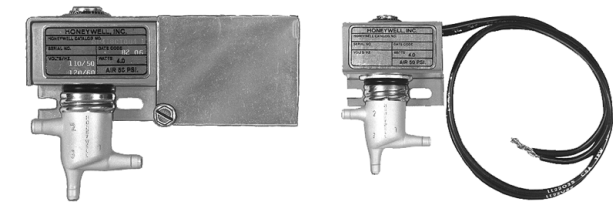


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Relays

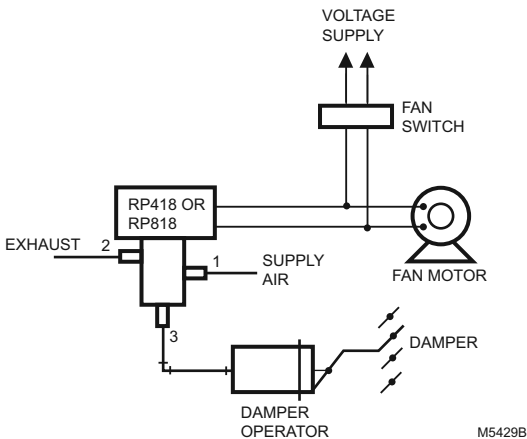
RP418, RP818 Electric/Pneumatic Relay



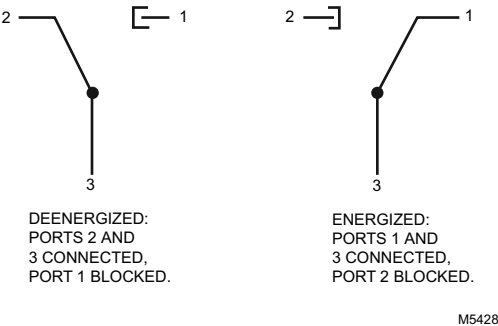
Electrically operated pneumatic switches used to interlock an electrical system and a pneumatic control system. Replacement devices are available for Johnson, Powers, Robertshaw, Barber-Colman, and older Honeywell devices.

- Usable as a diverting relay, a selector relay, or a stop and bleed relay.
- Mount and operate in any position.
- Available with lead wires or junction box.
- Line or low voltage models available.

RP418 & RP818 Typical Piping and Wiring



Internal Connections



Type: Electric / Pneumatic Relay
Dimensions, Approximate: 2 7/8 in. high x 3 13/16 in. wide x 1 1/4 in. deep (73 mm high x 97 mm wide x 32 mm deep)
Airflow Usage: 0.42 scfm (200 mL/s) at 20 psi (138 kPa) supply with 1 psi (7 kPa) pressure drop
Air Connections: Barbed fitting for 1/4 in. O.D. plastic tubing
Capacity: 0.075 Cv minimum
Operation: Energized: ports 1 and 3 connected, port 2 blocked
De-energized: ports 2 and 3 connected, port 1 blocked
Operating Humidity Range (% RH): 5 to 95% RH

Temperature Range: 0 F to 100 F (-18 C to +38 C)
Maximum Safe Operating Pressure: 50 psi (340 kPa)
Approvals:
Canadian Standards Association: Canadian Standards Association
Listed: File No. LR50900
Canadian Underwriters Laboratories, Inc. Listed: File No. LR50900
Underwriters Laboratories, Inc. Component Recognized File:
MP1502, Vol. 11, Sec. 1
UL Listed: Guide Y10Z

