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Typical Schematic

Typical application for the S2E, S2I, and S2L is where load holding in both directions is required.

### 2 Way 2 Position Normally Closed Bi-Directional Valves

<table>
<thead>
<tr>
<th>GPM</th>
<th>PSI</th>
<th>LPM</th>
<th>BAR</th>
<th>MODEL</th>
<th>CAVITY</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.20</td>
<td>3000</td>
<td>0.76</td>
<td>207</td>
<td>MA-S2E</td>
<td>5/8&quot;-18</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>3000</td>
<td>11</td>
<td>207</td>
<td>PB-S2I</td>
<td>3/4&quot;-16</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>3000</td>
<td>15</td>
<td>207</td>
<td>DE-S2I</td>
<td>7/8&quot;-14</td>
<td>42</td>
</tr>
<tr>
<td>12</td>
<td>3000</td>
<td>45</td>
<td>207</td>
<td>DE-S2L</td>
<td>7/8&quot;-14</td>
<td>44</td>
</tr>
</tbody>
</table>
MA-S2E Poppet, 2 Way, Normally Closed, Bi-directional

DESCRIPTION

7 size, 5/8-18 thread, “Mini” series, solenoid operated, 2 way normally closed, bi-directional poppet valve.

OPERATION

When de-energized the MA-S2E blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL

PERFORMANCE

Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0.25</td>
<td>5</td>
</tr>
<tr>
<td>0.5</td>
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<tr>
<td>0.75</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow (LPM)</th>
<th>Pressure Drop (BAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0.25</td>
<td>0.25</td>
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<tr>
<td>0.5</td>
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</tr>
<tr>
<td>0.75</td>
<td>0.75</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Valve Specifications

- Nominal Flow: 0.20 GPM (.76 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage: 0-10 drops/min
- Viscosity Range: 36 to 3000 SSU (3 to 647 cSt)
- Filtration: ISO 18/16/13
- Media Operating Temperature Range: -40°C to 250°F (-40°C to 120°C)
- Weight: .18 lbs (.08 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque Requirements: 15 ft-lbs (20.3 Nm)
- Coil Nut Torque Requirements: 3-5 ft-lbs (4.1-6.8 Nm)
- Cavity: MINI 2W
- Cavity Tools Kit (form tool, reamer, tap): 4050003
- Seal Kit: 21191003

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A Delta Power Co.
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a Delta Power Co.
PB-S2I Poppet, 2 Way, Normally Closed, Bi-Directional

DESCRIPTION
8 size, 3/4-16 thread, “Power” series, solenoid operated, 2 way normally closed, bi-directional poppet valve.

OPERATION
When de-energized the PB-S2I blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw clockwise. To release turn the manual override screw counter-clockwise.

FEATURES
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL

USES “V” COIL.

PERFORMANCE
Actual Test Data (Cartridge Only)

![Flow vs Pressure Drop Graph](image)

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

![Flow vs Pressure Drop Graph](image)

<table>
<thead>
<tr>
<th>Flow (LPM)</th>
<th>Pressure Drop (BAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>6</td>
</tr>
</tbody>
</table>

VALVE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>3 GPM (11 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>0-10 drops/min</td>
</tr>
<tr>
<td>Viscosity Range</td>
<td>36 to 3000 SSU (3 to 647 cSt)</td>
</tr>
<tr>
<td>Filtration</td>
<td>ISO 18/16/13</td>
</tr>
<tr>
<td>Media Operating Temperature Range</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>.15 lbs. (.07 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>25 ft-lbs (34 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>4-6 ft-lbs (5.4-8.1Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>POWER 2W</td>
</tr>
<tr>
<td>Cavity Tools kit (form tool, reamer, tap)</td>
<td>40500005</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191102</td>
</tr>
</tbody>
</table>

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SOLENOID OPERATED DIRECTIONAL CONTROLS

DIMENSIONS

ORDERING INFORMATION

PB-S2I

OPTIONS

Bodies

VOLTAGE (*other voltages available on request)

00 Blank Without Body

N ¼" BSP Ports

A0 Buna, Screen

V0 Viton Standard

N1 3/8"BSPPorts

Buna OVERRIDE

VM Buna, Override

S #6 SAE Ports

0M Buna, Override, Knob

V0 Viton, Override

VK Buna, Screen

Vit, Override, Knob

B0 Buna, Screen

Viton, Screen

B2 Buna, Screen, Override

VK Viton, Screen, Override

B5 Buna, Screen, Override, Knob

V5 Viton, Screen, Override, Knob

Note: Use screen only if flow direction is from (1) to (2).

