



Installation, Operation & Maintenance Manual for (2211PS / 2211DPS Model) Diaphragm/ Piston Operated Pressure/ Differential



Pressure Switches

I. General

The operation of Pressure Switch is based on Diaphragm sealed piston up to 40 bar and Piston operated from 60 bar onwards.

The Pressure Switches are designed to excel in performance within a range of ambient temperature from -10 to 70 Deg C provided that the process media doesn't freeze within this range. For the instruments installed in the ambient of less than 0 Deg C, precautions should be taken that in humid atmosphere to prevent frost formation inside the instrument jam the moving parts. For any media which is high in temperature than the standard prescribed by the manufacturer, necessary impulse tubing / piping shall be used. This will reduce the excessive heating of the sensing element.

II. Installation

Mounting

Choose the location of the Pressure Switch to be installed as recommended by the equipment manufacturer. With the help of 2 mounting screws provided in the enclosure, mount it on a panel surface or smooth surface.

Though the Pressure Switch is not position sensitive, it is always recommended to install it in vertical condition. This will also avoid any freezing of condensed water or sludge inside the pressure chamber.

Pressure Connection

The pressure connection is a part of pressure chamber, is of 1/4" NPT (F) as a standard. To assure a pressure tight joint, use Teflon or other good pipe joint material. The process connection can be connected directly or through tubing.

Electrical Connection

One or two SPDT switches of various forms can be provided in these Pressure Switches. They are each with normally open contacts closing and normally closed contacts opening during the increase of pressure beyond the set point. The contacts reverse, returning to their normal condition when pressure decreases below the low set point. The wiring diagram is provided with every switch and the wiring is to be done in accordance with local electrical codes.

Specifications:

- Sensing Element:** Diaphragm sealed piston up to 40 bar & Piston from 60 bar onwards.
- Material:** AISI 316 SS (standard). Other material can be provided as an alternate option.
- Enclosure:** Weatherproof to IP 66
- Material:** Die Cast Aluminum
- Wetted parts:** AISI 316 SS
- No. of switches:** 1 or 2 SPDT
- Electrical Rating:** Varies based on the selection of Micro Switch. Refer data sheet for details.
- Repeatability:** +1% of FS (Optionally +0.5% FS can be provided)
- Electrical Connection:** DIN connector for 1 SPDT & 2 DIN connectors for 2 SPDT
- Process Connection:** 1/4" NPT (F)
- Set point adjustment:** External with locking mechanism.

Note: When used on the media temperature above the recommended, necessary cooling arrangements shall be made. Maximum ambient temperature shall not exceed 70 C.
Warning: Any form of over pressures, excessive vibration, highly corrosive pressure media, electrical overload etc which are above the normal conditions of the pressure switch, could result in injury or damage.

III. Operation:

Set Point Adjustment: Pressure Switches are facilitated with scale & range spindle located at the top of the enclosure so that it can be directly set at the required point. The rotation of range spindle clockwise shall enable to increase the set point and anticlockwise rotation shall decrease the same. The corresponding change can be viewed in the scale provided, which is basically a

guide for setting. Actual setting can be cross checked with a good Pressure Gauge.

In case of 2 SPDT switches, the set points can be adjusted with the help of range spindle provided on top but the differential will be fixed. Operate the switch through several pressure cycles to confirm the proper set point adjustments.

Calibration:

Determine the set point and its corresponding differential value. Connect tubing from pressure port on bottom of the Pressure Switch to one leg of tee. Connect the second leg to a pressure gauge of better accuracy and in an appropriate range. The third leg should be connected to a controllable source of pressure. To indicate when switching occurs, connect a Volt / Ohm meter or other circuit tester to the snap switch. Apply pressure slowly and monitor the pressure rise and note down the pressure at which the switch actuates. If in need of adjustment, rotate the range spindle provided at the top of the enclosure with the help of screw driver. Rotate clockwise to increase the pressure and anticlockwise to decrease.

The instrument is always calibrated on the vertical position and it is recommended to use in the same position. Any other form of mounting could result in a minor drift of set point. Cut in and cut out setting should not exceed the upper or lower range span. The contact life of micro switches is 5 lac switching cycles for nominal load. In line with reducing DC sparks use diode in parallel with inductance ensuring polarity. The R-C network is also recommended with 'R' value in Ohms equal to coil resistance and 'C' value in micro Farads equal to holding current in Amps.

