

Mid-West[®] Instrument

Bulletin No. IIR/99

INSTRUMENT INSTALLATION RECOMMENDATIONS

1. Rapid pressurization can cause severe damage to the sensing element in all types of pressure Instruments. Modest quality instruments (± 2 to $\pm 5\%$ full scale accuracy) are usually unaffected by this type abuse because of their relatively simple design. More sophisticated instruments ($\pm 1\%$ full scale accuracy, or better) are quite likely to be damaged by rapid pressurization or over-range.

Rapid pressure change (either increase or decrease) can be described as a change in pressure occurring fast enough to drive an instrument full scale in less than one second.

Most better quality instruments have an over-range protection mechanism built into them, but since they are mechanical in design, they cannot be relied on to react in time to protect the instrument against such a rapid change in pressure. (This is one reason rupture disks, in addition to pressure relief valves, are required on some pressure vessels.)

The simplest method of avoiding this problem (for differential pressure instruments) is by installation and proper use of a three or five valve remote mount manifold. Opening the equalizer valve, prior to opening one or both of the block valves, will tend to insure that pressure is applied simultaneously to both sides of the sensing element.

If proper use of a manifold cannot be counted on, the most foolproof protection can be provided by installation of Mid-West Model 150 "vari-damp" snubbers to both sides of the instrument. Unlike other snubbers (pulsation dampeners), this unit provides an infinitely adjustable choke valve and an excess flow ball check. The excess flow ball check is designed in such a manner that it does not shut off completely but will react immediately to any sudden change in pressure while very slowly bleeding pressure to the instrument. This prevents sudden pressure surges from being transmitted directly to the instrument.

2. Whenever possible, instruments should be located at a higher elevation than the process connections on the equipment or process device on which they are being installed. When trouble is encountered, it is often found that the instrument has been installed at an elevation below the process connections, allowing particulate matter to flow by gravity into the instrument, resulting in erratic performance or complete malfunction. If for viewing properties or other reasons, the above-recommended location is impractical, there is an alternative procedure. Provide either a "pigtail" loop or a "dropleg" (u-tube manometer configuration) in the tubing between the instrument and the process connections. Since most instruments do not have flow through them, such an installation practice will insure that solids will not be moved by gravitational force into the instrument.

Following these two recommended installation practices should insure trouble free start up and long service life for your instruments.

If you should have any questions regarding these recommended procedures, please contact the local Mid-West Instrument representative in your area or one of our customer service representatives at our factory in Sterling Heights, Michigan, U.S.A.