

## RP470A and B Pneumatic Selector Relays

### INSTALLATION INSTRUCTIONS

#### DESCRIPTION

RP470A and B are three-port relays with the following differences:

##### RP470A:

- Transmits the higher of two input signals.
- Selects the higher pressure with a sensitivity of .015 psi (1.03 kPa).
- Is used in sensor lines, such as LP914 or LP915 temperature sensors with a 1.25 to 2.50°F (0.68 to 1.3°C) accuracy, depending on sensor span.
- Has a gray body.

##### RP470B:

- Locks out one pressure signal when a second pressure signal is higher.
- Functions as a repeater for signal isolation.
- Functions as a lower-of-two-pressures selector.
- Has a gray and black body.

Fig. 1 shows RP470A and B dimensions in inches (millimeters.)

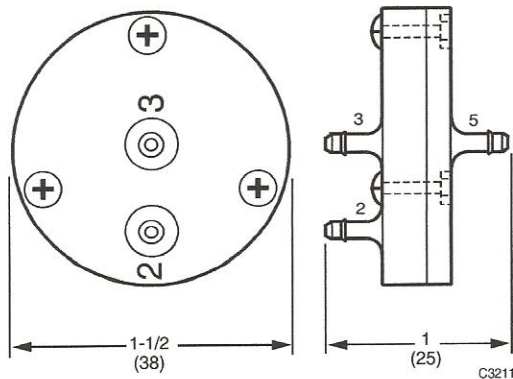


Fig. 1. RP470A and B dimensions.

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#### BEFORE INSTALLATION

In a lower-of-two-pressures application, the RP470B requires a 0.007 Filter Restrictor 14002913-002 if the input is not already restricted (a one-pipe device input.)

#### INSTALLATION

##### Mounting

Suspend on tubing or mount on a surface. See Fig. 2. for surface mounting.

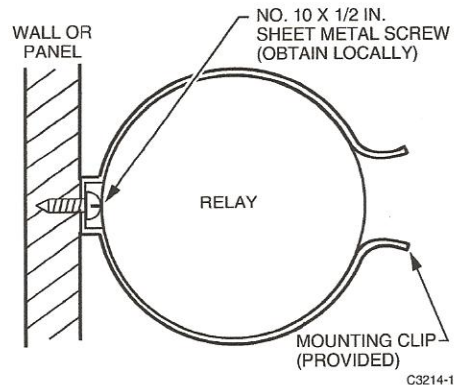


Fig. 2. Typical surface mounting.

##### Piping

Fig. 3 shows adaptation piping. All connections are sharp barb 5/32 in. (4 mm) O.D. polyethylene tubing.



#### CAUTION

To prevent damage to the sharp barb connections, do not attempt to cut or pull the tubing. To remove tubing from barb connections, cut tubing a few inches from the control device. Use a coupling to reconnect tubing.



NOTE: When the system is other than copper or polyethylene tubing, adapt as shown in Fig. 3. Some models provide parts for adapting.

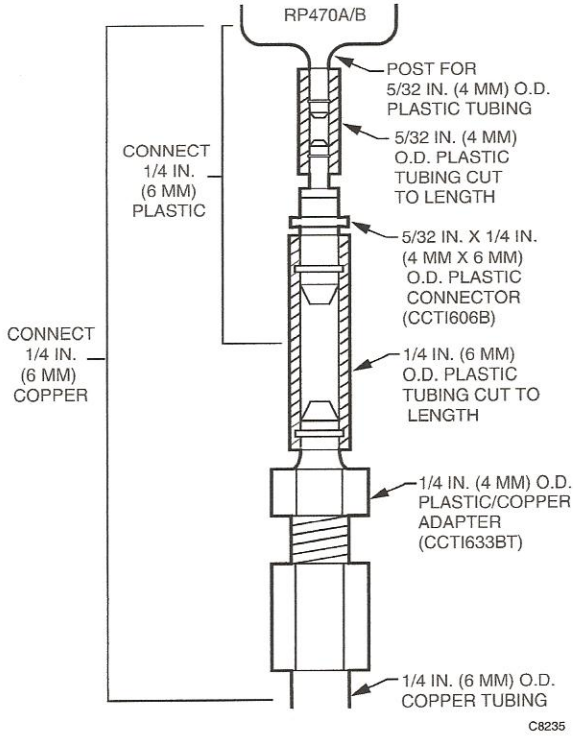


Fig. 3. Adaptation piping.

**Port Identification Tables**

The following tables identify ports of older Honeywell pneumatic relays when upgrading installation. Refer to Tables 1 and 2.