“V” COIL TERMINATION

(All DC Except as Noted)

DIN 43650 (Hirschman) – (AC & DC)

DI Deutsch – Integral DT04-2P

DIA “I” Coil AMP Superseal – Integral

DID “I” Coil Deutsch – Integral DT04-2P

DIJ “I” Coil AMP Jr. Timer - Integral

DIM “I” Coil Metri-Pack – Integral

Note: Use screen only if flow direction is from (1) to (2).

IMMERSION PROOF “D” TYPE

DL Double Lead

(*several types of termination can be added on leads on request)

DIJ “I” Coil AMP Jr. Timer - Integral

DIM “I” Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg.)

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a Delta Power Co.
DE-S2I Pilot Operated Poppet, 2 Way, Normally Closed

DESCRIPTION
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 2 way normally closed, bi-directional valve.

OPERATION
When de-energized the DE-S2I blocks flow from (1) to (2) or (2) to (1). When energized the valve allows flow from (1) to (2) or (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw clockwise.
To release turn the manual override screw counter-clockwise.

FEATURES
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL

for higher flow uses DE S2L

PERFORMANCE
Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS
Nominal Flow 4 GPM (15 LPM)
Rated Operating Pressure 3000 PSI (207 bar)
Typical Internal Leakage (150 SSU) 0-10 drops/min
Viscosity Range 36 to 3000 SSU (3 to 647 cSt)
Filtration ISO 18/16/13
Media Operating Temperature Range -40° to 250° F (-40° to 120° C)
Weight .21 lbs. (.09 kg)
Operating Fluid Media General Purpose Hydraulic Fluid
Cartridge Torque Requirements 30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements 4-6 ft-lbs (6.8 Nm)
Cavity DELTA 2W
Cavity Tools kit (form tool, reamer, tap) 40500000
Seal Kit 21191202

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a Delta Power Co.
SOLENOID OPERATED DIRECTIONAL CONTROLS

TECNORD

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a Delta Power Co.
DE-S2L Piloted Operated Poppet, 2 Way, Normally Closed, Bi-directional

DESCRIPTION
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 2 way normally closed, bi-directional poppet valve.

OPERATION
When de-energized the DE-S2L blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

FEATURES
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL

PERFORMANCE
Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
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<tr>
<td>5</td>
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<tr>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>30</td>
<td>35</td>
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Valve Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>12 GPM (45 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>0-10 drops/min</td>
</tr>
<tr>
<td>Viscosity Range</td>
<td>36 to 3000 SSU (3 to 647 cSt)</td>
</tr>
<tr>
<td>Filtration</td>
<td>ISO 18/16/13</td>
</tr>
<tr>
<td>Media Operating Temperature Range</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>26 lbs. (.12 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>30 ft-lbs (40.6 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>DELTA 2W</td>
</tr>
<tr>
<td>Cavity Tools kit (form tool, reamer, tap)</td>
<td>40500000</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191202</td>
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</table>

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SOLENOID OPERATED DIRECTIONAL CONTROLS

DIMENSIONS

ORDERING INFORMATION

DE-S2L

OPTIONS
Buna Standard 00
Viton Standard V0
Buna, Screen A0
Viton, Screen W0

BODIES
Blank Without Body
N ½” BSP Ports
S #8 SAE Ports

VOLTAGE
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"V" COIL TERMINATION
(All DC Except as Noted)
DL Double Lead
(“several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

IMMERSSION PROOF “D” TYPE
DIA “I” Coil AMP Superseal - Integral
DID “I” Coil Deutsch – Integral DT04-2P
DIJ “I” Coil AMP Jr. Timer - Integral
DIM “I” Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs. (.25 kg.)

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