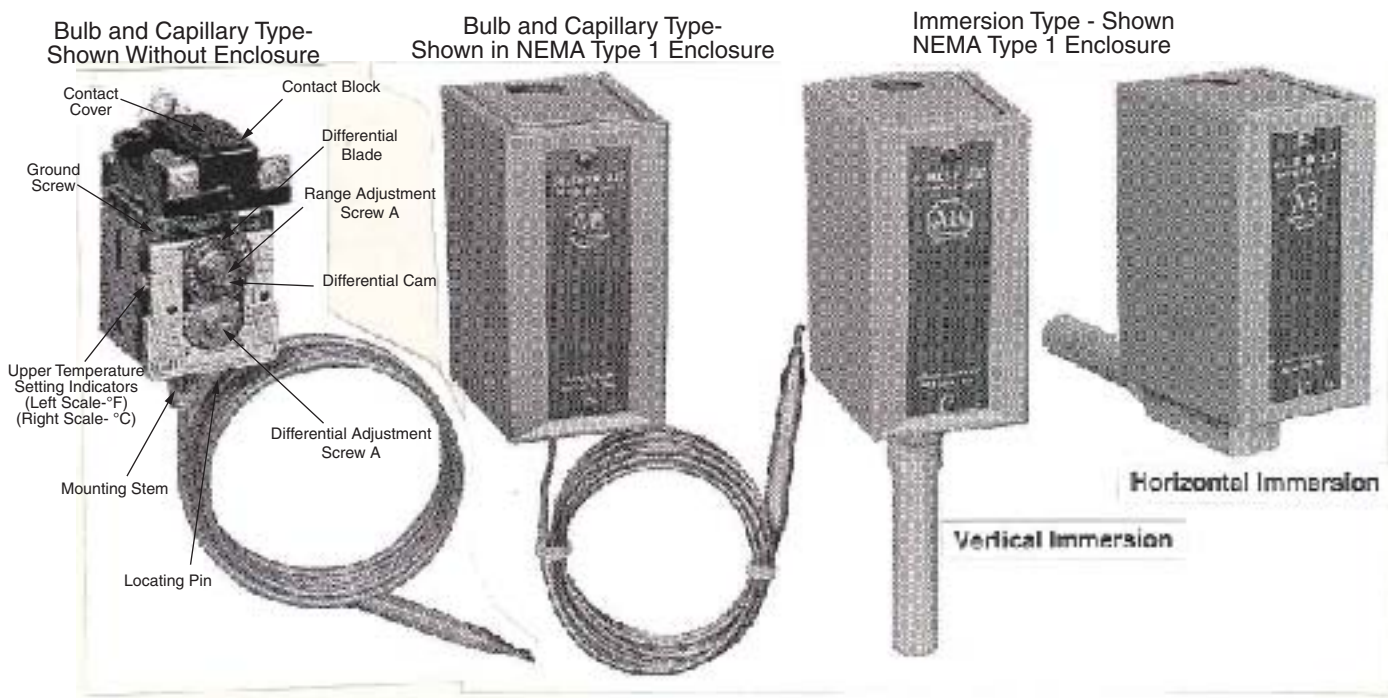




# Bulletin 837 Temperature Controls



WARNING: To prevent electrical shock, disconnect from power source before installing or servicing.



**DESCRIPTION** - Bulletin 837 Temperature Controls use a closed, chemically filled bellows system. The temperature sensing bulb is mounted directly on the control or is remotely mounted using a capillary. Copper capillaries and bulbs are supplied on lower temperature ranges to reduce thermal lag and response time of the controls. Stainless steel is used on temperature ranges above 260°F and is available on lower ranges for the more corrosive applications. Bronze or stainless steel armor is available for added protection of the capillary. Thermostat wells of brass, carbon steel or stainless steel are used when inserting the sensing bulb into a pressurized system. Packing gland assemblies are also available to form a seal at any desired position along a standard capillary. Temperature ranges are available from -150°F to +570°F. Controls are available in NEMA Type 1, 4, 4X, 7, 9, and 13 enclosures in addition to the open type.

The standard contact block is single pole, double throw and can be wired to open or close on increasing or decreasing temperature.

