

### **"My liquid filled gauge isn't reading correctly. Do I have a faulty gauge?"**

The gauge is most likely fine and you are seeing the effect of temperature increase on the filled gauge.

#### **"How do I fix it?"**

Cool the gauge or vent the gauge.

#### **Cooling the Gauge**

You can reduce the pressure buildup inside the gauge case by wrapping the gauge case with a cold, wet towel. Once the temperature of the gauge is at ambient temperature it will read correctly.

#### **Venting the Gauge**

Venting is easy to do and takes seconds. To vent the gauge carefully push the side of the vent plug (the part under the plug lip) with your thumbnail to equalize the gauge case pressure with the atmosphere (reference pressure). Do not remove the plug. See photo for an illustration of how to vent the gauge: It is OK if some liquid escapes, just wipe any liquid that escapes off with a cloth. Loss of the liquid fill will not affect operation of the gauge.

#### **"How often should I vent the gauge?"**

You should vent the gauge whenever the temperature of the gauge has changed significantly (either heated up or cooled down).

#### **"Why is venting/cooling necessary?"**

All mechanical liquid filled gauge cases are sealed (to keep the liquid in) so as they heat up pressure will build up in the case (approx 1psi for every 30-40F temperature change). This case pressure exerts a force on the mechanical movement and offsets the actual process pressure. This effect is minimal and typically only noticeable when measuring low pressures, i.e. on a 0-15 psi gauge.

#### **"How does temperature affect a filled gauge?"**

Changes in ambient temperature affects the accuracy of gauges in several ways:

#### **Range Shift**

Range shift is caused by the change in modulus of elasticity of the bourdon. This effect increases proportionately as the pressure increases. As a general rule, the loss of accuracy will be an additional 1% of full scale reading for every 50F degree change in temperature.

#### **Zero Shift**

Zero shift is created by the change in physical dimensions of the various components brought about by the temperature change. This shift is constant over the entire scale and does not vary with applied pressure.

#### **Maximum Temperature Limits**

To ensure longest, possible life and accurate readings, pressure gauges that have soft-soldered pressure joints should not be exposed to process or ambient temperatures over 120 degree F. This is especially true of pressure gauges with liquid filled cases, due to the expansion of the case fill fluid. Long term exposure to temperatures in excess of 120F degree may cause discoloration of dials and fill fluids, as well as hardening of the case seals and possible fill leakage. Gauges with silver soldered or welded pressure joints should not be exposed to process or ambient temperatures over 190 degree F.

#### **"Pointer does not rest at zero on a 0-15PSI gauge."**

On low pressure liquid filled gauges, such as 0-15 fuel pressure, changes in atmospheric conditions or high temperatures may move the pointer off zero. This is normal. Venting the gauge will return the pointer to zero.