Product Number	Mounting	Voltage rating at 50 Hz	Voltage rating at 60 Hz	Frequency	Electrical Connections	Includes
RP418A1008	Surface	208 Vac	—	50 Hz	Junction Box and 15 in. (380 mm) leads	Junction Box
RP418A1057	Surface	120 Vac	—	50 Hz	Junction Box and 15 in. (380 mm) leads	Junction Box
RP418A1065	Surface	440 Vac	480 Vac	50 Hz; 60 Hz	Junction Box and 15 in. (380 mm) leads	Junction Box
RP418A1073	Surface	—	277 Vac	60 Hz	Junction Box and 15 in. (380 mm) leads	Junction Box
RP418A1081	Surface	—	208 Vac	60 Hz	Junction Box and 15 in. (380 mm) leads	Junction Box
RP418A1099	Surface	220 Vac	240 Vac	50 Hz; 60 Hz	Junction Box and 15 in. (380 mm) leads	Junction Box
RP418A1107	Surface	110 Vac	120 Vac	50 Hz; 60 Hz	Junction Box and 15 in. (380 mm) leads	Junction Box
RP418B1014	Panel mount	208 Vac	—	50 Hz	15 in. (380 mm) leads	—
RP418B1022	Panel mount	240 Vac	—	50 Hz	15 in. (380 mm) leads	—
RP418B1030	Panel mount	120 Vac	—	50 Hz	15 in. (380 mm) leads	—
RP418B1048	Panel mount	440 Vac	480 Vac	50 Hz; 60 Hz	15 in. (380 mm) leads	—
RP418B1055	Panel mount	—	208 Vac	60 Hz	15 in. (380 mm) leads	—
RP418B1071	Panel mount	110 Vac	120 Vac	50 Hz; 60 Hz	15 in. (380 mm) leads	—
RP818A1004	Surface	—	24 Vac	60 Hz	Junction Box and 15 in. (380 mm) leads	Junction Box
RP818B1002	Panel mount	—	24 Vac	60 Hz	15 in. (380 mm) leads	—
RP818B1010	Panel mount	24 Vac	—	50 Hz	15 in. (380 mm) leads	—

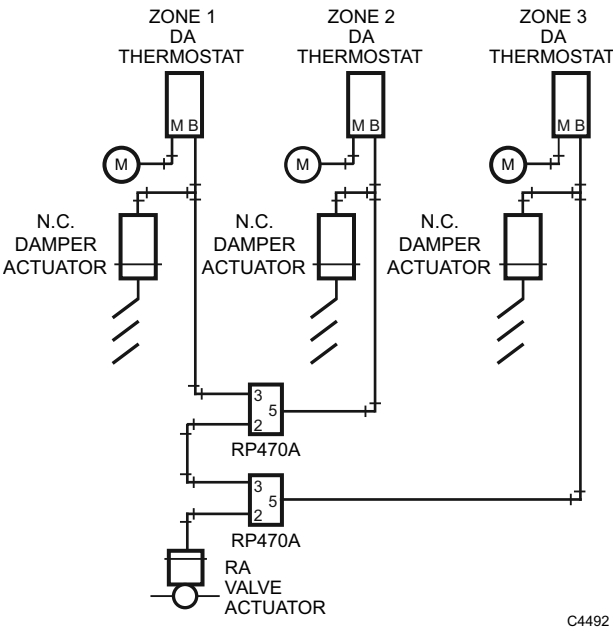
RP470 Pneumatic Selector Relay



Three-port relays used in HVAC systems to perform a variety of relay functions; transmit the higher of two input signals, lock out one pressure signal when a second signal is higher, or transmit the lower of two pressure signals. Replacement devices are available for Johnson, Powers, Robertshaw, Barber-Colman, and older Honeywell devices.

- Uses diaphragm-logic technology.
- In-line, wall, or panel mounted.
- Sharp-barb air connections.
- Molded plastic construction.

RP470A Higher-of-Two Pressures Application



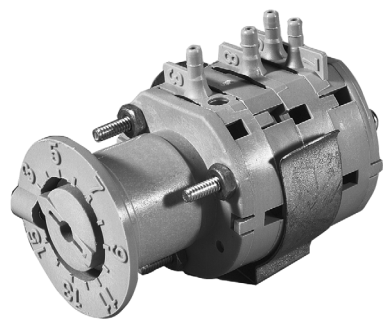
Type: Pneumatic Three-port Selector Relay
Dimensions, Approximate: 1 1/2 in. diameter x 1 in. deep (38 mm diameter x 25 mm deep)
Air Connections: Barb fittings 5/32 in. (4 mm) O.D. plastic tubing
Capacity: 0.039 scfm at 1 psi differential (18 mL/s at 5 kPa differential)
Operation: Higher-of-two-pressures selector relay
Mounting: Wall or In-line or panel
Operating Humidity Range (% RH): 5 to 95% RH
Temperature Range: 0 F to 140 F (-18 C to +60 C)
Maximum Safe Operating Pressure: 30 psi (205 kPa)

Relays

Product Number	Operation	Input Operating Pressure		Description	Includes
		(psi)	(kPa)		
RP470A1003	Higher-of-two-pressures selector relay	0 to 20 psi	0 to 138 kPa	Pneumatic Selector Relay, transmits higher of two input pressures	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel
RP470B1001	repeater relay; Lower-of-two pressures; Lockout	0 to 20 psi	0 to 138 kPa	Pneumatic Selector Relay, used in lockout, repeater and lower of two input pressure applications.	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel

