INSTALLATION DATA

2374-510 UNIVERSAL AIR PRESSURE SENSING SWITCH

GENERAL DESCRIPTION & OPERATION

The Robertshaw® 2374-510 Air Pressure Sensing Switch has a glass-filled polycarbonate housing containing a sensing diaphragm and an integral snap-acting switch with three male 90° quick-connect terminals. The switch can sense positive, negative or differential air pressure. 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, the switch can be applied to a wide variety of residential and light commercial HVAC applications.

SET POINT RANGE & ADJUSTMENT

Calibration requires a manometer (not included in the kit) as well as the included 7/32" hex wrench.

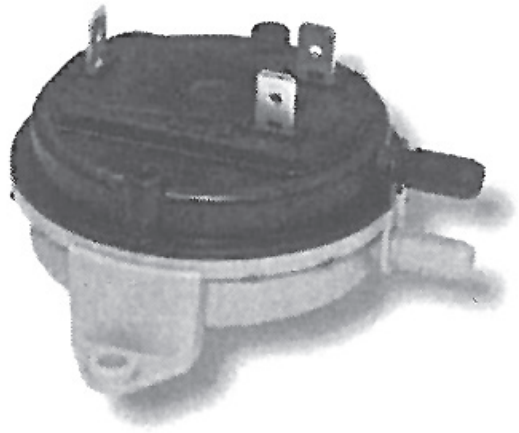
1. Establish the set point as follows. Referring to Table 2 in this manual, select the appropriate spring for the required set point range. Insert the spring into the center well of the mounting pan (light gray side of the switch housing).
2. Insert the black set point adjustment screw, and rotate it manually until the threads are engaged.
3. Connect the switch to a manometer. Using the 7/32" hex wrench provided in the kit, turn the adjustment screw in small increments until the desired set point is reached. Turn the screw clockwise to increase the set point or counterclockwise to decrease the set point. For precise calibration, confirm the set point at actual operating temperature with a manometer. Following precise calibration, if desired, seal the adjusting screw using a UV curable adhesive/ sealant. **Do not place the switch in operation without knowing what the set point is: doing so could create a hazardous situation.**

MOUNTING

Using the (2) #6 x 3/8" mounting screws included in the kit, mount via the integral foot bracket (see Fig. 1) or via either of the optional brackets (see Figs 4 & 5) included in the kit. If using one of the optional brackets, attach it to the switch with the self-tapping screw provided before mounting the switch. Select a mounting location free from vibration. Mount with the diaphragm in any vertical plane. Avoid mounting with the sample line connections directed upward.

ELECTRICAL CONNECTIONS

The snap switch has three 1/4" 90° male quick connect terminals. Before pressure is applied to the diaphragm, the switch contacts are in the deactivated position as shown in Figure 2.



CARTON CONTENTS

(1) field adjustable switch
(1) black set point adjustment screw
(1) hexagon key wrench
(5) color-coded springs
(8) color-coded orifices
(1) half strap mounting bracket
(1) angle ("L") bracket
(1) mounting screw for optional brackets
(2) #6 x 3/8" mounting screws for optional brackets

AIR SAMPLING CONNECTION

Integral sample line connectors, located on both sides of the diaphragm, accept 3/16" ID flexible tubing. See Figure 3. The High or Positive inlet (P1)is black and the Low or Negative inlet (P2) is gray. Connect the sample lines 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.

USING A FLOW-RESTRICTING ORIFICE

Some applications require a delayed switching action after set point is reached. The delay is created by inserting an orifice plug into either or both of the sample line connectors to restrict air flow. Eight orifice plugs in four color-coded sizes are included in the kit as shown in Table 3. Note that the measuring device and the air switch must both contain the same size restricting orifice in order to obtain an accurate measurement of the set point.

⚠ DANGER

CARBON MONOXIDE GAS IS DEADLY
EXCESSIVE CARBON MONOXIDE EXPOSURE
CAN CAUSE BRAIN DAMAGE OR DEATH.

This pressure switch may control air flow into the combustion chamber. Improper adjustment of the pressure switch in the field, or use of the switch for an application for which it was not intended, may introduce carbon monoxide into the ventilation system.

Carbon monoxide is a dangerous, poisonous gas you cannot see or smell. Symptoms of carbon monoxide exposure or poisoning include dizziness, headache, nausea, weakness, sleepiness, muscle twitching, vomiting and inability to think clearly. If you experience these symptoms, turn the HVAC system off, leave the vicinity of the building, and get into fresh air immediately. The pressure switch must be tested thoroughly by an HVAC professional before the HVAC system is restarted.

