



INSTRUCTION MANUAL

SERIES 931

BOURDON OPERATED PRESSURE SWITCH

INTRODUCTION

Switzer Series 931 Pressure Switches are simple electro-mechanical devices operating on bourdon tube principle. The essential elements are the bourdon tube and the microswitch(es). These are very simple in construction, employing time proven German 'C' / Coiled bourdon of 316SS (Ti) material.

OPERATION

Process pressure when applied to the sensing element creates a force inside the bourdon tube and it bends outwards as in a pressure gauge.

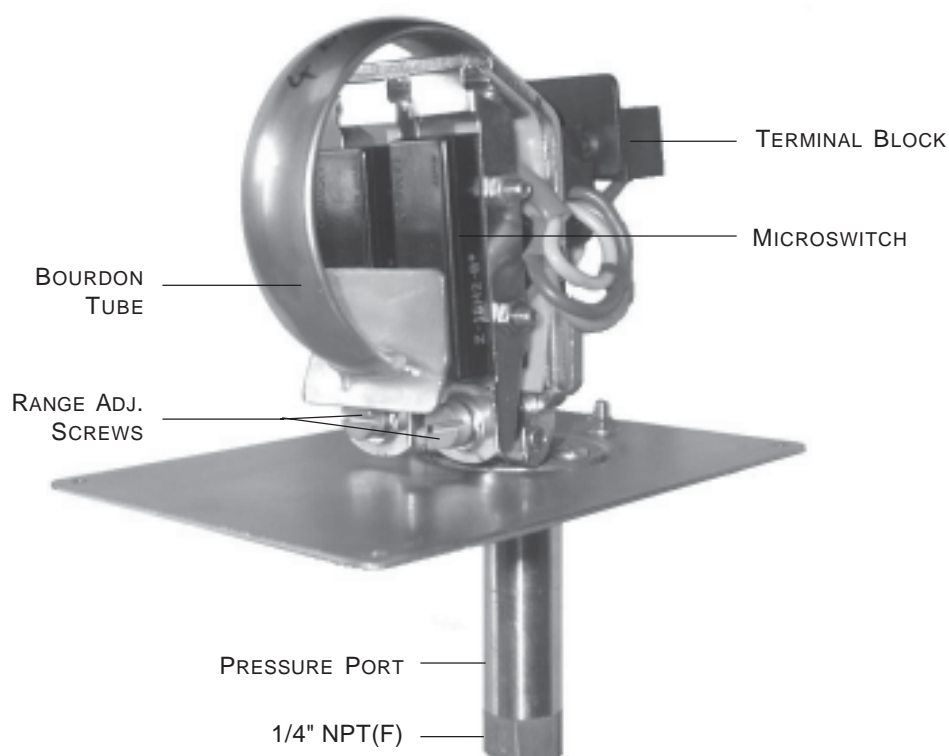
One or two microswitches are fixed in the instrument which remain in an **actuated** condition when the bourdon tube is not pressurised or when pressure is below setpoint. Microswitch(es) change over to **de-actuated** state when pressure increases.

PRESSURE SETTING

Connect the instrument to a comparator with a master pressure gauge (or a Dead Weight Tester). Apply the desired set pressure referring to the master pressure gauge.

Adjust the range screw such that the microswitch button just gets pressed at the applied pressure. To achieve this, keep the microswitch away from the bourdon initially. Turning the range screw clockwise, pushes the microswitch away from the bourdon and vice versa.

Increase and decrease the pressure input to verify that the microswitch actuates at the desired setting. Very precise setting can be achieved by the adjustment of range screw which has a fine pitch thread.



Two microswitches are provided, when ordered for either of the following purposes.

- a) For 2 x SPDT action (DPDT action) or
- b) To have 2 independently adjustable setpoints

In the case of 2 x SPDT action, set one of the switches according to above procedure. Then repeat the same procedure for the **second switch to act at the same set pressure** as the first switch.

In the case where the two switches are to be set at the different values, set the first switch at the desired value. Then set the **second switch** by **increasing** or **decreasing** the comparator pressure value at which it is required to actuate.

For this type of arrangement it is advisable to set the **lower** set point first and **then** the higher set point.

Note :

There could be a minor shift in the set point of the first switch after the second switch is set. Therefore, it is essential to go back to the first switch and check its actuation at the desired value. Trim if necessary. Repeat the checking for second switch also.

ON-OFF DIFFERENTIAL

The basic instrument is available only with a fixed ON-OFF differential or dead band. The ON-OFF differential for each microswitch depends on the microswitch movement differential and the bourdon tube spring rate. Either of this are unadjustable.

However, if a wide band ON-OFF differential is required, the instrument is supplied with 2 microswitches and an auxiliary relay unit in an independent weatherproof housing.

The pressure switch is first set to act at the two desired values and then the micro switches are wired to the relay to provide a change-over contact. The difference between the two set values is the differential. Changing any one or both the set points will change the differential value.

Refer instructions provided with the relay unit for wiring the pressure switch to the relay unit.

MAINTENANCE

Instruments are designed with rugged components that they seldom requires maintenance. Occasional cleaning of the moving parts, checking of the microswitch(s) and ensuring firm electrical contacts at the terminals will provide a trouble-free long performance.

GENERAL PRECAUTIONS

Ensure that –

1. The instrument is mounted rigidly, to avoid shock and vibration.
2. The instrument housing is never held to tighten it on the process line. Use a spanner at the hex or square provided on the sensing element for tightening.
3. Correct positioning of gaskets when covers are fixed.
4. All screws are tight.
5. Outdoor installations are with sufficient protections against aggressive air dust, temperature and water.
6. Electrical entries and cables are properly sealed with correct cable gland. If in doubt, consult factory.
7. Connected electrical load never exceeds declared maximum electrical capacity both in amperes and volts.
8. Process pressure never exceeds declared maximum working pressure.
9. Suitable dampener/snubber to be used in rapidly fluctuating pressure lines.
10. A condensate Pot or syphon should be used invariably for steam service.
11. A master gauge of accuracy better than 0.5% is to be used for setting actuating point as the setting accuracy will be the same as that of the master gauge used.



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