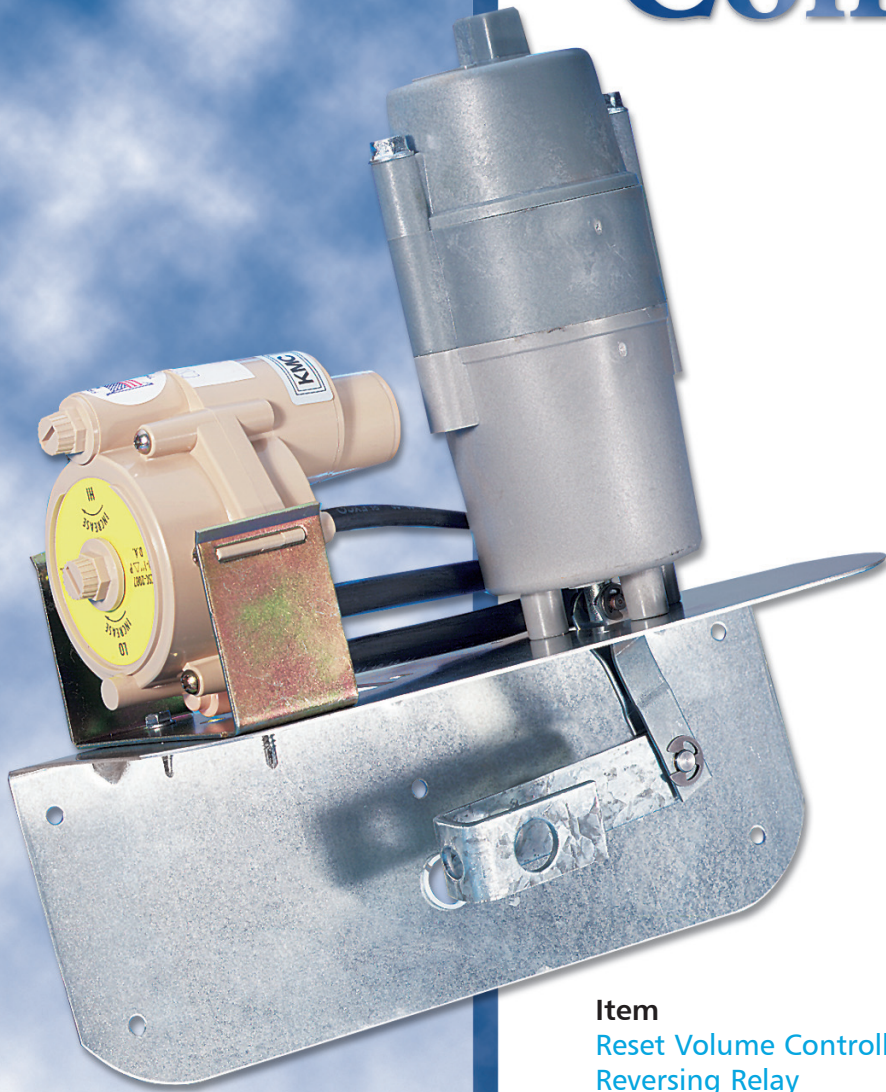
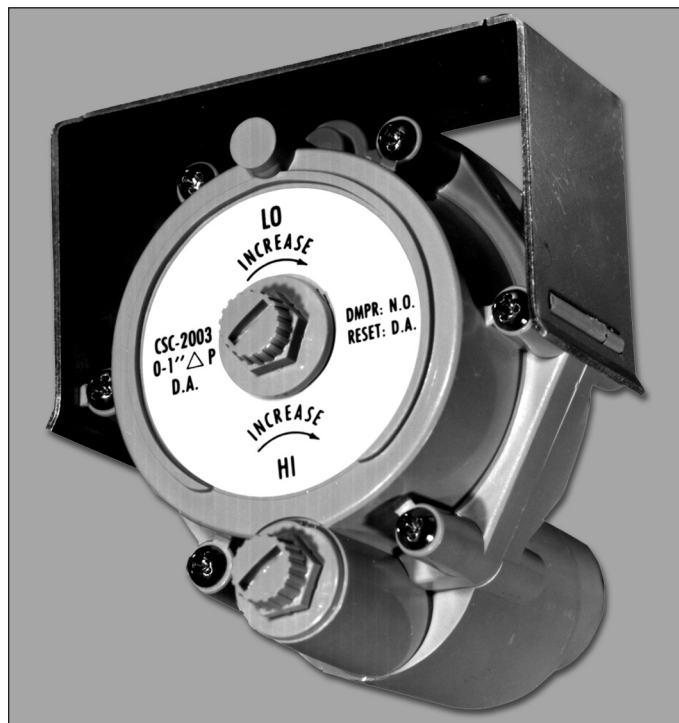


