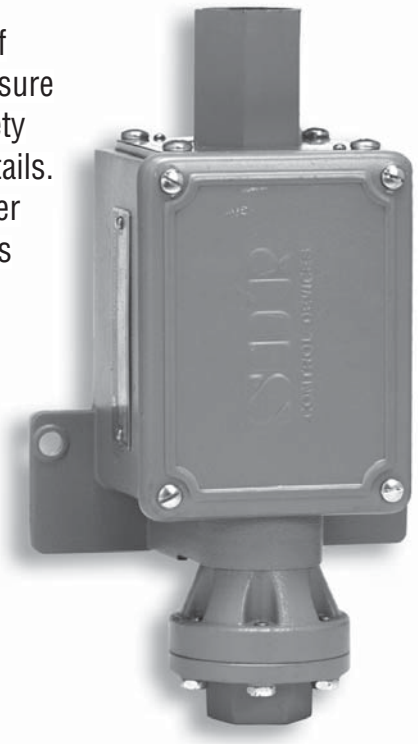
Big Hermet Pressure Switches
with Hermetically Sealed Electrical Switching Elements

General Instructions

This instruction provides information for Installation, Process Connection, Electrical Connection, and Calibration of SOR Pressure Switches with hermetically sealed, explosion proof electrical switching elements. The Static "O" Ring type pressure switch with optional wetted parts is suitable for a wide variety of process applications. See Big Hermet Catalog 455 for details. This type is not recommended for high-pressure, fluid-power applications where high-shock pressure and high cycle rates are expected.



If you suspect that an instrument is defective, contact the factory or the SOR representative in your area for a return authorization number. If the instrument cannot be returned for service, field work should be performed by a qualified instrument technician using factory authorized procedures. Contact the factory or the SOR representative in your area for technical support.

NOTE: If you suspect that a product is defective, contact the factory or the SOR® Representative in your area for a return authorization number (RMA). This product should only be installed by trained and competent personnel.

Design and specifications are subject to change without notice.

For latest revision, go to ***www.sorinc.com***

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Installation

Ensure that the wiring conforms to all applicable local and national electrical codes and install unit(s) according to relevant national and local safety codes.

- Secure the housing mounting pad to a bulkhead, panel rack or pipe stanchion with suitable 1/4" bolts.
- Line mounting by either process connection or electrical conduit connection is not recommended.
- Suggested mounting orientation is electrical conduit connection at 12 o'clock and process pressure port at 6 o'clock. However, the device can be mounted in any position. Breather drains are located on the housing back wall. Breather drains must be kept clear of paint and foreign matter.

Safety Integrity Level (SIL) Installation Requirements

The SOR pressure switches have been evaluated as Type-A safety related hardware. To meet the necessary installation requirements for the SIL system, the following information must be utilized:

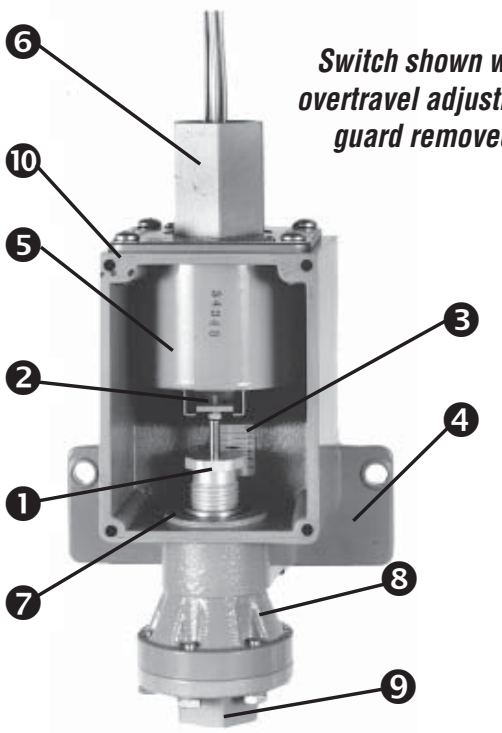
- Proof Test Interval shall be one year.
- Units may only be installed for use in Low Demand Mode.
- Products have a HFT (Hardware Fault Tolerance) of 0, and were evaluated in a 1oo1 (one out of one) configuration.

Process Connection

Securely connect process line to pressure port using two wrenches: one to hold hex flats on pressure port, the other to tighten process pipe or tube fitting.

Failure to mount the housing on a flat mounting surface may result in torsional forces on the housing that could cause false trips or render the pressure switch inoperative. Use care not to loosen port from body or body from housing.

