## Directional Cartridge Valves

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</table>
Directional Valves

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

- Maximum operating pressure = 5000 psi
- Maximum valve leakage = 1 in³/min. at 1000 psi
- Control pilot flow at opening = DPBA, DPBB, DPBC, DPBD = 7 - 10 in³/min., DPCA, DPCB, DPCC, DPCD = 10 - 15 in³/min.
- Maximum pressure at port 3 should be limited to 3000 psi.
- 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.
- For DP*C and DP*D port 3 can be blocked to prevent the cartridge from shifting.

Performance Curves

DPB* Typical Pilot Oil Flow vs. Load Pressure above Valve Setting

DPC* Typical Pilot Oil Flow vs. Load Pressure above Valve Setting

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 7.0 GPM</td>
<td>A</td>
<td>L Standard Screw</td>
<td>A 100 - 3000 psi</td>
<td>N Buna-N</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>C Tamper Resistant</td>
<td>B 50 - 1500 psi</td>
<td>V Viton</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>K Handknob</td>
<td>D 25 - 800 psi</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D</td>
<td></td>
<td>E 25 - 400 psi</td>
<td>W 150 - 4500 psi</td>
</tr>
</tbody>
</table>

Adjustment Range Options:
A, B, and W are standard set at 1000 psi.
D Option is standard set at 400 psi.
E Option is standard set at 200 psi.
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, WITH EXTERNAL DRAIN**

- Maximum operating pressure = 5000 psi
- Maximum valve leakage = 1 in³/min. at 1000 psi
- Control pilot flow at opening = DPBM, DPBN, DPBO, DPBP = 7 - 10 in³/min., DPCM, DPCN, DPCO, DPCP = 10 - 15 in³/min.
- Maximum pressure at port 3 should be limited to 3000 psi.
- 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 7.0 GPM</td>
<td>M</td>
<td>L</td>
<td>A 100 - 3000 psi</td>
<td>N</td>
</tr>
<tr>
<td>C 15 GPM</td>
<td>N</td>
<td>C</td>
<td>B 50 - 1500 psi</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>O</td>
<td>K</td>
<td>D 25 - 800 psi</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P</td>
<td></td>
<td>E 25 - 400 psi</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>W 150 - 4500 psi</td>
<td></td>
</tr>
</tbody>
</table>

Adjustment Range Options:
- A, B, and W are standard set at 1000 psi.
- D Option is standard set at 400 psi.
- E Option is standard set at 200 psi.
- Customer may specify pressure setting.

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

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US Shortcut Catalogue #999-901-243 103
Directional Valves

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

- Maximum operating pressure = 5000 psi
- Maximum valve leakage = 2 in³/min. at 1000 psi
- Maximum pressure at port 3 should be limited to 3000 psi.
- 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.

Performance Curves

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

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Directional Valves

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

- Maximum operating pressure = 5000 psi
- Maximum valve leakage = 2 in³/min. at 1000 psi
- Maximum pressure at port 3 should be limited to 3000 psi.
- 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.

OPTION ORDERING INFORMATION

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

- Nominal Capacity: 7.0 GPM
- Base Price: $84.50
- Version Options:
  - 2-Position, 2-Way: Normally Open, External Drain
  - 2-Position, 2-Way: Normally Closed, External Drain
  - 2-Position, 3-Way, Port 1 Blocked, External Drain
  - 2-Position, 3-Way, Port 1 Open, External Drain
  - 2-Position, 3-Way, External Pilot

- Control Options:
  - Standard Screw
  - Tamper Resistant
  - Handknob
  - External Pilot

- Adjustment Options:
  - 2-Position: 7.20
  - 3-Position: 2.00
  - External Pilot: 3.80

- Seal Options:
  - Buna-N
  - Viton
  - * DRBR only available with these spring ranges.

Adjustment Range Options:
- A, B, and C are standard set at 1000 psi.
- E, N, and S are standard set at 400 psi.
- Customer may specify pressure setting. +$ 1.10

Performance Curves

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Directional Valves

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

Typical Pressure Drop

- Maximum operating pressure = 5000 psi
- Control pilot flow at opening = DVBA-8, DVBB-8, DVBC-8, DVBD-8 = 7 - 10 in³/min., DVCA-8, DVCC-8, DVCD-8 = 10 - 15 in³/min.
- Maximum leakage per path = 2 in³/min. at 1000 psi
- Maximum pressure at port 3 should be limited to 3000 psi.
- 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

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**Directional Valves**

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

- Maximum operating pressure = 5000 psi
- Control pilot flow at opening = DVBM-8, DVBN-8, DVBO-8, DVBP-8 = 7 - 10 in³/min., DVCM-8, DVCN-8, DVCO-8, DVCP-8 = 10 - 15 in³/min.
- Maximum leakage per path = 2 in³/min. at 1000 psi
- Maximum pressure at port 3 should be limited to 3000 psi.
- 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.

**Pilot Control Cartridges**

- 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.

