

Rubber Expansion Joint

1. Function of Rubber Expansion Joint

Product Definition

Rubber expansion joints have been specified and used for many years by consulting engineers, mechanical contractors, pressure vessel designers, plant engineers and turn-key construction firms. They are installed to accommodate movement in piping runs, protect piping from expansion and contraction and insure efficient and economical on-stream operations. Rubber expansion joints provide time-tested ways to accommodate pressure loads, relieve movement stresses, reduce noise, isolate vibration, compensate for misalignment after plants go on stream and prolong the life of motive equipment. Rubber expansion joints, designed by engineers and fabricated by skilled craftsmen, are used in all systems conveying fluids under pressure and/or vacuum at various temperatures:

- Air Conditioning, heating and ventilating systems in commercial and institutional buildings, school, apartments, stores, hospitals, motels, hotels and aboard ships.*
- Central and ancillary power-generating stations in communities, factories, buildings and aboard ships.
- Sewage disposal and water-treatment plants.
- Process piping in paper and pulp, chemical, primary metal and petroleum refining plants.

A rubber expansion joint is a flexible connector fabricated of natural or synthetic elastomers and fabrics and, if necessary, metallic reinforcements to provide stress relief in piping systems due to thermal and mechanical vibration and/or movements. Noteworthy performance features include flexibility and concurrent movements in either single or multiple arch type construction, isolation of vibration and noise resistance to abrasion and chemical erosion.

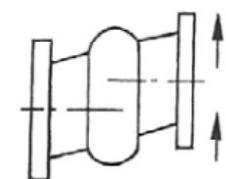
Functions

Engineers can solve anticipated problems of vibration, noise, shock, corrosion, abrasion, stresses and space by incorporating rubber expansion joints into designed piping systems.

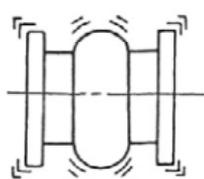
1. Reduce Vibration. Rubber expansion joints isolate or reduce vibration caused by equipment. Some equipment requires more vibration control than others. Reciprocating pumps and compressors, for example, generate greater unbalanced forces than centrifugal equipment. However, rubber pipe and expansion joints dampen undesirable disturbances including harmonic overtones and vibrations caused by centrifugal pump and fan blade frequency. This is based on actual tests conducted by a nationally recognized independent testing laboratory. Rubber expansion joints reduce transmission of vibration and protect equipment from the adverse effects of vibration.

2. Dampen Sound Transmission. Subsequent to going on stream, normal wear, corrosion, abrasion and erosion eventually bring about imbalance in motive equipment, generating undesirable noises transmitted to occupied areas. Rubber expansion joints tend to dampen transmission of sound because of the steel rubber interface of joints and mating flanges. Thick-wall rubber expansion joints, compared with their metallic counterparts, reduce considerably the transmission of sound.

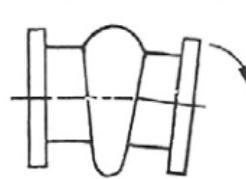
3. Compensate Lateral, Torsional and Angular Movements. Pumps, compressors, fans, piping and related equipment move out of alignment due to wear, load stresses, relaxation and setting of supporting foundations. Rubber expansion joints compensate for lateral, torsional and angular movements -preventing damage and undue downtime of plant operations.



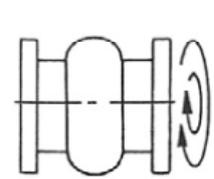
Lateral Movement



Absorbing Vibration

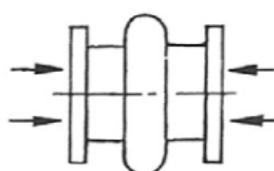


Angular Movement

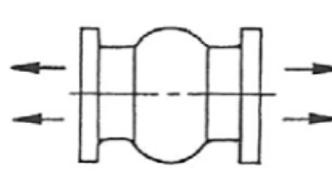


Torsional Movement

4. Compensate Axial Movements. Expansion and contraction movements due to thermal changes or hydraulic surge effects are compensated for with strategically located rubber expansion joints. They act as helix springs, compensating for axial movement. See



Axial Compression



Axial Elongation