Pneumatic Controls



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RESET VOLUME CONTROLLER



SPECIFICATIONS

Differential Pressure Range

- 0 to 1.3" W.G.

Reset Pressure Range:

- Direct Acting: 8 to 13 PSIG (Nominal)
- Reverse Acting: 3 to 8 PSIG (Nominal)

Main Air Pressure

- 15 to 30 PSIG

Air Consumption

- 0.5 SCFH @ 20 PSIG

Main Air (M) & Thermostat (T) Connection

- 3/16" nipples for 1/4" O.D. polyethylene tubing

Material

- ABS Plastic

Ambient Operating Temperature

- 40°F to 120°F

CONNECTIONS

Main Air Supply:	M
Thermostat Branch:	T
Air Valve Operator:	B
High Pressure Signal:	X (Direct Acting)
Low Pressure Signal:	X (Reverse Acting)
Low Pressure Signal:	Y (Direct Acting)
High Pressure Signal:	Y (Reverse Acting)

FUNCTION

The Reset Volume Controller controls air volume through the terminal unit. It controls the air volume between pre-set maximum and minimum limits in response to changes in the branch output of a zone thermostat. It maintains the air volume required by the zone, regardless of inlet static pressure variations. In other words, it assures that the terminal unit is system pressure independent.

DESCRIPTION

This device is available in two configurations. The direct acting reset controller is used for normally open air valves. The reverse acting reset controller is used for normally closed air valves. Each controller is equipped with maximum and minimum airflow adjustment knobs. Both limits can be independently set throughout the range as long as the maximum limit is equal to or greater than the minimum limit. The reset range will vary in response to the airflow limit settings.

CALIBRATION

Direct Acting: Requires a normally open air valve with a direct acting thermostat for cooling or reverse acting thermostat for heating.

1. Adjust center knob to desired **minimum** airflow with 0 PSIG at "T" port.
2. Adjust outer knob to desired **maximum** airflow with 15 PSIG or greater at "T" port.

Reverse Acting: Requires a normally closed air valve with a reverse acting thermostat for cooling or a direct acting thermostat for heating.

1. Adjust center knob to desired **maximum** airflow with 0 PSIG at "T" port.
2. Adjust outer knob to desired **minimum** airflow with 15 PSIG or greater at "T" port.

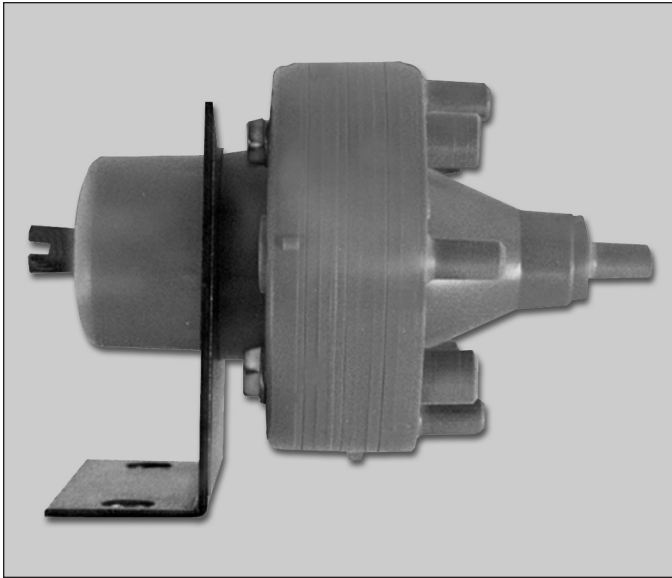
MOUNTING

These devices can be mounted in either a horizontal or vertical plane as long as they are calibrated in that position. Other angular positions are not recommended.

