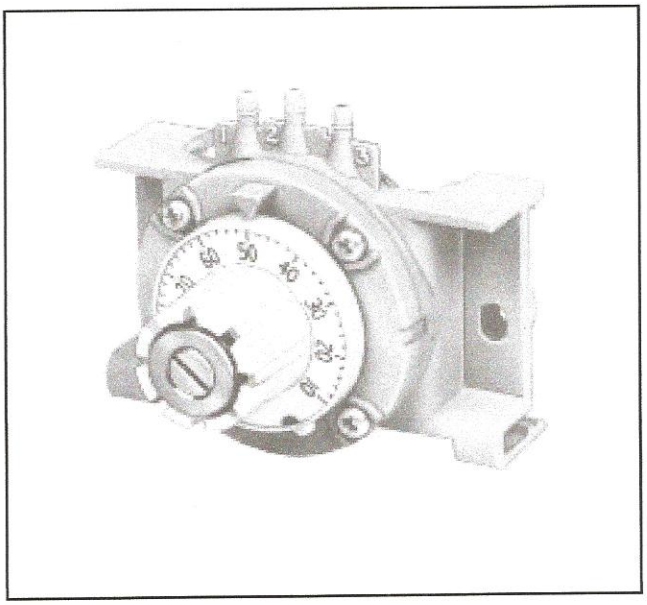
Honeywell

RP922A Pneumatic Potentiometer

SPECIFICATION DATA



FEATURES

- **High efficiency integral filters for all ports**
- **High reliability, no internal moving parts**
- **Compact size**
- **High accuracy**

GENERAL

The RP922A is a three-port pneumatic potentiometer. It is a multipurpose device used in control systems for the following:

— Sum of two input pressures
— Average of two input pressures
— Adjustable flow restriction
— Adjustable pressure supply

77-5053

SPECIFICATIONS

Operating Temperature:
39 to 122F 4 to 50C)

Operating Pressure:
0 to 20 psi (0 to 138 kPa)

Maximum Safe Air Pressure:
30 psi (207 kPa)

Air Connection:
5/32 in. (4 mm) push-on barb

Air Consumption:
- — Sum of two input pressures: none
- — Ratio of two input pressures: none
- — Adjustable flow restriction: none
- — Adjustable pressure supply application: 0.007 scfm (0.00331/sec) at 14.5 psi (101 kPa)

Mounting:
Snap-on device rail mounting or mounting on walls or panels with screws.

Dimensions:
See Figure 1.

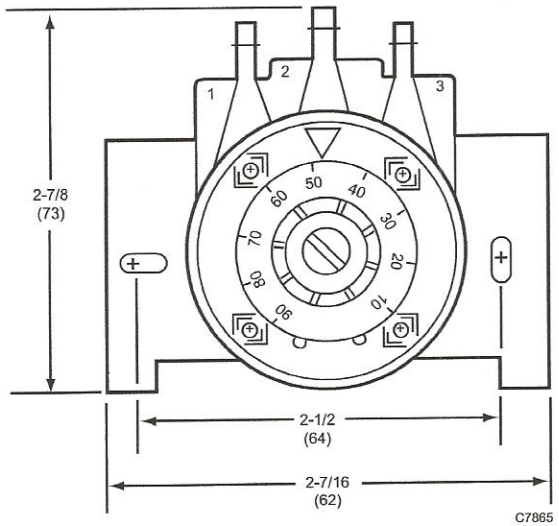


Fig. 1. RP922A dimensions in inches (millimeters).

TYPICAL OPERATION

1. Averaging-Ratio Relay, Summing Relay
   - — A typical application uses the RP922A to provide averaging-ratio pressure output. P1 and P3 connect to pressure signals and P2 connects to a controller input port. P2 is a functional output of P1 and P3 (Fig. 2 and Table 1).
   - — The RP922A sums the input velocity signals of two ducts with different areas to produce a total flow signal (Fig. 3).

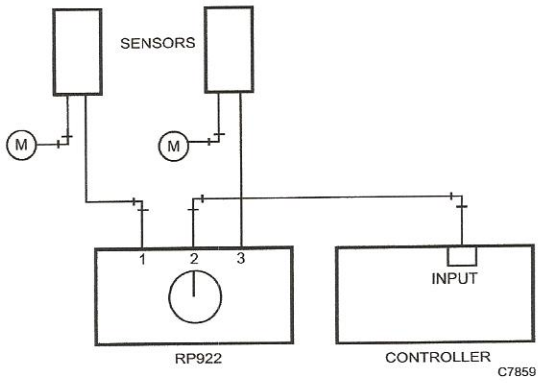


Fig. 2. Averaging-Ratio relay application.

