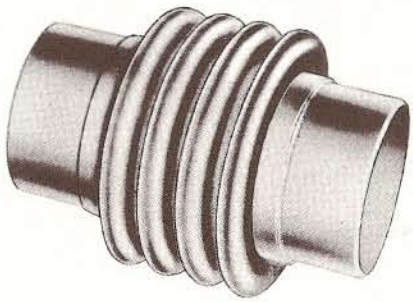
TYPES OF

Corrugated packless

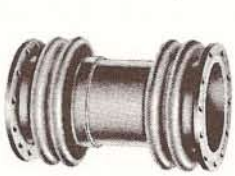
EXPANSION JOINTS

Free-flexing

WITH FLANGES



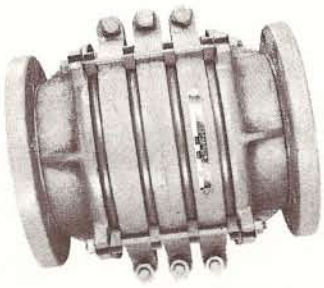
WITH WELDING ENDS



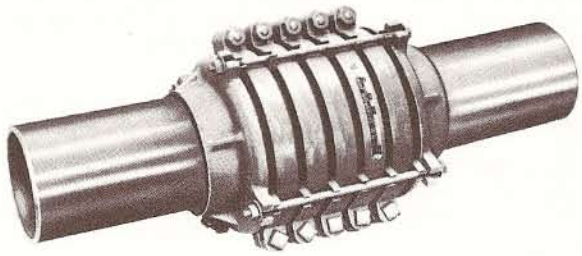
DUAL

PRESSURE
BALCONED

Controlled-flexing



WITH FLANGES



WITH WELDING ENDS

DUAL

SOUTHEASTERN HOSE, INC.
ATLANTA, GEORGIA 30318

WHY AN EXPANSION JOINT WORKS . . .

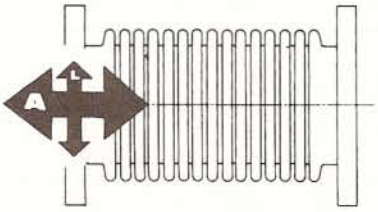
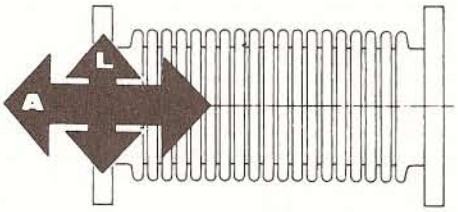
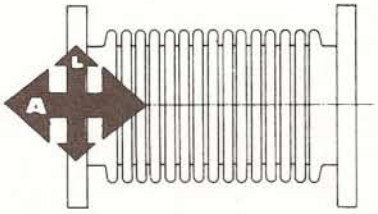
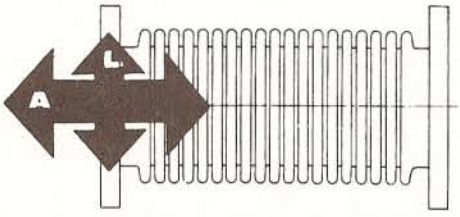
SOUTHEASTERN ratings have been established to produce a satisfactory cycle life for the Expansion Joint. Expansion Joint bellows are capable of movement in an axial, angular or lateral direction. These motions are possible because of the ability of the convolution sidewall to deflect under load. The cycle life of any bellows is directly affected by the magnitude of the deflection.

