Offset installations
corrugated metal hose

description

A common application for corrugated metal hose assemblies is to accommodate offset movement i.e. where the hose moves away from the center line in a single plane.

This movement may arise to:
- correct or compensate for a misalignment in or between rigid pipe work, usually a static application
- allow for a small amounts of thermal expansion or intermittent offset movements (e.g. seismic)

hose assembly length calculation

This required length for a hose assembly to accommodate an offset movement can be calculated using the following equations and formulae.

The equations which enable calculation of the main dimensions of this installation are listed below. The bending radius **R** which is mentioned must not be less than the minimum bending radius corresponding to the application, conditions of use and the selected hose.

The angle q must be included within following limits:
  - frequent offsets (Y) or double offsets (2Y) : q < 20°
  - infrequent offsets (Y)   : q < 36°
  - permanent misalignments only   : q <60°
For q < 14°, **P** and **U** can practically be the same.
For q > 14°, it is important not to confound the live length **U** and the projected length **P**, specially in the case of flexible braided hoses.
It is necessary, of course, to take into account not only the lengths of the fittings themselves but also of the end parts of the hose considered as not flexible.

- overall hose length   = U + A +B
- overall projected length
= dimensions of installation
= P + A + B.

Y = offset
R = bending radius
P = projected length
U = live length
A,B = total length of fittings and not flexible parts

$$Y = 2R(1 - \cos q)$$

$$P = 2R \sin q$$

$$U = \frac{\pi R q}{90}$$