Basic Types of Metal Expansion Joints | 1

Much like elastomeric expansion joints, metal expansion joints are used to preserve the integrity of a piping system where the piping is subject to changes in temperature, pressure, vibration, compression, extension, cyclical movements or movements required by usage.

Oftentimes, metal expansion joints are used when an elastomeric joint simply cannot handle the extreme conditions – generally high temperature, large temperature range, or high pressure exists in your application. Generally, metal expansion joints can be used from -450°F to +2000°F, depending on the metallurgy, and can also handle pressures from full vacuum to 3,000psi.

Metal Expansion Joints

Though customized and intricate metal expansion joints can be manufactured for a variety of specialized applications, there are four basic designs that are most commonly used. Each is readily available in 15, 50, 150, and 300 psi design pressures and is manufactured from T321 or T316 stainless steel. Available sizes range from 2” – 30” nominal diameter.

Basic Bellows – A bellows can be supplied without end fittings for field installation. The skirt, or straight portion at each end of the bellows, can be sized to fit a flange or pipe. Skirt length can vary depending on your needs and should be specified when ordered.

Unrestrained Single – An unrestrained single expansion joint is best used by piping systems which are equipped with proper guides and anchors to absorb axial, angular, and a small amount of lateral movement.
**Limit Single** - A limit single expansion joint is best used when main anchors and guides are in the pipeline. While some axial movement and lateral movement are acceptable, the hardware protects the expansion joint from exceeding its design movements.

**Tied Single** - A tied single expansion joint is best used in piping systems without a main anchor. It allows for lateral movement only while also restraining pressure thrust.

Gallagher Fluid Seals is a distributor for [Hose Master](https://www.hosemaster.com), North America’s leading manufacturer of metal hose and expansion joints. With 80+ [ASME IX Certified](https://www.asme.org) welders, Hose Master provides exceptional service the industry demands. [Contact us](mailto:info@hosemaster.com) for more information, or to discuss an application.