

# Flexible Hose & Coupling

## 2. Motion of Flexible Hose

### Axial Motion:

Motion that occurs when a hose is compressed along its longitudinal axis. Axial motion is only applicable in very short lengths of annular hose only. Helical hose and braided hose should not be subjected to axial motion.

### Offset Motion:

Motion that occurs when one end of the hose is deflected in a plane perpendicular to its longitudinal axis with the ends remaining parallel. In offset motion applications the offset should never exceed 25% of the center line bend radius.



$$L = \sqrt{(6TR + T^2)}$$

L = Hose Live Length (inches)

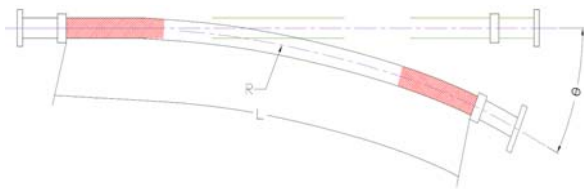
R = Bend Radius (inches)

T = Offset, Motion, plus or minus (inches)

NOTE : Where Offset Motion "T" occurs, both sides of  $\phi$ , the Hose Live Length should be based on Total Travel or 2 times Y. For Intermittent flexing, the offset motion should never be greater than 25% of the centerline bend radius.

### Angular Motion:

Motion that occurs when one end of a hose is moved in a simple bend when the ends do not remain parallel.



$$L = \pi R \theta / 180$$

L = Hose Live Length (inches)

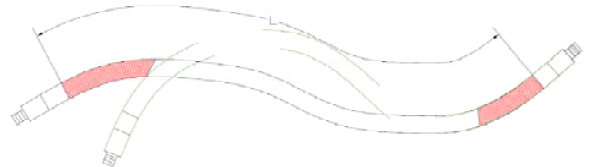
R = Bend Radius (inches)

θ = Angle of Bend (degrees)

π = 3.1416 (inches)

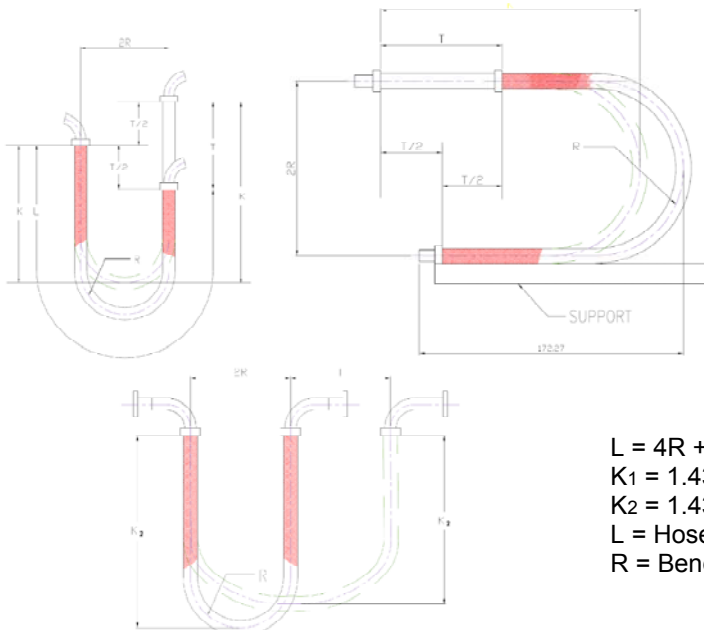
### Random Motion:

Motion that occurs in random planes such as a loading or unloading hose, or a fire hose. The hose length is dependent on the confines of areas and distance to be covered.



### Radial Motion:

Motion that occurs when a hose is bent in a circular arc.



$$L = 4R + 1.5T$$

$$K = 1.43R + .78T$$

$$L = 4R + 1.5T$$

$$K_1 = 1.43R + 0.78T$$

$$K_2 = 1.43R + T/2$$

L = Hose Live Length (inches)

T = Total Travel (inches)

R = Bend Radius (inches)

K = Loop Length (inches)