Relays

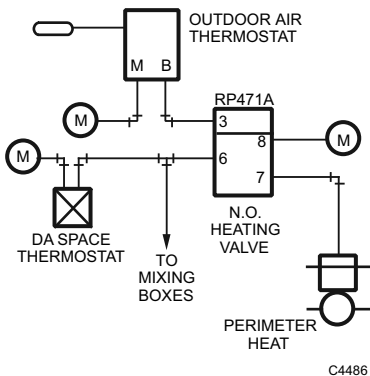
RP471 Snap-Acting Pneumatic Relay



The four port, snap acting relay converts a proportional air pressure change from a controller to a positive (two-position) pressure change. It can also divert a supply line to one of two branches. Replacement device is available for Johnson, Powers, Robertshaw, Barber-Colman, and older Honeywell devices.

- Manually adjustable switching pressure.
- Sharp barb connections for 5/32 inch (4 mm) O.D. plastic tubing.
- Molded plastic construction with neoprene diaphragms and stainless steel lever.
- Mounts in any position with mounting clip.

RP471A Typical Piping



Type: Pneumatic, four-port, snap acting relay
Dimensions, Approximate: 1 1/2 in. diameter x 2 3/4 in. deep (38 mm diameter x 70 mm deep)
Air Connections: Barb fittings 5/32 in. (4 mm) O.D. plastic tubing
Capacity: 0.039 scfm at 1 psi differential (18 mL/s at 5 kPa differential)
Mounting: Wall or Panel
Operating Humidity Range (% RH): 5 to 95% RH
Temperature Range: 0 F to 140 F (-18 C to +60 C)
Maximum Safe Operating Pressure: 30 psi (205 kPa)
Nominal Switch Differential: 0.5 psi (3 kPa)

Product Number	Operation	Differential Pressure Range		Setpoint Range		Description	Includes
		(psi)	(kPa)	(psi)	(kPa)		
RP471A1002	Proportional to 2-position converter	1 psi maximum	7 kPa maximum	Adjustable between 3 to 15 psi	Adjustable between 21 to 103 kPa	Wall or Panel Mounted Pneumatic, four-port, snap acting relay, SPDT	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel

