Directional Cartridge Valves

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Directional Valves

2 POSITION, 2-WAY AND 3-WAY, WITH INTERNAL DRAIN

- Maximum operating pressure = 350 bar
- Maximum valve leakage = 16.4 cc/min. at 70 bar
- Control pilot flow at opening = DPBA, DPBB, DPBC, DPBD = 0.11 - 0.16 L/min., DPCA, DPCB, DPCD = 0.16 - 0.25 L/min.
- Maximum pressure at port 3 should be limited to 210 bar.
- Pressure at port 3 is directly additive to the setting of the valve. Because of this, port 3 may not be usable as a work port in your circuit. If this is a consideration, the 4 port version of this valve may be a solution.
- For DP*C and DP*D port 3 can be blocked to prevent the cartridge from shifting.

**OPTION ORDERING INFORMATION**

Model Codes printed in Red are Preferred Versions and most readily available

**Nominal Capacity**
- B 30 L/min.
- C 60 L/min.

**Version**
- A 2 Position 2-Way Normally Open
- B 2 Position 2-Way Normally Closed
- C 2 Position 3-Way Port 1 Blocked
- D 2 Position 3-Way Port 1 Open

**Control**
- L Standard Screw
- C Tamper Resistant
- K Handknob

**Adjustment Range**
- A 7 - 210 bar
- B 3.5 - 105 bar
- D 2 - 55 bar
- E 2 - 25 bar
- W 10 - 315 bar

**Seal**
- N Buna-N
- V Viton

Adjustment Range Options:
- A, B, and W are standard set at 70 bar
- D Option is standard set at 25 bar
- E Option is standard set at 14 bar
- Customer may specify pressure setting.

**See page 162 for information on Control Options**

Visit www.sunhydraulics.com for detailed and complete technical information on our full line of products.
Directional Valves

2 POSITION, 2-WAY AND 3-WAY, WITH EXTERNAL DRAIN

**Maximum operating pressure = 350 bar**
**Maximum valve leakage = 16,4 cc/min. at 70 bar**
**Control pilot flow at opening = DPBM, DPBN, DPBO, DPBP = 0,11 - 0,16 L/min., DPCM, DPCN, DPCO, DPCP = 0,16 - 0,25 L/min.**
**Maximum pressure at port 3 should be limited to 210 bar.**
**Pressure at port 4 is directly additive to the setting of the valve.**
**Port 3 can be used as a work port.**
**Port 4 can be blocked to prevent the cartridge from shifting.**

OPTION ORDERING INFORMATION

Model Codes printed in Red are Preferred Versions and most readily available

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Version</th>
<th>Control**</th>
<th>Adjustment Range</th>
<th>Seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>B 30 L/min.</td>
<td>M</td>
<td>L</td>
<td>A 7 - 210 bar</td>
<td>N</td>
</tr>
<tr>
<td>C 60 L/min.</td>
<td>N</td>
<td>C</td>
<td>B 3.5 - 105 bar</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>O</td>
<td>K</td>
<td>D 2 - 55 bar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P</td>
<td></td>
<td>E 2 - 25 bar</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>W 10 - 315 bar</td>
<td></td>
</tr>
</tbody>
</table>

Adjustment Range Options:
A, B, and W are standard set at 70 bar.
D Option is standard set at 25 bar.
E Option is standard set at 14 bar.
Customer may specify pressure setting.

**See page 162 for information on Control Options**

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Directional Valves

2 POSITION, 2-WAY AND 3-WAY DIRECT ACTING, INTERNAL DRAIN

Performance Curves

- Maximum operating pressure = 350 bar
- Maximum valve leakage = 32.8 cc/min. at 70 bar
- Maximum pressure at port 3 should be limited to 210 bar.
- Pressure at port 3 is directly additive to the setting of the valve. Because of this, port 3 may not be useable as a work port in your circuit. If this is a consideration, the 4 port version of this valve may be a solution.

OPTION ORDERING INFORMATION

Model Codes printed in Red are Preferred Versions and most readily available

Visit www.sunhydraulics.com for detailed and complete technical information on our full line of products.
Directional Valves

2-POSITION, 2-WAY AND 3 WAY, DIRECT ACTING

Typical Pressure Drop

- Maximum operating pressure = 350 bar
- Maximum valve leakage = 32.8 cc/min. at 70 bar
- Maximum pressure at port 3 should be limited to 210 bar.
- DRBM, DRBN, DRBO, DRBP: Port 3 can be used as a work port
- DRBM, DRBN, DRBO, DRBP: Pressure at port 4 is directly additive to the setting of the valve.

