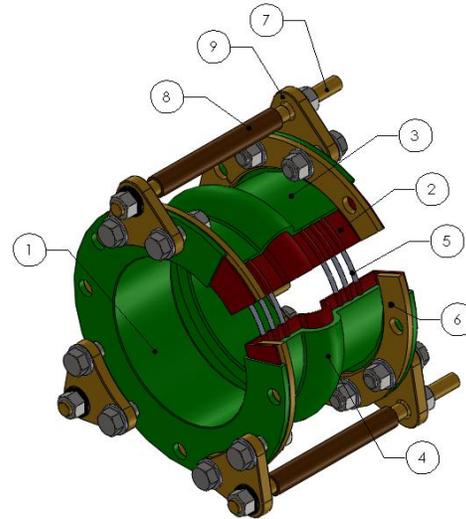


Holz Rubber Company Inc. Elastomeric Expansion Joint

Definition: 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.

- Functions:**
- A) Compensates axial movements.
 - B) Compensates lateral, torsional and angular movements.
 - C) Dampen sound transmission.
 - D) Reduces vibration.

- Advantages:**
- A) Minimal face to face dimensions.
 - B) Lightweight.
 - C) Low movement forces required.
 - D) Reduced fatigue factor.
 - E) Reduce heat loss.
 - F) Corrosion, erosion resistant.
 - G) No gasket required.
 - H) Acoustical impedance.
 - I) Greater shock resistance.



- Definitions:**
- ① **Tube:** Protective leak proof lining made of synthetic or natural rubber as service dictate.
 - ② **Carcass:** The body of the expansion joint consists of fabric and when necessary, metal reinforcement.
 - ③ **Cover:** The exterior surface of the joint formed from natural or synthetic rubber depending on service requirements.
 - ④ **Arch:** The portion of an expansion joint which accommodate the movement of the joint.
 - ⑤ **Metal Reinforcement:** Wire or solid steel rings imbedded in the carcass used to strengthen the joint.
 - ⑥ **Retaining Rings:** Must be used to distribute the bolting load and assure a tight seal. They are installed directly against the back of the flanges of the joint and bolted through to the mating piping flange.
 - ⑦ **Control Rod:** An assembly of two or more control rods (also known as tie rods) placed across an expansion joint from flange to flange to minimize possible damage to the joint caused by excessive motion of the pipeline.
 - ⑧ **Compression sleeve:** Pipe sleeve installed over the control rod to prevent excessive compression in the expansion joint.
 - ⑨ **Ears:** Also known as Gussets are used to connect the control rod to the expansion joints mating flanges.

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Movements:

Axial Elongation: The dimensional increase or lengthening of face to face parallel length of the joint measured along the longitudinal axis.

Axial Compression: The dimensional reduction or shortening of the face to face parallel length of the joint measured along the longitudinal axis.

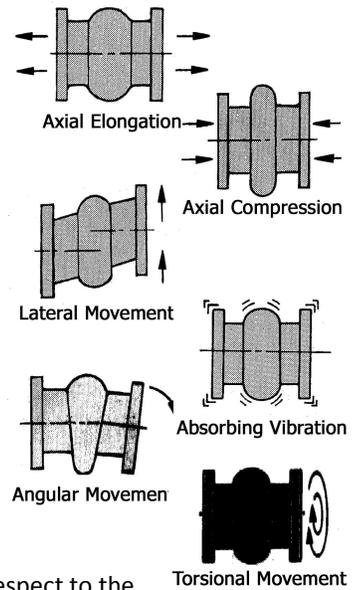
Lateral or Transverse movement: The movement or relating displacement of the two ends of the joint perpendicular to its longitudinal axis.

Vibration: The ability of a flexible connector to absorb mechanical oscillations in the system, usually high frequency.

Angular Movement: The displacement of the longitudinal axis of the expansion joint from its initial straight line position. This is a combination of axial elongation and axial compression.

Torsional Movement: The twisting of one end of the expansion joint with respect to the other end about its longitudinal axis.

Concurrent Movements: The combination of two or more of the above expansion joint movements. This value is expressed as the Resultant Movement.



Common Terminology:

ASTM: The American Society of Testing Materials.

Hydrostatic Test: If required, joints can be hydrostatic tested to 1-1/2 time the maximum allowable working pressure of the product, usually for 10 minutes.

PSIG: Pounds per square inch gauge.

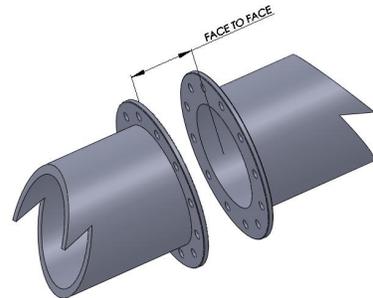


Vacuum: Most refer to the height of a column of mercury-usually in. Hg



Cycle Life: One full movement cycle is when an expansion joint fully compresses from neutral position then moves to the position of maximum elongation and finally returns to neutral. Most common life cycle life is 50,000 cycles, consult with Manufacture.

Breach Opening: The distance from one flange to the other, or face/face.



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