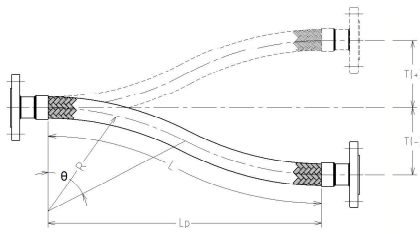


## 2 Calculation for Hose Length (L) with Movement

### 1. Lateral offset Movement



#### 1.1. Theoretical displacement by geometric calculation

Max. offset distance by geometric calculation

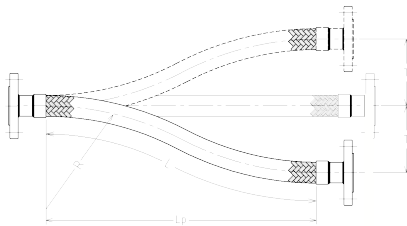
$$\begin{aligned} \text{Bend Angle } \theta &= 28.65 L/R \\ L &= 0.035R \times \text{COS}^{-1} (1-T/2R) \\ L_p &= 2R \text{ SIN} (\text{COS}^{-1} (1-T/2R)) \end{aligned}$$

#### 1.2. Practical application with a free retractable end

Recommended Length (L) for offset movement  
(Static with one end free)

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

$$L_p = \sqrt{L^2 - T^2}$$



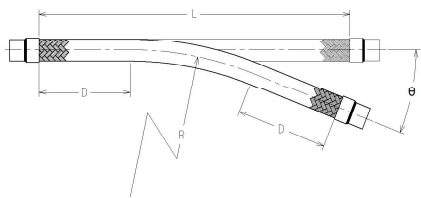
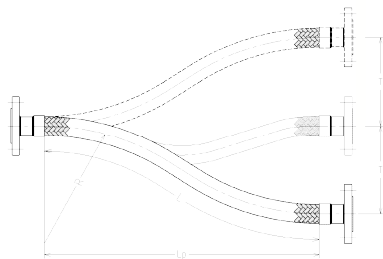
#### 1.3 Practical application with both fixed ends

Recommend Length (L) for offset movement  
(Static with both end fixed)

$$L = \sqrt{20(RT)}$$

$$L_p = \sqrt{L^2 - T^2}$$

( For repeatedly or dynamic movement "T" should not exceed 25% of "R")



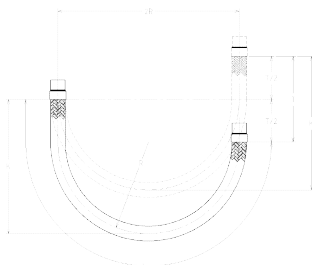
### 2. Angular Movement

$$L = 2D + (\theta/57.3)R$$

### 3. U-Loop arrangement

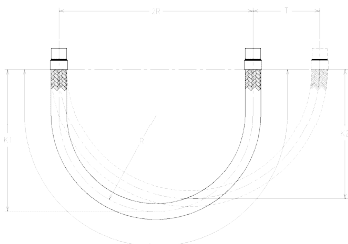
#### 3.1 Traveling Loop "A"

$$\begin{aligned} L &= 4R + 0.5T \\ K &= 1.43R + 0.5T \end{aligned}$$



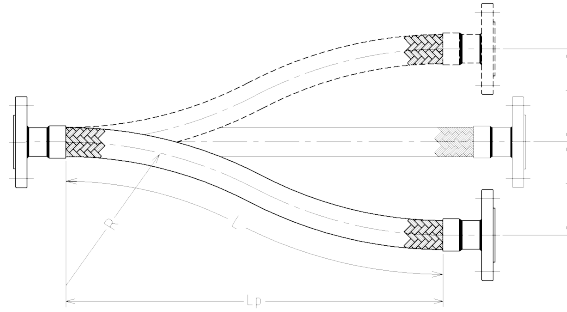
#### 3.2 Travelling Loop "B"

$$\begin{aligned} L &= 4R + 1.57T \\ K1 &= 1.43R + 0.785T \\ K2 &= 1.43R + 0.5T \end{aligned}$$