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**Performance Curves**

**DV**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Typical Cartridge Model Code</th>
<th>Cavity</th>
<th>Cartridge Dimensions</th>
<th>Installation Torque (lb. ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 GPM</td>
<td>DVBM – 8FN</td>
<td>T-21A</td>
<td>a = 1.38, b = 7/8, c = 1.69</td>
<td>30/35</td>
</tr>
<tr>
<td>7 GPM</td>
<td>DVBN – 8FN</td>
<td>T-21A</td>
<td>a = 1.38, b = 7/8, c = 1.69</td>
<td>30/35</td>
</tr>
<tr>
<td>7 GPM</td>
<td>DVBO – 8FN</td>
<td>T-21A</td>
<td>a = 1.38, b = 7/8, c = 1.69</td>
<td>30/35</td>
</tr>
<tr>
<td>7 GPM</td>
<td>DVBP – 8FN</td>
<td>T-21A</td>
<td>a = 1.38, b = 7/8, c = 1.69</td>
<td>30/35</td>
</tr>
</tbody>
</table>

**Option Ordering Information**

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

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Directional Valves

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

The -8 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.

<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 (lb. ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 GPM</td>
<td>DFCA – 8DN</td>
<td>T - 13A</td>
<td>1.38</td>
<td>7/8</td>
<td>.75</td>
<td>30/35</td>
</tr>
<tr>
<td>30 GPM</td>
<td>DFDA – 8DN</td>
<td>T - 5A</td>
<td>1.62</td>
<td>1 1/8</td>
<td>.69</td>
<td>45/50</td>
</tr>
<tr>
<td>60 GPM</td>
<td>DFEA – 8DN</td>
<td>T - 16A</td>
<td>2.44</td>
<td>1 1/4</td>
<td>.97</td>
<td>150/160</td>
</tr>
<tr>
<td>120 GPM</td>
<td>DFFA – 8DN</td>
<td>T - 18A</td>
<td>3.13</td>
<td>1 5/8</td>
<td>1.19</td>
<td>350/375</td>
</tr>
</tbody>
</table>

**Cartridge Dimensions**

- Maximum operating pressure = 5000 psi
- 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 5 drops/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 15 GPM</td>
<td>T-8A cavity in hex body for pilot operation (Pilot valve to be ordered separately)</td>
<td>D 50 psi</td>
<td>N Buna-N</td>
</tr>
<tr>
<td>D 30 GPM</td>
<td>Options are:</td>
<td></td>
<td>V Vinn</td>
</tr>
<tr>
<td>E 60 GPM</td>
<td>- Solenoid Pilot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F 120 GPM</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

### 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

- Maximum operating pressure = 5000 psi
- 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 5 drops/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 15 GPM</td>
<td>T-8A Pilot Cavity</td>
<td>D Bias Spring 50 psi</td>
<td>N Buna-N</td>
</tr>
<tr>
<td>D 30 GPM</td>
<td>T-8A Pilot Cavity to be ordered separately.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 60 GPM</td>
<td>T-8A Pilot Cavity</td>
<td>D Bias Spring 50 psi</td>
<td>V Viton</td>
</tr>
</tbody>
</table>

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Directional Valves

3-POSITION, 4-WAY SPRING CENTERED

- Maximum operating pressure = 5000 psi
- Maximum leakage per path = 2 in³/min. at 1000 psi
- Pilot volume for complete shift = DCCC: .02 in³/min., DCDC: .06 in³/min., DCEC: .17 in³/min., DCFC: .42 in³/min.
- Minimum pilot pressure required to shift valve = DCCC: 175 psi, DCDC: 150 psi, DCEC, DCFC: 125 psi
- All ports will accept 5000 psi, including the x and y pilot ports (port 5 and port 6).

OPTIO N ORDERING INFORMATION  Model Codes printed in Red are Preferred Versions and most readily available

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Directional Valves

2-POSITION, 4-WAY DETENTED

- Maximum operating pressure = 5000 psi
- Maximum leakage per path = 2 in³/min. at 1000 psi
- Pilot volume for complete shift = DCCD: .05 in³/min., DCDD: .12 in³/min., DCED: .34 in³/min., DCFD: .84 in³/min.
- Minimum pilot pressure required to shift valve = 40 psi
- All ports will accept 5000 psi, including the x and y pilot ports (port 5 and port 6).

**Performance Curves**

**DCDD**

![DCDD Performance Curve](image)

- Maximum operating pressure = 5000 psi
- Maximum leakage per path = 2 in³/min. at 1000 psi
- Pilot volume for complete shift = DCCD: .05 in³/min., DCDD: .12 in³/min., DCED: .34 in³/min., DCFD: .84 in³/min.
- Minimum pilot pressure required to shift valve = 40 psi
- All ports will accept 5000 psi, including the x and y pilot ports (port 5 and port 6).

**DCED**

![DCED Performance Curve](image)

**DCFD**

![DCFD Performance Curve](image)

**Nominal Capacity**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model Code</th>
<th>Cavity</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>Installation Torque (lb.ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 GPM</td>
<td>DCCD – XCN</td>
<td>T - 61A</td>
<td>3.35</td>
<td>7/8&quot;</td>
<td>1.97</td>
<td>30/35</td>
</tr>
<tr>
<td>20 GPM</td>
<td>DCDD – XCN</td>
<td>T - 62A</td>
<td>3.35</td>
<td>1 1/8&quot;</td>
<td>2.31</td>
<td>45/50</td>
</tr>
<tr>
<td>40 GPM</td>
<td>DCED – XCN</td>
<td>T - 63A</td>
<td>4.51</td>
<td>1 1/4&quot;</td>
<td>2.84</td>
<td>150/160</td>
</tr>
<tr>
<td>80 GPM</td>
<td>DCFD – XCN</td>
<td>T - 64A</td>
<td>5.51</td>
<td>1 5/8&quot;</td>
<td>3.59</td>
<td>350/375</td>
</tr>
</tbody>
</table>

**Machined to Order**

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NOTES