### SECTION/Description

<table>
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<tbody>
<tr>
<td>2W2P Normally Closed Poppet Valves</td>
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</tr>
<tr>
<td>2W2P Normally Closed Bi-Directional Valves</td>
<td>35</td>
</tr>
<tr>
<td>2W2P Normally Closed Spool Valves</td>
<td>51</td>
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<tr>
<td>2W2P Normally Open Poppet Valves</td>
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<td>4W3P Spool Valves</td>
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### 2 Way 2 Position Normally Closed Poppet Valves

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<td>SJ-S2B</td>
<td>32</td>
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</table>

### Typical Schematic

Typical application for the S2A is load holding and lowering in a Lift, Check and Dump circuit.

Typical application for the S2B is load holding and lowering when free flow in both directions is required to float the cylinder.

Typical application for the S2F is load holding and lowering of a cylinder in low pressure application where the soft seat gives better leakage control.
MA-S2A Pilot Operated Poppet, 2 Way, Normally Closed

**DESCRIPTION**
7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

**OPERATION**
When de-energized the MA-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (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)

**VALVE SPECIFICATIONS**
- Nominal Flow: 5 GPM (19 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage: 0-5 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: .13 lbs. (.06 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 Form Tool (Finishing): 40500003
- Seal Kit (Buna): 21191000

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WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**HA-S2A Pilot Operated Poppet, 2 Way, Normally Closed**

**DESCRIPTION**
“High Pressure” 7 size, 5/8-18 thread, “Mini” series, solenoid operated, 2 way normally closed, pilot operated poppet valve with free reverse flow de-energized.

**OPERATION**
When de-energized the HA-S2A blocks flow from (1) to (2) and allows flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

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

**HYDRAULIC SYMBOL**

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
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<td>Viscosity Range</td>
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<tr>
<td>Filtration</td>
<td>ISO 18/16/13</td>
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<tr>
<td>Media Operating Temperature Range</td>
<td>-40° to 250° F (-40° to 120° C)</td>
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<tr>
<td>Weight</td>
<td>.14 lbs. (.06 kg)</td>
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<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
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<tr>
<td>Cartridge Torque Requirements</td>
<td>15 ft-lbs (20.3 Nm)</td>
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<tr>
<td>Coil Nut Torque Requirements</td>
<td>3-5 ft-lbs (4.1-6.8 Nm)</td>
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SOLENOID OPERATED DIRECTIONAL CONTROLS

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Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

DIMENSIONS

ORDERING INFORMATION

HA-S2A - - -

OPTIONS

Buna Standard 00
Viton Standard V0

BODIES

Blank Without Body
N 1/4 NPTF Ports
S #6 SAE Ports

"M" COIL TERMINATION

Double Lead DL
Deutsch on Leads DT04-2P DT
Metri-Pack on Leads ML
Packard on Leads PL
Weatherpack on Leads WL
Single Spade SS
Double Spade DS
DIN 43650 (Hirschman) – (AC&DC) HC
Conduit Lead – (AC Only) CL

VOLTAGE

6 VDC 06
12 VDC 12
24 VDC 24
36 VDC 36
48 VDC 48
24 VAC 25
120 VAC 11
220 VAC 22
440 VAC 44

Approximate Coil Weight: .30 lbs/.14 kg.
PB-S2A Pilot Operated Poppet, 2 Way, Normally Closed

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

**OPERATION**
When de-energized the PB-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

**OPERATION OF MANUAL OVERRIDE OPTION:**
To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**
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<td>3500 PSI (241 bar)</td>
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<td>Typical Internal Leakage</td>
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<td>Viscosity Range</td>
<td>36 to 3000 SSU (3 to 647 cSt)</td>
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<tr>
<td>Filtration</td>
<td>ISO 18/16/13</td>
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<td>Media Operating Temperature</td>
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<td>General Purpose Hydraulic Fluid</td>
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<td>Cartridge Torque</td>
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<td>Coil Nut Torque Requirements</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
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<td>POWER 2W</td>
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<td>Seal Kit</td>
<td>21191100</td>
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SOLENOID OPERATED DIRECTIONAL CONTROLS

Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

DIMENSIONS

![Diagram of PB-S2A directional control model]

ORDERING INFORMATION

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<th>BODIES</th>
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Note: Use screen only if flow direction is from (1) to (2).

“P” COIL TERMINATION

(All DC Except as Noted)

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<tr>
<td>ML Metri-Pack on Leads</td>
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<tr>
<td>PL Packard on Leads</td>
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<td>WL Weatherpack on Leads</td>
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<tr>
<td>SS Single Spade</td>
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<tr>
<td>DS Double Spade</td>
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<tr>
<td>HC DIN 43650 (Hirschman) – (AC &amp; DC)</td>
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<tr>
<td>CL Conduit Lead – (AC Only)</td>
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<td>DI Deutsch – Integral DT04-2P</td>
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Note: Use screen only if flow direction is from (1) to (2).

Approximate Coil Weight: .42 lbs (.19 kg.)

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DE-S2A Pilot Operated Poppet, 2 Way Normally Closed

**DESCRIPTION**
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

**OPERATION**
When de-energized the DE-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

![Performance Graph]

**VALVE SPECIFICATIONS**

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<td>Rated Operating Pressure</td>
<td>3500 PSI (241 bar)</td>
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<tr>
<td>Typical Internal Leakage</td>
<td>0-5 drops/min</td>
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<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>
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<tr>
<td>Media Operating Temperature Range</td>
<td>-40° to 250°F (-40° to 120°C)</td>
</tr>
<tr>
<td>Weight</td>
<td>.27 lbs. (.12 kg)</td>
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<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
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<td>Cartridge Torque Requirement</td>
<td>30 ft-lbs (40.6 Nm)</td>
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<tr>
<td>Coil Nut Torque Requirement</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
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**HYDRAULIC SYMBOL**

![Hydraulic Symbol]
SOLENOID OPERATED DIRECTIONAL CONTROLS

Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

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DIMENSIONS

ORDERING INFORMATION

DE-S2A - - - -

OPTIONS

Bodies
Blank Without Body
N 3/8 NPTF Ports
S #8 SAE Ports

VOLTAGE

6 VDC
12 VDC
24 VDC
36 VDC
48 VDC
24 VAC
120 VAC
220 VAC
440 VAC

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

“D” COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads
SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IMMERSION PROOF “D” TYPE

IA “T” Coil AMP Superseal - Integral
ID “T” Coil Deutsch – Integral DT04-2P
IJ “T” Coil AMP Jr. Timer - Integral
IM “T” Coil Metri-Pack – Integral

Approximate Coil Weight: .74 lbs (.33 kg.)

Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com

Page 17
HE-S2A Pilot Operated Poppet, 2 Way Normally Closed

DESCRIPTION
"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

OPERATION
When de-energized the HE-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (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
Uses "L" Coil.

PERFORMANCE
Actual Test Data (Cartridge Only)

![Flow vs Pressure Drop Graph]

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</table>

| Port 1 to 2 (eng) | Port 2 to 1 (de-eng) |

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Flow (LPM)</th>
</tr>
</thead>
<tbody>
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<td>0</td>
</tr>
<tr>
<td>1</td>
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<tr>
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<td>44</td>
<td>65</td>
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<tr>
<td>48</td>
<td>70</td>
</tr>
</tbody>
</table>

| Port 1 to 2 (eng) | Port 2 to 1 (de-eng) |

VALVE SPECIFICATIONS
Nominal Flow 15 GPM (57 LPM)
Rated Operating Pressure 4000 PSI (276 bar)
Typical Internal Leakage 0-5 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 .39 lbs. (.17 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 (5.4-8.1 Nm)
Cavity DELTA 2W
Cavity Form Tool (Finishing) 40500000
Seal Kit 21191200

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIMENSIONS

ORDERING INFORMATION

HE-S2A

OPTIONS
Buna Standard 00
Viton Standard V0

BODIES
Blank N
3/8 NPTF Ports S
#8 SAE Ports

VOLTAGE
06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VAC
25 25 VAC
11 120 VAC
22 220 VAC
44 440 VAC

“L” COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads
SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – integral DT04-2P

IMMERSSION PROOF “D” TYPE
IA “I” Coil AMP Superseal - Integral
ID “I” Coil Deutsch – integral DT04-2P
IJ “I” Coil AMP Jr. Timer - Integral
IM “I” Coil Metri-Pack – Integral

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory options.

Approximate Coil Weight: .68 lbs. (.31 kg.)

IMMERSION PROOF “D” TYPE
IA “I” Coil AMP Superseal - Integral
ID “I” Coil Deutsch – integral DT04-2P
IJ “I” Coil AMP Jr. Timer - Integral
IM “I” Coil Metri-Pack – Integral

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 따니말: 위의 사양//application 데이터는 제품을 설명하는 일반적인 가이드로만 이해해야 합니다 (다음). 특정한 작업은 독립된 연구, 평가 및 적합성을 차근차근 수행할 필요가 있습니다.
TT-S2A Pilot Operated Poppet, 2 Way Normally Closed

DESCRIPTION
12 size, 1 1/16-12 thread, “Tecnord” series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

OPERATION
When de-energized the TT-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

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

PERFORMANCE
Actual Test Data (Cartridge Only)

Flow (GPM)

Pressure Drop (PSI)

Flow (LPM)

Pressure Drop (BAR)

Valve Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>25 GPM (95 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>0-5 drops/min</td>
</tr>
<tr>
<td>(150 SSU)</td>
<td></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>49 lbs. (.22 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>70 ft-lbs (94.9 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>TECNORD 2W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500032</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191300</td>
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</table>

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Page 21
**DESCRIPTION**

16 size, 1 5/16-12 thread, “Super” series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

**OPERATION**

When de-energized the SJ-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricted flow from (2) to (1).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

---

**PERFORMANCE**

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

- Nominal Flow: 30 GPM (114 LPM)
- Rated Operating Pressure: 3500 PSI (241 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: 72 lbs. (.32 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque Requirements: 90 ft-lbs (122 Nm)
- Coil Nut Torque Requirements: 4-6 ft-lbs (5.4-8.1 Nm)
- Cavity: SUPER 2W
- Cavity Form Tool (Finishing): 40500017
- Seal Kit: 21191400

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DIMENSIONS

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ORDERING INFORMATION

“D” COIL TERMINATION

(Applicable to DC Except as Noted)

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
<th>IMMERSION PROOF “D” TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna Standard</td>
<td>Blank Without Body</td>
<td>6 VDC</td>
<td>“I” Coil AMP Superseal - Integral</td>
</tr>
<tr>
<td>Viton Standard</td>
<td>3/4 NPT Ports</td>
<td>12 VDC</td>
<td>“I” Coil Deutsch – Integral DT04-2P</td>
</tr>
<tr>
<td>Buna, Override, Detent</td>
<td>#12 SAE Ports</td>
<td>24 VDC</td>
<td>“I” Coil AMP Jr. Timer - Integral</td>
</tr>
<tr>
<td>Viton, Override, Detent</td>
<td></td>
<td>36 VDC</td>
<td>“I” Coil Metri-Pack – Integral</td>
</tr>
<tr>
<td>Buna, Override, Nondetent</td>
<td></td>
<td>48 VDC</td>
<td></td>
</tr>
<tr>
<td>Viton, Override, Nondetent</td>
<td></td>
<td>24 VAC</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>120 VAC</td>
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<td>220 VAC</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>440 VAC</td>
<td></td>
</tr>
</tbody>
</table>

Approximate Coil Weight: .74 lbs (.33 kg.)
PB-S2B Pilot Operated Poppet, 2 Way Normally Closed

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

**OPERATION**
When de-energized the PB-S2B blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**
- Nominal Flow: 8 GPM (30 LPM)
- Rated Operating Pressure: 3500 PSI (241 bar)
- Typical Internal Leakage (150 SSU): 0-5 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: 20 lbs. (.09 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque: 25 ft-lbs (34 Nm)
- Requirements
- Coil Nut Torque Requirements: 4-6 ft-lbs (5.4-8.1 Nm)
- Cavity: POWER 2W
- Cavity Form Tool (Finishing): 40500005
- Seal Kit: 21191100

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Page 25
DE-S2B Pilot Operated Poppet, 2 Way Normally Closed

**DESCRIPTION**
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

**OPERATION**
When de-energized the DE-S2B acts as a check valve, allowing flow to pass from (2) to (1), while blocking flow from (1) to (2). When energized the valve opens allowing flow to pass from (1) to (2).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**
- Nominal Flow: 15 GPM (57 LPM)
- Rated Operating Pressure: 3500 PSI (241 bar)
- Typical Internal Leakage: 0-5 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: .27 lbs. (.12 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 (5.4-8.1 Nm)
- Cavity: DELTA 2W
- Cavity Form Tool (Finishing): 40500000
- Seal Kit: 21191200

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Approximate Coil Weight: .74 lbs (.33 kg.)
TT-S2B Pilot Operated Poppet, 2 Way Normally Closed

DESCRIPTION
12 size, 1 1/16-12 thread, “Tecnord” series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

OPERATION
When de-energized the TT-S2B blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

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

PERFORMANCE
Actual Test Data (Cartridge Only)

Valve Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>25 GPM (95 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>0-5 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>49 lbs. (22 kg)</td>
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<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>70 ft-lbs (94.9 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>TECNORD 2W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500032</td>
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<tr>
<td>Seal Kit</td>
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</table>

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HT-S2B Pilot Operated Poppet, 2 Way Normally Closed

**DESCRIPTION**

"High pressure" 12 size, 1 1/16-12 thread, "Tecnord" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

**OPERATION**

When de-energized the HT-S2B blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and from (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)

---

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>25 GPM (95 LPM)</td>
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<tr>
<td>Rated Operating Pressure</td>
<td>5000 PSI (345 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>0-8 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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>.94 lbs (.43 kg)</td>
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<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>70 ft-lbs (94.9 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>5-7 ft-lbs (6.8-9.5 Nm)</td>
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<tr>
<td>Cavity</td>
<td>TECNORD 2W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500032</td>
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<tr>
<td>Seal Kit</td>
<td>21191301</td>
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SJ-S2B Pilot Operated Poppet, 2 Way Normally Closed

DESCRIPTION
16 size, 1 5/16-12 thread, “Super” series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

OPERATION
When de-energized the SJ-S2B blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

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

PERFORMANCE
Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
<th>Pressure Drop (BAR)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>40</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow (LPM)</th>
<th>Pressure Drop (PSI)</th>
<th>Pressure Drop (BAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
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<td>150</td>
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<td>20.7</td>
</tr>
</tbody>
</table>

Valve Specifications

- Nominal Flow: 30 GPM (114 LPM)
- Rated Operating Pressure: 3500 PSI (241 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: .72 lbs. (.32 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque Requirements: 90 ft-lbs (122 Nm)
- Coil Nut Torque Requirements: 4-6 ft-lbs (5.4-8.1 Nm)
- Cavity: SUPER 2W
- Cavity Form Tool (Finishing): 40500017
- Seal Kit: 21191401

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Page 32
### DIMENSIONS

![Diagram showing dimensions of the product](image.png)

### ORDERING INFORMATION

**SJ-S2B**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
<th>IMMERSION PROOF “D” TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna Standard</td>
<td>Blank</td>
<td>06</td>
<td>IA</td>
</tr>
<tr>
<td>Viton Standard</td>
<td>N</td>
<td>12</td>
<td>ID</td>
</tr>
<tr>
<td>Buna, Screen</td>
<td>S</td>
<td>24</td>
<td>&quot;I&quot; Coi AMP Jr. Timer - Integral</td>
</tr>
<tr>
<td>Viton, Screen</td>
<td></td>
<td>36</td>
<td>&quot;I&quot; Coi Deutsch – Integral DT04-2P</td>
</tr>
<tr>
<td>Buna, Override, Detent</td>
<td></td>
<td>48</td>
<td>&quot;I&quot; Coi AMP Sr. Timer</td>
</tr>
<tr>
<td>Viton, Override, Detent</td>
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<td>25</td>
<td>IA</td>
</tr>
<tr>
<td>Buna, Override, Non-detent</td>
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<td>ID</td>
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<tr>
<td>Viton, Override, Non-detent</td>
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<td>22</td>
<td>&quot;I&quot; Coi AMP Jr. Timer</td>
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<tr>
<td>Buna, Screen, Override, Detent</td>
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<td>IA</td>
</tr>
<tr>
<td>Viton, Screen, Override, Detent</td>
<td></td>
<td></td>
<td>ID</td>
</tr>
</tbody>
</table>

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

**“D” COIL TERMINATION**

(All DC Except as Noted)

<table>
<thead>
<tr>
<th>DL</th>
<th>Double Lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT</td>
<td>Deutsch on Leads DT04-2P</td>
</tr>
<tr>
<td>ML</td>
<td>Metri-Pack on Leads</td>
</tr>
<tr>
<td>PL</td>
<td>Packard on Leads</td>
</tr>
<tr>
<td>WL</td>
<td>Weatherpack on Leads</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SS</th>
<th>Single Spade</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS</td>
<td>Double Spade</td>
</tr>
<tr>
<td>HC</td>
<td>DIN 43650 (Hirschman) – (AC &amp; DC)</td>
</tr>
<tr>
<td>CL</td>
<td>Conduit Lead – (AC Only)</td>
</tr>
<tr>
<td>DI</td>
<td>Deutsch – Integral DT04-2P</td>
</tr>
</tbody>
</table>

**Approximate Coil Weight: .74 lbs (.33 kg.)**

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
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>PAGE</th>
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<tbody>
<tr>
<td>0.20</td>
<td>3000</td>
<td>0.76</td>
<td>207</td>
<td>MA-S2E</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>3000</td>
<td>11</td>
<td>207</td>
<td>PB-S2I</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>3000</td>
<td>15</td>
<td>207</td>
<td>DE-S2I</td>
<td>40</td>
</tr>
<tr>
<td>11</td>
<td>5000</td>
<td>42</td>
<td>345</td>
<td>HB-S2L</td>
<td>592</td>
</tr>
<tr>
<td>12</td>
<td>3000</td>
<td>45</td>
<td>207</td>
<td>DE-S2L</td>
<td>42</td>
</tr>
</tbody>
</table>

Typical Schematic

Typical application for the S2E, S2I, and S2L is where load holding in both directions is required.
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>Pressure Drop (PSI)</th>
<th>Flow (GPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0.15</td>
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<tr>
<td>10</td>
<td>0.25</td>
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<tr>
<td>15</td>
<td>0.35</td>
</tr>
<tr>
<td>20</td>
<td>0.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressure Drop (BAR)</th>
<th>Flow (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0.25</td>
</tr>
<tr>
<td>10</td>
<td>0.5</td>
</tr>
<tr>
<td>15</td>
<td>0.75</td>
</tr>
</tbody>
</table>

**VALVE SPECIFICATIONS**
- Nominal Flow: 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°F 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 Form Tool (Finishing): 40500003
- Seal Kit: 21191003

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIN 43650 (Hirschmann) – (AC&DC)  
Conduit Lead – (AC only)  

Approximate Coil Weight: .30 lbs/.14 kg.

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  
Fax: (815) 397-2526  
E-mail: delta@delta-power.com
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 “D” Delta coil.

Higher pressure or higher flow capable, consult factory for options.

For Higher flow see HB-S2L.

