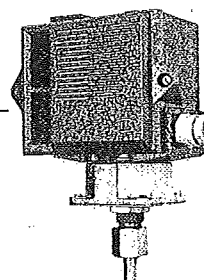




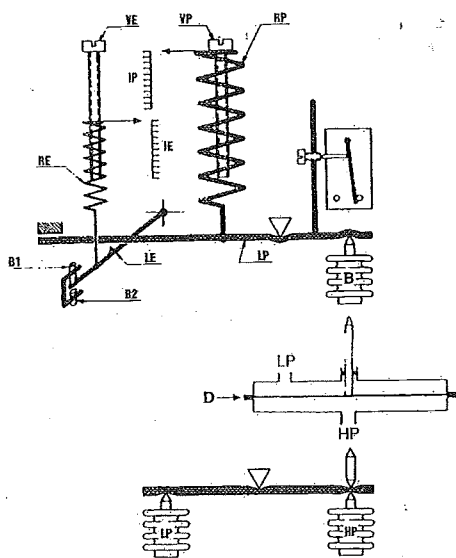
14-16, rue Pierre Sénard  
BP 107  
92323 CHATILLON cedex France  
Tél : 33 (0)1 46 12 60 00  
Fax : 33 (0)1 47 35 93 98  
E mail : regulateurs@georgin.com  
www.georgin.com



PRESSURE AND TEMPERATURE SWITCHES

**P Série**

**mounting, setting, wiring**



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 80% 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.

## MOUNTING

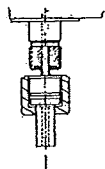
### PRESSURE SWITCHES

Pressure connections

Types P - PA - PHB - DPB - DPHB :

1/2 BSP or 1/2 NPTM or 1/4 NPTF

Nut and tailpipe on request



Types : ML - DML - PL

1/2 BSP male

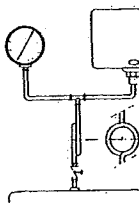
Types : MABV - DMABV - DMKBV - MJBV - DMJBV - MPB - DMPB

1/4 BSP female

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 :

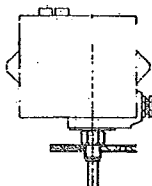
a) it can be used as a snubber; in the case of excessive pressure surges, additional damping may be required. If the speed of cycling is more than once every ten seconds never use a bellows operated switch. Same remark when the media to be controlled has pressure surges or important pressure variations.

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.

## THERMOSTATS

### Series B and BA with rigid bulb

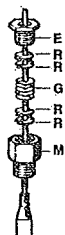


a) For the control of temperature of liquids (Series B), the wall fixing bracket is not generally used as the thermostat can be easily supported by its own connection (3/8 BSP). The instrument should be installed in such a manner that the bulb is totally immersed so ensure correct operation.

b) For air temperature control (Series BA), install the thermostat as follows : - Choose a wall which has good air circulation which is not subject to rapid changes in temperature and avoid the installation of any heating or cooling equipment in the vicinity as well as any obstacles which could disturb the natural air circulation past the bulb : when the unit is to be installed in office accommodation, or similar, the thermostat should be placed approximately 1.50 m from the floor and as far as possible from the outside walls of the room.

### Series C with Remote Sensors

a) For the control of liquid temperatures - ensure that the bulb is fully immersed : the length of capillary immersed in the fluid has no effect on the operation of the thermostat. If the capillary outlet must be watertight, use our special gland PC 11 (in mild steel) or PCX 11 (in stainless steel).

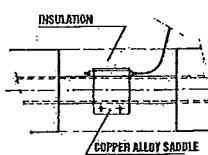


- Fit the adaptor M (tapped 1/2).
- Insert two washers (R), slots being diametrically opposed.
- Insert gasket (G) (5 teflon washers).
- Insert two additional washers (R) similar to the first pair.
- Screw in the nut (E).

b) For the control of air or gas temperature.

Install the bulb in such a way that 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, 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.

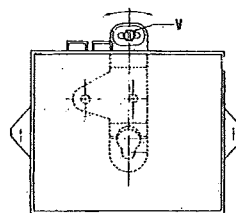
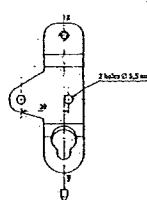
It is preferable to mount the bulb in a vertical position, other positions may tend to increase the time of response of the unit.

## 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.

Fix the wallplate and offer up the enclosure which can be fixed into position by screw V.



**NOTE** : The weight of the pressure housings for certain switches is such that the box should not be used as a means 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 :

**ML - DML - DMLB** - Use the four fixing points at the outer edge of the pressure housing.

**MABV - DMABV - DMKBV** - Use the two M10 tapped holes supplied in the base of the pressure housing.

**MJBV - DMJBV** - Use the two M6 tapped holes supplied in the base of the pressure housing.

## SETTING

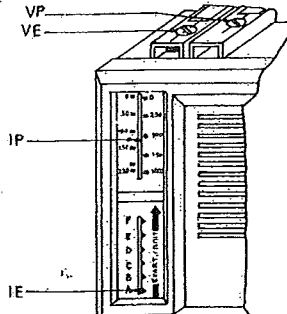
Should service pressure or temperature raise or fall beyond the set points, these ones would vary due to the well-known hysteresis effect.

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

**1. STANDARD UNITS** with one or two contacts switches operating in unison.

The unit is fitted with two adjustment screws **VP** and **VE** having two indicators **IP** and **IE** moving, respectively, over black and red calibrated plates. The black calibration plate has temperature or pressure calibration and the red one **ABCDEF** reference marks.

a) Using screw **VE** set the pointer **IE** at the very bottom of its scale.



