Installation & Maintenance Instructions

ASCO TRIPOINT Pressure Switches

Miniature-Size, Fixed Deadband Pressure Switches with Field Adjustable Set Points

H – SERIES

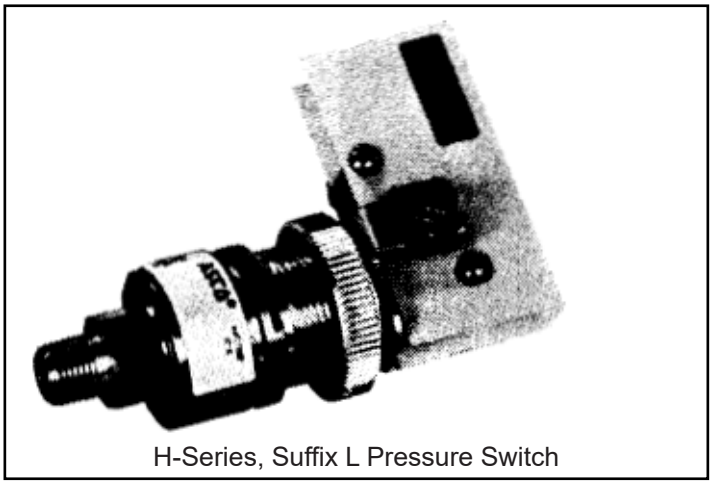
DESCRIPTION

The H-Series are miniature size pressure switches having field adjustable set points, fixed deadbands, and diaphragm/piston sensors. These pressure switches are designed to provide long life and maintain set point accuracy. Materials wetted by the fluid include brass or stainless steel pressure connections. Internal elastomers are made of Buna N, ethylene propylene, fluorosilicone, or FKM depending upon service requirements.

H-Series pressure switches are available with:

- Open-Frame Construction
- Type 1 - General Purpose Enclosure
- Types 3, 3S, and 4 - Raintight/Watertight Enclosure

NOTE: H-Series, Suffix *L* pressure switches are limited to Open-Frame Construction.



H-Series, Suffix L Pressure Switch

OPERATION

The pressure switch controls electrical circuits in response to changes in pressure. The set and reset points are adjustable over the full range of the switch. As the deadband (on-off differential) is adjusted, both set point on increasing pressure and set point on decreasing pressure are changed. The difference between these points is fixed and is not adjustable. Pressure setting adjustments are made by turning the adjustment wheel at the center of the switch. On H-Series, Suffix S pressure switches, the snap switch has an adjustment knob to vary the deadband range. To increase deadband range, turn knob counterclockwise; to decrease range, turn knob clockwise.

NOTE: The maximum proof pressure for H-Series pressure switches is 250 psig. Proof pressure is the pressure which a device can be subjected to for extended periods of time without changes in its operating characteristics.

INSTALLATION

Check the nameplate for correct catalog number, electrical rating, and pressure range. Never apply incompatible fluids or exceed pressure rating of the switch.

IMPORTANT: All internal adjustments have been made at the factory. Any adjustment, alteration, or repair to the parts of the switch other than stated herein voids all warranties.

Temperature Limitations

Ambient Temperature

- Standard & Suffix *L* Switch: - 4 °F to +140 °F
- Suffix *U* Switch: - 4 °F to + 122 °F

Check catalog number on nameplate to determine fluid temperature limitations. The seventh (7th) digit in the catalog indicates diaphragm material and fluid temperature limitations. See chart provided.

Seventh (7th) Digit in Catalog Number	Diaphragm Material	Fluid Temperature Limitations
1	BunaN	-4 °F to +180 °F
2	FKM	-4 °F to +250 °F
6	Ethylene Propylene	-4 °F to +250 °F
7	Fluorosilicone	-40 °F to +250 °F

EXAMPLE: For Catalog Number HB46A278, the seventh digit of the catalog number is 7. This indicates that the diaphragm material is Fluorosilicone and the fluid temperature limitations are -40 °F to +250 °F.

Positioning

The pressure switch may be mounted in any position.

