



Keeping the World Flowing  
for Future Generations



## Model 85D Multi-Stage Biasing Relay

### Features and Benefits

- 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 variation.

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.

### 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 m<sup>3</sup>/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply, 20 psig, [1.5 BAR], (150 kPa) setpoint

### Exhaust Capacity

- 2.5 SCFM (4.25 m<sup>3</sup>/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], (0.7 kPa) from dead end service to 10 SCFM (17 m<sup>3</sup>/HR) (Set pressure 10 psig, [.7 BAR], (70 kPa), supply pressure 100 psig, [7.0 BAR], (700 kPa))

### Air Consumption

- Less than .1 SCFM (.17 m<sup>3</sup>/HR)

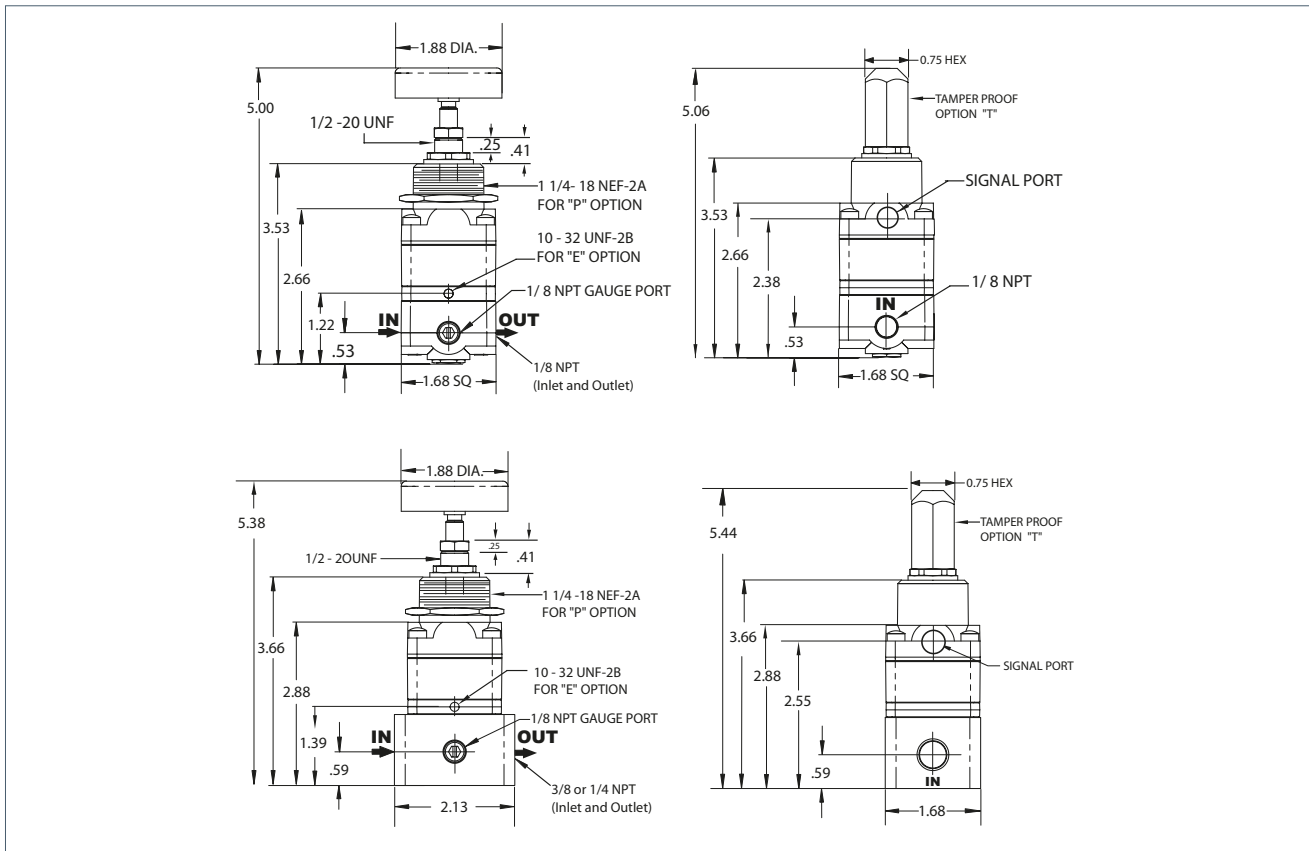
### Ambient Temperature

- -40 to +200 °F, (-40 to 93.3 °C)

### Materials of Construction

- Body: Aluminum  
Trim: Aluminum, Stainless Steel, Brass  
Diaphragms: Buna N on Dacron

### Dimensions



### Product Code

856 3 1 E

#### Pressure Range

psig	[BAR]	(kPa)
3 = 0-20	[0-1.5]	(0-150)
4 = 1-60	[0.1-4.0]	(10-400)
5 = 1-100	[0.1-7.0]	(10-700)

#### Pipe Size

1 = 1/8" NPT
2 = 1/4" NPT
3 = 3/8" NPT

#### Options

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

### 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*.

A full listing of the Rotork sales and service network is available on our website.

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