



# liners for metal bellows sitcoflex and expansion joints

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## **description**

A sheet of metal rolled into a cylinder and seam welded using the GTAW (TIG) welding process. The cylinder is attached to the inside of a bellows element, so as to cover all the convolutions of the element, to improve the performance of the expansion joint where applicable.

## **purpose**

A liner used where it is necessary:

- to ensure smooth flow of the media
- to minimise friction losses
- to minimise resonant vibration caused by high flow velocities
- to reduce the effects of turbulent flow upstream of the expansion joint
- to prevent erosion of the bellows wall from chemical and abrasive attack
- to reduce the temperature of the bellows in high temperature applications

## **materials of construction**

The material of the internal liner is generally the same as for the bellows element it is to fit. The selection of the material is generally dependent upon the temperature and corrosion resistance requirements of the application. Typical materials include:

- Stainless Steel grades 304, 316, 321
- High Nickel Alloys eg. Incoloy, Inconel, Monel, 253MA, Hastelloy C (registered trade name), nickel.

## **flow velocities**

Internal liners are recommended when flow velocities exceed:

For air, steam and other gases

- up to 150mm dia      1.2 m/s
- over 150mm dia      7.6 m/s

For water and other liquids

- up to 150mm dia      500 mm/s
- over 150mm dia      3 m/s

## **bore size – standard**

The internal liner is generally sized to have a bore 10mm less diameter than the bellows element however if the joint is to be used for lateral movement or angular rotation, additional clearance will need to be allowed between the liner and the element to enable the element to move as required.