APPLICATIONS FOR LATERAL MOVEMENT

SINGLE EXPANSION JOINT

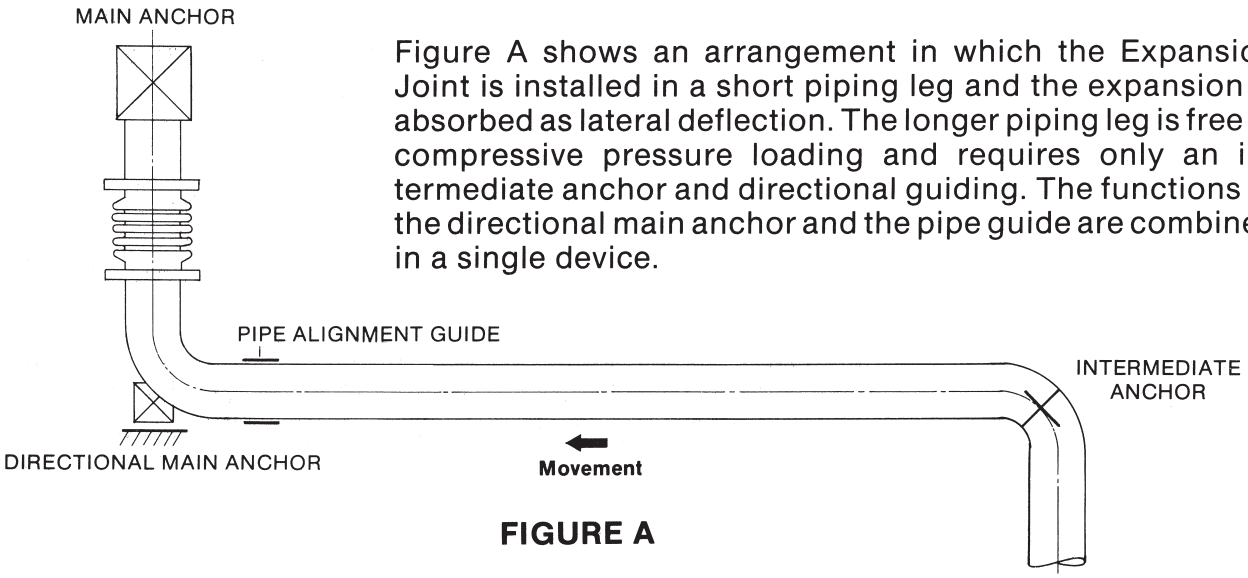


Figure A shows an arrangement in which the Expansion Joint is installed in a short piping leg and the expansion is absorbed as lateral deflection. The longer piping leg is free of compressive pressure loading and requires only an intermediate anchor and directional guiding. The functions of the directional main anchor and the pipe guide are combined in a single device.

FIGURE A

A single expansion joint can absorb combined axial and lateral movements. The Expansion Joint is located at one end of the long piping run with main anchors at each end. Guides must be properly spaced to provide for both movement control and protection of the piping against buckling.

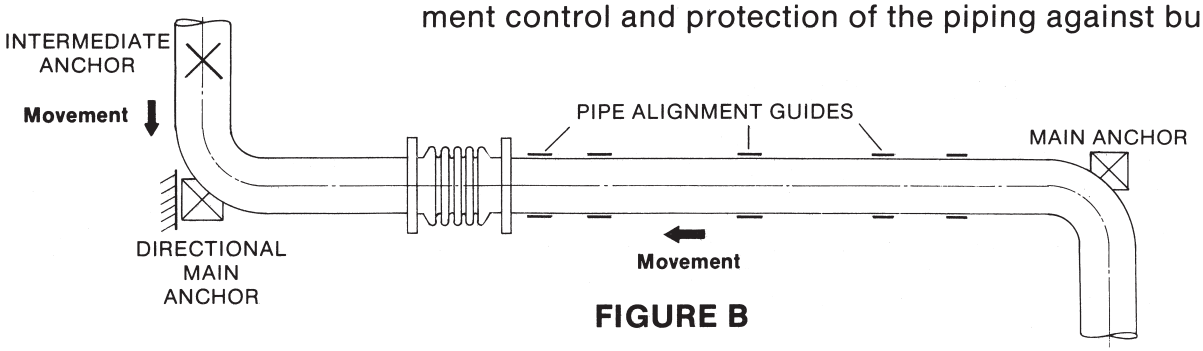


FIGURE B

The anchor at the left (Figure B) is a directional main anchor which absorbs the main load in the direction of the Expansion Joint axis and permits the growth of the short piping leg to act upon the Expansion Joint as lateral deflection. Because the main anchor loading exists only in the piping segment containing the Expansion Joint, the anchor at the end of the shorter piping leg is an intermediate anchor.

