LENZ
*Fluid Power Specialist*

# General Installation and Operating Instructions for Diaphragm Seal Measuring Systems

### 1. The Diaphragm seal measuring system

A diaphragm seal measuring system is made up of a diaphragm seal attached to a pressure measuring instrument (pressure gauge, pressure transmitter, etc.). Some systems also include a capillary separating the diaphragm seal and measuring instrument which allows for remote reading. In all cases, the components of the diaphragm seal measuring system must not be separated.

The diaphragm seal measuring system transmits pressure hydraulically from the seal diaphragm to the measuring instrument (pressure gauge or pressure transmitter) via a system fill. Even very small leaks of the hydraulic fluid from the system will lead to inaccurate measurements or failure of the diaphragm seal system.

The diaphragm of the seal is very thin (approximately 0.004 in), and is extremely sensitive. Care should be taken to protect the diaphragm from damage when handling the unit.

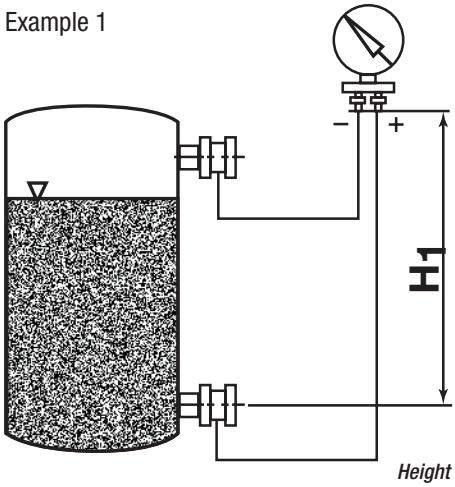
### 2. General installation instructions

- To protect the measuring system from mechanical damage, leave it in the factory packaging until installation.
- When removing the measuring system from the factory packaging and during installation, treat the system with particular care to prevent damage and mechanical deformation of the diaphragm.
- Never loosen or remove the sealed filling screw on either the diaphragm seal or the measuring instrument.
- Do not damage the seal diaphragm. Scratches on the seal diaphragm (caused by sharp objects, for example) are the main causes of corrosion.
- For diaphragm seals with flange fittings, use a gasket with an adequate large inner diameter and center it. Gasket contact with the diaphragm leads to errors in the measurement.
- Pay special attention to the gasket manufacturer's recommendations for tightening, torque and setting cycles.

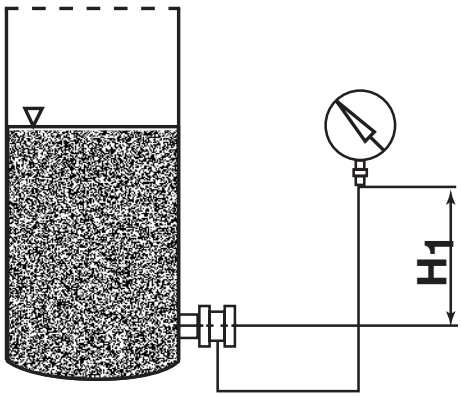
### 3. Installation instructions for diaphragm seal measuring systems with capillary

- To protect the capillary from mechanical stress, do not lift or carry the diaphragm seal measuring system by the capillary.
- Do not kink the capillary; this will make leaking more likely or increase the response time of the measuring system.
- When laying the capillary, do not bend into a radius smaller than 6 in (150 mm).

Example 1




Example 2




*Height (H,) max. 22.75 ft or 13 lt, respectively*

When taking absolute pressure measurements (vacuum), the measuring instrument has to be mounted at the same level as the diaphragm seal or below (see examples 3 and 4).

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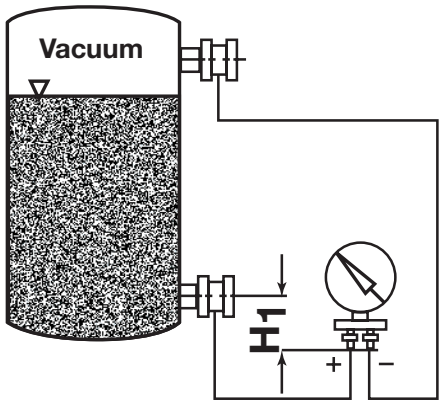
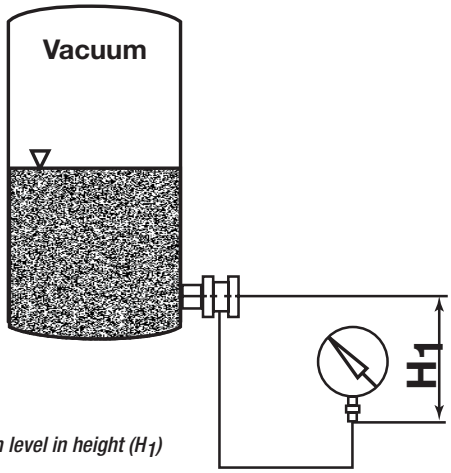
Example 3




Example 4




*Vacuum: fit the measuring instrument below the measuring point or on the seam level in height ($H_1$)*

- Fit the capillary so that it is not subject to vibration.
- Height differences between the pressure instrument and diaphragm seal

When installing the pressure instrument above the measuring point, the maximum difference in height must not exceed 22.75 ft for diaphragm seal measuring systems with silicone, glycerine or vegetable fluid filling (measurement H,).

If the fluid filling is an inert fluid (such as Halocarbon®), the maximum difference in height (H1) is 13ft (see examples 1 and 2).

The above maximum height differences only apply to applications measuring constant positive pressure. If a negative pressure can occur while measuring, the maximum heights must be adjusted based on the application parameters.

*Factory support is available for technical assistance in these cases.

- When measuring differential pressure, special care must be taken to reduce the influence of temperature. Both the High and Low sides should be installed such that the ambient temperature is equal on both sides

**4. General maintenance instructions**

Under normal circumstances the diaphragm seal measuring system requires no maintenance. However, if the pressure media is polluted, viscous or crystallizing, it may be necessary to clean the diaphragm from time to time.

Use only a soft brush and a suitable solvent to remove deposits from the diaphragm. Do not use aggressive cleaning agents. Caution: do not damage the diaphragm with sharp edged tools.

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