Inadvertent movement of the over-travel adjustment screw will degrade performance and could render the device inoperative, unless factory authorized procedures are followed.

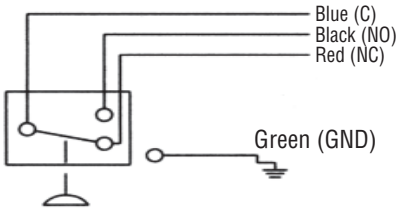


1. Set Point adjustment; 3/4" hex nut
2. Overtravel adjustment; hex screw (factory preset) See caution note above
3. Calibration scale
4. Housing mounting pad
5. UL Listed, CSA Certified and SAA Approved hermetically sealed explosion proof switching element capsule
6. 3/4" NPT(F) conduit connection, factory sealed 18" 18 gauge wire leads (glass seal not shown)
7. Breather vent; sintered 316ss (only shown)
8. Body
9. Pressure port
10. Housing

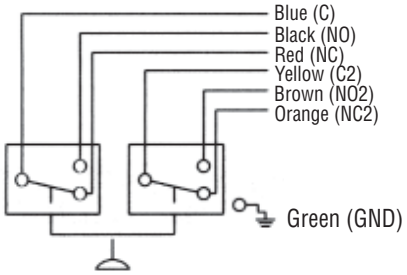
Electrical Connection

Electrical connections are free leads; 18 gauge, 18" with ground wire and 3/4 NPT(F) conduit connection. Use two wrenches: one to hold hex conduit connection, the other to tighten conduit fitting. The hermetically sealed, explosion proof switching element capsule has UL Listed/CSA Certified factory-sealed leads. Consequently, an external seal fitting is not required between the pressure switch and junction box of the external electrical circuit.

SPDT



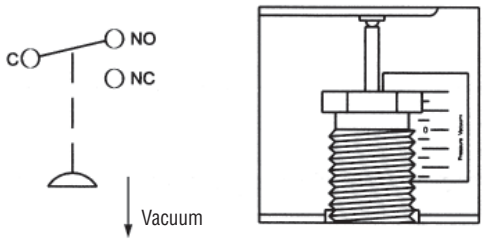
DPDT (2-SPDT)



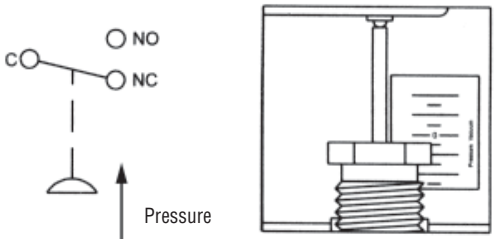
VACUUM SWITCH

Wiring Schematics for SPDT Switching Element in Compound Vacuum-Pressure Switches

When operating in vacuum range, i.e. when set point is calibrated to vacuum, use wiring schematic below.



When operating in positive pressure range, i.e. when set point is calibrated to positive gauge pressure, use wiring schematic below.



Calibration Procedure

Switching Element Capsure Assembly has been precisely positioned in the housing and overtravel adjusted at the factory for optimum performance. Any inadvertent movement or replacement in the field will degrade performance and could render the device inoperative, unless factory authorized procedures are followed.

❶ Remove weathertight cover from housing. It is unnecessary to disconnect electrical power because the hermetically sealed switching element capsule maintains explosion proof integrity.

❷ Use 3/4" open-end wrench to turn hex adjusting nut clockwise to increase set point; counterclockwise to decrease set point. Approximate set point can be obtained by sighting across top of adjusting nut to calibration scale on interior wall of housing. If precise set point calibration is required, it will be necessary to use a regulated pressure source, a suitable continuity tester, and a 1/4% or better test gauge.

❸ Replace housing cover and gasket to ensure weathertightness.

