Directional Control Valve
DM 160

Key valve features
DM 160 is a Monoblock open center valve in a modular design that together with the wide range of standard parts offers maximum flexibility.

The valve is designed for high performance applications mainly in systems with fixed pumps but also for systems with variable pumps.

Two or more valves can be connected to each other in a range of different circuits.

The valve is very robust and well suited for demanding mobile applications. The sections are designed to meet the most stringent requirements on controllability.

Applications
DM 160 is designed as a flexible valve for a wide range of applications, but typical applications are cranes, utility and agriculture applications within the flow range for the valve.

Technical data

<table>
<thead>
<tr>
<th>Pressures / Flows</th>
<th>Max. operating pressure per port:</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1, P2, PM, A, B:</td>
<td>3,625 psi  250 bar</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Typical Nominal Inlet Flow:</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.8 gpm  45 Lpm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommended contamination level at normal duty:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal to or better than 18/14 as per ISO 4406</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hydraulic fluid viscosity range at continuous operation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 – 400 mm²/s(cSt). Higher viscosity allowed at start up</td>
</tr>
</tbody>
</table>

| Mineral oil and synthetic oil based on mineral oil are recommended |

<table>
<thead>
<tr>
<th>Recommended temperature range for continuous operation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5°F up to 176°F -15°C up to +80°C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spool leakage at 100 bar, 32 cSt and 40°C:</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10 cm³/min</td>
</tr>
</tbody>
</table>

Higher values are possible, depending on application. For applications with demands that exceed stated data above, please contact us for consideration.

MTTFd value after consultation with HYDAC.
Pressure drop

Oil temperature/viscosity for all graphs: 104°F (40 °C / 32 cSt)

Pressure drop P – T

Pressure drop P – A/B

Pressure drop A/B-T
Dimensions and weight

SAE ports are shown in the table.

### Spools

<table>
<thead>
<tr>
<th>Spools</th>
<th>L (in)</th>
<th>L (mm)</th>
<th>LF (in)</th>
<th>LF (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5.7</td>
<td>145</td>
<td>4.6</td>
<td>117</td>
</tr>
<tr>
<td>3</td>
<td>7.0</td>
<td>177</td>
<td>5.9</td>
<td>149</td>
</tr>
</tbody>
</table>

### Hydraulic ports

<table>
<thead>
<tr>
<th>P1, P2, T1, T2, T3</th>
<th>3/4-16 UNF (SAE-8)*</th>
<th>A / B</th>
<th>9/16 UNF (SAE-6)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A / B</td>
<td></td>
</tr>
</tbody>
</table>

*according to ISO 11926 / SAE J1926
Main relief

Oil temperature/viscosity for all graphs: 104°F (+40 °C / 32 cSt)

Main relief

The adjustable type main relief valve.

- Setting range: 100-4,500 psi (10-300 bar)

Spools

<table>
<thead>
<tr>
<th>Metering Spools for general use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
</tr>
<tr>
<td>Double acting spool</td>
</tr>
<tr>
<td>Double acting spool with 4th pos. for float</td>
</tr>
<tr>
<td>Motor spool</td>
</tr>
</tbody>
</table>

Spool control A-side

- **Spool control 9**
  - Spring centered spool control on A-side

- **Spool control 10**
  - Detents at positions 1, 2 and 3

- **Spool control 11**
  - Spring centering with detent at position 4

Spring force for spool control 9 in neutral position: 12.4 lbs (55 N).
Spring force for spool control 9 with fully selected spool: 22.5 lbs (100 N).
Spool control B-side

<table>
<thead>
<tr>
<th>Spool control M1</th>
<th>Lever cup and lever mechanism for 3-positional spools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spool control M2</td>
<td>Lever cup and lever mechanism for 4-positional spools</td>
</tr>
<tr>
<td>Spool control 3W</td>
<td>Cable attachment for 3-positional spools</td>
</tr>
<tr>
<td>Spool control 4W</td>
<td>Cable attachment for 4-positional spools</td>
</tr>
</tbody>
</table>

Lever M11
The lever M11 can be assembled vertical and horizontal for spool control M1 or M2. Includes a jam nut and a plastic knob. Length 135 mm. The lever M11 is sold separately.

Model Code

Monoblock Valve
Number of Spools
- 2 - Two Spool monoblock valve
- 3 - Three Spool monoblock valve

Inlet Setting
- X - Not Machined for Relief Valve
- P - Inlet Relief Valve Plugged
- Required Pressure Setting for relief Valve in bar.

Spool for Section
- 14 - 3-positional cylinder spool
- 34 - 4-positional cylinder spool with float in position 4
- 44 - 3-positional motor spool

Spool Control A Side
- 09 - 3-positional spool control, spring centered
- 11 - 4-positional spool control, spring centered and detent in pos 4
- 10 - Detent in 3 positions

Spool control B-Side
- M1 - Lever cap including lever mechanism for 3-positional spool
- M2 - Lever cap including lever mechanism for 4-positional spool
- 3W - Cable attachment for 3-positional spool
- 4W - Cable attachment for 4-positional spool

Second Section Options
See First Section For Model Code Options

Third Section Options
See First Section For Model Code Options

Power Beyond Option
- (blank) - No Power beyond required
- PB - High Pressure Carry over function
- First Second Third
Typical hydraulic circuit diagrams

Hydraulic diagram - 2 spool with outlet RV

Hydraulic diagram - 3 spool with inlet RV
North America Locations

**USA**

**North America Headquarters**

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**Note**

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.