

Commercial/Industrial Combustion Control

Level Three Announcement

SUBJECT: C6097 requiring venting	Ref. Number	L3-08-006
	Issue Date	12/9/08
	Author	P.Yuen/L.Ziller
Model Numbers Affected: C6097A and B	Date Code Affected: All Devices	

Problem: Am I required to connect a Vent pipe to the C6097 Gas/Air Pressure Switches?

Background: For any diaphragm activated switches or devices to work and respond properly, it requires a vent to allow the diaphragm to flex. National Standards allow the use of vent limiters without the requirement of an externally connected vent provided the device meets certain requirements (See Attached white paper).

Actions: See Attached 'white paper for C6097' and highlighted areas in the Product Date sheet – form number 65-0237.

For Your Information

Subject: Honeywell C6097 Pressure Switch

For any diaphragm activated switches or devices to work and respond properly, they require a vent to allow the diaphragm to flex. National Standards allow the use of vent limiters without the requirement of an externally connected vent provided the device meets the following:

Summary of related requirements from UL 353....

A pressure control, in which a flexible diaphragm, bellows or similar construction constitutes the only flammable-fluid seal, shall have the atmospheric side of the diaphragm or bellows enclosed in a casing constructed to limit external leakage in the event of diaphragm or bellows rupture, or shall have provisions for connection of a vent pipe or tubing routed to the outdoors or other location acceptable for venting. The control shall not allow leakage under conditions of ruptured diaphragm or bellows from an unthreaded vent opening or around any pins, stems, or linkage passing through the housing in excess of the following rate when the control is tested to its maximum rated pressure:

- a) 1 cubic foot (0.03 m³) per hour of a 0.64 specific gravity gas for a limit control for use only with fuel gases having specific gravities less than 1.0
- b) 1/2 cubic foot (0.014 m³) per hour of a 1.53 specific gravity gas for a limit control for use with liquefied petroleum gases

The Honeywell C6097 pressure switches are designed with internal vent-limiters to meet these requirements, and are CSA certified, UL listed, FM approved and CSD-1 acceptable.

Local codes may or may not accept a gas device (i.e. pressure switch) without an external vent line connection. If that is the case, then a vent line will have to be added.

Honeywell's C6097 pressure switches can meet both application requirements - internally vent limited and external vent connection means:

- Honeywell C6097 (both Flanged and NPT versions) are constructed with internal vent limiters to eliminate the needs for an externally connected vent line.
- If external vent line is required to meet certain local codes, use the C6097 NPT version which is constructed with vent line connection means.

C6097A,B Pressure Switches

PRODUCT DATA



APPLICATION

The C6097 Pressure Switches are safety devices used in positive-pressure or differential-pressure systems to sense gas or air pressure changes.

FEATURES

- For use with natural gas, liquid propane (LP) gas, or air.
- Diaphragm-actuated safety-limit switch.
- Switch can be wired to turn on alarm.
- C6097A models break control circuit at setpoint on pressure fall.
- C6097B models break control circuit at setpoint on pressure rise.
- Lockout with manual reset and recycle options.
- Lockout models have external manual reset button.
- Removable transparent cover protects scaleplate and adjusting knob.
- Pipe tapings allow selection of positive pressure, differential pressure (air only) or venting connections (NPT mount only).
- 1/4 in. NPT or flange mount models for direct mounting to Honeywell Integrated Valve Train.
- Optional switch position indicator lamp available.
- IP54 enclosure standard.
- Ranges: 0.4 to 5 in. wc, 3 to 21 in. wc, 12 to 60 in. wc or 1.5 to 7 psi.
- Surge orifice.
- **Integral Vent Limiter.**

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65-0237-04

SPECIFICATIONS

Models:

C6097A Pressure Switch: Breaks a circuit when pressure falls to scale setting. See Table 1.

C6097B Pressure Switch: Breaks a circuit when pressure rises to scale setting. See Table 1.

Table 2 shows switch ratings and Table 3 shows alternate electrical ratings when used with Honeywell Flame Safeguard Programmers.

Minimum Ambient Temperature: -40°F (-40°C).

Maximum Ambient Temperature: 140°F (60°C).

