

# MICRO DDV PROPORTIONAL CARTRIDGE VALVE

# E245



## Designed for Extreme Environments:

We deliver Race Winning Motion Control technology, not just to F1 but other high-performance applications which often involve extreme, challenging environments and specifications.

**Efficiency and Speed:** The E245-100 is designed for precision, efficiency, and durability. It offers resistance to hydraulic contamination, crucial in high-performance applications.

**Lightweight and Compact:** The E245-100 is a compact design that offers a 50% reduction in weight compared to the E242, while still delivering a flow of up to 10 l/min.

**Advanced Technology:** The E245-100 features Moog's proportional Direct Drive Valve (DDV) technology, which uses a compact and powerful linear force motor to precisely actuate the flow control spool. This technology combines the robust functionality of a proportional valve with the speed and accuracy of a servo valve.


**Optimized Design:** The compact cartridge construction allows for neat integration within a manifold or actuator assembly, particularly within multi-axis systems.

**Power Density:** With a compact and lightweight design, the E245-100 continues to deliver power density where it matters the most.

## BENEFITS

- + Rated flow<sup>\*\*</sup> range from **0.5 lpm** up to **8.5 lpm** meeting the demands of miniature hydraulic applications
- + High flow capability up to **10 l/min**\*
- + Low weight - **185 gm**
- + High bandwidth for fast accurate control
- + Custom cartridge design for integration into compact manifold
- + Highly resistant to hydraulic contamination
- + Withstands challenging and extreme environments
- + High hydraulic system efficiency. Internal leakage **< 0.05 l/min**
- + Highly precise linear flow characteristics
- + Withstands high vibration survivability up to 50G

## INDUSTRY APPLICATIONS

-  Motorsport
-  High performance automotive
-  Oil & gas exploration
-  Medical - prosthetics
-  High performance marine (including racing yachts)

The new E245-100 has just 42% of the mass of the E242.



\* With  $\Delta p$  210 bar

\*\* With  $\Delta p$  70 bar

# MOOG

Shaping the way our world moves™

# SPECIFICATIONS

## TYPICAL TECHNICAL DATA E245-100 CARTRIDGE DDV PROPORTIONAL VALVE

<b>Max Supply Pressure:</b>	280 Bar
<b>Rated Flow (Qr):</b> (See below tabulated data for standard flow rates)	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
<b>Leakage Flow (Ql):</b> <b>@ 140 Bar with 25 cSt Fluid</b>	P>R port spool null leakages at 140 bar supply (for all models apart from 0.5 lpm rated flow models) is <0.05 lpm. For 0.5 lpm rated flow models leakage at 140 bar supply pressure is <0.025 lpm
<b>Operating Fluids:</b>	Mineral oil. Consult Moog for other fluid types
<b>Electrical Input Signal:</b>	+/- 1.0A into a 5.7 Ohm, 0.04H load
<b>Dynamic Performance at 25% signal:</b>	-1.5 dB (bandwidth) 150Hz, 90° phase lag 400 Hz (typical) Mechanical natural frequency and damping ratio 540Hz, 0.2 (typical)
<b>Accuracy of Flow Control:</b>	Full amplitude Hysteresis <180 mA Threshold <75 mA
<b>Operational/Environmental Survivability Limits:</b>	Thermal and Shock: 120 °C (248 °F)[TBC] & 25 G shock load (Any axis) [TBC] 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>	185 gm

### TWO BASIC VERSIONS OF THE E245 PROPORTIONAL VALVE ARE AVAILABLE:

**V1**

An axis-cut (Q) version for use in position, pressure and force control applications

**V2**

A switching version which is designed for applications that require fast directional control such as gear shift actuation.

### FLOW CONTROL VALVE STANDARD MODEL NUMBERS

Bias (%)	E245-100 Series, Flow Control Standard Axis Cut Valves Rated flow @ 70 bar, 4 port connected (l/min)				
	0.5	1.5	2.5	5.5	8.5
<b>None 0 %</b>	E245-101	E245-102	E245-103	E245-104	E245-105
<b>P&gt;A 15%</b>	E245-106	E245-107	E245-108	E245-109	E245-110
<b>P&gt;B 15%</b>	E245-111	E245-112	E245-113	E245-114	E245-115

### SHIFT VALVE STANDARD MODEL NUMBERS

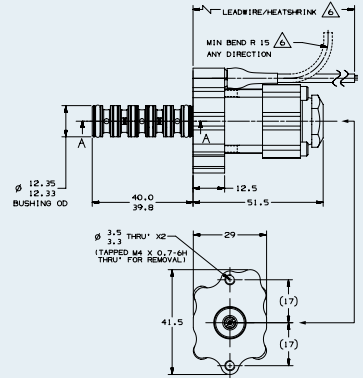
Bias (%)	E245-100 Series, Switching Standard Valves Rated flow rates @ 70 bar, 4 port connected (l/min)				<b>Note</b> Both Option A & B shift valves have control ports which are connected to return pressure at zero signal. Option A has both return lands open until 30% signal and the pressure lands closing until 30% signal. Option B has both return lands open until 60% signal and the pressure land closing at 30% signal.
	A- 30% OLP, 30% ULR		B- 30% OLP, 60% ULR		
<b>None 0 %</b>	4.5	7.0	4.5	7.0	
	E245-116	E245-117	E245-118	E245-119	

For further information, visit:  
[www.moog.com/miniature](http://www.moog.com/miniature)

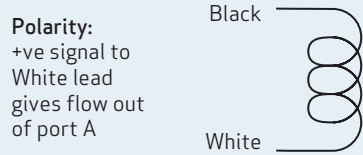
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## TYPICAL GENERAL INSTALLATION INFORMATION

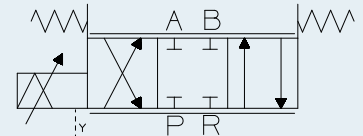


### Electrical connections:



For full installation information see drawing number CD25658

### Hydraulic Schematic:



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