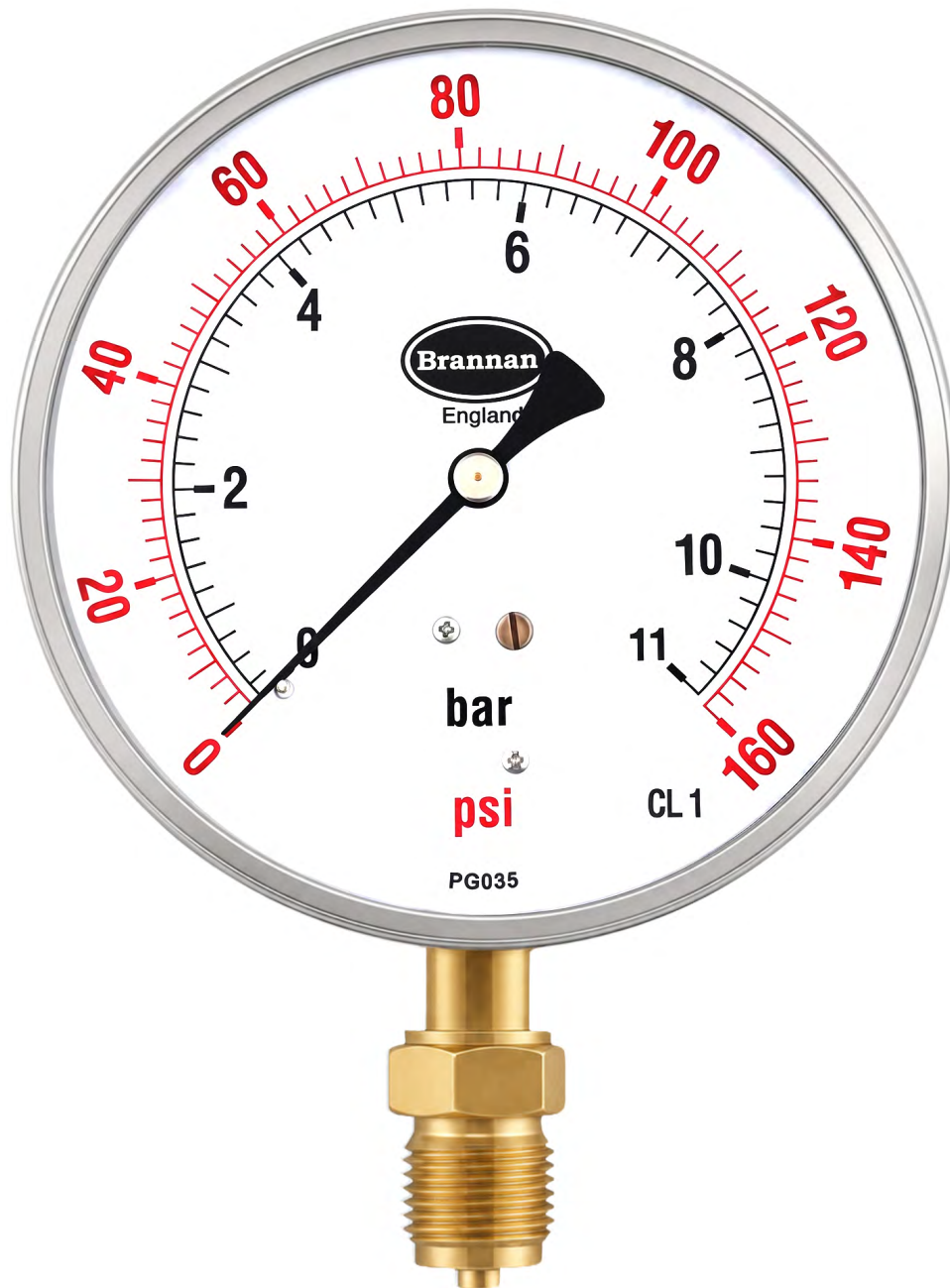




PRESSURE GAUGE OPERATIONAL GUIDE

Manufacturing pressure gauges and thermometers in the UK since 1913



Pressure gauge selection & storage

When selected, stored, installed and used correctly Brannan pressure gauges will give many years of safe and reliable service.