**Table 1. RP470A Connections for a Higher-of-Two Pressures Application.**

	RP470A	RP405A	RP407	RP904A	RO48B
Input A	3	P1	M	P1	1 & 2
Input B	5	P2	P	P2	4 & 5
Output	2	B	B1	B	3
Main	—	—	—	M	—

**Table 2. RP470B Connections for a Lockout Operation.**

	RP470B	RP405A	RP407	RP904A	RO48B
Output	3	P1	M	P1	1 & 2
Pilot	5	P2	P	P2	4 & 5
Input	2	B	B1	B	3
Main	—	—	—	M	—

**CHECKOUT AND TEST**

**RP470A - Higher-of-Two-Pressures Relay**

Ensure that the higher-of-two-input pressures at Ports 3 and 5 is transmitted through output Port 2.

**RP470B - Lockout Relay or Repeater**

In a lockout relay application, ensure that the relay passes the signal at Port 2 to Port 3 if the pressure at Port 5 is lower than the pressure at Port 2. When the pressure at Port 5 is greater than the pressure at Port 2, lockout should occur.

In a lower-of-two-pressures application, make sure that the output is the lower pressure.

**ENGINEERING DATA**

**Specifications**

**Models:**

- RP470A Higher-of-Two Pressures Relay
- RP470B Lockout Relay or Repeater

**Operating Pressure Range:**

- Normal: 0 to 18 psi (0 to 124 kPa)
- Maximum: 30 psi (207 kPa)

**Maximum Safe Air Pressure:** 30 psi (207 kPa)

**Ambient Operating Limits:**

- Temperature: 0 to 140°F (-18 to 60°C)
- Relative Humidity: 5 to 95%

**Air Handling Capacity:** 0.039 scfm at 1 psi (18 ml/s at 7 kPa) differential

**Construction:** Molded plastic with neoprene diaphragm and valox valve seat

**Operation**

**RP470A**

When the pressure at Port 3 is greater than the pressure at Port 5 (Fig. 4A), Port 3 supplies the output through Port 2 and the output at Port 2 equals the pressure at Port 3. When the pressure at Port 5 is greater than the pressure at Port 3 (Fig. 4B), Port 3 closes off and the output at Port 2 equals the pressure at Port 5.

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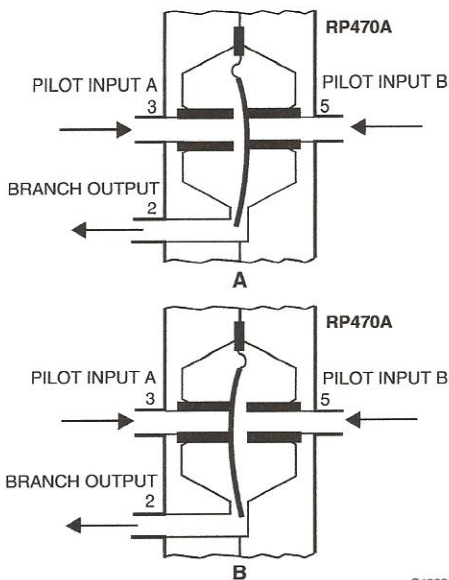


Fig. 4. RP470A operation.

**RP470B**

When the pressure at Port 2 is greater than the input pressure at Port 5 (Fig. 5A), Port 2 supplies output through Port 3. When the pressure at Port 5 is greater than the pressure at Port 2 (Fig. 5B), the diaphragm closes off the output (Port 3.) This action prevents the Port 2 signal from passing through Port 3.

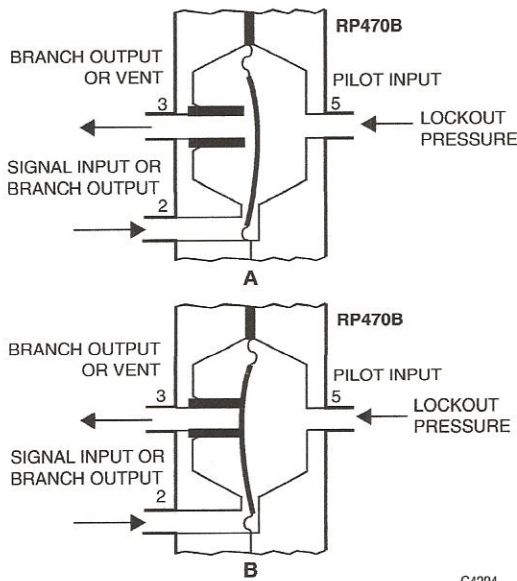


Fig. 5. RP470B operation.

**Applications**

RP470 A and B Pneumatic Selector Relays are used in HVAC systems to perform several relay functions.

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**RP470A - Higher-of-Two Pressures Relay**

**CAUTION**

Accuracy decreases when used with circuits having 0.005 restrictors; for example, TP974 (0.30 psi [2.07 kPa]) compared with those having 0.007 restrictors (0.15 psi [1.03 kPa]).

