



### ADJUSTABLE SET POINT AIR PRESSURE SENSING SWITCH KIT WITH SET POINT INDICATOR

#### APPLICATION

RFS-4001-097 is a convenient contractor kit that includes:

- **Model RFS-4001-379(E)**, a general purpose proving switch suitable to sense positive, negative, or differential air pressure. The switch has an adjustable set point range of 0.15±0.02" wc to 2.0"wc. A plate-style set point indicator (P/N 60787) is included.
- Six feet of clear vinyl tubing, 1/4" ID x 3/8" OD x 1/16" wall. (P/N 25781)
- Six (6) zinc-plated slotted hex mounting screws, 6-32 x 3/8", tap type 25.
- P/N 21117-112 static pressure (aspiration) probe with barbed connector
- P/N 21398-112 static pressure (aspiration) probe with barbed connector

#### GENERAL DESCRIPTION & OPERATION OF THE SWITCH

The plated housing contains a diaphragm, a calibration spring, a snap-acting switch and enclosure cover. The sample line connections located on each side of the diaphragm accept 3/16", 1/4", and 5/16" flexible tubing. The electrical connections are screw terminals with cup washers. A set point indicator plate with a .15"wc. to 2.0"wc. range scale label is mounted on the snap-acting switch. An enclosure cover protects the operator from accidental contact with the electrical components. The enclosure cover has five knockouts for a 1/2" conduit connection.

#### MOUNTING (FIG. 1)

Select a mounting location that is free from vibration. The **RFS-4001-379(E) Air Pressure Sensing Switch** must be mounted with the diaphragm in any vertical plane in order to maintain

Figure 1: Mount with the diaphragm in any vertical plane.

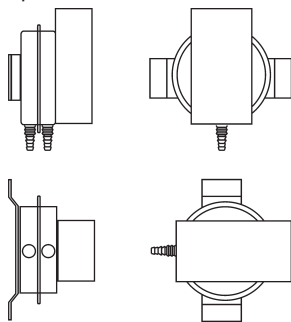
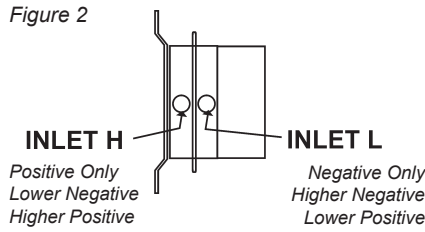


Figure 2



the specified operating set point. Avoid mounting with the sample line connections in the "up" position. Surface-mount via the two round holes (0.14" dia.) or two of the four slots (3/16" wide) on the zinc-plated strap bracket. The mounting holes and slots are 3-7/8" apart.

#### AIR SAMPLING CONNECTION (FIG. 2)

Locate a sampling probe a minimum of 1.5 duct diameters downstream from the air source, noting that the probe must be positioned 5 to 8 duct diameters downstream from elbows, obstructions, or any significant change in duct area. Insert the probe as close to the center of the air stream as possible: two probes are included in this kit, with insertion depths of 3.5" and 4.0". An aspiration (static) probe must be inserted into a duct perpendicular to the air stream so that the straight-cut probe tip opens parallel with the air stream. Use a small screwdriver to tighten mounting screws in two of the holes in the flange. A dual-barbed sample line connector (suitable to accept 3/16" ID or 1/4" ID flexible tubing) is situated on the free end of the probe.\*

Tri-barbed sample line connectors suitable to accept flexible tubing are situated on either side of the diaphragm as shown in **Figure 2**. The tri-barbed connectors accept 3/16", 1/4", and 5/16" ID flexible tubing. For sample lines up to 10 feet in length, 3/16" ID tubing is acceptable. For lines up to 20 feet, use 1/4" ID tubing.\*

\*This kit includes 6 feet of 1/4" ID tubing.

Refer to **Figure 2** to identify the **high pressure inlet (H)** and the **low pressure inlet (L)**. Select one of the five application options listed below, and connect the sample lines as recommended.