Mounting

For mounting bracket (optional feature) or mounting dimensions of general purpose enclosure see Figures 1, 2, and 3.

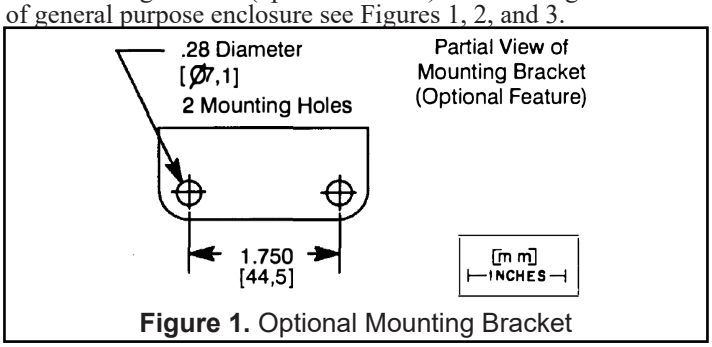


Figure 1. Optional Mounting Bracket

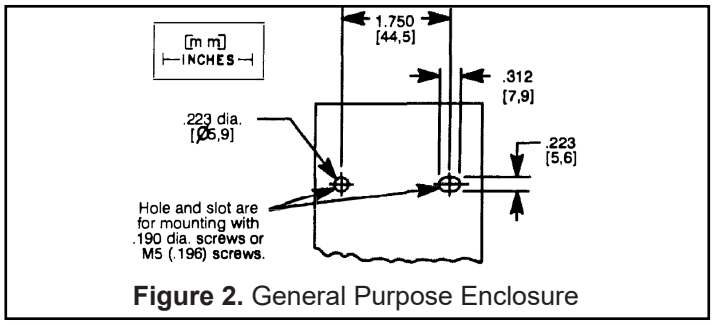


Figure 2. General Purpose Enclosure

Piping/Tubing

Adequate support of piping and proper mounting of pressure switch should be made to avoid excessive shock or vibration. To minimize the effect of vibration on a switch, mount perpendicular to vibration. Connect piping or tubing at base of pressure switch.

⚠ CAUTION Do not use 1/2" pipe thread on pressure switch body as a pressure connection. This thread is provided for mounting the pressure switch in a panel enclosure or mounting bracket through a 7/8" diameter hole.

⚠ ATTENTION N'utilisez pas le filetage du raccordement 1/2 pouce sur le corps du pressostat en tant que raccordement de pression. Ce filetage est prévu pour monter le pressostat en coffret ou sur un support de montage au travers d'un trou de 7/8 pouces.

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⚠ CAUTION Pressure switches with the seventh (7th) digit in the catalog number being a six (6) are provided with ethylene propylene diaphragm material which can be attacked by oils and greases. Wipe the pipe threads clean of cutting oils.

⚠ ATTENTION Les pressostats dont le septième (7ème) chiffre est un six (6) dans le numéro de catalogue, sont dotés d'un matériau de diaphragme en éthylène-propylène qui peut être attaqué par les huiles et les graisses. Essuyez les filetages de tubes pour éliminer les huiles de coupe.

Apply pipe compound sparingly to male pipe threads only. If applied to internal threads, the compound may enter the sensor and cause operational difficulty. Avoid pipe strain on pressure switch by properly supporting and aligning piping. When tightening pipe, do not use the pressure switch as a lever. Locate wrenches applied to pressure switch body on wrenching flats only.

⚠ CAUTION For steam service, install a condensate loop (pigtail or steam siphon tube) between the steam line and the pressure switch.

⚠ ATTENTION Pour tout service relatif à la vapeur, installez une boucle de condensat (toron de raccordement ou siphon pour vapeur) entre la conduite de vapeur et le pressostat.