Fig. 6 shows a typical application using three zone thermostats and two RP470A for control. Each zone is controlled by a separate thermostat. The thermostat that calls for the most cooling (transmits the highest branchline pressure) controls the cooling valve through one or both RP470A.

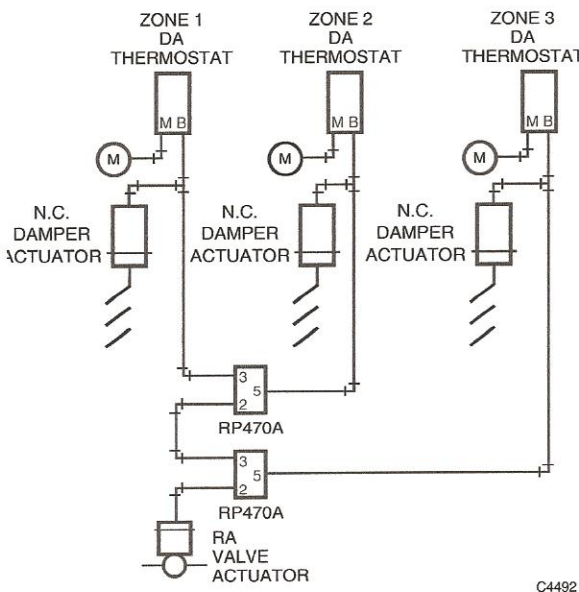


Fig. 6. RP470A typical application.

**RP470B - Lockout Relay or Repeater**

Fig. 7 shows a typical lockout application. When outdoor air temperature is higher than return air temperature, it disables the mixed air controller.

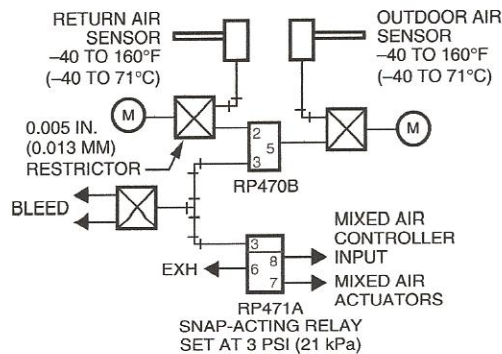


Fig. 7. RP470B typical lockout application.

Fig. 8 shows the RP470B piped as a repeater. This application provides circuit isolation by repeating the input pressure with a second air source. The signal at

Port 5 blocks Port 3 until the signal at Port 2 builds up a matching pressure, thus maintaining Port 3 equal to Port 5. Port 3 acts as an exhaust port.

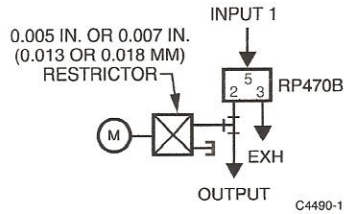


Fig. 8. RP470B piped as a repeater.

Fig. 9 shows the RP470B in a lowest-of-several-pressures application. In this application, the RP470B acts as a repeater, but repeat only the lowest input pressure.

NOTE: All inputs are isolated and a restricted main is required.

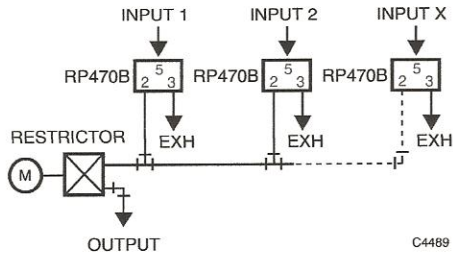


Fig. 9. RP470B piped for lowest-of-several-pressures selection.

Fig. 10 shows the RP470B piped for the lowest-of-two-pressures selection with a capacity-type device input.

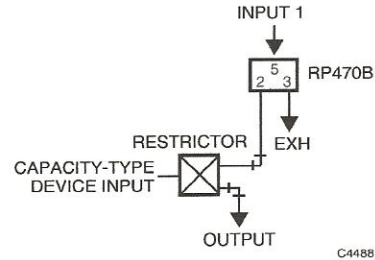


Fig. 10. RP470B piped for lowest-of-two-pressures selection with capacity-type device input.

Fig. 11 shows the RP470B piped for a lowest-of-two pressures selection with a one pipe, bleed-type device input.

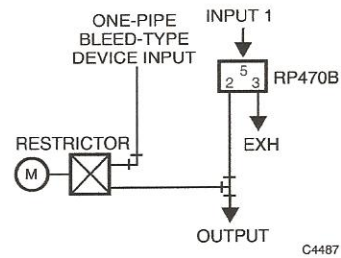


Fig. 11. RP470B piped for lowest-of-two-pressures selection with a one-pipe, bleed-type device input.

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