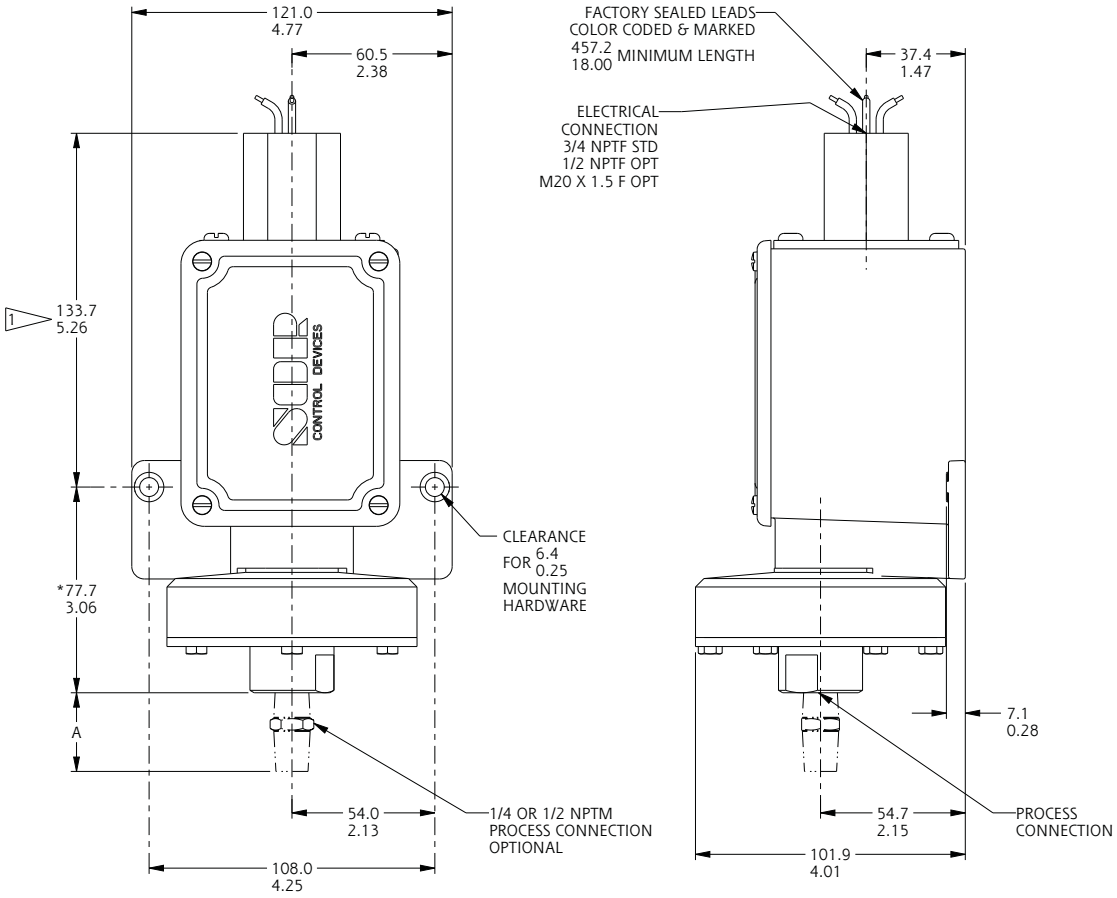
Special Conditions for Safe Use

- The terminal box to which the equipment is attached must, together with the switch, ensure the requisite thread engagement for Apparatus Group IIC.
- The permanently attached cables are to be suitably terminated and protected from impact.
- When the switch is attached to an increased safety terminal box the assembly must be capable of withstanding the impact test specified in BS 5501: Part 1: 1977.
- The sealing arrangements must maintain the minimum IP54 rating required by the increased safety enclosure.
- The switch must attach to the enclosure using an existing entry.

Dimensions

NOTE: Dimensions marked with an asterisk (*) on housing dimension drawings vary with respect to process connection size. (See A on page 8).