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>1</td>
<td>1</td>
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<tr>
<td>2</td>
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<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
</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>5</td>
<td>5</td>
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<tr>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

| Nominal Flow | 3 GPM (11 LPM) |
| Rated Operating Pressure | 3000 PSI (207 bar) |
| Typical Internal Leakage | 0-10 drops/min |
| (150 SSU) |                     |
| 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 | .15 lbs. (.07 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque | 25 ft-lbs (34 Nm) |
| Requirements |                     |
| Coil Nut Torque | 4-6 ft-lbs (5.4-8.1 Nm) |
| Requirements |                     |
| Cavity | POWER 2W |
| Cavity Form Tool (Finishing) | 40500005 |
| Seal Kit | 21191102 |

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**DIMENSIONS**

**ORDERING INFORMATION**

**PB-S2I**

**OPTIONS**
- Buna Standard 00
- Viton Standard V0
- Buna, Override 0M
- Viton, Override VM
- Buna, Override, Knob OK
- Viton, Override, Knob VK
- Buna, Screen A0
- Viton, Screen W0
- Buna, Screen, Override B2
- Viton, Screen, Override V2
- Buna, Screen, Override, Knob B5
- Viton, Screen, Override, Knob V5

**BODIES**
- Blank Without Body
- N 1/4 NPTF Ports
- S #6 SAE Ports

**VOLTAGE**
- 06 6 VDC
- 12 12 VDC
- 24 24 VDC
- 36 36 VDC
- 48 48 VDC
- 25 24 VAC
- 11 120 VAC
- 22 220 VAC
- 44 440 VAC

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

**“D” COIL TERMINATION**

(All DC Except as Noted)

<table>
<thead>
<tr>
<th>DL</th>
<th>Double Lead</th>
<th>SS</th>
<th>Single Spade</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT</td>
<td>Deutsch on Leads DT04-2P</td>
<td>DS</td>
<td>Double Spade</td>
</tr>
<tr>
<td>ML</td>
<td>Metri-Pack on Leads</td>
<td>HC</td>
<td>DIN 43650 (Hirschman) – (AC &amp; DC)</td>
</tr>
<tr>
<td>PL</td>
<td>Packard on Leads</td>
<td>CL</td>
<td>Conduit Lead – (AC Only)</td>
</tr>
<tr>
<td>WL</td>
<td>Weatherpack on Leads</td>
<td>DI</td>
<td>Deutsch – Integral DT04-2P</td>
</tr>
</tbody>
</table>

**IMMERSION PROOF “D” TYPE**

| IA | “I” Coil AMP Superseal - Integral |
| ID | “I” Coil Deutsch – Integral DT04-2P |
| IJ | “I” Coil AMP Jr. Timer - Integral |
| IM | “I” Coil Metri-Pack – Integral |

Approximate Coil Weight: .74 lbs (.33 kg.)

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**DE-S2I 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-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**

Higher pressure or higher flow capable, consult factory for options.
For Higher flow see DE-S2L.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**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>(150 SSU)</td>
<td></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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>21 lbs. (.09 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</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 Form Tool (Finishing)</td>
<td>40500000</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191202</td>
</tr>
</tbody>
</table>

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WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
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)

**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</td>
<td>0-10 drops/min</td>
</tr>
<tr>
<td>(150 SSU)</td>
<td></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</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 Form Tool (Finishing)</td>
<td>40500000</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191202</td>
</tr>
</tbody>
</table>
WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**MA-S2F Pilot Operated Poppet, 2 Way, Normally Closed – Soft Seat**

**DESCRIPTION**
7 size, 5/8-18 thread, “Mini” series, solenoid operated, 2 way normally closed, pilot operated soft seat poppet valve with reverse flow de-energized.

**OPERATION**
When de-energized the MA-S2F blocks flow from (1) to (2) and allows free reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

**FEATURES**
- Soft seat for ultra low leakage.
- 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**

Operational shift limit 2.5 GPM (9.5 LPM). For shifted flow performance consult chart.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**
- Maximum Flow: 2.5 GPM (9.5 LPM)
- Rated Operating Pressure: 1500 PSI (103 bar)
- Typical Internal Leakage (150 SSU): Negligible
- Viscosity Range: 36 to 3000 SSU (3 to 647 cSt)
- Filtration: ISO 18/16/13
- Media Operating Temperature Range: 32°F to 160°F (0°C to 70°C)
- Weight: .12 lbs. (.05 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 Form Tool (Finishing): 40500003
- Seal Kit: 21191000

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Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com

Page 45
**PB-S2F Pilot Operated Poppet, 2 Way Normally Closed – Soft Seat**

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 2 way normally closed, pilot operated soft seat poppet valve with reverse flow de-energized.

**OPERATION**
When de-energized the PB-S2F blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restrict flow from (2) to (1).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**FEATURES**
- Soft seat for ultra low leakage.
- 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**
Operational shift limit is 6 GPM. For shifted performance consult chart.

**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>2</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
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<tr>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow (LPM)</th>
<th>Pressure Drop (BAR)</th>
</tr>
</thead>
<tbody>
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<tr>
<td>2</td>
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<td>4</td>
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<td>6</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Maximum Flow</td>
<td>6 GPM (23 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>2500 PSI (172 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>Negligible</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</td>
<td>-35° to 200° F (-37° to 93° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>19 lbs. (.08 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque</td>
<td>25 ft-lbs (34 Nm)</td>
</tr>
<tr>
<td>Requirements</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>POWER 2W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>405000005</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191100</td>
</tr>
</tbody>
</table>

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Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
DE-S2F Pilot Operated Poppet, 2 Way Normally Closed – Soft Seat

**DESCRIPTION**
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 2 way normally closed, pilot operated soft seat poppet valve with reverse flow de-energized.

**OPERATION**
When de-energized the DE-S2F blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) but restricts reverse flow from (2) to (1).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**FEATURES**
- Soft seat for ultra low leakage.
- 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**

Operational shift limit 10 GPM (38 LPM). For shifted flow performance consult chart.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**
- Nominal Flow: 10 GPM (38 LPM)
- Rated Operating Pressure: 1000 PSI (69 bar)
- Typical Internal Leakage: Negligible
- Viscosity Range: 36 to 3000 SSU (3 to 647 cSt)
- Filtration: ISO 18/16/13
- Media Operating Temperature Range: 32° to 160° F (0° to 70° C)
- Weight: 25 lbs. (.11 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 (5.4-8.1 Nm)
- Cavity: DELTA 2W
- Cavity Form Tool (Finishing): 40500000
- Seal Kit: 21191200

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**DIMENSIONS**

**MANUAL OVERRIDE**

**STANDARD**

**7/16-20 UNF 2 A THREAD**

**SEE COIL DATA FOR TERMINATIONS**

**ORDERING INFORMATION**

**DE-S2F**

**OPTIONS**
- Buna Standard 00
- Viton Standard V0
- Buna, Override 0M
- Viton, Override VM
- Viton, Screen and Override 0M

**BODIES**
- Blank Without Body N 3/8 NPTF Ports
- S #8 SAE Ports

**VOLTAGE**
- Buna, Override, Non-detent B1 06 6 VDC
- Viton, Override, Non-detent V1 12 12 VDC
- Buna, Screen, Override, Non-detent B3 24 24 VDC
- Viton, Screen, Override, Non-detent B4 36 36 VDC
- Viton, Screen, Override, Detent V3 48 48 VDC
- Viton, Screen, Override, Detent V4 25 24 VAC
- 11 120 VAC
- 22 220 VAC
- 44 440 VAC

**"D" COIL TERMINATION**

(All DC Except as Noted)

- DL Double Lead
- DT Deutsch on Leads DT04-2P
- ML Metri-Pack on Leads
- PL Packard on Leads
- WL Weatherpack on Leads
- SS Single Spade
- DS Double Spade
- HC DIN 43650 (Hirschman) – (AC & DC)
- CL Conduit Lead – (AC Only)
- DI Deutsch – Integral DT04-2P

**IMMERSION PROOF "D" TYPE**
- IA "I" Coil AMP Superseal - Integral
- ID "I" Coil Deutsch – Integral DT04-2P
- IJ "I" Coil AMP Jr. Timer - Integral
- IM "I" Coil Metri-Pack – Integral

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Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com

Page 49
**2 Way 2 Position Normally Closed Spool Valves**

<table>
<thead>
<tr>
<th>GPM</th>
<th>PSI</th>
<th>LPM</th>
<th>BAR</th>
<th>MODEL</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>3000</td>
<td>6</td>
<td>207</td>
<td>MA-S2G</td>
<td>52</td>
</tr>
<tr>
<td>4</td>
<td>4000</td>
<td>15</td>
<td>276</td>
<td>HA-S2G</td>
<td>54</td>
</tr>
<tr>
<td>8</td>
<td>3000</td>
<td>30</td>
<td>207</td>
<td>PB-S2G</td>
<td>56</td>
</tr>
<tr>
<td>8</td>
<td>3000</td>
<td>30</td>
<td>207</td>
<td>DE-S2G</td>
<td>58</td>
</tr>
<tr>
<td>15</td>
<td>4000</td>
<td>57</td>
<td>276</td>
<td>HE-S2G</td>
<td>60</td>
</tr>
</tbody>
</table>

**Typical Schematic**

Typical application for the S2G is locking or braking of a fluid motor.

![Typical Schematic Diagram]
MA-S2G Direct Acting Spool, 2 Way, Normally Closed

**DESCRIPTION**
7 size, 5/8-18 thread, “Mini” series, solenoid operated, 2 way normally closed, spool valve.

**OPERATION**
When de-energized the MA-S2G 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**
- 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**

For higher flow or pressure see HA-S2G.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>1.5 GPM (5.7 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/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>12 lbs (.05 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>15 ft-lbs (20.3 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>3-5 ft-lbs (6.8 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>MINI 2W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500003</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191002</td>
</tr>
</tbody>
</table>

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Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com

Page 52
**DIMENSIONS**

![Dimensions Diagram]

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>MA-S2G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna Standard</td>
<td>00</td>
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<tr>
<td>Viton Standard</td>
<td>V0</td>
</tr>
<tr>
<td>Buna, Screen</td>
<td>A0</td>
</tr>
<tr>
<td>Viton, Screen</td>
<td>W0</td>
</tr>
</tbody>
</table>

**BODIES**

- Blank Without Body
- N 1/4 NPTF Ports
- S #6 SAE Ports

**VOLTAGE**

- 06 6 VDC
- 12 12 VDC
- 24 24 VDC
- 36 36 VDC
- 48 48 VDC
- 24 24 VAC
- 11 120 VAC
- 22 220 VAC
- 44 440 VAC

**“M” COIL TERMINATION**

- DL Double Lead
- DT Deutsch on Leads DT04-2P
- ML Metri-Pack on Leads
- PL Parkard on Leads
- WL Weatherpack on Leads
- SS Single Spade
- DS Double Spade
- HC DIN 43650 (Hirschmann) – (AC&DC)
- CL Conduit Lead - (AC Only)

Approximate Coil Weight: .30 lbs/.14 kg.

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
HA-S2G Direct Acting Spool, 2 Way, Normally Closed

DESCRIPTION
"High Pressure" 7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally closed, spool valve with free reverse.

OPERATION
When de-energized the HA-S2G 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 (for most common terminations, see coil page).
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL

Operation shift limit 2 GPM (8 LPM).
For shifted performance consult chart.

PERFORMANCE
Actual Test Data (Cartridge Only)

Valve Specifications
- Maximum Flow: 4 GPM (15 LPM)
- Rated Operating Pressure: 4000 PSI (276 bar)
- Typical Internal Leakage: 8 cu in/min (131 ml/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: 14 lbs. (.06 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque Requirements: 30 ft-lbs (40.6 Nm)
- Coil Nut Torque Requirements: 3-5 ft-lbs (4.1-6.8 Nm)
- Cavity: MINI 2W
- Cavity Form Tool (Finishing): 40500003
- Seal Kit: 21191002
OPTIONS
Buna Standard 00
Viton Standard V0

“M” COIL TERMINATION
(All DC Except as Noted)
Double Lead DL
Deutsch on Leads DT04-2P DT
Metri-Pack on Leads ML
Packard on Leads PL
Weatherpack on Leads WL
Single Spade SS
Double Spade DS
DIN 43650 (Hirschman) – (AC&DC) HC
Conduit Lead – (AC Only) CL

BODIES
Blank Without Body N
1/4 NPTF Ports S
#6 SAE Ports

VOLTAGE
6 VDC 06
12 VDC 12
24 VDC 24
36 VDC 36
48 VDC 48
24 VAC 25
120 VAC 22
220 VAC 44
440 VAC

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.

Approximate Coil Weight: .30 lbs/.14 kg.

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
PB-S2G Direct Acting Spool, 2 Way, Normally Closed

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

OPERATION
When de-energized the PB-S2G 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, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

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
Operational shift limit in 2 to 1 direction is 4 GPM. For shifted flow performance consult chart.

PERFORMANCE
Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
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<tr>
<td>0</td>
<td>0</td>
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<tr>
<td>5</td>
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<tr>
<td>10</td>
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Flow (LPM)

<table>
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<th>Pressure Drop (BAR)</th>
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<td>10</td>
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<tr>
<td>30</td>
<td>30</td>
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<td>40</td>
<td>40</td>
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Pressure Drop (PSI)

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<thead>
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<th>Flow (GPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
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<tr>
<td>5</td>
<td>5</td>
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<tr>
<td>10</td>
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<tr>
<td>35</td>
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<tr>
<td>40</td>
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</tbody>
</table>

Pressure Drop (BAR)

| Port 1 to 2 (eng) | Port 2 to 1 (eng) |

<table>
<thead>
<tr>
<th>VALVE SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
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<tr>
<td>Viscosity Range</td>
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<tr>
<td>Filtration</td>
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<tr>
<td>Media Operating</td>
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<tr>
<td>Temperature Range</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
</tr>
<tr>
<td>Cartridge Torque</td>
</tr>
<tr>
<td>Requirements</td>
</tr>
<tr>
<td>Cavity</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
</tr>
<tr>
<td>Seal Kit</td>
</tr>
</tbody>
</table>

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Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

### DIMENSIONS

![Diagram of PB-S2G dimensions]

<table>
<thead>
<tr>
<th>DIMENSIONS</th>
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<td>2.10 [53.3]</td>
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<td>2.13 [54.2]</td>
<td>2.13 [54.2]</td>
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<td>2.35 [60.2]</td>
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### ORDERING INFORMATION

**PB-S2G**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
<th>IMMERSION PROOF “P” TYPE</th>
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</thead>
<tbody>
<tr>
<td>Buna Standard</td>
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<td>DL</td>
</tr>
<tr>
<td>Viton Standard</td>
<td>Without Body</td>
<td>V0</td>
<td>DT</td>
</tr>
<tr>
<td>Buna, Override, Detent</td>
<td>1/4 NPTF Ports</td>
<td>0M</td>
<td>ML</td>
</tr>
<tr>
<td>Viton, Override, Detent</td>
<td>#6 SAE Ports</td>
<td>VM</td>
<td>PL</td>
</tr>
<tr>
<td>Buna, Screen</td>
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<td>A0</td>
<td>WL</td>
</tr>
<tr>
<td>Viton, Screen</td>
<td></td>
<td>W0</td>
<td></td>
</tr>
<tr>
<td>Buna, Override, Nondetent</td>
<td>6 VDC</td>
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<td>IA</td>
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<tr>
<td>Viton, Override, Nondetent</td>
<td>12 VDC</td>
<td>V1</td>
<td>ID</td>
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<tr>
<td>Buna, Screen, Override, Nondetent</td>
<td>24 VDC</td>
<td>B3</td>
<td>IJ</td>
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<td>36 VDC</td>
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<td>IM</td>
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<tr>
<td>Buna, Screen, Override, Detent</td>
<td>48 VDC</td>
<td>B4</td>
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<tr>
<td>Viton, Screen, Override, Detent</td>
<td>24 VAC</td>
<td>V4</td>
<td></td>
</tr>
</tbody>
</table>

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

**“P” COIL TERMINATION**

(All DC Except as Noted)

<table>
<thead>
<tr>
<th>DL</th>
<th>DT</th>
<th>ML</th>
<th>PL</th>
<th>WL</th>
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<tbody>
<tr>
<td>Double Lead</td>
<td>Deutsch on Leads DT04-2P</td>
<td>Metri-Pack on Leads</td>
<td>Packard on Leads</td>
<td>Weatherpack on Leads</td>
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<table>
<thead>
<tr>
<th>SS</th>
<th>DS</th>
<th>HC</th>
<th>CL</th>
<th>DI</th>
</tr>
</thead>
</table>

Approximate Coil Weight: .42 lbs (19 kg.)

Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com
DE-S2G Direct Acting Spool, 2 Way Normally Closed

DESCRIPTION
10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally closed, spool valve.

OPERATION
When de-energized the DE-S2G 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, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

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

OPERATIONAL shift limit 8 GPM (30 LPM) and 5 GPM (19 LPM). For shifted flow performance consult chart. For higher flow or pressure see HE-S2G.

PERFORMANCE
Actual Test Data (Cartridge Only)

![Graph showing performance data]

VALVE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>8 GPM (30 LPM) from (1) to (2)</td>
</tr>
<tr>
<td></td>
<td>5 GPM (19 LPM) from (2) to (1)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>5 cu in/min (82 ml/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>
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<td>Cavity Form Tool (Finishing)</td>
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<tr>
<td>Seal Kit</td>
<td>21191202</td>
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</tbody>
</table>

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ORDERING INFORMATION

DE-S2G

OPTIONS

- Buna Standard 00
- Viton Standard V0
- Buna, Override 0M
- Viton, Override VM
- Buna, Screen A0
- Viton, Screen W0
- Buna, Override, Non-detent B1
- Viton, Override, Non-detent V1
- Buna, Screen, Override, Non-detent B3
- Viton, Screen, Override, Non-detent V3
- Buna, Screen, Override, Detent B4
- Viton, Screen, Override, Detent V4

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

“D” COIL TERMINATION
(All DC Except as Noted)

- DL Double Lead
- DT Deutsch on Leads DT04-2P
- ML Metri-Pack on Leads
- PL Packard on Leads
- WL Weatherpack on Leads
- SS Single Spade
- DS Double Spade
- HC DIN 43650 (Hirschman) – (AC & DC)
- CL Conduit Lead – (AC Only)
- DI Deutsch – Integral DT04-2P

 Approximate Coil Weight: .74 lbs (.33 kg.)

BODIES

- Blank Without Body
- N 3/8 NPTF Ports
- S #8 SAE Ports

VOLTAGE

- 06 6 VDC
- 12 12 VDC
- 24 24 VDC
- 36 36 VDC
- 48 48 VDC
- 24 24 VAC
- 11 22 VAC
- 44 44 VAC

IMMERSION PROOF “D” TYPE

- IA "I” Coil AMP Superseal - Integral
- ID "I” Coil Deutsch – Integral DT04-2P
- IJ "I” Coil AMP Jr. Timer - Integral
- IM "I” Coil Metri-Pack – Integral

DIMENSIONS
HE-S2G Direct Acting Spool, 2-Way, Normally Closed

DESCRIPTION
"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2-way normally closed, spool valve.

OPERATION
When de-energized the HE-S2G 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
Uses "L" Coil.

PERFORMANCE
Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
<th>Pressure Drop (BAR)</th>
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<td>75</td>
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<table>
<thead>
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<th>Pressure Drop (BAR)</th>
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<table>
<thead>
<tr>
<th>Port 1 to 2 (eng)</th>
<th>Port 2 to 1 (eng)</th>
</tr>
</thead>
</table>

VALVE SPECIFICATIONS
- Nominal Flow: 15 GPM (57 LPM) from (1) to (2), 6 GPM (23 LPM) from (2) to (1)
- Max Operating Pressure: 4000 PSI (276 bar)
- Typical Internal Leakage: 8 cu in/min (131 ml/min)
- Viscosity Range: 36 to 300 SSU (3 to 647 cSt)
- Filtration: ISO 18/16/13
- Media Operating Temperature Range: -40°F to 250°F (-40°C to 120°C)
- Weight: 39 lbs. (17 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 (5.4-8.1 Nm)
- Cavity: DELTA 2W
- Cavity Form Tool (Finishing): 40500000
- Seal Kit: 21191202

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Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com
### 2 Way 2 Position Normally Open Poppet Valves

<table>
<thead>
<tr>
<th>GPM</th>
<th>PSI</th>
<th>LPM</th>
<th>BAR</th>
<th>MODEL</th>
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<td>207</td>
<td>MA-S2C</td>
<td>64</td>
</tr>
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<td>10</td>
<td>3500</td>
<td>38</td>
<td>241</td>
<td>PB-S2C</td>
<td>66</td>
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<td>5000</td>
<td>30</td>
<td>345</td>
<td>HB-S2C</td>
<td>590</td>
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<td>151</td>
<td>207</td>
<td>SJ-S2C</td>
<td>72</td>
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<td>38</td>
<td>241</td>
<td>PB-S2D</td>
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<td>57</td>
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<td>207</td>
<td>TT-S2D</td>
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<tr>
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<td>3000</td>
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<td>207</td>
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<td>PB-S2J</td>
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**Typical Schematic**

Typical application for the S2C is a pump unloading circuit when high flow and low pressure drop is required. Typical application for the S2D is for when free flow is required in both directions to float the cylinder. Typical application for the S2J is for low pressure applications where the soft seat gives better leakage control.