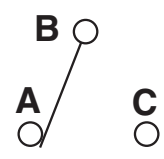
## CONTACT RATINGS

Non-Inductive Ratings	Control Circuit Ratings
5 Amperes, 250 Volts	AC-125 VA 24 to 600 Volts
3 Amperes, 600 Volts	DC-57.5 VA 115 to 230 Volts

Manual reset, horsepower rated and other contact block modifications are also available on devices manufactured at the factory.

**OPERATION** - The bulb and capillary system is filled with a chemical sensitive to temperature change. As the temperature at the bulb or probe rises, vapor pressure increases and decreases on falling temperature. The pressure is transmitted to the bellows through a capillary and operates a low friction, straight in-line mechanism. A snap action switch will operate at a predetermined temperature setting. On rising temperature the normally closed circuit A-B opens and the normally open circuit B-C closes. This is called the "Trip" temperature. When the temperature returns to a lower predetermined value, circuit A-B will close and circuit B-C will open. This is called the "Reset" temperature. The difference between "Trip" and "Reset" temperature is the differential. Because of the characteristics of vapor pressure operation, the differential will be wider at the minimum range setting and narrows as the control is adjusted to maximum range setting.

The vapor pressure method of sensing temperature was selected because it provides extremely long service life. It is not intended to be used on applications requiring instantaneous temperature response.



Standard Contact Arrangement

**ADJUSTMENT** - Generally, unless otherwise specified, controls shipped from the factory are set at the maximum operating range temperature and minimum differential. The following procedure should be used to set the control to a particular requirement.

**OPERATING RANGE ADJUSTMENT:** Turn adjustment Screw "A" counterclockwise to lower the upper and lower temperature settings. To increase the upper and lower settings, turn Screw "A" clockwise. The approximate upper temperature setting is shown by indicators on the outer edges of the nameplate.

**DIFFERENTIAL ADJUSTMENT:** When the differential blade is at the low point of the differential cam the control will function at minimum differential. To increase the differential, turn adjustment Screw "B" counterclockwise. This will decrease the lower temperature setting only. To decrease the differential, turn differential adjustment Screw "B" clockwise. This will raise the lower setting only.

**NOTE:** As mentioned previously, a particular differential setting will decrease with an increase in temperature operating range.

Condensed instructions are supplied with open style controls and are on the inside of the cover on enclosed devices.



**WARNING:** The range adjustment Screw "A" should not be adjusted beyond the temperature indicated on the temperature scale as this may cause the control to malfunction.

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It is recommended that periodic inspection of actual temperature be made on an independent instrument and the temperature control be adjusted to compensate for application variables.

**MOUNTING:** The temperature control should be mounted securely to a firm base using the mounting holes provided. The open type bulb and capillary control is normally mounted in an enclosed panel using the mounting stem lockwasher and nut of the control with the bulb and capillary extending outside the enclosure. A convenient mounting bracket can be provided. Care should be taken to properly locate and support the capillary avoiding strain, vibration, and short bends. The immersion type temperature control without enclosure is provided with a convenient mounting bracket for mounting in an enclosed panel.



**WARNING:** Cross-ambient type controls must be mounted with the end of the bulb or immersion tube slanted downward below the horizontal position. If they are mounted horizontally the word "TOP" stamped on the hex fitting or on the bulb must face upward at the 12:00 position.

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**PILOT LIGHT OPTION** - A high intensity neon glow pilot light is available for 120 volt, 60 hertz applications. A 24 volt DC LED pilot light is also available. The pilot light is factory wired across the N.C. contacts, circuit A - B, and can easily be converted to the N.O. contacts, circuit B - C, on the standard contact block.

Unless a third wire is made available, the pilot light is connected across the load contacts which can be either the N.O. or N.C. contacts. The pilot light is on until the load is energized.

Current rating:

120 VAC high intensity neon glow --- 4 mA

24 VDC high intensity LED --- 22mA



**WARNING:** For 24 VDC LED pilot lights, polarity must be observed. Red (+) lead of pilot light should always be connected to rear terminal (B).

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To order pilot light version add X9 (120VAC) or X15 (24VDC) to catalog number of the selected control.