Connections (Depending on Model):

1/4-18 NPT tapping for main or high-pressure connection.
1/8-27 NPT tapping for vent or low-pressure connection (air only).

Flange mount for connection to Honeywell Integrated Valve Train (internal vent only, no external connections).

Scale Range:

0.4 to 5 in. wc (0.10 kPa to 1.25 kPa).
3 to 21 in. wc (0.75 to 5.23 kPa).
12 to 60 in. wc (3.0 kPa to 15 kPa).
1.5 to 7 psi (10.3 kPa to 48 kPa).

Approvals:

Underwriters Laboratories Inc. listed.
Canadian Standards Association listed.
Factory Mutual: Approved.
Industrial Risk Insurers: Acceptable.
CSD-1 AFB: Acceptable.

Accessories:

32003041-001 C6097 Cover for manual reset models.
32003040-001 C6097 Cover for recycle models.
32003039-001 Position Indication Lamp Kit.

Dimensions: See Fig. 1 and 2.

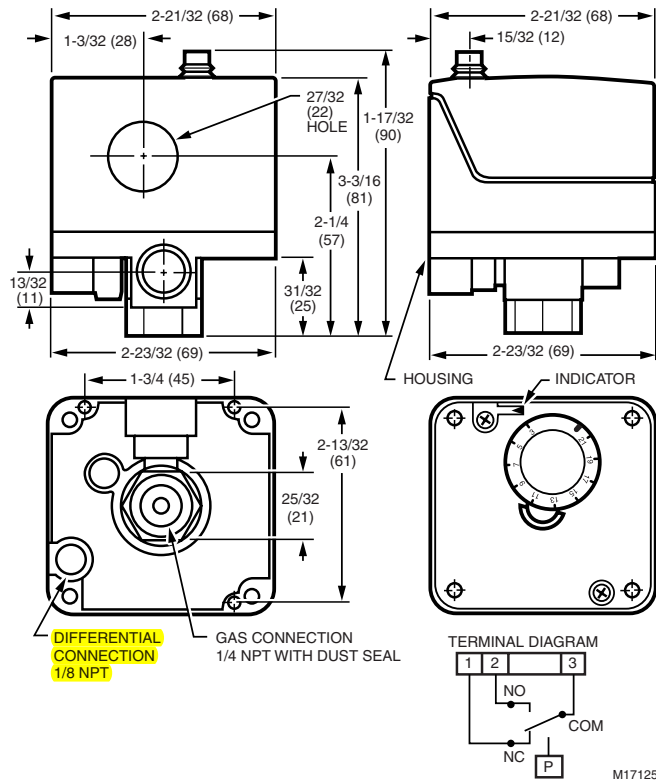


Fig. 1. C6097 1/4 in. NPT Mount dimensions in in. (mm).

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1885 Douglas Drive North
Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

Table 1. Pressure Switch Model Selection.