![Typical Schematic Diagram]
MA-S2C Pilot Operated Poppet, 2 Way, Normally Open

DESCRIPTION
7 size, 5/8-18 thread, “Mini” series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized.

OPERATION
When de-energized the MA-S2C allows flow from (1) to (2) and restricts flow from (2) to (1). When energized the valve blocks flow from (1) to (2) and allows flow from (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
Operational shift limit 5 GPM (19 LPM) from (1) to (2) energized. For shifted flow performance consult chart.

PERFORMANCE
Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Pressure Drop (PSI)</th>
<th>Flow (LPM)</th>
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<td>0</td>
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<tr>
<td>5</td>
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<tr>
<td>15</td>
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</table>

<table>
<thead>
<tr>
<th>Pressure Drop (BAR)</th>
<th>Flow (GPM)</th>
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</thead>
<tbody>
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<td>0</td>
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</tr>
<tr>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Valve Specifications
- Nominal Flow: 5 GPM (19 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage: 0-5 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: 14 lbs. (.06 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 Form Tool (Finishing): 40500003
- Seal Kit (Buna): 21191001

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**DIMENSIONS**

![Dimensions Diagram]

**ORDERING INFORMATION**

**MA-S2C**

<table>
<thead>
<tr>
<th>OPTIONS</th>
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<td>Buna Standard</td>
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<tr>
<td>Viton Standard</td>
<td>V0</td>
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<tr>
<td>Buna, Screen</td>
<td>A0</td>
<td></td>
</tr>
<tr>
<td>Viton, Screen</td>
<td>W0</td>
<td></td>
</tr>
</tbody>
</table>

**BODIES**

- Blank Without Body
- N 1/4 NPTF Ports
- S #6 SAE Ports

**VOLTAGE**

- 06 6 VDC
- 12 12 VDC
- 24 24 VDC
- 36 36 VDC
- 48 48 VDC
- 25 24 VAC
- 11 120 VAC
- 22 220 VAC
- 44 440 VAC

**“M” COIL TERMINATION**

- DL Double Lead
- DT Deutsch on Leads DT04-2P
- ML Metri-Pack on Leads
- PL Packard on Leads
- WL Weatherpack on Leads

- SS Single Spade
- DS Double Spade
- HC DIN 43650 (Hirschman) – (AC & DC)
- CL Conduit Lead – (AC Only)

Approximate Coil Weight: .30 lbs/.14 kg.

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**PB-S2C Pilot Operated Poppet, 2 Way, Normally Open**

**DESCRIPTION**
8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized.

**OPERATION**
When de-energized the PB-S2C allows flow from (1) to (2) and restricted flow from (2) to (1). When energized the valve blocks flow from (1) to (2) and allows flow from (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**

Unshifted limit 10 GPM (38 LPM) from (1) to (2) when deenergized. For shifted flow performance consult chart.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Port 1 to 2 (de-eng)</th>
<th>Port 2 to 1 (eng)</th>
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</thead>
<tbody>
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</tr>
<tr>
<td>0 to 250</td>
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<td>0 to 30</td>
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</tr>
<tr>
<td>0 to 15</td>
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</table>

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Nominal Flow</td>
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</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3500 PSI (241 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>0-5 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>
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<tr>
<td>Weight</td>
<td>22 lbs. (.10 kg)</td>
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<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 (5.4-8.1 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>POWER 2W</td>
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<tr>
<td>Cavity Form Tool (Finishing)</td>
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<tr>
<td>Seal Kit</td>
<td>21191100</td>
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</table>

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DE-S2C Pilot Operated Poppet, 2 Way, Normally Open

DESCRIPTION
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized.

OPERATION
When de-energized the DE-S2C allows flow to pass from (1) to (2), but restricts flow from (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (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

PERFORMANCE
Actual Test Data (Cartridges Only)

VALVE SPECIFICATIONS
- Nominal Flow 15 GPM (57 LPM)
- Rated Operating Pressure 3500 PSI (241 bar)
- Typical Internal Leakage (150 SSU) 0-5 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 29 lbs (.13 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 (5.4-8.1 Nm)
- Cavity DELTA 2W
- Cavity Form Tool (Finishing) 40500000
- Seal Kit 21191200

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**TT-S2C Pilot Operated Poppet, 2 Way, Normally Open**

**DESCRIPTION**
12 size, 1 1/16-12 thread, “Tecnord” series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized.

**OPERATION**
When de-energized the TT-S2C allows flow to pass from (1) to (2), but restricts flow from (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (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**

![Hydraulic Symbol](image)

**PERFORMANCE**
Actual Test Data (Cartridges Only)

**VALVE SPECIFICATIONS**
- Nominal Flow: 30 GPM (114 LPM)
- Rated Operating Pressure: 3000 PSI (214 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: .51 lbs. (.23 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque Requirements: 70 ft-lbs (94.9 Nm)
- Coil Nut Torque Requirements: 4-6 ft-lbs (5.4-8.1 Nm)
- Cavity: TECNORD 2W
- Cavity Form Tool (Finishing): 40500032
- Seal Kit: 21191300

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Phone: (815) 397-6628      Fax: (815) 397-2526      E-mail: delta@delta-power.com
**DESCRIPTION**
16 size, 1 5/16-12 thread, “Super” series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized.

**OPERATION**
When de-energized the SJ-S2C allows flow to pass from (1) to (2), but restricts flow from (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (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 (Cartridges Only)

**VALVE SPECIFICATIONS**
<table>
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<tr>
<th>Specification</th>
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<td>Nominal Flow</td>
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<tr>
<td>Rated Operating Pressure</td>
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<td>Typical Internal Leakage (150 SSU)</td>
<td>0-10 drops/min</td>
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<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>
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<tr>
<td>Weight</td>
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<td>Operating Fluid Media</td>
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<td>Cavity</td>
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**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com

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**DIMENSIONS**

- **DIA. MTG. HOLES**: 2X #12 SAE PORTS
- **BODY WEIGHT**: 1.29 lbs [ .58 kg]

**ORDERING INFORMATION**

**SJ-S2C**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>BODIES</th>
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<tr>
<td>Buna, Override</td>
<td>0K</td>
<td>25</td>
</tr>
<tr>
<td>Viton, Override</td>
<td>V0</td>
<td>11</td>
</tr>
<tr>
<td>Buna, Screen, Override</td>
<td>B2</td>
<td>22</td>
</tr>
<tr>
<td>Viton, Screen, Override</td>
<td>V2</td>
<td>44</td>
</tr>
</tbody>
</table>

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

**“D” COIL TERMINATION**

(All DC Except as Noted)

- **DL**: Double Lead
- **DT**: Deutsch on Leads DT04—2P
- **MI**: Metri-Pack on Leads
- **PI**: Packard on Leads
- **WL**: Weatherpack on Leads

**SS**: Single Spade
**DS**: Double Spade
**HC**: Din 43650 (Hirschmann) – (AC & DC)
**CL**: Conduit Lead – (AC Only)
**DI**: Deutsch – Integral DT04—2P

**IMMERSION PROOF “D” TYPE**

- **IA**: “I” Coil AMP Superseal – Integral
- **ID**: “I” Coil Deutsch – Integral DT04-2P
- **IJ**: “I” Coil AMP Jr. Timer – Integral
- **IM**: “I” Coil Metri-Pack – Integral

Approximate Coil Weight: .74 lbs/.33 kg.

**WARNING**: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized and de-energized.

**OPERATION**
When de-energized the PB-S2D allows flow from (1) to (2) or (2) to (1). When energized the valve blocks flow from (1) to (2) and allows flow from (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.
- Untitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

**HYDRAULIC SYMBOL**
Unshifted limit of 10 GPM (38 LPM) from (1) to (2) energized and from (2) to (1) de-energized. For shifted flow performance consult chart.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>NOMINAL FLOW</th>
<th>10 GPM (38 LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RATED OPERATING PRESSURE</td>
<td>3500 PSI (241 bar)</td>
</tr>
<tr>
<td>TYPICAL INTERNAL LEAKAGE</td>
<td>0-5 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>22 lbs. (.10 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 (5.4-8.1 Nm)</td>
</tr>
<tr>
<td>CAVITY</td>
<td>POWER 2W</td>
</tr>
<tr>
<td>CAVITY FORM TOOL (FINISHING)</td>
<td>40500005</td>
</tr>
<tr>
<td>SEAL KIT</td>
<td>21191100</td>
</tr>
</tbody>
</table>

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIMENSIONS

ORDERING INFORMATION

PB-S2D

OPTIONS

Bodies

VOLTS

VOLTAGE

IMMERSION PROOF “P” TYPE

“P” COIL TERMINATION

(Apple DC Except as Noted)

Approximate Coil Weight: .42 lbs (.19 kg.)

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com
DE-S2D Pilot Operated Poppet, 2 Way, Normally Open

DESCRIPTION
10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized and de-energized.

OPERATION
When de-energized the DE-S2D allows flow to pass from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (2) to (1).

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

PERFORMANCE
Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Port 1 to 2 (de-eng)</th>
<th>Port 2 to 1 (de-eng)</th>
<th>Port 2 to 1 (eng)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Drop (PSI)</td>
<td>0</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Pressure Drop (BAR)</td>
<td>0</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow (LPM)</th>
<th>Port 1 to 2 (de-eng)</th>
<th>Port 2 to 1 (de-eng)</th>
<th>Port 2 to 1 (eng)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Drop (PSI)</td>
<td>0</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Pressure Drop (BAR)</td>
<td>0</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

VALVE SPECIFICATIONS
Nominal Flow 15 GPM (57 LPM)
Rated Operating Pressure 3500 PSI (241 bar)
Typical Internal Leakage (150 SSU) 0-5 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°C (-40°F to 120°C)
Weight .29 lbs. (.13 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 (5.4-8.1 Nm)
Cavity DELTA 2W
Cavity Form Tool (Finishing) 40500000
Seal Kit 21191200

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
### DIMENSIONS

![Diagram of dimensions](image)  

### ORDERING INFORMATION

**DE-S2D**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th></th>
<th></th>
<th>BODIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna Standard</td>
<td>00</td>
<td></td>
<td>Blank Without Body</td>
</tr>
<tr>
<td>Viton Standard</td>
<td>V0</td>
<td></td>
<td>N 3/8 NPTF Ports</td>
</tr>
<tr>
<td>Buna, Override</td>
<td>0M</td>
<td></td>
<td>S #8 SAE Ports</td>
</tr>
<tr>
<td>Viton, Override</td>
<td>VM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buna, Override, Knob</td>
<td>OK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viton, Override, Knob</td>
<td>VK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buna, Screen</td>
<td>A0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viton, Screen</td>
<td>V0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buna, Screen, Override</td>
<td>B2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viton, Screen, Override</td>
<td>V2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buna, Screen, Override, Knob</td>
<td>B5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viton, Screen, Override, Knob</td>
<td>V5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VOLTAGE**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>06</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>36</td>
<td>48</td>
<td>25</td>
</tr>
<tr>
<td>11</td>
<td>22</td>
<td>44</td>
</tr>
</tbody>
</table>

**IMMERSION PROOF “D” TYPE**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>“I” Coil AMP Superseal - Integral</td>
</tr>
<tr>
<td>ID</td>
<td>“I” Coil Deutsch – Integral DT04-2P</td>
</tr>
<tr>
<td>IJ</td>
<td>“I” Coil AMP Jr. Timer - Integral</td>
</tr>
<tr>
<td>IM</td>
<td>“I” Coil Metri-Pack - Integral</td>
</tr>
</tbody>
</table>

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

**“D” COIL TERMINATION**  
*(All DC Except as Noted)*

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DL</td>
<td>Double Lead</td>
<td>SS</td>
<td>Single Spade</td>
</tr>
<tr>
<td>DT</td>
<td>Deutsch on Leads DT04-2P</td>
<td>DS</td>
<td>Double Spade</td>
</tr>
<tr>
<td>MI</td>
<td>Metri-Pack on Leads</td>
<td>HC</td>
<td>DIN 43650 (Hirschmann) – (AC &amp; DC)</td>
</tr>
<tr>
<td>PI</td>
<td>Packard on Leads</td>
<td>CL</td>
<td>Conduit Lead – (AC Only)</td>
</tr>
<tr>
<td>WL</td>
<td>Weatherpack on Leads</td>
<td>DI</td>
<td>Deutsch – Integral DT04-2P</td>
</tr>
</tbody>
</table>

Approximate Coil Weight: .74 lbs/.33 kg.

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  
Fax: (815) 397-2526  
E-mail: delta@delta-power.com
TT-S2D Pilot Operated Poppet, 2 Way, Normally Open

DESCRIPTION
12 size, 1 1/16-12 thread, “Tecnord” series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized and de-energized.

OPERATION
When de-energized the TT-S2D allows flow to pass from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (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

PERFORMANCE
Actual Test Data (Cartridge Only)

Valve Specifications

Nominal Flow | 30 GPM (114 LPM)
Rated Operating Pressure | 3000 PSI (207 bar)
Typical Internal Leakage | 0-10 drops/min (150 SSU)
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 | .51 lbs. (.23 kg)
Operating Fluid Media | General Purpose Hydraulic Fluid
Cartridge Torque Requirements | 70 ft-lbs (94.9 Nm)
Coil Nut Torque Requirements | 4-6 ft-lbs (4.5-8.1 Nm)
Cavity | TECNORD 2W
Cavity Form Tool (Finishing) | 40500032
Seal Kit | 21191300

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### DIMENSIONS

![Diagram of solenoid](image)

### ORDERING INFORMATION

**TT-S2D**

**OPTIONS**
- Buna Standard (Blank)
- Viton Standard (Blank)
- Buna, Override, Knob (Blank)
- Viton, Override, Knob (Blank)
- Buna, Screen (Blank)
- Viton, Screen (Blank)
- Buna, Screen, Override, Knob (Blank)
- Viton, Screen, Override, Knob (Blank)

**BODIES**
- Blank Without Body
- #12 SAE Ports

**VOLTAGE**
- 6 VDC
- 12 VDC
- 24 VDC
- 36 VDC
- 48 VDC
- 24 VAC
- 120 VAC
- 220 VAC
- 440 VAC

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

**“D” COIL TERMINATION**

<table>
<thead>
<tr>
<th>DL</th>
<th>SS</th>
<th>DS</th>
<th>IA</th>
<th>ID</th>
<th>IJ</th>
<th>IM</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT</td>
<td>MI</td>
<td>PI</td>
<td>WL</td>
<td>DL</td>
<td>DT</td>
<td>MI</td>
</tr>
</tbody>
</table>

Approximate Coil Weight: .74 lbs/.33 kg.

---

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Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com

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SJ-S2D Pilot Operated Poppet, 2 Way, Normally Open

DESCRIPTION
16 size, 1 5/16-12 thread, “Super” series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized and de-energized.

OPERATION
When de-energized the SJ-S2D allows flow to pass from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (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)

Valve Specifications
Nominal Flow 40 GPM (151 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°F to 250°F (-40°C to 120°C)
Weight .74 lbs. (.33 kg)
Operating Fluid Media General Purpose Hydraulic Fluid
Cartridge Torque Requirements 90 ft-lbs (122 Nm)
Coil Nut Torque Requirements 4-6 ft-lbs (5.4-8.1 Nm)
Cavity SUPER 2W
Cavity Form Tool (Finishing) 40500017
Seal Kit 21191400

[Graph: Flow vs. Pressure Drop]
**DIMENSIONS**

![Diagram of a solenoid valve with dimensions](image)

**ORDERING INFORMATION**

**SJ-S2D**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
<th>IMMERSION PROOF “D” TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna Standard</td>
<td>00</td>
<td>Blank</td>
<td>Without Body</td>
</tr>
<tr>
<td>Viton Standard</td>
<td>V0</td>
<td>N</td>
<td>3/4 NPTF Ports</td>
</tr>
<tr>
<td>Buna, Screen</td>
<td>A0</td>
<td>S</td>
<td>#12 SAE Ports</td>
</tr>
<tr>
<td>Viton, Screen</td>
<td>W0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buna, Override</td>
<td>OK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viton, Override</td>
<td>VK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buna, Screen, Override</td>
<td>B2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viton, Screen, Override</td>
<td>V2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

---

**“D” COIL TERMINATION**

(All DC Except as Noted)

- **DL**: Double Lead
- **DT**: Deutsch on Leads DT04—2P
- **MI**: Metri-Pack on Leads
- **PI**: Packard on Leads
- **WL**: Weatherpack on Leads
- **SS**: Single Spade
- **DS**: Double Spade
- **HC**: Din 43650 (Hirschmann) – (AC & DC)
- **CL**: Conduit Lead – (AC Only)
- **DI**: Deutsch – Integral DT04—2P
- **IA**: “I” Coil AMP Superseal – Integral
- **ID**: “I” Coil Deutsch – Integral DT04-2P
- **IJ**: “I” Coil AMP Jr. Timer – Integral
- **IM**: “I” Coil Metri-Pack – Integral

Approximate Coil Weight: .74 lbs/.33 kg.

---

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
2 Way 2 Position Normally Open Spool Valves

<table>
<thead>
<tr>
<th>GPM</th>
<th>PSI</th>
<th>LPM</th>
<th>BAR</th>
<th>MODEL</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3000</td>
<td>11</td>
<td>207</td>
<td>MA-S2H</td>
<td>84</td>
</tr>
<tr>
<td>3</td>
<td>4000</td>
<td>11</td>
<td>276</td>
<td>HA-S2H</td>
<td>86</td>
</tr>
<tr>
<td>5</td>
<td>3000</td>
<td>19</td>
<td>207</td>
<td>PB-S2H</td>
<td>88</td>
</tr>
<tr>
<td>8</td>
<td>3000</td>
<td>30</td>
<td>207</td>
<td>DE-S2H</td>
<td>90</td>
</tr>
<tr>
<td>8</td>
<td>4000</td>
<td>30</td>
<td>276</td>
<td>HE-S2H</td>
<td>92</td>
</tr>
<tr>
<td>6</td>
<td>1000</td>
<td>23</td>
<td>69</td>
<td>IE-S2H</td>
<td>596</td>
</tr>
</tbody>
</table>

Typical Schematic

Typical application for the S2H is a pump unloading valve.
MA-S2H Direct Acting Spool, 2 Way, Normally Open

DESCRIPTION
7 size, 5/8-18 thread, “Mini” series, solenoid operated, 2 way normally open, spool valve.

OPERATION
When de-energized the MA-S2H allows flow from (1) to (2) and (2) to (1). When energized the valve blocks 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
Valve is rated for shift and return from 1 to 2 only: 3 GPM, 3000 PSI. Max steady state flow 2 to 1 1:3 GPM. HA-S2H should be specified where higher pressures or 2 to 1 shift operation is required.

PERFORMANCE
Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Flow (LPM)</th>
<th>Pressure Drop (PSI)</th>
<th>Flow (GPM)</th>
<th>Pressure Drop (BAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>250</td>
<td>15</td>
<td>4</td>
<td>30</td>
</tr>
<tr>
<td>200</td>
<td>10</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>150</td>
<td>5</td>
<td>2</td>
<td>15</td>
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<td>5</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Valve Specification:
- Maximum Flow: 3 GPM (11 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage (150 SSU): 5 cu in/min (82 ml/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: 0.12 lbs. (.05 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque Requirements: 15 ft-lbs (40 Nm)
- Coil Nut Torque Requirements: 3-5 ft-lbs (4.1-6.8 Nm)
- Cavity: MINI 2W
- Cavity Form Tool (Finishing): 40500003
- Seal Kit: 21191002

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WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com

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HA-S2H Direct Acting Spool, 2 Way, Normally Open

**DESCRIPTION**


**OPERATION**

When de-energized the HA-S2H allows flow from (1) to (2) and (2) to (1). When energized the valve blocks 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 (for most common terminations, see coil page).
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

**HYDRAULIC SYMBOL**

Operational shift limit 2 GPM (8 LPM).

For shifted performance consult chart.

