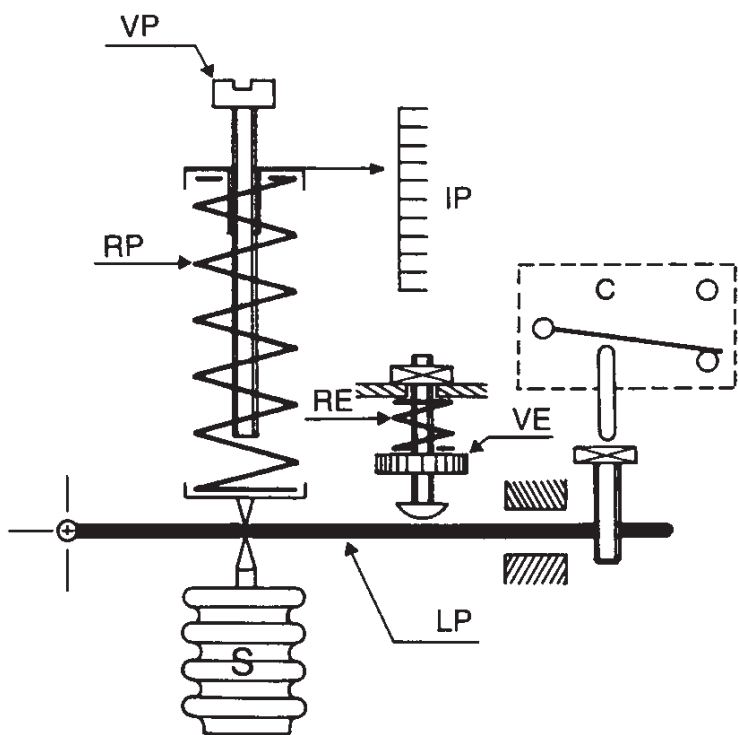


MOUNTING MANUAL

PRESSURE & TEMPERATURE SWITCHES



- VP Adjustment screw
- RP Adjustment spring
- IP Adjustment pointer
- RE Differential spring or offset spring
- VE Differential adj. knob or offset adj. knob
- S Sensing element
- LP Moving lever
- C Switch

This instrument is a very robust unit and has been designed to give reliable operation when installed in the recommended manner.

The general guide lines given below will ensure a long life for the unit, providing that no over-pressure or temperature applied is beyond the limits given for each unit in the appropriate sales leaflet.

NOTE : For greatest accuracy the set point should fall in the upper 75% of the adjustable range. For the most favourable life factor the set point should be in the lower 75% of the adjustable range. Therefore, the most favourable combination of accuracy and life factor lies in the middle 30% of the adjustable range.

CONTINUOUS DEVELOPMENTS MAY RESULT IN SPECIFICATION CHANGES WITHOUT NOTICE

FU-F-EN 15-02-2009



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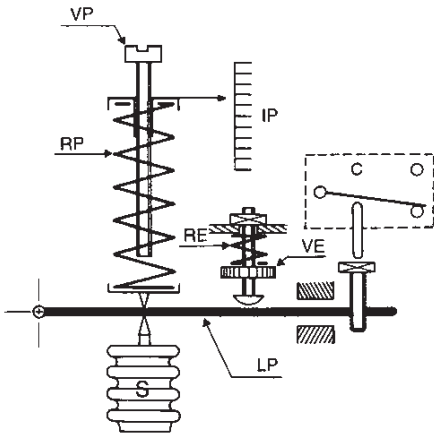
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SETTING

Should service pressure or temperature raise or fall beyond the set points, these ones would vary due to the well-known hysteresis effect.

Never interfere with those internal adjustments that are sealed by varnish.

1. STANDARD UNITS with one or two contacts switches operating in unison, with differential setting.



a) Using knob **VE** release completely the spring **RE**.

b) With the screw **VP** set the unit to operate on falling pressure or temperature.

c) Note the indicated value when the switch operates on pressure or temperature rise.

d) If the differential between the two operations is no sufficient, screw up the knob **VE** to compress the spring **RE** up to contentment.

NOTE :

When the differential is changed using the screw **VE**, only the upper set point is changed. When the setting is modified by screw **VP**, the upper and lower set points are changed together.

It is not possible to guarantee exactly simultaneous operation of the two switches fitted to double pole instruments. If simultaneous operation is essential the use of a single pole switch and double pole relay is recommended.

2. UNITS WITHOUT DIFFERENTIAL SETTING.

With one or two contacts operating in unison.

These units are fitted with adjustment screw **VP** and pointer **IP** moving against a black calibrated scale.

Apply the desired pressure or temperature to the instrument.

Adjust the screw **VP** so that the switch just operates.

Check the operation and adjust as necessary.

3. UNITS HAVING TWO ADJUSTABLE SWITCHES.

These instruments can be fitted with two single pole changeover microswitches. In most applications they can replace two separate instruments.

These units are fitted with an adjustment screw **VP** operating a pointer **IP** against black calibration plate and a knob **VE** operating on the differential spring **RE**.

