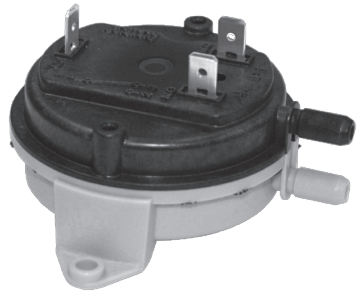


INSTALLATION INSTRUCTIONS

Field Adjustable Airflow Proving Switch



CARTON CONTENTS

- (1) Airflow proving switch factory set to 0.2" w.c. with black spring and set point adjustment screw
- (1) 6" Impact probe
- (1) Hexagon wrench, 7/32"
- (5) Color-coded range springs (1 each, see **TABLE 1**)
- (4) Switch mounting screws, slotted hex, #6-3/8"

ASSEMBLY

Unpack the carton and identify the airflow proving switch and accessories using the list at the top of this page. The airflow proving switch has a glass-filled polycarbonate housing containing a sensing diaphragm and an integral snap-acting switch with three male 90° quick-connect spade terminals. It can sense positive, negative or differential air pressure. The Switch comes factory set to 0.2" w.c. +/- 0.05" and is ready to use out of the box. Alternatively, the field adjustable set point range of this switch is 0.10" w.c. to 10.0" w.c. Using the switch accessories contained in this kit, this switch can be applied to a wide variety of residential and commercial HVAC applications.

APPROXIMATE SET POINT MODIFICATION INSTRUCTIONS

Approximate set points can be achieved using the appropriate range spring from **TABLE 1** and **FIGURES 3-7**. Set points lower than 0.2" w.c. can be achieved by turning the set point adjustment screw counter clockwise using **FIGURE 3** as a guideline.

NOTE: Do not attempt to increase pressure with spring installed by factory. Follow the instructions below to achieve set points higher than 0.2" w.c. Switch needs to be mounted with the diaphragm in a vertical position during calibration

TABLE 1 – SPRING SELECTION

Color	Set Point Range ("w.c.)
Black	0.10 through 0.20
Natural	0.21 through 0.90
Yellow	0.91 through 2.50
Red	2.51 through 5.00
Blue	5.01 through 10.00

APPROXIMATE SET POINT MODIFICATION INSTRUCTIONS (CONTINUED)

- 1. Remove set point adjustment screw and current spring** using provided 7/32" hex wrench.
- 2. Insert the range spring.** From **TABLE 1**, identify by color the range spring that includes the desired set point. Drop this spring into the center well on the light gray side ("mounting pan") of the switch (see **FIGURE 1**).
- 3.** Before the pressure switch is calibrated, the Normally Open and Normally Closed terminals are reversed. A range spring and set-point adjustment screw must be installed, with approximately 3 clockwise turns of the adjustment screw to engage the internal snap-switch mechanism. As the mechanism is engaged, a "click" may be heard and the NO contact will open and the NC contact will close. At this point the pressure switch will be at the minimum set-point for the installed spring. If no click is heard, a continuity tester can be used to determine when the screw has been installed deep enough to engage the mechanism (see **FIGURE 2**).
- 4. Tighten spring to desired set point.** Using **FIGURES 4-7** as a reference, count turns until approximate desired set point is achieved.

FIGURE 1 – INSERT A RANGE SPRING

Assembly Step 1: The kit contains five (5) color-coded range springs (see **TABLE 1**). Select the correct one for the desired set point and insert it into the well on the switch.

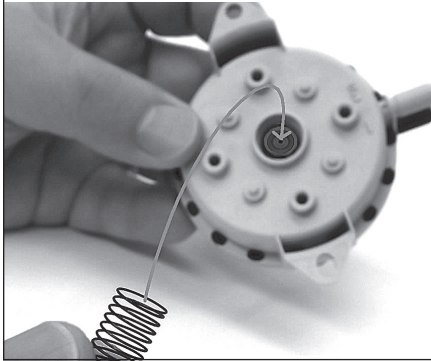


FIGURE 2 – INSERT THE SET POINT ADJUSTMENT SCREW

Assembly Step 2: With the range spring in place, insert the set point adjustment screw into the well on the switch. Use the hex wrench provided to rotate it until the threads engage.