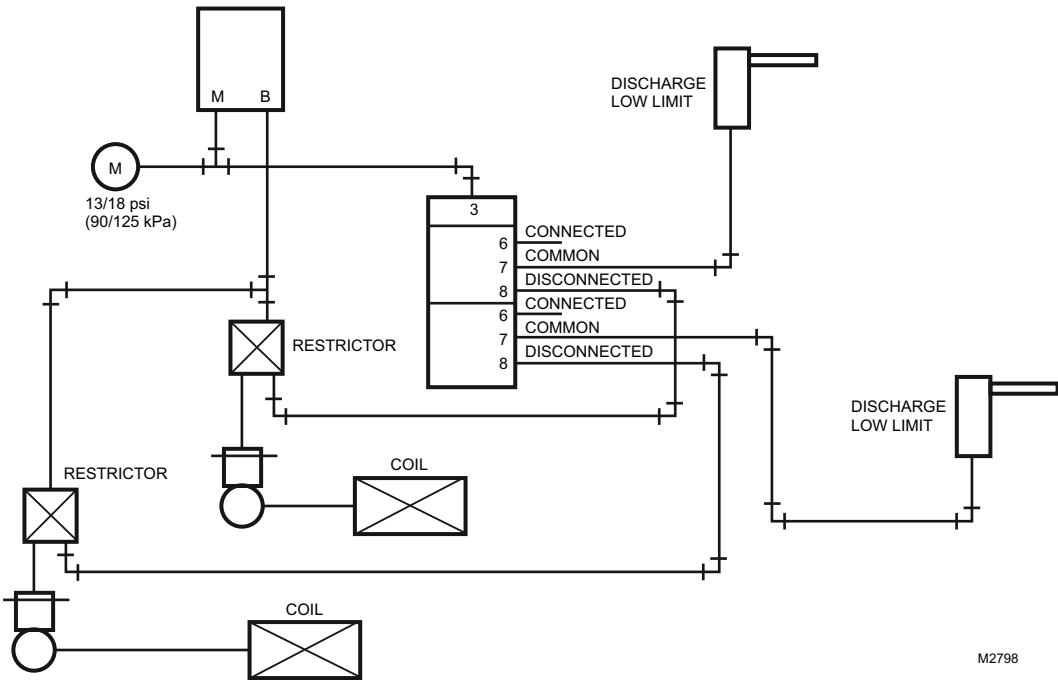
RP670 Pneumatic Switching Relay



Pneumatic switching relays block, divert, or bleed pneumatic air lines when pilot pressure is changed from one specific value to another. Commonly applied in Day-Night, Summer-Winter, Start-Stop, On-Off-Auto and other multiple condition systems where control sequence is changed as conditions change. Replacement devices are available for Johnson, Powers, Robertshaw, Barber-Colman, and older Honeywell devices.

- Available with either single-pole, double-throw (SPDT) or double-pole, double-throw (DPDT) switching action.
- Second switch on dpdt (RP670B) models molded in natural color for identification.
- Air connections for 5/32 in. (4 mm) O.D. plastic tubing.
- Molded plastic construction with neoprene diaphragms, stainless steel lever.
- In-line mounting, or wall or panel mounting with provided metal spring clip.

RP670 Typical Piping



Type: Pneumatic Switching Relay
Dimensions, Approximate: 1 1/2 in. diameter x 2 1/4 in. deep
(38 mm diameter x 56 mm deep)
Air Connections: Barb fittings 5/32 in. (4 mm) O.D. plastic tubing

Capacity: 0.039 scfm at 1 psi differential (18 mL/s at 5 kPa differential)
Operating Humidity Range (% RH): 5 to 95% RH
Temperature Range: 0 F to 140 F (-18 C to +60 C)
Maximum Safe Operating Pressure: 30 psi (205 kPa)

Product Number	Operation	Switching Occurs Between Pressures		Description	Includes
		(psi)	(kPa)		
RP670A1001	SPDT relay	3 and 7 psi	20 and 50 kPa	Pneumatic Switching Relay with SPDT switching	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel
RP670A1019	SPDT relay	13 and 17 psi	90 and 120 kPa	Pneumatic Switching Relay with SPDT switching	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel
RP670B1009	DPDT relay	3 and 7 psi	20 and 50 kPa	Pneumatic Switching Relay with DPDT switching	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel
RP670B1017	DPDT relay	13 and 17 psi	90 and 120 kPa	Pneumatic Switching Relay with DPDT switching	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel
RP670B1066	DPDT relay	18 and 22 psi	124 and 152 kPa	Pneumatic Switching Relay with DPDT switching	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel
RP670B1074	DPDT relay	20 and 25 psi	140 and 175 kPa	Pneumatic Switching Relay with DPDT switching	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel

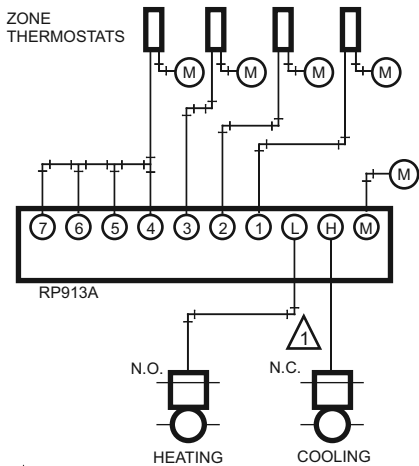
Relays

RP913 Pneumatic Load Analyzer



A diaphragm logic pressure selector selects the highest and/or lowest branch pressure input from zone thermostats to operate final control elements in pneumatic control applications.

RP913A Typical Piping



1 PLUG PORT H OR L WHEN NOT USED.

C4483

Replacement devices are available for Johnson, Powers, Robertshaw, and Barber-Colman devices.

- Seven input manifold containing logic diaphragm, air filter, and restrictions.
- Ten sharp barb connectors for all piping requirements.
- Large integral filter assures clean air to the manifold.
- Requires no field adjustment, and plastic construction results in minimum maintenance.
- Two analyzers can be connected together to increase inputs to twelve.