**PERFORMANCE**

**Actual Test Data (Cartridge Only)**

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Flow</td>
<td>3 GPM (11 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>4000 PSI (276 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>8 cu in/min (131 ml/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>.14 lbs. (.06 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>15 ft-lbs (20 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>3-5 ft-lbs (4.1-6.8 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>MINI 2W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500003</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191002</td>
</tr>
</tbody>
</table>

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**DIMENSIONS**

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
</tr>
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<tbody>
<tr>
<td>Buna Standard</td>
<td>Blank</td>
<td>06 6 VDC</td>
</tr>
<tr>
<td>Viton Standard</td>
<td>1/4 NPTF Ports</td>
<td>12 12 VDC</td>
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<td>24 24 VDC</td>
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<tr>
<td></td>
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<td>36 36 VDC</td>
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<td></td>
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<td>48 48 VDC</td>
</tr>
<tr>
<td></td>
<td>#6 SAE Ports</td>
<td>25 24 VAC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11 120 VAC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22 220 VAC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>44 440 VAC</td>
</tr>
<tr>
<td></td>
<td>Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.</td>
<td></td>
</tr>
</tbody>
</table>

**“M” COIL TERMINATION**

(All DC Except as Noted)

- Double Lead
- Deutsch on Leads DT04-2P
- Metri-Pack on Leads
- Packard on Leads
- Weatherpack on Leads
- Single Spade
- Double Spade
- DIN 43650 (Hirschman) – (AC&DC)
- Conduit Lead – (AC Only)

Approximate Coil Weight: .30 lbs (.14 kg.)

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**PB-S2H Direct Acting Spool, 2 Way, Normally Open**

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 2 way normally open, spool valve.

**OPERATION**
When de-energized the PB-S2H allows 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, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**
- **Nominal Flow**: 5 GPM (19 LPM) from (1) to (2)  3 GPM (11 LPM) from (2) to (1)
- **Rated Operating Pressure**: 3000 PSI (207 bar)
- **Typical Internal Leakage** (150 SSU) 5 cu in/min (82 ml/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**: .19 lbs. (.09 kg)
- **Operating Fluid Media**: General Purpose Hydraulic Fluid
- **Cartridge Torque Requirements**: 25 ft-lbs (34 Nm)
- **Coil Nut Torque Requirements**: 4-6 ft-lbs (5.4-8.1 Nm)
- **Cavity**: POWER 2W
- **Cavity Form Tool (Finishing)**: 40500005
- **Seal Kit**: 21191102

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### DIMENSIONS

![Diagram of dimensions](image1.png)

### ORDERING INFORMATION

<table>
<thead>
<tr>
<th>OPTIONS</th>
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<th>IMMERSION PROOF “P” TYPE</th>
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<td>6 VDC 06</td>
<td>“I” COIL AMP Superseal - Integral IA</td>
</tr>
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<td>Viton Standard V0</td>
<td>1/4 NPTF Ports S</td>
<td>12 VDC 12</td>
<td>“I” COIL Deutsch – Integral DT04-2P ID</td>
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<td>Buna, Override, Detent 0M</td>
<td>#6 SAE Ports V</td>
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<td>“I” COIL Deutsch Jr. Timer – Integral IJ</td>
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<td>36 VDC 36</td>
<td>“I” COIL Metri-Pack – Integral IM</td>
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<td>Buna, Screen A0</td>
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<td>48 VDC 48</td>
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<td>Viton, Screen W0</td>
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<td>24 VAC 24</td>
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<tr>
<td>Buna, Override, Nondetent B1</td>
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<td>120 VAC 120</td>
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<tr>
<td>Viton, Override, Nondetent V1</td>
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<td>220 VAC 220</td>
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<td>440 VAC 440</td>
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<tr>
<td>Viton, Screen, Override, Nondetent V3</td>
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<tr>
<td>Buna, Screen, Override, Detent B4</td>
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<tr>
<td>Viton, Screen, Override, Detent V4</td>
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</tr>
</tbody>
</table>

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

**“P” COIL TERMINATION**

| DL | Double Lead |
| DT | Deutsch on Leads DT04-2P |
| ML | Metri-Pack on Leads |
| PL | Packard on Leads |
| WL | Weatherpack on Leads |
| SS | Single Spade |
| DS | Double Spade |
| HC | Din 43650 (Hirschmann) – (AC & DC) |
| CL | Conduit Lead – (AC Only) |
| DI | Deutsch – Integral DT04-2P |

**Approximate Coil Weight:** .42 lbs/.19 kg.

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Phone: (815) 397-6628  
Fax: (815) 397-2526  
E-mail: delta@delta-power.com  
Page 89
DE-S2H Direct Acting Spool, 2 Way, Normally Open

**DESCRIPTION**
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 2 way normally open, spool valve

**OPERATION**
When de-energized the DE-S2H allows flow from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) and (2) to (1).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

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

**HYDRAULIC SYMBOL**

For higher pressure systems see HE-S2H

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>8 GPM (30 LPM) from (1) to (2)</td>
</tr>
<tr>
<td></td>
<td>4 GPM (15 LPM) from (2) to (1)</td>
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<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
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<tr>
<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/min)</td>
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<tr>
<td>(150 SSU)</td>
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<tr>
<td>Viscosity Range</td>
<td>36 to 3000 SSU (3 to 647 cSt)</td>
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<tr>
<td>Filtration</td>
<td>ISO 18/16/13</td>
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<tr>
<td>Media Operating Temperature</td>
<td>-40° to 250° F (-40° to 120° C)</td>
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<tr>
<td>Weight</td>
<td>26 lbs. (.12 kg)</td>
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<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
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<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>
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<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500000</td>
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<tr>
<td>Seal Kit</td>
<td>21191202</td>
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</tbody>
</table>

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WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
HE-S2H Direct Acting Spool, 2-Way, Normally Open

DESCRIPTION
“High Pressure” 10 size, 7/8-14 thread, “Delta” series, solenoid operated, 2 way normally open, spool valve

OPERATION
When de-energized the HE-S2H allows flow from (1) to (2) and (2) to (1). When energized the valve blocks 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>
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<tr>
<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
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<table>
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<th>Flow (LPM)</th>
<th>Pressure Drop (BAR)</th>
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VALVE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Flow</td>
<td>8 GPM (30 LPM) from 1 to 2</td>
</tr>
<tr>
<td></td>
<td>4 GPM (15 LPM) from 2 to 1</td>
</tr>
<tr>
<td>Max Operating Pressure</td>
<td>4000 PSI (276 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>8 cu in/min (131 ml/min)</td>
</tr>
<tr>
<td>(150 SSU)</td>
<td></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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>38 lbs. (.17 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>Cavity</td>
<td>DELTA 2W</td>
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<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500000</td>
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<tr>
<td>Seal Kit</td>
<td>21191202</td>
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</tbody>
</table>

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DIMENSIONS

ORDERING INFORMATION

HE-S2H

OPTIONS
Bodies
V0
Blank
V0
Without Body
3/8 NPTF Ports
#8 SAE Ports
VOLTAGE
6 VDC
12 VDC
24 VDC
36 VDC
48 VAC
25 VAC
120 VAC
220 VAC
440 VAC

"L" - COIL TERMINATION
(Double DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads

SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IMMERSSION PROOF "L" TYPE

IA "I" Coil AMP Superseal – Integral
ID "I" Coil Deutsch – Integral DT04-2P
IJ "I" Coil AMP Jr. Timer – Integral
IM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .68 lbs. (.31 kg.)

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com
PB-S2J Pilot Operated Poppet, 2 Way, Normally Open, Soft Seat

DESCRIPTION
8 size, 3/4-16 thread, “Power” series, solenoid operated, 2 way normally open, pilot operated soft seat poppet valve with free reverse flow energized.

OPERATION
When de-energized the PB-S2J allows flow from (1) to (2) and restricts flow from (2) to (1). When energized the valve blocks flow from (1) to (2) and allows free flow from (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
- Soft seat for ultra low leakage.
- 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

Unshifted limit 6 GPM (23 LPM) from (1) to (2) energized. For shifted flow performance consult chart.

PERFORMANCE
Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS
Nominal Flow 8 GPM (30 LPM)
Rated Operating Pressure 2000 PSI (138 bar)
Typical Internal Leakage (150 SSU) Negligible
Viscosity Range 36 to 3000 SSU (3 to 647 cSt)
Filtration ISO 18/16/13
Media Operating Temperature Range -35° to 200° F (-37° to 93° C)
Weight .21 lbs. (.10 kg)
Operating Fluid Media General Purpose Hydraulic Fluid
Cartridge Torque 25 ft-lbs (34 Nm)
Requirements
Coil Nut Torque Requirements 4-6 ft-lbs (5.4-8.1 Nm)
Cavity POWER 2W
Cavity Form Tool (Finishing) 40500005
Seal Kit 21191100

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com

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WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
### 3 Way 2 Position Spool Valves

<table>
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<tr>
<th>GPM</th>
<th>PSI</th>
<th>LPM</th>
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</table>

**Typical Schematic**

Typical application for porting option 1 is to operate a spring loaded hydraulic clutch.

Typical application for porting option 2 is single acting cylinder control in a gravity lower circuit.

Typical application for porting option 3 is a selector valve for two different systems or functions.
**MC-S3A Direct Acting Spool, 3 Way 2 Position**

**DESCRIPTION**
7 size, 5/8-18 thread, “Mini” series, solenoid operated, 3 way 2 position, spool valve.

**OPERATION**
When de-energized the MC-S3A blocks flow at (1) and allows flow from (3) to (2). When energized the valve allows flow from (1) to (3) and blocks flow at (2).

**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**

Operational shift limit 1 GPM (3.8 LPM) from (1) to (3) at 3000 PSI and 2 GPM (7.6 LPM) from (3) to (2) with no load.
For shifted flow performance consult chart.
For higher pressures or flows SEE HC-S3A

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>1 GPM (3.8 LPM) from (1) to (3)</td>
</tr>
<tr>
<td></td>
<td>2 GPM (7.6 LPM) from (3) to (2)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/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>.14 lbs (.06 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>15 ft-lbs (20.3 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>3-5 ft-lbs (4.1-6.8 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>MINI 3W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500004</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191004</td>
</tr>
</tbody>
</table>

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DIMENSIONS

ORDERING INFORMATION

MC-S3A - - - -

OPTIONS
Buna Standard 00
Viton Standard V0

BODIES
Blank Without Body
N 1/4 NPTF Ports
S #6 SAE Ports

VOLTAGE
06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
44 440 VAC
Non-Indicated VDC

"M" COIL TERMINATION
(All DC Except as Noted)
Double Lead DL
Deutsch on Leads DT
Metri-Pack on Leads ML
Packard on Leads PL
Weatherpack on Leads WL
Single Spade SS
Double Spade DS
DIN 43650 (Hirschman) – (AC&DC) HC
Conduit Lead – (AC Only) CL

Approximate Coil Weight: .30 lbs/.14 kg.

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**HC-S3A Direct Acting Spool, 3 Way 2 Position**

**DESCRIPTION**

"High Pressure" 7 size, 5/8-18 thread, "Mini" series, solenoid operated, 3 way 2 Position, spool valve.

**OPERATION**

When de-energized the HC-S3A blocks flow at (1) and allows flow from (3) to (2). When energized the valve allows flow from (1) to (3) and blocks flow at (2).

**FEATURES**

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

**PERFORMANCE**

Actual Test Data (Cartridge Only)

**EXPORT SYMBOL**

Flow limited at 1.5 GPM for flow at port (3)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>2 GPM (8 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>4000 PSI (276 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>8 cu in/min (131 ml/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>
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<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>15 ft-lbs (20.3 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>3-5 ft-lbs (4.1-6.8 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>MINI 3W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500504</td>
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<tr>
<td>Seal Kit</td>
<td>21191004</td>
</tr>
</tbody>
</table>

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**PP-S3A Direct Acting Spool, 3 Way 2 Position**

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 3 way 2 position, spool valve.

**OPERATION**
When de-energized the PP-S3A allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

Operational shift limit 3 GPM (11 LPM) from (1) to (3) at 3000 PSI (207 bar) and (3) to (2) with no load.
For shifted flow performance consult chart.

**PERFORMANCE**

**Actual Test Data (Cartridge Only)**

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>3 GPM (11 LPM)</td>
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<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>.23 lbs. (.10 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>
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<tr>
<td>Coil Nut Torque Requirements</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
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<tr>
<td>Cavity</td>
<td>POWER 3W</td>
</tr>
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<td>405000024</td>
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<tr>
<td>Seal Kit</td>
<td>21191105</td>
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</table>

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Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>PP-S3A</th>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Buna Standard</td>
<td>Blank</td>
<td>Without Body</td>
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<tr>
<td></td>
<td>Viton Standard</td>
<td>N</td>
<td>1/4 NPTF Ports</td>
</tr>
<tr>
<td></td>
<td>Buna, Override</td>
<td>S</td>
<td>#6 SAE Ports</td>
</tr>
<tr>
<td></td>
<td>Viton, Override</td>
<td>VM</td>
<td>6 VDC</td>
</tr>
<tr>
<td></td>
<td>Buna, Screen</td>
<td>A0</td>
<td>12 VDC</td>
</tr>
<tr>
<td></td>
<td>Viton, Screen</td>
<td>W0</td>
<td>24 VDC</td>
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<tr>
<td></td>
<td>Buna, Override, Non-detent</td>
<td>B1</td>
<td>36 VDC</td>
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<tr>
<td></td>
<td>Viton, Override, Non-detent</td>
<td>V1</td>
<td>48 VDC</td>
</tr>
<tr>
<td></td>
<td>Buna, Screen, Override, Non-detent</td>
<td>B3</td>
<td>24 VAC</td>
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<td></td>
<td>Viton, Screen, Override, Detent</td>
<td>B4</td>
<td>1120 VAC</td>
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<td>Viton, Screen, Override, Non-detent</td>
<td>V3</td>
<td>220 VAC</td>
</tr>
<tr>
<td></td>
<td>Viton, Screen, Override, Detent</td>
<td>V4</td>
<td>440 VAC</td>
</tr>
</tbody>
</table>

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

**“P” COIL TERMINATION**

(All DC Except as Noted)

<table>
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<tr>
<th>IMMERSSION PROOF “P” TYPE</th>
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<td>DL</td>
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<td>IA</td>
</tr>
<tr>
<td>ID</td>
</tr>
<tr>
<td>IJ</td>
</tr>
<tr>
<td>IM</td>
</tr>
</tbody>
</table>

Approximate Coil Weight: .42 lbs. (.19 kg.)
DF-S3A Direct Acting Spool, 3 Way 2 Position

DESCRIPTION
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 3 way 2 position, spool valve.

OPERATION
When de-energized the DF-S3A allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

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
Common lift/lower valve where load holding is not required. For higher pressures see HF-S3A.

PERFORMANCE
Actual Test Data (Cartridge Only)

Valve Specifications
Nominal Flow 10 GPM (38 LPM)
Rated Operating Pressure 3000 PSI (207 bar)
Typical Internal Leakage (150 SSU) 5 cu/in per min (82 ml/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 .28 lbs. (.12 kg)
Operating Fluid Media General Purpose Hydraulic Fluid
Cartridge Torque 30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements 4-6 ft-lbs (5.4-8.1 Nm)
Cavity DELTA 3W
Cavity Form Tool (Finishing) 40500001
Seal Kit 21191210
WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

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Page 105
HF-S3A Direct Acting Spool, 3 Way 2 Position

**DESCRIPTION**

**OPERATION**
When de-energized the HF-S3A blocks flow at port (1) and allows flow from (3) to (2). When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

**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**
Uses “L” Coil.

**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>4</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>15</td>
</tr>
</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>10</td>
<td>5</td>
</tr>
<tr>
<td>20</td>
<td>16</td>
</tr>
</tbody>
</table>

| Port 1 to 3 (eng) | Port 3 to 2 (de-eng) |

**VALVE SPECIFICATIONS**
- **Nominal Flow**: 10 GPM (38 LPM)
- **Rated Operating Pressure**: 4000 PSI (276 bar)
- **Typical Internal Leakage**: 8 cu/in per min (131 ml/min)
- **Viscosity Range**: 36 to 3000 SSU (3 to 647 cSt)
- **Media Operating Temperature Range**: -40° to 250° F (-40° to 120° C)
- **Weight**: 40 lbs., (.18 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 (5.4-8.1 Nm)
- **Cavity**: DELTA 3W
- **Cavity Form Tool (Finishing)**: 40500001
- **Seal Kit**: 21191210

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DIMENSIONS

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ORDERING INFORMATION

HF-S3A

OPTIONS
Buna Standard 00
Viton Standard V0

BODIES
Blank N
1/4 NPTF Ports S
#6 SAE Ports

VOLTAGE
06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

“L” COIL TERMINATION
(All DC Except as Noted)
DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads
SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IMMERSION PROOF “L” TYPE
IA “T” Coil AMP Superseal - Integral
ID “T” Coil Deutsch – Integral DT04-2P
IJ “T” Coil AMP Jr. Timer - Integral
IM “T” Coil Metri-Pack – Integral

Approximate Coil Weight: .68 lbs/.31 kg.

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.
**DF-S3B Direct Acting Spool, 3 Way 2 Position, Selector**

**DESCRIPTION**
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 3 way 2 position, selector spool valve.

**OPERATION**
When de-energized the DF-S3B allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (3) to (1) and blocks flow at port (2).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**
Trapped differentials above 1500 PSI from ports 2 to 1 can create shift issues near flow rating. (Differentials to 3000 psi from 1 to 2 are not an issue.)

For higher pressures consult HF-S3B.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>8 GPM (30 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>5 cu/in per min (82 ml/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°F to 250°F (-40°C to 120°C)</td>
</tr>
<tr>
<td>Weight</td>
<td>.28 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 3W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500001</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191210</td>
</tr>
</tbody>
</table>

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**DIMENSIONS**

![Diagram showing dimensions of a solenoid operated directional control]

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>DF-S3B</th>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
<th>IMMERSION PROOF “D” TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Buna Standard</td>
<td>Blank</td>
<td>6 VDC</td>
<td>“i” Coil AMP Superseal - Integral</td>
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<tr>
<td></td>
<td>Viton Standard</td>
<td>Without Body</td>
<td>12 VDC</td>
<td>“i” Coil - Deutsch – Integral DT04-2P</td>
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<td></td>
<td>Buna, Override</td>
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<td>24 VDC</td>
<td>“i” Coil AMP Jr. Timer - Integral</td>
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<tr>
<td></td>
<td>Viton, Override</td>
<td>S</td>
<td>36 VDC</td>
<td>“i” Coil - Metri-Pack - Integral</td>
</tr>
<tr>
<td></td>
<td>Buna, screen</td>
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<td>48 VDC</td>
<td></td>
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<tr>
<td></td>
<td>Viton, screen</td>
<td></td>
<td>24 VAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blank Without Body</td>
<td></td>
<td>120 VAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/4 NPTF Ports</td>
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<td>220 VAC</td>
<td></td>
</tr>
<tr>
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<td>#6 SAE Ports</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Blank Without Body</td>
<td>S</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>1/4 NPTF Ports</td>
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<tr>
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<td>#6 SAE Ports</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

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

Approximate Coil Weight: .74 lbs/.33 kg.

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Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
**HF-S3B Direct Acting Spool, 3 Way 2 Position, Selector**

**DESCRIPTION**
“High Pressure” 10 size, 7/8-14 thread, “Delta” series, solenoid operated, 3 way 2 position, selector spool valve.

**OPERATION**
When de-energized the HF-S3B allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (3) to (1) and blocks flow at port (2).

**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.
- Optional “I” Coil: Weatherproof, Thermal Shock, Immersion Safe

**HYDRAULIC SYMBOL**
Uses “L” Coil.

**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>
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<tr>
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</table>

**FLOW (LPM)**

<table>
<thead>
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<th>Pressure Drop (PSI)</th>
</tr>
</thead>
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**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Nominal Flow</th>
<th>8 GPM (30 LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Operating Pressure</td>
<td>4000 PSI (276 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>8 cu/in per min (131 ml/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>.40 lbs. (.18 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 3W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500001</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191210</td>
</tr>
</tbody>
</table>

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DIMENSIONS

ORDERING INFORMATION

HF-S3B

OPTIONS
Buna Standard 00 Blank
Viton Standard V0

BODIES
Without Body
1/4 NPTF Ports N
#6 SAE Ports S

VOLTAGE
6 VDC 06
12 VDC 12
24 VDC 24
36 VDC 36
48 VDC 48
24 VAC 25
120 VAC 11
220 VAC 22
440 VAC 44

“L" COIL TERMINATION
(All DC Except as Noted)
DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads
SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IMMERSION PROOF “L" TYPE
IA "I" Coil AMP Superseal - Integral
ID "I" Coil Deutsch – Integral DT04-2P
IJ "I" Coil AMP Jr. Timer - Integral
IM "I" Coil Metri-Pack

Approximate Coil Weight: .68 lbs/.31 kg.

