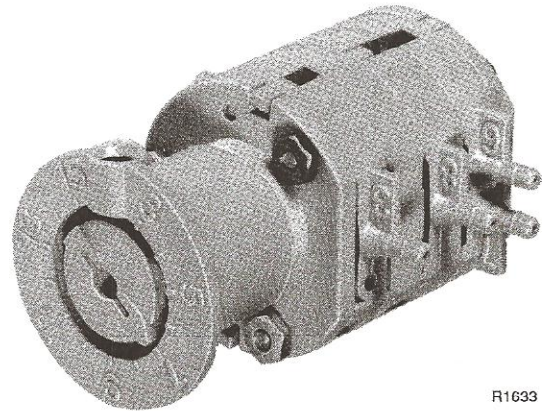


Honeywell

RP471A Pneumatic Snap Acting Relay



R1633

GENERAL

The RP471A is a four port, snap acting relay which converts a proportional air pressure change from a controller to a positive (two-position) pressure change to a pneumatic valve or damper operator. It can also divert a supply line to one of two branches.

Pilot pressure can be modulating; switch action is snap acting, two-position.

FEATURES

- Manually adjustable switching pressure
- Sharp barb connections for 5/32-inch (4 mm) O.D. plastic tubing
- Molded plastic construction with neoprene diaphragms and piano wire springs
- Surface or panel mounted

EPRI Edgemont Precision Rebuilders, Inc
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RP471A Pneumatic Snap Acting Relay

DESCRIPTION

The RP471A is a four port, snap acting relay which converts a proportional air pressure change from a controller to a positive (two-position) pressure change to a pneumatic valve or damper operator. It can also divert a supply line to one of two branches.

SPECIFICATIONS

Model:

RP471A: Snap acting pneumatic relay

Setpoint Range:

Adjustable, 3 to 15 psi (20 to 105 kPa)

Action:

SPDT, positive snap acting

Differential:

1 psi (10 kPa), nonadjustable, factory set

Maximum Safe Air Pressure:

30 psi (205 kPa)

Operating Pressure (Switch and Pilot):

0 to 18 psi (0 to 124 kPa)

Ambient Operating Limits

Temperature: 0 to 140F (-18 to 60C)

Humidity: 5 to 95%

Ambient Storage Limits:

Temperature: -30 to 150F (-34 to 66C)

Humidity: 5 to 95%

Knob Rotation:

300 degrees (from 3 to 15 psi on scale)

Mounting:

Surface or panel using 1-1/2 in. (38 mm) dia. metal spring clip (supplied) or in-line

Air Connections:

Sharp barb connections for 5/32-in. (4 mm) O.D. plastic tubing

Pilot:

Modulating pressure

Operation:

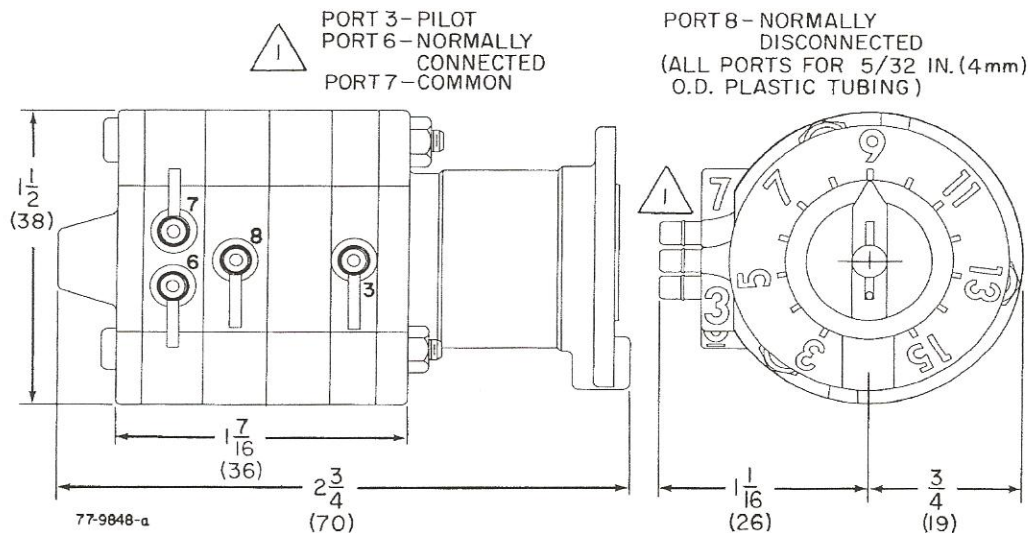
Makes 7 to 6 on pressure decrease to setpoint minus differential

Makes 7 to 8 on pressure increase to setpoint

Construction:

Molded plastic with neoprene diaphragms and piano wire springs

Dimensions:



Approximate Dimensions in Inches (Millimeters)

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RP471A Pneumatic Snap-Acting Relay

INSTALLATION INSTRUCTIONS

DESCRIPTION

The RP471A Snap-Acting Relay is a two-position, four-port, single-pole double-throw (SPDT), pneumatic switch that provides positive switching action from modulating signal lines with an adjustable switch point.