Type: Load Analyzer Relay, 7 input

Dimensions, Approximate: 3/4 in. high x 6 1/2 in. long x 2 1/16 deep (19 mm high x 165 mm long x 52 mm deep)

Airflow Usage: 0.04 scfm (0.019 mL/s)

Air Connections: Barb fittings (10) for 1/4 in. (6 mm) O.D. plastic tubing

Capacity: 0.039 scfm at 1 psi differential (18 mL/s at 5 kPa differential)

Operating Humidity Range (% RH): 5 to 95% RH

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

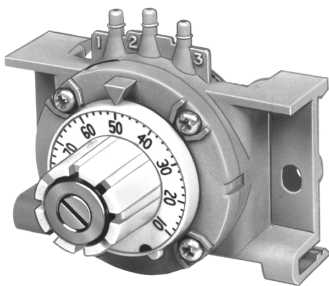
Maximum Safe Operating Pressure: 25 psi (172 kPa)

Replacement Parts:

14001865-001 Filter Cartridge Assembly

Product Number	Operation	Mounting	Description
RP913A1008	Selects highest and/or lowest branch pressure input to operate final control elements	Wall or In-line or panel	Wall, In-Line or Panel Mounted Load Analyzer Relay, 7 input

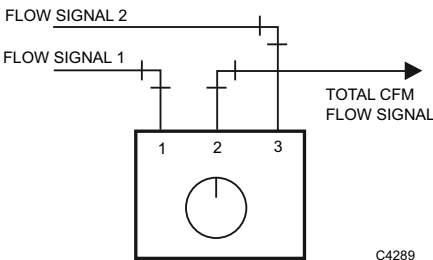
RP922 Pneumatic Potentiometer



A three-port pneumatic potentiometer can sum two input pressures, average two input pressures, be an adjustable flow restriction, or be an adjustable pressure supply. Replacement devices are available for Johnson, Powers, Robertshaw, Barber-Colman, and older Honeywell devices.

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

Typical Wiring Diagram for RP922



Type: Pneumatic Averaging / Ratio Relay
Dimensions, Approximate: 2 7/16 in. wide x 1 5/8 in. deep x 2 7/8 in. high (62 mm wide x 42 mm deep x 73 mm high)
Airflow Usage: Average of two input pressures
Air Connections: Barb fittings 5/32 in. (4 mm) O.D. plastic tubing
Operation: Can sum two input pressures, average two input pressures, be adjustable flow restriction or be an adjustable pressure supply.
Mounting: Wall or panel or Snap onto DIN rail
Operating Humidity Range (% RH): 5 to 95% RH
Maximum Safe Operating Pressure: 30 psi (205 kPa)

Product Number	Operation	Mounting	Description
RP922A1007	Can sum two input pressures, average two input pressures, be adjustable flow restriction or be an adjustable pressure supply.	Wall or panel or Snap onto DIN rail	Wall, Snap onto DIN rail or panel mounted Pneumatic Averaging / Ratio Relay

Relays

Relays

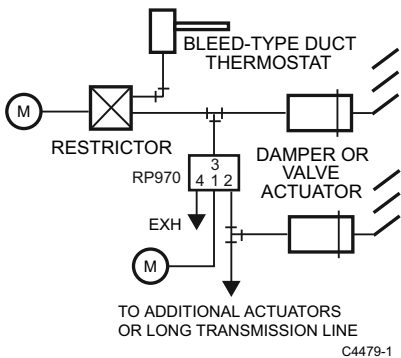
RP970 Pneumatic Capacity Relay



Direct acting, modulating relay provides increased capacity of the branchline pressure to the final control device. Replacement devices are available for Johnson, Powers, Robertshaw, Barber-Colman, and older Honeywell devices.

- In-line, wall, or panel mounted.
- Sharp-barb air connections.
- Molded plastic construction with neoprene diaphragms.
- Mounting clip provided.

RP970 Typical Piping



Type: Pneumatic Capacity Relay

Dimensions, Approximate: 1 1/2 in. diameter, 1 1/2 in. deep (38 mm dia., 38 mm deep)

Airflow Usage: 0.002 scfm (1.0 mL/s) maximum

Air Connections: Barb fittings, Port 1: 1/4 in. (6 mm) O.D. plastic tubing; Other Ports: 5/32 in. (4 mm) O.D. plastic tubing

Action: Direct Acting

Capacity: 0.039 scfm at 1 psi differential (18 mL/s at 5 kPa differential)

Mounting: Wall or In-line or panel

Operating Humidity Range (% RH): 5 to 95% RH

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

Maximum Safe Operating Pressure: 30 psi (205 kPa)