**Positive Pressure Only:** Connect the sample line to inlet H; inlet L remains open to the atmosphere.

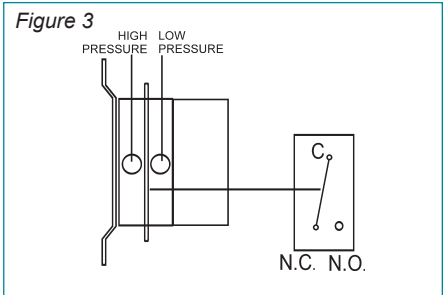
**Negative Pressure Only:** Connect the sample line to inlet L; inlet H remains open to the atmosphere.

**Two Negative Samples:** Connect the higher negative sample to inlet L. Connect the lower negative sample to inlet H.

Model RFS-4001-379(E)



Figure 3



**Two Positive Samples:** Connect the higher positive sample to inlet H. Connect the lower positive sample to inlet L.

**One Positive and One Negative Sample:** Connect the positive sample to inlet H. Connect the negative sample to inlet L.

#### ELECTRICAL CONNECTIONS (FIGURES 3 & 4)

Before pressure is applied to the diaphragm, the switch contacts will be in the normally closed (NC) position. Wire control and alarm functions as shown in **Figure 4**.

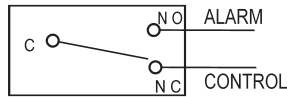
#### FIELD ADJUSTMENT

The adjustment range of the **RFS-4001-379(E)** switch is 0.15±0.02" wc to 2.0"wc. To adjust the set point, turn the adjusting screw counter-clockwise until motion has stopped. Next, turn the adjusting screw 5 complete turns clockwise to engage the spring. From this point, the next eight turns will be used for the actual calibration. **Each full turn represents approximately 0.23" wc.** The set point indicator plate (with .15"wc. to 2.0"wc. range scale label) is mounted on the snap-acting switch to guide you. **Please note:** To properly calibrate an air switch, a digital manometer or other measuring device should be used to confirm the actual set point.

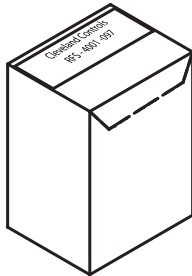
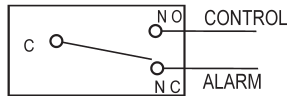


Figure 4

To prove excessive air flow or pressure:



To prove insufficient air flow or pressure:



RFS-4001-097 Kit is packaged in an individual carton with Cleveland Controls label.

## SPECIFICATIONS MODEL RFS-4001-379(E)

AIR PRESSURE SENSING SWITCH WITH ADJUSTABLE SET POINT RANGE AND SET POINT INDICATOR

### Mounting Position:

Mount with the diaphragm in any vertical plane.

### Standard Set Point Range:

0.15 ± 0.02" wc to 2.0" wc.

### Field Adjustable "Operate Range":

0.17" wc to 2.0" wc.

### Field Adjustable "Release Range":

0.10" wc to 1.8" wc.

### Approximate Switch Differential:

Progressive, increasing from 0.05 ± 0.02" wc at minimum set point to approximately 0.2" wc at maximum set point.

### Measured Media: Air.

### Maximum Pressure:

½ psi (0.03 bar).

### Operating Temperature Range:

-40 to 180 °F (-40.0 to 82.2 °C).

### Life:

100,000 cycles minimum at ½ psi maximum pressure each cycle and at maximum rated electrical load.

### Electrical Rating:

300 VA pilot duty at 115 to 277 VAC;  
15 amp noninductive to 277 VAC, 60 Hz.

### Contact Arrangement:

SPDT.

### Electrical Connections:

Screw terminals with cup washers.

### Sample Line Connectors:

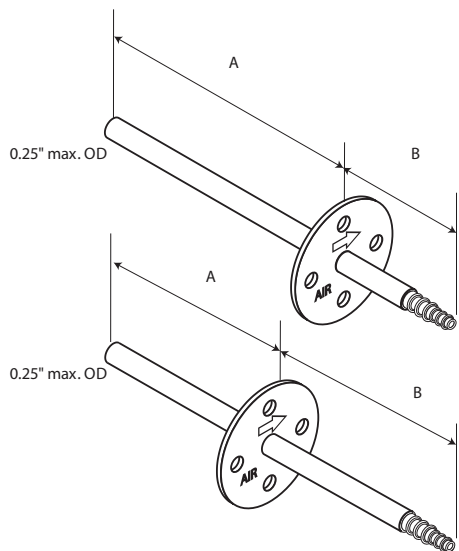
Tri-barb connectors for ⅜", ¼", and ⅙" ID tubing.

