Parker’s Fluid Control Division offers true proportional flow control for air and compatible gases with the BP Proportional Valve. The BP valve is an economical solenoid valve that can be used in open- or closed-loop systems to control flow, pressure, temperature, speed, or position parameters.

**Product Features:**
The BP combines a solenoid valve with electronics that digitally modulate the control signal to provide analog proportional control.

Parker’s long-time use of a spider spring allows for linear proportional control, long life, and fast response times. The solenoid includes a non-contact plunger / sleeve assembly to create frictionless movement and ultra-low hysteresis.

**Typical Applications:**
- Life Science
- Analytical Instrumentation
- Diagnostic Test Equipment
- Gas Controllers
- Semiconductor Processing
- Pressure & Flow Control

**Product Specifications**

<table>
<thead>
<tr>
<th>Mechanical</th>
<th>Electrical</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Valve Type:</strong></td>
<td><strong>Voltage:</strong></td>
<td><strong>Orifice sizes / Cv / MOPD:</strong></td>
</tr>
<tr>
<td>2-Way Normally Closed</td>
<td>12 - 24 VDC</td>
<td>1/32&quot; (0.8mm) / 0.02 / 200 psi (13.4 bar)</td>
</tr>
<tr>
<td><strong>Media:</strong></td>
<td><strong>Control Signal:</strong></td>
<td>3/64&quot; (1.2mm) / 0.04 / 100 psi (6.9 bar)</td>
</tr>
<tr>
<td>Air and gases compatible with valve materials</td>
<td>0 – 5 V</td>
<td>1/16&quot; (1.6mm) / 0.08 / 60 psi (4.1 bar)</td>
</tr>
<tr>
<td><strong>Porting:</strong></td>
<td>0 – 10 V</td>
<td>5/64&quot; (2.0mm) / 0.12 / 40 psi (2.8 bar)</td>
</tr>
<tr>
<td>1/8&quot; NPT</td>
<td>4 – 20 mA</td>
<td></td>
</tr>
<tr>
<td><strong>Wetted Materials:</strong></td>
<td><strong>Connections:</strong></td>
<td></td>
</tr>
<tr>
<td>Stainless Steel and FKM</td>
<td>18&quot; Leads</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Red – DC Power Supply</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grey – Control Signal (+)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Black - Common</td>
<td></td>
</tr>
<tr>
<td><strong>Power:</strong></td>
<td><strong>Power:</strong></td>
<td></td>
</tr>
<tr>
<td>7 Watts (maximum)</td>
<td>7 Watts (maximum)</td>
<td></td>
</tr>
</tbody>
</table>

**Media Temperature Range:**
0° to 180°F (-18° to 82°C)

**Ambient Temperature Range:**
14° to 122°F (-10° to 50°C)

**Hysteresis:**
10% of full flow (open loop)

**Response Time:**
40 msec (Full Cycle at 0 pressure)
BP Proportional Valves

Standard Valve Part Numbers

<table>
<thead>
<tr>
<th>Port Size NPT</th>
<th>Orifice Size</th>
<th>Flow Factor Cv</th>
<th>Operating Pressure Differential MOPD psi</th>
<th>Operating Pressure Differential MOPD bar</th>
<th>Max Power Watts</th>
<th>Input Signal 0-5 V</th>
<th>Part Number</th>
<th>Input Signal 0-10 V</th>
<th>Part Number</th>
<th>Input Signal 4-20 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8&quot;</td>
<td>1/32 (0.8mm)</td>
<td>0.02</td>
<td>200</td>
<td>13.4</td>
<td>7</td>
<td>BP2EV0012</td>
<td>BP2EV0013</td>
<td>BP2EV0029</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/8&quot;</td>
<td>3/64 (1.2mm)</td>
<td>0.05</td>
<td>100</td>
<td>6.9</td>
<td>7</td>
<td>BP2EV0010</td>
<td>BP2EV0011</td>
<td>BP2EV0024</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/8&quot;</td>
<td>1/16 (1.6mm)</td>
<td>0.08</td>
<td>60</td>
<td>4.1</td>
<td>7</td>
<td>BP2EV0005</td>
<td>BP2EV0009</td>
<td>BP2EV0020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/8&quot;</td>
<td>5/64 (2.0mm)</td>
<td>0.12</td>
<td>40</td>
<td>2.8</td>
<td>7</td>
<td>BP2EV0006</td>
<td>BP2EV0008</td>
<td>BP2EV0014</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How to Order

