**Packed Spool Directional Control Valves**
- Directional Valve for a range of applications
- Up to 46 GPM (32 GPM nominal)
- 3000 PSI (207 bar) and 6000 PSI (414 bar)

**Proportional Pressure Control System**
- Controlled Pressure Ranges:
  - 390 PSI (27 bar) to 1500 PSI (103 bar)
  - 480 PSI (33 bar) to 3000 PSI (207 bar)
  - 580 PSI (40 bar) to 6000 PSI (414 bar)
- Flow Rate: To 1000 GPM (3785 LPM)

**Descaling & Pump Unloading Valves**
- Capacities:
  - 3000 PSI (207 bar)
  - 6000 PSI (414 bar)
  - 6000 GPM (22710 LPM)
- Connection Sizes: 1-1/4" to 10"

**Poppet Type Directional Control Valves**
- Capacities to 1600 GPM (6057 LPM)
- 3000 PSI (207 bar), 4500 PSI (310 bar) and 6000 PSI (414 bar) models are available
- Built-in flow control
- Manifold mounted, NPT, socket weld or flanged

**Modular ISO-Lock**
- Isolates manifold mounted directional control valves
- Reduces maintenance time - replace Directional Valves without depressurizing and draining hydraulic system.
- Single lever operation to close all four ports (P, T, A, B). Cylinders can remain under the external load without having to be blocked.
- Lockable per OSHA safety standard
- NFPA "DO"/CETOP and special mounting patterns available

**Accumulator Systems**
- Descaling
- Mill Systems
- Presses
- Controls
- Level
- Pressure
- Pump Sequencing
- Ballast Charging
- Designed to your specifications

**Descaling & Pump Unloading Valves**
- Spindle – Brochure 2218
- DIN – Brochure 2219

**Poppet Type Directional Control Valves**
- Air Solenoid Operated
- 3-position spring centered
- 2-position spring offset
- 2-position momentary contact

**Modular ISO-Lock**
- Brochure 250

**Accumulator Systems**
- Brochures 102, 105 & 380

**Descaling Valves - Spindle**
- Brochure 2218
**Pump Unloading Valves**
- Brochure 2213

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www.elwood.com

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1/07 - Brochure 2219
Rev. A
### Features

This unique valve has proven itself unequalled for sustained, low-maintenance service under the most severe high-pressure operating conditions. It is widely used in steel mills for shut-off service, descaling service. Its shielded design and soft, composition disc result in long periods of leak-free service. Actual service tests on 1500 PSI filtered river water indicates disc life at up to one million cycles. Because of the inverse flow of liquid through the valve, and the exclusive V-notch throttle ports, shock upon closure has virtually been eliminated.

#### Function

Primarily used in shutoff applications to control fluid flow. Available in normally closed or open positions. The valve features a cartridge design consisting of an outer sleeve with an integral seat and poppet assembly. A pilot valve is used to actuate the plunger open or closed. The pilot valve is a pneumatically-operated hydraulic spool valve that is controlled by a solenoid-operated air valve. In a typical system, a signal to the solenoid valve commands the pilots to shift allowing high-pressure hydraulic fluid to enter the pilot valve. According to the valve configuration, normally opened or closed, the fluid is directed to pressurize or vent the hydraulic fluid acting on the poppet, controlling fluid flow in the main pressure line.

#### Features

- **Hardened Stainless Steel Seat**
- **Stainless Steel Poppet**
- **Polymer Static Seats**
- **Contoured Nose Piece for Built-In Deceleration and Shock Abatement**
- **Flow Rates to 3035 GPM (11,490 LPM)**
- **Normally Closed**
- **Electric Quick Disconnects**
- **Offset (Type “Z”)**
- **Uses specially-designed orifices machined into outer sleeve and precision contours on the spindle assembly to control flow and reduce hydraulic shock in the system.**
- **As the valve is opened, fluid flows past the disc and is discharged through the special V-notch orifices machined into the annular area of the sleeve located above the sealing area of the disc. (1) As the valve closes, the poppet reduces the V-notch area, rapidly at first, (2) then at a decreasing rate for each increment of poppet movement, until, (3) at the very peak of the V-Notch, flow is stopped before the disc is seated. The fluid is brought to rest gradually, eliminating harmful shock or water hammering.**
- **V-NOTCH SHOCK TECHNOLOGY**

### Ordering Data – DIN Descale Valves

#### Valve Body Configurations

<table>
<thead>
<tr>
<th>VALVE SIZE</th>
<th>Connecting Size</th>
<th>Function</th>
<th>ELECTRICAL SOLENOIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN 50</td>
<td>63</td>
<td>3&quot;</td>
<td>11B</td>
</tr>
<tr>
<td>DIN 63</td>
<td>98</td>
<td>3&quot;</td>
<td>11D</td>
</tr>
<tr>
<td>DIN 80</td>
<td>144</td>
<td>4&quot;</td>
<td><strong>乱序</strong></td>
</tr>
<tr>
<td>DIN 100</td>
<td>265</td>
<td>6&quot;</td>
<td><strong>乱序</strong></td>
</tr>
<tr>
<td>DIN 150</td>
<td>430</td>
<td>6&quot; or 8&quot;</td>
<td><strong>乱序</strong></td>
</tr>
<tr>
<td>DIN 200</td>
<td>924</td>
<td>8&quot; or 10&quot;</td>
<td><strong>乱序</strong></td>
</tr>
<tr>
<td><strong>Optional Porting (Non-Standard)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inline (Type “N”)</strong></td>
<td></td>
<td>20</td>
<td>Normally Closed</td>
</tr>
<tr>
<td><strong>90 Degree (Type “D”)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Offset (Type “Z”)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
<th>CONNECTION STYLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3.6K</td>
<td>11B</td>
</tr>
<tr>
<td>8</td>
<td>6K</td>
<td>11D</td>
</tr>
</tbody>
</table>

