

Installation, handling and operation

General

The pressure gauge should be installed such as to avoid exposure to heat and vibration and to enable easy observation of the dial indication.

It is common practise to install the pressure gauge by means of an isolating device to facilitate replacement while the system is pressurised and to set the gauge inoperative when reading is not required.

Isolating devices

The isolating device may be either a pressure gauge cock or a pressure gauge manifold valve, depending on operating conditions and requirements.

Pressure gauge cocks

The handle features 3 positions:

- OFF The pressure medium is barred and the pressure element is open to the ambient atmosphere.
- ON The pressure gauge is connected to the pressure medium.
- VENT The pressure gauge is isolated but the pressure system is vented and the medium can escape into the ambient atmosphere.

Pressure gauge manifold valves

The valve are operated by a hand wheel. The valve body normally features a venting plug or for differential pressure gauges the venting between the two pressure connections. This is mandatory to avoid the damage of the differential pressure gauge by static pressure.

Both cocks and valves should be installed such, as to direct the blast of the escaping pressure medium away from the position of the operator. Hazardous or polluting media may prohibit use of the venting function.

Local safety codes such as for pressure or steam vessels may specify isolating devices enabling on-site testing of the pressure gauge.

Pressure gauge mounting provisions

If the pressure system or tail pipe is not sufficiently rigid to accept the weight of the gauge, also in consideration of vibration existing, then the gauge should be mounted by means of surface mounting flange or wall mounting.

Damping of vibration

If the pressure gauge is exposed to vibration or pulsating pressure of both, then a liquid filled pressure gauge may provide considerably better performance and readability. The installation of a snubber will also dampen pressure vibrations.

Effects of the temperature

The operating temperature of the pressure gauge, resulting from the heat transfer of the pressure medium, the ambient temperature and possibly heat radiation must not exceed the temperature span the pressure gauge is specified for. Suitably shaped tailpipes or syphons with water filling may be used to separate the pressure gauge and its isolating device from hot pressure media.

Chemical seals

Chemical seals may be employed to separate the pressure gauge from the pressure medium to avoid any chemical attack of the measuring device. Chemical seal and pressure element are filled with an inert liquid that acts as a pressure transmitting agent. Once assembled and filled, the pressure instrument must not be separated from the chemical seal.

Overload protection for pressure elements

Should the measuring media be subject to rapid fluctuations in pressure, pressure surges have to be taken into account. These must not be allowed to act directly on the pressure element. The pressure surges must be restricted in their effect, for example, by fitting integral restrictor screws (to reduce the cross-section in the channel) or by using adjustable snubber devices.

Should a pressure range be selected which is lower than the intermittent occurring maximum pressure to achieve a higher reading resolution, than the pressure element must be fitted with a pressure limiter which isolates the system when a pressure surge occurs or gradually closes in the case of a slow increase pressure. The set closing pressure depends on the course of the pressure over time.

A further possibility is the use of a pressure gauge with high over-pressure safety (internal protection).

Pressure tapping points

Correct gauge performance requires to tap the pressure system at a point of undisturbed and continuous flow. The pressure gauge should be fitted in-line with an isolating device.

Installation and commissioning

Correct pressure connection shall be made by means of a suitable sealing ring or sealing washer. Only with tapered threads such as NPT a suitable sealing compound must be applied on the thread.

The tightening or loosening torque applied to the connection should be by means of the spanner flats provided on the stem and not by means of grasping the case as this may damage the gauge. The connecting tail pipe should be thoroughly cleaned prior to fitting of the gauge.

In the case of diaphragm or capsule gauges, care should be taken not to accidentally loosen the bolts that retain upper and lower diaphragm housing.

No attempts should be made to remove a pressurised gauge. The pressure system must be totally relieved if the gauge cannot be isolated otherwise.

Remainder of the pressure medium contained in the pressure element may be hazardous or toxic. This should be considered when handling and storing the removed pressure gauge.

Pressure gauges in service

Open isolating devices always gently and never abrupt, since this may generate sudden pressure surges that may damage the gauge.

Correct zeroing may be inspected by closing the isolating device and relieving the gauge from pressure. The pointer must fall within the thickened division of the zero mark. Unless the gauge temperature is considerably higher or lower than 20°C, a pointer not returning to zero may indicate serious damage of the gauge.

On-site testing of the pressure gauge is feasible by means of special isolating devices enabling connection of a test gauge together with a suitable pressure source.

Storage

The pressure gauge should remain in its original packing until installation.

Storage temperature should not exceed -20°C or + 60°C unless specified otherwise. Consult the data sheet of the pressure gauge model.

Pressure gauges removed from the service should be protected from dust and humidity, preferably by using the original packing material. Remainder of the pressure medium contained in the pressure element may be susceptible to freezing. This should be considered when storing the removed pressure gauge.

Modifications reserved

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