**See page 162 for information on Control Options**

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UK Shortcut Catalogue #999-901-244

### Performance Curves

- **Maximum operating pressure = 350 bar**
- **Control pilot flow at opening = DVBA-8, DVBB-8, DVBC-8, DVBD-8 = 0.11 - 0.16 L/min., DVCA-8, DVCB-8, DVCC-8, DVCD-8 = 0.16 - 0.25 L/min.**
- **Maximum leakage per path = 32.8 cc/min. at 70 bar**
- **Maximum pressure at port 3 should be limited to 210 bar.**
- **There must be a pressure source at port 1, relative to port 3, to shift the valve.**
- **Pressure at port 3 may oppose the opening of the valve. Because of this, port 3 may not be useable as a work port in your circuit. If this is a consideration, the 4 port version of this valve may be a solution.**
- **The main stage valve should first be installed to the correct torque value followed by the T-8A pilot control section into the main stage valve to its required torque value.**

### OPTION ORDERING INFORMATION

**Model Codes printed in Red are Preferred Versions and most readily available**

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Version</th>
<th>Control**</th>
<th>Adjustment Range</th>
<th>Seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 L/min.</td>
<td>A</td>
<td>T-8A Cavity in hex body for pilot operation</td>
<td>7 bar</td>
<td>N Buna-N</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Normally Open</td>
<td></td>
<td>V Viton</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Normally Closed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>Port 1 Blocked</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 1 Open</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**See page 162 for information on Control Options**

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Directional Valves

4-PORT, 2-WAY AND 3-WAY WITH INTEGRAL PILOT CONTROL CAVITY

The -8 control option allows the pilot control valve to be incorporated directly into the end of the cartridge via the T-8A cavity. These pilot control cartridges are sold separately and include solenoid, air pilot, and hydraulic pilot operation. See Pilot Control Cartridges on page 121.

Performance Curves

- Maximum operating pressure = 350 bar
- Control pilot flow at opening = DVBM-8, DVBN-8, DVBO-8, DVBP-8 = 0,11 - 0,16 L/min., DVCM-8, DVCN-8, DVCO-8, DVCP-8 = 0,16 - 0,25 L/min.
- Maximum leakage per path = 32,8 cc/min. at 70 bar
- Maximum pressure at port 3 should be limited to 210 bar.
- There must be a pressure source at port 1, relative to port 4, to shift the valve.
- The main stage valve should first be installed to the correct torque value followed by the T-8A pilot control section into the main stage valve to its required torque value.

OPTION ORDERING INFORMATION

Model Codes printed in Red are Preferred Versions and most readily available

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Version</th>
<th>Control**</th>
<th>Adjustment Range</th>
<th>Seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>B 28 L/min.</td>
<td>M 2 Position, 2-Way Normally Open</td>
<td>T-8A Cavity in hex body for pilot operation (Pilot valve to be ordered separately)</td>
<td>F 7 bar</td>
<td>N Buna-N</td>
</tr>
<tr>
<td></td>
<td>N 2 Position, 2-Way Normally Closed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>O 2 Position, 3-Way, Port 1 Blocked</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P 2 Position, 3-Way, Port 1 Open</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** See page 162 for information on Control Options

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Directional Valves

2-POSITION, 2-WAY POPPET, CONTROL 1 TO 2 WITH INTEGRAL PILOT CONTROL CAVITY

The -8 control option allows the pilot control valve to be incorporated directly into the end of the cartridge via the T-8A cavity. These pilot control cartridges are sold separately and include solenoid, air pilot, and hydraulic pilot operation. See Pilot Control Cartridges on page 121.

Performance Curves

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Typical Cartridge Model Code</th>
<th>Cavity</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>Installation Torque (Ncm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 L/min.</td>
<td>DFCA-8DN</td>
<td>T - 13A</td>
<td>34.9</td>
<td>22.2</td>
<td>46</td>
<td>40/50</td>
</tr>
<tr>
<td>120 L/min.</td>
<td>DFDA-8DN</td>
<td>T - 5A</td>
<td>41.1</td>
<td>28.6</td>
<td>17.5</td>
<td>60/70</td>
</tr>
<tr>
<td>240 L/min.</td>
<td>DFEA-8DN</td>
<td>T - 16A</td>
<td>62.0</td>
<td>31.8</td>
<td>24.6</td>
<td>200/215</td>
</tr>
<tr>
<td>480 L/min.</td>
<td>DFFA-8DN</td>
<td>T - 18A</td>
<td>79.5</td>
<td>41.3</td>
<td>30.2</td>
<td>465/500</td>
</tr>
</tbody>
</table>

Cartridge Dimensions

- Maximum operating pressure = 350 bar
- The main stage valve should first be installed to the correct torque value followed by the T-8A pilot control section into the main stage valve to its required torque value.
- Main stage leakage less than 0.3 cc/min.