## Recommend Effective Length for Lateral offset Movement

### Static application 1: with one end free or allowed to pull in

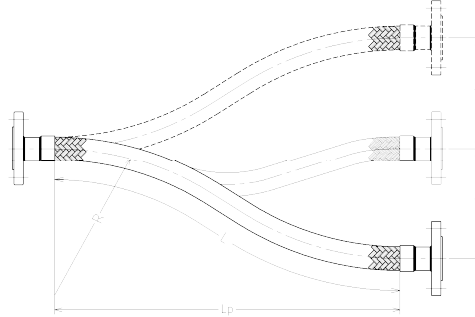


Nominal Diameter A (B)	Minimum Bending Radius (mm)	Lateral Movement in mm (T)									
		25	50	75	100	150	200	250	300	400	500
8A ( 1/8" )	100	125	180	225	265	335	<b>437</b>	<b>546</b>	<b>655</b>	<b>874</b>	<b>1092</b>
10A (3/8")	150	152	218	270	316	397	469	<b>546</b>	<b>655</b>	<b>874</b>	<b>1092</b>
15A (1/2")	200	175	250	309	361	450	529	602	671	<b>874</b>	<b>1092</b>
20A (3/4")	200	175	250	309	361	450	529	602	671	<b>874</b>	<b>1092</b>
25A (1")	200	175	250	309	361	450	529	602	671	<b>874</b>	<b>1092</b>
32A (1-1/4")	250	195	278	344	400	497	583	661	735	<b>874</b>	<b>1092</b>
40A(1-1/2")	250	195	278	344	400	497	583	661	735	<b>874</b>	<b>1092</b>
50A (2")	350	230	328	404	469	581	678	766	849	1000	1140
65A (2-1/2")	410	249	354	436	506	626	729	823	910	1070	1217
80A (3")	450	261	371	456	529	654	762	859	949	1114	1265
100A (4")	560	291	413	508	588	726	844	950	1048	1226	1389
125A (5")	660	316	448	550	637	785	912	1026	1130	1321	1493
150A (6")	815	351	497	610	706	869	1009	1134	1248	1455	1642
200A (8")	1015	391	554	680	787	967	1122	1259	1385	1611	1815
250A (10")	1220	429	607	745	861	1059	1226	1376	1512	1757	1977
300A (12")	1420	462	655	803	928	1140	1321	1481	1627	1889	2124

- Figures in blue color cells are limited for static movement
- Figures in bold fonts are adjusted with length retraction below 10%

## Recommend Effective Length for Lateral offset Movement

### Static application 2: Crowded position with both end fixed and not allowed to move in



Nominal Diameter A ( B )	Minimum Bending Radius (mm)	Lateral Movement in mm (T)									
		25	50	75	100	150	200	250	300	400	500
8A ( 1/8" )	100	224	316	387	447	<b>610</b>	<b>812</b>	<b>1014</b>	<b>1217</b>	<b>1623</b>	<b>2028</b>
10A (3/8")	150	274	387	474	548	671	<b>812</b>	<b>1014</b>	<b>1217</b>	<b>1623</b>	<b>2028</b>
15A (1/2")	200	316	447	548	632	775	894	1000	<b>1217</b>	<b>1623</b>	<b>2028</b>
20A (3/4")	200	316	447	548	632	775	894	1000	<b>1217</b>	<b>1623</b>	<b>2028</b>
25A (1")	200	316	447	548	632	775	894	1000	<b>1217</b>	<b>1623</b>	<b>2028</b>
32A (1-1/4")	250	354	500	612	707	866	1000	1118	1225	<b>1623</b>	<b>2028</b>
40A(1-1/2")	250	354	500	612	707	866	1000	1118	1225	<b>1623</b>	<b>2028</b>
50A (2")	350	418	592	725	837	1025	1183	1323	1449	1673	<b>2028</b>
65A (2-1/2")	410	453	640	784	906	1109	1281	1432	1568	1811	<b>2028</b>
80A (3")	450	474	671	822	949	1162	1342	1500	1643	1897	2121
100A (4")	560	529	748	917	1058	1296	1497	1673	1833	2117	2366
125A (5")	660	574	812	995	1149	1407	1625	1817	1990	2298	2569
150A (6")	815	638	903	1106	1277	1564	1806	2019	2211	2553	2855
200A (8")	1015	712	1007	1234	1425	1745	2015	2253	2468	2850	3186
250A (10")	1220	781	1105	1353	1562	1913	2209	2470	2706	3124	3493
300A (12")	1420	843	1192	1459	1685	2064	2383	2665	2919	3370	3768

- Figures in blue color cells are limited for static movement
- Figures in bold fonts are adjusted with length elongation below 3%