PISTON NUMBERS 12 & 52 *HOUSING DESIGNATOR: BA, BL*

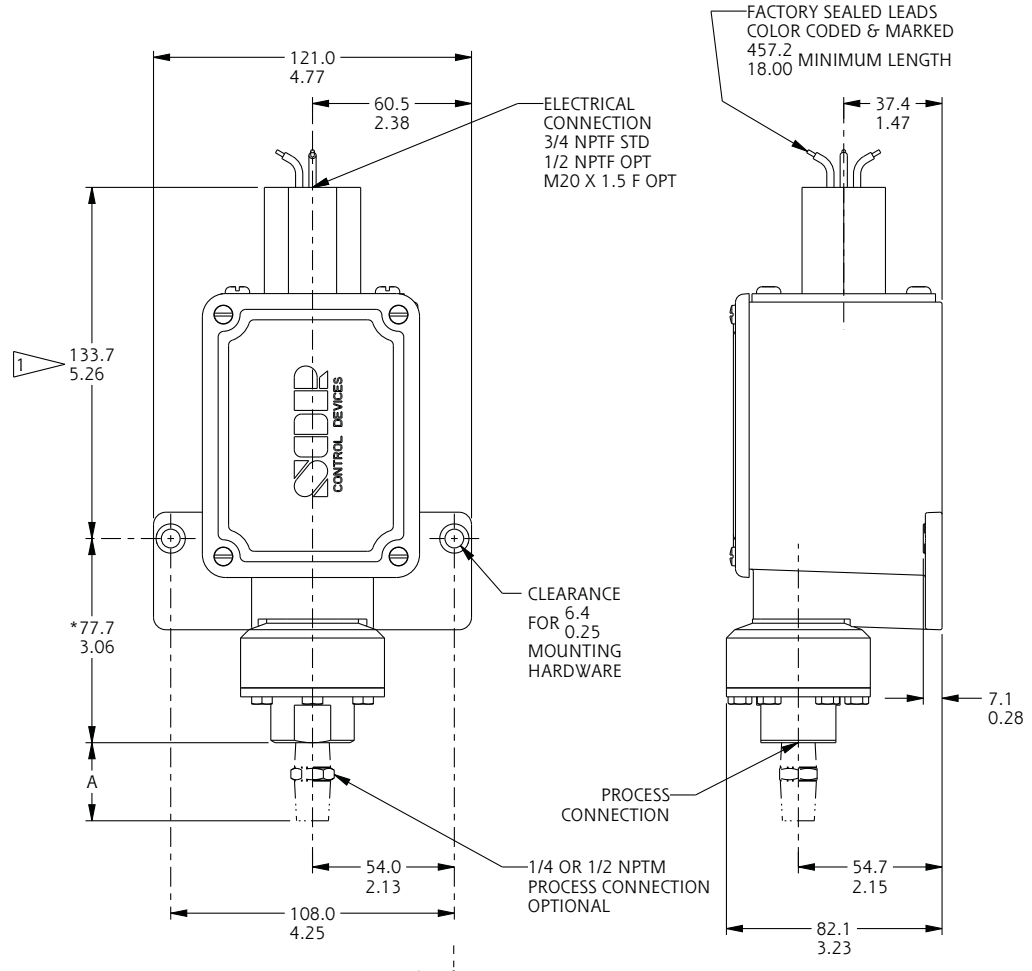


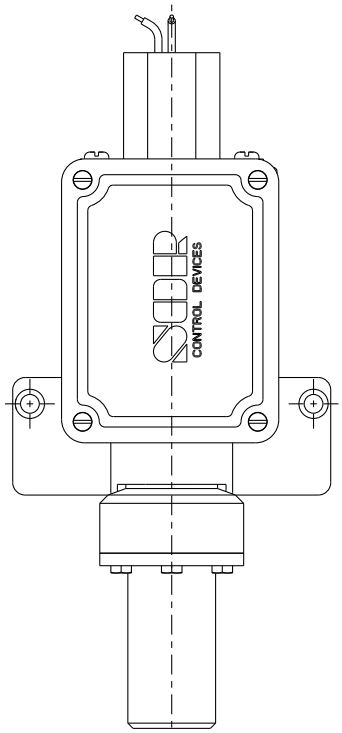
Dimensions are for reference only.
Contact the factory for certified drawings for a particular model number.

PROCESS CONN SIZE	* LENGTH
1/4 NPTF	SHOWN
1/2 NPTF	SHOWN
1 NPTF	ADD 5.6 0.22
2 NPTF	ADD 25.4 1.00
PROCESS CONN SIZE	LENGTH A
1/4 NPTM SHOWN	29.7 1.17
1/2 NPTM	38.9 1.53
1 ADD 41.6 1.64 FOR M20 X 1.5 F ELECTRICAL CONNECTION	