Select valve Part Number from listing above – based on required performance and input signal.

Example: 1/8” NPT, 3/64” orifice, 0-10 V input signal – Part Number: BP2EV0011

Dimensions

Bumper for nearly silent operation

Factory tuned orifice & ‘stop’ for performance consistency

Spider Springs for long life & linear control

Non-contact plunger/sleeve for frictionless movement & ultra-low hysteresis

2-WAY NORMALLY CLOSED

PORT IDENTIFICATION
P-IN / A-OUT

Parker
Standard Cartridge Part Numbers

Operating Principle
The BP valve is an analog proportional device. The current supplied to the coil of the BP valve is digitally modulated by the electronic package. The mechanism which opens and closes the valve’s flow orifice moves in a linear manner in response to the varying coil current. The amount that the orifice is opened is a function of the input signal to the valve. Benefits of analog control technology used in the BP valve include longer valve life, linear flow control, no pressure or flow spikes, faster response time, simplified control systems, and less power consumption.

Media Filtration
Filtration of air or gas lines is recommended to 40 micron. Install the filter on the inlet side as close to the valve as possible. These valves have a non-contact plunger /sleeve design and are generally not sensitive to a small amount of foreign material, however, they do contain soft rubber inserts. Dirt or foreign material in the media may cause excessive leakage, excessive wear, or in exceptional cases, malfunction.

BP Proportional Valves

Proportional Valve Flow Curve

BP Valves in Closed-Loop Systems
For applications requiring more precise control, closed-loop control systems are recommended. In closed-loop control, sensors provide system information (pressure, flow, temperature) to the controller, which then adjusts the input signal to the valve until the desired condition is reached. In such systems, measurements of process parameters (provided by pressure, temperature and/or flow sensors) are compared to a desired set-point by a controller. If a discrepancy exists, the controller will change the input signal to the BP valve until the desired set point is achieved.

BP Valves in Open-Loop Systems
Non-critical applications can be controlled in an open-loop fashion. In open-loop control, the input signal to the valve is not coupled to feedback from the system. Under steady state conditions an input signal to the valve will open the orifice and produce a certain amount of flow. However, when system conditions change, such as pressure, the output of the valve will also change.
Options and Accessories

3000 Series Solenoid Valves

A small solenoid with BIG potential! The 3000 Series valves are available in brass or stainless steel and measures only 1 inch in diameter. The 3000 is ideal for a variety of markets where performance is required in small spaces.


204 Series Valves and Manifolds

Enhance system integrity with cost effective, manifoldsed solenoid valves. Simplify valve installation while reducing total purchasing, installation, and testing costs. Many offerings available in stainless steel and aluminum.


Media Isolated Valves

Media Isolated Valves (or dry operator valves) have been specially designed for non-contaminating and corrosive applications. Available in Stainless Steel, PTFE, and Noryl™, the valves assure absolute purity and inertness to corrosion when used with a broad range of fluids.


FCD Express

Need a valve quickly? The Fluid Control Express offers valves and coils shipped next day! Hundreds of valve and coil options provide for thousands of combinations, including 2-, 3- & 4-Way flow patterns and 5 voltages.

Repair Kits are available for many valve designs in the Fluid Control Express. New products are being added to the Express program on a regular basis.

Please consult our Fluid Control Express Catalog FCDEXP0912, available at www.parker.com/fcd.