Wiring

Wiring must comply with local codes and the National Electric Code. Use No. 14 AWG copper wire rated for 60 °C minimum. Switch is marked *NO* for normally open, *NC* for normally closed, and *C* for common. H-Series, Suffix *L* switches are provided with 1/4" spade terminal connections. The general purpose switch enclosure is provided with two 7/8" diameter knockouts to accommodate 1/2" electrical hub or connector. For extra support, leave switch housing assembled when driving out 7/8" diameter knockout. It is recommended that flexible conduit be used. If rigid conduit is used, do not consider it or use it as a means of supporting (mounting) the pressure switch. The raintight/watertight enclosure has a 1/2" conduit hub. When replacing housing cover, torque screws in a crisscross manner to 10 in-lbs [1,1 Nm] to ensure even gasket compression.

⚠ CAUTION Electrical load must be within range stated on electrical nameplate. Failure to stay within the range of the switch rating may result in damage or premature failure of the electrical switch.

⚠ ATTENTION La charge électrique doit se situer dans la plage figurant sur la plaquette signalétique électrique. Tout manquement au respect de la plage électrique du classement du commutateur risque d'endommager le commutateur électrique ou de provoquer sa défaillance.

⚠ CAUTION Do not overtighten screw type terminal connections. When connections are made, be sure there is no stress on the wire leads. Excess of either condition may cause malfunction of switch.

⚠ ATTENTION N'exercez pas de force excessive avec le tournevis sur les bornes de connexion. Lorsque les connexions sont réalisées, assurez-vous qu'il n'y a aucune contrainte sur les conducteurs pouvant entraîner un dysfonctionnement de l'interrupteur.

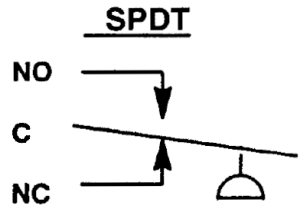
ELECTRICAL RATING

Standard & Suffix *L* Switches

15 amps resistive, 125 volts AC
10 amps resistive, 250 volts AC
1/8 HP, 125 volts AC
1/4 HP, 250 volts AC
1/2 amp resistive, 125 volts DC
1/4 amp resistive, 250 volts DC

Suffix U Switch

5 amps resistive, 125 and 250 volts AC
1/8 HP, 125 volts AC
1/4 HP, 250 volts AC
1/2 amp resistive, 125 volts DC
1/4 amp resistive, 250 volts DC



IMPORTANT: H-Series pressure switches are available with optional snap switches which have different electrical ratings than listed above. Check nameplate on housing cover or frame to verify electrical ratings.

Set Point Adjustment (Pressure Setting) of Fixed Deadband Pressure Switch

When making adjustment (pressure setting) a pressure gauge within suitable range is required. If electrical hookup (to line of final application) to the switch is not desirable, a battery powered test lamp or Ohm meter may be used. The markings on the pressure switch calibration scale (in PSIG or BAR) are for an approximate pressure setting. The adjustment wheel in the center of the pressure switch is turned clockwise or counterclockwise to change pressure setting. For an exact pressure setting proceed as follows:

To Adjust Set Point On *Increasing Pressure*

1. If the pressure switch is in the line of final application when set point adjustment is made, be sure switch can be test operated without affecting other equipment.
2. Turn adjustment wheel clockwise until indicator is full down (toward pressure connection) or well beyond desired pressure setting (set point).
3. Follow the steps in the chart below to make the pressure setting.

Adjustment Procedure	Normally Closed		Normally Open	
	Switch Terminal	Status of Test Lamp	Switch Terminal	Status of Test Lamp
1. Starting with zero pressure, connect test lamp to common	NC	On (Closed Circuit)	NO	Off (Open Circuit)
2. Apply desired set point pressure. Then turn adjustment counter clock-wise until switch operates	NC	Off (Open Circuit)	NO	On (Closed Circuit)
3. Lower pressure until switch returns on decreasing pressure	NC	On (Closed Circuit)	NO	Off (Open Circuit)

4. For exact pressure setting, cycle pressure switch and make fine adjustments with wheel.
5. After setting has been made, make permanent electrical connections.

⚠ WARNING To prevent the possibility of personal injury or property damage, be sure electrical power is off when making permanent electrical connections.

⚠ ADVERTISSEMENT Pour éviter tout risque de blessure ou de dégâts matériels, assurer vous que l'alimentation électrique est coupée quand vous êtes en train de faire des raccordements électriques permanents.

