

Table 3-8M Values of L for Pipe Sizes ≥ 914 mm and $< 1\ 066$ mm O.D.**(12)**

Depth, d , mm	Wall Thickness, t , mm							
	6.4	7.1	7.9	9.5	10.3	11.9	14.3	17.5
0.8	341.4	361.9	No limit	No limit	No limit	No limit	No limit	No limit
1.0	341.4	361.9	381.4	418.1	No limit	No limit	No limit	No limit
1.3	228.4	340.2	381.4	418.1	435.0	467.6	No limit	No limit
1.5	158.1	208.9	282.3	418.1	435.0	467.6	511.8	No limit
1.8	124.9	157.6	199.4	336.8	435.0	467.6	511.8	566.3
2.0	104.9	129.4	158.7	241.7	302.1	467.6	511.8	566.3
2.3	91.2	111.0	133.9	193.6	232.8	348.1	511.8	566.3
2.5	81.1	98.0	116.9	164.0	193.0	270.6	481.2	566.3
2.8	73.2	88.0	104.3	143.5	166.7	225.4	361.6	566.3
3.0	66.8	80.1	94.6	128.4	147.9	195.2	295.4	566.3
3.3	61.4	73.6	86.7	116.7	133.5	173.5	252.9	440.2
3.6	56.9	68.1	80.1	107.2	122.1	156.9	222.9	363.6
3.8	52.9	63.4	74.5	99.3	112.8	143.7	200.5	313.1
4.1	49.4	59.3	69.6	92.6	105.0	132.9	183.0	277.1
4.3	46.2	55.6	65.4	86.9	98.3	123.9	168.8	249.9
4.6	43.3	52.3	61.6	81.8	92.5	116.2	157.0	228.5
4.8	40.7	49.3	58.2	77.3	87.4	109.5	147.1	211.2
5.1	38.3	46.5	55.1	73.3	82.8	103.6	138.5	196.8
5.3	...	44.0	52.2	69.7	78.7	98.4	131.1	184.6
5.6	...	41.6	49.6	66.3	75.0	93.7	124.5	174.1
5.8	...	...	47.1	63.3	71.6	89.5	118.6	164.9
6.1	...	...	44.8	60.5	68.5	85.6	113.3	156.9
6.4	...	...	...	57.8	65.6	82.0	108.5	149.7
6.6	...	...	...	55.4	62.9	78.7	104.1	143.2
6.9	...	...	...	53.1	60.3	75.7	100.1	137.3
7.1	...	...	...	50.9	58.0	72.8	96.3	132.0
7.4	...	...	...	48.8	55.7	70.2	92.9	127.1
7.6	...	...	...	46.9	53.6	67.7	89.6	122.6
7.9	...	...	...	...	51.6	65.3	86.6	118.4
8.1	...	...	...	...	49.7	63.0	83.8	114.5
8.4	...	...	...	...	...	60.9	81.1	110.9
8.6	...	...	...	...	...	58.9	78.6	107.5
8.9	...	...	...	...	...	56.9	76.2	104.3
9.1	...	...	...	...	...	55.1	73.9	101.3
9.4	...	...	...	...	...	53.3	71.8	98.4
9.7	...	...	...	...	...	...	69.7	95.7
9.9	...	...	...	...	...	...	67.7	93.2
10.2	...	...	...	...	...	...	65.8	90.7
10.4	...	...	...	...	...	...	64.0	88.4
10.7	...	...	...	...	...	...	62.2	86.1
10.9	...	...	...	...	...	...	60.5	84.0
11.2	...	...	...	...	...	...	58.9	82.0
11.4	...	...	...	...	...	...	...	80.0
11.7	...	...	...	...	...	...	...	78.1
11.9	...	...	...	...	...	...	...	76.3
12.2	...	...	...	...	...	...	...	74.5
12.4	...	...	...	...	...	...	...	72.8
12.7	...	...	...	...	...	...	...	71.1
13.0	...	...	...	...	...	...	...	69.5
13.2	...	...	...	...	...	...	...	68.0
13.5	...	...	...	...	...	...	...	66.4
13.7	...	...	...	...	...	...	...	65.0
14.0	...	...	...	...	...	...	...	63.5