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**DESCRIPTION**

8 size, 3/4-16 thread, "Power" series, solenoid operated, 3 way 2 position spool valve.

**OPERATION**

When de-energized the PP-S3D allows flow from (2) to (1) and blocks flow at port (3). When energized the valve allows flow from (2) to (3) and blocks flow at port (1).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

Operational shift limit 3 GPM (11 LPM) from (2) or (3). Consult factory for flow in (1) that exceed 3 GPM. For shifted flow performance consult chart.

**PERFORMANCE**

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

- Nominal Flow: 3 GPM (11 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage (150 SSU): 5 cu in/min (82 ml/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: 2.2 lbs. (.10 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque Requirements: 25 ft-lbs (34 Nm)
- Coil Nut Torque Requirements: 4-6 ft-lbs (5.4-8.1 Nm)
- Cavity: POWER 3W
- Cavity Form Tool (Finishing): 40500024
- Seal Kit: 21191105

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
SOLENOID OPERATED DIRECTIONAL CONTROLS

Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com

DIMENSIONS

ORDERING INFORMATION

PP-S3D - - - -

OPTIONS
Buna Standard 00
Viton Standard V0
Buna, Override 0M
Viton, Override VM
Buna, Screen A0
Viton, Screen W0
Buna, Override, Non-detent B1
Viton, Override, Non-detent V1
Buna, Screen, Override, Non-detent B3
Viton, Screen, Override, Detent B4
Viton, Screen, Override, Detent V3

I1 120 VAC
I2 220 VAC
I4 440 VAC

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

“P” COIL TERMINATION (All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads

SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IMMERION PROOF “P” TYPE
IA “I” Coil AMP Superseal - Integral
ID “I” Coil Deutsch – Integral DT04-2P
IJ “I” Coil AMP Jr. Timer - Integral
IM “I” Coil Metri-Pack – Integral

Approximate Coil Weight: .42 lbs. (.19 kg.)
HU-S3E Direct Acting Spool, 3 Way 2 Position, High Pressure

**DESCRIPTION**
12 size, 1 1/16-12 thread, “Tecnord” series, solenoid operated, 3 way 2 position, spool valve.

**OPERATION**
When de-energized the HU-S3E allows flow from (2) to (1) and blocks flow at port (3). When energized the valve allows flow from (3) to (2) and blocks flow at port (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**

Common usage is inlet at port 3.
See HU-S3F for port 2 or port 1 inlet.

**PERFORMANCE**

**VALVE SPECIFICATIONS**

- **Nominal Flow**: 15 GPM (57 LPM)
- **Rated Operating Pressure**: 5000 PSI (345 bar)
- **Typical Internal Leakage (150 SSU)**: 8 cu in/min @ 3000 PSI
- **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**: 1.01 lbs. (.46 kg)
- **Operating Fluid Media**: General Purpose Hydraulic Fluid
- **Cartridge Torque Requirements**: 70 ft-lbs (94.9 Nm)
- **Coil Nut Torque Requirements**: 5-7 ft-lbs (6.8-9.5 Nm)
- **Cavity**: TECNORD 3W
- **Cavity Form Tool (Finishing)**: 40500034
- **Seal Kit**: 21191305

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
### DIMENSIONS

<table>
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<tr>
<th>Dimension</th>
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<td>[31.8]</td>
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<tr>
<td>1/16-12 UN 2A THREAD</td>
<td>[1]</td>
</tr>
</tbody>
</table>

SEE COIL DATA FOR TERMINATIONS

**BODY WEIGHT:** 4.14 lbs [1.89 kg]

### ORDERING INFORMATION

**HU-S3E -**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th></th>
<th></th>
<th></th>
<th>BODIES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna Standard</td>
<td>00</td>
<td></td>
<td></td>
<td>Blank Without Body</td>
<td>S</td>
</tr>
<tr>
<td>Viton Standard</td>
<td>V0</td>
<td></td>
<td></td>
<td>#10 SAE Ports</td>
<td></td>
</tr>
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</table>

**VOLTAGE**

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<td>36 VDC</td>
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<td>48</td>
<td>48 VDC</td>
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<tr>
<td>25</td>
<td>24 VAC</td>
</tr>
<tr>
<td>11</td>
<td>120 VAC</td>
</tr>
<tr>
<td>22</td>
<td>220 VAC</td>
</tr>
</tbody>
</table>

*“T” COIL TERMINATION*  
*(All DC Except as Noted)*

- Double Lead: DL
- Deutsch on leads: DT
- Metri-Pack on leads: ML
- Packard on leads: PL
- Weatherpack on leads: WL
- Double Spade: DS
- DIN 43650 (Hirschman) – (AC & DC): HC

Approximate Coil Weight: .89 lbs/.41 kg.

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**HU-S3F Direct Acting Spool, 3 Way 2 position, High Pressure**

**DESCRIPTION**
12 size, 1 1/16-12 thread, “Tecnord” series, solenoid operated, 3 way 2 position, spool valve.

**OPERATION**
When de-energized the HU-S3F allows flow from (2) to (1) and blocks flow at port 3. When energized the valve allows flow from (2) to (3) and blocks flow at port (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**

Recommended usage is inlet at port 1 or 2. See HU-S3E for port 3 inlet.

**PERFORMANCE**

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>15 GPM (57 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>5000 PSI (345 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>8 cu in/min @ 3000 PSI</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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>1.01 lbs. (.46 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>70 ft-lbs (94.9 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>5-7 ft-lbs (6.8-9.5 Nm) Maximum</td>
</tr>
<tr>
<td>Cavity</td>
<td>TECNORD 3W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500034</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191305</td>
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</tbody>
</table>

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Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com

Page 117
HC-S3P Direct Acting Spool, 3 Way 2 Position, Pilot Control, Low Leakage

DESCRIPTION
"High Pressure" 7 size, 5/8-18 thread, "Mini" series, solenoid operated, 3 way 2 Position, pilot control spool valve.

OPERATION
When de-energized the HC-S3P blocks flow at (1) and allows flow from (3) to (2). When energized the valve allows flow from (1) to (3) and blocks flow at (2).

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

HYDRAULIC SYMBOL
Great for pilot control, low leakage.

PERFORMANCE
Actual Test Data (Cartridge Only)

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<thead>
<tr>
<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
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<td>0</td>
</tr>
<tr>
<td>0.1</td>
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<td>0.2</td>
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<tr>
<td>0.6</td>
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</table>

Flow (LPM)

<table>
<thead>
<tr>
<th>Pressure Drop (BAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<tr>
<td>5</td>
</tr>
<tr>
<td>10</td>
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<tr>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Port 1 to 3 (eng)</th>
<th>Port 3 to 2 (de-eng)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
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<tr>
<td>10</td>
<td>10</td>
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<tr>
<td>15</td>
<td>15</td>
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</tbody>
</table>

VALVE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>.3 GPM (1.13 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>4000 PSI (276 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>3 cu in/min (49 ml/min)</td>
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<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>
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<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>15 ft-lbs (20.3 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>3-5 ft-lbs (4.1-6.8 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>MINI 3W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
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<tr>
<td>Seal Kit</td>
<td>21191004</td>
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</tbody>
</table>

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Phone: (815) 397-6628    Fax: (815) 397-2526    E-mail: delta@delta-power.com
MC-S3T Direct Acting Spool, 3 Way 2 Position, Transmission & Brake

DESCRIPTION
7 size, 5/8-18 thread, “Mini” series, solenoid operated, 3 way 2 position, transmission & brake spool valve.

OPERATION
When de-energized the MC-S3T blocks flow at (1) and allows flow from (3) to (2). When energized the valve allows flow from (1) to (3) and blocks flow at (2).

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

Contamination Tolerant Product
This valve is designed for transmission and brake applications. Consult factory for alternate low wattage coil options.

PERFORMANCE
Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>0-50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow (LPM)</th>
<th>Pressure Drop (BAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-15</td>
<td>0-50</td>
</tr>
</tbody>
</table>

| Port 1 to 3 (eng) — Port 3 to 2 (de-eng) |

<table>
<thead>
<tr>
<th>VALVE SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
</tr>
<tr>
<td>Viscosity Range</td>
</tr>
<tr>
<td>Filtration ISO</td>
</tr>
<tr>
<td>Media Operating</td>
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<td>Temperature Range</td>
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<tr>
<td>Weight</td>
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<tr>
<td>Operating Fluid Media</td>
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<tr>
<td>Cartridge Torque</td>
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<tr>
<td>Requirements</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
</tr>
<tr>
<td>Seal Kit</td>
</tr>
</tbody>
</table>

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIMENSIONS

SEE COIL DATA FOR TERMINATIONS

MC-S3T - - - -

OPTIONS

Buna Standard 00
Viton Standard V0

"M" TYPE COIL TERMINATION
(All DC Except as Noted)

Double Lead DL
Deutsch on Leads DT
Metri-Pack on Leads ML
Packard on Leads PL
Weatherpack on Leads WL
Single Spade SS
Double Spade DS
DIN 43650 (Hirschman) – (AC & DC) HC
Conduit Lead – (AC Only) CL

VOLTAGE

06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

Approximate Coil Weight: .30 lbs/.14 kg.

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**DF-S3T Direct Acting Spool, 3 Way 2 Position, Transmission & Brake**

**DESCRIPTION**
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 3 way 2 position, transmission & brake spool valve.

**OPERATION**
When de-energized the DF-S3T allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

**Contamination Tolerant Product**
This valve is designed for transmission and brake applications. Consult factory for alternate low wattage coil options.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

![Performance Graph]

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>8 GPM (30 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>1500 PSI (103 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>5 cu/in per min (82 ml/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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>28 lbs (.12 kg)</td>
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<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>
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<td>Cavity</td>
<td>DELTA 3W</td>
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<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>405000001</td>
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<tr>
<td>Seal Kit</td>
<td>21191204</td>
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Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com

Page 122
WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**DESCRIPTION**

8 size, 3/4-16 thread, “Power” series, solenoid operated, 3 way 2 position, selector spool valve.

**OPERATION**

When de-energized the PP-S3X allows flow from (2) to (3) and blocks flow at port (1). When energized the valve allows flow from (2) to (1) and blocks flow at port (3). **OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

Operational shift limit 3 GPM (11 LPM) from port 2. Not recommended for port 3 inlet cavity. For shifted flow performance consult chart.

**PERFORMANCE**

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tr>
<td>Nominal Flow</td>
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<tr>
<td>Typical Internal Leakage</td>
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<tr>
<td>Viscosity Range</td>
<td>36 to 3000 SSU (3 to 647 cSt)</td>
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<tr>
<td>Filtration</td>
<td>ISO 18/16/13</td>
</tr>
<tr>
<td>Media Operating Temperature</td>
<td>-40° to 250° F (-40° to 120° C)</td>
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<td>Weight</td>
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<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
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<tr>
<td>Cartridge Torque Requirements</td>
<td>25 ft-lbs (34 Nm)</td>
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<td>Coil Nut Torque Requirements</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
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Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
### 4 Way 2 Position Spool Valves

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<td>276</td>
<td>HG-S4F</td>
<td>170</td>
</tr>
</tbody>
</table>

**Typical Schematic**

Typical application for the S4A, S4D, and S4F is directional motor or cylinder control.

Typical application for the S4B is directional motor or cylinder control in a parallel circuit.

Typical application for the S4C is directional motor or cylinder control in a series circuit.

Typical application for the S4E is motor control in a series/parallel circuit.

---

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**MD-S4A Direct Acting Spool, 4 Way 2 Position**

**DESCRIPTION**
7 size, 5/8-18 thread, “Mini” series, solenoid operated, 4 way 2 position, spool valve.

**OPERATION**
When de-energized the MD-S4A allows flow from (1) to (4) and (2) to (3). When energized the valve allows flow from (2) to (1) and (3) to (4).

**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**
Operational shift limit 1 GPM (3.8 LPM).
For shifted flow performance consult chart.
For higher pressures or flows see HD-S4A.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**
<table>
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<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/min) per path</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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>15 lbs. (.07 kg)</td>
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<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>15 ft-lbs (20.3 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>3-5 ft-lbs (4.1-6.8 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>MINI 4W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500006</td>
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<tr>
<td>Seal Kit</td>
<td>21191008</td>
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</table>

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### DIMENSIONS

![Diagram](image)

### ORDERING INFORMATION

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<th>BODIES</th>
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<td>Viton Standard</td>
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</table>

#### "M" COIL TERMINATION

*(All DC Except as Noted)*

- Double Lead: DL
- Deutsch on Leads DT04-2P: DT
- Metri-Pack on Leads: ML
- Packard on Leads: PL
- Weatherpack on Leads: WL
- Single Spade: SS
- Double Spade: DS
- DIN 43650 (Hirschman) – (AC & DC): HC
- Conduit Lead – (AC Only): CL

Approximate Coil Weight: .30 lbs/.14 kg.
**HD-S4A Direct Acting Spool, 4 Way 2 Position**

**DESCRIPTION**

“High Pressure” 7 size, 5/8-18 thread, “Mini” series, solenoid operated, 4 way 2 position spool valve.

**OPERATION**

When de-energized the HD-S4A allows flow from (1) to (4) and (2) to (3). When energized the valve allows flow from (2) to (1) and (3) to (4).

**FEATURES**

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

**HYDRAULIC SYMBOL**

**PERFORMANCE**

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
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<tr>
<td>Rated Operating Pressure</td>
<td>4000 PSI (276 bar)</td>
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<tr>
<td>Typical Internal Leakage</td>
<td>8 cu in/min (131 ml/min) per path</td>
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<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>
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<tr>
<td>Media Operating Temperature Range</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>16 lbs. (.07 kg)</td>
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<tr>
<td>Operating Fluid Media</td>
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<tr>
<td>Cartridge Torque Requirements</td>
<td>15 ft-lbs (20 Nm)</td>
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<tr>
<td>Coil Nut Torque Requirements</td>
<td>3-5 ft-lbs (4.1-6.8 Nm)</td>
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<tr>
<td>Cavity</td>
<td>MINI 4W</td>
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<td>Cavity Form Tool (Finishing)</td>
<td>40500006</td>
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<tr>
<td>Seal Kit</td>
<td>21191008</td>
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Phone: (815) 397-6628       Fax: (815) 397-2526       E-mail: delta@delta-power.com
PQ-S4A Direct Acting Spool, 4 Way 2 Position

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 4 way 2 position, spool valve.

**OPERATION**
When de-energized the PQ-S4A allows flow from (1) to (4) and from (2) to (3). When energized the valve allows flow from (2) to (1) and from (3) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

Modes of shift operation to 6 GPM, Consult Factory.

**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):** 5 cu in/min (82 ml/min) per path
- **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:** .24 lbs. (.11 kg)
- **Operating Fluid Media:** General Purpose Hydraulic Fluid
- **Cartridge Torque Requirements:** 25 ft-lbs (34 Nm)
- **Coil Nut Torque Requirements:** 4-6 ft-lbs (5.4-8.1 Nm)
- **Cavity:** POWER 4W
- **Cavity Form Tool (Finishing):** 40500029
- **Seal Kit:** 21191108

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## DIMENSIONS

![Diagram of SOLNOID OPERATED DIRECTIONAL CONTROLS](image)

**Manual Override**
- Standard
- Standard with 3/4-16 UNF 2A THREAD
- 1.25 [31.7]
- 1.54 [39.1]
- 2.89 [73.6]
- 2.13 [54.2]
- .75 [19.1] HEX NUT
- 2.11 [53.6]

**Bodies**
- Buna Standard: Blank Without Body
- Viton Standard: N 1/4 NPTF Ports
- Buna, Override, Detent: S #6 SAE Ports
- Viton, Override, Detent: VM
- Buna, Override, Non-detent: B1
- Viton, Override, Non-detent: V1

**Voltage**
- 06 6 VDC
- 12 12 VDC
- 24 24 VDC
- 36 36 VDC
- 48 48 VDC
- 25 24 VAC
- 11 120 VAC
- 22 220 VAC
- 44 440 VAC

**Immersion Proof “P” Type**
- “I” Coil AMP Superseal - Integral
- “I” Coil Deutsch – Integral DT04-2P
- “I” Coil AMP Jr. Timer - Integral
- “I” Coil Metri-Pack – Integral

**Ordering Information**

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<tr>
<td>Buna, Override, Detent</td>
<td>VM</td>
<td>44 440 VAC</td>
</tr>
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Approximate Coil Weight: .42 lbs (.19 kg.)

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DG-S4A Direct Acting Spool, 4 Way 2 Position

DESCRIPTION
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 4 way 2 position, side flow spool valve.

OPERATION
When de-energized the DG-S4A allows flow between (1) to (4) and (2) to (3). When energized the valve allows flow between (2) to (1) and (3) to (4).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

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 pressures see HG-S4A.

PERFORMANCE
Actual Test Data (Cartridge Only)

![Graphs showing flow and pressure drop]

VALVE SPECIFICATIONS
- Nominal Flow: 10 GPM (38 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage: 5 cu in/min (82 ml/min) per path
- 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: 32 lbs. (.15 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 (5.4-8.1 Nm) Maximum
- Cavity: DELTA 4W
- Cavity Form Tool (Finishing): 40500002
- Seal Kit: 21191214

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**DIMENSIONS**

MANUAL OVERRIDE

STANDARD

7/16-20 UNF-2A THREAD

2.27 [57.8]

63 [15.8]

2.00 [50.8]

3.25 [82.6]

1.38 [34.9]

2.88 [73.0]

28 [7.1] DIA. MTG. SLOTS

#6 SAE PORTS

4X

BODY WEIGHT: .99 lbs [.45 kg]

**ORDERING INFORMATION**

DG-S4A - - - -

OPTIONS

Buna Standard 00
Viton Standard V0
Buna, Override 0M
Viton, Override VM
Buna, Override, Non-detent B1
Viton, Override, Non-detent V1

BODIES

Blank Without Body N
1/4 NPTF Ports S
#6 SAE Ports

VOLTAGE

06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

“D” COIL TERMINATION

(All DC Except as Noted)

DL Double Lead SS Single Spade IA “T” Coil AMP Superseal - Integral
DT Deutsch on Leads DT04-2P DS Double Spade ID “T” Coil Deutsch – Integral DT04-2P
ML Metri-Pack on Leads HC DIN 43650 (Hirschman) – (AC & DC) IJ “T” Coil AMP Jr. Timer - Integral
PL Packard on Leads CL Conduit Lead – (AC Only) IM “T” Coil Metri-Pack – Integral
WL Weatherpack on Leads DI Deutsch – integral DT04-2P

Approximate Coil Weight: .74 lbs (.33 kg.)

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
HG-S4A, Direct Acting Spool, 4 Way 2 Position, Criss Cross

**DESCRIPTION**

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, 4 way 2 position, side flow spool valve.

**OPERATION**

When de-energized the HG-S4A allows flow from (1) to (4) and from (2) to (3). When energized the valve allows flow from (2) to (1) and from (3) to (4).

**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**

Uses "L" Coil.

**PERFORMANCE**

Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Pressure Drop (PSI)</th>
<th>Flow (GPM)</th>
<th>Flow (LPM)</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>8</td>
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<tr>
<td>10</td>
<td>4</td>
<td>16</td>
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<td>15</td>
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<td>20</td>
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<td>30</td>
<td>12</td>
<td>48</td>
</tr>
<tr>
<td>35</td>
<td>14</td>
<td>56</td>
</tr>
</tbody>
</table>

**VALVE SPECIFICATIONS**

- Nominal Flow: 10 GPM (38 LPM)
- Rated Operating Pressure: 4000 PSI (276 bar)
- Typical Internal Leakage: 10 cu in/min (164 ml/min) per path (150 SSU)
- Viscosity Range: 36 to 3000 SSU (3 to 647 cSt)
- Filtration: ISO 18/16/13
- Media Operating Temperature Range: -40°F to 250°F (-40°C to 120°C)
- Weight: 44 lbs. (20 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 (5.4-8.1 Nm)
- Cavity: DELTA 4W
- Cavity Form Tool (Finishing): 40500002
- Seal Kit: 21191214

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
SOLENOID OPERATED DIRECTIONAL CONTROLS

Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

DIMENSIONS

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

ORDERING INFORMATION

HG-S4A

OPTIONS
Buna Standard 00
Viton Standard V0

BODIES
Blank
1/4 NPTF Ports N
#6 SAE Ports S

VOLTAGE
6 VDC 06
12 VDC 12
24 VDC 24
36 VDC 36
48 VDC 48
24 VAC 25
120 VAC 11
220 VAC 22
440 VAC 44

“L” COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads

SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IA “I” Coil AMP Superseal - Integral
ID “I” Coil Deutsch – Integral DT04-2P
IJ “I” Coil AMP Jr. Timer - Integral
IM “I” Coil Metri-Pack – Integral

Approximate Coil Weight: .68 lbs. (.31 kg.)