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 not sufficient, raise the pointer **IE** using the screw **VE**.

**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.**

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 two adjustment screws VP and VE operating two pointers IP and IE against black and red Calibration plates, respectively. The black calibration plate has the temperature or pressure graduations and the red one as A B C D E F reference marks.

Screw VP adjusts the set point of the low switch (called low level switching). This switch is mounted to the rear of the case.

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

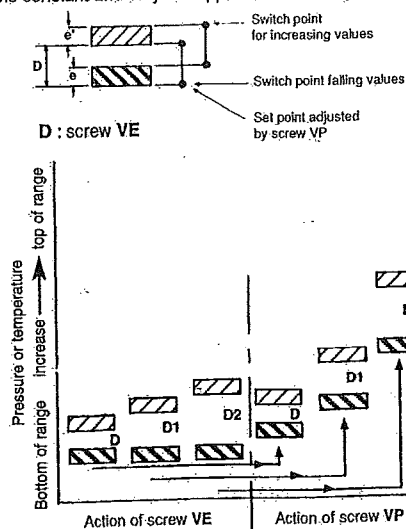
The so called differential D is adjusted by the screw VE, but the value of the low level switch point remains constant as the high level switch point is changed.

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 screw VE is adjusted, the lower switch remains constant and only the upper switch setting changes.



**4. MANUAL RESET UNITS.**

Once the switch has operated it can only be reset.

1. by using the push-button located at the right hand side of the body and if either.

2. the pressure or temperature has fallen below the reset level (the switch mechanisms 18 - used for rising pressure or temperature settings) or

3. if the pressure or temperature has risen above the reset value (switch mechanisms 20 used for falling pressure or temperature settings).

These units are only supplied without differential setting.

**5. DIFFERENTIAL PRESSURE/TEMPERATURE UNITS. (Bellows and diaphragm types)**

These units are supplied with setting scale VP coupled to pointer IP moving against the engraved black plate. The scale IP indicates the differential pressure/temperature desired between the two sensors.

The maximum pressure or temperature must not rise above the value indicated on the appropriate leaflet.

Other adjustments to be made as Sections 1, 2, 3, or 4, as appropriate.

**NOTE :** We take the greatest care, particularly with regard to calibration in the manufacture of all our instruments. All thermostats and pressure switches are individually calibrated in our laboratories. Even though the greatest care is taken in the calibration of the instrument, scales should be taken as indication of the function and to be confirmed by pressure or temperature indicators on the installation.

Calibration plates are engraved in metric and imperial units.

## INTERCONNECTING CABLES

All units are provided with one or two No. 13 glands for plastic cables up to 13 mm diameter. Terminal strips are intended for cables of a maximum diameter of 2.25 mm (4 mm<sup>2</sup>).

- Single pole changeover - see figure 1.
- Two Single pole changeover switches acting in unison - see figure 2.
- Two independently adjustable single pole changeover switches - see figure 3.

## WIRING

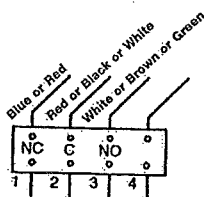


Fig 1

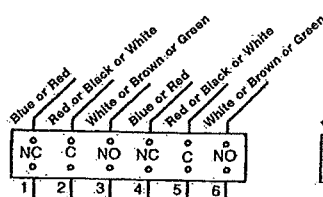


Fig 2

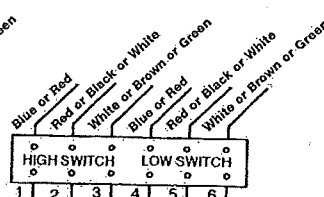
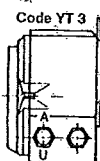
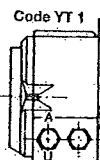


Fig 3

## PNEUMATIC SWITCHES

A : Supply  
U : Output  
E : Exhaust



U : air supplied for rising value

## COLOUR CODING OF SPDT SWITCHES :

	STANDARD	HERMETICALLY SEALED SWITCHES	
Common	Red	Black	White
Make on fall	Red and Blue	Black and Blue	White and Red
Make on rise	Red and White	Black and Brown	White and Green
Ex	increased safety "e" Code 62 { 1/2/4 }	Code 60 { 1/4/2 }	

N.B. - Simultaneous operation of 2 switches cannot be guaranteed. If it is required use a single switch and a suitable relay

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.

## SWITCHING CAPACITY (resistive loads)

CONTACTS NR	ALTERNATING CURRENT		DIRECT CURRENT	
	I max.	U max.	I max.	U max.
4	10 A	240 V	0,5 A	110 V
6 - 8 - 18 - 20 - 34 - 38 - 54 min.	5 A 0,1 A	240 V	0,5 A	130 V
10 - 16 - 30 - 36 - 50 - 56 min.	2 A 0,1 A	240 V	0,5 A	30 V
96 - 98 - 106 - 108 - 116 - 118	2,5 A	240 V	1 A	130 V
Ex 60 - 60 C - 160 - 160 C - 170 - 170 C	7 A	240 V	0,25 A	250 V
Ex 62 - 62 C - 162 - 162 C - 172 - 172 C	5 A	240 V	0,4 A	250 V
92	4 A	115 V	0,3 A	110 V

Gold plated contact : min. 10 mA - 6 VDC. - max. 100 mA - 24 VDC

Ex (never use or test these contacts above 100 mA - 24 VDC).