

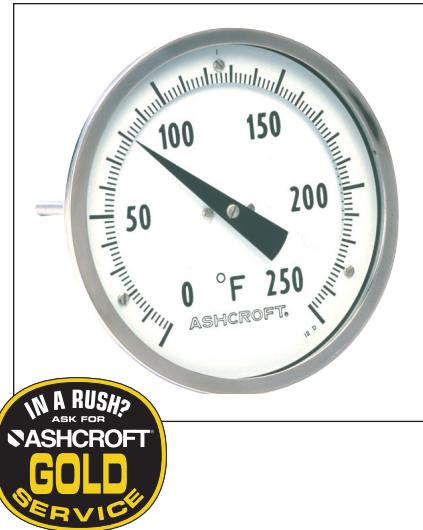


**Bimetal Thermometers  
Series EI, ASME B40.3  
Grade A ( $\pm 1\%$  of span)**

- **Hermetically sealed**
- **External adjustment**
- **Maxivision® dial**
- **$\pm 1\%$  full-span accuracy (ASME B40.3 Grade A)**
- **All-welded stainless steel construction**
- **Silicone on the coil provides vibration dampening and superior time response**
- **Heavy-duty glass standard; plastic or shatterproof glass optional**
- **Limited five-year warranty**

This series has a hermetic seal and an external adjustment in the rear of the case. As with other Ashcroft® industrial bimetal thermometers, it has a Maxivision® dial which eliminates parallax by placing the pointer on the same plane as the graduations. The connection locations are rear, lower, and Everyangle™.

The hermetic seal prevents entry of moisture into the casing, thus minimizing the possibility of icing or fogging inside the case. The window stays clear, and with the Maxivision dial, precise readings are certain.



**SELECTION TABLE**

Case Size		Style Code	Stem				Stem Lengths Available		Temperature Range						
Dial	Code		Connection	Code	Location	Code	"S" Length (inches)	Code	°F* Fahrenheit	°/Div.	Fig. Inter.	°C Celsius	°/Div.	Fig. Inter.	
2"	20	EI	Plain	40	Rear	R	2½	025	-80/120	2	20	-50/50	1	10	
			Pointed Plain	50	Rear	R			-20/120††			-20/120	2	20	
3"	30		¼ NPT	60	Rear	R	4	040	30/130††	1	10	0/50††	1	5	
			½ NPT Union	42	Everyangle	E			0/200			0/100	1	10	
			½ NPT	60		6	060	0/250	2	20	10/150	2	20		
			½ NPT	60	Rear			R			50/300			0/200	
5"	50	EI	½ NPT	60	Lower	L	9	090	50/400	5	50	0/300	5	50	
			½ NPT Union	42	Everyangle	E			50/550			50/450**†			
			½ NPT	60		12	120	200/700†	10	100	100/500**†				
			½ NPT	60	Rear			R			200/1000***†	200/1000***†			

\*Dual scale ranges available for all standard °F ranges (3" and 5" case only)

\*\*Satisfactory for continuous service up to 800°F or 425°C. Can be used for intermittent service from 800 to 1000°F, or 425 to 500°C.

Use Ashcroft Duratemp® thermometers for ranges above and below those listed above.

†Minimum stem length for these ranges is 4".

††Minimum stem length for lower connection and Everyangle is 4".

Thermowells must be used on all pressure or velocity applications, to protect the stem of thermometer from corrosion and physical damage, and to facilitate removal of the thermometer without disturbing the process. Maximum ambient temperature is 200°F (95°C).