Model	Operating Pressure Range	Manual Reset Differential		Non-Manual Reset Differential		Differential Type	Maximum Rated Pressure (continuous) (psi)	Manual Reset	Media ^a	Switch Action at Setpoint	Comments
		Maximum at Minimum Setpoint	Maximum at Maximum Setpoint	Nominal	Maximum						
C6097A1004	0.4 to 5 in. wc	—	—	0.16 in. wc	0.24 in. wc	Additive	2.9	No	Air/Gas	Breaks N.O. to C. connection on pressure fall.	1/4 in. NPT Mount
C6097A1012	3 to 21 in. wc	2.4 in. wc	4.2 in. wc	—	—		5.0	Yes	Air/Gas		1/4 in. NPT Mount
C6097A1020	3 to 21 in. wc	2.4 in. wc	4.2 in. wc	—	—		5.0	Yes	Air/Gas		Flange Mount
C6097A1038	12 to 60 in. wc	10 in. wc	12 in. wc	—	—		5.0	Yes	Air/Gas		1/4 in. NPT Mount
C6097A1046	12 to 60 in. wc	10 in. wc	12 in. wc	—	—		5.0	Yes	Air/Gas		Flange Mount
C6097A1053	3 to 21 in. wc	—	—	0.24 in. wc	0.48 in. wc		5.0	No	Air/Gas		1/4 in. NPT Mount
C6097A1061	3 to 21 in. wc	—	—	0.24 in. wc	0.48 in. wc		5.0	No	Air/Gas		Flange Mount
C6097A1079	12 to 60 in. wc	—	—	1.1 in. wc	2.4 in. wc		5.0	No	Air/Gas		1/4 in. NPT Mount
C6097A1087	12 to 60 in. wc	—	—	1.1 in. wc	2.4 in. wc		5.0	No	Air/Gas		Flange Mount
C6097A1095	0.4 to 5 in. wc	0.6 in. wc	1.0 in. wc	—	—		2.9	Yes	Air/Gas		1/4 in. NPT Mount
C6097A1103	1.5 to 7 psi	1.1 psi	1.4 psi	—	—		9.3	Yes	Air/Gas		Flange Mount
C6097A1111	1.5 to 7 psi	1.1 psi	1.4 psi	—	—		9.3	Yes	Air/Gas		1/4 in. NPT Mount
C6097A1129	1.5 to 7 psi	—	—	0.1 psi	0.3		9.3	No	Air/Gas		Flange Mount
C6097A1137	1.5 to 7 psi	—	—	0.1 psi	0.3		9.3	No	Air/Gas		1/4 in. NPT Mount
C6097A1210	0.4 to 5 in. wc	—	—	0.16 in. wc	0.24 in. wc		2.9	No	Air/Gas		Flange Mount
C6097A1228	0.4 to 5 in. wc	—	—	—	—		2.9	Yes	Air/Gas		Flange Mount
C6097B1002	12 to 60 in. wc	10 in. wc	12 in. wc	—	—		Subtractive	5.0	Yes		Air/Gas
C6097B1010	12 to 60 in. wc	10 in. wc	12 in. wc	—	—	5.0		Yes	Air/Gas	Flange Mount	
C6097B1028	3 to 21 in. wc	2.4 in. wc	4.2 in. wc	—	—	5.0		Yes	Air/Gas	1/4 in. NPT Mount	
C6097B1036	3 to 21 in. wc	2.4 in. wc	4.2 in. wc	—	—	5.0		Yes	Air/Gas	Flange Mount	
C6097B1044	1.5 to 7 psi	1.1 psi	1.4 psi	—	—	9.3		Yes	Air/Gas	Flange Mount	
C6097B1051	1.5 to 7 psi	1.1 psi	1.4 psi	—	—	9.3		Yes	Air/Gas	1/4 in. NPT Mount	
C6097B1069	3 to 21 in. wc	—	—	0.24 in. wc	0.48 in. wc	5.0		No	Air/Gas	Flange Mount	
C6097B1077	12 to 60 in. wc	—	—	1.1 in. wc	2.4 in. wc	5.0		No	Air/Gas	Flange Mount	
C6097B1085	12 to 60 in. wc	—	—	1.1 in. wc	2.4 in. wc	5.0		No	Air/Gas	1/4 in. NPT Mount	
C6097B1093	1.5 to 7 psi	—	—	0.1 psi	0.3 psi	9.3		No	Air/Gas	Flange Mount	
C6097B1101	1.5 to 7 psi	—	—	0.1 psi	0.3 psi	9.3		No	Air/Gas	1/4 in. NPT Mount	
C6097B1119	3 to 21 in. wc	—	—	0.24 in. wc	0.48 in. wc	5.0		No	Air/Gas	1/4 in. NPT Mount	

^a Acceptable media: Natural gas, liquid propane (LP) gas, and air.

Table 2. Switch Ratings (Amperes).

120/240 Vac, 50/60 Hz		
Inductive	Full Load	3.0
	Locked Rotor	18.0
Resistive		5.0

Table 3. Alternate Electrical Ratings when used with Honeywell Flame Safeguard Programmers.

Device	Rating
Ignition Transformer	540 VA
Pilot Valve	50 VA
Main Valve	400 VA with 2-1/2 times inrush.

