## Directional Cartridge Valves

<table>
<thead>
<tr>
<th>Cartridge Type</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-way and 3-way, with Internal Drain to Port 3</td>
<td>118</td>
</tr>
<tr>
<td>2-way and 3-way, with Drain to Port 4</td>
<td>119</td>
</tr>
<tr>
<td>2-way and 3-way Direct Acting, Internal Drain to Port 3</td>
<td>120</td>
</tr>
<tr>
<td>2-way and 3-way, Direct Acting, Drain to Port 4</td>
<td>121</td>
</tr>
<tr>
<td>2-way, Direct Acting, Sealed Pilot, Pilot-to-shift</td>
<td>122</td>
</tr>
<tr>
<td>2-way and 3-way, Vent-to-Operate, with Integral T-8A Control Cavity</td>
<td>123</td>
</tr>
<tr>
<td>2-way and 3-way, Vent-to-operate, with Integral T-8A Control Cavity</td>
<td>124</td>
</tr>
<tr>
<td>3-way, 2-position Vent-to-shift, Diverter, Normally Closed</td>
<td>125</td>
</tr>
<tr>
<td>3-way, 2-position Vent-to-shift, Diverter, Normally Open</td>
<td>126</td>
</tr>
<tr>
<td>2-way Poppet, with Integral T-8A Control Cavity, Control Port 1 to Port 2</td>
<td>127</td>
</tr>
<tr>
<td>2-way Poppet, with Integral T-8A Control Cavity, Control Port 2 to Port 1</td>
<td>128</td>
</tr>
<tr>
<td>3-position, 4-way, Pilot-to-shift</td>
<td>129</td>
</tr>
<tr>
<td>2-position, 4-way, Pilot-to-shift, Detented</td>
<td>130</td>
</tr>
</tbody>
</table>
Directional Valves

2-WAY AND 3-WAY, WITH INTERNAL DRAIN TO PORT 3

Performance Curves

- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 15 cc/min. at 70 bar.
- Control pilot flow = DPBA, DPBB, DPBC, DPBD: 0.11 - 0.16 L/min.; DPCA, DPCC, DPDD: 0.16 - 0.25 L/min.
- Maximum pressure at port 3 should be limited to 210 bar. This is due to fatigue strength limits not hydraulic operating limits.
- 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.
- Direct acting and pilot operated versions of these valves are interchangeable. They fit the same cavities and have the same flow paths.
- These valves are not bistable; it is capable of modulating between the two positions shown.

OPTION ORDERING INFORMATION

- DP ** - ***

Nominal Capacity | Version | Control** | Adjustment Range | Seal Material
--- | --- | --- | --- | ---
B 28 L/min. | A 2-Way, Pilot Operated, with Internal Drain to Port 3, Normally Open | L Standard Screw Adjustment | A 7 - 210 bar Standard set at 70 bar | N Buna-N
C 60 L/min. | B 2-Way, Pilot Operated, with Internal Drain to Port 3, Normally Closed | C Tamper Resistant Factory Set | B 3.5 - 105 bar Standard set at 70 bar | V Viton
| C 3-Way, 2-Position, Pilot Operated, with Internal Drain to Port 3, Port 1 Blocked, 2 to 3 Open | K Handknob with Lock Knob | D 1.7 - 55 bar Standard set at 28 bar | 
| D 3-Way, 2-Position, Pilot Operated, with Internal Drain to Port 3, Port 3 Blocked, 1 to 2 Open | * Special setting required. Specify at time of order. | E 1.7 - 28 bar Standard set at 14 bar | 
** See page 178 for information on Control Options

Consult the Sun website for our most recent and complete information on the full Corrosion Resistant line of products.

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.
Directional Valves

2-WAY AND 3-WAY, WITH DRAIN TO PORT 4

- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 15 cc/min. at 70 bar.
- Control pilot flow = 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. This is due to fatigue strength limits not hydraulic operating limits.
- 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.
- Direct acting and pilot operated versions of these valves are interchangeable. They fit the same cavities and have the same flow paths.
- These valves are not bistable; it is capable of modulating between the two positions shown.