### Approvals:

UL, CUL.

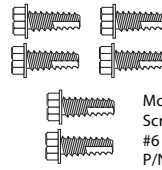
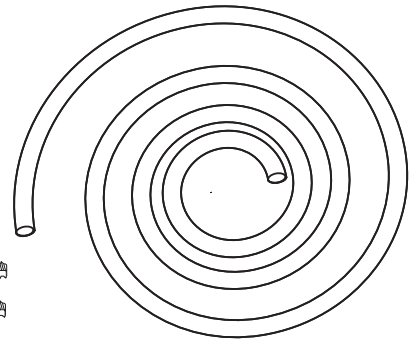
### Shipping Weight:

approx. 16 oz.



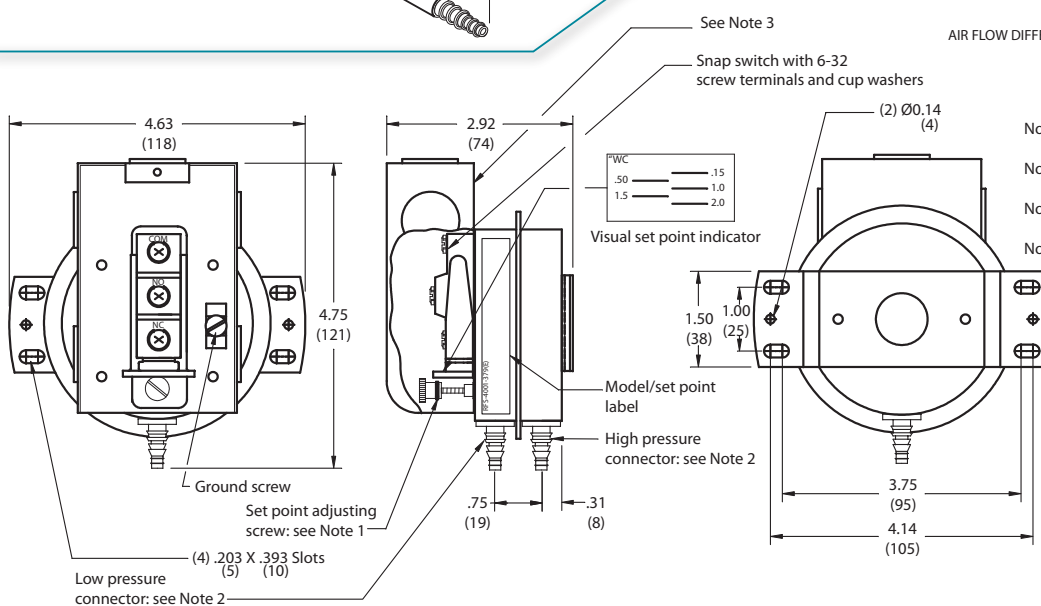
### STATIC PRESSURE PROBE (ASPIRATION)

- Overall Length = 5.31"  
Dimension A (Insertion End):  
P/N 21117-112: 4.00"  
P/N 21398-113: 3.50"  
Dimension B (Barbed End):  
P/N 21117-112: 1.31"  
P/N 21398-113: 1.81"
- Dual-barbed sample line connector accepts ⅜" or ¼" ID Flexible Slip-on Tubing.



Mounting Screws, Slotted Hex  
#6 - ⅜"  
P/N 27577-037  
(6 pieces)

6' length of clear vinyl tubing,  
¼" ID x ⅜" OD x ⅙" wall,  
P/N 25781



RFS-4001-379(E)  
AIR FLOW DIFFERENTIAL PRESSURE SENSING SWITCH

- Note 1: Adjustment Screw - turn clockwise to increase set point.  
Note 2: Sample line connectors accept ⅜", ¼", or ⅙" ID Flexible Slip-on Tubing.  
Note 3: Switch enclosure accepts (5) ½" conduit connections.  
Note 4: Approval or Recognition: UL/CUL File MH6213.

Reference Dimensions in Inches (Millimeters)