

Diaphragm Seal Assembly Technical Brief

Causes of Slow Response Time

As a general rule of thumb, diaphragm seals slow the response time of whatever pressure instrument is mounted to them. In most instances the delayed response time is negligible; however the following factors are the most common contributors to noticeably slow response times:

- **Remote Mounting** – Increasing the distance between the diaphragm seal and the pressure instrument with capillary will increase the response time.
- **Low Pressure** – Low static or differential pressures could lead to slow response times, especially when the operating pressure is in the first third of the gauge’s measuring range.
- **High-viscosity Fill Fluid** - See the diaphragm seal fill fluid guide for fill fluid viscosity information. Higher viscosity fill fluids (such as Glycerin) will equate to slower response times.
- **Low Temperature** – Low ambient or process temperatures will increase the stated viscosity of the diaphragm seal fill fluid and increase response time.
- **Pulsation Protection** – The addition of a snubber, or REOTEMP’s custom PulsePlus+ mechanism, restricts the free flow of seal fill fluid and will slow down response times.
- **Mechanical Gauges vs. Transmitters** – Mechanical gauges with elastic movements will have slower response times than pressure transmitters. This is especially true with mechanical differential pressure gauges assembled with diaphragm seals.

When more than one of these factors is applicable, the pressure instrument could show extremely slow response to process pressures. This is not necessarily a sign of a malfunctioning system, but rather the physical reality of some diaphragm seal assemblies.

For further information or application questions please contact REOTEMP Instruments.