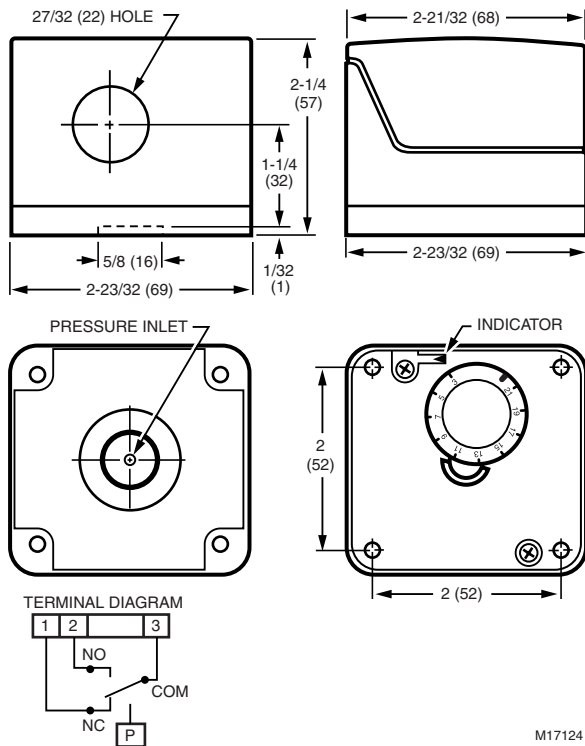


Fig. 2. C6097 Flange Mount dimensions in in. (mm).

INSTALLATION

⚠ WARNING

Explosion or Fire Hazard.
Can cause severe personal injury, death or property damage.
 Observe all safety requirements each time a control is installed on a burner.

When Installing this Product...

1. Read these instructions carefully. Failure to follow them can damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure that the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is completed, check out product operation as provided in these instructions.

⚠ WARNING

Electrical Shock Hazard.
Can cause serious personal injury or death.
 Disconnect power supply before beginning installation. More than one disconnection can be involved.

Mounting

NOTE: On flange models, remove the label holding the O-ring in place and make sure O-ring seal is in place before mounting the pressure switch on the valve.

The C6097 models allow NPT or flange (directly to valve) mounting. The NPT models have a hexagonal fitting with a 1/4 in. NPT tapping, which is the high pressure connection, in differential applications. The bleed fitting is 1/8 in. NPT tapped. In differential pressure control applications using air only, connect the lower pressure to the bleed fitting. See Fig. 1.

Both the flange mount and NPT mount models are supplied with an Integral Vent Limiter. External vent line is not required. If necessary, this 1/8-in. atmospheric vent fitting can be used for the vent line connection.

C6097 models with flange mount can be fitted directly to Honeywell Integrated Valve Train (model specific). See Fig. 2 and Table 1. The flange mount models vent internally, with no external tap.

Mount the C6097A,B in any position.

Leak Check

- After installation, perform a leak check on the pressure switch:
1. Turn on main gas. Make sure gas has reached the pressure switch (e.g., high gas pressure switch)
 2. Check installation for gas leaks using a gas leak detector or a soap solution.

OPTIONAL SWITCH POSITION INDICATION LAMP

The 32003039-001 Switch Position Indicator Lamp Kit consists of a plastic bag containing the following parts (see Fig. 1):

1. Lamp and wires.
2. Terminal plate.
3. Captive screw and nut.
4. Screw.

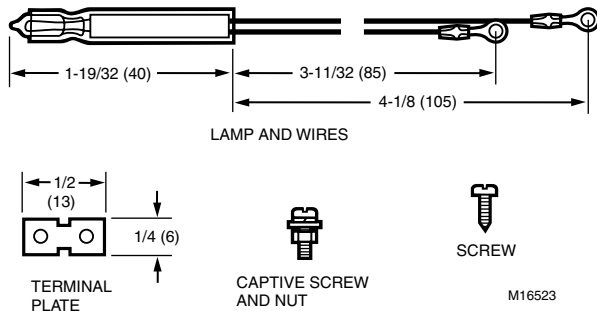


Fig. 3. 32003039-001 Position Indication Lamp Kit.

Installation

⚠ WARNING

Explosion or Fire Hazard.
Can cause severe personal injury, death or property damage.
 Observe all safety requirements each time a control is installed on a burner.

⚠ WARNING

Electrical Shock Hazard.
Can cause serious personal injury or death.
 Disconnect power supply before beginning installation. More than one disconnection can be involved.

