

## C437D,E Gas Pressure Switches

### PRODUCT DATA



### FEATURES

- C437 models have direct- and reverse-acting (spst) switching.
- Pressure ranges: 1/2 to 5-1/2 in. of water (0.1 to 1.4 kPa); 1 to 26 in. of water (0.5 to 7 kPa); 1/2 to 5 psi (3 to 35 kPa); 1 to 10 psi (5 to 70 kPa).
- Models intended for lockout applications must be manually reset before resuming operation.
- Trip-free mechanism on manual reset models ensures that the limit function of the switch cannot be defeated by jamming the reset lever.
- External manual reset button on side of lockout models.
- Enclosed setting impedes tampering and provides dust-resistant operation.
- Buna-N fiber-reinforced material for increased strength of control diaphragm.
- Two Buna-N fiber-reinforced seal-off diaphragms for added reliability.
- Clear glass cover allows observation of interior mechanism to aid setting and checkout.
- Heavy die-cast case increases durability and resistance to corrosion.
- Main control diaphragm completely enclosed a leak-proof chamber can be vented to a safe area.
- Models with a pressure range of 1 to 26 in. of water (0.5 to 7 kPa) have a restrictive orifice in the inlet pressure channel to compensate for momentary surges in gas pressure.
- Field-addable orifices of various sizes are available.

### APPLICATION

The C437D,E Gas Pressure Switches are pressure-actuated switching devices used in industrial gas system applications for safety shutoff, pressure control, and differential-pressure control.

All Series 4 models have MicroSwitch™ snap switches to open or close a circuit on pressure rise or drop.

NOTE: Series numbers immediately follow OS numbers, i.e., C437D2003(4).

### Contents

Application .....	1
Features .....	1
Specifications .....	2
Ordering Information .....	2
Installation .....	4
Wiring .....	5
Setting and Checkout .....	5



## SPECIFICATIONS

Table 1. Models.

Model Number	Switch Action (Response at Setpoint to Pressure Change)	Manual Reset <sup>a</sup> (Locks Out on Switch Break)
C437D	spst, breaks on rise	Yes
C437E	spst, breaks on fall	Yes

<sup>a</sup> Designated Manual Reset 2; the trip-free reset mechanism does not permit the switch to function as an automatic-reset device when the manual reset lever is held in the Reset position.

Table 2. Switch Ratings (In Amperes).

Voltage	C437D,E		
	Full Load	Locked Rotor	Resistive Load
120 Vac	8.0	48.0	10.0
240 Vac	5.1	30.6	5.0

**Switch:**  
Snap Switch (spst).

**Differentials:**  
Fixed, nominal; measured at pressure indicated in Table 3.

Table 3. Pressure Differentials.

Model Numbers	Pressure Range <sup>a</sup>								Type <sup>a</sup>
	1/2 to 5-1/2 in. (0.1 - 1.4 kPa) Differential Measured at 1/2 in.		1 to 26 in. <sup>b</sup> (0/5 - 7 kPa) Differential Measured at 15 in.		1/2 to 5 psi (3 - 35 kPa) Differential Measurement at midscale		1 to 10 psi (5 - 70 kPa) Differential Measurement		
	in.	kPa	in.	kPa	psi	kPa	psi	kPa	
C437D	—	—	1-3/4	0.44	1/2	3.45	1 <sup>c</sup>	6.89 <sup>c</sup>	Subtractive <sup>c</sup>
C437E	0.25	0.06	1-1/4	0.31	1/4	1.72	1/2	3.45	Additive <sup>d</sup>

<sup>a</sup> in. = inches of water.

<sup>b</sup> Restrictive orifice in inlet pressure channel to compensate for momentary surges in gas pressure.

<sup>c</sup> Subtractive models: switching action occurs on pressure rise to the setpoint.

<sup>d</sup> Additive models: switching action occurs on pressure fall to the setpoint.

**Pressure Ranges (Scale Range):**

Specify one:

1/2 to 5-1/2 inches of water (0.1 to 1.4 kPa).