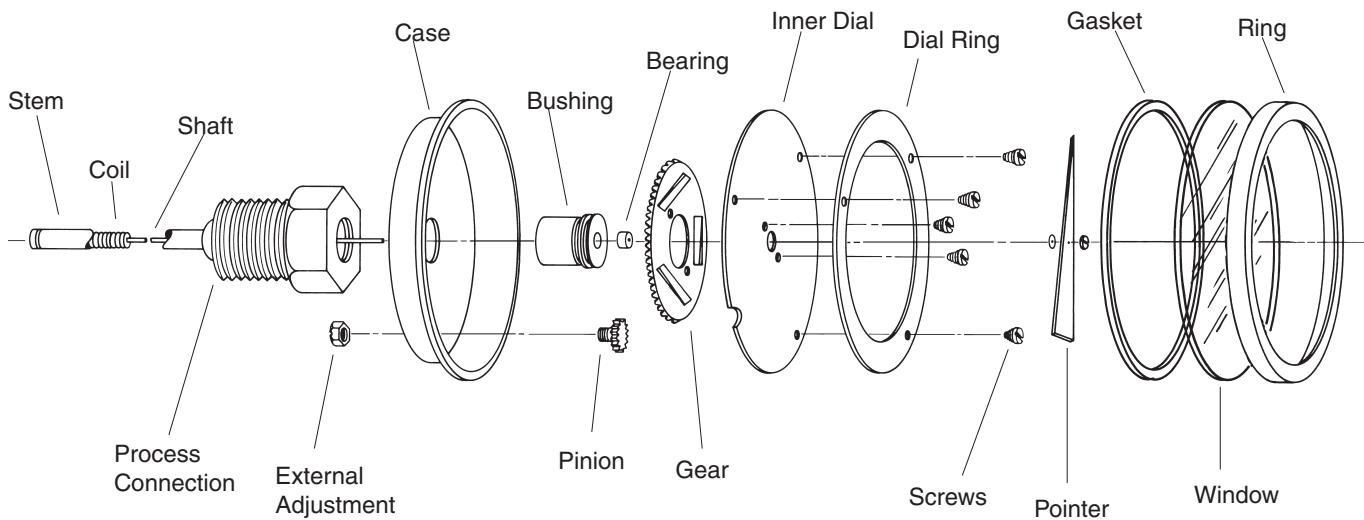
**Overtemperature Limits**

Top of Range °F	Maximum Overtemperature
up to 250	100% of span
250/550	50% of span
550/1000	800°F **

**TO ORDER THIS EI SERIES BIMETAL THERMOMETER:**

Select:	30	El	60	R	040	0/250°F	XNH
1. Case Size: 3" Code 30	_____						
2. Style: Code El	_____						
3. Stem Conn: ½ NPT Code 60	_____						
4. Stem Location: Rear Code R	_____						
5. Stem Length: 4" Code 040	_____						
6. Range: Code 0/250°F	_____						
7. Options: Stainless Steel Tag (see Page 210)	_____						

*Consult factory for guidance in product selection  
Phone (203) 385-0217, Fax (203) 385-0602 or  
visit our web site at [www.ashcroft.com](http://www.ashcroft.com)*



**Warning:** When selecting all bimetal thermometers, consider the media and the ambient operating conditions. Improper application can be detrimental to the thermometer and can cause failure and possibly personal injury or property damage. Inaccuracies resulting from improper setting of the external adjustment by the user may cause personal injury or property damage. Consult ASME B40.3 for guidance in selection and use of bimetal thermometers.

**Temperature Ranges:** Standard Fahrenheit and Celsius ranges have been established to encompass all normal temperature measurement requirements. A bimetal thermometer can be used at an operating temperature anywhere throughout its dial range. Provision should be made for extreme temperature conditions. No bimetal thermometer should be exposed continuously to process temperatures over 800°F (425°C).

**Operating Conditions:** The maximum ambient temperature of the case should be no more than 200°F (95°C); liquid-filled series 150°F (65°C). Temperatures beyond this value may cause discoloration of the dial or result in increased pressure inside the casing which would ultimately lead to failure of the window. The lowest ambient temperature should not exceed -40°F (-40°C).

**Thermowells:** Thermowells must be used on any application where the stem of the bimetal thermometer may be exposed to pressure, corrosive fluids or high velocity. Additionally, the use of a thermowell permits instrument interchange or calibration check without disturbing or closing down the process.

**Pointers:** The pointers are balanced to close tolerances, and the paint finishes are controlled to assure long-term stability under adverse ultraviolet conditions.

**Cases:** There are three case styles. The CI series has no adjustment but is hermetically sealed. The hermetic seal prevents

entry of moisture into the casing, minimizing the possibility of icing or fogging inside the case. The EL series provides the same features as the EI plus the added benefit of liquid filling which prolongs instrument life. Potential wear problems caused by excessive vibration are minimized through dampening, and the liquid medium improves readability. The instruments are leak-tested to ensure the integrity of the joints. Case and stem material is 304 stainless steel.