MAINTENANCE

These devices must be supplied with clean, dry control air. No attempt should be made to use any other medium. No routine maintenance is required.

REVERSING RELAY



SPECIFICATIONS

Maximum Air Pressure

- 30 PSIG

Air Consumption

- 0.5 SCFH @ 20 PSIG

Connections

- 3/16" nipple for 1/4" O.D. polyethylene tubing

Material

- ABS Plastic

Ambient Operating Temperature

- 40°F to 120°F

CALIBRATION

This device is usually supplied pre-calibrated by the factory. When field calibration is necessary, connect a suitable air pressure gauge to the output port using polyethylene tubing. Remove tubing from input port. Turn bias adjustment in either direction to obtain desired bias constant. Reconnect original tubing to their respective ports.

MOUNTING

This device is suitable for in-line mounting in any position without concern for orientation.

MAINTENANCE

These devices must be supplied with clean, dry control air. No attempt should be made to use any other medium. No routine maintenance is required.

FUNCTION

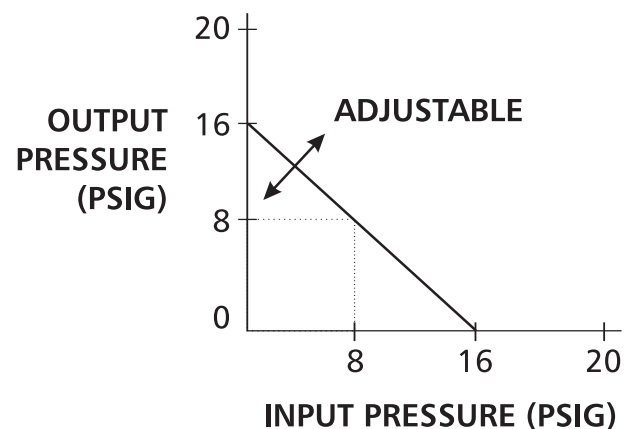
This relay is designed to reverse a proportional signal from a controlling device. In other words, it will provide a decreasing branch line pressure as the input pressure increases and vice versa. Most often, this relay is used to reverse the zone thermostat signal for compatibility with a reset volume controller.

DESCRIPTION

This device is provided with a bias adjustment to retard or advance the output signal if required. The following diagram further explains the operation.

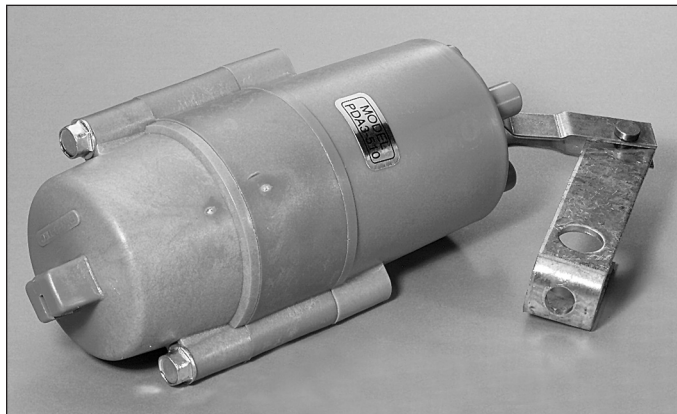
INPUT (PSIG)	OUTPUT (PSIG)
0	16
3	13
8	8
13	3
16	0

INPUT PLUS OUTPUT = CONSTANT*



*Constant is adjustable with biasing screw. It is commonly set at 16 PSIG.

