Operating Instructions

Utilizing the industry’s most robust and powerful miniature linear actuator, the patent pending stepper-controlled proportional valve leads the industry in performance and durability.

This valve is ideal in critical applications for liquid and gas delivery, medical, analytical, and industrial automation requiring high resolution and excellent repeatability. In addition, the unique design allows for custom flow profiles.

- For Fluid & Air Applications
- Excellent Linearity (<4% of full-scale)
- Fast Response (<2 ms reaction time)
- Cycle Life of Typically >1 million Cycles
- Repeatability: <0.5% of Full Travel
- Bi-Directional

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clippard.com/link/eiv
### Technical Data

<table>
<thead>
<tr>
<th>Medium</th>
<th>Liquids &amp; gases*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Cycle Time for</td>
<td>1.1 seconds at 1,000 steps per second</td>
</tr>
<tr>
<td>Full Travel</td>
<td></td>
</tr>
<tr>
<td>Wetted Material</td>
<td>Ceramic (others depending on porting option)</td>
</tr>
<tr>
<td>Operating Pressure Range</td>
<td>Vac to 30 psig**</td>
</tr>
<tr>
<td>Proof Pressure (Overpressure)</td>
<td>50 psig</td>
</tr>
<tr>
<td>Flow Range</td>
<td>Air: 0 to 8.8 l/min (0.31 scfm) at 30 psig</td>
</tr>
<tr>
<td></td>
<td>Water: 0 to 230 ml/min (0.00812 scfm) at 30 psig</td>
</tr>
<tr>
<td>Flow Resolution</td>
<td>0.20 ml/min water and 0.0078 l/min air max at 30 psig per full step depending on pressure</td>
</tr>
<tr>
<td>Position Resolution</td>
<td>0.00006* per step</td>
</tr>
<tr>
<td>Driver</td>
<td>Bipolar chopper drive required (see Power &amp; Control Instructions)</td>
</tr>
</tbody>
</table>

* Contact Clippard for specific media compatibility

** Contact Clippard for custom pressure ranges

### Ambient/Environment
- 32 to 180°F

### Supply Voltage to Motor Driver
- 20 VDC @ 30 psig

### Mounting
- Manifold or flat bottom (ZDVF)

### Current/Phase
- 0.49 Amps

### Power Consumption
- 2.5 watts nominal only during adjustment. Zero power consumption to maintain position.

### Seals
- FKM standard, no elastomers with Zero Dead Volume (ZDVF) option

### Options
- Other seal materials. Encoder ready

### More Details
- clippard.com/link/eiv

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* M2.5 on bolt circle 0.586 dia. (2 pcs.)

* 1/16" ports

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* Contact Clippard for specific media compatibility

** Contact Clippard for custom pressure ranges
CONFIGURATIONS | **EIVU-M**

**EIVU-M**

**EIVU-M-ENS (shown at right)**

CONFIGURATIONS | **EIVU-Z**

**EIVU-Z (shown at right)**

**EIVU-Z-ENS**

0.125 dia. mtg. holes (#4 or M3 hardware) 1/4-28 UNF thru for headless flatbottom fittings

encoder shaft (4.0 mm dia.)
### Porting

**Manifold Mount Model (EIVU-M)**

An adapter such as the EIV single-station manifold (ordered separately) or a custom-made adapter utilizing the manifold layout below can be used to allow for a variety of needed fasteners. The EIV manifold has two #10-32 UNF or M5 x 0.8-6H ports where thread-to-barb fasteners can be used.

**Zero Dead Volume Model (EIVU-Z)**

The adapter that is included with the valve has two 1/4-28 UNF ports for two headless flatbottom fittings such as a nut/ferrule combination ordered separately as ZDVF-18 (IDEX P/N #XP-283x).

The Eclipse valve is bi-directional, however the calibration curve is recorded using the port closest to the motor (Port B) as the supply. Please note there are slightly different flow characteristics depending on which way the valve is operated. Contact Clippard’s Technical Sales Team with questions.

### Single-Station Manifold

![Single-Station Manifold](image)

### Manifold Layout

![Manifold Layout](image)

### Valve Ordering Information

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>PORTING</th>
<th>SEALS</th>
<th>ENCODER SHAFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIVU-M-V</td>
<td>Manifold Mount</td>
<td>FKM</td>
<td>-</td>
</tr>
<tr>
<td>EIVU-M-V-ENS</td>
<td>Manifold Mount</td>
<td>FKM</td>
<td>yes</td>
</tr>
<tr>
<td>EIVU-Z</td>
<td>Zero Dead Volume Adapter</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>EIVU-Z-ENS</td>
<td>Zero Dead Volume Adapter</td>
<td>-</td>
<td>yes</td>
</tr>
</tbody>
</table>
**Power & Control**

A Bipolar Chopper Drive, SCPVD-1 (not included) is a power-efficient method of using current to drive a stepper motor to obtain high stepping rates. The chopper gets its name from the technique of rapidly turning the output voltage on and off (chopping) to control motor current.

Stepper motors require external electrical components in order to operate. These components typically include a power supply, logic sequencer switching components, and a clock pulse source to determine the step rate. Many commercially available drives have integrated these components into a complete package.

The EIV coil pairs are: red and red with white strip (A), and green and green with a white strip (B).

See clippard.com/scpv for further information.

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**Homing the Valve**

If step counts are lost the valve can be homed by driving the motor clockwise until it reaches the hard stop (audible change). It is recommended to drive the motor at a lower current or voltage during the homing procedures. The 4-digit number at the end of the serial number is the number of steps from the motor hard stop to initial flow, or the offset distance. A hard-stop can be reached on either end of the motor shaft, but the offset distance given is relative to the motor hard-stop. Direction of rotation can be determined by viewing the inset shaft on the back of the valve.

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![Typical Flow Curves for Air](image1)

![Typical Flow Curves for Water](image2)
Limited Warranty

All information contained in this publication is for reference only. Proper design engineering procedures should be used to assure any compliances. Clippard Instrument Laboratory, Inc. reserves the right to make changes without notice and does not warrant or guarantee the information contained herein.

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