1 to 26 inches of water (0.5 to 7 kPa).

1/2 to 5 lb per sq in. (3 to 35 kPa).

1 to 10 lb per sq in. (5 to 70 kPa).

## 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.

**Maximum Sustained Operating Pressure:** See Table 4.

**Table 4. Maximum Sustained Operating Pressure.**

Pressure Range	Maximum Pressure	
	psi	kPa
1/2 to 5-1/2 in. of water	3.0	20.7
1 to 26 in. of water	5.0	34.5
1/2 to 5 psi	15.0	103.4
1 to 10 psi	30.0	206.8

**Pipe Connections:**

Main or High Pressure: 1/2 in. NPT, female.  
 Vent or Low Pressure: 1/8 in. NPT, female.  
 Electrical Wiring: Hole tapped for 1/2 in. conduit.

**Maximum Ambient Temperature:** 125°F (52°C).

**Minimum Temperature:** 32°F (0°C).

**Approvals:**

Underwriters Laboratories Inc. Listed: File No. MP2168, Guide No. MFHX.  
 Canadian Standards Association Certified: File No. LR95329, Certificate No. 1736842.  
 Factory Mutual Approved: Report No. 3024921.

**Replacement Parts:**

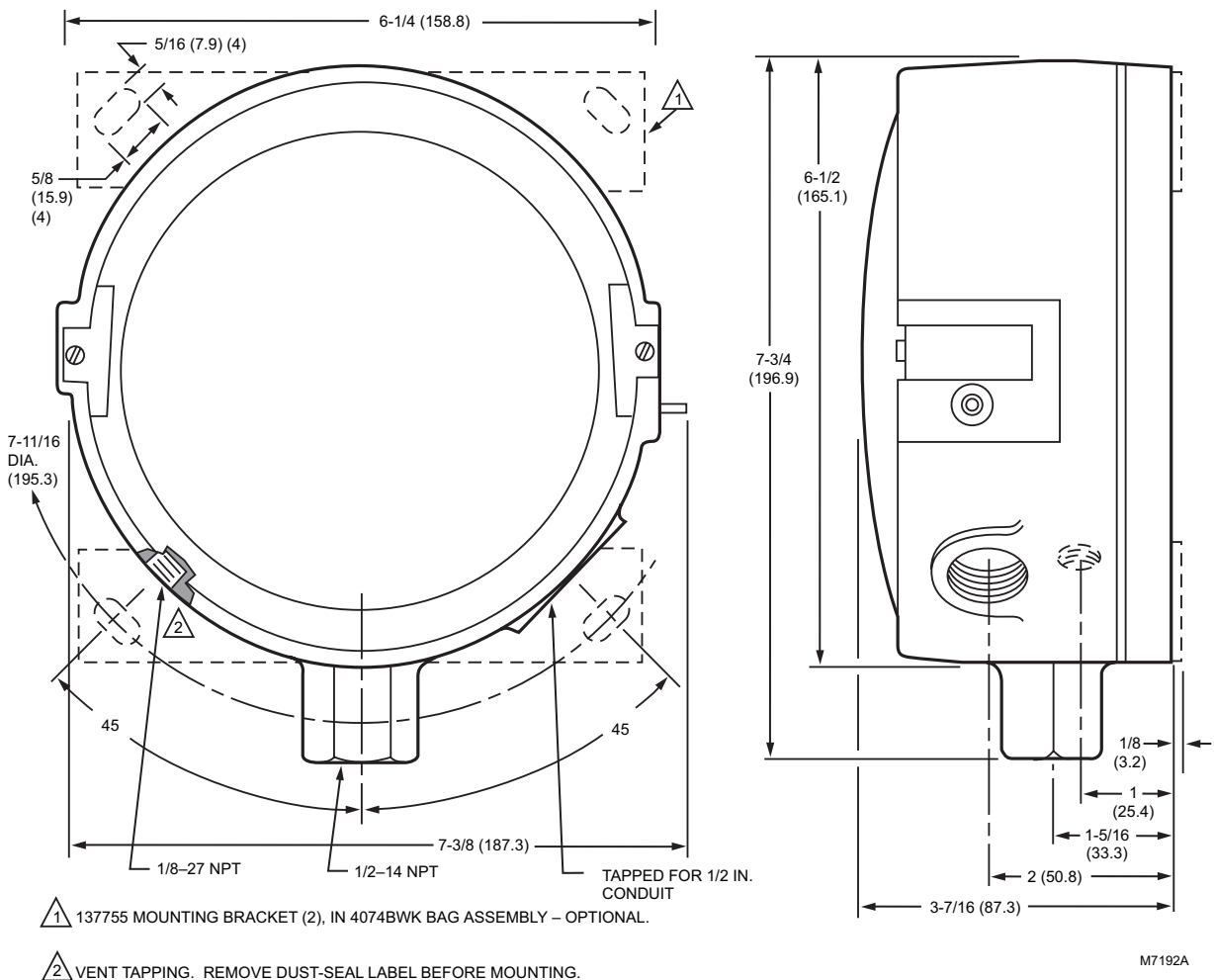
106729 Cover Glass, 6 in. (152.4 mm) diameter.  
 118733-21 Retaining Clip.