It has a slight air bleed in its pilot chamber that prevents the device from locking up when the pilot port is blocked. This bleed prevents air from being trapped in the circuit.

The switching setpoint is manually adjustable for 3 to 15 psi (21 to 103 kPa.)

The RP471A is designed for use in HVAC systems to convert a gradual air pressure change from a controller to a positive (two-position) pressure change at a pneumatic valve or damper operator.

Fig. 1 shows RP471 approximate dimensions.

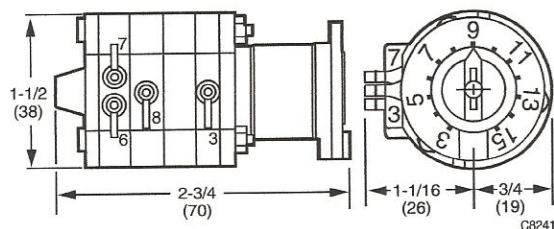


Fig. 1. RP471A dimensions in in. (mm).

INSTALLATION

Mounting

Suspend on tubing or mount on a surface. See Fig. 2 for surface mounting. Use a 1-1/2 in. (38 mm) dia. metal spring clip (supplied) and one No. 10 mounting screw (locally purchased).

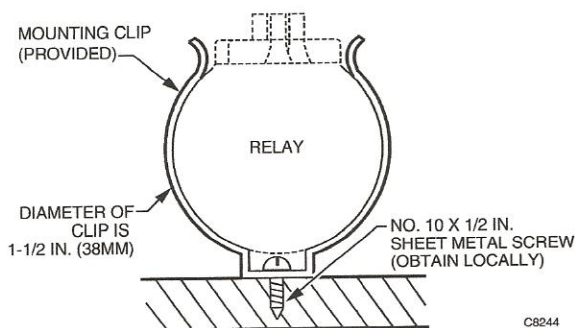


Fig. 2. Surface mounting the RP471A with a spring clip.

Piping

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



CAUTION

Equipment Damage Hazard.

To prevent damage to the sharp barb connections, do not attempt to cut or pull tubing. To remove the tubing from the 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.

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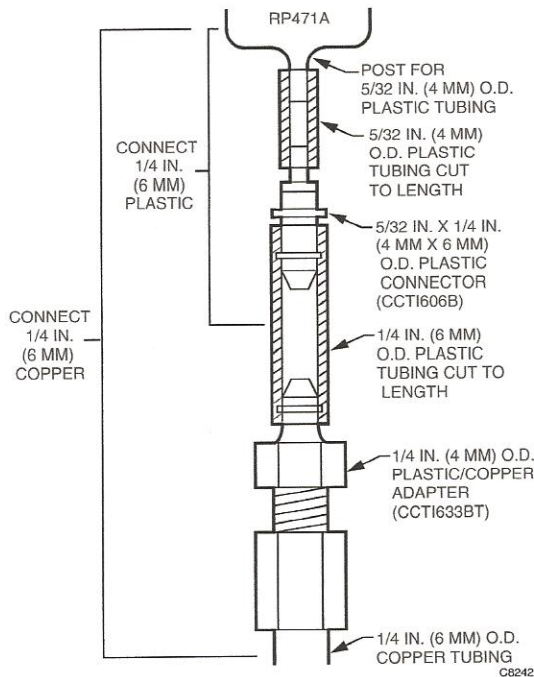


Fig. 3. Adaptation piping.

Port Identification Table

The right column in Table 1 identifies the ports of older Honeywell pneumatic relays when upgrading the installation.

Table 1. Pneumatic Relay Ports.

	RP471A	RO49A
Pilot	3	1
Common	7	3
Normally connected	6	4
Normally disconnected	8	2

Checkout and Test

Decrease pilot pressure (port 3) to 1 psi (7 kPa) below setpoint. This connects port 7 (Common) with port 6 (Normally Connected) and blocks port 8 (Normally Disconnected). See Fig. 4.

