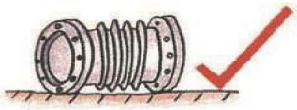
Handling Manual for Metal Expansion Joint

Guide for storage and installation

1) Inspect damage such as dent, burr, broken, etc.

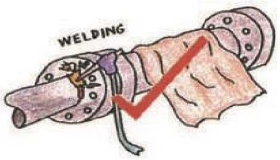
2) Store in the clean and dry area. Don't expose the joint in hazardous or corrosive environment.



3) Never use chains or other devices directly on the bellows.

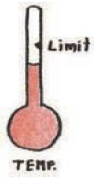
4) Don't use cleaning agents which contain chlorides.

5) Don't drop or strike Expansion Joint and beware bellows when you have welding process.



6) Don't force or rotate one end of an Expansion Joint for alignment of bolt holes because torsions may damage the joint.

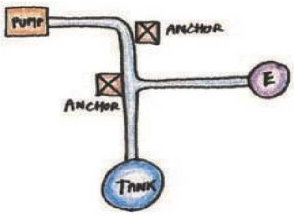
7) Check working pressure & working temperature do not exceed the limited.



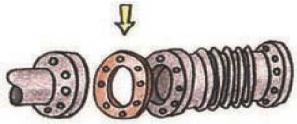
8) Check the corrective of flow direction (see arrow mark) 

with fluid flow.

9) Check for adequate anchor and guide support for the system.



10) Insert gasket between Expansion Joint and counter flange.



11) Remove shipping bar after installation completed.

Note : Don't use shipping bars to restrain the pressure thrust during testing.

Receiving Inspection

Upon receipt, identify and inspect the Expansion Joints for any damage that may have occurred in transit. We recommend that the Expansion Joints be stored in a safe area in its original packaging until ready for installation. Contact Tozen immediately if any repairs should be required.

Expansion Joint Installation

The bellows of an Expansion Joint is manufactured from relatively thin material in order to provide the flexibility needed to absorb the specified movement. The life of the Expansion Joint can be shortened if the unit is improperly handled and/or installed. This can arise from direct physical damage to the bellows through stresses imposed during installation, or by other factors. Therefore, some basic instructions must be followed having safe and proper installation of Expansion Joints.

Pipework system design

Tozen strongly recommends that you seek the advice of qualified Pipework engineer on your piping system and Expansion Joint selection. Pipework containing Expansion Joints requires careful anchoring and guiding for the Expansion Joint(s) to operate to their designed capacity.

Pipe anchors

The function of a pipe anchor is to divide the pipeline into individual expanding sections. Because thermal growth cannot be restrained, it becomes the functions of the anchors to limit and control the amount of movement which Expansion Joints located between these anchors will absorb. Sometimes equipment such as turbines, pump, compressors, heat exchanger, etc. may possibly act as anchors.

Pipe Guides

Correct alignment of the adjoining Pipework is essential in the proper functioning of an Expansion Joints. Pipe guides are necessary to ensure movement is directed onto the Expansion Joint and also to prevent buckling of the pipeline.

Installation Guidelines

1) Anchors, guides, and pipe supports must be installed in strict accordance with the piping system drawing. Any field variances from the planned installation may affect the proper functioning of the Expansion Joint.

2) No movement or stresses shall be imposed on Expansion Joint during installation. This may occur through pipe or flange bolt hole misalignment or due to mishandling. The pressure capacity, fatigue life, and stability of the bellow may be diminished, and unanticipated forces may be imposed on the adjacent pipework/or equipment.

3) Expansion Joints fitted with a flow liner shall be installed in accordance with the flow arrow given on the Expansion Joint.

4) Extreme care shall be taken during unloading and installation to prevent damage. In particular the bellows is readily prone to damage. Such damage may include dent, scores, arc strikes, and weld spatter, all of which may be detrimental to the proper functioning of the Expansion Joint. Protect the bellows with wet, chloride free, insulation blanket during welding installation.

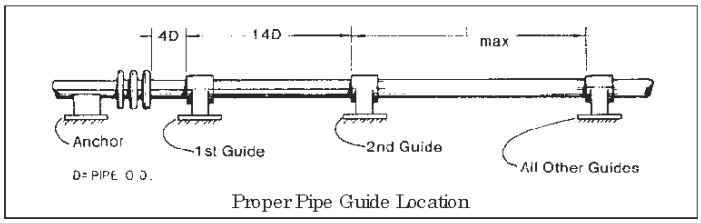
5) Shipping bars painted yellow, or shipping rods, must be removed from the Expansion Joint once it is correctly installed, and prior to hydrostatic testing of the system. This will allow the Expansion Joint to move as designed.