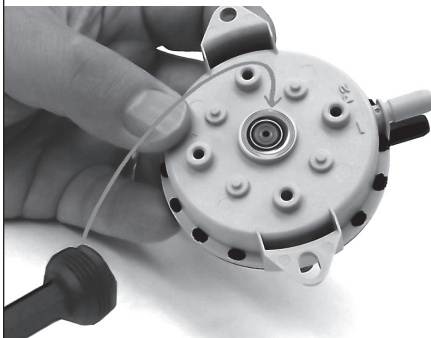


FIGURE 3 – BLACK RANGE SPRING (0.10 THROUGH 0.20"w.c.)

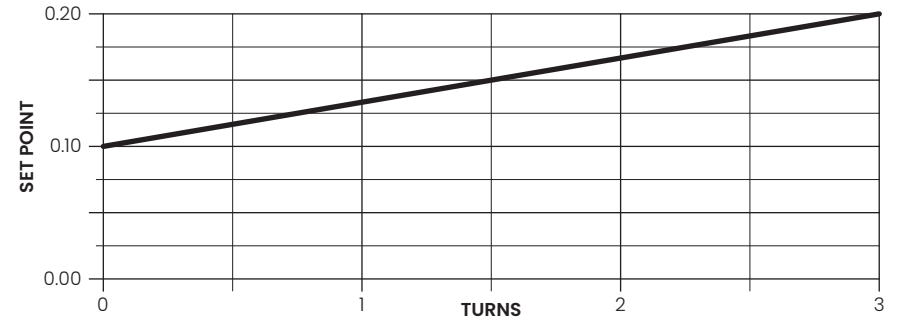


FIGURE 4 – NATURAL RANGE SPRING (0.20 THROUGH 0.90"w.c.)

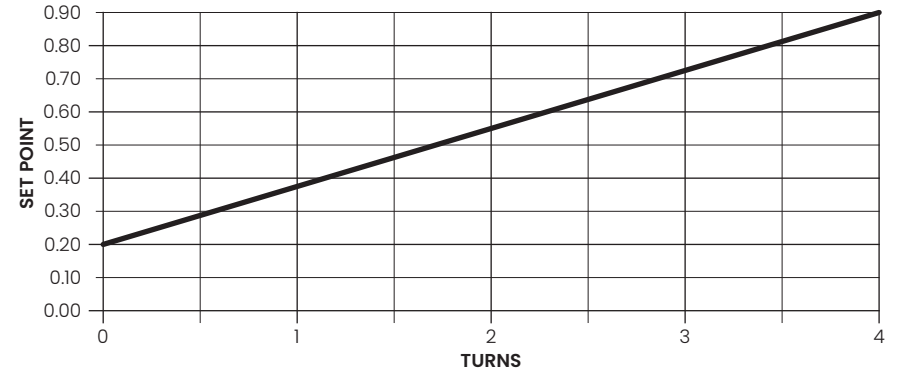


FIGURE 5 – YELLOW RANGE SPRING (0.90 THROUGH 2.50"w.c.)

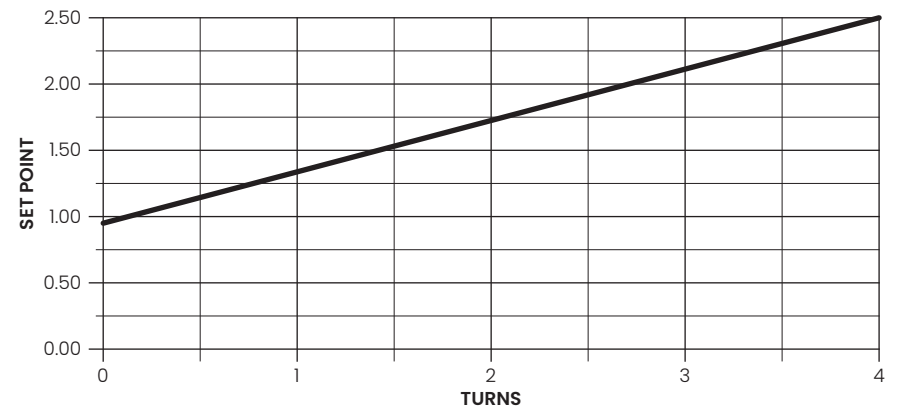


FIGURE 6 – RED RANGE SPRING (2.50 THROUGH 5.00" w.c.)

