Features & Benefits

- Fixed-gain force and bias adjustment mechanisms amplify pneumatic instrument signals to provide control circuit design flexibility.

Description

Series 661 Amplifying Relays are fixed-gain force-balance instruments, which incorporate bias adjustment that amplify pneumatic instrument signals. For example, a 3-15 psi signal can be amplified to operate a 3-27 psi control valve.

The input pressure signal, acting upon the effective area of the upper diaphragm, produces a force opposed by the force produced by the output pressure applied over the effective area of the lower diaphragm and by a manually-set (constant) spring force. Any imbalance in the opposing forces will operate the pilot valve to throttle supply air to change the output until rebalance is achieved.

Plus or minus biasing of the input signal is accomplished by changing the setting of the upper biasing spring, which alters the net spring force on the diaphragm assembly.

Specifications

- Supply Pressure
  - Normal: 20 psig (140 kPa)
  - Maximum: 80 psig (550 kPa)
  - Minimum: 1 psi (7 kPa) above maximum required output
- Range Limits
  - 80 psig max. for input or output (whichever limits)
- Overrange Limits
  - 100 psig (690 kPa) at any connection
- Minimum Output Pressure
  - Less than 0.1 psi (0.7 kPa)
- Ratio Accuracy
  - Within 1% of normal ratio
- Linearity
  - ±1% of output span

Reproducibility
- Within 0.1% of output span

Response Level
- 0.2" H_2O (5 mm H_2O)

Bias Range
- Direct Acting: +30 psi to -15 psi (210 to -100 kPa)

Flow Capacity
- 2.2 scfm minimum (62.3 SDM³/M)

Air Consumption
- 0.15 scfm maximum (4.25 SDM³/M)

Ambient Temperature Limits
- -40 to 180° F (-40 to 82° C)

Materials of Construction
- Brass, aluminum, stainless steel, and Neoprene
Relays

Model 661 Amplifying Relays with Bias

Technical data

Model Selection

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Function Equation:
\[ P_{out} = G (P_{in} \pm K) \]

Where \( P_{in} \) = input pressure
\( P_{out} \) = output pressure

Mounting Dimensions

Direct Acting

Input 3.25" (82.5mm) 4.625" (117mm)

Bias adjust screw

Supply 6.875" (175mm) approx. max.

Output

All connections are 1/4"NPT except where noted