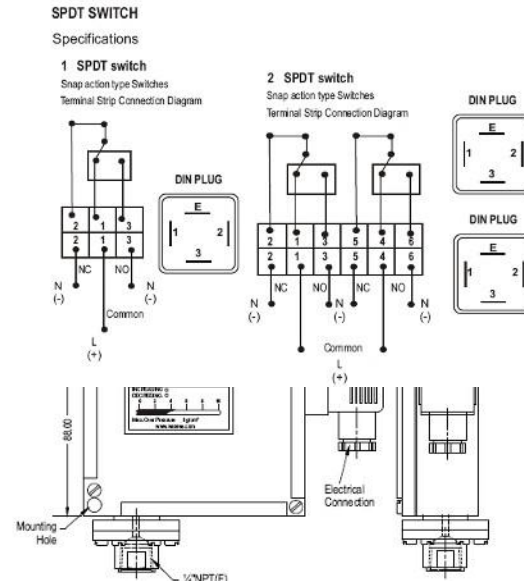
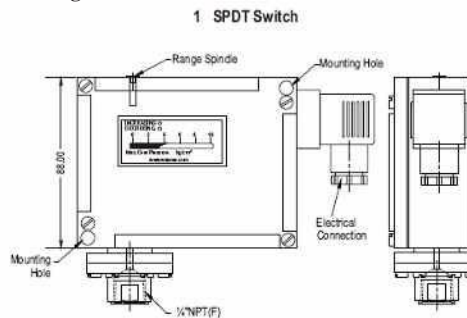
DP Switches:

For DP Switches, follow the procedure above but with two different set of Pressure Gauges and calibrators are to be used for high and low pressure port.

Differential Adjustment:

If the switches are provided with differential adjustable switch, the set points can be adjusted with the help of range spindle and the differential can be adjusted with the help of knob provided below the switch as shown in the diagram. To increase the differential value, move the knob in clockwise direction and to decrease the differential value, move it in anticlockwise direction. Operate the switch through several pressure cycles to confirm the proper set point adjustments. This facility is available for 1 SPDT switches only.

V. Diagrams:

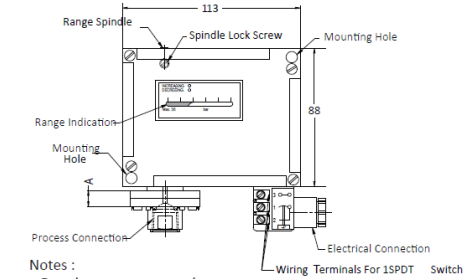
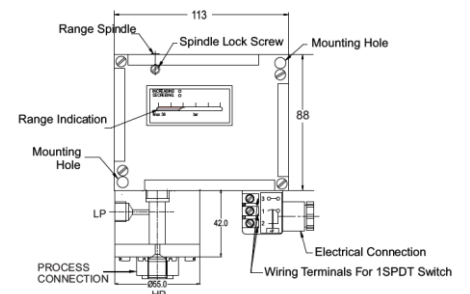
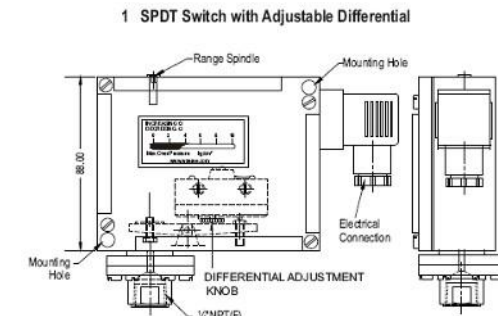


IV. Maintenance:

There is no lubrication needed to the moving parts of these switches. The set point is the only user adjustment.

Notes:

- 1) The set value of the Pressure Switch should fall in between 35% to 70% of the range span.
- 2) A scale is provided in the instrument just to assist setting, because Pressure Switch is switching device and not a measuring instrument.



- Notes :
- Drawings are not to scale.
- All Dimensions are in mm.

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