IMMERSION PROOF “L” TYPE

BODY WEIGHT: 59 lbs./.45 kg.
HV-S4A Direct Acting Spool, 4 Way 2 Position

DESCRIPTION
“High pressure” 12 size, 1 1/16-12 thread, “Tecnord” series, solenoid operated, 4 way 2 position, criss cross side flow spool valve.

OPERATION
When de-energized the HV-S4A allows flow from (1) to (4) and from (2) to (3). When energized the valve allows flow from (2) to (1) and from (3) to (4).

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

<table>
<thead>
<tr>
<th>PRESSURE DROP</th>
<th>BAR</th>
<th>PSI</th>
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<tbody>
<tr>
<td>11.0</td>
<td>160</td>
<td>96</td>
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<td>9.6</td>
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<td>8.3</td>
<td>120</td>
<td>75</td>
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<tr>
<td>6.9</td>
<td>100</td>
<td>59</td>
</tr>
<tr>
<td>5.5</td>
<td>80</td>
<td>45</td>
</tr>
<tr>
<td>4.1</td>
<td>60</td>
<td>36</td>
</tr>
<tr>
<td>2.7</td>
<td>40</td>
<td>25</td>
</tr>
<tr>
<td>1.4</td>
<td>20</td>
<td>14</td>
</tr>
</tbody>
</table>

FLOW

1 TO 4

2 TO 3

3 TO 4

2 TO 1

GPM (LPM)

VALVE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Nominal Flow</th>
<th>15 GPM (57 LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Operating Pressure</td>
<td>5000 PSI (345 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>8 cu in/min (131 ml/min) per path</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>1.07 lbs. (.48 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>70 ft-lbs (94.9 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>5-7 ft-lbs (6.8-9.5Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>TECNORD 4W</td>
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<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500035</td>
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<tr>
<td>Seal Kit</td>
<td>21191309</td>
</tr>
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</table>

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIMENSIONS

ORDERING INFORMATION

HV-S4A

OPTIONS

Buna Standard 00
Viton Standard V0

“T” COIL TERMINATION

(All DC Except as Noted)

Double Lead DL
Deutsch on Leads DT
Metri-Pack on Leads ML
Packard on Leads PL
Weatherpack on Leads WL
Double Spade DS
DIN 43650 (Hirschman) – (AC & DC) HC

BODIES

Blank Without Body S
#10 SAE Ports

VOLTAGE

06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
24 VAC
120 VAC
220 VAC

Approximate Coil Weight: .89 lbs/.41 kg.

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Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com
**MD-S4B Direct Acting Spool, 4 Way 2 Position, Closed Center**

**DESCRIPTION**
7 size, 5/8-18 thread, “Mini” series, solenoid operated, 4 way 2 position, closed center spool valve.

**OPERATION**
When de-energized the MD-S4B blocks flow at all ports. When energized the valve allows flow from (2) to (1) and (3) to (4).

**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**

 Modes of shift operation to 3 GPM, Consult Factory.
For higher pressures or flows see HD-S4B.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>1.5 GPM (6 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
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<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>5 cu in/min (82 ml/min) per path</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>15 ft-lbs (20.3 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>3-5 ft-lbs (4.1-6.8 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>MINI 4W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500006</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191008</td>
</tr>
</tbody>
</table>

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Phone: (815) 397-6628   Fax: (815) 397-2526   E-mail: delta@delta-power.com
**HD-S4B Direct Acting Spool, 4 Way 2 Position, Closed Center**

**DESCRIPTION**

**OPERATION**
When de-energized the HD-S4B blocks flow at all ports. When energized the valve allows flow from (2) to (1) and (3) to (4).

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

**HYDRAULIC SYMBOL**

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Maximum Flow</td>
<td>3 GPM (11 LPM)</td>
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<tr>
<td>Rated Operating Pressure</td>
<td>4000 PSI (276 bar)</td>
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<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>8 cu in/min (131 ml/min) per path</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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>.16 lbs. (.07 kg)</td>
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<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>15 ft-lbs (20 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>3-5 ft-lbs (4.1-6.8 Nm)</td>
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<tr>
<td>Cavity</td>
<td>MINI 4W</td>
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<td>Cavity Form Tool (Finishing)</td>
<td>405000006</td>
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<tr>
<td>Seal Kit</td>
<td>21191008</td>
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</tbody>
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Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com

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## DIMENSIONS

![Diagram of HD-S4B solenoid](image)

### ORDERING INFORMATION

<table>
<thead>
<tr>
<th>HD-S4B</th>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Buna Standard</td>
<td>Blank</td>
<td>06 6 VDC</td>
</tr>
<tr>
<td></td>
<td>Viton Standard</td>
<td>1/4 NPTF Ports</td>
<td>12 12 VDC</td>
</tr>
<tr>
<td><strong>&quot;M&quot; COIL TERMINATION</strong></td>
<td></td>
<td>24 VDC</td>
<td></td>
</tr>
<tr>
<td>(All DC Except as Noted)</td>
<td></td>
<td>36 36 VDC</td>
<td></td>
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<tr>
<td>Double Lead</td>
<td></td>
<td>24 VDC</td>
<td></td>
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<tr>
<td>Deutsch on Leads DT04-2P</td>
<td></td>
<td>36 VDC</td>
<td></td>
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<tr>
<td>Metri-Pack on Leads</td>
<td></td>
<td>48 48 VDC</td>
<td></td>
</tr>
<tr>
<td>Packard on Leads</td>
<td></td>
<td>24 VAC</td>
<td></td>
</tr>
<tr>
<td>Weatherpack on Leads</td>
<td></td>
<td>25 24 VAC</td>
<td></td>
</tr>
<tr>
<td>Single Spade</td>
<td></td>
<td>11 120 VAC</td>
<td></td>
</tr>
<tr>
<td>Single Spade</td>
<td></td>
<td>22 220 VAC</td>
<td></td>
</tr>
<tr>
<td>Double Spade</td>
<td></td>
<td>44 440 VAC</td>
<td></td>
</tr>
<tr>
<td>DIN 43650 (Hirschman) – (AC &amp; DC)</td>
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</tr>
<tr>
<td>Conduit Lead – (AC Only)</td>
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</tr>
<tr>
<td>Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approximate Coil Weight: .30 lbs/.14 kg.
PQ-S4B Direct Acting Spool, 4 Way 2 Position, Closed Center

**DESCRIPTION**
8 size, 3/4 -16 thread, “Power” series, solenoid operated, 4 way 2 position, closed center spool valve.

**OPERATION**
When de-energized the PQ-S4B blocks flow at all ports. When energized the valve allows flow from (2) to (1) and from (3) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

Modes of shift operation to 6 GPM, Consult Factory.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Nominal Flow</td>
<td>4 GPM (15 LPM)</td>
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<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
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<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>5 cu in/min (82 ml/min) per path</td>
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<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>.24 lbs. (.11 kg)</td>
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<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>
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<tr>
<td>Coil Nut Torque Requirements</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>POWER 4W</td>
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<td>Cavity Form Tool (Finishing)</td>
<td>40500029</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191108</td>
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Phone: (815) 397-6628   Fax: (815) 397-2526   E-mail: delta@delta-power.com
**DG-S4B Direct Acting Spool, 4 Way 2 Position, Closed Center**

**DESCRIPTION**
10 size, 7/8 -14 thread, “Delta” series, solenoid operated, 4 way 2 position, closed center spool valve.

**OPERATION**
When de-energized the DG-S4B blocks flow at all ports. When energized the valve allows flow from (2) to (1) and (3) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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 pressures see HG-S4B.
Operational shift limit, 10 GPM.
For shift performance consult chart.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>10 GPM (38 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>5 cu in/min (82 ml/min) per path</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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>.32 lbs (.15 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque</td>
<td>30 ft-lbs (40.6 Nm)</td>
</tr>
<tr>
<td>Requirements</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>DELTA 4W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500002</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191214</td>
</tr>
</tbody>
</table>

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### DIMENSIONS

**MANUAL OVERRIDE**

- Hex Nut: 0.75 [19.1]
- Manual Override: 1.83 [46.6]
- See coil data for terminations

**STANDARD**

- 7/16-20 UNF-2A Thread
- 7/8-14 UNF-2A

**ORDERING INFORMATION**

**DG-S4B**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna Standard</td>
<td>Blank</td>
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</tr>
<tr>
<td>Viton Standard</td>
<td>N</td>
<td>1/4 NPTF Ports</td>
</tr>
<tr>
<td>Buna, Override</td>
<td>S</td>
<td>#6 SAE Ports</td>
</tr>
<tr>
<td>Viton, Override</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buna, Override, Non-detent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viton, Override, Non-detent</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>“D” COIL TERMINATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(All DC Except as Noted)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DL</td>
<td>Single Spade</td>
<td></td>
</tr>
<tr>
<td>DT</td>
<td>Double Spade</td>
<td></td>
</tr>
<tr>
<td>ML Metri-Pack on Leads</td>
<td>DIN 43650 (Hirschman) – (AC &amp; DC)</td>
<td></td>
</tr>
<tr>
<td>PL Packard on Leads</td>
<td>Conduit Lead – (AC Only)</td>
<td></td>
</tr>
<tr>
<td>WL Weatherpack on Leads</td>
<td>Deutsch – Integral DT04-2P</td>
<td></td>
</tr>
<tr>
<td><strong>IMMERSION PROOF “D” TYPE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IA</td>
<td>“I” Coil AMP Superseal - Integral</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>“I” Coil Deutsch – Integral DT04-2P</td>
<td></td>
</tr>
<tr>
<td>IJ</td>
<td>“I” Coil AMP Jr. Timer - Integral</td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>“I” Coil Metri-Pack – Integral</td>
<td></td>
</tr>
</tbody>
</table>

Approximate Coil Weight: 0.74 lbs/0.33 kg.

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Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
HG-S4B, Direct Acting Spool, 4 Way 2 Position

DESCRIPTION
"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position closed center spool valve.

OPERATION
When de-energized the HG-S4B blocks flow at all ports. When energized the valve allows flow from (2) to (1) and from (3) to (4).

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)

-valve specifications-

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>10 GPM (38 LPM)</td>
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<tr>
<td>Rated Operating Pressure</td>
<td>4000 PSI (276 bar)</td>
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<tr>
<td>Typical Internal Leakage</td>
<td>(150 SSU) 10 cu in/min (164 ml/min) per path</td>
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<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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Temperature Range</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>44 lbs. (.20 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque</td>
<td>30 ft-lbs (40.6 Nm)</td>
</tr>
<tr>
<td>Requirements</td>
<td></td>
</tr>
<tr>
<td>Coil Nut Torque</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
</tr>
<tr>
<td>Requirements</td>
<td></td>
</tr>
<tr>
<td>Cavity</td>
<td>DELTA 4W</td>
</tr>
<tr>
<td>Cavity Form Tool</td>
<td>40500002</td>
</tr>
<tr>
<td>(Finishing)</td>
<td></td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191214</td>
</tr>
</tbody>
</table>

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## DIMENSIONS

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<tr>
<th>Measurement</th>
<th>Description</th>
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<tr>
<td>3.25</td>
<td>[82.5]</td>
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<tr>
<td>1.38</td>
<td>[34.9]</td>
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<tr>
<td>2.88</td>
<td>[73.0]</td>
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<tr>
<td>1.56</td>
<td>[39.6]</td>
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<td>1.50</td>
<td>[38.1]</td>
</tr>
<tr>
<td>1.25</td>
<td>[31.8]</td>
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</table>

See coil data for terminations.

## OPTIONS

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<thead>
<tr>
<th>Body Option</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>00</td>
<td>1/4 NPTF Ports</td>
</tr>
<tr>
<td>06</td>
<td>6 VDC</td>
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<tr>
<td>12</td>
<td>12 VDC</td>
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<td>24 VDC</td>
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<td>36</td>
<td>36 VDC</td>
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<td>48</td>
<td>48 VDC</td>
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<td>25</td>
<td>24 VAC</td>
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<tr>
<td>11</td>
<td>120 VAC</td>
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<tr>
<td>22</td>
<td>220 VAC</td>
</tr>
<tr>
<td>44</td>
<td>440 VAC</td>
</tr>
</tbody>
</table>

## BODIES

Note: Aluminum, Not durability rated for 4000 PSI. Consult factory for body options.

### VOLTAG£

- 6 VDC
- 12 VDC
- 24 VDC
- 36 VDC
- 48 VDC
- 24 VAC
- 120 VAC
- 220 VAC
- 440 VAC

## ORDERING INFORMATION

### HG-S4B

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
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<tbody>
<tr>
<td>Buna Standard</td>
<td>Blank</td>
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<tr>
<td>Viton Standard</td>
<td>00</td>
</tr>
<tr>
<td>V0</td>
<td>1/4 NPTF Ports</td>
</tr>
</tbody>
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## "L" COIL TERMINATION

(All DC Except as Noted)

<table>
<thead>
<tr>
<th>Lead Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL</td>
<td>Double Lead</td>
</tr>
<tr>
<td>DT</td>
<td>Deutsch on Leads DT04-2P</td>
</tr>
<tr>
<td>ML</td>
<td>Metri-Pack on Leads</td>
</tr>
<tr>
<td>PL</td>
<td>Packard on Leads</td>
</tr>
<tr>
<td>WL</td>
<td>Weatherpack on Leads</td>
</tr>
<tr>
<td>SS</td>
<td>Single Spade</td>
</tr>
<tr>
<td>DS</td>
<td>Double Spade</td>
</tr>
<tr>
<td>HC</td>
<td>DIN 43650 (Hirschman) – (AC &amp; DC)</td>
</tr>
<tr>
<td>CL</td>
<td>Conduit Lead – (AC Only)</td>
</tr>
<tr>
<td>DI</td>
<td>Deutsch – Integral DT04-2P</td>
</tr>
</tbody>
</table>

IMMERSON PROOF “L” TYPE

- "I" Coil AMP Superseal - Integral
- "I" Coil Deutsch – Integral DT04-2P
- "I" Coil AMP Jr, Timer - Integral
- "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .68 lbs. (.31 kg.)

### WARNING:
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PQ-S4C Direct Acting Spool, 4 Way 2 Position, Tandem Center

DESCRIPTION
8 size, 3/4-16 thread, “Power” series, solenoid operated, 4 way 2 position, tandem center spool valve.

OPERATION
When de-energized the PQ-S4C allows flow between (2) and (4), blocks flow at (1) and (3). When energized the valve allows flow from (2) to (3) and from (1) to (4).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

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

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) 5 cu in/min (82 ml/min) per path
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 .24 lbs. (.11 kg)
Operating Fluid Media General Purpose Hydraulic Fluid
Cartridge Torque 25 ft-lbs (34 Nm)
Requirements
Coil Nut Torque 4-6 ft-lbs (5.4-8.1 Nm)
Requirements
Cavity POWER 4W
Cavity Form Tool (Finishing) 40500029
Seal Kit 21191108

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
SOLENOID OPERATED DIRECTIONAL CONTROLS

Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com

DIMENSIONS

ORDERING INFORMATION

PQ-S4C

OPTIONS
Buna Standard - 00
Viton Standard - V0
Buna, Override, Detent - 0M
Viton, Override, Detent - VM
Buna, Override, Non-detent - B1
Viton, Override, Non-detent - V1

BODIES
Blank Without Body - N
1/4 NPTF Ports - S
#6 SAE Ports - #6

VOLTAGE
6 VDC - 06
12 VDC - 12
24 VDC - 24
36 VDC - 36
48 VDC - 48
24 VAC - 25
120 VAC - 11
220 VAC - 22
440 VAC - 44

“P” COIL TERMINATION
(All DC Except as Noted)
DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads
SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IMMERSION PROOF “P” TYPE
IA “I” Coil AMP Superseal - Integral
ID “I” Coil Deutsch – Integral DT04-2P
IJ “I” Coil AMP Jr. Timer - Integral
IM “I” Coil Metri-Pack – Integral

Approximate Coil Weight: .42 lbs (.19 kg.)
DG-S4C Direct Acting Spool, 4 Way 2 Position, Tandem Center

**DESCRIPTION**
10 size, 7/8 -14 thread, “Delta” series, solenoid operated, 4 way 2 position, tandem center spool valve.

**OPERATION**
When de-energized the DG-S4C allows flow between (2) and (4), and blocks flow at ports (1) and (3). When energized the valve allows flow from (2) to (3) and (1) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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 pressures see HG-S4C.
Operational shift limit, 8 GPM.
For shift performance consult chart.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>8 GPM (30 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/min) per path</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>.31 lbs (.14 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque</td>
<td>30 ft-lbs (40.6 Nm)</td>
</tr>
<tr>
<td>Requirements</td>
<td>4-6 ft-lbs (5.4-8.1Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>DELTA 4W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500002</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191214</td>
</tr>
</tbody>
</table>

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DIMENSIONS

MANUAL OVERRIDE
7/16-20 UNF-2A THREAD
3.35 [85.1]
2.31 [58.8]
1.00 [25.4] HEX
.75 [19.1] HEX NUT
1.83 [46.6]
.22 [5.6]
2.44 [61.9]
7/8-14 UNF-2A
SEE COIL DATA FOR TERMINATIONS

ORDERING INFORMATION

DG-S4C
OPTIONS
Buna Standard 00
Viton Standard V0
Buna, Override 0M
Viton, Override VM
Buna, Override, Non-detent B1
Viton, Override, Non-detent V1

BODIES
Without Body Blank
1/4 NPTF Ports N
#6 SAE Ports S

VOLTAGE
6 VDC 06
12 VDC 12
24 VDC 24
36 VDC 36
48 VDC 48
24 VAC 25
120 VAC 11
220 VAC 22
440 VAC 44

“D” COIL TERMINATION
(Double Lead DT04-2P)

Approximate Coil Weight: .74 lbs/.33 kg.

IMMERSION PROOF “D” TYPE
IA “I” Coil AMP Superseal – Integral
ID “I” Coil Deutsch – Integral DT04-2P
IJ “I” Coil AMP Jr. Timer – Integral
IM “I” Coil Metri-Pack – Integral

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Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com
HG-S4C, Direct Acting Spool, 4 Way 2 Position, Tandem

DESCRIPTION
“High Pressure” 10 size, 7/8-14 thread, “Delta” series, solenoid operated, 4 way 2 position tandem center spool valve.

OPERATION
When de-energized the HG-S4C allows flow between (2) and (4) and blocks the flow at (1) and (3). When energized the valve allows flow from (2) to (3) and from (1) to (4).