Remember:

- The U.S. Consumer Product Safety Commission warns that carbon monoxide gas is an "invisible killer." Carbon monoxide gas is colorless, odorless and deadly.
- Carbon monoxide is produced by burning fuel, including natural gas and propane.
- Proper installation, operation and maintenance of fuel-burning appliances in the home is the most important factor in reducing carbon monoxide poisoning.
- Be sure that fuel burning appliances, including HVAC systems, are installed by professionals according to manufacturer's instructions and codes.
- Always follow the manufacturer's directions for safe operation.
- Have the HVAC system (including pressure switches) inspected and serviced annually by a trained service technician.
- Examine vents regularly for improper connections, visible cracks, rust or stains.
- Install battery-operated carbon monoxide alarms. The alarms should be certified to the requirements of the most recent UL, IAS and CSA standard for carbon monoxide alarms. Test carbon monoxide alarms regularly and replace dead batteries.

If you have any questions regarding the installation, use or safety of this switch, please call Technical Service at (800) 445-8299. This sensing switch must be installed, adjusted and serviced by a qualified HVAC installation technician.

TABLE 1: MODEL SELECTION	
P/N 2374-510 Kit	Bleed hole 1n Mounting Pan

TABLE 2: SPRING SELECTION	
Color	**Set Point Range ("W.C.)**
Black	0.10 thru 0.30
Natural	0.30 thru 0.90
Yellow	0.90 thru 2.50
Red	2.50 thru 5.00
Blue	5.00 thru 10.00

TABLE 3. ORIFICE SELECTION	
Color	**Diameter**
Green	0.010
Gray	0.016
Red	0.028
Blue	0.035

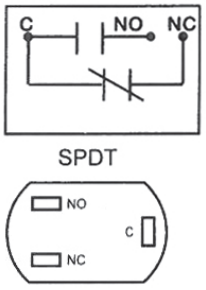


Figure 2. Without pressure applied to the diaphragm, switch contacts are in the position shown.

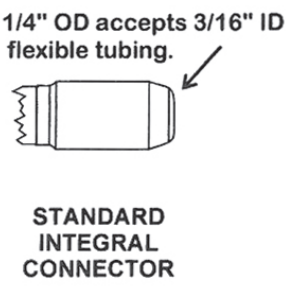


Figure 3. Standard integral connector accepts $^{3}/_{16}$" ID tubing.