APPLICATIONS FOR LATERAL MOVEMENT, CONTINUED

When the piping configuration permits, the use of tie rods adjusted to prevent axial movement simplifies and reduces the cost of the installation (See Figure C).

Consequently, the growth of the longer pipe is absorbed by the tied Expansion Joint as lateral movement. This arrangement eliminates the need for main anchors.

Appreciable lateral deflection causes shortening of the Expansion Joint resulting from the lateral displacement of the tie rods. The piping should be flexible enough to absorb this deflection.

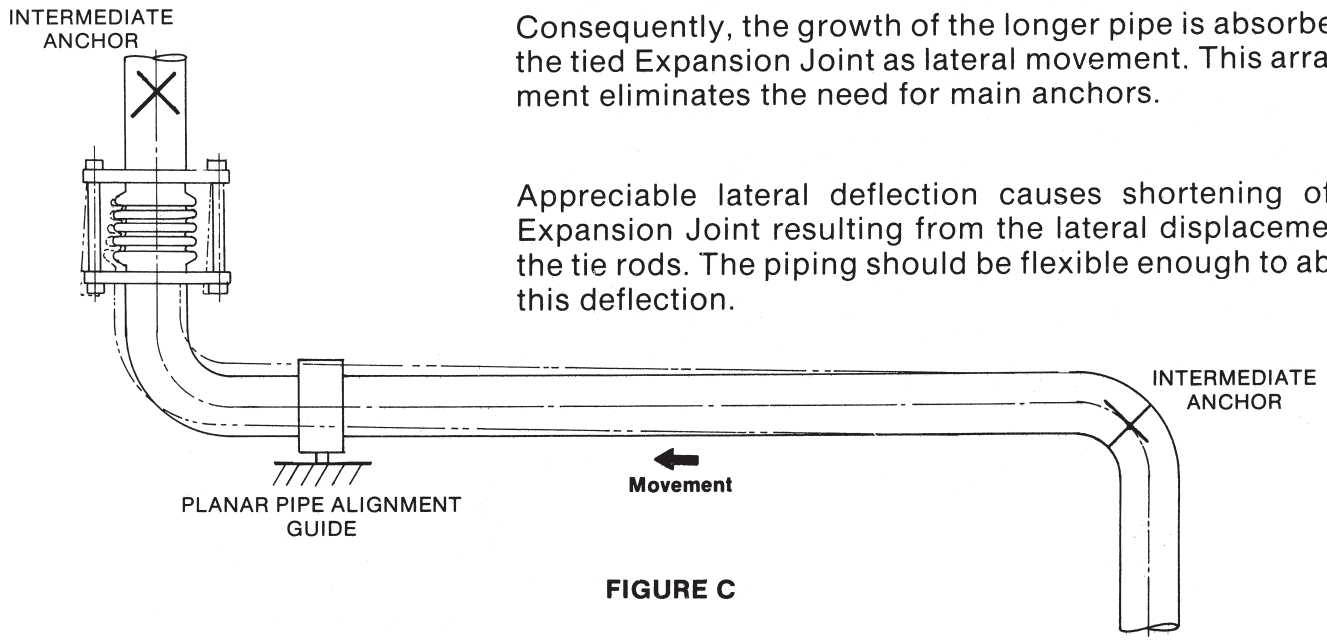


FIGURE C

UNIVERSAL EXPANSION JOINT

Where large amounts of lateral movement are encountered, a Universal Expansion Joint should be used (See Figure D on Page 35).

If necessary, the Expansion Joint should be designed to fill the entire piping leg so its expansion is absorbed within the tie rods as axial movement. The movement of the horizontal line is absorbed as lateral deflection by the Universal Expansion Joint.

Only intermediate anchors are required since the pressure loading is absorbed by the tie rods. However, directional piping guides must be provided.

