

Trerice

Number IB-1

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INSTALLATION AND MAINTENANCE INSTRUCTIONS

FOR THE OPERATION AND MAINTENANCE OF TRERICE INDUSTRIAL TYPE THERMOMETERS AND TEST WELLS

Principle of Operation

The TRERICE industrial thermometer is of the mercury in glass type. The glass tube in front of a metal scale extends into a metal bulb chamber and has a glass bulb attached. This tube is completely sealed and the bulb contains a predetermined amount of mercury which on expanding and contracting caused by temperature changes will indicate the temperature for a given temperature range. The portion of the tube which is in front of the scale is formed with a lens front to magnify the mercury column in the bore of the tube. Along the side of the bore which is flat and faces the front of the instrument is a red strip of glass which causes the mercury column to appear red by reflection. These two features make the thermometer more easily read. Around the outside of the sensitive bulb and inside the metal bulb chamber, flake graphite is used to conduct the temperature that the bulb chamber is immersed in, to the glass bulb inside.

INSTRUMENT DESCRIPTION

Installation

Care should be taken in installing the TRERICE industrial thermometer as it is a fine precision type of instrument. To install in pipe line or similar service, remove union hub, install the hub in the service and then insert the thermometer in place holding the proper position to be read then lock in place by tightening down the coupling nut with the proper size open end wrench. To install industrial thermometers with a separable socket type connection, remove separable socket from instrument taking care not to lose the oil and graphite conducting bath furnished with the instrument. Install the separable socket first and proceed as before. If the separable socket was purchased separately from the instrument it is necessary to fill this socket sufficiently with oil and graphite mixture to properly conduct the temperature to the thermometer bulb.

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Mercury Separation

All mercury-in-glass thermometers are subject to separation of the mercury column. When this occurs, the thermometer will not read correctly. Some ranges and types are more readily susceptible to separation than others.

I. CAUSES OF SEPARATION

1. Rough handling in shipment causes most separations. If the thermometer is given a sudden jar, the weight of the mercury column in the bore has sufficient inertia to separate the column.
2. If a thermometer with an expansion chamber at the top of the tube (away from the bulb) is accidentally overheated, some of the mercury is driven into the expansion chamber. As the thermometer later cools, the mercury column recedes towards the bulb. If the thermometer is left in a horizontal or inverted position while cooling, part of the mercury will remain in the expansion chamber. This would cause separation of the mercury column.

II. HOW TO RE-UNITE SEPARATED MERCURY COLUMN

1. When the reservoir or expansion chamber is at the top of the tube (away from the bulb) - - Ranges below 400°F.

Heat the bulb of the thermometer slowly, observing the rise of the mercury in the tube. The point of separation should be driven into the expansion chamber. Take care that the chamber never becomes completely filled or the internal pressure will cause the tube to break. After the separation enters the expansion chamber, put the thermometer in an upright position. Give the tube a slight jar so that the particles of entrapped gas will rise above the mercury. When the mercury recedes, the column will be joined.

2. When there is no reservoir at the top of the tube - - Ranges above 400°F.

Put the thermometer bulb in dry ice, so as to draw all of the mercury into the bulb. Tap the bulb gently on a hard surface with the thermometer held in an upright position, bringing the mercury together. When gradual heat is applied and the mercury rises, the column will be joined.

CONCLUSION

Separated or split columns in glass thermometers can usually be successfully joined by using the methods outlined above. Some types and ranges make these methods difficult to accomplish outside the factory. If such is the case, send the thermometer to the factory where it will be rejoined.

Location

Care should be taken to locate the instrument on the equipment where the vibration is at a minimum.

Corrosion

The standard bulb of a TRERICE industrial thermometer is brass and should not be used in corrosive mediums to this material. The use of separable sockets of special material is recommended for corrosive or highly abrasive service.

Range

In selecting a temperature range for an industrial thermometer, it is recommended that the actual working temperatures be as near as possible in the middle of the scale. This reduces the possibility of overheating the instrument and causing failure.

Accuracy

TRERICE standard instruments are guaranteed to be accurate within one scale division as indicated on the scale. Inaccuracy may be caused by a broken tube, scale shifting in slots from original position, mercury separation, sensitive bulb not fully immersed in the temperature to be read, or by poor circulation.

Poor circulation can be explained as follows: If there is poor agitation in a fluid, the temperature stratifies, higher temperature rises to the top and the lower temperature settles to the bottom. The thermometer will read only the temperature in which the sensitive bulb is immersed. It is, therefore, important to locate on installation the sensitive bulb in the correct position.

General

TRERICE industrial thermometers are available in ranges from minus 40 to plus 1000 degrees, 7, 9, and 12" cases, straight form, regular angle form, and adjustable angle form, fixed connected, union connection, separable socket connection, etc. There is a TRERICE industrial thermometer to suit your particular job and by choosing the correct instrument, the maximum efficiency will be obtained.

