Specifications for the Liquid Pipeline Expansion Chamber Assembly

LIQUID PIPELINE EXPANSION PROTECTION SYSTEM
TO BE USED WITH VAPORIZER SYSTEMS

1.01 GENERAL

1.01.1 Completeness
The system shall be complete with all components, equipment, and appurtenances.

1.01.2 Quality Assurance
All materials and components shall be new and unused of first quality by well-known manufacturers. Inferior materials or components shall not be allowed.

1.02 MANUFACTURER
The manufacturer shall be Hydro Instruments, Telford, PA, USA or a Hydro Instruments approved equivalent.

1.03 LIQUID PIPELINE EXPANSION CHAMBER ASSEMBLY

1.03.1 General
1. The function of this assembly is to prevent the liquid process pipeline pressure from exceeding safe limits and provide an alarm signal in the event that safe pressure limits have been exceeded. This assembly is designed to be mounted on the liquid process pipeline on every section of pipe that can be sealed off in the event of valve closures.
2. The system will be comprised of a rupture disc and holder, DOT certified expansion chamber, a diaphragm protected pressure switch, and all necessary piping and fittings.
3. All piping shall be of seamless carbon steel schedule 80 construction, and fittings shall be 3000 pound forged steel A-105.
4. The rupture disc and holder shall be mounted vertically in line with the pressure switch and expansion chamber, through a T-fitting off the main liquid supply line.
5. The expansion chamber shall be mounted vertically, directly in line with the protected side of the rupture disc.
6. Due to the weight of the expansion chamber it must be supported by means other than the service piping.
7. A Tee-fitting and a 90° elbow shall be used to mount the pressure switch vertically in parallel with the expansion chamber on the protected side of the rupture disc. The pressure switch must not be mounted directly in line with the rupture disc. Doing so could result in damage to the tantalum protection diaphragm on the switch.

1.03.2 Rupture Disc and Approved holder
1. The rupture disc shall be housed in an ASME certified union-type rupture disc holder with a max rating of no less than 3000 psi, and 1” FNPT connections on both ends.
2. The rupture disc shall be an ASME certified silver pre-bulged disc with a Monel vacuum support, Monel top cover, and PTFE coating.
3. The rupture disc shall have a burst pressure of 400 psig at 72 °F (+8%/-4%).

1.03.3 Diaphragm Protected Pressure Switch
1. The pressure switch shall be used to provide an alarm contact signal in the event that the disc should rupture.
2. The assembly shall have a Tantalum diaphragm protector with adjustable pressure switch, having a switch setting range of 25-65 psig, overpressure rated to 600 psig, and a proof pressure rated to 1,000 psig.

1.03.4 Expansion Chamber
1. Two expansion chamber sizes are available; a 660 in³ chamber for liquid supply systems with less than 350 feet of 1” pipe (622 feet of ¾” pipe), and a 995 in³ chamber for liquid supply systems with up to 527 feet of 1” pipe (938 feet of ¾” pipe).
2. The expansion chamber shall be DOT3AA2015 rated ASTM A519 grade seamless carbon steel, with a maximum service pressure of at least 2,000 psig.