Warranty

Warranty is void if these instructions are not followed.

● Pipe Guide Application

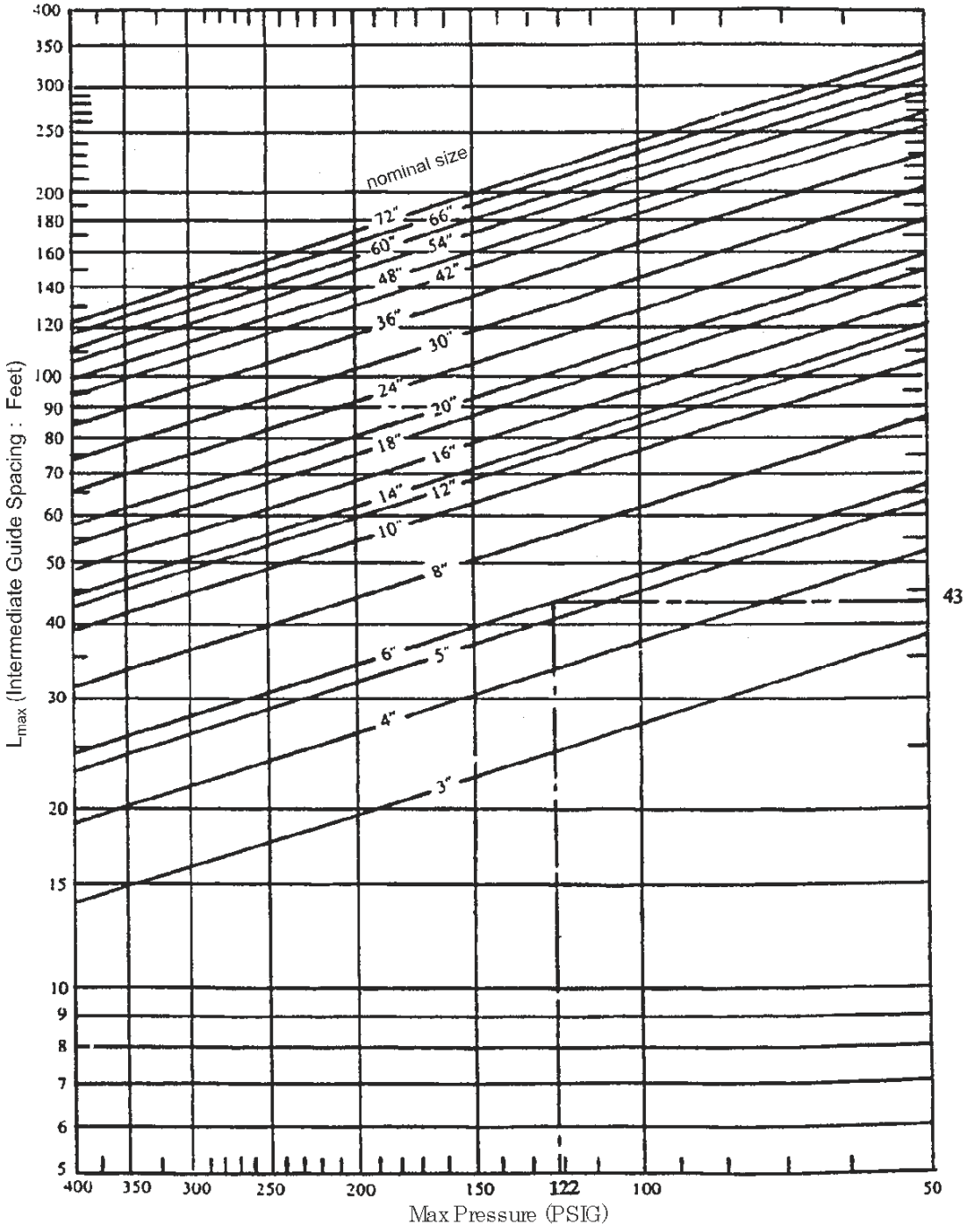
Generally recommended that the Expansion Joint is located near an anchor, and any other guides should determine the position like below figure.



