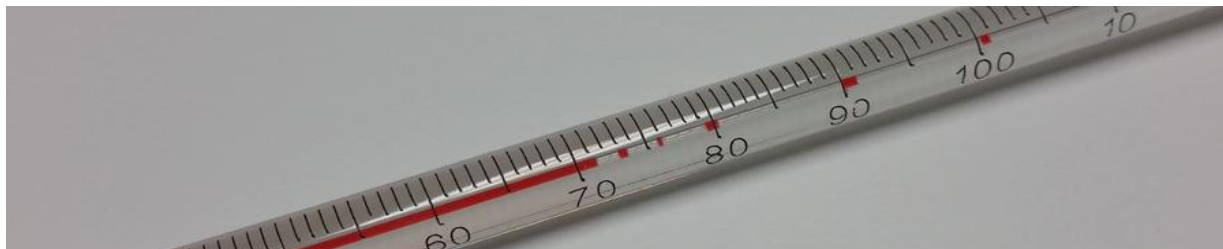


Rejoining a Separated Thermometer Column



A separated column is one in which portions of the mercury or alcohol become separated from the main column. Column separation is common in thermometers, particularly after transit or other situations producing excessive jarring. In alcohol thermometers, column separations may appear as small bubbles. They can be caused by a distillation tendency during warm weather; alcohol vapor condenses in the upper portion of the bore. Column separation may entrap the minimum thermometer index rod.

Separated columns can usually be reunited by one of the following methods: tapping, applying centrifugal force, and heating. The procedures follow:

Tapping– Grasp the thermometer securely in one hand, slightly below the middle with bulb end down, by curling the fingers and thumb around the edges of the mounting frame. Do not touch or press on the glass tube itself, or this may crack during tapping. Be sure that the thermometer is fastened securely to its frame. Strike the edge of the frame against the palm of the other hand. Repeat several times as necessary, or until success is doubtful. In cases where a short segment of mercury is lodged in the upper end of the bore, hold the thermometer inverted (bulb end up) during the tapping. This procedure is particularly suited for a maximum thermometer; the heavier main column of mercury above the constriction will easily slide to unite with the short segment.

Use of Centrifugal Force– Grasp the thermometer securely as in the tapping method, except grasp the thermometer slightly above the middle and hold it with the bulb end pointed outward. With the arm extended in a near-horizontal position, swing the thermometer rapidly downward; stop abruptly when the thermometer has reached a vertical position. Repeat several times as necessary. Be sure that the thermometer is securely mounted and has sufficient clearance from obstructions. With a minimum thermometer, the downward swings can be started with the arm extended upward, giving an arc of 3 or 4 feet. Swings with a maximum thermometer must always be started with the arm at or slightly below the horizontal, with the mercury column resting against the constriction; otherwise, the constriction may be fractured.

Alternatively, a minimum thermometer can be whirled rapidly on a strong cord, wire, or chain that is fastened through the hole near the top of its mounting frame. The cord or chain can be grasped directly or attached to a sling psychrometer handle; the cord length should be about 8 inches.

Heating– Heating the thermometer bulb is often the quickest and most successful method of repairing column separations. The heat can be applied by holding the bulb under a faucet of hot running water or by immersion in a pan of slowly heating water. Take care to remove the bulb from the water before the mercury or alcohol column rises too far into the expansion chamber at the top of the thermometer bore.

For a minimum (alcohol) thermometer, heat the bulb in the above manner until the main column enters but does not completely fill the expansion chamber. This heating should force all air bubbles up the bore and into the expansion chamber, where they should rise above the alcohol. *Do not let the alcohol completely fill the expansion chamber*–continued heating and resulting internal pressure will rupture the thermometer tube (at either the bulb or top).

Whatever method has been used, after separations in an alcohol thermometer have been reunited, hang the thermometer in a vertical position (bulb down) for several hours. This will permit any alcohol that is clinging to the sides of the bore to drain down into the column.