The following key points are provided as guide and are not an exhaustive list. Pressure gauges should always be selected and installed by a qualified instrumentation engineer.

Pressure gauge selection

- To ensure safety in use, to maintain measurement accuracy and to provide maximum gauge life, pressure gauges must be selected correctly for its application.
- Brannan offers a range of pressure gauge designs in various materials and a range of accessories suitable for the safe operation of many processes, pressure mediums and applications.
- Pressure gauges should always be selected and installed by a qualified instrumentation engineer.
- For definitive information on the selection and installation of pressure gauges see EN 837 Part 2: Guide to the Selection and Installation of Pressure Gauges.
- Each application is different and only a qualified instrumentation engineer with full knowledge of the process, the pressure media, the operating conditions, the safety conditions and the environmental conditions can choose the correct gauge to meet the safety, environmental and operational requirements.

Pressure gauge handling and storage

- Handle pressure gauges with care.
- Dropping or damaging a pressure gauge will adversely affect its accuracy, reduce its operating life or possibly cause gauge failure.
- Pressure gauges should always be stored in their original packaging.
- Pressure gauges should be stored in a dry environment.
- Refer to the product data sheet for specific storage conditions.



Pressure gauge installation

- To ensure safety in use, to maintain measurement accuracy and to provide maximum gauge life, pressure gauges must be installed and used correctly.
- For definitive information on the selection and installation of pressure gauges see EN 837 Part 2: Guide to the Selection and Installation of Pressure Gauges.
- The following key points are provided as guide and are not an exhaustive list. Pressure gauges should always be installed by a qualified instrumentation engineer.

Gauge location

- **Ensure safe blow out device operation:**
Where a blow-out device is fitted to the gauge, leave sufficient clearance for the blow out device to release and for the gauge contents to evacuate. The blow out device must never be obstructed.
- **Consider the risk of catastrophic gauge failure:**
In the rare event of catastrophic gauge failure, the pressure medium will leak or spray from the gauge giving rise to safety issues and potential damage to nearby surroundings. The specifying and installing engineer should consider this scenario when choosing the gauge location:
 - Install a valve or gauge cock in line with the gauge. Using this valve the operator should isolate the gauge when it is left unattended. In the event of gauge failure the operator should isolate the gauge to prevent further damage.
 - Install the gauge in a controlled area where any leaking pressure media can be handled safely.
 - Avoid installing the gauge where leakage could cause damage or electrical hazard to equipment and surroundings.
- **Observe ambient temperature limits:**
 - Ambient temperature limits are listed on all Brannan product data sheets, please refer to these for more information.
 - Do not use the gauge outside of its operating temperatures.
 - Exposing the gauge to higher temperatures will affect its accuracy and reduce its operating life. Higher temperatures may result in leakage and gauge failure.
- **Observe temperature limits for the pressure medium:**
 - Pressure medium temperature limits are listed on all Brannan product data sheets, please refer to these for more information.
 - Do not use the gauge outside of its operating temperatures.
 - Exposing the gauge to higher temperatures will affect its accuracy and reduce its operating life. Higher temperatures may result in leakage and gauge failure.
 - Where appropriate, syphons, cooling towers, capillary extensions and diaphragm seals may be used to lower the pressure medium temperature as it enters the pressure gauge.

