Alarm Pressure Switch

Model 161-01 / 02 / 03 / 04

Model 161-01

General Description

The Alarm Pressure Switch model 161-01 /02/ 03 / 04 is designed to indicate a water flow condition in automatic fire protection systems. The model 161-01/ 02 consists of pressure actuated switches which may be adjusted to operate on pressure between 4 and 20 psi.

The model 161-03/04 may be adjusted to operate on pressure between 10 to 175 psi.

The Alarm Pressure Switch is used as an attachment to the **Inbal** Automatic Water Control Valves of deluge (161-01/02), dry pipe, and preaction systems (161-03/04) to provide initiating electric alarms when the fire protection system operates. The switch may also initiate start-up or shut-down of fire pumps or any auxiliary fire protection system equipment.

The pressure switch model 161-01/03 has one single pole double throw (SPDT) snap action switch. Model 161-02/04 is equipped with dual single pole double throw snap action switches. The 161 switches are operated by pressure acting against a neoprene diaphragm.

The 161-01/02 switches are factory adjusted to transfer the contacts at 4-20 psi (0.3-1.4 bar) on increasing pressure and on decreasing pressure, they transfer back with a maximum differential of 1 psi (0.07 bar). *This switch is used in deluge system only*.

The 161-03-04 switches are factory adjusted to transfer the contacts at 10- 175 psi (0.7-12 bar) on decreasing pressure, they transfer back with a maximum differential of 2-5 psi (0.15-0.35 bar).

The pressure switches can be wired for normally open or normally closed circuits.

Technical Data

Manufactured By

Potter Electric Signal Company or System Sensor.

Approvals

UL listed; FM Approved.

Model Numbers

161-01/03: Single set of SPDT.
161-02/04: Dual sets of SPDT.

Dimensions

4 ¾" (121 mm) W x 2¼" (57 mm) Dx
4 ⅜" (111 mm) H.

Enclosure

Cover : Die-Cast Aluminum, textured red powder coat finish.
Base : Plated Steel.

Pressure Connection

½" NPT, male.

Factory Adjustment

161-01/02:
Operates on pressure increase at 6±1 psi (0.4±0.07 bar) and on pressure decrease at 5±1 psi (0.35±0.07 bar).
161-03:
Operates on decrease at 25 psi (1.7 bar).
161-04:
Operates on increase at 50 psi (3.5 bar), and on decrease at 30 psi (2.1 bar).

Adjustment Range

161-01/02 : 4 to 20 psi (0.3-1.4 bar).
161-03/04:
Potter: 10 to 175 psi (0.7-12 bar)
System Sensor: 10 to 100 psi (0.7-7 bar)

Maximum Differential

161-01/02 : 1 psi (0.07 bar).
161-03/04 :
Potter: 1 psi at10psi, 4psi at 60psi
System Sensor: 3 psi at10psi, 6psi at100psi

Pressure Rating
Maximum working pressure: 250 psi (17 bar).

Temperature Range
Potter: -40°F to +140°F (-40°C to +60°C).
System Sensor: -40°F to +160°F (-40°C to +71°C).

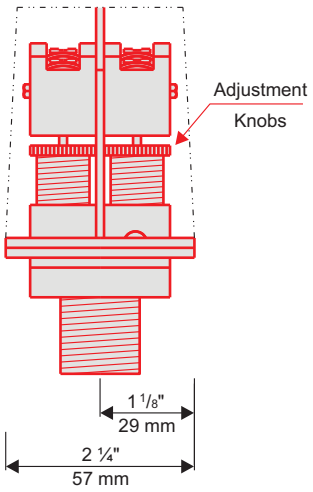
Switch Contacts
SPDT (Form C).
10.0 Amps at 125/250 VAC.
Potter: 2.0 Amps at 30 VDC.
System Sensor: 2.5 Amps at 6/12/24 VDC.
One set in model 161-01/03.
Two sets in model 161-02/04.

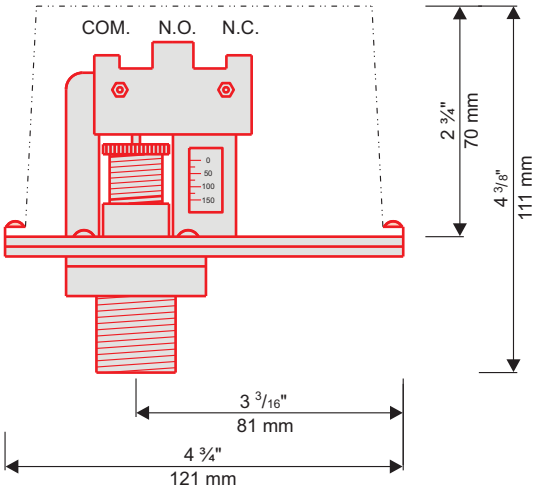
Rated Enclosure
Potter: NEMA 4 / IP55,
System Sensor: NEMA 4 / IP54,
Indoor or outdoor use.
Not for use in hazardous locations.

Tamper Resistant Fasteners
Cover incorporates tamper resistant fasteners that require a special key for removal. One key is supplied with each device.