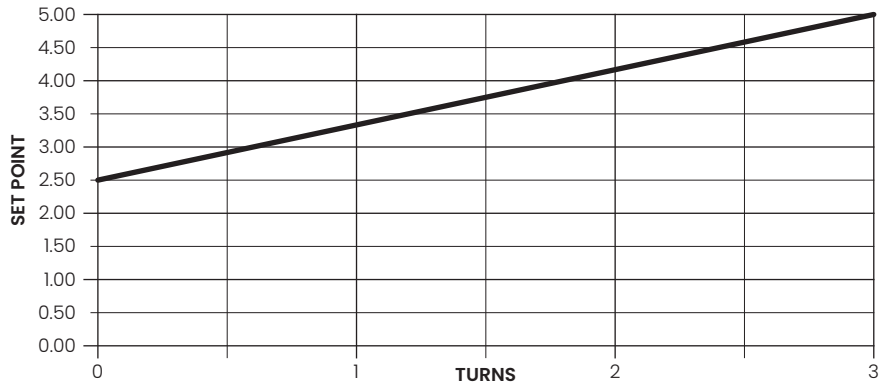
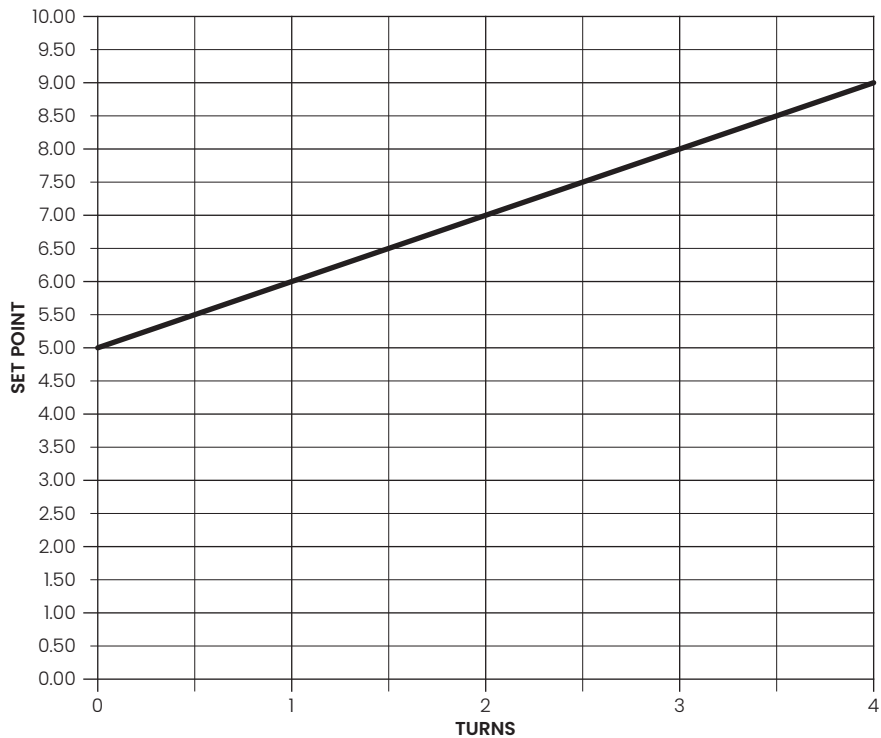


FIGURE 7 – BLUE RANGE SPRING (5.00 THROUGH 10.00" w.c.*)



*Precise calibration required above 9.00" w.c.

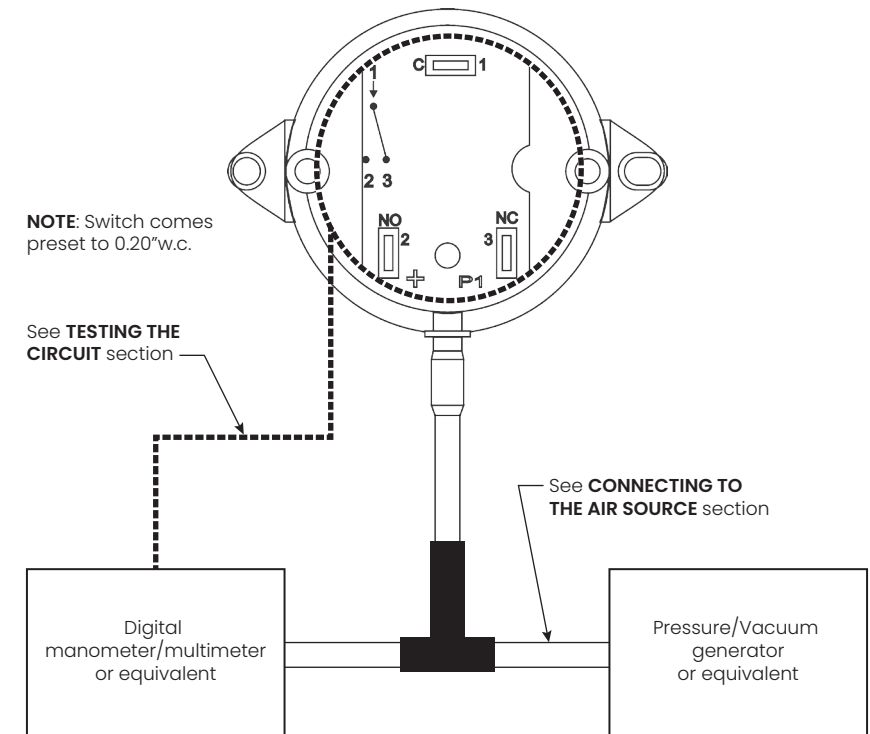
PRECISE SET POINT MODIFICATION INSTRUCTIONS