To Adjust Set Point On *Decreasing Pressure*

1. If the pressure switch is in the line of final application when set point adjustment is made, be sure switch can be test operated without affecting other equipment.
2. Turn adjustment wheel counterclockwise until indicator is full up (toward snap switch).
3. Follow the steps in the chart below to make the pressure settings.

Adjustment Procedure	Normally Closed		Normally Open	
	Switch Terminal	Status of Test Lamp	Switch Terminal	Status of Test Lamp
1. Starting with initial pressure above desired pressure (set point), connect test lamp to common.	NC	Off (Open Circuit)	NO	On (Closed Circuit)
2. Decrease pressure to desired set point pressure. Then turn adjustment wheel clockwise until switch operates.	NC	On (Closed Circuit)	NO	Off (Closed Circuit)
3. Raise pressure until switch returns on increasing pressure.	NC	Off (Open Circuit)	NO	On (Closed Circuit)

4. For exact pressure setting, cycle pressure switch and make fine adjustments with wheel.
5. After setting has been made make permanent electrical connections.

⚠ WARNING To prevent the possibility of personal injury or property damage, be sure electrical power is off when making permanent electrical connections.

⚠ ADVERTISSEMENT Pour éviter tout risque de blessure ou de dégâts matériels, assurer vous que l'alimentation électrique est coupée quand vous êtes en train de faire des raccordements électriques permanents.

Testing of Installation

If the adjustment of the switch has been made outside of the line of final application, the switch should be re-tested when installed in the line of final application. Follow adjustment instructions. Be sure switch can be test operated without affecting other equipment.

MAINTENANCE

⚠ WARNING To prevent the possibility of personal injury or property damage, turn off electrical power, depressurize switch and vent fluid to a safe area before removal or inspection.

⚠ ADVERTISSEMENT Pour éviter tout risque de blessure grave ou de dégâts matériels, couper l'alimentation électrique, dépressuriser le pressostat et purger le fluide dans une zone sûre, avant la dépose ou l'inspection.

IMPORTANT: Pressure switch is not field repairable. In case of damage, replace the entire pressure switch. Address all service inquiries to ASCO, L.P. 160 Park Avenue, Florham Park, New Jersey 07932, Valve Service Department.

Preventive Maintenance

- While in service, operate the fixed deadband pressure switch periodically (cycle between two set points) to ensure proper operation. If necessary, electrical wiring and pipe connections should be made so that switch can be test operated without affecting other equipment.
- Periodic inspection of the pressure switch, external surfaces only, should be carried out. Switch should be kept clean and free from paint, foreign matter, corrosion, icing, or freeing conditions.
- Keep the medium entering the pressure switch as free from dirt and foreign material as possible.

Causes of Improper Operation

- **Incorrect Electrical Connection**: Check leads to switch. Be sure they are properly connected. Switch is marked *NO* for normally open, *NC* for normally closed, and *C* for common.
- **Faulty Control Circuit**: Check the electrical power supply to switch. Check for loose or blown fuses, open-circuited or grounded wires, loose connections at switch. See nameplate for electrical rating and range.
- **Incorrect Pressure**: Check pressure in system with suitable pressure gauge. Pressure must be within range specified on nameplate.
- **Incorrect Adjustment**: Check pressure scale to see approximate setting. Refer to section on "Set Point Adjustment of Fixed Deadband Pressure Switch".
- **External Leakage or Snap Switch Failure**: Replace pressure switch, see *ORDERING INFORMATION*.
- **Excessive Vibration or Surges Causing Switch to Operate Undesirably**: Check for pressure fluctuations in system and install pressure surge suppressor. Check switch mounting and be sure there is no excessive vibration.

If the operation of the pressure switch cannot be corrected by the above means, it should be replaced.

FOR SERVICE, REPLACEMENT OR INFORMATION

Consult Factory or Authorized Factory Representative or Distributors

ORDERING INFORMATION

When Ordering, Specify Catalog Number, Fluid, and Pressure Range.