Performance Curves

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Version</th>
<th>Control**</th>
<th>Adjustment Range</th>
<th>Seal Material</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B</strong> 28 L/min.</td>
<td>M</td>
<td>L</td>
<td>A 7 - 210 bar</td>
<td>N Buna-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 Viton</td>
</tr>
<tr>
<td>O</td>
<td>P</td>
<td>K</td>
<td>D 1.7 - 55 bar</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td>E 1.7 - 28 bar</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>See page 178 for information on Control Options</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.
Directional Valves

2-WAY AND 3-WAY DIRECT ACTING, INTERNAL DRAIN TO PORT 3

Full Adjustment 5 Turns

- Maximum operating pressure = 350 bar.
- Maximum combined valve leakage (ports 2 and 3) = 30 cc/min. at 70 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.
- Pilot pressure at port 3 is limited to 210 bar.
- Direct acting and pilot operated versions of these valves are interchangeable. They fit the same cavities and have the same flow paths.
- Because of their direct acting design, these cartridges feature low internal leakage and low pilot flow consumption.
- These valves are not bistable; it is capable of modulating between the two positions shown.

OPTON ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Version</th>
<th>Control**</th>
<th>Adjustment Range</th>
<th>Seal Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B: 2-Way, Direct Acting, with Internal Drain to Port 3, Normally Closed</td>
<td>C: Tamper Resistant Factory Set</td>
<td>B: 3.5 - 105 bar Standard set at 14 bar</td>
<td>V: Viton</td>
</tr>
<tr>
<td></td>
<td>C: 3-Way, 2-Position, Direct Acting, with Internal Drain to Port 3, Port 1 Blocked, 2 to 3 Open</td>
<td>K: Handknob with Lock Knob</td>
<td>D: 1.7 - 55 bar Standard set at 14 bar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D: 3-Way, 2-Position, Direct Acting, with Internal Drain to Port 3, Port 3 Blocked, 1 to 2 Open</td>
<td>✓ Special setting required. Specify at time of order.</td>
<td>E: 1.7 - 28 bar Standard set at 14 bar</td>
<td></td>
</tr>
</tbody>
</table>

** See page 178 for information on Control Options

Visit www.sunhydraulics.com for our most recent and complete information on the full Corrosion Resistant line of products.
Performance Curves

- Maximum operating pressure = 350 bar.
- Maximum combined valve leakage (ports 2, 3, and 4) = 30 cc/min. at 70 bar.
- Maximum pressure at port 3 should be limited to 210 bar. This is due to fatigue strength limits not hydraulic operating limits.
- Port 3 can be used as a work port.
- Maximum combined valve leakage (ports 2, 3, and 4) = 30 cc/min. at 70 bar.
- Maximum operating pressure = 350 bar.

Directional Valves

2-WAY AND 3-WAY DIRECT ACTING, DRAIN TO PORT 4

<table>
<thead>
<tr>
<th>Cartridge</th>
<th>Capacity</th>
<th>Model Code</th>
<th>Cavity</th>
<th>Installation Torque (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRBM</td>
<td>28 L/min.</td>
<td>T - 21A</td>
<td>35.1</td>
<td>22.2</td>
</tr>
<tr>
<td>DRBN</td>
<td>28 L/min.</td>
<td>T - 21A</td>
<td>35.1</td>
<td>22.2</td>
</tr>
<tr>
<td>DRBO</td>
<td>28 L/min.</td>
<td>T - 21A</td>
<td>35.1</td>
<td>22.2</td>
</tr>
<tr>
<td>DRBP</td>
<td>28 L/min.</td>
<td>T - 21A</td>
<td>35.1</td>
<td>22.2</td>
</tr>
<tr>
<td>DRBR</td>
<td>28 L/min.</td>
<td>T - 21A</td>
<td>35.1</td>
<td>22.2</td>
</tr>
</tbody>
</table>

**OPTION ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Version</th>
<th>Control**</th>
<th>Adjustment Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>B 28 L/min.</td>
<td>DRCO</td>
<td>L Standard Screw Adjustment</td>
<td>A 35 - 210 bar Standard set at 70 bar</td>
</tr>
<tr>
<td>C 60 L/min.</td>
<td>DRCO only</td>
<td>C** Tamper Resistant Factory Set</td>
<td>B 3.5 - 105 bar Standard set at 14 bar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>K Handknob with Lock Knob</td>
<td>D 1.7 - 55 bar Standard set at 14 bar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Special setting required. Specify at time of order.</td>
<td>E 1.7 - 28 bar Standard set at 14 bar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>** See page 178 for information on Control Options</td>
<td>S 1.7 - 14 bar Standard set at 14 bar</td>
</tr>
</tbody>
</table>

** Seal Material: N Buna-N, V Viton **

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.
Directional Valves

2-WAY, DIRECT ACTING, SEALED PILOT, PILOT-TO-SHIFT

![Diagram of directional valves DRAY and DRAX]

Performance Curves

- Maximum operating pressure = 350 bar.
- Reseat = > 85% of set pressure.
- The pilot area (port 1) and the spring chamber drain (port 4) are positively sealed.
- The valve is designed not to modulate and is the equivalent of a hydraulic pressure switch.
- There is spool leakage at 0.6 cc/min. at 70 bar between work ports 2 and 3.