Proper Pipe Guide Location

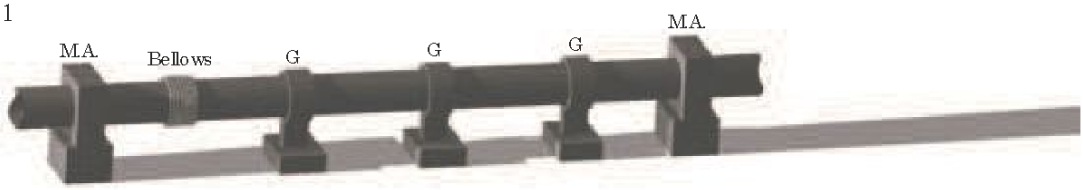
D = Nominal diameter of pipe

L_{max} = see below graph



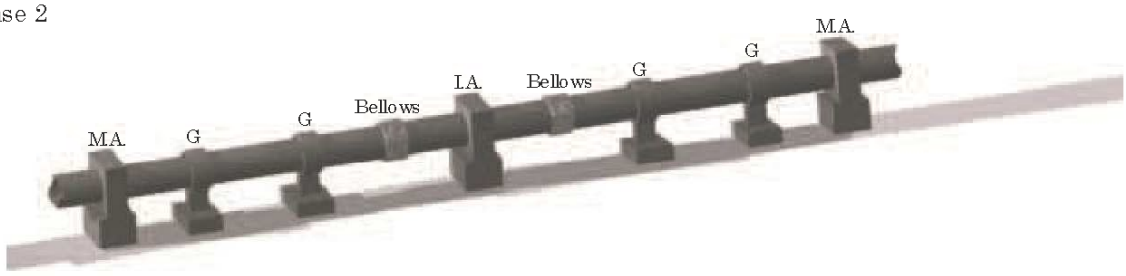
Case of Installation

Case 1



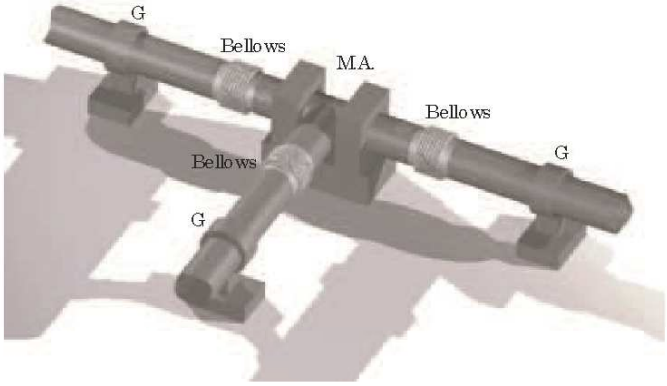
The basic form of single bellows Expansion Joint in a straight line piping between two Main Anchors (M.A.) with support Guides (G).

Case 2



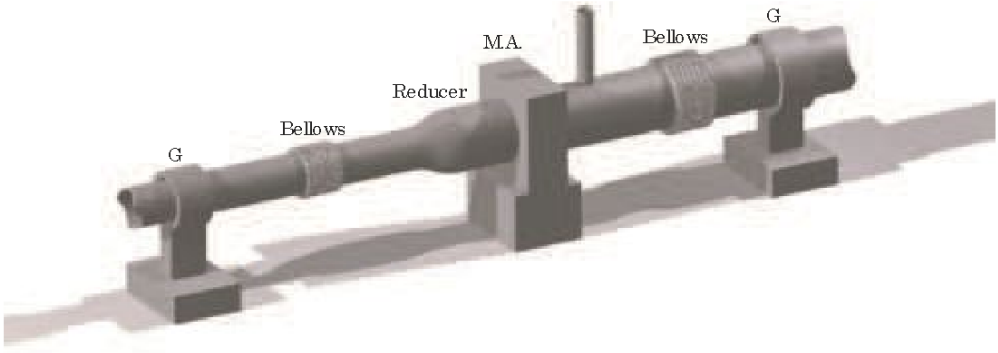
Universal or double bellow Expansion Joint in straight line piping between two Main Anchors and Intermediate Anchors (I.A.) at middle line with support Guides installed.

Case 3



Case of Installation : Expansion Joint at the entrance of a side branch piping.

Case 4



Case of Installation : Expansion Joint between two pipes of different sizes in straight line.