The black calibration plate has the temperature or pressure graduations.

Screw **VP** adjusts the set point of the low switch (called low level switching). This switch is mounted in the left of the case.

Knob **VE** is used to change **D**, i. e., the upper switch setting relative to the lower switch. This switch is mounted in the right of the case.

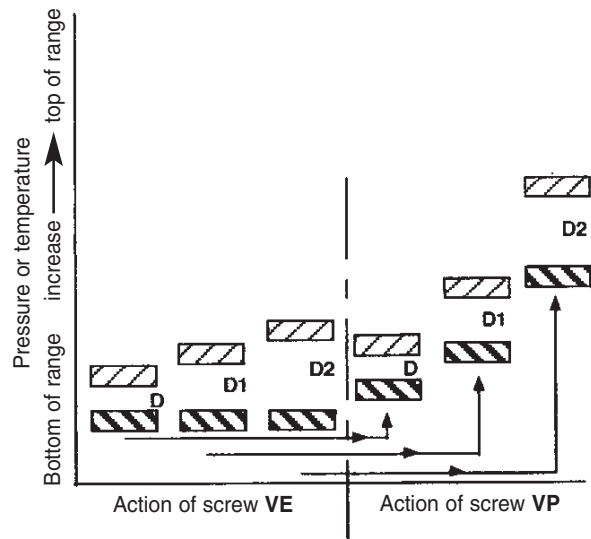
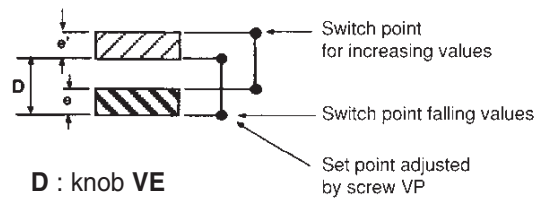
The so called differential **D** is adjusted by the knob **VE**, but the value of the low level switch point remains constant as the high level switch point is changed.

The so called differentials **D1** and **D2** are those defined by the adjustment **VE**.

Adjusting **VP** adjusts the level of the combined operation.

The differentials **e'** and **e** cannot be adjusted on this type of instrument. They vary slightly depending upon the set point and the value **D** (refer to the appropriate chart for each series of instruments).

To sum up - once the instrument is set, as the lower switch point is changed by the screw **VP**, the upper switch settings change by the same amount, leaving the so called differential constant. When the knob **VE** is adjusted, the lower switch remains constant and only the upper switch setting changes.



WIRING

All units are provided with one or two ISO 16 glands for plastic cables up to 9 mm diameter.
Terminal strips are intended for cables 1.5 mm² max.

- Single pole changeover - see fig. 1 or 2.
- Two Single pole changeover switches acting in unison or independently adjustable - see fig. 1.
- One independently adjustable SPDT switches - see fig. 3.

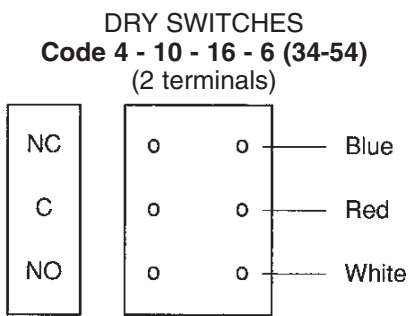
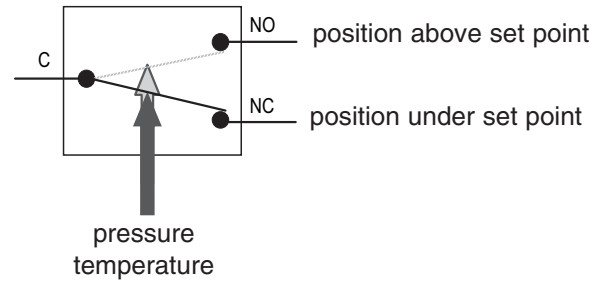


Fig. 1

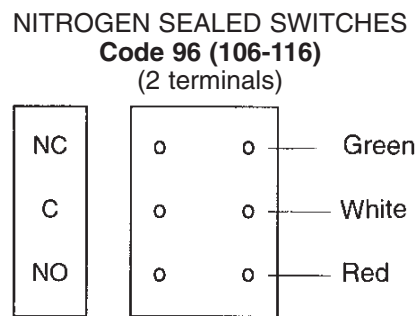


Fig. 2

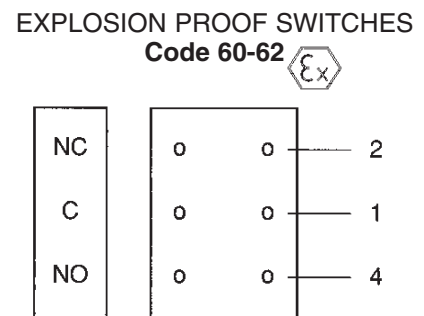


Fig. 3

After wiring, the only micro switch test which can be carried out is performed through the variation of pressure of temperature around set points. Any other will cause damage to the instrument.

