


<b>PROJECT :</b>			<b>DATE :</b>	03/05/2013
<b>PROJ. NO.:</b>			<b>BY :</b>	S.R
<b>CLIENT :</b>			<b>REV :</b>	A
<b>UNIT :</b>			<b>DOC NO.:</b>	0

### Pipe Equivalent Length Calculation

Pipe Data		
Nominal Pipe Size	in	2
Pipe Internal diameter	m	0.07793
Pipe Length	m	102
Standart Friction Factor ( $f_T$ )	----	0.0196

Fitting	Detail	factor	Factor	No	K
Ball valve	Full Bore	3 $f_T$	3	0	0.000
	Reduced bore DN 40 and	65 $f_T$	65	0	0.000
	Reduced bore DN 50 and	45 $f_T$	45	0	0.000
Gate valve	Standard bore	13 $f_T$	13	0	0.000
	Reduced bore DN 40 and	65 $f_T$	65	0	0.000
Globe valve	Straight pattern	340 $f_T$	340	0	0.000
	Y pattern	160 $f_T$	160	0	0.000
	Angle pattern	150 $f_T$	150	0	0.000
Check valve	Swing type- inclined seat	100 $f_T$	100	0	0.000
	Swing type- vertical seat	50 $f_T$	50	1	0.978
	Lift type – inclined seat	55 $f_T$	55	0	0.000
	Lift type – Horizontal seat	600 $f_T$	600	0	0.000
	Tilting disc type – 2" to 8"	40-120 $f_T$	120	0	0.000
	Tilting disc type – 10" to 14"	30-90 $f_T$	90	1	1.760
	Tilting disc type – 16" to 48"	20-60 $f_T$	60	0	0.000
	Stop Globe type - inclined seat	300 $f_T$	300	0	0.000
	Stop Globe type - Horizontal	400 $f_T$	400	0	0.000
	Stop Angle type - inclined seat	350 $f_T$	350	1	6.843
Stop Angle type - Horizontal	200 $f_T$	200	0	0.000	
Plug valve	Straight way	18 $f_T$	18	0	0.000
	Three way- Flow straight	30 $f_T$	30	0	0.000
	Three way- Flow through side	90 $f_T$	90	0	0.000
Butterfly valve	DN 150 and larger	20 $f_T$	20	0	0.000
	2" – 8"	45 $f_T$	45	0	0.000
	10" – 14"	35 $f_T$	35	0	0.000
Foot valve with mesh	16" – 24"	25 $f_T$	25	0	0.000
	Poppet Disc type	420 $f_T$	420	0	0.000
	Hinged Disc type	75 $f_T$	75	0	0.000
Mitre Bend	a = 30 °	8 $f_T$	8	0	0.000
	a = 45 °	15 $f_T$	15	0	0.000
	a = 60 °	25 $f_T$	25	0	0.000
	a = 90 °	60 $f_T$	60	0	0.000
Tee-equal	Flow straight through	20 $f_T$	20	0	0.000
	Flow through side outlet	60 $f_T$	60	0	0.000
Elbow 45 °	45°, Screwed, R = 1.5 D (std)	16 $f_T$	16	0	0.000
	45°, Screwed , Long Radius	10 $f_T$	10	0	0.000
	45°, Flanged, R = 1.5 D (std)	10 $f_T$	10	0	0.000
	45°, Flanged , Long Radius	7 $f_T$	7	0	0.000
Elbow 90° (Screwed)	90°, R = 1.5 D (std)	30 $f_T$	30	0	0.000
	90°, Long Radius	14 $f_T$	14	0	0.000
Elbow 90° (flanged or butt-welded)	90°, R = 1 D	10 $f_T$	10	0	0.000
	90°, R = 1.5 D (std)	14 $f_T$	14	0	0.000
	90°, R = 2 D	12 $f_T$	12	0	0.000
	90°, R = 3 D	12 $f_T$	12	0	0.000
	90°, R = 4 D	14 $f_T$	14	0	0.000
	90°, R = 6 D	17 $f_T$	17	0	0.000
	90°, R = 8 D	20 $f_T$	20	0	0.000
	90°, R = 10 D	30 $f_T$	30	0	0.000
	90°, R = 12 D	34 $f_T$	34	0	0.000
	90°, R = 14 D	38 $f_T$	38	0	0.000
	90°, R = 16 D	42 $f_T$	42	0	0.000
90°, R = 20 D	50 $f_T$	50	0	0.000	
Elbow 180° (flanged or butt-welded)	180°, R = 1.5 D	23 $f_T$	23	0	0.000
	180°, R = 4 D	25 $f_T$	25	0	0.000
	180°, R = 10 D	53 $f_T$	53	0	0.000
Close Pattern	Screwed	50 $f_T$	50	0	0.000
	Flanged	20 $f_T$	20	0	0.000
Strainer	Pump suction Y or bucket type	250 $f_T$	250	0	0.000
Reducer		1	1	0	0.000
Expander		1	1	0	0.000
Nozzle	Pipe Entrance- Inward	0.78	0.78	0	0.000
	Pipe Entrance- Sharp edged	0.5	0.5	0	0.000
	Pipe Entrance- flush	0.1	0.1	0	0.000
	Pipe Exit- any shape	1	1	0	0.000
<b>K Value for Fittings</b>					<b>9.581</b>
<b>K Value for pipe</b>					<b>26.173</b>
<b>Total K Value</b>					<b>35.754</b>
<b>Eq. Length (m)</b>					<b>142.5</b>