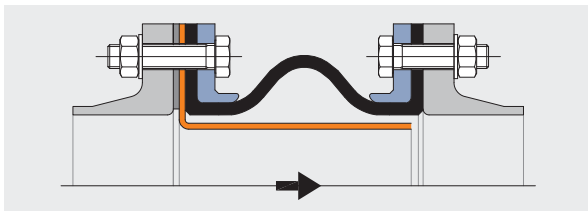


## Expansion joint technology > Flow liners

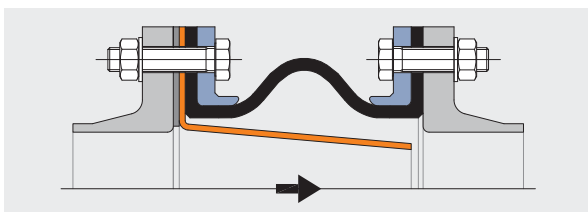
Rubber expansion joints have streamlined arch contours in order to reduce pressure drop (resistance coefficient), turbulence and flow losses. In most cases it is possible to use them without an additional flow liner. This is only needed for abrasive media and for flow speeds of more than 5 m/s. The expansion joint bellows should then be fully protected by the flow liner. The sleeve extends through the bore of the expansion joint with a full faced flange on one end. It is constructed of metal, fluoroplastic or GRP. It reduces frictional wear of the expansion joint and provides smooth flow, reducing turbulence. The lateral displacement needs to be taken into account in dimensioning the flow liner and can in some circumstances lead to severe narrowing of the pipeline cross-section. The medium's direction of flow must be taken into account during installation. To avoid deposits between the flow liner and the expansion joint,

the tube can be perforated multiple times around its circumference, so that the intermediate space is flushed out and no deposits are able to form in the dead spots. This type of sleeve should not be used where high viscosity fluids, such as tars, are being transmitted. These fluids may cause packing or caking of the open arch or arches, which reduces movements and in turn may cause premature expansion joint failures.

The flow liners are installed along with the expansion joint. An additional seal is required between the flow liner flange and the pipeline flange. This extra seal is workshop-side fixed on the flange of the flow liner already. Expansion joints with a full faced rubber flange need a flow liner flange with holes while for expansion joints with a sealing bead the flow liner flange can be centered with the screws.

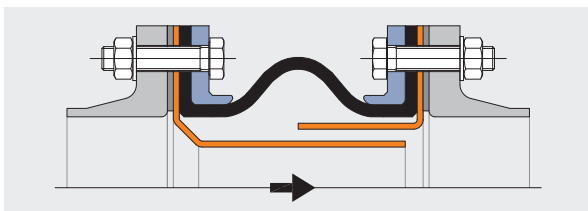


**Cylindrical flow liner**



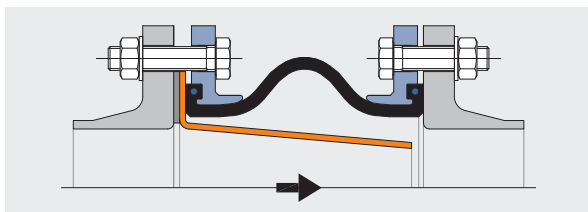
**Conical flow liner**

Streamlined



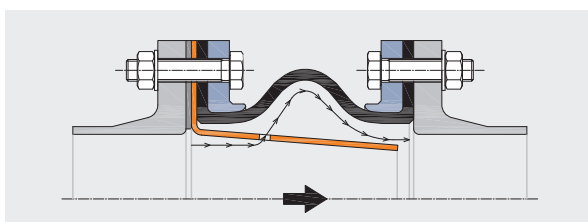
**Telescoping flow liner**

Complete bellows protection



**Flow liners with a centring flange**

For expansion joints with a sealing bulge



**Flow liners with flushing holes**

To avoid caking of medium between flow liner and bellow