Table 1. Ratio pressure at port 2.[1]

Ratio	Output at P2	Scale Setting
9-1	$\frac{9\ P1 + P3}{10}$	10
3-1	$\frac{3\ P1 + P3}{4}$	25
2-1	$\frac{2\ P1 + P3}{3}$	33
1-1	$\frac{P1 + P3}{2}$	50 (Averaging)
1-2	$\frac{P1 + 2\ P3}{3}$	67
1-3	$\frac{P1 + 3\ P3}{4}$	75
1-9	$\frac{P1 + 9\ P3}{10}$	90

[1] Idealized Response. Actual response is higher than the calculated response by about 5 percent of the P1, P3 difference.

2. Adjustable Flow Restriction
   - — A typical application uses the RP922A to function as an adjustable airflow restriction. Thirty percent scale setting is equivalent to an 0.007-inch restrictor, ninety percent scale setting is equivalent to an 0.005-inch restrictor (Fig. 4).
3. Adjustable Pressure Supply
   - — The RP922A provides an adjustable pressure from 10 to 90 percent of the pressure at Port P1 (Fig. 5 and Fig. 6).
   - — The RP922A widens the effective proportional band of a controller by reducing the sensor input pressure by a fixed ratio (i.e., at a scale setting of 50, controller pb is doubled) (Fig. 7 and Table 1).

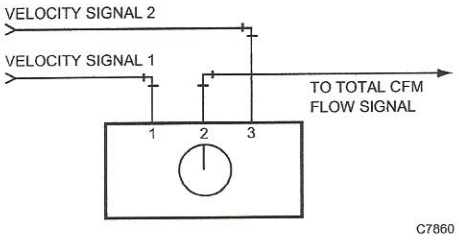


Fig. 3. Summing relay application.

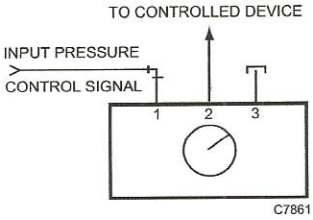


Fig. 4. Adjustable flow restrictor application.

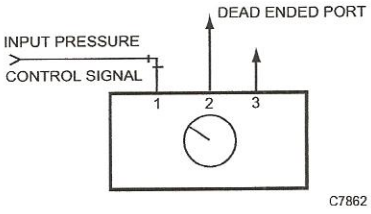


Fig. 5. Adjustable pressure supply application.

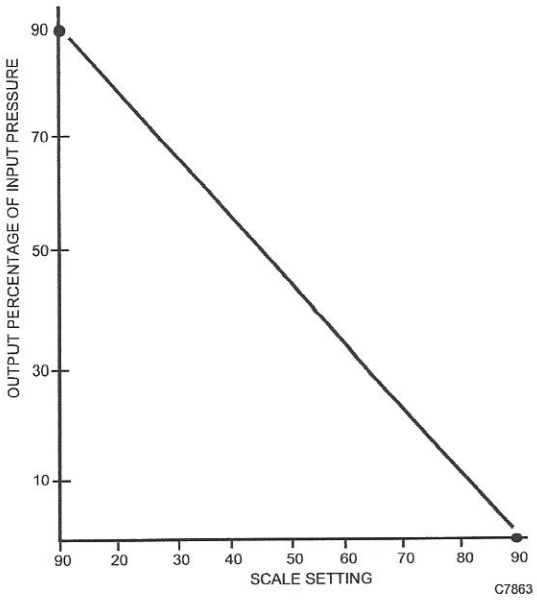


Fig. 6. Output pressure vs scale settings.

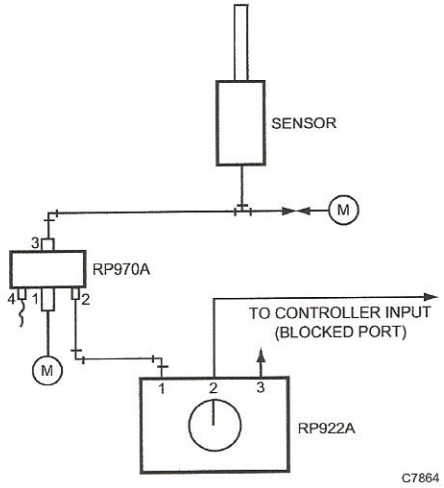


Fig. 7. Adjustable sensor input span application.