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

Uses “L” Coil

PERFORMANCE
Actual Test Data (Cartridge Only)

<table>
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<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
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<tr>
<td>2</td>
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<td>4</td>
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<tr>
<td>6</td>
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<td>8</td>
<td>20</td>
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<tr>
<td>10</td>
<td>25</td>
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<tr>
<td>12</td>
<td>30</td>
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<table>
<thead>
<tr>
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<th>Pressure Drop (BAR)</th>
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</thead>
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<tr>
<td>10</td>
<td>5</td>
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<td>20</td>
<td>10</td>
</tr>
<tr>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>40</td>
<td>20</td>
</tr>
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</table>

| Port 1 to 4 (eng) | Port 2 to 3 (eng) | Port 2 to 4 (de-eng) |

<table>
<thead>
<tr>
<th>VALVE SPECIFICATIONS</th>
</tr>
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<tbody>
<tr>
<td>Nominal Flow</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
</tr>
<tr>
<td>Viscosity Range</td>
</tr>
<tr>
<td>Filtration</td>
</tr>
<tr>
<td>Media Operating Temperature Range</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
</tr>
<tr>
<td>Cartridge Torque</td>
</tr>
<tr>
<td>Requirements</td>
</tr>
<tr>
<td>Cavity</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
</tr>
<tr>
<td>Seal Kit</td>
</tr>
</tbody>
</table>

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**SOLENOID OPERATED DIRECTIONAL CONTROLS**

**Delta Power Company**
4484 Boeing Drive - Rockford, IL 61109

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**DIMENSIONS**

**ORDERING INFORMATION**

HG-S4C - - - -

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<thead>
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<th>OPTIONS</th>
<th>BODIES</th>
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<tr>
<td>N</td>
<td>1/4 NPTF Ports</td>
</tr>
<tr>
<td>S</td>
<td>#6 SAE Ports</td>
</tr>
</tbody>
</table>

**VOLTAGE**

- 06: 6 VDC
- 12: 12 VDC
- 24: 24 VDC
- 36: 36 VDC
- 48: 48 VDC
- 25: 24 VAC
- 11: 120 VAC
- 22: 220 VAC
- 44: 440 VAC

**“L” COIL TERMINATION**

(All DC Except as Noted)

<table>
<thead>
<tr>
<th>DL</th>
<th>Double Lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT</td>
<td>Deutsch on Leads DT04-2P</td>
</tr>
<tr>
<td>ML</td>
<td>Metri-Pack on Leads</td>
</tr>
<tr>
<td>PL</td>
<td>Packard on Leads</td>
</tr>
<tr>
<td>WL</td>
<td>Weatherpack on Leads</td>
</tr>
</tbody>
</table>

| SS | Single Spade |
| DS | Double Spade |
| HC | DIN 43650 (Hirschman) – (AC & DC) |
| CL | Conduit Lead – (AC Only) |
| DI | Deutsch – Integral DT04-2P |

**IMMERSION PROOF “L” TYPE**

- IA: “I” Coil AMP Superseal - Integral
- ID: “I” Coil Deutsch – Integral DT04-2P
- IJ: “I” Coil AMP Jr, Timer - Integral
- IM: “I” Coil Metri-Pack – Integral

**Approximate Coil Weight:** .68 lbs. (.31 kg.)

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
PQ-S4D Direct Acting Spool, 4 Way 2 Position, Criss Cross

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 4 way 2 position, criss cross, bottom flow spool valve.

**OPERATION**
When de-energized the PQ-S4D allows flow from (3) to (2), and from (4) to (1). When energized the valve allows flow from (1) to (2) and from (4) to (3).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

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

**HYDRAULIC SYMBOL**
![Hydraulic Symbol]

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Flow</td>
<td>2.5 GPM (9 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/min) per path</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</td>
<td>-40° to 250° F (-40° to 120° C)</td>
</tr>
<tr>
<td>Weight</td>
<td>.24 lbs. (.11 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 (33.8 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>POWER4W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>405000029</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191108</td>
</tr>
</tbody>
</table>

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  
Fax: (815) 397-2526  
E-mail: delta@delta-power.com
**DIMENSIONS**

![Diagram showing dimensions and specifications](image)

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
<th>IMMERSION PROOF “D” TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna Standard</td>
<td>Blank</td>
<td>6 VDC, 12 VDC</td>
<td>DL “T” Coil AMP Superseal</td>
</tr>
<tr>
<td>Viton Standard</td>
<td>1/4 NPTF Ports</td>
<td>24 VDC, 36 VDC</td>
<td>DT “I” Coil Deutsch – Integral</td>
</tr>
<tr>
<td>Buna, Override, Detent</td>
<td>#6 SAE Ports</td>
<td>48 VDC, 24 VAC</td>
<td>ML “I” Coil AMP Jr. Timer – Integral</td>
</tr>
<tr>
<td>Viton, Override, Detent</td>
<td></td>
<td>220 VAC</td>
<td>WL “I” Coil Metri-Pack – Integral</td>
</tr>
<tr>
<td>Buna, Override, Non-detent</td>
<td></td>
<td>440 VAC</td>
<td></td>
</tr>
<tr>
<td>Viton, Override, Non-detent</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

“P” COIL TERMINATION

- DL: Double Lead
- DT: Deutsch on Leads DT04-2P
- ML: Metri-Pack on Leads
- PL: Packard on Leads
- WL: Weatherpack on Leads
- SS: Single Spade
- DS: Double Spade
- HC: DIN 43650 (Hirschman) – (AC & DC)
- CL: Conduit Lead – (AC Only)
- DI: Deutsch – Integral DT04-2P

Approximate Coil Weight: .42 lbs (.19 kg.)

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**SOLENOID OPERATED DIRECTIONAL CONTROLS**

Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

**DG-S4D Direct Acting Spool, 4 Way 2 Position, Criss Cross**

**DESCRIPTION**
10 size, 7/8 -14 thread, “Delta” series, solenoid operated, 4 way 2 position, criss cross, bottom flow spool valve.

**OPERATION**
When de-energized the DG-S4D allows flow from (4) to (1), and (3) to (2). When energized the valve allows flow from (4) to (3) and (1) to (2).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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 pressures see HG-S4D.
Operational shift limit, 6 GPM.
For shift performance consult chart.

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>6 GPM (23 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/min) per path</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>.31 lbs (.14 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 4W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500002</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191214</td>
</tr>
</tbody>
</table>

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
DIMENSIONS

ORDERING INFORMATION

DG-S4D - - - -

OPTIONS
Buna Standard 00 Blank
Viton Standard V0 1/4 NPTF Ports
Buna, Override OM #6 SAE Ports
Viton, Override VM
Buna, Override, Non-detent B1
Viton, Override, Non-detent V1

BODIES
Without Body
1/4 NPTF Ports
#6 SAE Ports

VOLTAGE
6 VDC
12 VDC
24 VDC
36 VDC
48 VDC
24 VAC
120 VAC
220 VAC
440 VAC

“D” COIL TERMINATION
(All DC Except as Noted)
DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads
SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IMMERSION PROOF “D” TYPE
IA “I” Coil AMP Superseal - Integral
ID “I” Coil Deutsch – Integral DT04-2P
IJ “I” Coil AMP Jr. Timer - Integral
IM “I” Coil Metri-Pack – Integral

Approximate Coil Weight: .74 lbs/.33 kg.

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
HG-S4D, Direct Acting Spool, 4 Way 2 Position, Bottom Flow

**DESCRIPTION**

“High Pressure” 10 size, 7/8-14 thread, “Delta” series, solenoid operated, 4 way 2 position bottom flow spool valve.

**OPERATION**

When de-energized the HG-S4D allows flow from (4) to (1) and from (3) to (2). When energized the valve allows flow from (4) to (3) and from (1) to (2).

**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**

Uses “L” Coil

**PERFORMANCE**

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

- Nominal Flow: 8 GPM (30 LPM)
- Rated Operating Pressure: 4000 PSI (276 bar)
- Typical Internal Leakage: 10 cu in/min (164 ml/min) per path
- 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: 43 lbs. (.20 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 (5.4-8.1 Nm)
- Cavity: DELTA 4W
- Cavity Form Tool (Finishing): 40500002
- Seal Kit: 21191214

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WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
DG-S4E Direct Acting Spool, 4 Way 2 Position, Series/Parallel

**DESCRIPTION**

10 size, 7/8-14 thread, “Delta” series, solenoid operated, 4 way 2 position, series/parallel spool valve.

**OPERATION**

When de-energized the DG-S4E allows flow from (2) and (1), and (3) to (4). When energized the valve allows flow (2) to (4) and blocks the flow at (1) and (3).

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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 pressures see HG-S4E. Operational shift limit, 6 GPM. For shift performance consult chart.

**PERFORMANCE**

Actual Test Data (Cartridge Only)

<table>
<thead>
<tr>
<th>Flow (GPM)</th>
<th>Pressure Drop (PSI)</th>
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<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>30</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressure Drop (BAR)</th>
<th>Flow (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Nominal Flow</th>
<th>6 GPM (23 LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/min) per path</td>
</tr>
<tr>
<td>(150 SSU)</td>
<td></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>.31 lbs (.14 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 4W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500002</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191214</td>
</tr>
</tbody>
</table>
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Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com

Page 163
HG-S4E, Direct Acting Spool, 4 Way 2 Position, Series/Parallel

DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position series / parallel spool valve.

OPERATION

When de-energized the HG-S4E allows flow from (1) to (2) and from (3) to (4). When energized the valve allows flow from (2) to (4) and blocks flow at (1) and (3).

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

Uses “L” Coil

PERFORMANCE

Actual Test Data (Cartridge Only)

Valve Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>8 GPM (30 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>4000 PSI (276 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage (150 SSU)</td>
<td>10 cu in/min (164 ml/min) per path</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>43 lbs. (.20 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>Operating Fluid Nut Torque Requirements</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
</tr>
<tr>
<td>Cavity</td>
<td>DELTA 4W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>405000002</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191214</td>
</tr>
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</table>

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIMENSIONS

ORDERING INFORMATION

HG-S4E - - - -

OPTIONS
Buna Standard 00
Viton Standard V0

BODIES
Blank 00
Without Body 00
1/4 NPTF Ports 00
#6 SAE Ports 00

VOLTAGE
06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

“L” COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads
SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P
IA “I” Coil AMP Superseal - Integral
ID “I” Coil Deutsch – Integral DT04-2P
IJ “I” Coil AMP Jr. Timer - Integral
IM “I” Coil Metri-Pack – Integral

IMMERSION PROOF “L” TYPE

BODY WEIGHT: .99 lbs. / .45 kg.

Approximate Coil Weight: .68 lbs. (.31 kg.)

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com
**HV-S4E Direct Acting Spool, 4 Way 2 Position, Series / Parallel**

**DESCRIPTION**

“High pressure” 12 size, 1 1/16-12 thread, “Tecnord” series, solenoid operated, 4 way 2 position, series / parallel flow spool valve.

**OPERATION**

When de-energized the HV-S4E allows flow from (2) to (1) and from (3) to (4). When energized the valve allows flow from (2) to (4) and blocks flow at (1) to (3).

**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**

![Hydraulic Symbol Image]

**PERFORMANCE**

![Performance Graph]

**VALVE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>15 GPM (57 LPM) From (2) to (4) 8 GPM (30 LPM) from (4) to (2)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>5000 PSI (345 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>8 cu in/min (131 ml/min) per path</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>1.09 lbs. (.49 kg)</td>
</tr>
<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
</tr>
<tr>
<td>Cartridge Torque Requirements</td>
<td>70 ft-lbs (94.9 Nm)</td>
</tr>
<tr>
<td>Coil Nut Torque Requirements</td>
<td>5-7 ft-lbs (6.8-9.5 Nm) Maximum</td>
</tr>
<tr>
<td>Cavity</td>
<td>TECNORD 4W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500035</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191309</td>
</tr>
</tbody>
</table>

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIMENSIONS

ORDERING INFORMATION

HV-S4E - - - -

OPTIONS

Buna Standard 00
Viton Standard V0

“T” COIL TERMINATION

(Default DC Except as Noted)

Double Lead DL 06 6 VDC
Deutsch on Leads DT 12 12 VDC
Metri-Pack on Leads ML 24 24 VDC
Packard on Leads PL 36 36 VDC
Weatherpack on Leads WL 48 48 VDC
DIN 43650 (Hirschman) – (AC & DC)
Double Spade DS 25 24 VAC
HC 11 120 VAC
HC 22 220 VAC

BODIES

Blank Without Body S
#10 SAE Ports

VOLTAGE

Approximate Coil Weight: .89 lbs/.41 kg.

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DG-S4F Direct Acting Spool, 4 Way 2 Position, Energized to Block

**DESCRIPTION**
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 4 way 2 position, energized to block spool valve.

**OPERATION**
When de-energized the DG-S4F allows flow from (2) and (1), and from (3) to (4). When energized the valve blocks flow at all ports.

**OPERATION OF MANUAL OVERRIDE OPTION:** To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

**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**

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**
- **Nominal Flow:** 6 GPM (23 LPM)
- **Rated Operating Pressure:** 3000 PSI (207 bar)
- **Typical Internal Leakage (150 SSU):** 5 cu in/min (82 ml/min) per path
- **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:** .31 lbs (.14 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 (5.4-8.1 Nm)
- **Cavity:** DELTA 4W
- **Cavity Form Tool (Finishing):** 40500002
- **Seal Kit:** 21191214

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com

Page 168
**DIMENSIONS**

- **Screws**
  - #3-48 [0.84]
  - #8-32 [1.00]
  - #6-32 [1.56]
- **Stack Height**
  - 2.31 [58.8]
  - 3.35 [85.1]
- **Body Weight**: .99 lbs / .45 kg

**ORDERING INFORMATION**

**DG-S4F**

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>BODIES</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna Standard</td>
<td>Blank Without Body</td>
<td>06 6 VDC</td>
</tr>
<tr>
<td>Viton Standard</td>
<td>N 1/4 NPTF Ports</td>
<td>12 12 VDC</td>
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<tr>
<td>Buna, Override</td>
<td>S #6 SAE Ports</td>
<td>24 24 VDC</td>
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<tr>
<td>Viton, Override</td>
<td></td>
<td>36 36 VDC</td>
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<tr>
<td>Buna, Override, Non-detent</td>
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<td>22 220 VAC</td>
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<td></td>
<td></td>
<td>44 440 VAC</td>
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**‘D’ COIL TERMINATION**

(All DC Except as Noted)

- DL Double Lead
- DT Deutsch on Leads DT04-2P
- ML Metri-Pack on Leads
- PL Packard on Leads
- WL Weatherpack on Leads
- SS Single Spade
- DS Double Spade
- HC DIN 43650 (Hirschman) – (AC & DC)
- CL Conduit Lead – (AC Only)
- DI Deutsch – Integral DT04-2P

Approximate Coil Weight: .74 lbs / .33 kg.
HG-S4F, Direct Acting Spool, 4 Way 2 Position, Energized to Block

**DESCRIPTION**
"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position energized to block spool valve.

**OPERATION**
When de-energized the HG-S4F allows flow from (2) to (1) and from (3) to (4). When energized the valve blocks flow at all ports.

**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**
Uses "L" Coil

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**
- Nominal Flow: 6 GPM (23 LPM)
- Rated Operating Pressure: 4000 PSI (276 bar)
- Typical Internal Leakage: 10 cu in/min (164 ml/min) per path
- 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: 44 lbs. (.20 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 (5.4-8.1 Nm)
- Cavity: DELTA 4W
- Cavity Form Tool (Finishing): 40500002
- Seal Kit: 21191214

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com
DIMENSIONS

ORDERING INFORMATION

HG-S4F

OPTIONS
Buna Standard 00
Viton Standard V0

BODIES
Blank Without Body
1/4 NPTF Ports N
#6 SAE Ports S

VOLTAGE
06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

"L" COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads

SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IMMERSION PROOF "L" TYPE
IA "I" Coil AMP Superseal - Integral
ID "I" Coil Deutsch – Integral DT04-2P
IJ "I" Coil AMP Jr. Timer - Integral
IM "I" Coil Metri-Pack – Integral

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.

Approximate Coil Weight: .68 lbs. (.31 kg.)

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
**4 Way 3 Position Spool Valves**

<table>
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<tr>
<th>GPM</th>
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<th>LPM</th>
<th>BAR</th>
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<td>207</td>
<td>PQ-S4M</td>
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<td>DG-S4M</td>
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<td>DG-S4O</td>
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<td>207</td>
<td>PQ-S4T</td>
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<td>23</td>
<td>207</td>
<td>DG-S4S</td>
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**Typical Schematic**

Typical application for the S4O and S4T "Open Center" valve is a bi-directional fluid motor control with coasting.

Typical application for the S4Q and S4P "Closed Center" valve is a parallel circuit for cylinder control.

Typical application for the S4N and S4R "Tandem Center" valve is a series circuit with power beyond.

Typical application for the S4M "Figure Four" valve is coasting in a fluid motor control circuit.

Typical application for the S4S "Scotch Center" valve is to vent the pilot side of load holding application.
PQ-S4M Direct Acting Spool, 4 Way 3 Position, Motor Center

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 4 way 3 position, motor center spool valve.

**OPERATION**
When de-energized the PQ-S4M allows flow between (1), (3) and (4), blocks flow at (2). When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:**
Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

**FEATURES**
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Optional manual “push only” override.
- 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>Port 2 to 1 (eng S1)</th>
<th>Port 3 to 4 (eng S1)</th>
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<th>Flow (GPM)</th>
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<table>
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<th>Flow (GPM)</th>
<th>Pressure Drop (BAR)</th>
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<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
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**VALVE SPECIFICATIONS**

- **Nominal Flow**: 6 GPM (23 LPM)
- **Rated Operating Pressure**: 3000 PSI (207 bar)
- **Typical Internal Leakage**: 5 cu in/min (82 ml/min) per path
- **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**: 42 lbs, (.19 kg)
- **Operating Fluid Media**: General Purpose Hydraulic Fluid
- **Cartridge Torque Requirements**: 25 ft-lbs (34 Nm)
- **Coil Nut Torque Requirements**: 4-6 ft-lbs (5.4-8.1 Nm)
- **Cavity**: POWER 4W
- **Cavity Form Tool (Finishing)**: 40500029
- **Seal Kit**: 21191108

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**SOLENOID OPERATED DIRECTIONAL CONTROLS**