CONTACT RATING (resistive loads)

CONTACT NR	AC		DC	
Standard 4, 6, 34, 54	10 A	240 V	0.5 A	110 V
Tight dead band 10	5 A	240 V	0.5 A	130 V
Very tight dead band 16	2 A	240 V	1 A	130 V
Nitrogen sealed 96, 106, 116	2.5 A	240 V	1 A	130 V
Ex Gold plated 4D, 6D, 34D, 54D	-	-	1 mA/100 mA	4 V/30 V
Ex Tight gold plated 10D	-	-	50 mA	30 V
Ex Expl. proof 62, 62C, 162C, 172C	5 A	240 V	0.4 A	250 V
Ex Tight expl. proof 60, 60C, 160C, 170C	7 A	240 V	0.25 A	250 V

[C] EEx d IIC T6 explosion-proof switch with 1m cable length for use with certified junction terminal.

[D] Gold plated contacts for EEx ia IIC T6 IS applications. Also suitable for low voltage signals.

Nota : 4, 6, 34 and 54 are tropicalised as standard.

MOUNTING

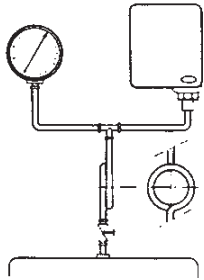
PRESSURE SWITCHES FP

Pressure connections 1/2 BSP other on request

Always use the correct spanners when making connections - never apply force to the body.

Always ensure that the impulse pipework applies no stresses on the body when the connections are made.

When used on saturated steam, always use a pig-tail or syphon between the pressure switch and pressure source, if a pressure gauge is required it should be teed into the pressure switch connection.



The use of an isolation cock is recommended for the following reasons :

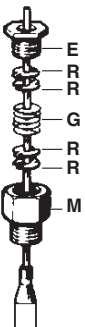
a) it can be used as a snubber; in the case of excessive pressure surges, additional damping may be required. If the speed of cycling is more than once every ten seconds never use a bellows operated switch. Same remark when the media to be controlled has pressure surges or important pressure variations.

b) Calibration or maintenance can be carried out without interfering with the main installation.

NOTE. - The temperature of the process fluid will have no effect on the instrument's operation, providing that the impulse pipework is long enough to ensure that the temperature at the instrument is within its normal operating band.

TEMPERATURE SWITCHES FB, FC

a) For the control of liquids temperatures - ensure that the bulb is fully immersed; the length of capillary immersed in the fluid as no effect on the operation of the thermostat. If the capillary outlet must be watertight, use our special gland PC ** (in mild steel) or PCX ** (in stainless steel).

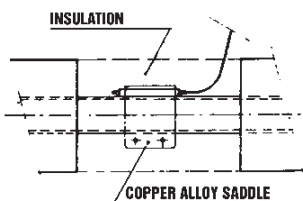


- Fit the adaptor M (tapped 1/2).
- Insert two washers (R), slots being diametrically opposed.
- Insert gasket (G) (4 or 5 teflon washers).
- Insert two additional washers (R) similar to the first pair.
- Screw in the nut (E).

b) For the control of air or gas temperature.

Install the bulb in such a way that it is perpendicular to and totally immersed in the flow of gas. The length of capillary inserted is unimportant.

c) For use as a surface contact thermostat.



- Carefully clean the contact surface and bulb.
- Use a copper strap to ensure that the entire length of the bulb is in contact with the surface.
- Apply insulating material over the bulb, strap and heated surface.

IMPORTANT

The minimum differentials given in our leaflets are to be considered as the actual differentials which are found under test conditions when the sensing element is subjected, in its entirety, to the change in temperature. It is imperative that the bulb is completely in contact with the process fluid.

Under normal operation these differentials can vary, depending upon the rate of temperature change, specific heat, radiation losses, radiation effects, thermal inertia of the instrument relative to the system, the effect of any thermowell, etc..., etc.

NOTE : As a result of the method of operation employed - vapour pressure - the temperature to which the capillary is subjected does not normally affect the operation of the thermostat.

Equally the length of capillary has no influence on the operation.

It is preferable to mount the bulb in a vertical position, other positions may tend to increase the time of response of the unit.

Mounting the Case

Avoid ambient temperatures in excess of 60°C.

Avoid areas subject to vibration, hence fix the case to a rigid wall or use an anti-vibration mounting.

The orientation of the housing does not have any effect. However, in order to prevent any premature parts wear and to keep its metrological characteristics, the vertical position will be advised for any device with diaphragm.

NOTE : The weight of the pressure housings for certain switches is such that the box should not be used as a mean of support, and as a result these units are supplied without wall mounting plates. If the impulse pipework is not sufficiently rigid to support the switch, the following methods of installation should be used :

FML- DFML - Use the four M4 fixing points at the outer edge of the sensing element.

FMS - DFMS - Use the four M16 tapped holes supplied in the sensing elements.