**Accessories:**

4074BWK Bag Assembly: Contains two 137755 Mounting Brackets and four self-tapping screws: for surface mounting. Mounting brackets are shown by dashed lines in Fig. 1.

**Field-addable Orifices:**

124674: 0.011 in. (0.28 mm) diameter.  
 122160: 0.018 in. (0.46 mm) diameter.



**Fig. 1. Installation dimensions of the C437 gas pressure switches, in in. (mm).**



**RECYCLE NOTICE**

If this control is replacing a control that contains mercury in a sealed tube, do *not* place your old control in the trash.

Contact your local waste management authority for instructions regarding recycling and the proper disposal of an old control containing mercury in a sealed tube.

## INSTALLATION

### When Installing this Product...

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

### **⚠ WARNING**

**Electrical Shock Hazard.**  
**Can cause severe injury, death or property damage.**  
 Disconnect all power to the pressure switch before beginning installation to prevent electrical shock and equipment damage.

#### **IMPORTANT**

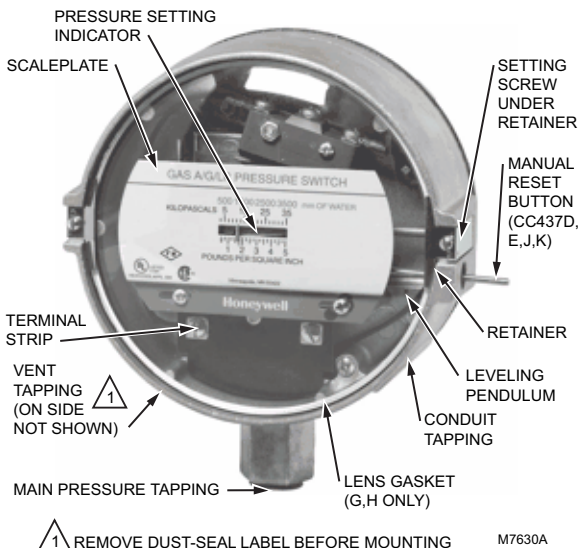
1. Remove the dust-seal label from the vent tapping before mounting.
2. Use pipe compound sparingly to avoid clogging the hole in the pie or diaphragm fitting.
3. Do not hand tighten the pressure switch by holding the case.

Follow local codes or ordinances *in all cases* when different from these recommendations.

Fig. 1 shows the mounting dimensions for the C437 models, and for the accessory mounting bracket. See Fig. 2 for the individual components.

### Location

Mount the gas pressure switch downstream from the pressure regulator. Mount low gas pressure switches upstream of any shutoff valve. Mount high gas pressure switches just upstream from the burner.