Precise calibration requires a multimeter or continuity meter, a manometer, a set of test leads; plus an air source with flexible tubing and a 1/4" tee connector (see FIGURE 8). If you choose to seal the set point after calibration, you will also need hot melt glue and a glue gun. Be sure to have all of these items on hand before beginning to calibrate and install the switch. The switch must be calibrated before being placed in service. To calibrate it, you will select and install a range spring, and use the hex wrench in the kit to insert and tighten the **set point adjustment screw**. Note that before this is done, the switch contacts are closed in the NO position. **NOTE:** Switch needs to be mounted with the diaphragm in a vertical position during calibration.

Proceed as follows:

1. **Insert the range spring.** From TABLE 1, identify by color the range spring that includes the desired set point. Drop this spring into the center well on the light gray side ("mounting pan") of the switch (see FIGURE 8).
2. **Insert the set point Adjustment Screw.** Place the black set point adjustment screw (from the kit) on the end of the hex wrench and insert it into the well over the spring. Rotate the screw slowly clockwise, just until the threads engage (see FIGURE 2). This completes the assembly of the switch.

FIGURE 8 – SET-UP FOR PRECISE CALIBRATION OF THE SWITCH



TESTING THE CIRCUIT

1. **Connect the switch to a multimeter** to perform a continuity test of the snap switch electrical circuit before an air source is connected to the switch.
2. The snap switch contacts are in the NO position after installing the spring and adjustment screw. Connect the COM, NC and NO terminals on the switch to the corresponding connection points on the multimeter. The NO connection will indicate as closed, showing the snap switch is in the NO condition.
3. With the air switch held in a vertical position, use the 7/32" hex wrench to rotate the calibration screw clockwise **until the NC connection indicates as closed**. If the multimeter indicates that the NO and NC connections have functioned as above, then the snap switch is functioning properly.

CONNECTING TO THE AIR SOURCE

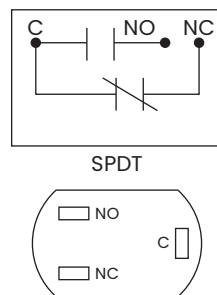
1. **Connect the switch to the manometer and air source.** Using flexible tubing and a "tee", connect the air source to one of the process connections (High or Low) on the switch and to the corresponding (High or Low) inlet on the manometer. Keep the tubing as short as possible overall. Be sure that the length to the air switch and the length to the manometer are the same after the tee. Avoid kinks in the tubing, and keep bending to a minimum. See **FIGURE 8**.
2. **Apply air flow to the switch.** With power and air flow applied, the switch is ready for set point adjustment. Note that for precise calibration, the set point should be adjusted at **actual operating temperature**.

ADJUSTING THE SET POINT

1. After completing the circuit test, and before air pressure is applied to the diaphragm, the switch contacts are in the NC position as described in Paragraph B-3 above, and shown in **FIGURE 9**.
2. Adjust the air flow until the desired set point appears on the manometer's display. This will cause the contacts to change to the NO position.
3. Using the 7/32" hex wrench, turn the adjusting screw clockwise, in small increments, until the contacts change state to NC, as indicated on the multimeter.
4. To verify the air switch set point, increase the air flow so that the switch contacts change to the NO position, and note the reading on the manometer. Then decrease the air flow until the contacts change to the NC position, and note the reading on the manometer. Confirm that, at the specified set point, the NC or the NO indicator on the multimeter comes on. Repeat this adjustment process as needed until satisfactory set point is achieved.
5. Seal the adjusting screw using hot melt glue following precise calibration, if desired.