BASIC TERMINOLOGY

- **ANGULAR ROTATION**
  The displacement of the longitudinal axis of the Expansion Joint from its initial straight line position into a circular arc. Angular rotation is occasionally referred to as "rotational movement". This is not torsional rotation.
- **AXIAL COMPRESSION**
  The dimensional shortening of an Expansion Joint along its longitudinal axis. Axial compression has been referred to as axial movement, traverse, compression, etc.
- **AXIAL EXTENSION**
  The dimensional lengthening of an Expansion Joint along its longitudinal axis. Axial extension has been referred to as axial movement, traverse, elongation or extension.
- **BELLOWS**
  The flexible element of an Expansion Joint, consisting of one or more convolutions and the end tangents, if any.
- **COMBINED MOVEMENTS**
  Both axial and lateral movements absorbed by the same Expansion Joint.
- **CYCLE**
  One complete movement of an Expansion Joint from initial to extreme position and return.
- **CYCLE LIFE**
  Total number of cycles an Expansion Joint will absorb at rated movement.
- **DEFLECTION FORCE**
  Amount of force required to cause movement in an Expansion Joint.
- **EXTERNAL COVER**
  A device used to protect the exterior surface of the bellows of an Expansion Joint from foreign objects or mechanical damage.
- **FITTINGS**
  Welding nipples, fixed flanges or floating flanges attached to the ends of the bellows section.
- **INTERNAL SLEEVE**
  A device which minimizes contact between the inner surface of the bellows of an Expansion Joint and the fluid flowing through it.
- **LATERAL DEFLECTION**
  The relative displacement of the two ends of an Expansion Joint perpendicular to its longitudinal axis. This has been referred to as lateral offset, lateral movement, parallel misalignment, direct shear, transverse movement, etc.
- **MAXIMUM TEST PRESSURE**
  Highest permissible pressure which can be exerted on an Expansion Joint without causing objectionable deformation.
- **MAXIMUM WORKING PRESSURE**
  Greatest pressure which can be exerted on the Joint during operation.
- **MOVEMENT**
  The dimensional changes which the Expansion Joint is required to absorb, such as those resulting from thermal expansion or contraction.
- **PIPE ALIGNMENT GUIDE**
  A pipe alignment guide is a form of sleeve or framework fastened to some rigid part of the installation which permits the pipe line to move freely only along the axis of the pipe.
- **PIPE ANCHOR**
  Device used to firmly fix the location of a point in the piping system. No movement should occur at the anchor point.
- **PURGE CONNECTIONS**
  Purge connections, where required are usually installed at the sealed end of each internal sleeve of an Expansion Joint for the purpose of injecting a liquid or gas between the bellows and the internal sleeve to keep the area clear of errosive and corrosive media and/or solids that could pack the convolutions.
- **RATED MOVEMENT**
  Rated movement is the maximum amount of movement (axial compression, lateral deflection, angular rotation, or any combination thereof) which an Expansion Joint is capable of absorbing.
- **SHIPPING RODS**
  Temporary supporting members attached to the fittings of an Expansion Joint to prevent movement of the joint and retain dimensional stability during shipping, handling and installation.
- **SPRING RATE**
  Force required to extend or compress one convolution one inch.
- **THRUST AREA**
  Area over which the effects of pressure in an Expansion Joint will produce a longitudinal force in the piping system.
- **TIE RODS**
  Rods or bar devices for the purpose of restraining the Expansion Joint from the thrust due to internal pressure acting on the thrust area of the Expansion Joint, plus other specified forces.
- **TORSIONAL ROTATION**
  The twisting of one end of the Expansion Joint with respect to the other end about its longitudinal axis. This twisting produces extremely high membrane stresses in the bellows. For this reason, Expansion Joints must not be used to absorb tortional rotation.

GENERAL INFORMATION

E AND M EXPANSION JOINTS .

TYPE	MOVEMENT	
SINGLE SHORT **ES**	Small amount of axial "A", slight amount of lateral "L" or a combination of both movements.	
SINGLE LONG **EL**	Large amount of axial "A" (full rated amount in compression and up to ¼" in extension), small amount of lateral "L" or a combination of both movements.	
SINGLE SHORT **MS**	Small amount of axial "A", slight amount of lateral "L" or a combination of both movements.	
SINGLE LONG **ML**	Large amount of axial "A" (full rated amount in compression and up to ¼" in extension), small amount of lateral "L" or a combination of both movements.	

SOUTHEASTERN HOSE, INC.
ATLANTA, GEORGIA 30318

APPLICATIONS FOR AXIAL MOVEMENT

ABSORBING AXIAL MOVEMENT IN PIPING SYSTEMS

Component spacing is extremely important. Expansion Joints should be near anchors . . . alignment guide #1 near Expansion Joints . . . relationship of guide #2 to guide #1 and positioning of additional guides along pipe should be as shown in diagrams.

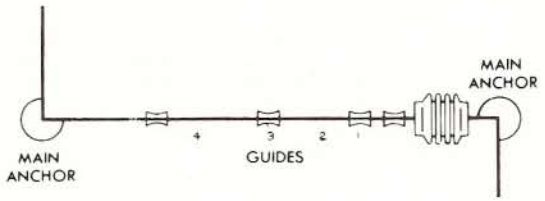


DIAGRAM #1 Single Expansion Joint used to absorb axial pipe line movement and positioned as shown between two main anchors.