**Fig. 2. Principal parts of the gas pressure switch.**

### Mounting

1. Remove the dust-seal label from the vent tapping.
2. Remove the screws and retainers, and the cover glass.
3. Mount the device on the pipe or nearby vertical surface. Use nipple and T for pipe mounting or the mounting bracket for surface mounting. If a mounting bracket is used, install the bracket before making piping connections. Mount the bracket horizontally with the four 10-24 flathead tapping screws provided.

#### **IMPORTANT**

*To avoid leaks and case damage, use a parallel jaw wrench on the hexagonal part of the case close to the pipe. Carefully make all connections and test for leakage. Do not tighten the pressure switch by holding the case.*

4. Complete the main piping.
5. Connect the piping to the pressure switch. Select the application from the following, and proceed as instructed.
  - a. Hazardous-gas applications: Install a 1/8 in. NPT pipe at the vent tapping on all hazardous-gas applications.

### **⚠ WARNING**

**Explosion or Fire Hazard.**  
**Can cause severe injury, death or property damage.**  
 The vent must be installed so that any gas leakage is vented into a safe place in event of a diaphragm failure.

- b. Differential-pressure applications:
  - (1) Connect the high-pressure side of the system to the 1/2 in. NPT main pressure tapping on the gas pressure switch.
  - (2) Connect the low pressure side to the 1/8 in. NPT vent tapping.

### **⚠ WARNING**

**Explosion or Fire Hazard.**  
**Can cause severe injury, death or property damage.**  
 No venting is possible in this case. Do not use this device for differential pressure control with the hazardous gases.

- c. Negative-pressure applications: Connect the low pressure side to the 1/8 in. NPT vent tapping.

### **⚠ WARNING**

**Explosion or Fire Hazard.**  
**Can cause severe injury, death or property damage.**  
 This application is for use only with nonhazardous gases. Do not use this device for negative-pressure applications with hazardous gases.

6. Install other controls in the system. Connect wiring, and complete setting and checkout before replacing the cover glass and retainers. See Setting and Checkout section.

## WIRING

### ⚠ WARNING

**Electrical Shock Hazard.**  
**Can cause severe injury, death or property damage.**  
 Disconnect all power to the pressure switch before connecting wiring to prevent electrical shock and equipment damage.

All wiring must comply with local electrical codes, ordinances, and regulations. Do not exceed the switch ratings given in the Specifications section.

Wiring diagram for the C437D,E is shown in Fig. 3. The switches make or break as indicated in the diagram. Connect the wiring to the screw terminals on the terminal strip after removing the cover glass. Route the wires through the conduit tapping.

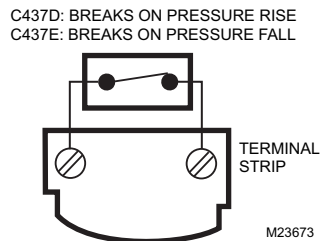




Fig. 3. Wiring diagram for C437D,E.

## SETTING AND CHECKOUT

### Setting

In the C437D, the differential is subtractive. The upper operating point is determined by the setpoint, while the lower operating point is determined by the setpoint minus the differential. In the C437E, the differential is additive. The lower operating point is determined by the setpoint, while the upper operating point is determined by the setpoint plus the differential. Operating points are shown in Fig. 4.

Remove the retainer and adjust the setpoint for the desired operating pressure (cutout pressure) by turning the setting screw (Fig. 2) clockwise  to increase the setpoint and counterclockwise  to decrease it.

### Trip-Free Manual Reset Feature (C437D,E only)

The C437D breaks contact between terminals when the pressure rises to the setpoint. The C437E breaks contact between terminals when the pressure falls to the setpoint. None of these pressure switches will automatically return to their former positions.