**Coils:** The bimetallic coils are carefully wound and inspected. Each is heat treated for optimum stability and overtemperature capability.

**Bearings:** The bearings are made of Teflon or other low-friction material.

**Shafts:** Shafts are made of specially drawn stainless steel wire with a very smooth finish.

**Dials:** The dials are based on computer-calculated temperature deflection data and have the Maxivision® format to minimize parallax error.

**Windows:** The standard window on EI and CI series are heavy-duty glass. Plastic and shatterproof glass are optional. The standard window on EL series is polycarbonate. No other options are available.

The complete line of Ashcroft® industrial bimetal thermometers and accessories provides quality choices for your temperature applications. There is a long history of superior quality in engineering, manufacturing and customer service of these products. Each Ashcroft industrial bimetal thermometer is backed by a limited five year warranty.

Each instrument is manufactured to a standard accuracy of 1% of span (ASME B40.3, Grade A) traceable to the National Institute of Standards and Technology (NIST). The bimetal coils are heat treated for stability and overtemperature capability. A single helix is used to reduce lag time. The bearings are made of a low-friction long-life material. The shafts are made of

specially drawn stainless steel with a very smooth finish. All joints are welded, and the weld between the stem and the outlet is located at the bottom of the threads to eliminate the possibility of crevice corrosion.

Silicone dampening is included for improved vibration resistance. The Ashcroft Maxivision® dial eliminates parallax error by placing the pointer in the same plane as the graduations. The dial can be rotated 360 degrees and can be angled 180 degrees with the Everyangle™ connection.

**Everyangle – Case Connection:** The Ashcroft Everyangle industrial bimetal thermometer dial face with Maxivision dial can be rotated 360 degrees and angled 180 degrees. It is available in the EI and EL (5° only in EL) series with either a threaded or compression type union connection.

This design provides maximum utility. Since the entire case can be rotated and angled, the instrument can be installed almost anywhere and adjusted so that the dial face can be easily read.

**Installation and Maintenance  
Instructions for ASHCROFT® Bimetal  
Thermometer with EVERYANGLE™ Conn.**

**ASHCROFT®**

This thermometer was designed to be positioned to face the direction of easiest reading.

