</td>
<td>1</td>
<td>25</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

**Features**

- Normally Closed, 2 Way, Pilot Piston Operation
- Operating Pressure: Standard: 6 to 230 PSI
- Options:
  - Medium DC: 6 to 580 PSI
  - Medium AC: 6 to 725 PSI
  - High: 87 to 1160 PSI

- Fluid Temperature: -20°C to 180°C
- Ambient Temperature: -20 to 55°C
- Valve Material: Stainless Steel
- Seal: PTFE, Options: Viton
- Compatible Fluid: Steam, Air, Inert Gases, Water, Liquid, etc.

### Valve Model

<table>
<thead>
<tr>
<th>Valve Type</th>
<th>2 Way Normally Closed (NC)</th>
<th>2 Way Normally Open (NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>Pilot Piston</td>
<td>Pilot Piston</td>
</tr>
<tr>
<td>Port Size (NPT)</td>
<td>3/8</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>Port Size (Flange)</td>
<td>1 1/2 F</td>
<td>3/4 F</td>
</tr>
<tr>
<td>Cv</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Orifice</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Operating Pressure</td>
<td>Standard: 6 to 230 PSI</td>
<td>Standard: 6 to 230 PSI</td>
</tr>
<tr>
<td>M Option</td>
<td>Medium DC: 6 to 580 PSI</td>
<td>Medium DC: 6 to 580 PSI</td>
</tr>
<tr>
<td>H Option</td>
<td>Medium AC: 6 to 725 PSI</td>
<td>High: 87 to 1160 PSI</td>
</tr>
</tbody>
</table>

### Temperature

- Medium: -6 to 356 °F (-20 TO 180 °C) with PTFE Seal
- Ambient: -6 to 130 °F (-20 TO 55 °C) with PTFE Seal

### Body Materials

- Stainless Steel

### Seal Materials

- Standard: PTFE; Options: Viton, EPDM

### Coil Protection Insulation Class

- H Class IP65

### Coil Power

- DC: 20W, AC: 22VA

### Electrical Connections

- DIN 43650A (Form A)

### Wetted Surfaces

- Stainless Steel & PTFE

### Service

- Air, Inert Gas, Liquid, Steam, Vacuum

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StcValve.com; 650-856 8833
## 2MS/2MSO Series Stainless Steel Pilot Piston Solenoid Valve Numbering System

<table>
<thead>
<tr>
<th>Model</th>
<th>Valve Port Size (in)</th>
<th>Connection Style</th>
<th>Pressure</th>
<th>Coil Voltage</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>2MS120</td>
<td>3/8</td>
<td></td>
<td>Standard</td>
<td></td>
<td>Blank = 6 to 230 PSI</td>
</tr>
<tr>
<td>2MS150</td>
<td>1/2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2MS200</td>
<td>3/4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2MS250</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2MS320</td>
<td>1 1/4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2MS400</td>
<td>1 1/2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2MS500</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**High Pressure Options:**
- **M** = 6 to 580 PSI (DC Coil)
- **M** = 6 to 725 PSI (AC Coil)
- **H** = 87 to 1450 PSI

**Electrical Connection Options:**
- **D** = DIN (43650A)
- **E** = Explosion Proof Coil (ATEX)
- **M** = 3 ft Molded Cable (3 Wires)
- **N** = DIN with 1/2 NPT for Conduit

**2 Way Normally Closed**

**2 Way Normally Open**

Coil Voltage:
- 1 = 12VDC
- 2 = 24VDC
- 2A = 24VAC 50/60HZ
- 3 = 110 VAC 50/60HZ
- 4 = 220 VAC 50/60HZ

**Electrical Connection Options:**
- **M** = 3 ft Molded Cable (3 Wires)
- **N** = DIN with 1/2 NPT for Conduit
- **D** = DIN (43650A)
2MS & 2MSO Series Valves Internal Components

- Solenoid Coil (Plastic Encapsulated)
- DIN 43650, Form A
- Armature Tube (Stainless Steel)
- Plunger (Stainless Steel)
- Screws, 4x (Stainless Steel)
- Upper Valve Body (Stainless Steel)
- Spring (Stainless Steel)
- Seals (PTFE)
  Seal Options: EPDM, Viton
- Piston (Stainless Steel)
- Lower Valve Body (Stainless Steel)
### Valve Dimensions

