

# 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

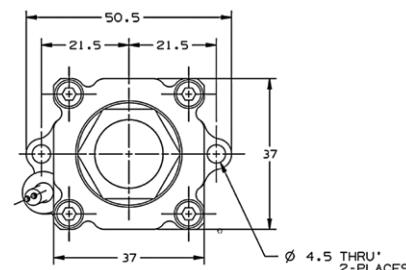
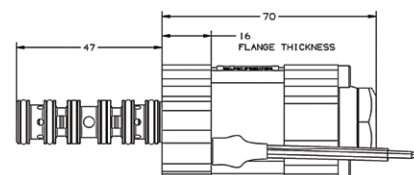
- Rally cars
- Automotive damper test
- Subsea (thrusters)
- LMP sports-racing cars
- Specialist road cars
- Oil & gas exploration
- Racing Yachts
- Autonomous Robotics

# SPECIFICATIONS

## TYPICAL TECHNICAL DATA E242 CARTRIDGE DDV PROPORTIONAL VALVE

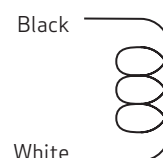
<b>Max Supply Pressure:</b>	280 Bar
<b>Rated Flow (Q<sub>r</sub>):</b> (See below tabulated data for standard flow rates)	Rated flow Q <sub>r</sub> is specified at 70 bar supply pressure and 4-port connected. Consult Moog for details of flow rates at other pressures and operating modes
<b>Leakage Flow (Q<sub>l</sub>):</b> @ 140 Bar with 25 cSt Fluid	P>R port spool null leakages at 140 bar supply is typically < 1.0% of Q <sub>r</sub>
<b>Operating Fluids:</b>	Mineral oil. Consult Moog for other fluid types
<b>Electrical Input Signal:</b>	+/- 1.0 A into a 6.4 Ohm, 0.01H load
<b>Dynamic Performance at 25% signal:</b>	-3 dB (bandwidth) 200 Hz, 90° phase lag 350 Hz (typical) Mechanical natural frequency of linear motor: 400 Hz, (Damping ratio 0.25)
<b>Accuracy of Flow Control:</b>	Full amplitude Hysteresis <120 mA Threshold <50 mA
<b>Operational/Environmental Survivability Limits:</b>	Thermal and Shock: 120 °C & 25 G shock load (Any axis) Corrosion Resistance: 240 hours to ASTM B117 Salt Spray Test.
<b>Connector Type:</b>	Flying lead: PTFE insulated 24 AWG copper wire Lead length 350 mm
<b>Mass:</b>	429 gm

## TYPICAL GENERAL INSTALLATION INFORMATION



Electrical connections:

Polarity: +ve signal to White lead gives flow out of port A



For full installation information see drawing number CC34203

## FLOW CONTROL VALVE STANDARD MODEL NUMBERS

Bias: (spool offset with no input)	Standard range of E242-200 Series, Flow Control Axis Cut Valves Rated flow (l/min) @ 70 bar, in 4-port configuration.							
	0.6	1.0	2.0	4.0	6.0	8.0	11.0	18.0
<b>None 0 %</b>	E242-208	E242-218	E242-219	E242-266	E242-258A	E242-220A	E242-205A	E242-200A
<b>P&gt;A 15%</b>	E242-234	E242-222	E242-223	E242-259	E242-262A	E242-229A	E242-227A	E242-206A
<b>P&gt;B 15%</b>	E242-235	E242-233	E242-215	E242-261	E242-265A	E242-230A	E242-228A	E242-212A

## SHIFT VALVE STANDARD MODEL NUMBERS

Bias	Standard range of E242-200 Series, Switching Valves Rated flow (l/min) @ 70 bar 4-port configuration				Note:
	A- 30% OLP, 30% ULR		B- 30% OLP, 60% ULR		
<b>None 0 %</b>	11.0	16.0	13.0	17.0	Option A has both return lands open until 30% signal and the pressure lands closing at 30% signal.  Option B has both return lands open until 60% signal and the pressure land closing at 30% signal.
	E242-203	E242-202	E242-236	E242-204	

Moog has offices around the world. For further information, or the office nearest you, contact us online.

e-mail: [info.uk@moog.com](mailto:info.uk@moog.com)

[www.moog.com/motorsport](http://www.moog.com/motorsport)

Moog is a registered trademark of Moog Inc. and its subsidiaries. All trademarks as indicated herein are the property of Moog Inc. and its subsidiaries. © 10/2022 Moog Inc. All rights reserved. All changes are reserved. E242-200 Datasheet Cartridge DDV. CDL65574

This technical data is based on current available information and is subject to change at anytime by Moog. Specifications for specific systems or applications may vary.

# MOOG

**Moog Industrial Group.**

Ashchurch Parkway, Tewkesbury,  
Glos. GL20 8TU UK

**Tel:** +44 (0)1684 858000