Linear = mm/inches

Drawing 0090177



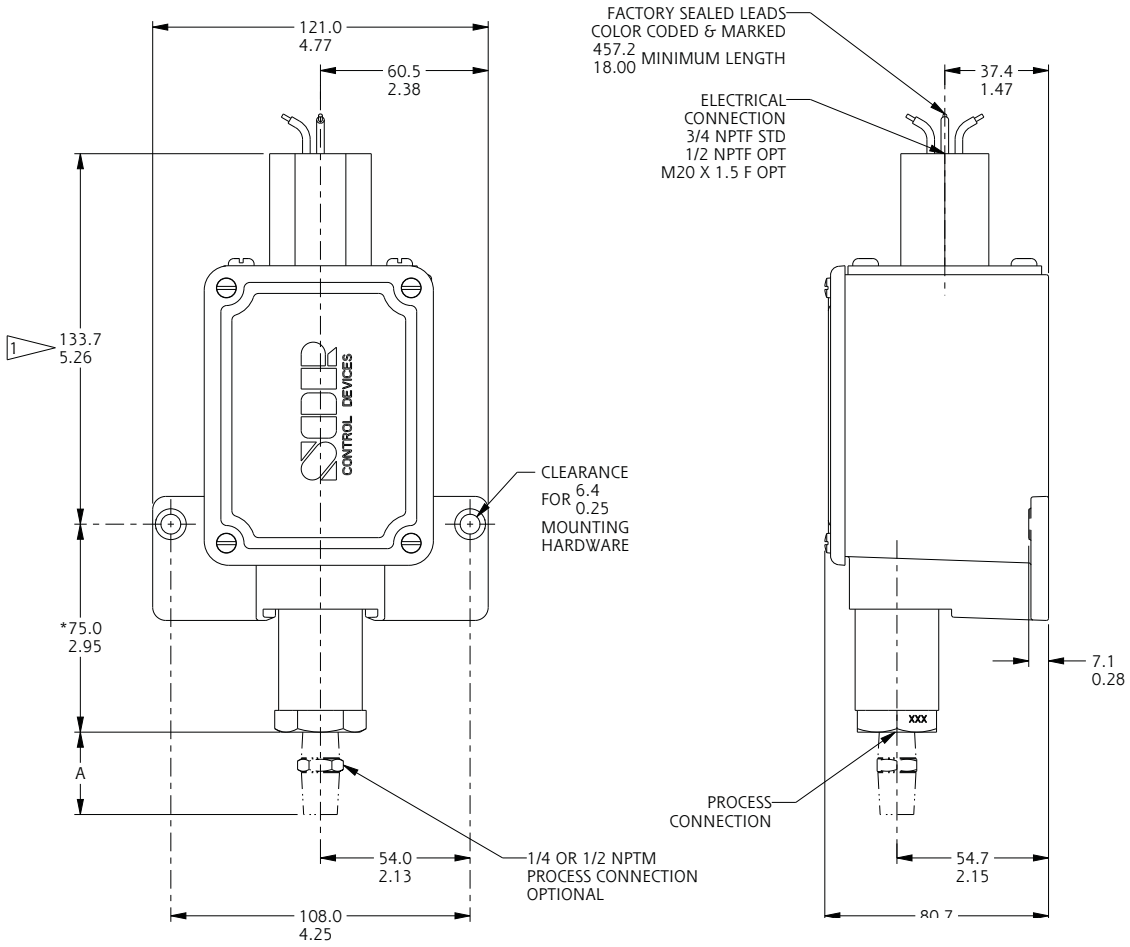


DETAIL 1 NPTM
PROCESS CONNECTION

PROCESS CONN SIZE	* LENGTH
1/4 NPTF	SHOWN
1/2 NPTF	SHOWN
1 NPTM SEE DETAIL	ADD 46.0 1.81
PROCESS CONN SIZE	LENGTH A
1/4 NPTM SHOWN	29.7 1.17
1/2 NPTM	38.9 1.53
1 ADD 41.6 1.64 FOR M20 X 1.5 F ELECTRICAL CONNECTION	

Linear = mm/inches

Drawing 0090175



PROCESS CONN SIZE	* LENGTH 1, 5, 6, 9, 56	* LENGTH 2, 3
1/4 NPTF	SHOWN	ADD 14.0 0.55
1/2 NPTF	ADD 13.2 0.52	ADD 24.1 0.95
9/16 SAE	N/A	ADD 14.0 0.55
3/4 NPTM	ADD 23.1 0.91	N/A

PROCESS CONNECTION SIZE	LENGTH A
1/4 NPTM SHOWN	29.7 1.17
1/2 NPTM	38.9 1.53
1 ADD 41.6 1.64 FOR M20 X 1.5 F ELECTRICAL CONNECTION	

Linear = mm/inches

Drawing 0090174

A Process Connection Size	Piston Number		
	12, 52	4, 54	6, 5, 9, 1, 56
1/4 NPT(F)	Shown	Shown	Shown
1/2 NPT(F)	Shown	Shown	Add 13.2 / 0.52
3/4 NPT(M)	N/A	N/A	Add 23.1 / 0.91
1 NPT(F)	Add 5.6 / 0.22	N/A	N/A
1 NPT(M)	N/A	Add 46.0 / 1.81	N/A
2NPT(F)	Add 25.4 / 1.00	N/A	N/A
Length A 1/4 NPT(M)	Add 29.7 / 1.17	Add 29.7 / 1.17	Add 29.7 / 1.17
Length A 1/2 NPT(M)	Add 38.9 / 1.53	Add 38.9 / 1.53	Add 38.9 / 1.53

14685 West 105th Street, Lenexa, KS 66215 ■ 913-888-2630 ■ 800-676-6794 USA ■ Fax 913-888-0767