Installing the Position Indication Lamp Kit (See Fig. 4)

1. Remove the cover from the C6097 by removing the screws in the upper left and lower right quadrants of the cover.
2. Place the lamp in the slot to the right of the dial, in the upper right-hand corner of the C6097, with the base down. Run the two lamp wires through the slit in the upper left corner of the lamp slot.
3. Place the nut in the hexagonal depression in the lower left-hand corner of the C6097.
4. Place the terminal plate over the nut and fasten the terminal plate to the C6097 with the screw through the bottom hole in the terminal plate.
5. Place the captive screw through the terminal lug on the shorter wire and fasten the wire to the terminal plate with the captive screw secured by the nut under the terminal plate.
6. Using Fig. 5 or 6 for reference, fasten the terminal lug on the longer lamp wire to either the normally open (NO) or normally closed (NC) terminal of the C6097.

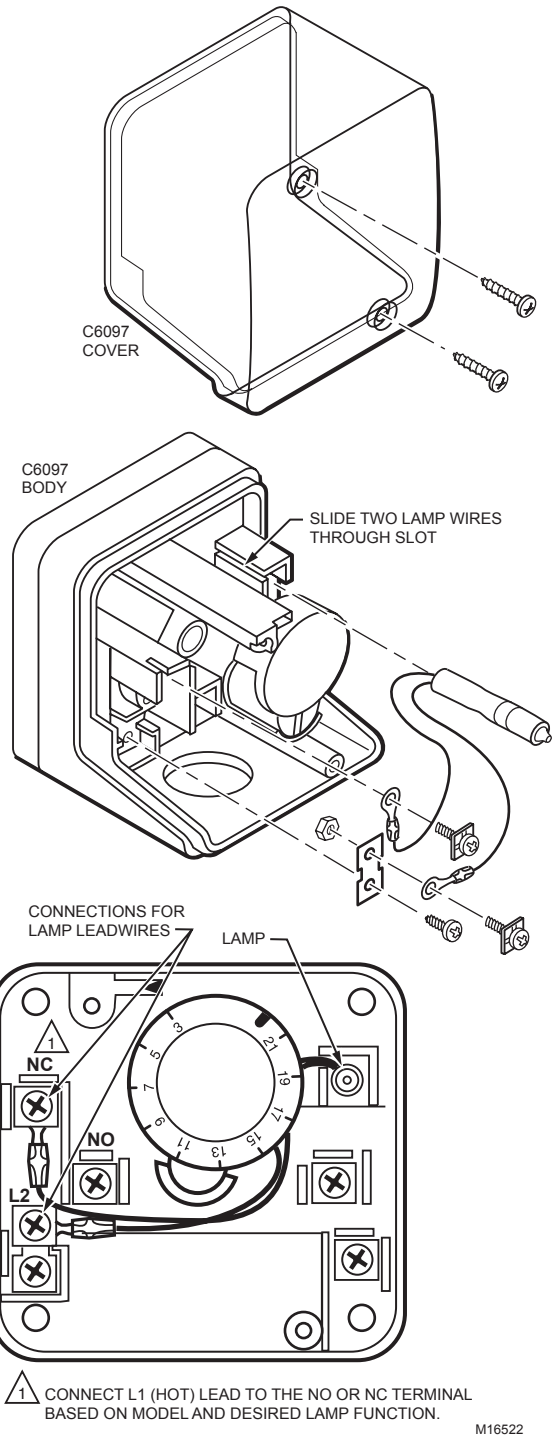


Fig. 4. Installing the Position Indicator Lamp Kit.

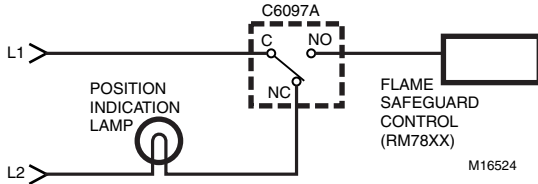


Fig. 5. Wiring the Position Indicator Lamp Kit in the C6097A.

