LENZ
Fluid Power Specialist

ADVANTAGES OF LIQUID-FILLED GAUGES

Liquid-filled gauges

Liquid-filled pressure gauges provide a number of advantages:

1. The liquid absorbs vibration and pressure spikes
2. The dampening action of the liquid enables the operator to take readings during conditions of rapid dynamic loading and vibration
3. The liquid lubricates all moving elements, dramatically reducing wear in the movement
4. Because most liquid-filled gauges are filled with non-aqueous liquid and hermetically sealed, they perform in corrosive environments and are immune to moisture penetration and icing, and shock effects are lessened.

Liquid-filled gauges enhance the reliability and integrity of the measuring system for long periods under extreme operating conditions.

Liquid Fill Fluid

Ambient Temperature Ratings (see chart below)

Allowable Operating Range

This is the temperature range in which the operation of the gauge is not adversely affected by the filling liquid. At temperatures above the maximum rating, the fluid may break down. At temperatures below the minimum rating, the fluid may solidify (freeze).

NOTE: Some parts of the pressure gauge may not be able to withstand temperature above 140 degrees F. Consult with Lenz for technical assistance for these applications.

Liquid-Filled Gauge Case Venting

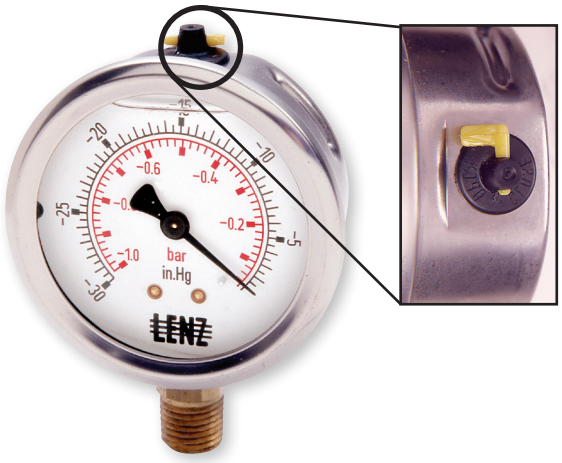
For pressure gauges with full scale ranges of 300 PSI and below (including vacuum and compound ranges of 30" HG-0-200 PSI and below), case venting (after the gauge is installed) is necessary to preserve the accuracy. Temperature fluctuations during shipment and in the process application cause the liquid filling to expand and contract which in turn increases or decreases case pressure. As a result, accuracy can be decreased and the pointer may not return to zero properly until the gauge is vented to the atmosphere.

Choose the Right Liquid

The type of liquid used to fill the gauge varies with the application. Although pure glycerine provides the best performance in most applications, each has its own requirements. Guidelines to help ensure that a fluid is properly matched to an application are:

1. If icing is a problem, use gauges filled with silicone oil or other comparable liquids. They have low viscosities even at -60 degrees C.
2. If the system has electric accessories such as contacts, use insulating oils, and
3. If extreme temperature fluctuations are expected, use silicone oils

The higher the liquid viscosity, the greater it's dampening capacity. The reason for this is that dampening changes in proportion to the temperature-dependent viscosity of the filling liquid. The suitable degree of dampening depends on the operating requirements the gauge must meet, such, as pointer response time, pressure extremes, vibration, and changes in pressure. Lenz can recommend specific liquids to suit problem applications.



Fill Fluid	Allowable Operating Range
Glycerine Dow 99.7% USP, Synthetic 1118 Centistokes at 68 degrees F	-4 F to 140 F (-20C to 60 C)
Silicone Dow Corning 200 Fluid 1000 Centistokes at 77 degrees F	-40F to 140F (-40C to 60C)
Halocarbon Halocarbon Products 6.3 Centistokes At 100 degrees F	-40F to 140F (-40C to 60C)

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