OPTION ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Version</th>
<th>Control</th>
<th>Adjustment Range*</th>
<th>Seal Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 L/min.</td>
<td>Y 2-Way, Pilot-to-shift with Drain to Port 4, Normally Open</td>
<td>L Standard Screw Adjustment</td>
<td>A 70 - 210 bar Standard set at 70 bar</td>
<td>N Buna-N</td>
</tr>
<tr>
<td></td>
<td>X 2-Way, Pilot-to-shift with Drain to Port 4, Normally Closed</td>
<td></td>
<td>C 140 - 420 bar Standard set at 140 bar</td>
<td>V Viton</td>
</tr>
</tbody>
</table>

Visit [www.sunhydraulics.com](http://www.sunhydraulics.com) for current list pricing and complete technical information on all Sun products.
Directional Valves

2-WAY AND 3-WAY, VENT-TO-OPERATE WITH INTEGRAL T-8A 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 141.

Performance Curves

- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 30 cc/min. at 70 bar.
- Control pilot flow = 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.
- 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.
- Pressure at port 3 is limited to 210 bar.
- These valves are not bistable; they are capable of modulating between the two positions shown.

The main stage valve should first be installed to the correct torque value followed by the T-8A pilot control section into 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 141.

Option Ordering Information

Cartridge 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>28 L/min.</td>
<td>DVB* – 8FN</td>
<td>T-11A</td>
<td>35.1</td>
<td>22.2</td>
<td>35.1</td>
<td>45 - 50</td>
</tr>
<tr>
<td>60 L/min.</td>
<td>DVC* – 8FN</td>
<td>T-2A</td>
<td>35.1</td>
<td>28.6</td>
<td>35.1</td>
<td>60 - 70</td>
</tr>
</tbody>
</table>

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.
Directional Valves

2-WAY AND 3-WAY, VENT-TO-OPERATE, WITH INTEGRAL T-8A 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 141.

- Maximum operating pressure = 350 bar.
- Maximum leakage at 24 cSt = 30.0 cc/min. at 70 bar.
- Control pilot flow at opening = DVB*-8, DVC*-8: 0.11 - 0.16 L/min.
- Pressure at port 3 is limited to 210 bar.
- The flow path between port 2 and port 3 is bidirectional.
- Port 3 can be used as a work port.
- These valves are not bistable; it is capable of modulating between the two positions shown.
- 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

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.
Directional Valves

3-WAY, 2-POSITION VENT-TO-SHIFT, DIVERTER, NORMALLY CLOSED

**Performance Curves**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Typical Cartridge Model Code</th>
<th>Cartridge Dimensions</th>
<th>Installation Torque (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 L/min.</td>
<td>DSCX – XEN T - 31A</td>
<td>a = 84.8, b = 22.2, c = 30.2</td>
<td>45 - 50</td>
</tr>
<tr>
<td>120 L/min.</td>
<td>DSEX – XEN T - 32A</td>
<td>a = 92.2, b = 28.6, c = 33.3</td>
<td>60 - 70</td>
</tr>
<tr>
<td>240 L/min.</td>
<td>DSGX – XEN T - 33A</td>
<td>a = 14.6, b = 28.6, c = 41.4</td>
<td>200 - 215</td>
</tr>
<tr>
<td>480 L/min.</td>
<td>DSIX – XEN T - 34A</td>
<td>a = 139.7, b = 41.3, c = 53.8</td>
<td>465 - 500</td>
</tr>
</tbody>
</table>

- Maximum operating pressure = 350 bar.
- Pressure compensated vent flow = DSCX, DSEX: 0.38 L/min.; DSGX, DSIX: 0.60 L/min.
- There must be a pressure source at port 3, relative to port 1, to shift the valve.
- The pressure at port 3 must be greater than port 1 and is dependant on the minimum control pressure selected.
- One application of this valve is to bypass divider/combiner valves in a limited-slip tractive circuit. Closed, the oil must go through the divider/combiner valves. Open, there is a large path around the divider/combiner valves for efficient high speed operation.
- One pilot valve may be used; to vent multiple diverter valves if blocking checks are used at port 1 of each diverter. If blocking checks are not used, there will be interaction between high and low pressure legs of the circuits.
- Hardened spool and sleeve provide consistent and low spool leakage rates and excellent wear characteristics.
- The valve is not bistable; it is capable of modulation between the two positions shown.