Installation

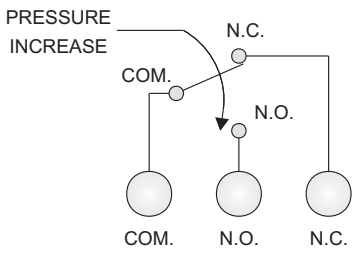
1. The pressure switches 161-01/02 are provided ready for installation and factory set to transfer contacts at 6 psi when pressure rises.
2. Refer to the applicable Trim Chart and Technical Data of the **Inbal** deluge, dry pipe, and preaction system in use for the appropriate installation of the Alarm Pressure Switch.
3. Device should be mounted in upright position (threaded connection down). To prevent leakage, apply Teflon tape sealant, or Teflon based pipe joint compound sparingly, to the male threads only. Excessive amount or use of pipe joint cement may result in obstruction of aperture and loss of signal.
4. Conduit and electrical connections to the Switch are to be made in accordance with the requirements of the authority having jurisdiction and/ or NEC, IEC, or CENELEC standards.
5. Test the Alarm Pressure Switch according to the applicable Testing Procedure.



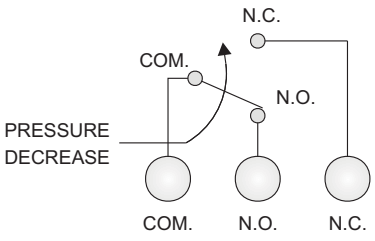


Pressure Switch Termination

Alarm Pressure Switch



Pressure Supervisory Switch



Alarm Pressure Switch

Model 161-01 / 02 / 03 / 04

Adjustment

1. De-energize electrical circuits of the pressure switch.
2. The operating point of the switch (or switches for 161-02) can be adjusted to any point between 4 and 20 psi (0.3 - 1.4 bar), by turning the adjustment knob(s) clockwise to raise the actuation point and counter-clockwise to lower the actuation point. In model 161-02, the two switches operate completely independent of one another and each switch may be adjusted to actuate at any point the system requires.
   The operating point of the switch (or switches for161-04) can be adjusted to any point between 10 and 175 psi (0.7 - 12 bar) for Potter, and between 10 and 100 psi (0.7 - 7 bar) for System Sensor, by turning the adjustment knob(s) clockwise to raise the actuation point and counter clockwise to lower the actuation point. In model 161-04 the two switches operate completely independent of one another and each switch may be adjusted to actuate at any point the system requires.
3. Verify pressure settings of the switch by using an ohm meter. Alternately raise and lower the system pressure to verify proper setting. Apply further adjustment if necessary.
4. Energize the circuits and reset all necessary equipment.

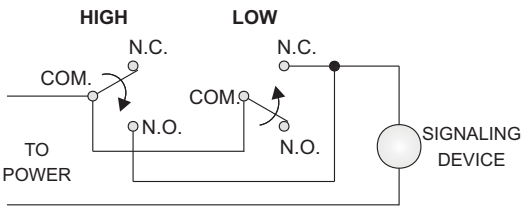
Maintenance and Testing

Operation and testing of the Alarm Switch as required by the authority having jurisdiction and/or the Owner, as well as in accordance with the applicable NFPA codes and standards. Quarterly testing of Alarm Pressure Switch is recommended. If auxiliary equipment is controlled by the operation of the switch, take the necessary precautions:

1. Temporarily disconnect any associated auxiliary equipment which is not to be operated during the alarm test.
2. Test operation of the switch by pressurizing the piping in which it is installed. The alarm should activate as soon as pressure exceeds the switch setting. In most **Inbal** Valve control trim, an alarm test valve is provided. Operation of the alarm test valve will pressurize the Alarm Pressure Switch.
3. When testing is complete, depressurize the piping (turn the alarm test valve to SET position) in which the switch is installed. Alarms should stop.
4. Connect and reset all necessary equipment and place the system in service. ●

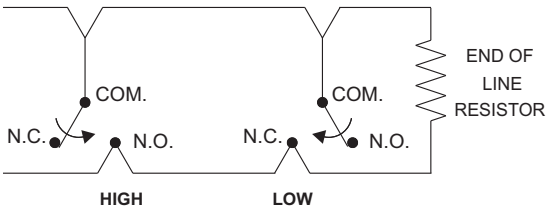
Typical Electrical Connections

Transformer or Battery Power

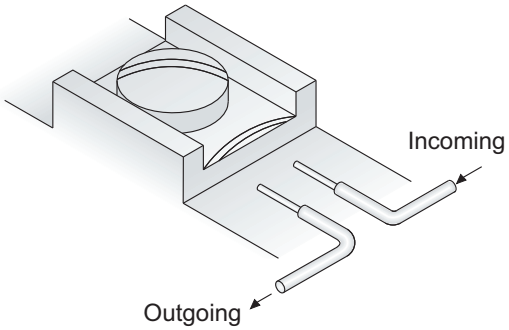


Note: Switches are shown in standby condition of pressure.

Style B (class B) Supervised Circuit



Switch Terminal Connection Clamping Plate Terminal



CAUTION:
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connection. The wire must be served, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal.