

Use Case



Utilizing Diaphragm Seals To Isolate Pressure Data Loggers

Overview



The use of a diaphragm seal to separate and protect a Track-It™ Pressure/Temperature Data Logger from the medium (liquid or gas) being measured.



Leading Industrial Applications:

- Water/Wastewater Treatment
- Chemical/Petrochemical/Oil & Gas
- Food and Beverage
- Pharma and Biotech

What are diaphragm seals?

The purpose of a diaphragm seal is to isolate a pressure measuring device (in this case, a Track-It Pressure/Temp. or Vacuum/Temp. Data Logger) from the media being processed in challenging environments where the process media should not come into contact with the pressurized parts of the logger, in order to protect and extend its life.

A diaphragm protected pressure gauge uses the deflection of a thin, flexible diaphragm element, to displace diaphragm seal transfer fluid into the pressure gauge. The components are assembled and vacuum filled with a transfer fluid such as silicone, and then calibrated together, in order to retain accurate pressure readings. The diaphragm isolates internal components from the media, making the logger suitable for use with corrosive and/or contaminated liquids or gases.

How to choose the right diaphragm seal configuration?

Not every pressure measurement application requires a diaphragm seal, but when conditions warrant, it's important to understand the environment.

What is the application?

- High-temperature media
- Suspended solids
- Viscous or crystallized media
- Corrosive media

With the application identified, there are other considerations:

Connection: threaded, in-line, flanged, or sanitary

Wetted material: such as 316L stainless steel, plastics, titanium, etc.

Additional transfer fluids: depending upon the application, transfer fluids such as silicone or FDA mineral oil, glycerine, etc. may be required

Maximum Allowable Working Pressure (MAWP): as diaphragm seals are designed to withstand MAWP

Add-ons: such as pressure snubbers, cooling elements, etc.

A properly specified assembly should be corrosion and clog-resistant, function reliably and most important read accurately.

— Colonial Instruments, Inc.

Case Study



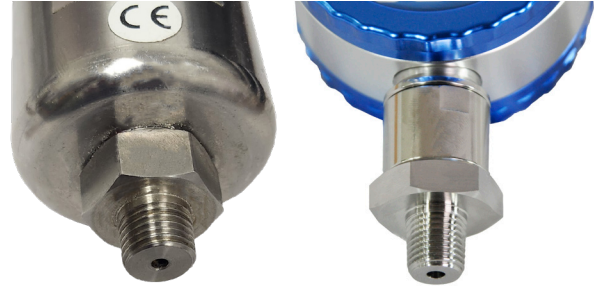
How to choose the right data logger for your pressure measuring application?

Again, not every pressure measurement application requires a diaphragm seal, but when conditions warrant, it's important to understand the environment.

Monarch Instrument data loggers have 1.5x/150% "over-range" pressure capacity. However, you should choose a pressure data logger that is closest to your application's pressure range and max pressure to ensure optimal accuracy of the pressure sensor (versus relying on the over range capacity).

The **Pressure sensor** is located in the nozzle port of the Logger.

The **Temperature sensor** is located inside the logger housing, therefore measurement is more ambient temperature versus media temperature.



Product Information

Monarch Instrument's [Track-It™ Pressure/Temperature](#) and [Vacuum/Temperature Data Loggers](#) (with Display and without) can be ordered with absolute or gauge sensors, or Torr for vacuum. The devices are battery-powered, stand-alone loggers that can record up to 130,000 (Display) or 64,000 (non-display) pressure/ambient temperature or vacuum/temperature samples for plotting, which can be easily configured using the included downloadable Track-It™ DataLogger Software. These data loggers are available in a wide variety of ranges, and all options are available with NIST Traceable Certification.

- PSIG (Gauge): 6 range options
- PSIA (Absolute): 9 range options
- Torr (Vacuum): 4 options

In addition, the Pressure/Temperature with Display unit now offers two methods to retrieve data:

- USB (direct communication)
- Bluetooth® Low Energy connectivity (wireless)

Collaboration

Since 1977, Monarch Instrument continues to make strides in instrumentation innovation as the world's largest supplier of rotational speed measuring instruments and stroboscopic inspection equipment. We are a proud U.S. manufacturer of tachometers, stroboscopes, speed sensors, data loggers, and data acquisition systems.

Monarch Instrument is an ISO9001:2015 certified facility.



COLONIAL INSTRUMENTS, INC. is a stocking wholesale distributor of pressure and temperature instruments. Colonial Instruments offers full service diaphragm seal filling and repair services and partners with Monarch Instrument as our subject matter experts for diaphragm seal applications.

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