AIR VALVE ACTUATOR



SPECIFICATIONS

Normal Stroke: 2 or 3 inches

Normal Operating Pressure: 0 to 20 PSIG

Maximum Air Pressure: 30 PSIG

Air Consumption: None

Connection:

- 3/16" nipple for 1/4" O.D. polyethylene tubing

Material:

- Body: Glass-filled Nylon
- Diaphragm: Neoprene

Ambient Operating Temperature: 40°F to 120°F

FUNCTION

The Air Valve Actuator modulates the primary air damper blade in response to a signal from either a zone thermostat (System Pressure Dependent) or a Reset Volume Controller (System Pressure Independent).

DESCRIPTION

When the input pressure is below the lower value, the pushrod remains in the normal position. As the input pressure gradually increases, the pushrod extends proportionally. When the input pressure reaches the higher value, the pushrod remains in the full extended position.

MOUNTING

This device can be installed in any position without concern for orientation.

MAINTENANCE

These devices must be supplied with clean, dry control air. No attempt should be made to use any other medium. No routine maintenance is required.

LOWER-OF-TWO-PRESSURES RELAY



SPECIFICATIONS

Maximum Air Pressure: 30 PSIG

Air Consumption: None

Connection: Varies with supplier

Material: Varies with supplier

Ambient Operating Temperature: 40°F to 120°F

FUNCTION

This relay compares two independent input signals and passes the lower of the two pressures to a controlled device.

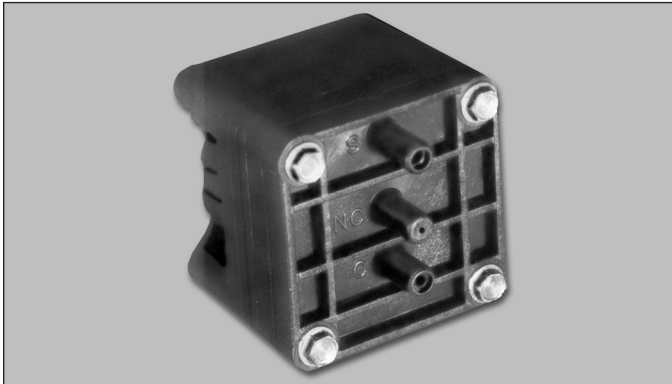
MOUNTING

This device is suitable for in-line mounting in any position regardless of orientation.

MAINTENANCE

These devices must be supplied with clean, dry control air. No attempt should be made to use any other medium. No routine maintenance is required.

DIVERTING RELAY



SPECIFICATIONS

Setpoint Range: 3 to 23 PSIG

Switching Range: 5 PSIG

Switching Action: SPDT

- Below Setpoint: C + N.O. Connected
- Above Setpoint: C + N.C. Connected

Maximum Air Pressure: 30 PSIG

Air Consumption: None

Connection: 3/16" nipples for 1/4" O.D. polyethylene tubing

Material: Glass-filled Nylon

Ambient Operating Temperature: 40°F to 120°F

MOUNTING

This device is suitable for in-line mounting in any position regardless of orientation.

MAINTENANCE

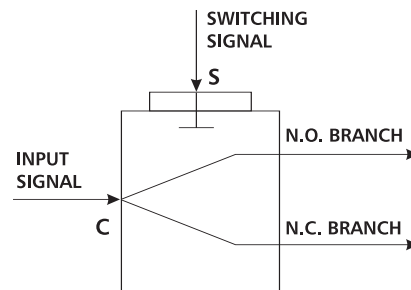
These devices must be supplied with clean, dry control air. No attempt should be made to use any other medium. No routine maintenance is required.

FUNCTION

This is designed to direct one signal to either of two branch circuits, or to select one of two input signals and transmit it to another control device. It may also be used to feed or exhaust a particular circuit.

DESCRIPTION

This device requires a positive signal pressure change (5 PSIG) to accomplish its switching function. An adjustment is provided to calibrate the switching function to an associated input signal range. The following diagram further explains the operation.