OPTION ORDERING INFORMATION

Model Codes printed in Red are Preferred Versions and most readily available

Visit www.sunhydraulics.com for detailed and complete technical information on our full line of products.
**Directional Valves**

**2-POSITION, 2-WAY POPPET, CONTROL 2 TO 1 WITH INTEGRAL PILOT CONTROL CAVITY**

The -8 control option allows the pilot control valve to be incorporated directly into the end of the cartridge via the T-8A cavity. These pilot control cartridges are sold separately and include electro-proportional, solenoid, air pilot, and hydraulic pilot operation. See Pilot Control Cartridges on page 121.

### Performance Curves

- Main stage leakage less than 5 drops/min. Maximum operating pressure = 350 bar
- The main stage valve should first be installed to the correct torque value followed by the T-8A pilot control section into the main stage valve to its required torque value.
- Main stage leakage less than 0.3 cc/min.

### OPTION ORDERING INFORMATION

**Model Codes printed in Red are Preferred Versions and most readily available**

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Control</th>
<th>Adjustment Range</th>
<th>Seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 60 L/min.</td>
<td>T-8A Pilot Cavity</td>
<td>D Bias Spring 3.5 bar</td>
<td>N Buna-N</td>
</tr>
<tr>
<td>D 120 L/min.</td>
<td>Pilot Stage Control to be ordered separately.</td>
<td></td>
<td>V Viton</td>
</tr>
<tr>
<td>E 240 L/min.</td>
<td>Options are:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Solenoid Pilot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Air Pilot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Hydraulic Pilot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Manual Control</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Directional Valves

3-POSITION, 4-WAY SPRING CENTERED

- Maximum operating pressure = 350 bar
- Maximum leakage per path = 2 in³/min. at 1000 psi
- Pilot volume for complete shift = DCCC: 0,33 cc/min., DCDC: 0,98 cc/min., DCEC: 2,8 cc/min., DCFC: 6,9 cc/min.
- Minimum pilot pressure required to shift valve = DCCC: 12 bar, DCDC: 10,5 bar, DCEC, DCFC: 9 bar
- All ports will accept 350 bar, including the x and y pilot ports (port 5 and port 6).

Performance Curves

- Typical Pressure Drop

Carslotte Dimensions

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Typical Cartridge Model Code</th>
<th>Cavity</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>Installation Torque (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 L/min.</td>
<td>DCCC – XCN</td>
<td>T - 61A</td>
<td>84.8</td>
<td>22.2</td>
<td>50</td>
<td>40/50</td>
</tr>
<tr>
<td>80 L/min.</td>
<td>DCCD – XCN</td>
<td>T - 62A</td>
<td>92.2</td>
<td>28.6</td>
<td>59</td>
<td>60/70</td>
</tr>
<tr>
<td>160 L/min.</td>
<td>DCEC – XCN</td>
<td>T - 63A</td>
<td>114.4</td>
<td>31.8</td>
<td>73</td>
<td>200/215</td>
</tr>
<tr>
<td>320 L/min.</td>
<td>DCFC – XCN</td>
<td>T - 64A</td>
<td>139.7</td>
<td>41.3</td>
<td>92</td>
<td>465/500</td>
</tr>
</tbody>
</table>

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**Directional Valves**

**2-POSITION, 4-WAY DETENTED**

- Maximum operating pressure = 350 bar
- Maximum leakage per path = 2 in³/min. at 1000 psi
- Pilot volume for complete shift = DCCD: 0.82 cc/min., DCDD: 2.0 cc/min., DCED: 5.6 cc/min., DCFD: 14.0 cc/min.
- Minimum pilot pressure required to shift valve = 3 bar
- All ports will accept 350 bar, including the x and y pilot ports (port 5 and port 6).

**OPTION ORDERING INFORMATION**

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**Typical Switching Pilot Pressure**

Differential between pilot ports 5 and 6 is 14 bar.

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