



# LIQUID FILLING/VENTING SEALED GAUGES

Sealed gauges, whether liquid filled or dry, can build internal pressure that can cause an instrument to be inaccurate. An inaccurate gauge can lead to inaccurate system pressures, inefficient processes and damage to components of pressurized systems. By venting the gauge, the internal case pressure can be returned to atmospheric pressure, thereby improving the accuracy of the gauges.

American National Standards Institute (ANSI) approves American National Standards which include the American Society of Mechanical Engineers (ASME) standard ASME B40.100. This standard addresses venting of sealed gauges within the following section:

*Sealed Cases: Liquid filled or not, will exhibit error as a result of exposure to ambient or media temperature different from that at which the case was sealed unless compensation is provided. This error is caused by internal case pressure changes and depends on fill media, extent of fill and other factors. The error is constant over the entire scale, and if the temperature is stable, within limits, it can be corrected by resetting the pointer. An increase in temperature generally causes an increase in internal case pressure with a resulting decrease in indicated pressure. The opposite occurs for a decrease in temperature. For a given temperature change, the percentage of error noted on the gauge is a function of the range of the gauge. If, for example, the temperature increase causes the internal pressure to increase by 3 psi, then on a 30 psi gauge, this will cause a 10% error, whereas on a 0/100 psi gauge, the error will be 3%. For higher ranges, the percentage of error becomes proportionately less.*

A fill plug fits into the hole in a pressure gauge case. On liquid fillable pressure gauges, a ventable fill plug is used to relieve internal case pressures that occur due to thermal expansion of the fill fluid. Several options are shown below. **IMPORTANT NOTE:** When venting filled gauges, always install in the upright position to prevent leaks.

## PRESSURE RELIEF PLUG OPTIONS



Vent plug open



Vent Plug Closed



FLAT PLUG

VENT PLUG

