

Introduction

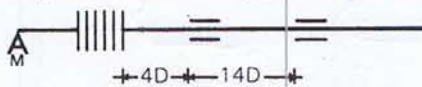
Expansion bellows, or compensators, as they are also known, should only be used when the pipe configuration does not permit natural flexibility, or over stressing, damage to the building structure, and leaks would occur. Where possible it is always advisable to use tied bellows/compensators of the articulated/lateral, angular, braided or gimbal type. These are all tied assemblies having contained internal pressure thrust and therefore require only a limited amount of guiding due to small anchor loads.

When there is no alternative to the use of axial expansion bellows due consideration must be given to anchor loads created plus a margin of safety and the correct alignment guides must be used. This is often a stumbling block for Designers, Engineers and installers.

SUPAFLEX objectives have been aimed at a co-ordination of expansion bellows, guides and anchors. Within this brochure we have endeavoured to show the type and number of guides required per piped service from a simple saddle guide to low friction reinforced PTFE insert guides for heavy pipework.

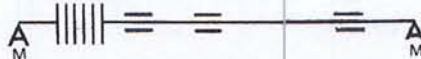
Spacing of Alignment Guides

MAXIMUM SPACING for the first two guides adjacent to the joint is as follows:

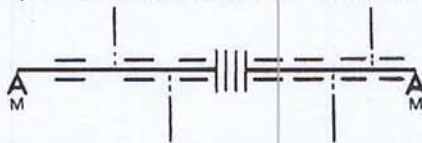


The first pipe guide must be located within a distance of four pipe diameters or 300 mm (12 in), whichever is the less. The second guide must be located within a distance of fourteen pipe diameters from the first pipe guide.

This graph gives the recommended maximum spacing of Intermediate Pipe Guides for applications involving AXIAL MOVEMENTS Expansion Joint lines ONLY.



When using a single AXIAL joint position the joint as near as possible to one of the anchors. This simplifies the guiding near the joint.



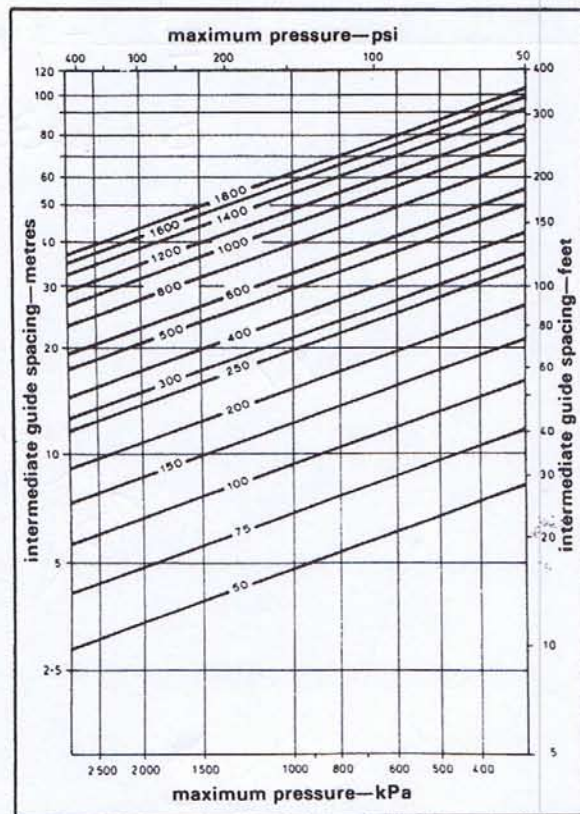
When using a single AXIAL joint in a pipe line with a number of small bore flexible branches, the AXIAL joint is placed in the centre of the pipe section so as to minimise the amount of flexing on each branch.

For copper pipework we recommend the spacing of intermediate guides to be 75% of the spacing shown in the graph for steel pipework.

Alignment

Proper guiding of the pipe is essential to insure straight axial movement of the pipe to the expansion joint. Misalignment may introduce such unusual stresses as to damage equipment. A pipe line should be considered

as a load bearing column and pipe alignment guides should be used accordingly to prevent bowing and bending. Pipe supports such as hangers, or chairs and rollers, are not considered to be pipe alignment guides.



Conversion Factors

Kg./cm ²	x 14.233	= p.s.i. x 0.0703= Kg./cm ²
bar.	x 14.52	= p.s.i. x 0.0685= bar.
N/mm ²	x 145.0	= p.s.i. x 0.0069= N/mm ²
KPa	x 0.145	= p.s.i. x 6.897 = kPa
Atmosphere	x 14.7	= p.s.i. x 0.068 = Atmos.
ft. head	x 0.4335	= p.s.i. x 2.307 = ft. head

Kg.	x 2.205	= lbs.	x 0.4535= Kgs.
mm	x 0.03937=	in.	x 25.4 = mm
Metre	x 3.281	= ft.	x 0.3048= cm ²
cm ²	x 0.155	= in ²	x 6.452 = cm ²
M ²	x 10.76	= ft ²	x 0.0929= M ²
Kg./cm ²	x 32.806	= ft. head	x 0.0305 = Kg./cm ²