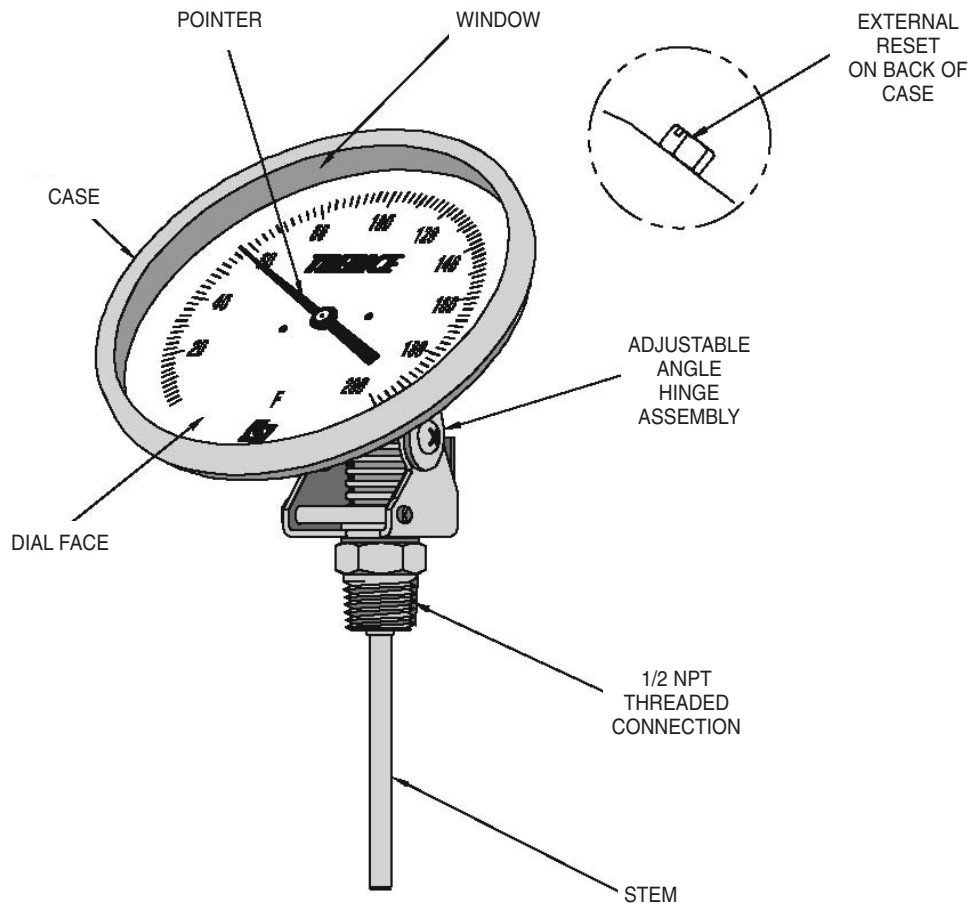


# Bimetal Thermometers

## DESIGN & OPERATION



### Description

A thermometer is an instrument designed to measure and indicate the temperature of a specific application or condition. A bimetallic dial thermometer, commonly known as a bimetal thermometer, is installed at the point of measurement and is usually read from that location.

### Principles of Operation

The Trerice Bimetal Thermometer employs a bimetallic sensing element which reacts consistently to temperature change, producing an accurately calibrated temperature measurement. The sensing element consists of two dissimilar metals welded together (in the form of a coil), and encased in a stainless steel stem. The coil is silicone dampened (ranges up to 300°F) to protect against vibration, and connected to a dial pointer on the instrument face. When the stem is exposed to temperature change, the coil expands or contracts, and the corresponding reaction is transmitted to the pointer, thereby indicating the temperature of the process.

## Selecting a Bimetal Thermometer

All Trerice Bimetal Thermometers should be carefully selected to meet the demands of the particular application. The information contained in this catalog is offered only as a guide to assist in making the proper selection. Improper application may cause failure of the instrument, resulting in possible personal injury or property damage. For correct use and application of all bimetal thermometers, please refer to Bimetallic Actuated Thermometer Standard ASME B40.3. This document may be obtained from the American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016-5990.

For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

### Case

The Trerice Bimetal Thermometer is available in an adjustable angle, rear or lower connected case. The hermetically sealed case is made from highly polished, type 300 stainless steel in sizes from 1" through 5".

### Window and Ring

Double strength glass and plastic are standard window materials. The window is held in place by a ring, which is crimped around the case of the instrument.

### Accuracy

The accuracy of a bimetal thermometer is expressed as a percentage (plus or minus) of the maximum scale range. Trerice Bimetal Thermometers are accurate to  $\pm 1.0\%$  Full Scale, ASME B40.3 Grade A (except pocket type:  $\pm 5.0\%$  Full Scale, ASME B40.3 Grade 3).

### Measurement Range and Dial

A wide variety of measurement ranges are available in Dual Scales (Fahrenheit and Celsius) from  $-100^{\circ}$  through  $1000^{\circ}\text{F}$ . Single scale Fahrenheit or Celsius is available on special order. Ranges are indelibly presented in black ( $^{\circ}\text{F}$ ) and blue ( $^{\circ}\text{C}$ ) graduations with black markings upon a white painted dialface. Fahrenheit is the primary (outside) scale on dual scale ranges.

**Ranges up to  $250^{\circ}\text{F}$  ( $120^{\circ}\text{C}$ ) are provided with overrange protection of 100% of range span. Ranges over  $250^{\circ}\text{F}$  ( $120^{\circ}\text{C}$ ) are provided with overrange protection of 50% of range span.**

### External Reset

Most Trerice Bimetal Thermometers are equipped with an external reset. This feature allows the instrument to be calibrated at any specific point within the measuring range.

### Stem and Connection

Trerice Bimetal Thermometers are furnished with a 0.250" or 0.125" O.D. stainless steel stem in lengths from 2 $\frac{1}{2}$ " though 72". Connection styles are either threaded ( $\frac{1}{4}$  or  $\frac{1}{2}$  NPT) or plain (non-threaded).

### Environmental Conditions

The Trerice Bimetal Thermometer is hermetically sealed. The case should not be exposed to sustained temperatures in excess of  $200^{\circ}\text{F}$  ( $93^{\circ}\text{C}$ ). For applications where vibration may be present, the thermometer case can be silicone filled to protect the internals of the instrument.

**The thermometer should not be operated continuously above  $800^{\circ}\text{F}$  ( $425^{\circ}\text{C}$ ), as damage to the instrument may result.**

### Thermowells

For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process. Thermowells are available in various lengths, connections, sizes, and materials. Please consult the Thermowell Section of this catalog.

**To ensure minimum response time, Trerice Heat Transfer Paste should be applied to the sensing portion of the stem before installation into a thermowell. 1 oz. tube: Item No. 107-0001**