**Model: 2M Series Dimensions (MM)**

<table>
<thead>
<tr>
<th>Brass</th>
<th>Stainless Steel</th>
<th>Normally Closed (NC)</th>
<th>Normally Open (NO)</th>
<th>Pressure (psi)</th>
<th>Medium Temperature</th>
<th>Ambient Temperature</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>2M150-1/2</td>
<td>2MS150-1/2</td>
<td>2MO150-1/2</td>
<td>2MSO150-1/2</td>
<td>1/2</td>
<td>15</td>
<td>4.5</td>
<td>75</td>
</tr>
<tr>
<td>2M200-3/4</td>
<td>2MS200-3/4</td>
<td>2MO200-3/4</td>
<td>2MSO200-3/4</td>
<td>2/4</td>
<td>20</td>
<td>7.6</td>
<td>75</td>
</tr>
<tr>
<td>2M250-1</td>
<td>2MS250-1</td>
<td>2MO250-1</td>
<td>2MSO250-1</td>
<td>1</td>
<td>25</td>
<td>12</td>
<td>92</td>
</tr>
<tr>
<td>2M320-1 1/4</td>
<td>2MS320-1 1/4</td>
<td>2MO320-1 1/4</td>
<td>2MSO320-1 1/4</td>
<td>1 1/4</td>
<td>32</td>
<td>22</td>
<td>110</td>
</tr>
<tr>
<td>2M400-1 1/2</td>
<td>2MS400-1 1/2</td>
<td>2MO400-1 1/2</td>
<td>2MSO400-1 1/2</td>
<td>1 1/2</td>
<td>40</td>
<td>30</td>
<td>122</td>
</tr>
<tr>
<td>2M500-2</td>
<td>2MS500-2</td>
<td>2MO500-2</td>
<td>2MSO500-2</td>
<td>2</td>
<td>50</td>
<td>48</td>
<td>161</td>
</tr>
</tbody>
</table>

StcValve.com; 650-856 8833
STC 2MS150-500 SERIES VALVES
WATER FLOW RATE VS PRESSURE

- 2MS500-2
- 2MS400-1 1/2
- 2MS350-1 1/4
- 2MS250-1
- 2MS200 3/4
- 2MS160-1/2

WATER FLOW RATE (GPM) vs PRESSURE (PSI)

StcValve.com; 650-856 8833
Installation and Operation:

To connect the valve Inlet and Outlet:
Connect the inlet and outlet in the direction of the arrow marked on the valve.

To install coil:
Put the coil onto the armature tube of the valve. Put the lock-washer and nut onto the armature tube. Hand tighten the nut, then use a wrench to tighten the nut to a quarter turn; do not over-tighten the nut, it may cause the armature tube to fail pre-maturely.

To connect DIN coil:
1. Remove the Philip screw from the plastic housing and unplug it from the DIN coil.
2. From the screw opening, push the terminal block out from the plastic housing.
3. Note the 1, 2 and ground markings on underside of DIN enclosure.
4. For DC DIN Coil, Connect 1 to Positive, 2 to Negative.
5. For AC DIN Coil, connect 1 to HOT wire, 2 to Neutral wire, and if required connect
6. Do not energize the coil without installing it onto the valve, it will burn the coil and create fire hazards.

Safety Note: Standard valves are supplied with continuous duty coils. The proper class of insulation for the service is indicated on the coil. The coil temperature may become hot after being energized for extended periods, but it is normal. Do not energize the coil without installing it onto the valve or connect the coil to a wrong voltage, as it may overheat and damage the coil; although the coil is made of flame retarded material, misuse of the coil in this manner could create fire hazards and generate smoke or burning odor which indicates excessive coil temperature and should disconnect the power to the coil immediately.

Operation: 2MS series valve is a 2/2 Pilot Piston, Normally Closed Solenoid Valve.
When the valve receives an electrical signal, a magnetic field is formed which attracts the plunger covering the pilot orifice to lift off and allow the media to escape into the outlet port, which causes pressure on the top of the piston to drop. As the pressure is reduced, the full system pressure on the other side of the piston acts to lift the piston away from the main orifice and allows the media to flow through the valve. Since the bleed orifice in the piston is dimensionally smaller than the pilot orifice, the system pressure cannot rebuild on the top of the piston as long as the pilot orifice remains open.

When the valve is de-energized, it releases its hold on the plunger. Then the plunger forced by the spring drops and covers the pilot orifice. As the media enters through the piston bleed orifice into the top side of the piston, it causes the pressure to build up and forces the piston down until it covers the main orifice and stops media flow through the valve.

These valves are equipped with Teflon (PTFE) seals which is not elastic but is formable. It is because of this seal property, if the valve is used in low temperature, there may be small leak and the valve needs to be break-in to form a good mating surface between the seal and the valve orifice. Although the valve have been break-in at the factory level to make sure there is no leak, but due to shipping and installation, the break-in mating surface may have shifted and needs to break-in again, and this is very common. This is accomplished by cycling the valve ON/OFF quickly at the operating pressure until no leak is observed.

The 2MS series valve is to be used with clean media. If the pilot hole is block, use the cleaning procedure to clean the pilot hole.
Valve Pilot Hole Cleaning Procedure

The 2MS series valve is to be used with clean media. If the valve does not open or close properly, the pilot holes inside the valve may be block or restricted. Use the following cleaning procedure to clean the pilot hole.

1. Remove the coil from the valve body.
2. Remove the 4 socket head machine screws from the valve.
3. Remove the top valve cover.
4. Put a small wire through the hole in the valve cover as shown below. Try to dislodge and remove any small particles got trap inside the small pilot hole.
5. Put a small wire through the hole in the valve piston as shown below. Try to dislodge and remove any small particles got trap inside the small pilot hole.
6. Reassemble the valve and test the valve to assure that it is functioning properly before returning it to service.
During re-assembling of the valve, make sure the large hole on the top half of the valve lines up with the hole on the bottom half of the valve.
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