

F-4103 Series Diaphragm Comparator



The F-4103-20 & 25 Diaphragm Comparator is a versatile control circuit component for both fluidic and pneumatic signal levels. It performs many functions including those of an analog pressure comparator, an analog pressure repeater and a digital signal isolator.

Referring to Fig. 1, port 1 is a center leakport with a 0.020 inch diameter. The two other ports provide a means of applying pressure to either side of a rubber diaphragm. Port 2, on the left side of the diaphragm, is a dead-ended input. Port 0 is an input for applying pressure to the right side of the diaphragm. The two most common F-4103-20 & 25 circuit configurations are the comparator and the repeater.

Comparator Function

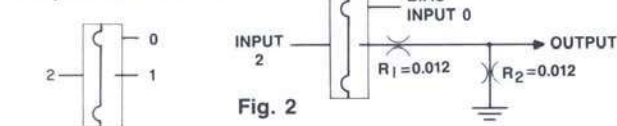


Fig. 1

Note: Bleed through R_2 required for dead ended output load.

Comparator Function

When connected as shown in Fig. 2, the F-4103-20 & 25 compares two analog pressure signals. In this configuration, the diaphragm shifts when the pressure on one side becomes greater than the pressure on the other. An output signal from port 1 indicates that input 0 is greater than input 2. No output indicates that input 2 is greater than input 0. The F-4103-20 in this configuration can be used to compare an analog signal to a reference pressure as required in a Schmitt Trigger circuit.

Repeater Function

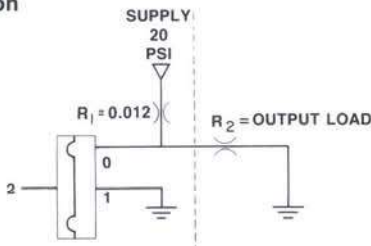


Fig. 3

Repeater Function

When connected as shown in Fig. 3, the F-4103-20 & 25 produces an output pressure which is equal to its input pressure. The pressure on the right side of the diaphragm is held equal to the pressure on the left side of the diaphragm over a wide range of output flow changes. The diaphragm isolates the input from the output so that flow changes on the output side have no effect on the input pressure. As the output flow decreases, the diaphragm shifts away from the center leakport and allows more air to bleed to atmosphere. As the output flow increases, the diaphragm moves toward the center leakport and allows less air to bleed to atmosphere. In this manner, the output pressure is held equal to the input over a wide range of output flow changes.

Applying the F-4103-20 & 25 in a repeater configuration prevents contamination from entering an analog or digital fluidic circuit.

Please Read Warranty on Page 8.

FEATURES

- Fast Response
- Snap-Action
- Miniature Size

SPECIFICATIONS

Operating Pressure: 0.5 to 25 PSI Maximum
Bleed Port: 0.020 Inch
Temperature Limits: 40° to 120°F. (4.4° to 49°C.)
Recommended Filtration: 5 Micron

MATERIALS

Housing: Polysulfone
Diaphragm: Silicone

MOUNTING

F-4103-20: Inline
F-4103-25: Panel Mounted

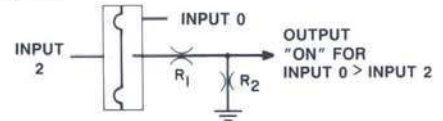
PORT CONNECTIONS

Straight ports for 1/16" I.D. flexible tubing

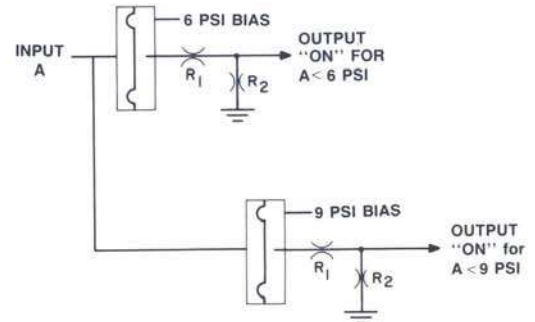
ORDERING INFORMATION (Order by model number.)

Model Numbers: F-4103-20 - Inline
F-4103-25 - Panel Mount

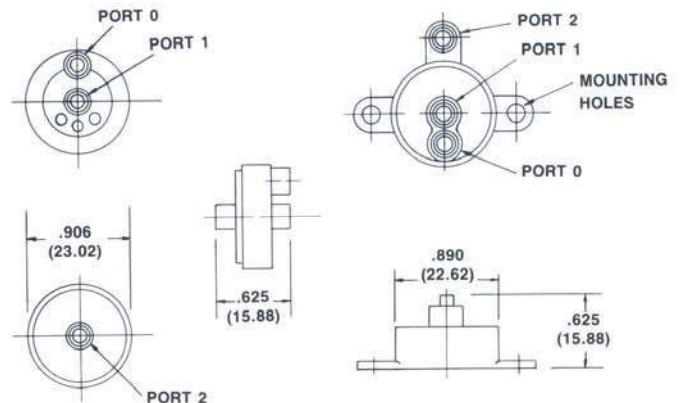
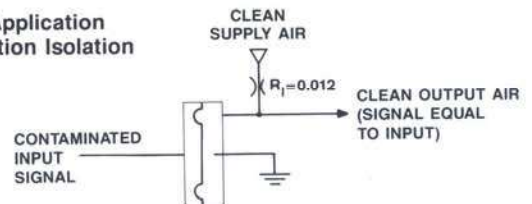
Comparator Application Comparing Two Variables



Comparator Application Comparing a Variable to Two Constants



Repeater Application Contamination Isolation



() = Metric Dimensions

Check Chemical Compatibility of Polysulfone.