Options

Temperature Transmitter

- 100mm and 160mm Diameter
- For Viscous Fluids
- Can be overload protected up to 25 bar
- Used where a syphon tube cannot be fitted
- For bitumen road spraying bars, boilers and other high temperature applications
- Operating Temperature is standard 140°C, option for maximum 300°C available.

Special Features

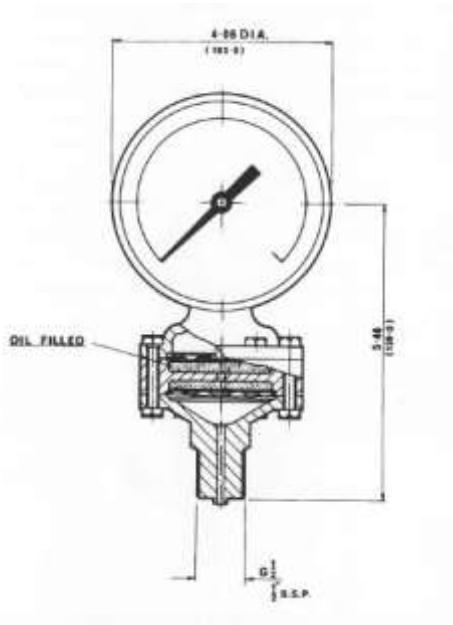
1. Pressure passage through the brass G ½ (1/2" BSP) pressure connection is 3/8" dia. (9.5mm) instead of the normal 3mm (1/8") dia. This reduces the possibility of blockage when the liquid cools, increasing viscosity. If this is considered to be too small other designs of pressure connections are available, and also alternative materials as described on the Alternative Base Fittings and Chemical Compatibility Datasheets.
2. The coiled tube which connects the transmitter diaphragm to the working diaphragm, has the effect of damping out pressure pulsations as well as providing a temperature gradient.
3. Transmitter liquid is normally Shell Calibrating Fluid; for special applications the following alternatives have been used – paraffin, distilled water, glycerine, vinegar, or silicone only where temperatures above 140°C are involved.
4. Options for an overload stop can be fitted above the working diaphragm, preventing gauges being damaged by high pressures.

NOTE: The flange-clamping bolts must not be slackened as this will cause oil leak and render the gauge inoperative.

Method of Operating

Pressure is applied to a transmitting diaphragm clamped between the lower flanges. Deflection of this diaphragm transmits the pressure through the coiled tube to the working diaphragm clamped between the upper flanges. Movement of the working diaphragm is sensed by the gauge movement giving a reading by the gauge pointer.

The working diaphragm and gauge mechanism are situated far enough away from the hot fluid for the reading not to be affected by fluid temperatures up to 300°C, depending on the fluid being used.



Throttled Transmitter

In many applications where diaphragm gauges are used it is not possible to protect the mechanism against the effect of pulsating pressures by means of a snubber involving a small orifice in the line to the gauge. This particularly applies where the application is on suspended solids or there is a hygiene requirement. The Bailey & Mackey solution to the problem is integral hydraulic throttling.

The drawing shows how this is achieved. The diaphragm pressure gauge is assembled with a plate which has 2 oil filled chambers which connect through a sintered filter. Pressure in the system is transmitted via the lower stainless steel diaphragm to the working diaphragm on the gauges. Pressure pulsations are dampened at the sintered filter with no danger of blockage.

Please note: the 2 hexagon head screws used at the side of the plates are used for filling the two chambers with oil. These should never be slackened because loss of oil will cause the gauge to read incorrectly and in extreme cases, could rupture the transmitter diaphragm.

Overload Protection

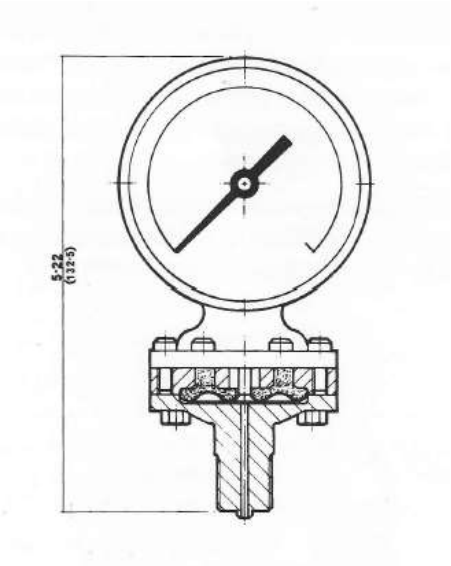
It is recommended that the working pressure of gauges should be $^{2}/_{3}$ of the range for fluctuating pressures or $^{3}/_{4}$ times for steady pressures. Overload will strain the diaphragm causing distortion which will put the gauge out of calibration.