Table 3-9 Values of L for Pipe Sizes \geq NPS 42 and $<$ NPS 48

Depth, <i>d</i> , in.	Wall Thickness, <i>t</i> , in.																
	0.344	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062	1.125	1.188	1.250
0.03	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.04	17.03	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.05	17.03	18.50	19.21	19.88	20.53	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.06	17.03	18.50	19.21	19.88	20.53	21.77	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.07	10.93	18.50	19.21	19.88	20.53	21.77	22.95	24.08	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.08	8.33	12.85	16.55	19.88	20.53	21.77	22.95	24.08	25.14	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.09	6.87	9.90	12.06	14.80	18.55	21.77	22.95	24.08	25.14	26.16	27.16	No limit	No limit	No limit	No limit	No limit	No limit
0.10	5.92	8.21	9.72	11.51	13.74	20.46	22.95	24.08	25.14	26.16	27.16	28.12	29.03	No limit	No limit	No limit	No limit
0.11	5.24	7.09	8.26	9.58	11.15	15.37	22.44	24.08	25.14	26.16	27.16	28.12	29.03	29.92	No limit	No limit	No limit
0.12	4.72	6.29	7.25	8.30	9.51	12.56	17.06	24.08	25.14	26.16	27.16	28.12	29.03	29.92	30.79	31.65	No limit
0.13	4.31	5.68	6.50	7.38	8.36	10.75	14.02	18.72	25.14	26.16	27.16	28.12	29.03	29.92	30.79	31.65	32.46
0.14	3.97	5.19	5.91	6.67	7.51	9.48	12.04	15.46	20.25	26.16	27.16	28.12	29.03	29.92	30.79	31.65	32.46
0.15	3.69	4.80	5.44	6.11	6.84	8.53	10.63	13.32	16.82	21.75	27.16	28.12	29.03	29.92	30.79	31.65	32.46
0.16	3.44	4.47	5.05	5.65	6.31	7.78	9.57	11.78	14.54	18.17	23.31	28.12	29.03	29.92	30.79	31.65	32.46
0.17	3.23	4.18	4.72	5.27	5.86	7.18	8.75	10.63	12.89	15.75	19.56	24.84	29.03	29.92	30.79	31.65	32.46
0.18	3.05	3.93	4.43	4.94	5.48	6.68	8.08	9.72	11.65	14.00	17.00	20.93	26.23	29.92	30.79	31.65	32.46
0.19	2.88	3.72	4.18	4.66	5.16	6.26	7.52	8.98	10.66	12.66	15.14	18.25	22.22	27.60	30.79	31.65	32.46
0.20	2.73	3.52	3.96	4.41	4.88	5.89	7.05	8.37	9.86	11.60	13.71	16.28	19.43	23.48	29.04	31.65	32.46
0.21	2.59	3.35	3.76	4.18	4.63	5.57	6.65	7.85	9.20	10.74	12.58	14.76	17.36	20.59	24.80	30.45	32.46
0.22	2.46	3.19	3.59	3.99	4.40	5.29	6.29	7.40	8.63	10.03	11.65	13.55	15.77	18.44	21.80	26.11	31.74
0.23	2.35	3.05	3.42	3.80	4.20	5.04	5.98	7.01	8.15	9.42	10.88	12.56	14.49	16.77	19.56	23.00	27.32
0.24	2.24	2.91	3.27	3.64	4.02	4.82	5.70	6.67	7.72	8.89	10.23	11.74	13.45	15.43	17.81	20.67	24.13
0.25	2.14	2.79	3.14	3.49	3.85	4.61	5.45	6.36	7.35	8.43	9.66	11.04	12.57	14.33	16.40	18.84	21.72
0.26	2.04	2.67	3.01	3.35	3.70	4.43	5.22	6.09	7.02	8.03	9.17	10.43	11.83	13.40	15.24	17.36	19.82
0.27	1.95	2.57	2.89	3.22	3.55	4.25	5.02	5.84	6.72	7.67	8.73	9.90	11.18	12.62	14.26	16.15	18.29
0.28	...	2.46	2.78	3.10	3.42	4.10	4.83	5.61	6.45	7.35	8.34	9.43	10.62	11.93	13.43	15.12	17.02
0.29	...	2.37	2.68	2.98	3.30	3.95	4.65	5.40	6.20	7.05	7.99	9.02	10.12	11.34	12.71	14.25	15.95
0.30	...	2.28	2.58	2.88	3.18	3.81	4.49	5.21	5.97	6.79	7.68	8.64	9.68	10.81	12.08	13.49	15.03
0.31	...	2.19	2.49	2.78	3.07	3.68	4.34	5.04	5.76	6.54	7.39	8.30	9.28	10.34	11.52	12.82	14.24
0.32	...	2.11	2.40	2.68	2.97	3.56	4.20	4.87	5.57	6.32	7.13	8.00	8.92	9.92	11.02	12.23	13.54
0.33	...	...	2.31	2.59	2.87	3.45	4.07	4.72	5.39	6.11	6.88	7.71	8.59	9.53	10.57	11.70	12.92
0.34	...	...	2.23	2.50	2.78	3.34	3.94	4.57	5.22	5.91	6.66	7.45	8.29	9.18	10.17	11.23	12.37
0.35	...	...	2.16	2.42	2.69	3.24	3.82	4.43	5.07	5.73	6.45	7.21	8.01	8.87	9.80	10.80	11.87
0.36	...	...	...	2.34	2.61	3.14	3.71	4.31	4.92	5.56	6.26	6.99	7.76	8.57	9.46	10.41	11.42
0.37	...	...	...	2.27	2.52	3.05	3.61	4.19	4.78	5.41	6.07	6.78	7.52	8.30	9.15	10.05	11.01
0.38	...	...	...	...	2.45	2.96	3.51	4.07	4.65	5.26	5.90	6.59	7.30	8.05	8.86	9.73	10.64
0.39	...	...	...	...	2.37	2.88	3.41	3.96	4.53	5.12	5.74	6.40	7.09	7.81	8.59	9.42	10.29
0.40	...	...	...	...	2.30	2.80	3.32	3.86	4.41	4.98	5.59	6.23	6.90	7.59	8.34	9.14	9.97

