E242 (200 series)
SUB MINIATURE CARTRIDGE DDV
HYDRAULIC PROPORTIONAL VALVE

A fast and precise proportional valve with high contamination resistance, for use in challenging environments.

Motorsport, subsea exploration and automotive testing often involves extreme and challenging environments, where there is a need for high resistance to hydraulic contamination. These needs are addressed by Moog's proportional Direct Drive Valve (DDV) technology, which uses a linear motor to directly actuate the flow control spool.

This technology combines the robust functionality of a proportional valve with the speed and accuracy of a servo valve. The compact cartridge construction lends itself to multi-axis applications utilizing a single manifold.

The E242-200 Series version is a development of the well proven 100 Series Motorsport design. Improvements based on feedback from our customers include:

- An increase in operating pressure capability (up to 280 bar)
- Improved levels of control accuracy & repeatability
- Higher linear motor force for even higher levels of reliability

The valve range can accommodate rated flows of between 0.6 and 18 l/min, meeting the requirements of the majority of motorsport applications.

Two basic versions of the E242 proportional valve are available:
1. An axis-cut (Q) version for use in position, pressure and force control applications
2. A special sequential gear box actuation (S) version for control of ratchet drum indexing mechanisms

Advantages of the E242 Valve
- Excellent peak flow capability of up to 18 l/min
- High operating force of linear motor
- Compact package suited to multi-axis systems
- High reliability due to hydraulic contamination resistance
- Suitable for challenging and extreme environments

Industry Applications
- Rally cars
- Automotive damper test
- Subsea (thrusters)
- LMP sports-racing cars
- Specialist road cars
- Oil & gas exploration
- Racing Yachts
- Autonomous Robotics

What moves your world
TYPICAL TECHNICAL DATA E242 CARTRIDGE DDV PROPORTIONAL VALVE

Max Supply Pressure: 280 Bar

Rated Flow (Qr): Rated flow Qr is specified at 70 bar supply pressure and 4-port connected. Consult Moog for details of flow rates at other pressures and operating modes

Leakage Flow (Ql): P>R port spool null leakages at 140 bar supply is typically <1.0% of Qr

Operating Fluids: Mineral oil. Consult Moog for other fluid types

Electrical Input Signal: +/- 1.0 A into a 6.4 Ohm, 0.01H load

Dynamic Performance at 25% signal: -3 dB (bandwidth) 200 Hz, 90° phase lag 350 Hz (typical)
Mechanical natural frequency of linear motor: 400 Hz, (Damping ratio 0.25)

Accuracy of Flow Control: Full amplitude Hysteresis <120 mA
Threshold <50 mA

Operational/Environmental Survivability Limits:
Thermal and Shock: 120 °C & 25 G shock load (Any axis)
Corrosion Resistance: 240 hours to ASTM B117 Salt Spray Test.

Connector Type:
Flying lead:
PTFE insulated 24 AWG copper wire
Lead length 350 mm

Mass: 429 gm

For full installation information see drawing number CA34203

FLOW CONTROL VALVE STANDARD MODEL NUMBERS

<table>
<thead>
<tr>
<th>Bias: (spool offset with no input)</th>
<th>Standard range of E242-200 Series, Flow Control Axis Cut Valves Rated flow (l/min) @ 70 bar, in 4-port configuration.</th>
</tr>
</thead>
<tbody>
<tr>
<td>None 0 %</td>
<td>0.6</td>
</tr>
</tbody>
</table>

SHIFT VALVE STANDARD MODEL NUMBERS

<table>
<thead>
<tr>
<th>Bias</th>
<th>Standard range of E242-200 Series, Switching Valves Rated flow (l/min) @ 70 bar 4-port configuration</th>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None 0 %</td>
<td>A- 30% OLP, 30% ULR B- 30% OLP, 60% ULR</td>
<td>Option A has both return lands open until 30% signal and the pressure lands closing at 30% signal.</td>
</tr>
<tr>
<td>11.0</td>
<td>16.0</td>
<td>13.0</td>
</tr>
</tbody>
</table>

Moog has offices around the world. For further information, or the office nearest you, contact us online.
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<Diagram of the valve>