To reset one of these pressure switches, wait until the pressure falls to the setpoint minus the differential (C437D), or rises to the setpoint plus the differential (C437E). Then depress the manual reset button (Fig. 2) and release it. The pressure

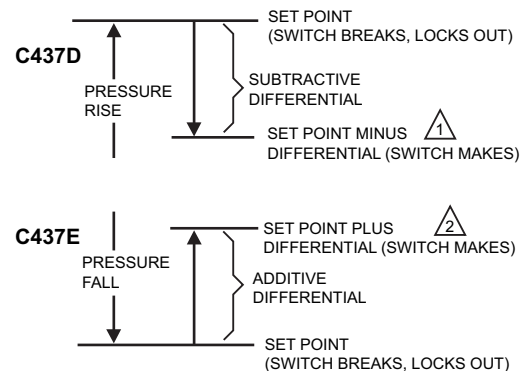
switch will not be reset until you release the manual reset button. This prevents the switch from becoming an automatic-reset device if the reset button is stuck, held in, or tied down.

### Checkout

Adjust the setpoint for normal operation and check to see that the gas pressure switch performs as intended. Use a manometer or accurate pressure gauge connected upstream from the switch to measure the actual pressure.

### C437D (Subtractive Differential)

- Put the system into normal operation, and set the pressure switch at the normal setpoint (above the normal operating pressure). Turn the setting screw (Fig. 2) slowly toward a lower pressure setting (counterclockwise ) to simulate a pressure increase.
- When the setpoint is approximately equal to the pressure indicated on the pressure gauge, the C437D should break contact and turn off the controlled equipment, locking out.




⚠ C437D IS A MANUAL RESET MODELS; IT CAN BE MANUALLY RESET WHEN THE PRESSURE FALLS TO THE SET POINT MINUS THE DIFFERENTIAL.

⚠ C437E IS A MANUAL RESET MODELS; IT CAN BE MANUALLY RESET WHEN THE PRESSURE RISES TO THE SET POINT PLUS THE DIFFERENTIAL.

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Fig. 4. C437 operating points.

Turn the setting screw toward a high pressure setting (clockwise ) to simulate a pressure decrease greater than the differential.

- Push the manual reset button (Fig. 2) on the C437D; the C437D should make contact.

### C437E (Additive Differential)

- Put the system into normal operation and gradually close the upstream gas shutoff valve to cause a pressure decrease.
- When the pressure gauge indicates that the pressure is approximately equal to the setpoint, the C437E should break contact and turn off the controlled equipment, locking out.
- Open the gas shutoff valve to increase the pressure again. When the pressure rises to the setpoint plus the differential, push the manual reset button (Fig. 2) on the C437E; the C437E should make contact.

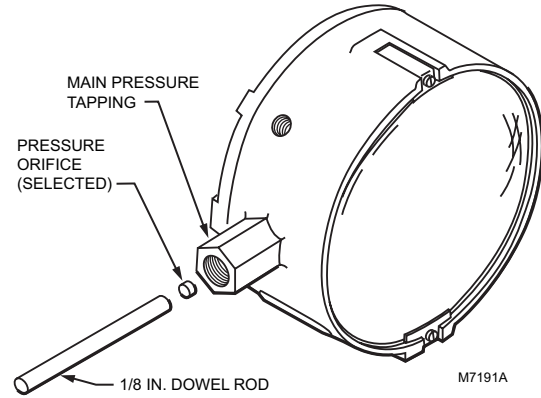
## Completing the Installation

1. Remove the pressure gauge or manometer used for testing. Visually recheck the piping, wiring, and setting.
2. Replace the cover glass and retainers.
3. Return the system pressure to normal.
4. Push the manual reset button (C437D,E only).

## Installing a Pressure Orifice (Fig. 5)

To compensate for momentary surges in gas pressure, install a restrictive orifice in the inlet pressure channel of the pressure switch. (Refer to Accessories in the Specification section for the orifice sizes available.)

Align pressure orifice into reset located inside of the main pressure tapping at the bottom. Press orifice into place using 1/8 in. dowel rod.



**Fig. 5. Installing a pressure orifice to compensate for pressure surges.**



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