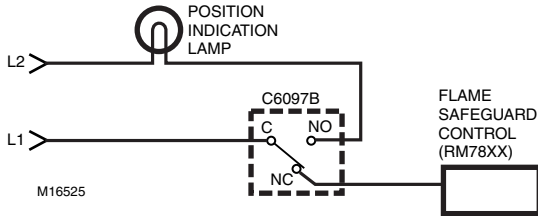


Fig. 6. Wiring the Position Indicator Lamp Kit in the C6097B.



Fig. 7. C6097 (manual reset switch model) with cover removed.

Position Indicator Lamp Operation

The Position Indicator Lamp will light when the C6097 Pressure Switch opens and provides power to the lamp (see Fig. 5 or 6). An option alarm circuit can also be connected as shown in the same figures.

WIRING

⚠ WARNING

Electrical Shock Hazard.
Can cause serious personal injury or death.
 Disconnect power supply before beginning installation.
 More than one disconnection can be involved.



Make sure that all wiring agrees with all applicable local codes, ordinances and regulations. An opening is provided to accommodate rigid conduit or armored cable for line voltage operation (see Fig. 3 and 4). Do not overload the switch contacts (see Switch Ratings in the Specifications section). The switching schematic is shown in Fig. 5.



Fig. 8. C6097 (recycle model) with cover removed.

SETTINGS AND ADJUSTMENTS

Pressure Setpoint Adjustment

To adjust the pressure setting, turn the setpoint adjustment dial (Fig. 3, 4 and 5) clockwise  to increase the pressure setting and counterclockwise  to decrease the pressure setting.

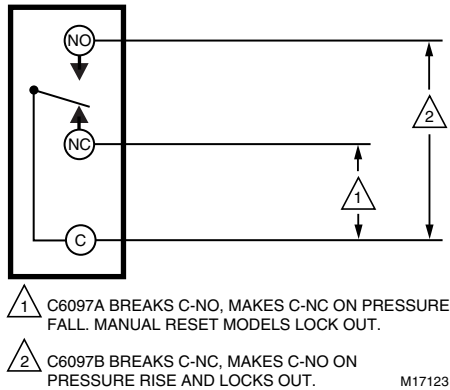


Fig. 9. C6097 schematic.

OPERATION AND CHECKOUT

Operation

The manual reset C6097A diaphragm actuates the snap-acting switch to break a control circuit and lock out when pressure falls to the scale setting. The recycle C6097A models recycle automatically when the control circuit returns to scale setting plus differential.

The manual reset C6097B diaphragm actuates the snap-acting switch that breaks a control circuit and locks out when the pressure rises to the scale setting. The recycle C6097B models recycle automatically when the control pressure falls to the scale setting minus differential.

Manual Resetting

The C6097A manual reset models lock out when pressure falls to the scale setting and require manual resetting after the pressure rises to scale setting plus differential to resume normal operation.

The C6097B manual reset models lock out when pressure rises to the scale setting and require manual resetting after the pressure falls to scale setting minus the differential to resume normal operation.

To reset, once normal operating pressure is restored, push the reset button in as far as it goes, then release.

IMPORTANT

Lockout models cannot be made to recycle automatically by permanently holding in the reset lever.

Checkout

C6097 Gas Fuel Application

1. Set cutoff pressure.
2. Open main supply line. Depress reset lever on lockout models until switch makes control circuit.
3. Set controller and limit switch to call for heat.
4. For C6097A: Close the manual gas shutoff valve. C6097 should open control circuit when pressure reaches cutoff point.
For C6097B: Open the manual gas shutoff valve, wait a few minutes for the pressure to rise; then lower the scale setting until the switch breaks control circuit and locks out.
5. For C6097A: Open the shutoff valve, return the pressure switch to its original setting and press the reset button (if necessary).
For C6097B: raise setting to normal and press reset button (if necessary).
6. Allow system to operate through at least one complete cycle to make sure all components are functioning properly.

C6097A Air Application

1. Set cutoff pressure.
2. Turn on fan.
3. Block fan inlet or filter area. Switch should break control circuit when pressure drops to cutoff point. Manual reset models lock out.
4. Remove obstruction. Press reset lever (manual reset models) and allow system to operate through at least one complete cycle to be sure all components are functioning properly.

Automation and Control Solutions

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