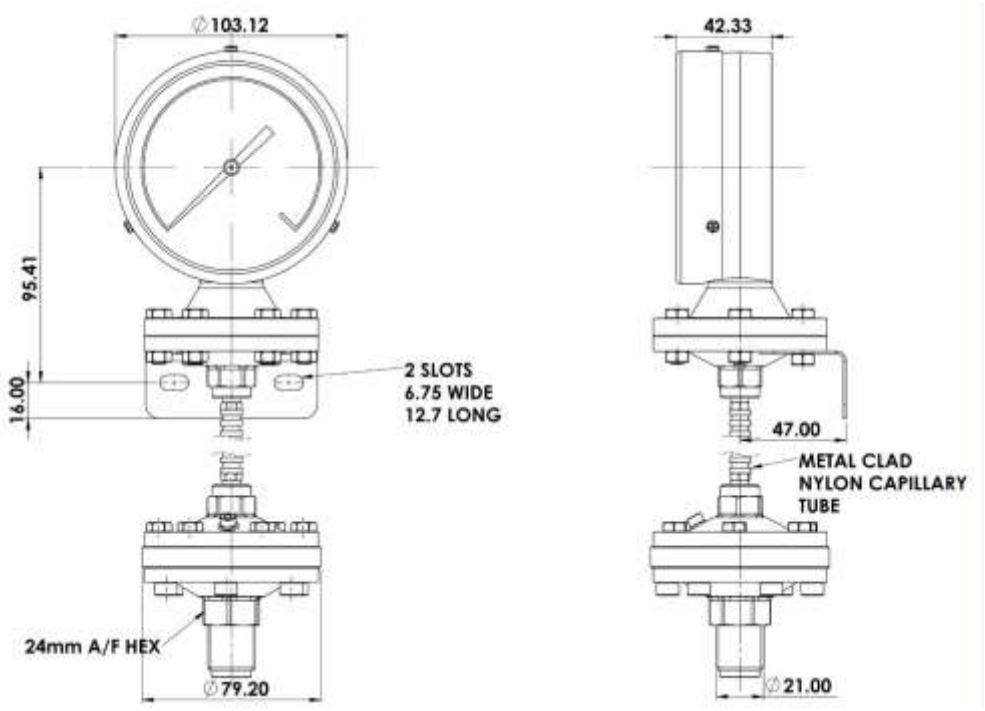
Normally the pressure range should be chosen to cover the highest pressure likely to develop in the system, but gauges can be built with a moulded resin diaphragm support which prevents excessive deflection under over-pressure.

The drawing shows how this is achieved by adding a support plate above the diaphragm to hold the resin.

Maximum overload pressure is 1000 lbf/in^2 (70 bar)

Maximum Temperature is 60°C.





Distant Reading Transmitter

Bailey & Mackey diaphragm pressure gauges in ranges 0-1 bar and above can be fitted with transmitters for distant reading. In this way pressure indication can be provided at a panel some distance away from the tapping point, e.g. where severe vibration may be present, isolating the gauge from an adverse environment.

The standard material for pressure chamber is brass, stainless steel, UPVC or other corrosion resistant materials can be used if required. The stainless steel transmitter diaphragm is connected to the pressure gauge by a length of oil-filled capillary.

The illustration shows a bottom connection gauge with bracket for surface mounting. Transmitters can also be fitted to the front flange mounted gauges No. 70A and No. 70B shown in the datasheet. The recommended maximum length of capillary is 6 meters (20 ft.). Accuracy of diaphragm pressure gauges with distant reading transmitters is +/- 2% of full scale deflection. It is important that great care is taken when fitting distant reading transmitter gauges because damage to the capillary tube or end connections can lead to oil leaking out of the sealed system and inaccurate gauge reading.