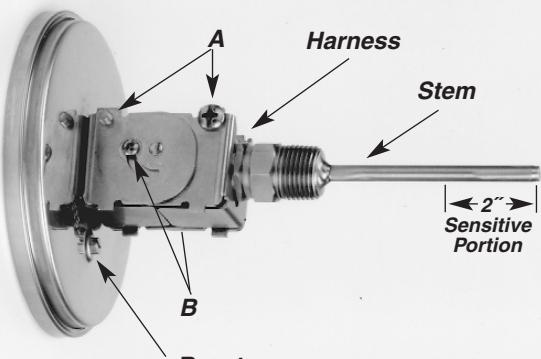


Figure 1

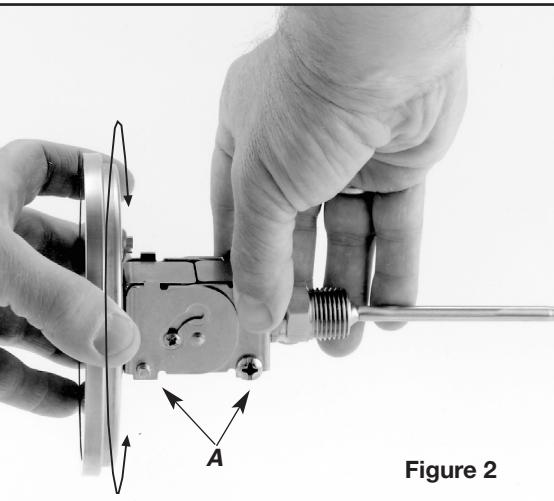


Figure 2

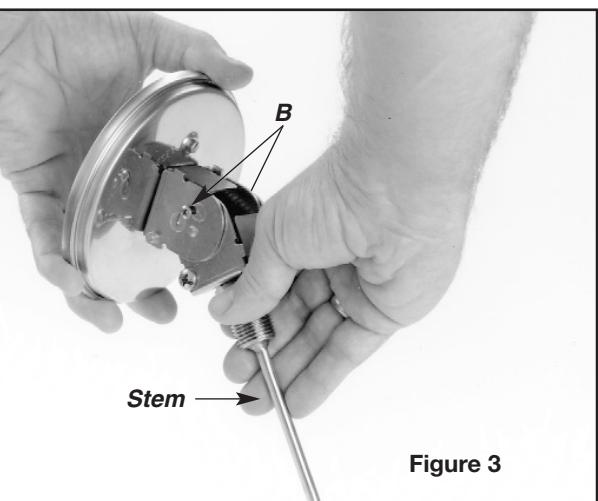


Figure 3

**CAUTION:** To assure longest life, the "EVERY-ANGLE" joint should be operated only when necessary during installation or removal of the thermometer.

### POSITIONING THE STEM

Before installation, the stem should be set to the desired angle as follows:

**Figure 1:** Loosen the four screws labeled "A" and "B" in Figure 1, until the harness revolves freely without twisting the flexible housing.

**Figure 2:** While holding the case, revolve the harness clockwise or counterclockwise, as indicated by arrows in Figure 2, to place the harness in a position that will permit flexing the stem in the desired direction with respect to the case. Then lock the two screws labeled "A".

**Figure 3:** Flex the stem to the desired angle with respect to the face of the thermometer, as shown in Figure 3, then lock the two screws labeled "B".

### INSTALLATION

The lower 2" of the stem is the sensitive portion. Be sure this part of the stem is exposed to the temperature to be measured.

Tighten the thermometer to the apparatus or into the thermometer well, using an open-end wrench applied to the hexagon head of the connection bushing. Turn until reasonably tight, then tighten further (in the same manner as a pipe fitting) until the scale is in the desired position for reading. **DO NOT TIGHTEN BY TURNING THE THERMOMETER CASE OR THE HARNESS. INSTALL THE DRY TYPE EVERYANGLE THERMOMETER SO THAT THE MAXIMUM CASE TEMPERATURE IS KEPT BELOW 200°F. INSTALL THE LIQUID-FILLED TYPE EVERYANGLE THERMOMETER, SO THAT THE MAXIMUM CASE TEMPERATURE IS KEPT BELOW 150°F.**

### XC2 INSTALLATION

The "XC2" variation meets the NSF/ANSI standard 2 (2002E) guidelines for non-exposed applications. The harness (hinged) portion of the unit must be non-exposed. Please refer to the NSF Standard for certification installation instruction and approved materials.

### THERMOMETER WELLS

When the thermometer is equipped with a well, the well should first be removed from the thermometer and screwed into the apparatus.

**Installation and Maintenance  
Instructions for ASHCROFT® Bimetal  
Thermometer with EVERYANGLE™ Conn.**



Coat the thermometer stem with a heat conducting medium, such as a mixture of graphite and glycerin. This improves the speed of response of the thermometer.

If the operating temperature does not exceed 350°F, vaseline or any heavy lubricant may be used as a substitute for the glycerin and graphite mixture.

If the operating temperature does exceed 350°F, the glycerin and graphite mixture may smoke when first subjected to the high temperature. This is caused by the glycerin vaporizing, leaving the dry graphite behind and should not be a cause for alarm. The dry graphite will act equally well as a heat conducting medium for temperatures up to 1000°F.

**CAUTION:** *Thermowells should be used on all pressurized applications, to protect the thermometer from corrosion or physical damage, and to facilitate removal of the thermometer without disturbing the process.*

### **MAINTENANCE**

Aside from occasional testing, little or no maintenance is required.

If the thermometer is used for measuring the temperature of material that may harden and build up an insulating layer on the stem, the thermometer should be removed from the apparatus occasionally, and the stem cleaned. Observe this precaution to ensure the sensitivity of the instrument.

### **ADJUSTMENT**

If it is necessary to make an adjustment to the thermometer proceed as follows:

On thermometers fitted with an "External Adjustment" – Use a small wrench, small screwdriver, or a coin to turn the slotted hexagon head in the back of the case until the pointer indicates the proper temperature on the dial.

**CAUTION:** *Bimetal Thermometers operating below freezing must have a perfectly tight case to prevent entrance of moisture which eventually will condense and freeze inside the stem. This condition shows up as a failure of the thermometer to read accurately below 32°F, or 0°C. For this reason it is important to avoid damage to the glass front while the stem temperature is at freezing or below.*