LOW VOLUME TEE FITTING FOR INSTRUMENT ASSEMBLIES

When attaching multiple instruments to a single diaphragm seal or isolation ring, Ashcroft engineers have optimized assemblies to provide the most robust and accurate instrumentation possible. To do so, assemblies are designed to minimize:

- Potential leak paths
- Overall weight of the assembly, with special attention to load-bearing points on an assembly
- The effects of pulsation, vibration, temperature fluctuations and everyday use
- Internal fill volume

To that end, Ashcroft provides instruments mounted on a “tee” fitting (see figure 1), rather than in a goal-post orientation. Doing so allows for weight to be better centered over the diaphragm seal connection port, minimizing the chances of damage during shipping or at a customer’s site. It also requires significantly less fill fluid to operate, improving an assembly’s thermal error.

To further improve the performance of these assemblies, Ashcroft has introduced new low volume fittings (see figure 2) for use in multiple-instrument assemblies. By minimizing the amount of pressure transmitting fluid inside of a seal assembly, the effect of temperature fluctuations on an assembly with multiple instruments is greatly reduced when compared to a goal post orientation (see figure 3).

Figure 1 Instrument Assembly with "tee" fitting
Switch set points are particularly susceptible to drift with changes in ambient temperature. Figure 4 below shows the effect of changing temperatures on the set point of an Ashcroft B-series switch when assembled to a 4” isolation ring with both a low-volume fitting and a goal-post fitting.

![Switch/Isolation Ring Set Point vs Temperature](image)

Figure 4- Switch/Isolation Ring Set Point vs Temperature

The red line (goal post fitting) shows a shift of about 0.39 psi per 10°F change in temperature, while the blue line shifts about 0.25 psi per 10°F, a 35% improvement. These changes may not seem like much, but when pumping equipment relies on pressure switches to prevent damaging or potentially unsafe process conditions, minimizing temperature error becomes critical.