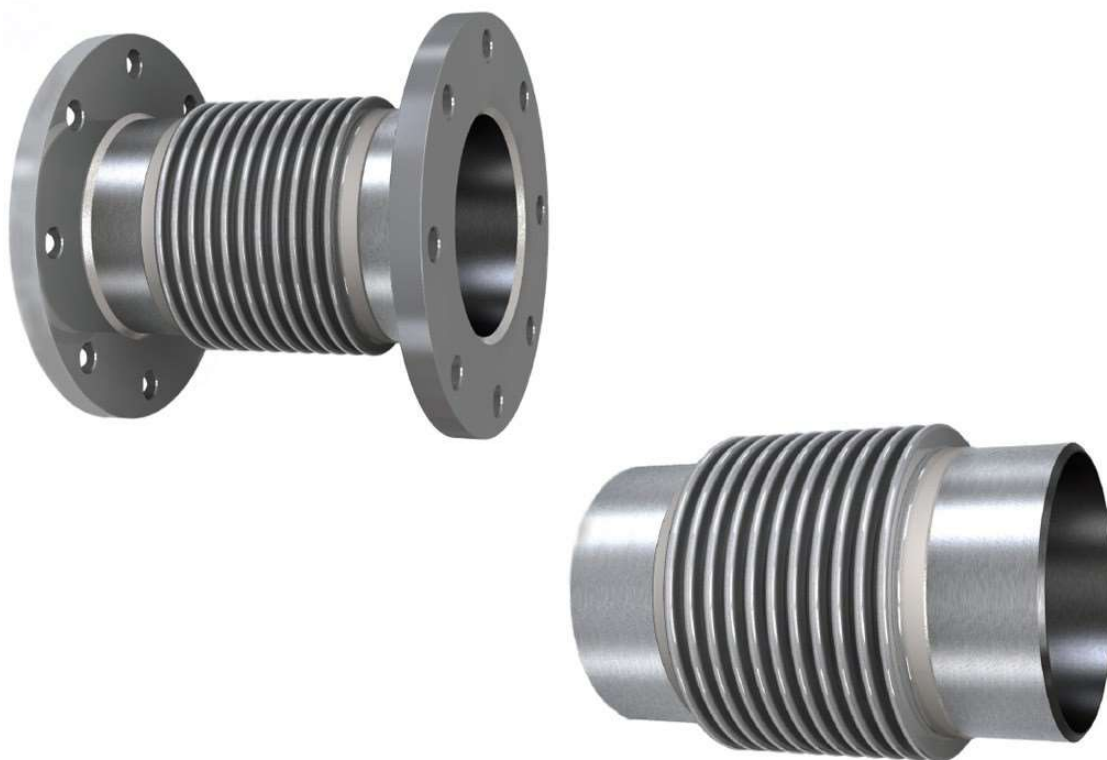


Installation, operation and maintenance manual Discom compensators



1 Storage and Transport

Discom recommends to carry out a visual inspection immediately on receipt of delivery of the compensator to ensure no damage occurred during shipment.

Compensators should not be lifted using slings or chains around the bellow. Do not pile up excessive weight and store on a solid surface in a clean and dry environment to avoid mechanical damage as well as damage by water, sand and chemicals.

2 Installation

Installation of compensators should be carried out by trained staff working in compliance with relevant legislation and regulations for occupational safety.

Prior to installation it should be checked that:

- the manual is read;
- the compensator is undamaged and clean;
- the expansion of the pipeline is in accordance with the design data of the compensator;
- only one compensator is fitted between two anchors;
- adjacent pipework is not only connected to the compensator creating loads on the bellow.

Compensators should be installed after alignment of the engine and after mounting the silencer / soot filter. If compensators are supplied with shipping bars these should be removed after installation of the complete system. In case no shipping bars are provided it is recommended to use strips/rods or pipes to keep the compensator at the correct length and alignment during assembly.

Compensators have to be mounted stress-free and without pre-tension. Please note that a compensator cannot take torsion and therefore residual torsion forces. It is not designed to compensate for installation inaccuracies of the piping.

Anchors and guides on the pipeline shall be placed as per following guidelines:

- directly behind / before the compensator an anchor is used;
- the distance between the nearest anchor / guide to the compensator does not exceed 4 x the nominal pipe diameter;
- the distance between adjacent piping guides does not exceed 14 x the nominal pipe diameter;
- the distance between remaining piping does not exceed 21 x the nominal pipe diameter;
- piping between two compensators is fixed;
- anchors and guides are dimensioned and located in a way that pipe weight and axial reaction forces are absorbed.

During installation of the compensator, one should bear in mind the following:

- in case of welding the compensator in the exhaust system the compensator should be protected by a chloride free welding blanket to avoid weld spatter, which would damage the compensator beyond repair. Discom advises to remove the blanket only after full completion of the installation and prior to pressure testing to assure the compensator is protected during construction;
- in case the compensator is equipped with an inner sleeve one must respect the flow direction indicated;
- do not apply torsion to the compensator to align the bolts on flanged units;
- start installation only once work on the adjacent piping has been completed;
- on flanged units ensure that the flange facings are undamaged and clean;
- do not force the counter flange and / or do not try to tighten the bolts when a gap exists between the compensator flange and pipe flange, to avoid torsion on the compensator;
- on flanged units ensure that over-long stud bolts do not contact and damage the bellows.

Prior to start-up all guides and anchors should be firmly secured in their right position. Visual inspection of all compensator / pipe connections is required as well as retightening of bolts in case of leakage.

Before pressure testing the system ensure that all temporary shipping and pre-tensioning devices are removed from the compensator.

3 Maintenance

Since compensators are designed to compensate deflections due to heat and vibrations Discom recommends to check compensators every two year on wear age visually. A correctly installed and designed compensator does not require special maintenance other than the inspection which is carried out for the other parts of the pipe system in which the compensator is installed.

The calculated service life of a compensator is based on the precondition that the compensator will never be subjected to mechanical or thermal load exceeding the stated design data.