Table 3-9 Values of L for Pipe Sizes \geq NPS 42 and $<$ NPS 48 (Cont'd)

Depth, d , in.	Wall Thickness, t , in.													
	0.344	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062
0.41	2.72	3.23	3.76	4.30	4.86	5.45	6.07	6.71	7.39
0.42	2.65	3.15	3.66	4.19	4.74	5.31	5.92	6.54	7.19
0.43	2.57	3.07	3.57	4.09	4.62	5.18	5.77	6.38	7.01
0.44	2.50	2.99	3.49	3.99	4.51	5.06	5.64	6.22	6.84
0.45	2.91	3.40	3.90	4.41	4.95	5.50	6.08	6.68
0.46	2.84	3.32	3.81	4.31	4.83	5.38	5.94	6.52
0.47	2.77	3.24	3.72	4.21	4.73	5.26	5.81	6.38
0.48	2.70	3.17	3.64	4.12	4.62	5.15	5.68	6.24
0.49	2.64	3.09	3.56	4.03	4.52	5.04	5.56	6.10
0.50	2.57	3.02	3.48	3.94	4.43	4.93	5.44	5.97
0.51	2.96	3.40	3.86	4.34	4.83	5.33	5.85
0.52	2.89	3.33	3.78	4.25	4.73	5.23	5.73
0.53	2.83	3.26	3.70	4.17	4.64	5.12	5.62
0.54	2.76	3.19	3.63	4.08	4.55	5.02	5.51
0.55	2.70	3.12	3.56	4.00	4.46	4.93	5.41
0.56	3.06	3.49	3.93	4.38	4.84	5.31
0.57	3.00	3.42	3.85	4.30	4.75	5.21
0.58	2.94	3.35	3.78	4.22	4.66	5.12
0.59	2.88	3.29	3.71	4.14	4.58	5.03
0.60	2.82	3.22	3.64	4.07	4.50	4.94
0.61	3.16	3.58	4.00	4.42	4.85
0.62	3.10	3.51	3.93	4.34	4.77
0.63	3.04	3.45	3.86	4.27	4.69
0.64	2.99	3.39	3.79	4.20	4.61
0.65	3.33	3.73	4.13	4.54
0.66	3.27	3.66	4.06	4.47
0.67	3.21	3.60	3.99	4.39
0.68	3.15	3.54	3.93	4.32
0.69	3.10	3.48	3.87	4.26
0.70	3.04	3.42	3.80	4.19
0.71	3.37	3.74	4.13
0.72	3.31	3.69	4.06
0.73	3.26	3.63	4.00
0.74	3.21	3.57	3.94
0.75	3.15	3.52	3.88
0.76	3.46	3.82

Table 3-9 Values of L for Pipe Sizes \geq NPS 42 and $<$ NPS 48 (Cont'd)

Depth, d , in.	Wall Thickness, t , in.													
	0.344	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062
0.77	3.41	3.77
0.78	3.36	3.71
0.79	3.30	3.66
0.80	3.25	3.60
0.81	3.55
0.82	3.50
0.83	3.45
0.84	3.40
0.85
0.86
0.87
0.88
0.89
0.90
0.91
0.92
0.93
0.94
0.95
0.96
0.97
0.98
0.99
1.00

Table 3-9M Values of L for Pipe Sizes $\geq 1\ 066\text{ mm}$ and $< 1\ 219\text{ mm O.D.}$