**OPTION ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Control</th>
<th>Minimum Control Pressure</th>
<th>Seal Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 60 L/min.</td>
<td>X Not Adjustable</td>
<td>C 2 bar</td>
<td>N Buna-N</td>
</tr>
<tr>
<td>E 120 L/min.</td>
<td></td>
<td>D 3.5 bar</td>
<td>V Viton</td>
</tr>
<tr>
<td>G 240 L/min.</td>
<td></td>
<td>E 5 bar</td>
<td></td>
</tr>
<tr>
<td>I 480 L/min.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.
Directional Valves

3-WAY, 2-POSITION, VENT-TO-SHIFT, DIVERTER, NORMALLY OPEN

Nominal Capacity | Typical Cartridge Model Code | Cavity | Cartridge Dimensions | Installation Torque (Nm) |
---|---|---|---|---|
60 L/min. | DSCY – XEN | T - 31A | a | 84.8 | 22.2 | 30.2 | 45 - 50 |
120 L/min. | DSEY – XEN | T - 32A | b | 92.2 | 28.6 | 33.3 | 60 - 70 |
240 L/min. | DSGY – XEN | T - 33A | c | 114.6 | 31.8 | 41.4 | 200 - 215 |
480 L/min. | DSJY – XEN | T - 34A | d | 139.7 | 41.3 | 53.8 | 465 - 500 |

Maximum operating pressure = 350 bar.
- Pressure compensated vent flow = DSCY, DSEY: 0.38 L/min.; DSGY, DSJY: 0.60 L/min.
- The pressure at port 3 must be greater than port 1 and is dependant on the minimum control pressure selected.
- There must be a pressure source at port 3, relative to port 1, to shift the valve.
- One application of this valve is to be used in pairs to select between 2 motors or pumps.
- Hardened spool and sleeve provide consistent and low spool leakage rates and excellent wear characteristics.
- The valve is not bistable; it is capable of modulation between the two positions shown.

OPTION ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Control</th>
<th>Minimum Control Pressure</th>
<th>Seal Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>60 L/min.</td>
<td>X Not Adjustable</td>
<td>C 2 bar</td>
</tr>
<tr>
<td>E</td>
<td>120 L/min.</td>
<td></td>
<td>D 3.5 bar</td>
</tr>
<tr>
<td>G</td>
<td>240 L/min.</td>
<td></td>
<td>E 5 bar</td>
</tr>
<tr>
<td>I</td>
<td>480 L/min.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.
Directional Valves

2-WAY POPPET, WITH INTEGRAL T-8A CONTROL CAVITY, CONTROL PORT 1 TO PORT 2

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 141.

### Performance Curves

#### DFCA-8

- **Pressure Differential vs. Flow**

#### DFDA-8

- **Pressure Differential vs. Flow**

#### DFEA-8

- **Pressure Differential vs. Flow**

#### DFFA-8

- **Pressure Differential vs. Flow**

- **Maximum operating pressure = 350 bar.**
- **Maximum main stage valve leakage at 24 cSt = 0.6 cc/min. at 350 bar (for complete assembly, port valve leakage must be considered).**
- **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

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Control</th>
<th>Cracking Pressure</th>
<th>Seal Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 60 L/min.</td>
<td>8 T-8A cavity in hex body for pilot operation</td>
<td>D 3.5 bar</td>
<td>N Buna-N</td>
</tr>
<tr>
<td>D 120 L/min.</td>
<td>Pilot valve to be ordered separately</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| E 240 L/min.     | Options are:  
  - Solenoid Pilot  
  - Air Pilot  
  - Hydraulic Pilot  
  - Manual Control | | V Viton |
| F 480 L/min.     | | | |

Visit [www.sunhydraulics.com](http://www.sunhydraulics.com) for current list pricing and complete technical information on all Sun products.
Directional Valves

2-WAY POPPET, WITH INTEGRAL T-8A CONTROL CAVITY, CONTROL PORT 2 TO PORT 1

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 141.

