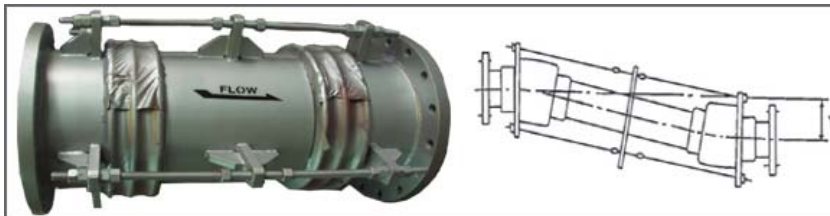


Metallic Expansion Joint

2. Universal Expansion Joint (PEM-UN/UT)

The universal expansion joint consists of two bellows connected by a center spool piece with flange, pipe ends and others. The universal expansion joint absorbs greater axial, lateral and angular movements than a single expansion joint. The amount of lateral deflection of the universal expansion joint is a function of the amount of angulation of each bellows and the distance between the bellows. If the bellows design is same condition, the amount of lateral deflection capability can be increased or decreased by simply changing the length of the center spool. If the universal expansion joints must accept greater movement, the overall length can be increased to suit.



The universal expansion joints can be supplied with or without tie rods. Tie rods connect the ends of the expansion joint to each other and resist the pressure thrust load.

The addition of tie rods to an universal expansion joint increase design flexibility in a piping system. The tie rods are attached to the pipe or flange with lugs that carry the pressure thrust of the system, eliminating the need for main anchors. The tied universal expansion joint can't absorb axial movement. Only lateral and angular movement can be absorbed with the tied universal expansion joint.

The thermal expansion of the distance between the tie rods will be controlled by the bellows element. The tie rods usually come in sets of two or more, equally distributed around the circumference of the expansion joint. When only two are provided, 180 degrees apart, the expansion joint is free to bend, or deflect angularly, as well as laterally. With three or more tie rods, since rods are loaded equally by the pressure thrust, only lateral deflections are possible without significant forces being applied by the adjacent piping. Without tie rods, the universal expansion joint will accept all of the movements that a single expansion joint will, and the pipe guiding and anchoring needs.

