Fine Controls have been supplying process controls & instrumentation equipment since 1994, & now serves an ever expanding customer base, both in the UK & globally.

We offer a full range of valve & instrumentation products & services, with our product range representing leading technologies & brands:

**Flow:** Flow Meters & Transmitters, Flow Switches, Flow Control Valves & Batch Control Systems

**Temperature:** Temperature Probes & Thermowells, Temperature transmitters, Temperature Regulators & Temperature Displays

**Level:** Level Transmitters & Switches

**Pressure:** Pressure Gauges & Transmitters, Precision & High Pressure Regulators & I-P Converters, Volume Boosters

**Precision Pneumatics:** Pressure Regulators, I-P Converters, Volume Boosters, Vacuum Regulators

**Valves:** Solenoid & Pneumatic Valves, Control Valves & Positioners, Actuated Ball, Globe or Diaphragm Valves & Isolation Valves

**Services:** Repair, Calibration, Panel Build, System Design & Commissioning
Features

- 2 Stage Pilot Operation allows precise control of set points.
- 14 SCFM flow capacity in a small size unit.
- Low air consumption preserves air and other costly gases.
- Compact size permits installation where space is limited.
- Available in 1/8”, 1/4” and 3/8” port sizes.

Operating Principles

The Model 85D Multi-Stage Biasing Relay is a precision control combining the sensitivity of a precision pressure regulator with positive biasing capability. This compact, pilot-operated device offers unusually high output capacity with minimal air consumption, while providing excellent protection against supply or output pressure variations.

The versatile Model 85D is recommended for use in systems requiring precision pressure maintenance and instrument biasing, in dead end service and instrument panel supply applications.

The basic mathematical expression for the Model 85D is \( PO = PS + K \) where \( PO \) is output pressure, \( PS \) is signal pressure and \( K \) is the spring constant.
Model 85D Multi-Stage Biasing Relay

Specifications

Maximum Supply Pressure
250 psig, [17.5 BAR], (1750 kPa)

Recommended Operating Supply Pressure
150 psig, [10 BAR], (1000 kPa)

Maximum Signal or Output Pressure
150 psig, [10 BAR], (1000 kPa)

Flow Capacity
14 SCFM (23.8 m³/HR) @ 100 psig, [7.0 BAR], (700 kPa)
supply, 20 psig, [1.5 BAR], (150 kPa) setpoint

Exhaust Capacity
2.5 SCFM (4.25 m³/HR) where downstream pressure is
5 psig, [.35 BAR], (35 kPa) above setpoint

Supply Pressure Effect
Less than 0.2 psig, [.014 BAR], (1.4 kPa) for 100 psig,
[7.0 BAR], (700 kPa) change in supply pressure

Pressure Change Under Flow Conditions
Less than 0.1 psig, [.007 BAR], (.7 kPa) from dead end
service to 10 SCFM (17 m³/HR)
(Set pressure 10 psig, [.7 BAR], (70 kPa), supply pressure
100 psig, [.7 BAR], (700 kPa)

Air Consumption
Less than .1 SCFM (.17 m³/HR)

Ambient Temperature Limits
-40° F to +200° F, (-40° C to 93.3° C)

Materials of Construction

Body ........................................... Aluminum
Trim ........................................... Aluminum, Stainless Steel, Brass
Diaphragms ................................. Buna N and Dacron

Catalog Information

Catalog Number 8 5

Pressure Range

<table>
<thead>
<tr>
<th>psig</th>
<th>BAR</th>
<th>(kPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20</td>
<td>0-1.5</td>
<td>(0-150)</td>
</tr>
<tr>
<td>1-60</td>
<td>0.07-4</td>
<td>(7-400)</td>
</tr>
<tr>
<td>1-100</td>
<td>0.07-7</td>
<td>(7-700)</td>
</tr>
<tr>
<td>0-20</td>
<td>0-1.5</td>
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<tr>
<td>1-100</td>
<td>0.07-7</td>
<td>(7-700)</td>
</tr>
</tbody>
</table>

Pipe Size

1/8” NPT ........................................... 1
1/4” NPT ........................................... 2
3/8” NPT ........................................... 3

Options

Tapped Exhaust ................................. E
Bonnet Mounting ............................... P
Tamper Proof ................................... T
BSPT (Tapered) ................................. U

¹ 1/8” NPT Pipe Size only.
² 1/4” or 3/8” NPT Pipe Size only.

Service Kit

A Service Kit is available for the Model 85D Multi-Stage Biasing Relay, refer to the Installation, Operation and Maintenance Instructions, IS-3000085D.