Increase pilot pressure to setpoint. This connects port 7 with port 8, and blocks port 6.

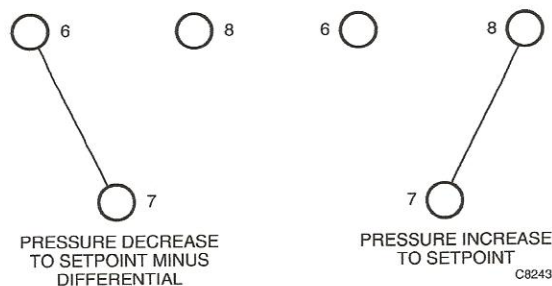


Fig. 4. RP471A internal port alignment.

ENGINEERING DATA

Specifications

Model: RP471A Snap-Acting Pneumatic Relay

Operating Pressure (Switch and Pilot) Range:

Normal: 0 to 18 psi (0 to 124 kPa)

Maximum Safe: 30 psi (207 kPa)

Ambient Operating Limits:

Temperature: 0 to 140°F (-18 to 60°C)

Relative Humidity: 5 to 95%

Setpoint: 3 to 15 psi (21 to 103 kPa) (field adjustable)

Differential: Between 0.1 and 0.8 psi (0.7 and 5.5 kPa), 41 to 140°F (5 to 60°C), nonadjustable; factory set

Action: SPDT, positive snap acting

Knob Rotation: 300 degrees (from 3 to 15 psi [21 to 103 kPa] on scale)

Switching Differential: 1 psi (7 kPa), with actual operation at 0.3 to 0.4 psi (2 to 3 kPa), nonadjustable.

Air Consumption: 0.002 scfm (1.0 l/sec)

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

Construction: Molded plastic with neoprene diaphragms, steel spring, aluminum shaft, stainless steel lever

Operation

The return spring has an equivalent pressure of less than 1 psi (7 kPa.). See Fig. 5. The pilot pressure at port 3 must equal or exceed the switching pressure developed by the setpoint spring. At that point, the control chamber port opens. Pilot pressure enters the control chamber and pushes up the control chamber diaphragm. This opens port 8 and closes port 6.

When pilot pressure drops below setpoint minus the differential, the setpoint spring relaxes and closes the control chamber port. Air trapped in the control chamber bleeds to the atmosphere.

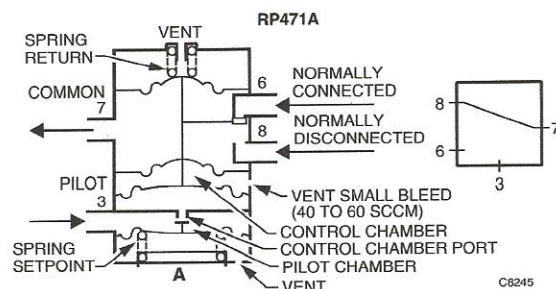


Fig. 5. RP471A operation.

When control chamber pressure is less than return spring pressure, it connects port 6 to port 7 and port 8 closes port 3 is the pilot port. See Fig. 6.

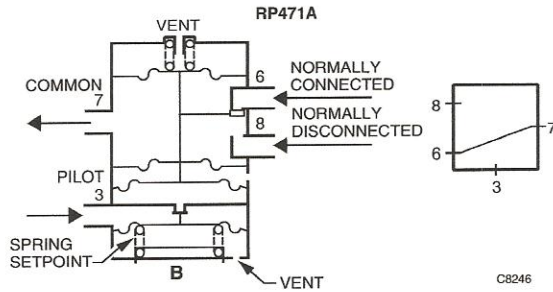


Fig. 6. RP471A operation.

Application

The RP471A can stop, divert or bleed pneumatic air lines when pilot pressure is changed from one specific value to another. It can change the air flow in one or two pneumatic circuits with one pilot pressure change. See Fig. 7.

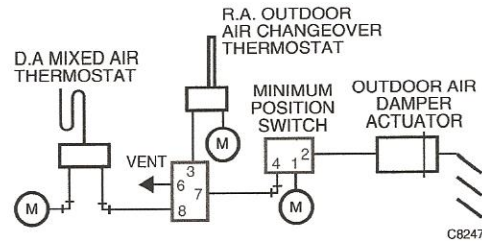


Fig. 7. Typical system using RP471 to switch control of an outdoor air damper from a mixed air state to minimum position when outdoor air exceeds a given temperature.

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