FIGURE 9 – ELECTRICAL CONNECTIONS

After the circuit continuity test has been completed, the switch contacts are in the disengaged (**NC**) position as shown before air pressure is applied to the diaphragm.



MOUNTING

SWITCH MOUNTING

1. Select a mounting location free from vibration. Mount with the diaphragm in any vertical plane. Do not mount with the sample line connections directed upward.
2. Refer to **FIGURE 10** for the mounting dimensions of the integral foot bracket. Using two **#6-3/8" slotted hex mounting screws**, mount the switch via the **integral foot bracket**.

IMPACT PROBE MOUNTING

Mount impact probe to duct using two of the provided mounting screws. Ensure airflow indicator on probe matches the direction of airflow in duct. Position the probe at least 5 duct equivalent diameters from any elbows, obstructions, or significant changes in the duct area.

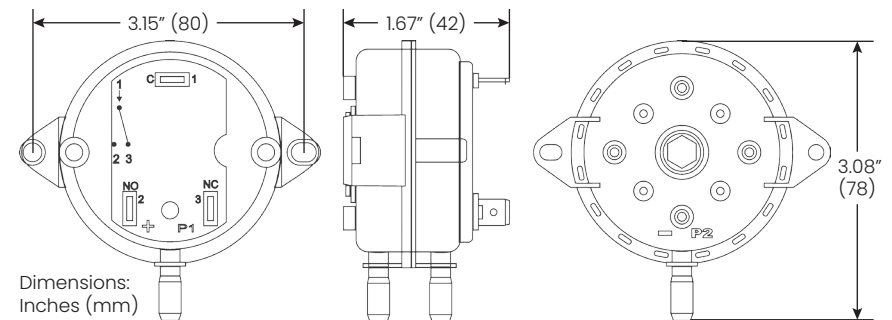
ELECTRICAL CONNECTIONS

The snap switch has three 1/4" x .032" 90° male quick connect spade terminals. Connect them to the corresponding application wire terminals and apply power.

AIR SAMPLING CONNECTION

1. The integral sample line connectors are located on either side of the diaphragm. As marked on the switch, the High or Positive inlet (P1) is black and the Low or Negative inlet (P2) is gray.
2. Connect the sample lines to the application using flexible tubing as follows:
 - **Positive Pressure Only:** Connect the sample line to P1; P2 remains open to the atmosphere.
 - **Negative Pressure Only:** Connect the sample line to P2; P1 remains open to the atmosphere.
 - **Two Negative Samples:** Connect higher negative sample to P2; lower sample to P1.
 - **Two Positive Samples:** Connect higher positive sample to P1; lower sample to P2.
 - **One Positive and One Negative:** Connect positive sample to P1; connect negative sample to P2.

FIGURE 10 – DIMENSIONS OF SWITCH WITH INTEGRAL CONNECTORS AND MOUNTING FEET. THE STANDARD CONNECTORS ACCEPT FLEXIBLE TUBING.



GENERAL SPECIFICATIONS

Body Material	Glass-filled polycarbonate
Diaphragm Material	Silicone
Operating Range	0.10"w.c. to 10.0"w.c.
Maximum Pressure Rating	14"w.c.
Mounting (standard)	Diaphragm vertical.*
Operating Temperature	-40 to 88 °C. (-40 to 190 °F).
Sample Line Connectors	Straight type, accepts flexible tubing
Sample Line Connections	Black=positive, Gray=negative
Sample Medium	Air and byproducts of combustion that will not degrade silicone or polycarbonate
Electrical Connectors	1/4" x .032" 90° quick-connect spade terminals
Standard Contacts	Fine silver
Contact Arrangement	SPDT
Position of Contacts	With spring engaged and before pressure is applied, NC
Switching Action	Change contact position at set point
Electrical Rating	<p>SPDT Electrical Load: 1/10 HP @120 to 277 VAC 28 VA pilot duty @ 24 VAC 125 VA pilot duty @ 120 VAC</p> <p>SPST Electrical Load: 5 Amps resistive @ 24, 120 to 277 VAC</p>

**To meet published specifications, the switch must be calibrated and installed with the diaphragm in a vertical plane. Mounting in a non vertical orientation can affect switch accuracy. Calibrate switch in intended operating orientation*