

**GENERAL GUIDELINES**  
for Glass Thermometers with Organic Liquid Fill

Organic liquid filled glass thermometers manufactured by H-B Instrument are designed for quality and accuracy. The liquid fill interacts with the glass and actually “wets” the bore as it expands and contracts. In order to ensure proper function and avoid wrong measurement results, we suggest the following instructions be observed.

1. Thermometers with a range not exceeding 115°C should be warmed carefully until the thermometer filling enters into the upper expansion chamber until the chamber is about one third full. Any separations should be joined with the column during this process.

Thermometers with a range above 115°C should be warmed carefully until the highest temperature of the range is achieved, rejoining any liquid separations in the process.

2. Let the thermometer cool down very slowly, allowing the liquid to drain down and the “wetted” volume to flow down as completely as possible. For best results, the speed of the cooling should not be more than 1°C per minute. The thermometer can be drained to ambient temperature, or taken slowly to the temperature of measurement.

3. Allow to cool completely for use at lower temperatures; for higher temperatures, no further pretreatment should be required.

4. Before every new measurement at lower temperatures than ambient, always pretreat the bore with the liquid and allow to cool slowly and drain. Follow the instructions for heating if separations in the liquid occur.

5. Thermometers calibrated for total immersion will read exactly when immersed in the measured medium, up to the reading point. At temperatures from about 50°C and higher, the reading point should be slightly above the medium measured to avoid distillation of the liquid (colorless drops appear in the bore and in the chamber). Unnoticed, this will cause a small error.

To further avoid distillation, a calculated correction can be made to adjust for leaving the thermometer further out of the medium than “normal” for total immersion.

6. A partial immersion thermometer should be handled according to steps 1 through 4 as well. The stipulated average emergent stem temperature used in manufacturing may vary from other instruments, but is targeted at the most common applications and the relevant environments. For a partial immersion thermometer used in a critical application, we recommend calibration at the critical temperature point with a stated emergent stem temperature. Corrections to readings in applications with very high or very low emergent stem temperatures may be accurately calculated with the appropriate formula.