Accessories:

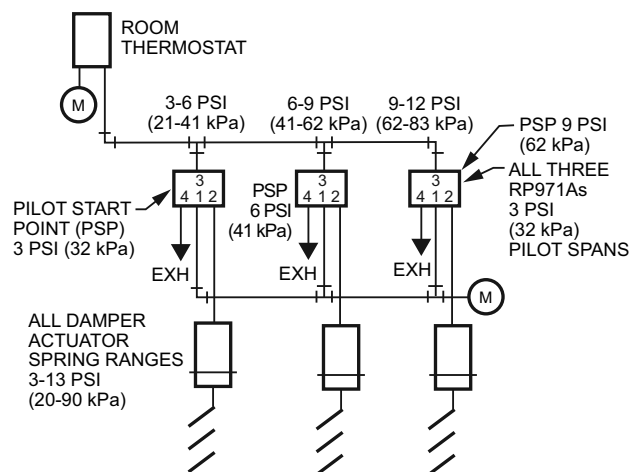
14003203-003 Conversion Kit to convert Johnson, Powers, Robertshaw, Barber Coleman and older Honeywell switches

Product Number	Operation	Input Operating Pressure		Description	Includes
		(psi)	(kPa)		
RP970A1008	Provides increased capacity of branchline pressure to final control device	0 to 20 psi	0 to 138 kPa	Wall, In-Line or panel mounted Pneumatic Capacity Relay	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel

RP971 Pneumatic Ratio Relay



RP971A Typical Piping



C4478-1

A four port non-bleed pneumatic relay which produces a modulating pressure output, proportional in a fixed ratio to pilot input changes. It is used to control pneumatic valve or damper actuators in sequence from a single thermostat. Replacement devices are available for Johnson, Powers, Robertshaw, Barber-Colman, and older Honeywell devices.

- Adjustable pilot start point pressures.
- Two pilot pressure spans available.
- Four sharp-barb air connections.
- Molded plastic construction with neoprene.
- Mounting clip provided.

Type: Pneumatic, Four Port Ratio Relay

Dimensions, Approximate: 2 in. diameter x 2 5/8 in. deep (52 mm dia. x 67 mm deep)

Airflow Usage: 0.002 scfm (1.0 mL/s) maximum

Air Connections: Barb fittings, Port 1: 1/4 in. (6 mm) O.D. plastic tubing; Other Ports: 5/32 in. (4 mm) O.D. plastic tubing

Action: Direct Acting

Capacity: 0.039 scfm at 1 psi differential (18 mL/s at 5 kPa differential)

Mounting: Wall or In-line or panel

Operating Humidity Range (% RH): 5 to 95% RH

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

Maximum Safe Operating Pressure: 30 psi (205 kPa)

Pilot Start Pressure: Adjustable 0 to 10 psi (Adjustable 0 to 69 kPa)

Output Span: 3 to 13 psi (21 to 90 kPa)

Accessories:

14003203-003 Conversion Kit to convert Johnson, Powers, Robertshaw, Barber Coleman and older Honeywell switches

801629T Clip for surface mounting

Product Number	Operation	Pilot Input Span		Description	Includes
		(psi)	(kPa)		
RP971A1007	Produces modulating pressure output proportional to pilot pressure input changes	3 psi input span for 3 to 13 psi output	—	Wall, In-Line or panel mounted Pneumatic Four Port Ratio Relay	14003030-002 Mounting Clip and scaleplate with psi markings
RP971A1015	Produces modulating pressure output proportional to pilot pressure input changes	5 psi input span for 3 to 13 psi output	—	Wall, In-Line or panel mounted Pneumatic Four Port Ratio Relay	14003030-002 Mounting Clip and scaleplate with psi markings
RP971A1023	Produces modulating pressure output proportional to pilot pressure input changes	—	21 kPa input span for 21 to 90 kPa output	Wall, In-Line or panel mounted Pneumatic Four Port Ratio Relay	14003030-002 Mounting Clip and scaleplate with kPa markings
RP971A1031	Produces modulating pressure output proportional to pilot pressure input changes	—	34 kPa input span for 34 to 90 kPa output	Wall, In-Line or panel mounted Pneumatic Four Port Ratio Relay	14003030-002 Mounting Clip and scaleplate with kPa markings

Relays

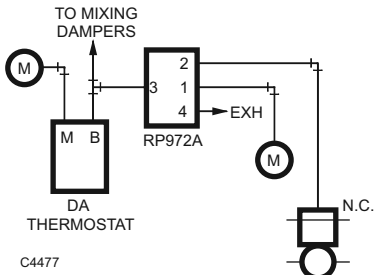
RP972 Pneumatic Reversing Relay



A modulating relay suitable for all types of heating and air conditioning control systems to reverse and increase the capacity of the branchline pressure to the final control element. The output varies inversely with the input with an adjustable offset. Replacement devices are available for Johnson, Powers, Robertshaw, Barber-Colman, and older Honeywell devices.