Torque Chart

Part Name	Torque Value Inch-Pounds	Torque Value Newton-Meters
Cover screws	10	1.1

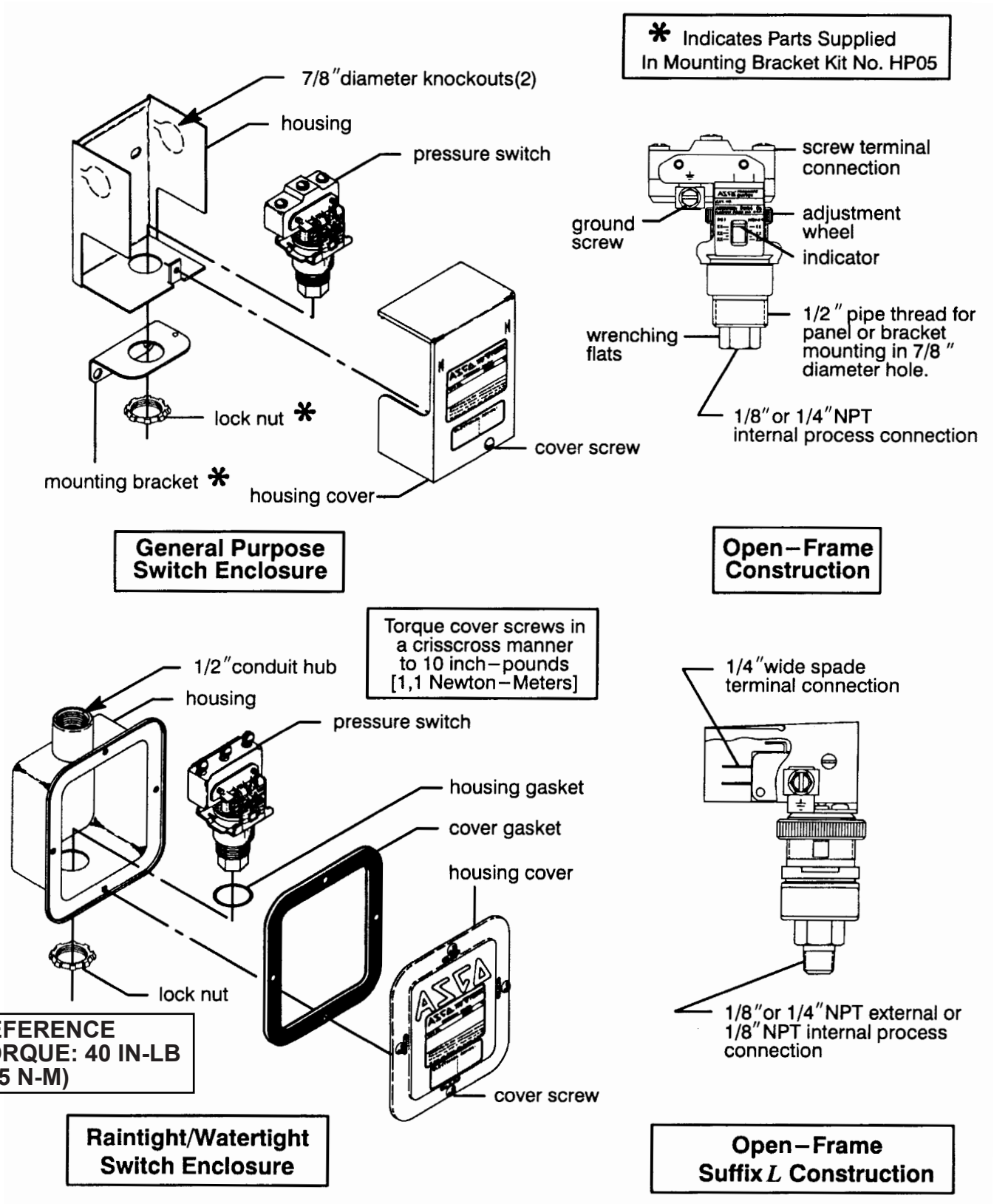


Figure 3. H–Series Pressure Switches