DIAGRAM #2 Two Expansion Joints in longer pipe run than that shown in Diagram #1. Intermediate anchor between main anchors forms individual expanding and contracting sections. Expansion Joints are installed between intermediate and main anchors.

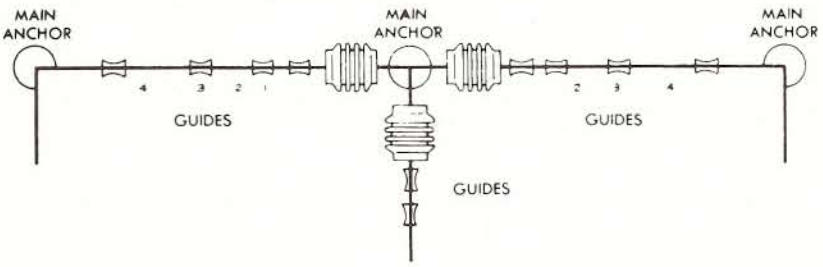


DIAGRAM #3 Expansion Joints, guides and anchors, absorbing movement in piping layout with branch connection. Anchor at the junction serves as a main anchor and is designed to resist thrust from the branch line Expansion Joint.

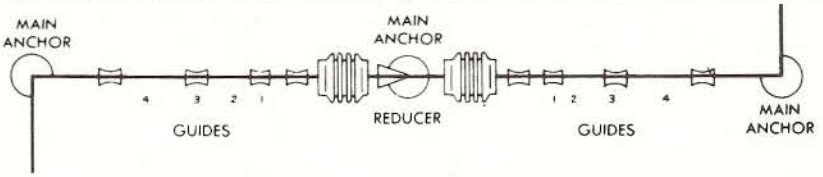
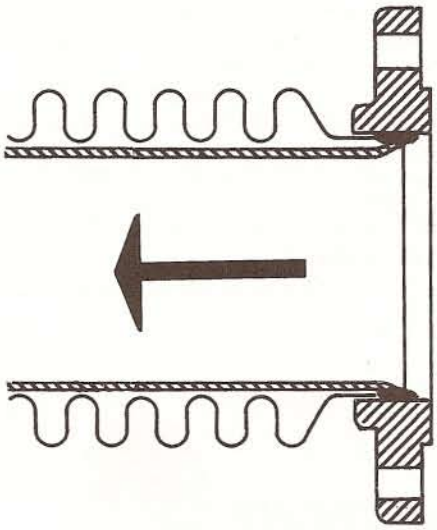


DIAGRAM #4 Expansion Joints, guides and anchors absorbing axial pipe line movement in a piping system having a reducer. One main anchor at reducer (center of diagram) is designed to resist the differential in the thrust of both expansion joints.

Pipe guides and anchors are essential to the proper functioning of expansion joints and are the responsibility of the piping designer. His knowledge of the total system will determine how many guides and anchors must be used and their locations.

PROTECTIVE SLEEVES FOR UNUSUAL CONDITIONS

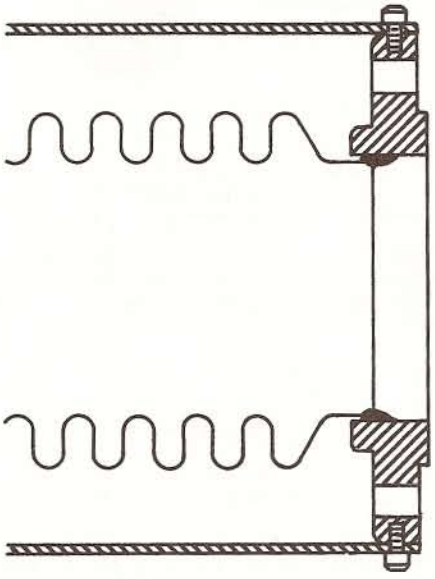
INTERNAL SLEEVES . . .



should be specified when abrasive material is being conveyed, when velocity of conveyed medium exceeds 180 F.P.S. and when pressure drop is an important factor.

Do not use internal sleeves for high-viscosity materials such as tar, syrup, etc., as such materials become trapped between sleeve and bellows and interfere with proper function of the Expansion Joint.

EXTERNAL SLEEVES . . .



should be considered if the unit is to be located where damage may occur. Expansion Joint performance is materially affected by dented or otherwise damaged bellows. In vertical installations, the sleeve should be attached at the upper end to prevent trapping of water, dirt or other foreign materials between it and the bellows.

If ordering a complete Non-Standard Unit with the Ordering Guide, submit details for all items which apply.