SP10-24  Spool, 2-Way, Normally Closed, Metering

DESCRIPTION
A proportional solenoid-operated, 2-way, spool-type, normally-closed, direct-acting, screw-in hydraulic cartridge valve for bi-directional metering.

OPERATION
When energized, the SP10-24 acts as a bi-directional metering valve. When de-energized, the valve blocks flow in both directions.

Note: If low voltage is expected on the machine, 12 or 24 volt systems will require the use of 10 volt or 20 volt coils respectively. See “SP Valves and Coil Operating Parameters,” page 2.002.1.

FEATURES
• Industry-common cavity.
• Efficient wet-armature construction.
• Continuous-duty rated coils.
• Optional waterproof E-Coils rated up to IP69K.
• Manual Override option.

RATINGS
Operating Pressure: 207 bar (3000 psi)
Minimum Operating Dither/Pulse Frequency: 70 Hz
Flow: 0 to 26.5 lpm (0 to 7 gpm)
Max. Internal Leakage: 328 cc/minute (20 cu. in./minute) at 207 bar (3000 psi)
Operating Temperature: -26 to 204°C (-15°F to 400°F) with Fluorocarbon seals
-54 to 107°C (-65°F to 225°F) with Polyurethane seals
Filtration: See page 9.010.1
Fluids: Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1
Installation: No Restrictions. See page 9.020.1
Cavity: VC10-2; See page 9.110.1
Cavity Tool: CT10-2XX; See page 8.600.1
Seal Kit: SK10-2X-M; See page 8.650.1
Coil Nut: Part No. 7004420

PERFORMANCE

![Pressure Drop at I-Max. Graph]

Typical Flow vs. Current
at 11 bar (160 psi) with 12 VDC Coil
Shaded Area = Range

Typical Flow vs. Current
at 207 bar (3000 psi) with 12 VDC Coil
Shaded Area = Range

Performance charts continued on next page.
### MATERIALS

**Cartridge:** Weight: 0.17 kg. (0.37 lbs.) Steel with hardened work surfaces. Zinc-plated exposed surfaces Buna N O-rings and back-ups standard.

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1.

**Standard D-Coil:** Weight: 0.27 kg. (0.60 lbs.) Utilized thermoplastic encapsulated, Class H high temperature magnetwire. See page 3.200.1.

**E-Coil:** Weight: 0.41 kg. (0.9 lbs.) Perfect wound, fully encapsulated with rugged external metal shell. Rated up to IP69K with integral connectors. See page 3.400.1

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### TO ORDER

**Option**

- None (Blank)
- Manual Override P
- Manual Override K

For Manual Override details see page 1.001.1

**Porting**

- Cartridge Only 0
- SAE 6 6T
- SAE 8 8T
- 1/4 in. BSP* 2B
- 3/8 in. BSP* 3B
- 1/2 in. BSP* 4B

*BSP Body; U.K. Mfr. Only

**Voltage**

- **Less Coil** 0
- 10 VDC 10
- 12 VDC 12
- 20 VDC 20
- 24 VDC 24

**Includes Coil Nut and Spacer.**

10 and 20 VDC coils should be used for most continuous-duty applications. Consult factory.

**Seals**

- Buna N (Std.) N
- Fluorocarbon V
- Polyurethane P

**Coil Termination**

- Deutsch DT04-2P
- Metri-Pak 150
- Dual Lead Wires
- Amp Jr. Timer
- DIN 43650
- Dual Spades

For Coils with Zener Diode, add "Z" to option code. For example: "ERZ". Not available on all models. See coil option info. on pages 3.200.1 & 3.400.1

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### PERFORMANCE (cont’d.)

**Typical Pressure Response**

<table>
<thead>
<tr>
<th>Port 1 to 2</th>
<th>Port 2 to 1</th>
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<tbody>
<tr>
<td>30.3/6</td>
<td>1200</td>
</tr>
<tr>
<td>26.5/5</td>
<td>1000</td>
</tr>
<tr>
<td>22.7/4</td>
<td>800</td>
</tr>
<tr>
<td>19.0/3</td>
<td>600</td>
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<tr>
<td>15.1/2</td>
<td>500</td>
</tr>
<tr>
<td>11.4/1</td>
<td>400</td>
</tr>
<tr>
<td>7.6/1</td>
<td>300</td>
</tr>
<tr>
<td>3.8/1</td>
<td>200</td>
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</tbody>
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**FLOW lpm/gpm**

<table>
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<tr>
<th>PRESSURE bar/psi</th>
<th>35</th>
<th>69</th>
<th>103</th>
<th>138</th>
<th>172</th>
<th>207</th>
<th>3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLOW lpm/gpm</td>
<td></td>
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</tr>
</tbody>
</table>

### DIMENSIONS

**D-Coil View**

- **DIA:** 2.00
- **TORQUE:** 4–5 ft-lbs (5.4–6.8 Nm)
- **ACROSS FLATS:** 1.00

**E-Coil View**

- **DIA:** 1.62
- **TORQUE:** 33–37 ft-lbs (44.8–50.2 Nm)
- **ACROSS FLATS:** 1.33

**INCH MILLIMETRE**

- **BSP BODY 55.9 mm**

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**Recommended Electronic Controllers:**

See page 2.001.1 or our Electronics catalog.