Depth, d, mm	Wall Thickness, t, mm																31.8
	8.7	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	30.2	
0.8	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
1.0	432.5	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
1.3	432.5	469.9	488.1	505.0	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	No limit
1.5	432.5	469.9	488.1	505.0	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	No limit
1.8	277.7	469.9	488.1	505.0	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	No limit
2.0	211.6	326.3	420.4	505.0	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	No limit
2.3	174.5	251.4	306.4	376.0	471.2	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	521.5	No limit
2.5	150.3	208.4	246.9	292.3	348.9	519.7	583.0	611.7	638.7	664.5	689.8	714.2	737.5	760.0	782.2	803.8	No limit
2.8	133.0	180.1	209.8	243.4	283.2	390.5	570.0	611.7	638.7	664.5	689.8	714.2	737.5	760.0	782.2	803.8	No limit
3.0	119.8	159.7	184.1	210.8	241.5	319.1	433.4	611.7	638.7	664.5	689.8	714.2	737.5	760.0	782.2	803.8	No limit
3.3	109.4	144.2	165.0	187.4	212.4	273.1	356.1	475.5	638.7	664.5	689.8	714.2	737.5	760.0	782.2	803.8	824.5
3.6	100.8	131.9	150.1	169.4	190.7	240.8	305.7	392.7	514.4	664.5	689.8	714.2	737.5	760.0	782.2	803.8	824.5
3.8	93.6	121.9	138.1	155.2	173.8	216.6	270.0	338.2	427.3	552.4	689.8	714.2	737.5	760.0	782.2	803.8	824.5
4.1	87.5	113.4	128.2	143.6	160.2	197.6	243.2	299.3	369.3	461.4	592.0	714.2	737.5	760.0	782.2	803.8	824.5
4.3	82.1	106.2	119.8	133.9	148.9	182.3	222.2	269.9	327.5	400.0	496.8	630.8	737.5	760.0	782.2	803.8	824.5
4.6	77.3	99.9	112.6	125.5	139.3	169.6	205.2	246.8	295.8	355.5	431.9	531.7	666.3	760.0	782.2	803.8	824.5
4.8	73.1	94.4	106.2	118.3	131.0	158.9	191.0	228.1	270.8	321.6	384.5	463.5	564.4	701.0	782.2	803.8	824.5
5.1	69.3	89.5	100.6	111.9	123.8	149.6	179.1	212.6	250.5	294.8	348.3	413.4	493.4	596.5	737.6	803.8	824.5
5.3	65.8	85.0	95.6	106.3	117.5	141.6	168.8	199.4	233.6	272.9	319.5	374.9	441.0	523.0	630.0	773.6	824.5
5.6	62.6	81.0	91.1	101.2	111.8	134.4	159.8	188.1	219.3	254.7	296.0	344.2	400.5	468.4	553.8	663.1	806.1
5.8	59.6	77.3	87.0	96.6	106.7	128.1	151.9	178.2	206.9	239.2	276.4	319.1	368.1	425.9	496.7	584.3	693.8
6.1	56.9	74.0	83.2	92.4	102.0	122.4	144.8	169.4	196.2	225.9	259.7	298.2	341.6	391.9	452.3	524.9	612.9
6.4	54.3	70.8	79.7	88.6	97.8	117.2	138.5	161.7	186.7	214.2	245.4	280.4	319.3	363.9	416.5	478.5	551.7
6.6	51.9	67.9	76.5	85.0	93.9	112.4	132.7	154.7	178.2	204.0	232.8	265.0	300.4	340.5	387.0	441.0	503.5
6.9	49.6	65.2	73.5	81.7	90.2	108.1	127.5	148.3	170.6	194.8	221.8	251.5	284.0	320.4	362.3	410.1	464.6
7.1	...	62.6	70.7	78.7	86.9	104.0	122.6	142.6	163.7	186.6	211.9	239.6	269.7	303.1	341.1	384.1	432.3
7.4	...	60.2	68.0	75.8	83.7	100.3	118.2	137.3	157.4	179.1	203.0	229.0	257.1	288.0	322.8	361.8	405.2
7.6	...	57.9	65.5	73.1	80.8	96.8	114.1	132.4	151.7	172.4	195.0	219.5	245.8	274.6	306.8	342.5	381.9
7.9	...	55.7	63.2	70.5	78.0	93.6	110.2	127.9	146.4	166.1	187.7	210.9	235.7	262.6	292.6	325.6	361.7
8.1	...	53.6	60.9	68.1	75.4	90.5	106.6	123.7	141.5	160.4	181.0	203.1	226.5	251.9	279.9	310.7	343.9
8.4	...	...	58.8	65.8	72.9	87.6	103.3	119.8	136.9	155.1	174.8	195.9	218.2	242.2	268.6	297.3	328.2
8.6	...	...	56.7	63.6	70.6	84.9	100.1	116.1	132.7	150.2	169.1	189.3	210.5	233.3	258.2	285.3	314.2
8.9	...	...	54.8	61.5	68.3	82.3	97.1	112.6	128.7	145.6	163.8	183.2	203.5	225.2	248.9	274.4	301.6
9.1	...	...	...	59.5	66.2	79.9	94.3	109.4	125.0	141.3	158.9	177.5	197.0	217.7	240.3	264.5	290.1
9.4	...	...	...	57.6	64.1	77.5	91.6	106.3	121.4	137.3	154.3	172.2	190.9	210.8	232.3	255.4	279.7
9.7	...	...	...	...	62.2	75.3	89.1	103.4	118.1	133.5	150.0	167.3	185.3	204.4	225.0	247.0	270.2
9.9	...	...	...	...	60.3	73.1	86.6	100.6	115.0	129.9	145.9	162.7	180.1	198.5	218.3	239.3	261.4
10.2	...	...	...	...	58.4	71.1	84.3	98.0	112.0	126.5	142.0	158.3	175.1	192.9	211.9	232.1	253.3

Table 3-9M Values of L for Pipe Sizes $\geq 1\ 066\ \text{mm}$ and $< 1\ 219\ \text{mm}$ O.D. (Cont'd)