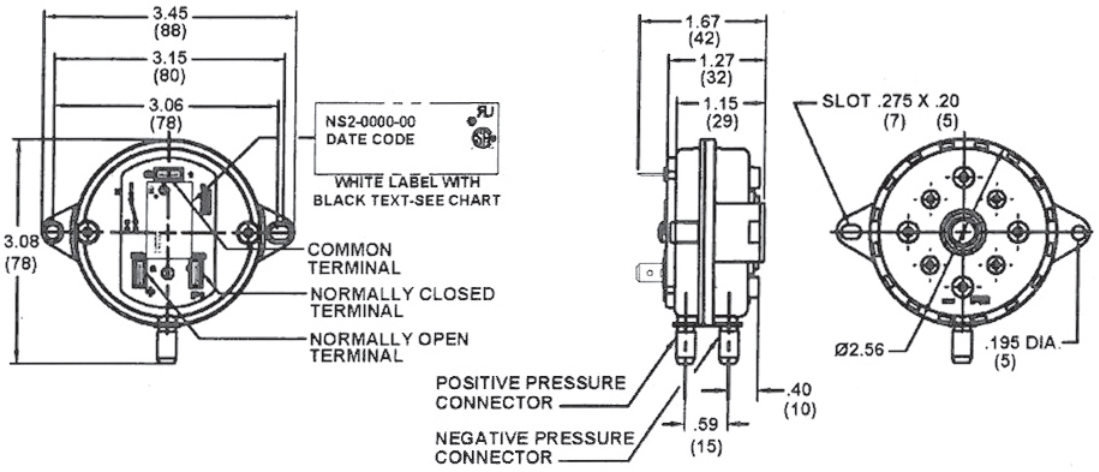


Figure 1: Dimensions NS2 Switch with integral connectors and mounting feet

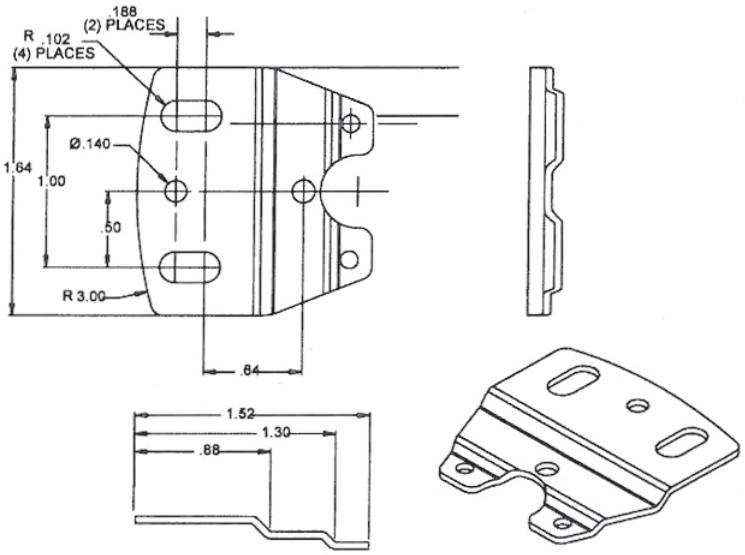


Figure 4: Half Strap Bracket

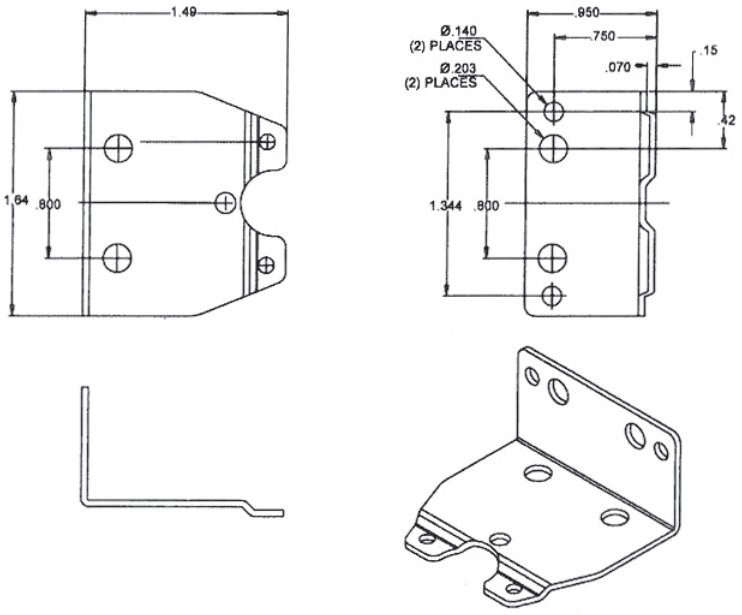


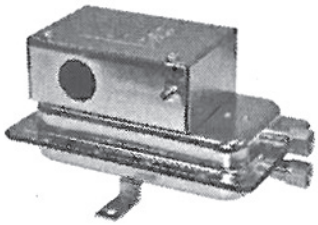
Figure 5: "L" Bracket

ADDITIONAL KITS FOR HVAC APPLICATIONS!

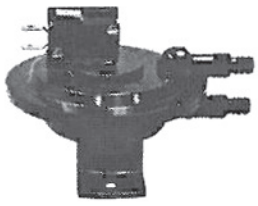
The New Sensing Probe Kits contain a 7" universal probe with mounting hardware, 3' of vinyl tubing, a slip on adapter, and complete application instructions. Order 10-650 Today!



The Robertshaw® Air Pressure Sensing Switches include Pneumatic Switches, Air Pressure Sensing Switches and Manual Reset Switches. These reliable devices are designed to replace a wide variety of switches found in residential and light commercial applications.



- All Air Switches come in a contractor kit that includes the hardware, replacement hose and an adjustment tool for easy installation and calibration.
- These switches include features such as factory-calibrated and factory-fixed set points, NEMA rated housings, manual resets and gold contacts.
- Select Air Pressure Sensing Switches are practically insensitive to temperature change with an operating range of -40°F to 190°F.



ROBERTSHAW SENSING SWITCH TECHNICAL SPECIFICATION

MATERIAL	
Body	Glass-filled polycarbonate
Diaphragm	Silicone
Terminals	Copper alloy
Contacts	Fine silver
OPERATION	
Operating Range	0.10" W.C to 10.0" W.C.
Max. Pressure Rating	14" W.C.
Mounting	Standard: Diaphragm vertical
Operating Temperature	-40 to +88°C (-40 to +190°F)
Sample Line Connections	Black: positive Gray: negative
Sample Medium	Air and byproducts of combustion that will not degrade silicone or polycarbonate
Product Life	100,000 cycles minimum
ELECTRICAL	
Electrical Rating	Standard Silver Contacts SPDT Electrical load 1/10 HP @120 to 277 VAC 28 VA pilot duty @ 24 VAC 125 VA pilot duty @ 120 VAC SPST Electrical load 5 Amps resistive @ 24, 120 to 277 VAC
Contact Arrangement	SPDT
Electrical Connectors	Standard quick-connect terminals ¼" x 0.032
GENERAL	
Approvals	UL, CUL, CSA, CE, Australian Gas Association
Accessories	Consult Factory

Robertshaw

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