- Reverse acting.
- In-line mounting or can be wall or panel mounted with mounting clip provided.
- Molded plastic construction with neoprene diaphragms.

RP972A Typical Piping



Type: Pneumatic Reversing Relay

Dimensions, Approximate: 1 1/2 in. diameter x 2 1/4 in. deep
(38 mm diameter x 57 mm deep)

Airflow Usage: 0.002 scfm (1.0 mL/s) maximum

Air Connections: Barb fittings for three 5/32 in. (4 mm) and one 1/4 in. (6 mm) O.D. plastic tubing

Action: Reverse Acting

Capacity: 0.039 scfm at 1 psi differential (18 mL/s at 5 kPa differential)

Mounting: Wall or In-line or panel

Operating Humidity Range (% RH): 5 to 95% RH

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

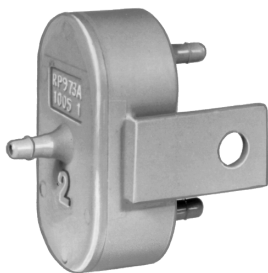
Maximum Safe Operating Pressure: 30 psi (205 kPa)

Accessories:

14003203-003 Conversion Kit to convert Johnson, Powers, Robertshaw, Barber Coleman and older Honeywell switches

Product Number	Operation	Description	Includes
RP972A1006	Output varies inversely with input with an adjustable offset	Wall, In-line or panel mounted Pneumatic Reversing Relay	14003030-001, 1 1/2 in. Mounting Clip for Mounting relay to wall or panel

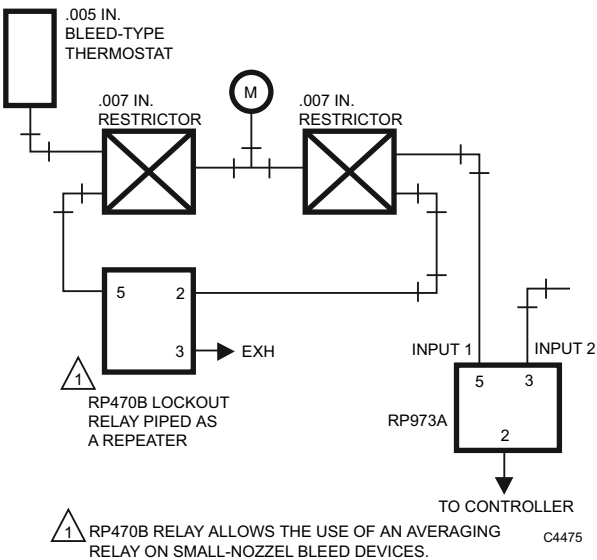
RP973 Pneumatic Averaging Relay



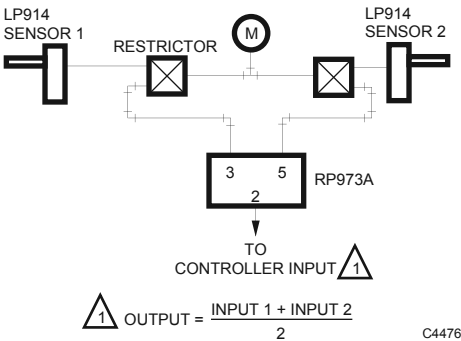
A three-port relay used in HVAC systems averages the signals from two thermostats to control a single device such as a heating coil valve for a multizone unit. The pneumatic averaging relay provides an output pressure equal to the average of two input pressures. Replacement devices are available for Johnson, Powers, Robertshaw, Barber-Colman, and older Honeywell devices.

- In-line, wall or panel mounted.
- Sharp-barb air connections.
- Molded plastic construction.