Depth, d , mm	Wall Thickness, t , mm																
	8.7	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	30.2	31.8
10.4	69.1	82.1	95.5	109.1	123.3	138.4	154.2	170.5	187.7	206.0	225.5	245.7
10.7	67.2	79.9	93.0	106.4	120.3	135.0	150.3	166.1	182.7	200.5	219.2	238.7
10.9	65.4	77.9	90.7	103.8	117.4	131.7	146.6	162.0	178.1	195.3	213.4	232.1
11.2	63.6	75.9	88.5	101.3	114.6	128.6	143.1	158.1	173.7	190.4	207.9	226.0
11.4	74.0	86.4	99.0	111.9	125.6	139.8	154.4	169.6	185.8	202.7	220.2
11.7	72.2	84.3	96.7	109.4	122.8	136.6	150.9	165.7	181.4	197.8	214.8
11.9	70.4	82.4	94.5	106.9	120.0	133.6	147.5	161.9	177.2	193.2	209.7
12.2	68.6	80.5	92.4	104.6	117.4	130.7	144.3	158.4	173.3	188.8	204.8
12.4	67.0	78.6	90.3	102.3	114.9	127.9	141.2	155.0	169.5	184.7	200.2
12.7	65.3	76.8	88.3	100.2	112.5	125.3	138.3	151.7	165.9	180.7	195.8
13.0	75.1	86.4	98.1	110.2	122.7	135.5	148.6	162.5	176.9	191.7
13.2	73.4	84.6	96.0	108.0	120.3	132.7	145.6	159.2	173.3	187.7
13.5	71.8	82.8	94.1	105.8	117.9	130.1	142.8	156.1	169.8	183.9
13.7	70.2	81.1	92.2	103.7	115.6	127.6	140.0	153.0	166.5	180.2
14.0	68.6	79.4	90.3	101.7	113.4	125.2	137.4	150.1	163.3	176.8
14.2	77.7	88.5	99.8	111.2	122.9	134.8	147.3	160.3	173.4
14.5	76.1	86.8	97.9	109.2	120.6	132.4	144.7	157.3	170.2
14.7	74.6	85.1	96.0	107.2	118.4	130.0	142.1	154.5	167.1
15.0	73.1	83.5	94.2	105.2	116.3	127.7	139.6	151.8	164.2
15.2	71.6	81.9	92.5	103.3	114.3	125.4	137.1	149.1	161.3
15.5	80.3	90.8	101.5	112.3	123.3	134.8	146.6	158.6
15.7	78.8	89.2	99.7	110.3	121.2	132.5	144.1	155.9
16.0	77.3	87.6	98.0	108.5	119.2	130.3	141.8	153.3
16.3	75.8	86.0	96.3	106.6	117.2	128.2	139.4	150.8
16.5	84.5	94.7	104.9	115.3	126.1	137.2	148.4
16.8	83.0	93.0	103.1	113.4	124.1	135.0	146.1
17.0	81.5	91.5	101.4	111.6	122.1	132.9	143.8
17.3	80.1	89.9	99.8	109.8	120.2	130.9	141.6
17.5	78.7	88.4	98.2	108.1	118.4	128.9	139.4
17.8	77.3	87.0	96.6	106.4	116.6	126.9	137.4
18.0	85.6	95.1	104.8	114.8	125.1	135.3
18.3	84.1	93.6	103.2	113.1	123.2	133.4
18.5	82.8	92.1	101.6	111.4	121.4	131.4
18.8	81.4	90.7	100.1	109.8	119.7	129.6
19.1	80.1	89.3	98.6	108.2	118.0	127.7
19.3	87.9	97.1	106.6	116.3	126.0

Table 3-9M Values of L for Pipe Sizes $\geq 1\ 066$ mm and $< 1\ 219$ mm O.D. (Cont'd)

Depth, d , mm	Wall Thickness, t , mm														
	8.7	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6
19.6	86.6	95.7	105.1
19.8	85.2	94.3	103.6
20.1	83.9	92.9	102.1
20.3	82.7	91.5	100.7
20.6	90.2	99.3
20.8	88.9	97.9
21.1	87.6	96.5
21.3	86.4	95.2
21.6	93.9
21.8	92.6
22.1	91.3
22.4	90.1
22.6	88.9
22.9	87.7
23.1
23.4
23.6
23.9
24.1
24.4
24.6
24.9
25.1
25.4