**Delta Power Company**
4484 Boeing Drive - Rockford, IL 61109

**DIMENSIONS**

```
<table>
<thead>
<tr>
<th>Option</th>
<th>Dimension</th>
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<tbody>
<tr>
<td>PQ-S4M</td>
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**ORDERING INFORMATION**

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<th>Bodies</th>
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<tr>
<td>Buna Standard</td>
<td>Blank</td>
<td>6 VDC</td>
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<tr>
<td>Viton Standard</td>
<td>Without Body</td>
<td>12 VDC</td>
</tr>
<tr>
<td>Buna, Push only override</td>
<td>1/4 NPTF Ports</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Viton, Push only override</td>
<td>#6 SAE Ports</td>
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</tr>
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<td>120 VAC</td>
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<td></td>
<td>220 VAC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>440 VAC</td>
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</tbody>
</table>

**"D" COIL TERMINATION**

(All DC Except as Noted)

- DL Double Lead
- DT Deutsch on Leads DT04-2P
- ML Metri-Pack on Leads
- PL Packard on Leads
- WL Weatherpack on Leads
- SS Single Spade
- DS Double Spade
- HC DIN 43650 (Hirschman) – (AC & DC)
- CL Conduit Lead – (AC Only)
- DI Deutsch – Integral DT04-2P

Approximate Coil Weight: .74 lbs. (.33 kg.)

**IMMERSION PROOF "D" TYPE**

- IA "I" Coil AMP Superseal - Integral
- ID "I" Coil Deutsch – Integral DT04-2P
- IJ "I" Coil AMP Jr. Timer - Integral
- IM "I" Coil Metri-Pack – Integral

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DG-S4M Direct Acting Spool, 4 Way 3 Position, Motor Center

DESCRIPTION
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 4 way 3 position motor center spool valve.

OPERATION
When de-energized the DG-S4M block the flow at (2) and allows flow between (1), (3) and (4). When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:
Bi-Directional Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction, when pulled the valve shifts in the S1 direction.
Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

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

PERFORMANCE
Actual Test Data (Cartridge Only)

Valve Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Nominal Flow</td>
<td>6 GPM (23 LPM)</td>
</tr>
<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
</tr>
<tr>
<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/min) per path</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</td>
<td>-40°F to 250°F (-40°C to 120°C)</td>
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<tr>
<td>Weight</td>
<td>51 lbs. (.23 kg)</td>
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<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
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<tr>
<td>Cartridge Torque</td>
<td>30 ft-lbs (40.6 Nm)</td>
</tr>
<tr>
<td>Requirements</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
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<tr>
<td>Cavity</td>
<td>DELTA 4W</td>
</tr>
<tr>
<td>Cavity Form Tool</td>
<td>40500002</td>
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<tr>
<td>Seal Kit</td>
<td>21191214</td>
</tr>
</tbody>
</table>

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
SOLENOID OPERATED DIRECTIONAL CONTROLS
Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

DIMENSIONS

ORDERING INFORMATION

DG-S4M - - - -

OPTIONS
Buna Standard 00
Viton Standard V0
Buna, Override 0M
Viton, Override VM
Buna, Push only override 0P
Viton, Push only override VP

BODIES
Blank Without Body
N 1/4 NPTF Ports
S #6 SAE Ports

VOLTAGE
06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

“L” COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads

SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IJA "I" Coil AMP Superseal - Integral
ID "I" Coil Deutsch – Integral DT04-2P
IJ "I" Coil AMP Jr. Timer - Integral
IM "I" Coil Metri-Pack – Integral

IMMERSION PROOF “L” TYPE

APPROXIMATE COIL WEIGHT: .68 lbs. (.31 kg.)

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
PQ-S4N Direct Acting Spool, 4 Way 3 Position, Tandem Center

DESCRIPTION
8 size, 3/4-16 thread, “Power” series, solenoid operated, 4 way 3 position, tandem center spool valve.

OPERATION
When de-energized the PQ-S4N allows flow between (2) and (4), blocks flow at (1) and (3). When outer coil (S1) is energized the valve allows flow from (2) to (3) and from (1) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (1) and from (3) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:
Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

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

HYDRAULIC SYMBOL

PERFORMANCE
Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS
Nominal Flow 5 GPM (19 LPM)
Rated Operating Pressure 3000 PSI (207 bar)
Typical Internal Leakage (150 SSU) 5 cu in/min (82 ml/min) per path
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 .42 lbs. (.19 kg)
Operating Fluid Media General Purpose Hydraulic Fluid
Cartridge Torque Requirements 25 ft-lbs (34 Nm)
Coil Nut Torque Requirements 4-6 ft-lbs (5.4-8.1 Nm)
Cavity POWER 4W
Cavity Form Tool (Finishing) 40600029
Seal Kit 21191108

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
**DG-S4N Direct Acting Spool, 4 Way 3 Position, Tandem Center**

**DESCRIPTION**

10 size, 7/8-14 thread, “Delta” series, solenoid operated, 4 way 3 position, tandem center spool valve.

**OPERATION**

When de-energized the DG-S4N allows flow between (2) and (4), and blocks flow at (1) and (3). When outer coil (S1) is energized the valve allows flow from (2) to (3) and from (1) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (1) and from (3) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:**

Bi-Directional Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction, when pulled the valve shifts in the S1 direction.

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

**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.

**VALVE SPECIFICATIONS**

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<tr>
<th>Specification</th>
<th>Value</th>
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<tr>
<td>Nominal Flow</td>
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<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
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<tr>
<td>Typical Internal Leakage</td>
<td>5 cu in/min (82 ml/min) per path</td>
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<tr>
<td>Viscosity Range</td>
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<tr>
<td>Filtration</td>
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<td>Media Operating Temperature</td>
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<td>Operating Fluid Media</td>
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<td>Cartridge Torque Requirements</td>
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<td>Coil Nut Torque Requirements</td>
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<tr>
<td>Cavity</td>
<td>DELTA 4W</td>
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<td>Cavity Form Tool (Finishing)</td>
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<tr>
<td>Seal Kit</td>
<td>21191214</td>
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</table>

**PERFORMANCE**

Actual Test Data (Cartridge Only)

- **Flow (LPM)**
- **Pressure Drop (PSI)**
- **Pressure Drop (BAR)**

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
SOLENOID OPERATED DIRECTIONAL CONTROLS

DIMENSIONS

ORDERING INFORMATION

DG-S4N - - - -

OPTIONS
- Buna Standard 00
- Viton Standard V0
- Buna, Override 0M
- Viton, Override VM
- Buna, Push only override 0P
- Viton, Push only override VP

BODIES
- Blank Without Body
- N 1/4 NPTF Ports
- S #6 SAE Ports

VOLTAGE
- 06 6 VDC
- 12 12 VDC
- 24 24 VDC
- 36 36 VDC
- 48 48 VDC
- 25 24 VAC
- 11 120 VAC
- 22 220 VAC
- 44 440 VAC

“L” COIL TERMINATION

(DL Except as Noted)
- DL Double Lead
- DT Deutsch on Leads DT04-2P
- ML Metri-Pack on Leads
- PL Packard on Leads
- WL Weatherpack on Leads

- SS Single Spade
- DS Double Spade
- HC DIN 43650 (Hirschman) – (AC & DC)
- CL Conduit Lead – (AC Only)
- DI Deutsch – Integral DT04-2P

IMMERSION PROOF “L” TYPE

- IA “I” Coil AMP Superseal – Integral
- ID “I” Coil Deutsch – Integral DT04-2P
- IJ “I” Coil AMP Jr. Timer - Integral
- IM “I” Coil Metri-Pack – Integral

Approximate Coil Weight: .68 lbs (.31 kg.)

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com

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**SOLENOID OPERATED DIRECTIONAL CONTROLS**

Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

---

**PQ-S4R Direct Acting Spool, 4 Way 3 Position, Tandem Center**

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 4 way 3 position, tandem center spool valve.

**OPERATION**
When de-energized the PQ-S4R allows flow between (2) and (4), ports (1) and (3) are blocked. When outer coil (S1) is energized the valve allows flow from (2) to (3) and from (1) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (1) and from (3) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:**
Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

**FEATURES**
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Optional manual “push only” override.

**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>
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<tr>
<td>Rated Operating Pressure</td>
<td>3000 PSI (207 bar)</td>
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<tr>
<td>Typical Internal Leakage</td>
<td>(150 SSU) 5 cu in/min (82 ml/min) per path</td>
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<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>
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<tr>
<td>Media Operating</td>
<td>-40° to 250° F (-40° to 120° C)</td>
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<tr>
<td>Weight</td>
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<tr>
<td>Operating Fluid Media</td>
<td>General Purpose Hydraulic Fluid</td>
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<tr>
<td>Cartridge Torque</td>
<td>25 ft-lbs (34 Nm)</td>
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<tr>
<td>Coil Nut Torque</td>
<td>4-6 ft-lbs (5.4-8.1 Nm)</td>
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<tr>
<td>Cavity</td>
<td>POWER 4W</td>
</tr>
<tr>
<td>Cavity Form Tool (Finishing)</td>
<td>40500029</td>
</tr>
<tr>
<td>Seal Kit</td>
<td>21191108</td>
</tr>
</tbody>
</table>

**PERFORMANCE**
Actual Test Data (Cartridge Only)

---

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com
警告：本手册中的规格/应用数据仅供参考，不得作为特定应用的依据。任何特定应用均需进行独立研究、评估和测试，以确保适用性。

订购信息

型号 PQ-S4R

选项
- Buna Standard 00
- Viton Standard V0
- Buna, Push only override 0P
- Viton, Push only override VP

主体
- 空白 N
- 1/4 NPTF Ports S
- #6 SAE Ports #

电压
- 6 VDC 06
- 12 VDC 12
- 24 VDC 24
- 36 VDC 36
- 48 VDC 48
- 24 VAC 25
- 120 VAC 11
- 220 VAC 22
- 440 VAC 44

"P" 绕组终止
（适用于所有 DC）

浸没型“D”型
- 油连接 DL
- 德国线状连接 DT
- 梅特包连接 ML
- 包连接 PL
- 天气包连接 WL

- 单点连接 SS
- 双点连接 DS
- DIN 43650（Hirschman）AC/DC HC
- 管道连接 CL
- 德国线状连接 DT04-2P DI

约绕组重量：.42 磅（.19 公斤）

警告：本手册中的规格/应用数据仅供参考，不得作为特定应用的依据。任何特定应用均需进行独立研究、评估和测试，以确保适用性。
PQ-S4O Direct Acting Spool, 4 Way 3 Position, Open Center

DESCRIPTION
8 size, 3/4-16 thread, “Power” series, solenoid operated, 4 way 3 position, open center spool valve.

OPERATION
When de-energized the PQ-S4O allows flow to all ports, and pressures are relieved. When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:
Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

FEATURES
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Optional manual “push only” override.

VALVE SPECIFICATIONS
Nominal Flow 3 GPM (11 LPM)
Rated Operating Pressure 3000 PSI (207 bar)
Typical Internal Leakage (150 SSU) 5 cu in/min (82 ml/min) per path
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 42 lbs. (.19 kg)
Operating Fluid Media General Purpose Hydraulic Fluid
Cartridge Torque Requirements 25 ft-lbs (33.9 Nm)
Coil Nut Torque Requirements 4-6 ft-lbs (5.4-8.1 Nm)
Cavity POWER 4W
Cavity Form Tool (Finishing) 40500029
Seal Kit 21191108

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIMENSIONS

ORDERING INFORMATION

PQ-S4O

OPTIONS
Buna Standard 00
Viton Standard V0
Buna, Push only override 0P
Viton, Push only override VP

BODIES
Blank Without Body N 1/4 NPTF Ports
S #6 SAE Ports

VOLTAGE
06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

"P" COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads

SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IMML Packard on Leads
IA "I" Coil AMP Superseal - Integral
ID "I" Coil Deutsch – Integral DT04-2P
IJ "I" Coil AMP Jr. Timer - Integral
IM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .42 lbs. (.19 kg.)

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com
**DG-S4O Direct Acting Spool, 4 Way 3 Position, Open Center**

**DESCRIPTION**
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 4 way 3 position, open center spool valve.

**OPERATION**
When de-energized the DG-S4O is open to all ports, all pressures are relieved. When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:**
Bi-Directional Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction, when pulled the valve shifts in the S1 direction.
Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

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

**VALVE SPECIFICATIONS**
- Nominal Flow: 8 GPM (30 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage: 5 cu in/min (82 ml/min) per path
- 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: 0.50 lbs. (.23 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 (5.4 to 8.1 Nm)
- Cavity: DELTA 4W
- Cavity Form Tool (Finishing): 40500002
- Seal Kit: 21191214

**PERFORMANCE**
Actual Test Data (Cartridge Only)

![Graphs showing Flow vs. Pressure Drop for different flow configurations.]

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Phone: (815) 397-6628  Fax: (815) 397-2526  E-mail: delta@delta-power.com

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SOLENOID OPERATED DIRECTIONAL CONTROLS

DIMENSIONS

ORDERING INFORMATION

DG-S4O

OPTIONS
Buna Standard 00
Viton Standard V0
Buna, Override 0M
Viton, Override VM
Buna, Push only override 0P
Viton, Push only override VP

BODIES
Blank Without Body
N 1/4 NPTF Ports
S #6 SAE Ports

VOLTAGE
06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

"L" COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads

SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – integral DT04-2P

IMMERSSION PROOF "L" TYPE

IA "I" Coil AMP Superseal - Integral
ID "I" Coil Deutsch – integral DT04-2P
IJ "I" Coil AMP Jr. Timer - Integral
IM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .68 lbs. (.31 kg.)

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Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com
**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 4 way 3 position, open center spool valve.

**OPERATION**
When de-energized the PQ-S4T is open to all ports, all pressures are relieved. When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:**
Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

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

**VALVE SPECIFICATIONS**
- Nominal Flow: 5 GPM (19 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage (150 SSU): 5 cu in/min (82 ml/min) per path
- 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: 42 lbs. (.19 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque Requirements: 25 ft-lbs (34 Nm)
- Coil Nut Torque Requirements: 4-6 ft-lbs (5.4-8.1Nm)
- Cavity: POWER 4W
- Cavity Form Tool (Finishing): 40500029
- Seal Kit: 21191108

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIMENSIONS

ORDERING INFORMATION

OPTIONS

Buna Standard 00
Viton Standard V0
Buna, Push only override 0P
Viton, Push only override VP

BODIES

Blank Without Body N
1/4 NPTF Ports S
#6 SAE Ports

VOLTAGE

06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

"D" COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads

SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IMMERSION PROOF "D" TYPE

IA "I" Coil AMP Superseal - Integral
ID "I" Coil Deutsch – Integral DT04-2P
IJ "I" Coil AMP Jr. Timer - Integral
IM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .74 lbs. (.33 kg.)

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
PQ-S4P Direct Acting Spool, 4 Way 3 Position, Closed Center

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 4 way 3 position, closed center spool valve.

**OPERATION**
When de-energized the PQ-S4P blocks flow at all ports. When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:**
Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

**FEATURES**
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.

**VALVE SPECIFICATIONS**
- Nominal Flow: 8 GPM (30 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage (150 SSU): 5 cu in/min (82 ml/min) per path
- Viscosity Range: 36 to 3000 SSU (3 to 647 cSt)
- Media Operating Temperature Range: -40°C to 250°C (-40°F to 120°F)
- Weight: 0.42 lbs. (.19 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque Requirements: 25 ft-lbs (34 Nm)
- Coil Nut Torque Requirements: 4-6 ft-lbs (5.4-8.1 Nm)
- Cavity: POWER 4W
- Cavity Form Tool (Finishing): 40500029
- Seal Kit: 21191108

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIMENSIONS

ORDERING INFORMATION

PQ-S4P

OPTIONS

Buna Standard 00
Viton Standard V0
Buna, Push only override 0P
Viton, Push only override VP

BODIES

Blank Without Body N
1/4 NPTF Ports S
#6 SAE Ports

VOLTAGE

06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

"D" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads

SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – Integral DT04-2P

IA "I" Coil AMP Superseal - Integral
ID "I" Coil Deutsch – Integral DT04-2P
IJ "I" Coil AMP Jr. Timer - Integral
IM "I" Coil Metri-Pack – Integral

IMMERSION PROOF “D” TYPE

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Phone: (815) 397-6628 Fax: (815) 397-2526 E-mail: delta@delta-power.com

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**DESCRIPTION**

10 size, 7/8-14 thread, “Delta” series, solenoid operated, 4 way 3 position, closed center spool valve.

**OPERATION**

When de-energized the DG-S4P blocks flow at all ports. When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:**

Bi-Directional Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction, when pulled the valve shifts in the S1 direction.

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

**FEATURES**

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override options.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Uses "L" Coil. Flow rating is at 1000 PSID maximum differential loading.

**HYDRAULIC SYMBOL**

**PERFORMANCE**

Actual Test Data (Cartridge Only)

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<td>6</td>
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<table>
<thead>
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<th>Pressure Drop (BAR)</th>
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<td>15</td>
<td>75</td>
</tr>
<tr>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

**VALVE SPECIFICATIONS**

- Nominal Flow: 8 GPM 30 LPM
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage: 5 cu in/min (82 ml/min) per path
- 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: .53 lbs. (.24 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 (5.4 to 8.1 Nm)
- Cavity: DELTA 4W
- Cavity Form Tool (Finishing): 40500002
- Seal Kit: 21191214

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
DIMENSIONS

ORDERING INFORMATION

DG-S4P

OPTIONS
Buna Standard 00
Viton Standard V0
Buna, Override 0M
Viton, Override VM
Buna, Push only override 0P
Viton, Push only override VP

BODIES
Blank Without Body
N 1/4 NPTF Ports
S #6 SAE Ports

VOLTAGE
06 6 VDC
12 12 VDC
24 24 VDC
36 36 VDC
48 48 VDC
25 24 VAC
11 120 VAC
22 220 VAC
44 440 VAC

“L” COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
DT Deutsch on Leads DT04-2P
ML Metri-Pack on Leads
PL Packard on Leads
WL Weatherpack on Leads

SS Single Spade
DS Double Spade
HC DIN 43650 (Hirschman) – (AC & DC)
CL Conduit Lead – (AC Only)
DI Deutsch – integral DT04-2P

IA "I" Coil AMP Superseal - Integral
ID "I" Coil Deutsch – integral DT04-2P
IJ "I" Coil AMP Jr. Timer - Integral
IM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .68 lbs. (.31 kg.)

IMMERSION PROOF “L” TYPE

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
**PQ-S4Q Direct Acting Spool, 4 Way 3 Position, Closed Center**

**DESCRIPTION**
8 size, 3/4-16 thread, “Power” series, solenoid operated, 4 way 3 position, closed center spool valve.

**OPERATION**
When de-energized the PQ-S4Q blocks flow to all ports. When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:**
Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

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

**VALVE SPECIFICATIONS**
- Nominal Flow: 6 GPM (23 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage: 5 cu in/min (82 ml/min) per path
- 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: 0.42 lbs. (.19 kg)
- Operating Fluid Media: General Purpose Hydraulic Fluid
- Cartridge Torque: 30 ft-lbs (40.6 Nm)
- Coil Nut Torque: 4-6 ft-lbs (5.4-8.1 Nm)
- Cavity: POWER 4W
- Cavity Form Tool (Finishing): 40500029
- Seal Kit: 21191108

**HYDRAULIC SYMBOL**

**PERFORMANCE**
Actual Test Data (Cartridge Only)

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.
SOLENOID OPERATED DIRECTIONAL CONTROLS
Delta Power Company
4484 Boeing Drive - Rockford, IL 61109

DIMENSIONS

ORDERING INFORMATION

PQ-S4Q - - -

OPTIONS
Buna Standard 00
Viton Standard V0
Buna, Push only override 0P
Viton, Push only override VP

BODIES
Blank Without Body N 1/4 NPTF Ports
#6 SAE Ports S

VOLTAGE
6 VDC 06
12 VDC 12
24 VDC 24
36 VDC 36
48 VDC 48
24 VAC 25
120 VAC 11
220 VAC 22
440 VAC 44

"P" COIL TERMINATION
(All DC Except as Noted)

DL Double Lead SS Single Spade IA "I" Coil AMP Superseal - Integral
DT Deutsch on Leads DT04-2P DS Double Spade ID "I" Coil Deutsch – Integral DT04-2P
ML Metri-Pack on Leads HC DIN 43650 (Hirschman) – (AC & DC) IJ "I" Coil AMP Jr. Timer - Integral
PL Packard on Leads CL Conduit Lead – (AC Only) IM "I" Coil Metri-Pack – Integral
WL Weatherpack on Leads DI Deutsch – Integral DT04-2P

Approximate Coil Weight: .42 lbs. (.19 kg.)

WARNING: The specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

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**DESCRIPTION**
10 size, 7/8-14 thread, “Delta” series, solenoid operated, 4 way 3 position, scotch center spool valve.

**OPERATION**
When de-energized the DG-S4S blocks flow at (1) and (2) and allows flow from (3) to (4). When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

**OPERATION OF MANUAL OVERRIDE OPTION:**
Bi-Directional Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction, when pulled the valve shifts in the S1 direction.
Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

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

**VALVE SPECIFICATIONS**
- Nominal Flow: 6 GPM (23 LPM)
- Rated Operating Pressure: 3000 PSI (207 bar)
- Typical Internal Leakage: 5 cu in/min (82 ml/min) per path
- 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: .62 lbs. (.28 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 (5.4-8.1 Nm)
- Cavity: DELTA 4W
- Cavity Form Tool (Finishing): 40500002
- Seal Kit: 21191214

**PERFORMANCE**
Actual Test Data (Cartridge Only)

- **Flow (GPM)**
  - Port 1 to 4 (eng S2)
  - Port 2 to 3 (eng S2)

- **Flow (LPM)**
  - Port 3 to 4 (de-eng)
  - Port 3 to 4 (eng S1)
  - Port 2 to 1 (eng S1)

- **Pressure Drop (PSI)**
  - Port 3 to 4 (de-eng)
  - Port 3 to 4 (eng S1)
  - Port 2 to 1 (eng S1)

- **Pressure Drop (BAR)**
  - Port 3 to 4 (de-eng)
  - Port 3 to 4 (eng S1)
  - Port 2 to 1 (eng S1)

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**ORDERING INFORMATION**

**DG-S4S**

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<th>OPTIONS</th>
<th>BODIES</th>
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**“L” COIL TERMINATION**

(All DC Except as Noted)

| DL | Double Lead |
| DLT | Deutsch on Leads DT04-2P |
| ML | Metri-Pack on Leads |
| PL | Packard on Leads |
| WL | Weatherpack on Leads |
| SS | Single Spade |
| DS | Double Spade |
| HC | DIN 43650 (Hirschman) – (AC & DC) |
| CL | Conduit Lead – (AC Only) |
| DI | Deutsch – Integral DT04-2P |

**IMMERSION PROOF “L” TYPE**

| IA | “I” Coil AMP Superseal - Integral |
| ID | “I” Coil Deutsch – Integral DT04-2P |
| IJ | “I” Coil AMP Jr. Timer - Integral |
| IM | “I” Coil Metri-Pack – Integral |

Approximate Coil Weight: .68 lbs (.31 kg.)

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