**Pressure Rating**

- **3.6K** 3600 PSI (248 Bar)
- **6K** 6000 PSI (414 Bar)

**Flange Type**

- **SR 15** ASA 1500# Flange
- **SR 25** ASA 2500# Flange

*For alternate flanges, consult factory.*

**Code No. Example:**

DIN 63 - 3.6K - 20 - SR15 - 3 - N - 3 - 11B

Refer to Elwood Options Brochure (number 2221) for available valve options.
**Dimensional Data – In-Line ASA 2500 lb. Flanges**

**Technical Data**

<table>
<thead>
<tr>
<th>HYDRAULIC</th>
<th>400 PSI (28 bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Operating Pressure</td>
<td>(Consult factory for pressures below 400 PSI)</td>
</tr>
</tbody>
</table>

**Hydraulic Media**

- HWCF, 97/3 Soluble Oil in Water
- Synthetics
- Mineral Oils
- Kerosene

**Viscosity Range at 100°F (38°C)**

- 20 SSU (1.2 Cst.) to 1800 SSU (385 Cst.)

**Maximum Pressure Rating**

- 2 Ranges
  - 3600 PSI (248 Bar)
  - 6000 PSI (414 Bar)

**Fluid Temperature Range**

- HWFC 35º to 150º F (2º to 65º C)
- Mineral Oil 5º to 150º F (-15º to 65º C)

**Recommended Filtration**

- Minimum - 149 Micron (100 mesh)

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**Valve Sizing**

Valve sizing and selection requires consideration in two (2) areas: Pipe Velocity and Pressure Drop through the valve.

**Pipe Velocity**

- Allowable maximum pipe velocity is based on various system considerations and fluid velocity and resulting pressure drop. Generally, the following flow rates are acceptable parameters for most piping systems:
  - for short-to-medium length runs, 26 ft/sec (8 m/sec.), and a maximum of 30 ft/sec. (9 m/sec.)
  - for long piping runs, 20 ft/sec. (6 m/sec.)

**Pressure Drop Through The Valve**

For peak performance and extended valve life pressure drop through the valve should be a consideration. Use the manufacturer's stated Cv Factor as an effective method in calculating a valve's pressure drop.

1. \[ \Delta P = \frac{(GPM)^2}{Cv} \]

   \( \Delta P = \) Pressure drop (PSI)
   \( GPM = \) Flow (GPM)
   \( Cv = \) Cv factor

2. \[ Cv = \sqrt{\frac{2 \times GPM \times \Delta P}{\Delta P}} \]

3. \[ GPM = Cv \sqrt{\Delta P} \]

**Dimensional Data - 2500 LB. ASA Flanges**

<table>
<thead>
<tr>
<th>SIZE</th>
<th>CV FACTOR</th>
<th>CONNECT. SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>BOLT CIRCLE</th>
<th>MOUNTING BOLTS</th>
<th># OF BOLTS</th>
<th>WEIGHT (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>63</td>
<td>3”</td>
<td>12.00</td>
<td>9.00</td>
<td>12.00</td>
<td>12.00</td>
<td>6.00</td>
<td>6.00</td>
<td>14.50</td>
<td>1 1/4 - 7UNC</td>
<td>8</td>
<td>555</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>66</td>
<td>3”</td>
<td>12.25</td>
<td>9.25</td>
<td>12.25</td>
<td>12.25</td>
<td>6.12</td>
<td>6.12</td>
<td>16.75</td>
<td>1 1/4 - 7UNC</td>
<td>8</td>
<td>460</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>144</td>
<td>4”</td>
<td>19.00</td>
<td>9.50</td>
<td>14.25</td>
<td>15.50</td>
<td>7.12</td>
<td>7.75</td>
<td>20.50</td>
<td>1 1/2 - 8UNC</td>
<td>8</td>
<td>1190</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>265</td>
<td>6”</td>
<td>19.00</td>
<td>9.50</td>
<td>19.00</td>
<td>19.00</td>
<td>9.50</td>
<td>9.50</td>
<td>22.50</td>
<td>2 - 4.5UNC</td>
<td>8</td>
<td>1948</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>430</td>
<td>8”</td>
<td>24.00</td>
<td>12.00</td>
<td>19.50</td>
<td>19.50</td>
<td>11.00</td>
<td>11.00</td>
<td>27.00</td>
<td>2 - 4.5UNC</td>
<td>12</td>
<td>7389</td>
<td></td>
</tr>
</tbody>
</table>

Consult Factory for additional configurations or flange sizes. Above dimensions are for reference only. All dimensions are subject to change.
Flow and Capacity Curves

FLOW AND CAPACITY CURVES

FLOW RATES:

- DIN 50
  - 20 ft/sec (6.1 m/sec)
- DIN 63
  - 30 ft/sec (9.1 m/sec)
- DIN 80
  - 40 ft/sec (12.2 m/sec)

MODELS:

- DIN 100
  - 20 ft/sec (6.1 m/sec)
- DIN 150
  - 30 ft/sec (9.1 m/sec)
- DIN 200
  - 40 ft/sec (12.2 m/sec)

Dimensional Data – In-Line ASA 1500 lb. Flanges

Consult Factory for additional configurations or flange sizes.
Above dimensions are for reference only. All dimensions are subject to change.