Table 3-10 Values of L for Pipe Sizes \geq NPS 48 and $<$ NPS 52

Depth, <i>d</i> , in.	Wall Thickness, <i>t</i> , in.																
	0.344	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062	1.125	1.188	1.250
0.03	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.04	18.20	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.05	18.20	19.78	20.54	21.26	21.95	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.06	18.20	19.78	20.54	21.26	21.95	23.27	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.07	11.69	19.78	20.54	21.26	21.95	23.27	24.54	25.74	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.08	8.91	13.73	17.69	21.26	21.95	23.27	24.54	25.74	26.88	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.09	7.35	10.58	12.89	15.82	19.83	23.27	24.54	25.74	26.88	27.97	29.03	No limit	No limit	No limit	No limit	No limit	No limit
0.10	6.33	8.77	10.39	12.30	14.69	21.87	24.54	25.74	26.88	27.97	29.03	30.06	31.04	No limit	No limit	No limit	No limit
0.11	5.60	7.58	8.83	10.24	11.92	16.44	23.99	25.74	26.88	27.97	29.03	30.06	31.04	31.99	No limit	No limit	No limit
0.12	5.04	6.72	7.75	8.87	10.16	13.43	18.24	25.74	26.88	27.97	29.03	30.06	31.04	31.99	32.92	33.83	No limit
0.13	4.60	6.07	6.94	7.89	8.94	11.49	14.99	20.01	26.88	27.97	29.03	30.06	31.04	31.99	32.92	33.83	34.70
0.14	4.24	5.55	6.32	7.13	8.03	10.13	12.87	16.53	21.65	27.97	29.03	30.06	31.04	31.99	32.92	33.83	34.70
0.15	3.94	5.13	5.81	6.53	7.32	9.11	11.36	14.23	17.99	23.25	29.03	30.06	31.04	31.99	32.92	33.83	34.70
0.16	3.68	4.77	5.40	6.04	6.74	8.32	10.24	12.60	15.54	19.42	24.92	30.06	31.04	31.99	32.92	33.83	34.70
0.17	3.46	4.47	5.04	5.63	6.27	7.67	9.35	11.36	13.78	16.84	20.91	26.55	31.04	31.99	32.92	33.83	34.70
0.18	3.26	4.21	4.74	5.28	5.86	7.14	8.63	10.39	12.45	14.96	18.18	22.38	28.04	31.99	32.92	33.83	34.70
0.19	3.08	3.97	4.47	4.98	5.52	6.69	8.04	9.60	11.40	13.54	16.18	19.51	23.75	29.51	32.92	33.83	34.70
0.20	2.92	3.77	4.24	4.71	5.21	6.30	7.54	8.95	10.54	12.41	14.66	17.40	20.77	25.10	31.05	33.83	34.70
0.21	2.77	3.58	4.02	4.47	4.94	5.96	7.10	8.39	9.83	11.49	13.45	15.78	18.56	22.01	26.52	32.56	34.70
0.22	2.63	3.41	3.83	4.26	4.71	5.66	6.73	7.91	9.23	10.72	12.46	14.49	16.86	19.71	23.31	27.91	33.93
0.23	2.51	3.26	3.66	4.07	4.49	5.39	6.39	7.50	8.71	10.07	11.63	13.43	15.49	17.93	20.91	24.59	29.20
0.24	2.39	3.11	3.50	3.89	4.29	5.15	6.10	7.13	8.26	9.51	10.93	12.55	14.38	16.49	19.03	22.09	25.80
0.25	2.29	2.98	3.35	3.73	4.12	4.93	5.83	6.80	7.86	9.02	10.33	11.80	13.44	15.32	17.53	20.14	23.22
0.26	2.18	2.86	3.22	3.58	3.95	4.73	5.59	6.51	7.50	8.58	9.80	11.15	12.64	14.33	16.29	18.56	21.19
0.27	2.09	2.74	3.09	3.44	3.80	4.55	5.36	6.24	7.18	8.20	9.33	10.59	11.95	13.49	15.25	17.26	19.55
0.28	...	2.63	2.97	3.31	3.66	4.38	5.16	6.00	6.89	7.85	8.92	10.09	11.35	12.76	14.36	16.17	18.20
0.29	...	2.53	2.86	3.19	3.52	4.22	4.97	5.78	6.63	7.54	8.54	9.64	10.82	12.12	13.59	15.23	17.05
0.30	...	2.44	2.76	3.08	3.40	4.08	4.80	5.57	6.38	7.25	8.21	9.24	10.35	11.56	12.91	14.42	16.07
0.31	...	2.34	2.66	2.97	3.28	3.94	4.64	5.38	6.16	6.99	7.90	8.88	9.92	11.05	12.32	13.71	15.22
0.32	...	2.26	2.56	2.87	3.17	3.81	4.49	5.21	5.95	6.75	7.62	8.55	9.53	10.60	11.78	13.08	14.48
0.33	...	...	2.47	2.77	3.07	3.69	4.35	5.04	5.76	6.53	7.36	8.25	9.18	10.19	11.30	12.51	13.81
0.34	...	...	2.39	2.68	2.97	3.57	4.21	4.89	5.58	6.32	7.12	7.97	8.86	9.82	10.87	12.01	13.22
0.35	...	...	2.31	2.59	2.88	3.46	4.09	4.74	5.42	6.13	6.90	7.71	8.56	9.48	10.47	11.55	12.69
0.36	...	...	...	2.50	2.79	3.36	3.97	4.60	5.26	5.95	6.69	7.47	8.29	9.16	10.11	11.13	12.21