Pressure gauge installation

- **Consider environmental conditions:**
 - Dust and water ingress into the gauge will result in loss of accuracy and reduced gauge life.
 - Instruments with IP ratings of less than IP67 are not dust proof or waterproof and should be installed indoors in a suitably dry and clean environment.
- **Avoid vibration:**
 - Vibration will significantly reduce the life of the gauge and will adversely affect its accuracy.
 - Where possible, install the gauge in such a way that it is not subject to vibration.
 - Where vibration cannot be avoided, vibration effects can be reduced by using a glycerine filled gauge.

Gauge Mounting

- **Mounting angle:**
 - To ensure accuracy gauges should be mounted in a 90° position, with the dial in a vertical position, unless marked otherwise.
- **Install and tighten using a spanner:**
 - Install the gauge using a spanner across the flats of the screw connection.
 - Do not apply force to the gauge head or case to tighten or realign the gauge – this will damage the accuracy of the gauge or cause it to fail.
- **Thread sealing materials:**
 - Ensure that any thread sealing materials do not obstruct the pressure medium from flowing into the gauge.
- **Always install an isolating valve or gauge cock**
 - An isolating valve or gauge cock should be installed with every gauge.
 - The valve should be clearly visible and easily accessible by the operator.
 - The operator should use the valve to isolate the gauge when it is not being attended. The valve can be used to isolate the gauge in the event of leakage or gauge failure.
 - Care should be taken when opening and closing the valve, to prevent sudden pressure changes being applied to the gauge.
- **Avoid and pressure spikes and water hammer**
 - Water hammer or pressure spikes are sudden pressure surges, or high pressure shockwaves which propagate through liquids in pipes.
 - They are caused by sudden opening or closing of valves and pumps causing fluid in motion to stop or reverse suddenly.
 - Pressure spikes can result in momentary pressures many times higher than the operating pressure.
 - Do not subject the gauge to pressure spikes.
 - Pressure spikes will cause serious damage to the pressure gauge, resulting in loss of accuracy, reduced gauge life and incorrect readings. Pressure spikes have been known to result in catastrophic gauge failure.
 - After a pressure spike event, all pressure gauges should be inspected and if necessary re-calibrated.
 - Pressure spikes can be avoided through considerate design and correct operation of the pressure system.



- A closed isolating valve will protect the pressure gauge from pressure spikes.
- A snubber will offer some protection to the pressure gauge in the event of a pressure spike.
Brannan recommends installing a snubber immediately below the pressure gauge.

• Avoid Pulsation

- Pulsation is the rapid repeating change of pressure within operating pressure limits. Pulsation is caused by the operation of pumps or by the operation of mechanical process equipment.
- Pulsation will adversely affect gauge accuracy and reduce gauge life.
- To protect the pressure gauge from pulsation a snubber should be fitted immediately below the pressure gauge.
- A closed isolating valve will protect the pressure gauge from pulsation
- Pulsation can often be avoided through considerate design.

• Venting of glycerine filled gauges

- Glycerine filled gauges with a range below 25 bar must be vented immediately after installation by piercing the filling plug.
- Failure to perform venting will result in inaccurate readings.



Pierce filling plug immediately after installation.

• Pressure gauge safety inspection

The gauge should be inspected at regular periods; the frequency is best determined by the end user. It should be based on:

- The safety and operational requirements of the process application
- The environment in which the instrument is used
- The frequency of use
- Any evidence of a change in reading
- The consequence of an incorrect reading
- The gauge being subject to any misuse, pulsation, over pressure, pressure spikes, corrosion or other damage.

Inspection should be performed by a qualified instrumentation engineer.

• Pressure gauge re-calibration

Brannan recommend recalibrating every gauge at least once every year. More frequent re-calibration may be appropriate.

The frequency is best determined by the end user based on:

- The safety and operational requirements of the process application
- The environment in which the instrument is used
- The frequency of use
- Any evidence of a change in reading
- The consequence of an incorrect reading
- The gauge being subject to any misuse, pulsation, over pressure, pressure spikes, corrosion or other damage

For recalibration and/or repair, please return the gauge to Brannan or a suitable calibration laboratory.

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