RP973A Typical Piping



Typical Averaging Application



Type: Pneumatic Three-Port Averaging Relay
Dimensions, Approximate: 1 1/2 in. high x 7/8 in. wide x 15/16 in. deep (38 mm high x 22 mm wide x 24 mm deep)
Airflow Usage: 0.007 scfm (3.303 mL/s) maximum
Air Connections: Barb fittings 5/32 in. (4 mm) O.D. plastic tubing
Capacity: 0.039 scfm at 1 psi differential (18 mL/s at 5 kPa differential)

Operation: Output pressure equals average of two input pressures
Mounting: Wall or In-line or panel
Operating Humidity Range (% RH): 5 to 95% RH
Temperature Range: 32 F to 125 F (0 C to 52 C)
Maximum Safe Operating Pressure: 30 psi (205 kPa)
Output Operating Pressure: 3 to 15 psi (21 to 103 kPa)

Product Number	Operation	Input Operating Pressure		Output Operating Pressure		Description
		(psi)	(kPa)	(psi)	(kPa)	
RP973A1005	Output pressure equals average of two input pressures	3 to 15 psi	21 to 103 kPa	3 to 15 psi	21 to 103 kPa	Output is the average of the two inputs. Pneumatic Three-Port Averaging Relay.

Relays

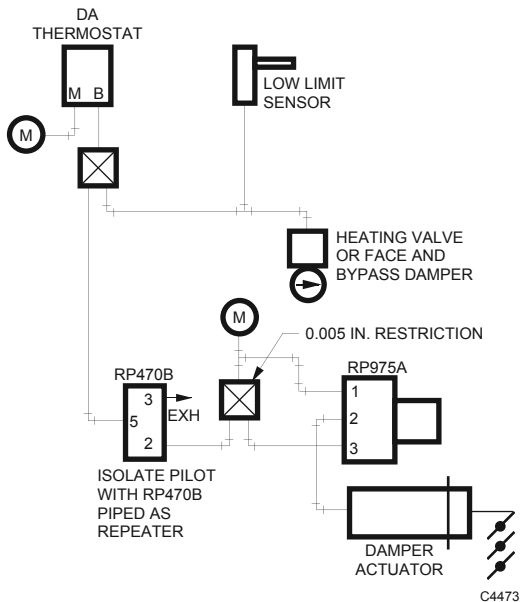
RP975 Pneumatic Hesitation Relay



A three-port hesitation relay provides minimum outside air damper position plus controlled ventilation for large volume unit ventilators. Replacement devices are available for Johnson, Powers, and Barber-Colman devices.

- Manually adjustable minimum position. In-line, wall or panel mounted.
- Sharp-barb air connections.
- Molded plastic construction.

Typical Piping With Isolation Circuit



Type: Pneumatic Three-Port Hesitation relay

Dimensions, Approximate: 2 1/4 in. high x 2 1/2 in. wide x 3 3/4 in. deep (57 mm high x 63 mm wide x 96 mm deep)

Airflow Usage: 0.022 scfm (10 mL/s)

Air Connections: Barb fittings 5/32 in. (4 mm) O.D. plastic tubing

Capacity: 0.003 scfm (1.65 mL/s)

Knob Rotation: Knob has two (2) internal breakaway stops that limit rotation to 188 degrees. Each stop, when removed, adds 56 degrees of rotation. Maximum rotation is 300 degrees.

Mounting: Wall or In-line or panel

Operating Humidity Range (% RH): 5 to 95% RH

Temperature Range: 32 F to 125 F (0 C to 52 C)

Maximum Safe Operating Pressure: 30 psi (205 kPa)

Replacement Parts:

14003203-003 Conversion Kit to convert Johnson, Powers, Robertshaw, Barber Coleman and older Honeywell switches

Product Number	Operation	Description	Includes
RP975A1003	Provides minimum outside air damper position	Pneumatic Three-Port Hesitation Relay	14003030-001, 1 1/2 in. Mounting Clip for mounting relay to wall or panel. Also includes scaleplate and knob, factory mounted and calibrated. Use with MP909 or MP918 Damper Actuator having a 7 to 13 psi (50 to 90 kPa) spring range

Pneumatic Relay Accessories and Replacement Parts

Product Number	Description	Used With
14003030-001	Mounting Clip	RP470, RP471, SP970
14003638-001	Bag Assembly, Mounting Hardware for RP418	RP418;
315178/0062	Cup, feedback spring for old Gradutrol relay	—;