Table 3-10 Values of L for Pipe Sizes ≥ NPS 48 and < NPS 52 (Cont'd)

Depth, d, in.	Wall Thickness, t, in.																
	0.344	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062	1.125	1.188	1.250
0.37	2.42	2.70	3.26	3.86	4.47	5.11	5.78	6.49	7.25	8.04	8.87	9.78	10.75	11.77
0.38	2.62	3.17	3.75	4.35	4.97	5.62	6.31	7.04	7.80	8.60	9.47	10.40	11.37
0.39	2.54	3.08	3.65	4.23	4.84	5.47	6.14	6.85	7.58	8.35	9.19	10.07	11.00
0.40	2.46	2.99	3.55	4.12	4.71	5.33	5.98	6.66	7.37	8.12	8.92	9.77	10.66
0.41	2.91	3.45	4.02	4.59	5.19	5.83	6.49	7.18	7.90	8.67	9.49	10.34
0.42	2.83	3.36	3.92	4.48	5.06	5.68	6.33	6.99	7.69	8.44	9.23	10.05
0.43	2.75	3.28	3.82	4.37	4.94	5.54	6.17	6.82	7.50	8.22	8.98	9.77
0.44	2.68	3.19	3.73	4.26	4.82	5.41	6.02	6.65	7.31	8.01	8.75	9.51
0.45	3.11	3.64	4.16	4.71	5.29	5.88	6.50	7.14	7.82	8.53	9.27
0.46	3.04	3.55	4.07	4.60	5.17	5.75	6.35	6.97	7.63	8.33	9.04
0.47	2.96	3.47	3.98	4.50	5.05	5.62	6.21	6.82	7.46	8.13	8.82
0.48	2.89	3.39	3.89	4.40	4.94	5.50	6.07	6.67	7.29	7.95	8.62
0.49	2.82	3.31	3.80	4.31	4.84	5.39	5.94	6.52	7.13	7.77	8.43
0.50	2.75	3.23	3.72	4.22	4.74	5.27	5.82	6.39	6.98	7.60	8.24
0.51	3.16	3.64	4.13	4.64	5.17	5.70	6.26	6.84	7.45	8.07
0.52	3.09	3.56	4.04	4.54	5.06	5.59	6.13	6.70	7.29	7.90
0.53	3.02	3.48	3.96	4.45	4.96	5.48	6.01	6.57	7.15	7.74
0.54	2.95	3.41	3.88	4.37	4.87	5.37	5.89	6.44	7.01	7.59
0.55	2.89	3.34	3.80	4.28	4.77	5.27	5.78	6.32	6.87	7.44
0.56	3.27	3.73	4.20	4.68	5.17	5.67	6.20	6.75	7.30
0.57	3.20	3.65	4.12	4.60	5.08	5.57	6.09	6.62	7.16
0.58	3.14	3.58	4.04	4.51	4.98	5.47	5.98	6.50	7.03
0.59	3.07	3.51	3.97	4.43	4.90	5.37	5.87	6.39	6.91
0.60	3.01	3.45	3.89	4.35	4.81	5.28	5.77	6.28	6.79
0.61	3.38	3.82	4.27	4.73	5.19	5.67	6.17	6.67
0.62	3.32	3.75	4.20	4.64	5.10	5.58	6.07	6.56
0.63	3.25	3.69	4.12	4.57	5.02	5.48	5.97	6.45
0.64	3.19	3.62	4.05	4.49	4.93	5.40	5.87	6.35
0.65	3.55	3.98	4.41	4.85	5.31	5.77	6.25
0.66	3.49	3.92	4.34	4.77	5.22	5.68	6.15

Table 3-10 Values of L for Pipe Sizes \geq NPS 48 and $<$ NPS 52 (Cont'd)

[illegible]

Table 3-10M Values of L for Pipe Sizes ≥ 1 219 mm and < 1 320 mm O.D.

