PENFLEX

ENGINEERING BULLETIN #114

Vibration and Minimum Hose Length Requirements

Vibration can be very harmful for an assembly because it may cause high fatigue stress to the metal hose, which leads to the development of cracks and premature failure of the assembly.

Therefore, to decrease harmful effects of vibration, it is important during assembly fabrication to take into consideration such factors as minimum hose length requirements, operating pressure and respective derating factors for a type of vibration or dynamic stress. If vibration is present, it is especially important to follow Assembly Installation Handling Precautions, which include making sure that the hose bend and the main direction of movement lie in one plain and avoiding dangerous torsions.

It is important to calculate proper length of the assembly, keeping in mind that there are some requirements as to the minimum live length of the assembly used in the application involving vibration. While minimums will vary based on the type and intensity of vibration experiences, suggestions are found in the table below.

Nominal OD	Minimum Live Length for Vibration
1/4″	5.5″
3/8″	6.0″
1/2″	6.5″
3/4″	7.0″
1.0″	7.5″
1-1/4″	8.0″
1-1/2″	8.5″
2″	9.5″
2-1/2″	11.0″
3″	12.0″
3-1/2″	13.0″
4″	14.0″
5″	16.0″
6″	17.5″

8″	21.0″
Nominal OD	**Minimum Live Length for Vibration**
10″	23.5″
12″	27.0″
14″	30.0″
16″	33.0″
18”	45.0”
20”	50.0”
22”	55.0”
24”	60.0”

Note: As been already pointed out there are some reduction factors (for published Working Pressure) that should be considered with vibration and other dynamic stresses. These factors can be as low as 0.32 in case of strong vibrations with pulsating and unsteady flow through the hose.

If you have any questions or comments, please contact us.