WHERE A UNIVERSAL EXPANSION JOINT MUST ABSORB AXIAL MOVEMENT OTHER THAN ITS OWN THERMAL GROWTH, IT CANNOT FUNCTION AS A TIED EXPANSION JOINT AND MUST BE USED IN COMBINATION WITH MAIN ANCHORS TO ABSORB PRESSURE LOADING.

UNIVERSAL EXPANSION JOINT, CONTINUED

As a direct result of increasingly high operating pressures and temperatures, and lighter building construction methods, universal Expansion Joints are finding increasing use in steam and hot water distribution systems where, due to their ability to absorb large amounts of movement with minimum guiding and anchoring, they offer impressive savings in overall cost.

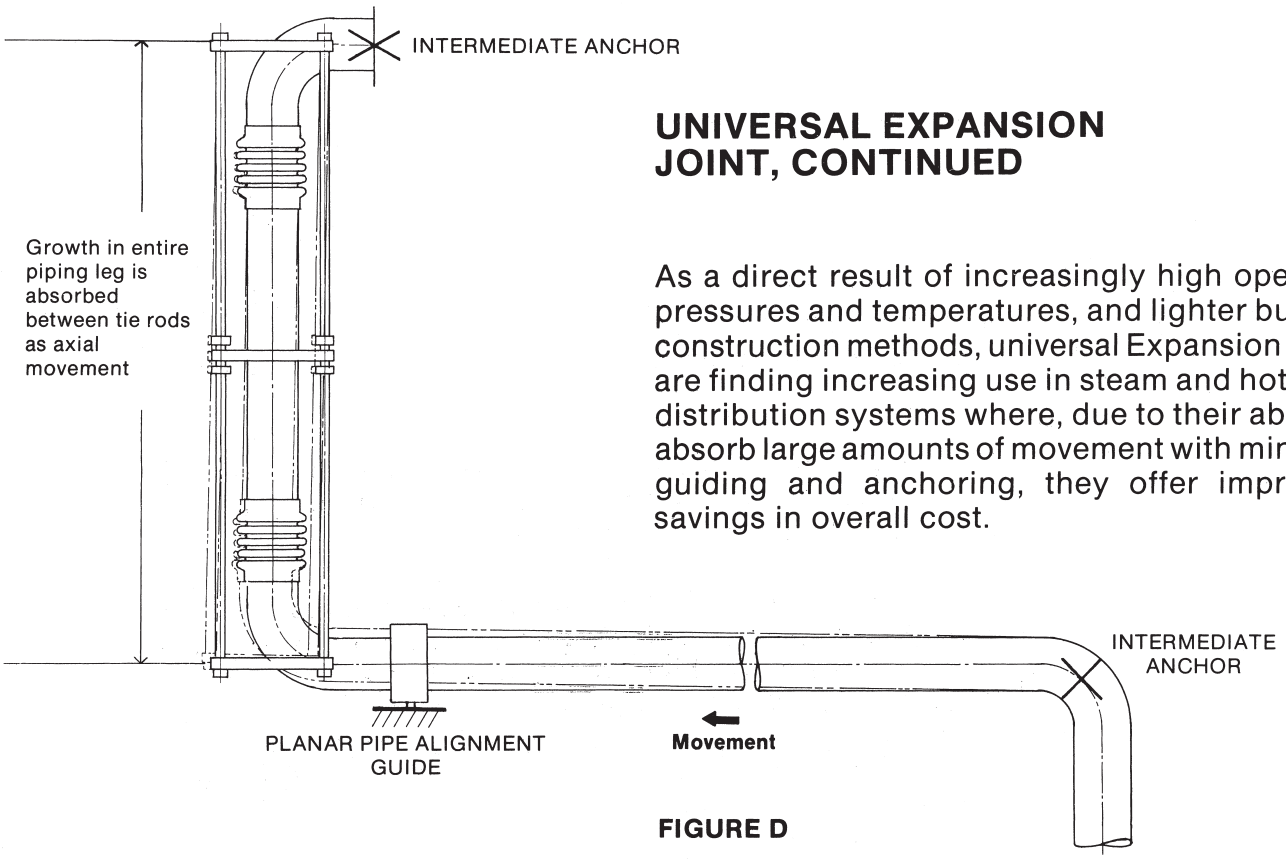
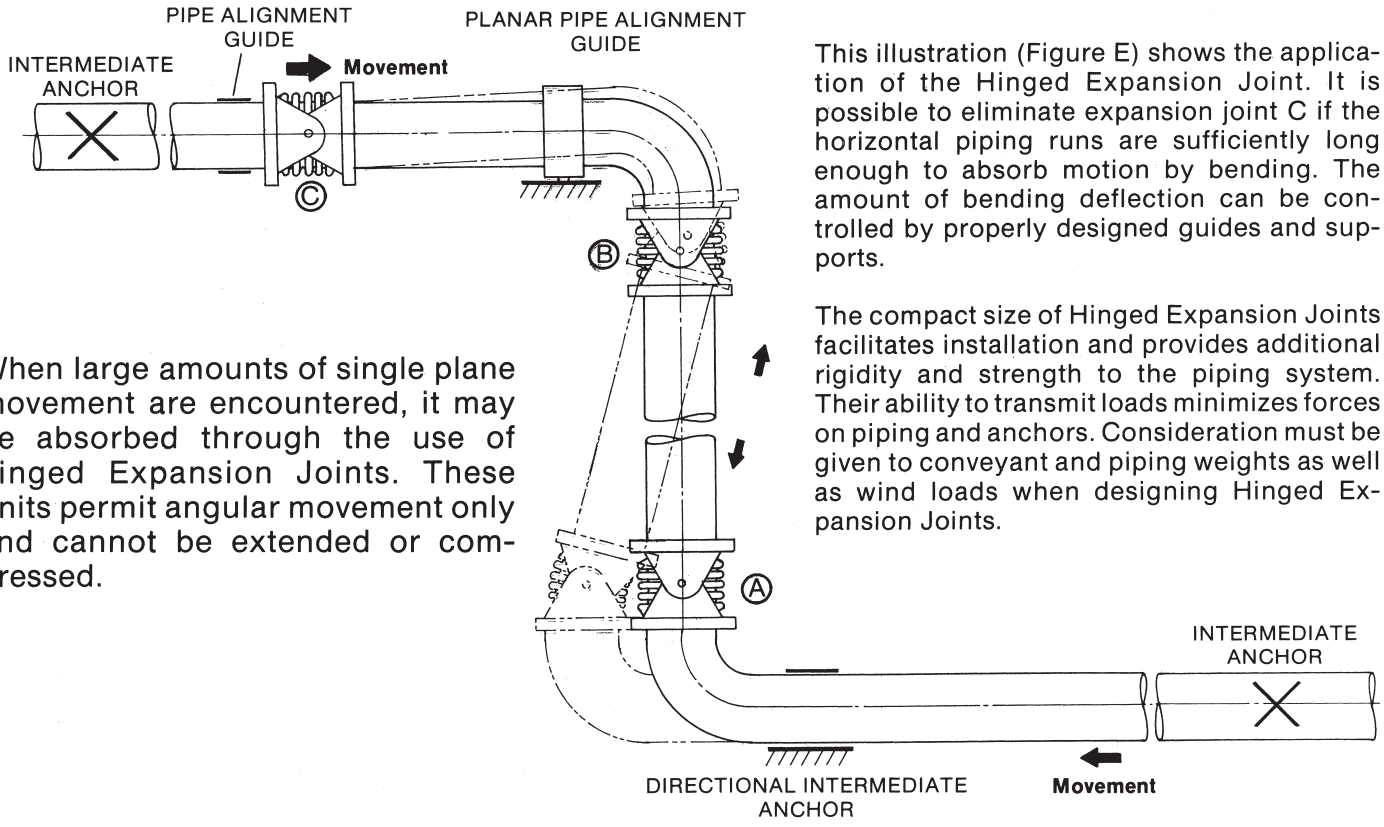


FIGURE D

APPLICATIONS FOR ANGULAR MOVEMENT

When large amounts of single plane movement are encountered, it may be absorbed through the use of hinged Expansion Joints. These units permit angular movement only and cannot be extended or compressed.



This illustration (Figure E) shows the application of the Hinged Expansion Joint. It is possible to eliminate expansion joint C if the horizontal piping runs are sufficiently long enough to absorb motion by bending. The amount of bending deflection can be controlled by properly designed guides and supports.

The compact size of Hinged Expansion Joints facilitates installation and provides additional rigidity and strength to the piping system. Their ability to transmit loads minimizes forces on piping and anchors. Consideration must be given to conveyant and piping weights as well as wind loads when designing Hinged Expansion Joints.

FIGURE E