### Performance Curves

- **DFCB-8**
- **DFDB-8**
- **DFEB-8**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Topical 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>60 L/min.</td>
<td>DFCB – 8DN</td>
<td>T - 13A</td>
<td>35.1</td>
<td>22.2</td>
<td>19.1</td>
<td>45 - 50</td>
</tr>
<tr>
<td>120 L/min.</td>
<td>DFDB – 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>DFEB – 8DN</td>
<td>T - 16A</td>
<td>62.0</td>
<td>31.8</td>
<td>24.6</td>
<td>200 - 215</td>
</tr>
</tbody>
</table>

- Maximum operating pressure = 350 bar.
- Maximum main stage valve leakage at 24 cSt = 0.6 cc/min. at 350 bar (for complete assembly, port valve leakage must be considered).
- 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

**DF** * B – 8 **D**

- **Nominal Capacity**
  - C 60 L/min.
  - D 120 L/min.
  - E 240 L/min.
- **Control**
  - 8 T-8A cavity in hex body for pilot operation
  - Pilot valve to be ordered separately
  - Options are:
    - Solenoid Pilot
    - Air Pilot
    - Hydraulic Pilot
    - Manual Control
- **Cracking Pressure**
  - D 3.5 bar
- **Seal Material**
  - N Buna-N
  - V Viton

Visit [www.sunhydraulics.com](http://www.sunhydraulics.com) for current list pricing and complete technical information on all Sun products.
Directional Valves

3-POSITION, 4-WAY, PILOT-TO-SHIFT

Pilot Ports 5 and 6 are positively sealed from the work ports. All ports will accept 350 bar, including the x and y pilot ports (port 5 and port 6).

Pilot volume displacement = DCCC: 0,33 cc, DCDC: 0,98 cc, DCEC: 2,8 cc, DCFC: 6,9 cc.

Minimum pilot pressure required to shift valve = DCCC: 12 bar, DCDC: 10,5 bar, DCEC, DCFC: 9 bar.

Pilot volume displacement = DCCC: 0,33 cc, DCDC: 0,98 cc, DCEC: 2,8 cc, DCFC: 6,9 cc.

Maximum valve leakage at 24 cSt = 30 cc/min. at 70 bar.

Reason for the different capacities, or performance limits, for the different spool configurations are flow forces. Flow forces are proportional to flow and pressure drop. Typically, they resist the opening of a passage. Spool configurations that open passages as they spring centre are the most susceptible. If the flow forces due to the flow and pressure conditions exceed the centring spring force the valve may not shift completely. Higher flows may be used at lower pressures.

OPTION ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Nominal Capacity</th>
<th>Control</th>
<th>Spool Configuration</th>
<th>Spool Configuration</th>
<th>Seal Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 40 L/min.</td>
<td>X</td>
<td>A to T Centre</td>
<td>R Regen Centre</td>
<td>N Buna-N</td>
</tr>
<tr>
<td>D 80 L/min.</td>
<td>A</td>
<td>B to T Centre</td>
<td>T Tandem Centre</td>
<td>V Viton</td>
</tr>
<tr>
<td>E 160 L/min.</td>
<td>B</td>
<td>Blocked Centre</td>
<td>W A and B Bleed to T Centre</td>
<td></td>
</tr>
<tr>
<td>F 320 L/min.</td>
<td>H</td>
<td>Open Centre</td>
<td>X P to B and A to T Centre</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>P to A and B to T Centre</td>
<td>Y A and B to T Centre</td>
<td></td>
</tr>
</tbody>
</table>

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.
Directional Valves

2-POSITION, 4-WAY, PILOT-TO-SHIFT, DETENTED

Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 30 cc/min. at 70 bar.
- Minimum pilot pressure required to shift valve = DCCD: 12 bar, DCDD: 10.5 bar, DCED: 9 bar.
- Pilot volume displacement = DCCD: 0.82 cc, DCDD: 2.0 cc, DCED: 5.6 cc, DCFD: 14.0 cc.
- All ports will accept 350 bar, including the x and y pilot ports (port 5 and port 6).
- The pilot ports, 5 and 6, are positively sealed from the work ports.

Performance Curves

See www.sunhydraulics.com for additional performance curves.

OPTION ORDERING INFORMATION

DC * D – X **

Nominal Capacity | Control | Spool Configuration | Seal Material
--- | --- | --- | ---
C 40 L/min. | X Standard Pilot | G Blocked Crossover | N Buna-N
D 80 L/min. | | H Open Crossover | V Viton
E 160 L/min. | | | |
F 320 L/min. | | | |

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.