- Example:** Relay is calibrated for 18/23 PSIG signal. Switching main air pressure signal (5 PSIG change required)
- If $S < 18$ PSIG, then $C \rightarrow$ N.O.
 - If $S > 23$ PSIG, then $C \rightarrow$ N.C.
 - If $18 \text{ PSIG} < S < 23 \text{ PSIG}$, then out of control.

CALIBRATION

This device is usually supplied pre-calibrated by the factory; however, field calibration can easily be achieved. The setpoint dial can be rotated in either direction to obtain the desired 5 PSIG switching range.

HIGHER-OF-TWO-PRESSURES RELAY



SPECIFICATIONS

Maximum Air Pressure: 30 PSIG

Air Consumption: None

Connection: Varies with supplier

Material: Varies with supplier

Ambient Operating Temperature: 40°F to 120°F

FUNCTION

This relay compares two independent input signals and passes the higher of the two pressures to a controlled device.

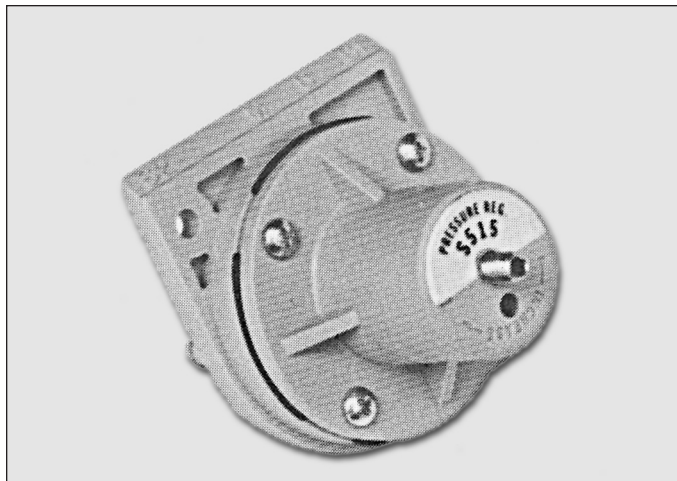
MOUNTING

This device is suitable for in-line mounting in any position regardless of orientation.

MAINTENANCE

These devices must be supplied with clean, dry control air. No attempt should be made to use any other medium. No routine maintenance is required.

GRADUAL SWITCH



SPECIFICATIONS

Maximum Air Pressure: 30 PSIG

Air Consumption: 1 SCFH Maximum

Output Range: 2 to 18 PSIG

Connection: Varies with supplier

Material: Varies with supplier

Ambient Operating Temperature: 40°F to 120°F

FUNCTION

This device provides an adjustable constant air pressure signal for utilization in more complex sequences of operation such as dual minimum airflow setpoints.

DESCRIPTION

This device is supplied with an adjustment to vary the output pressure to a fixed constant value.

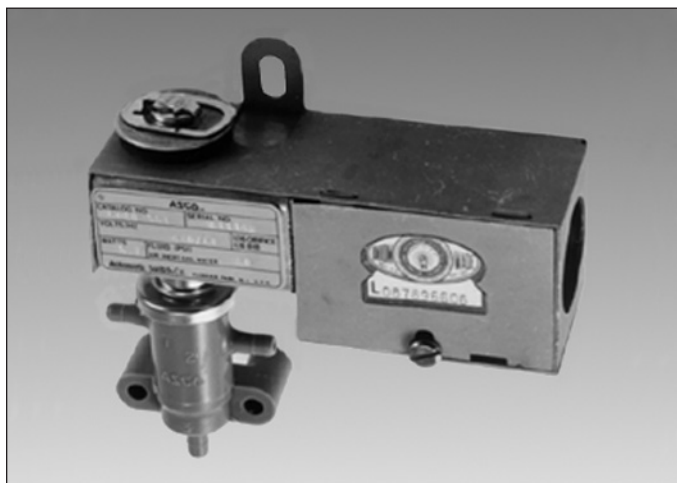
CALIBRATION

Connect a suitable air pressure gauge to the branch output using polyethylene tubing. Turn the calibration adjustment until the desired output is obtained. If this device is connected to a Reset Volume Controller, proper calibration can be achieved by leaving the regulator connected to the controller. The adjustment is rotated until the controller is providing the desired airflow capacity.

