

# PNEUMATICS & FITTINGS

## SIEMENS/POWERS REVERSE ACTING RELAY 243-0024 SERIES



### DESCRIPTION

The **Siemens/Powers 243-0024 Series Reverse Acting Relay** provides a proportional output signal that varies inversely with the input signal. A spring adjustment is provided to allow setting a desired reverse acting schedule required by a particular application.

**NEW!**

**SIEMENS  
POWERS™**

### FEATURES

- *Lightweight and small in size*
- *Can be mounted in any position (mounting bracket and screws included)*
- *Field adjustable spring range*
- *Can be used as a signal inverting relay*
- *Force-balance operation minimizes air consumption*
- *Internal relief provides fail-safe operation*
- *Amplifies air volume to minimize system lag*



243-0024 Series

### SPECIFICATIONS

<b>Operating Range</b>	0 to 30 psi (0 to 207 kPa) Adjustment Using 5/64" (2 mm) Hex Wrench	<b>Mounting</b>	Mounting bracket provided
<b>Range Adjustment</b>	10 to 30 psi (69 to 207 kPa)	<b>Air Capacity</b>	230 scim (63 ml/sec)
<b>Factory Setting</b>	15 psi (103 kPa)	<b>Air Consumption for Compressor Sizing</b>	29 scim (8 ml/sec)
<b>Maximum Air Pressure</b>	30 psig (207 kPa)	<b>Housing</b>	Glass-filled nylon
<b>Ambient Temperature Range</b>	140°F (60°C)	<b>Weight</b>	0.27 lb (0.13 Kg)
<b>Air Connections</b>	Barbed nipple for 1/4" OD polyethylene tubing	<b>Warranty</b>	1 year

### DIMENSIONS

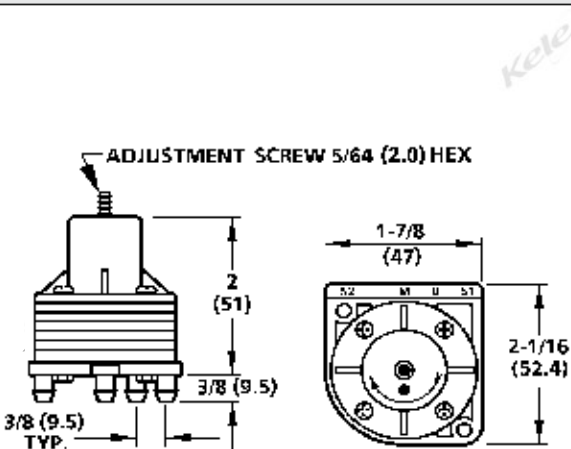


Figure 5 - Relay Dimensions

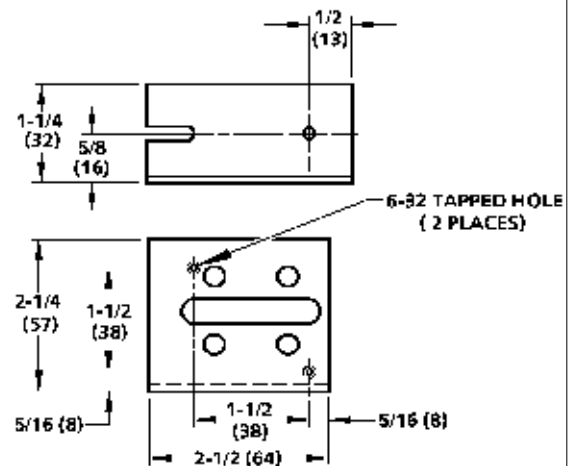


Figure 6 - Mounting Bracket Dimensions



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### OPERATION

Supply air pressure is connected to the "M" port. The input signal is connected to the "S1" port. The output signal is connected to the "B" port. The "S2" port is not used.

With no pressure at the "S1" port, the adjusting spring pushes down on the stack. This causes the stack to contact the supply-exhaust valve assembly which first closes the exhaust port then opens the supply port. This allows supply air to flow into the "B" port chamber.

When the pressure in the "B" port chamber is the same as the downward force on the stack, the stack will move up, causing the supply-exhaust valve assembly to close the supply port. Pressure at the "S1" port causes an upward force on the stack that opposes the downward force caused by the adjusting spring. The stack moves up allowing the exhaust port to open, relieving the "B" port pressure.

When the "B" port pressure plus "S1" pressure equals the downward force of the adjusting spring, the stack will move down, closing the exhaust port.

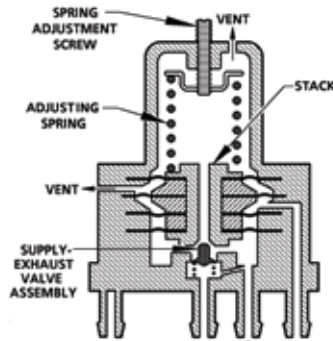


Figure 3 - Relay Operation

**SIGNAL INVERTING:** Connect the input signal to both "M" and "S1" ports and connect the output signal to the "B" port. Port "S2" is not used.

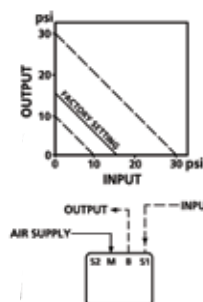
With the spring set of 15 psi (103 kPa), the exhaust port is closed and the supply port is open to the "B" chamber until "S1" pressure plus "B" pressure equals 15 psi (103 kPa). As "S1" increases, the exhaust port opens, causing "B" to decrease to maintain the "S1" + "B" = 15 psi (103 kPa) relationship.

A small leak port between "M" and "B" chambers assures fast response and prevents the device from locking up on a loss of supply air pressure.

### APPLICATION

This relay has two applications. For both applications the supply air pressure must be equal to or greater than the spring setting.

- The relay reverses a controller signal to match the operation of a control element. See Figure 1.



OPERATIONAL FORMULA:

$$B = SP - S1$$

SP = 15 psi

Input S1	Output B
0	15
5	10
10	5
15	0

**Legend**

- B Output pressure
- M Supply air
- S1 Input pressure
- S2 Not used
- SP Spring setting

Figure 1 - Reverse Acting Relay Application

An increase in input pressure causes equivalent decrease in output pressure.

### ORDERING INFORMATION

**MODEL**  
**243-0024**

**DESCRIPTION**  
Pneumatic reverse acting relay with mounting bracket, and two screws