MAINTENANCE

These devices must be supplied with clean, dry control air. No attempt should be made to use any other medium. No routine maintenance is required.

ELECTRIC / PNEUMATIC (E.P.) SWITCH



SPECIFICATIONS

Maximum Air Pressure: 30 PSIG

Air Consumption: Varies with supplier

Connection:

- 3/16" nipples for 1/4" O.D. polyethylene tubing

Switching: SPDT

Material: Varies with supplier

Ambient Operating Temperature: 40°F to 120°F

FUNCTION

This device diverts one pneumatic signal to either of two branch circuits in response to an electrical signal. It may select one of two input signals and transmit it to another control device, and also feed or exhaust a particular circuit.

DESCRIPTION

This device is available in various voltages (low and line) to be compatible with job requirements. In the normal state (no voltage), the common port is connected with the normally open port. When the appropriate voltage is applied, the common port is connected with the normally closed port.

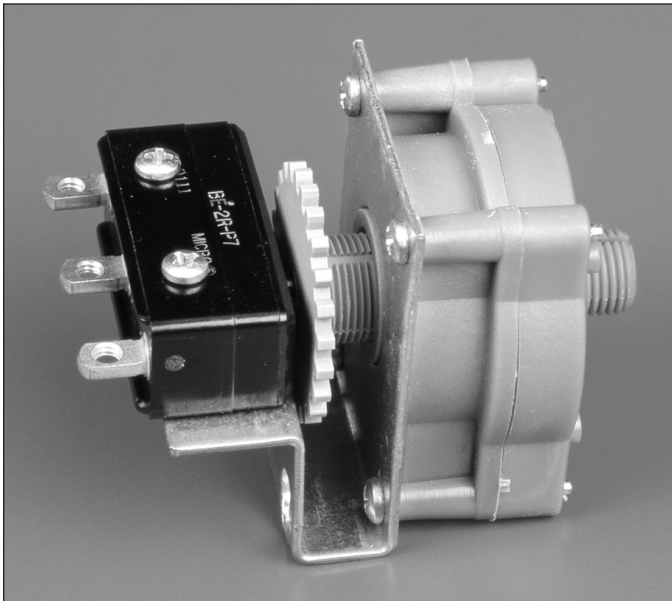
MOUNTING

This device is designed for direct mounting onto sheet-metal using integral mounting bracket. It can be installed in any position, regardless of orientation.

MAINTENANCE

These devices must be supplied with clean, dry control air. No attempt should be made to use any other medium. No routine maintenance is required.

PNEUMATIC / ELECTRIC (P.E.) SWITCH



SPECIFICATIONS

Setpoint Range

- 3 to 15 PSIG

Differential

- ≤ 1.0 PSIG

Maximum Air Pressure

- 30 PSIG

Air Connection

- 3/16" nipple for 1/4" O.D. polyethylene tubing

Switching Action

- SPDT

Electrical Rating

- Varies

Material

- Flame Retardant Polyester

Ambient Operating Temperature

- 40°F to 120°F

FUNCTION

This device energizes or de-energizes an electrical device in response to a pneumatic signal (usually from a zone thermostat).

DESCRIPTION

An adjustment is provided to calibrate the switching point to a specific input pressure. There is a maximum 1 PSIG differential between the make and break points.

CALIBRATION

Field calibration requires a suitable gauge connected in parallel with a proportional pneumatic signal (usually a thermostat branch). The setpoint adjustment can be rotated in either direction to increase or decrease the switching point. After making an adjustment, slowly increase air pressure up from zero and notice where switching occurs (a click can be heard from the end switch). Continue this procedure until switching occurs at the desired pressure.

MOUNTING

This device is designed for direct mounting through a hole in sheetmetal or against the sheetmetal using integral mounting bracket. It can be installed in any position regardless of orientation.

MAINTENANCE

These devices must be supplied with clean, dry control air. No attempt should be made to use any other medium. No routine maintenance is required.

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