Depth, <i>d</i> , mm	Wall Thickness, <i>t</i> , mm																
	8.7	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	30.2	31.8
0.8	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
1.0	462.4	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
1.3	462.4	502.3	521.8	539.9	557.5	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
1.5	462.4	502.3	521.8	539.9	557.5	591.0	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
1.8	296.9	502.3	521.8	539.9	557.5	591.0	623.3	653.9	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
2.0	226.2	348.8	449.4	539.9	557.5	591.0	623.3	653.9	682.8	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
2.3	186.6	268.8	327.5	402.0	503.7	591.0	623.3	653.9	682.8	710.4	737.5	No limit	No limit	No limit	No limit	No limit	No limit
2.5	160.7	222.8	264.0	312.5	373.0	555.6	623.3	653.9	682.8	710.4	737.5	763.5	788.4	No limit	No limit	No limit	No limit
2.8	142.2	192.5	224.3	260.2	302.7	417.5	609.4	653.9	682.8	710.4	737.5	763.5	788.4	812.4	No limit	No limit	No limit
3.0	128.1	170.7	196.8	225.4	258.2	341.1	463.3	653.9	682.8	710.4	737.5	763.5	788.4	812.4	836.2	859.3	No limit
3.3	116.9	154.2	176.4	200.3	227.1	292.0	380.6	508.3	682.8	710.4	737.5	763.5	788.4	812.4	836.2	859.3	881.4
3.6	107.8	141.0	160.5	181.1	203.9	257.4	326.8	419.8	549.9	710.4	737.5	763.5	788.4	812.4	836.2	859.3	881.4
3.8	100.1	130.3	147.7	165.9	185.8	231.5	288.7	361.6	456.8	590.5	737.5	763.5	788.4	812.4	836.2	859.3	881.4
4.1	93.5	121.3	137.1	153.5	171.2	211.3	260.0	320.0	394.8	493.3	632.9	763.5	788.4	812.4	836.2	859.3	881.4
4.3	87.8	113.5	128.1	143.1	159.1	194.9	237.5	288.6	350.1	427.7	531.1	674.4	788.4	812.4	836.2	859.3	881.4
4.6	82.7	106.8	120.3	134.2	148.9	181.3	219.3	263.9	316.2	380.1	461.7	568.4	712.3	812.4	836.2	859.3	881.4
4.8	78.2	100.9	113.6	126.5	140.1	169.9	204.2	243.9	289.5	343.8	411.1	495.5	603.3	749.4	836.2	859.3	881.4
5.1	74.1	95.7	107.6	119.7	132.4	160.0	191.4	227.2	267.8	315.1	372.3	442.0	527.5	637.7	788.6	859.3	881.4
5.3	70.3	90.9	102.2	113.6	125.6	151.3	180.4	213.2	249.7	291.7	341.6	400.8	471.4	559.1	673.5	827.0	881.4
5.6	66.9	86.6	97.4	108.2	119.5	143.7	170.8	201.0	234.4	272.3	316.4	368.0	428.1	500.7	592.0	708.9	861.8
5.8	63.8	82.7	93.0	103.3	114.0	136.9	162.4	190.5	221.2	255.7	295.5	341.2	393.5	455.3	531.0	624.6	741.7
6.1	60.8	79.1	88.9	98.8	109.1	130.8	154.8	181.1	209.7	241.5	277.7	318.8	365.1	418.9	483.5	561.2	655.3
6.4	58.1	75.7	85.2	94.7	104.5	125.3	148.0	172.8	199.6	229.0	262.3	299.7	341.4	389.0	445.2	511.5	589.8
6.6	55.5	72.6	81.8	90.9	100.3	120.2	141.9	165.3	190.5	218.0	248.9	283.3	321.1	364.0	413.8	471.5	538.3
6.9	53.0	69.7	78.5	87.4	96.5	115.5	136.3	158.6	182.4	208.3	237.1	268.9	303.7	342.6	387.3	438.4	496.7
7.1	...	66.9	75.5	84.1	92.9	111.2	131.1	152.4	175.0	199.5	226.5	256.2	288.4	324.1	364.7	410.6	462.2
7.4	...	64.3	72.7	81.0	89.5	107.2	126.4	146.8	168.3	191.5	217.0	244.9	274.8	307.9	345.1	386.8	433.1
7.6	...	61.9	70.0	78.1	86.4	103.5	121.9	141.5	162.2	184.3	208.5	234.7	262.8	293.5	328.0	366.2	408.2
7.9	...	59.6	67.5	75.4	83.4	100.0	117.8	136.7	156.5	177.6	200.6	225.5	252.0	280.8	312.8	348.1	386.6
8.1	...	57.3	65.1	72.8	80.6	96.8	114.0	132.2	151.3	171.5	193.5	217.1	242.2	269.3	299.3	332.1	367.7
8.4	...	...	62.8	70.3	78.0	93.7	110.4	128.0	146.4	165.8	186.9	209.4	233.2	258.9	287.1	317.8	350.9
8.6	...	...	60.7	68.0	75.4	90.8	107.0	124.1	141.8	160.6	180.8	202.4	225.1	249.4	276.1	305.0	335.9
8.9	...	...	58.6	65.8	73.0	88.0	103.8	120.4	137.6	155.7	175.1	195.8	217.5	240.7	266.0	293.3	322.4
9.1	...	...	...	63.6	70.8	85.4	100.8	116.9	133.6	151.1	169.9	189.8	210.6	232.8	256.8	282.7	310.2

Table 3-10M Values of L for Pipe Sizes ≥ 1 219 mm and < 1 320 mm O.D. (Cont'd)

Depth, d , mm	Wall Thickness, t , mm																
	8.7	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	30.2	31.8
9.4	61.6	68.6	82.9	97.9	113.7	129.8	146.8	164.9	184.1	204.1	225.4	248.4	273.0	299.0
9.7	66.5	80.5	95.2	110.5	126.3	142.7	160.3	178.9	198.1	218.5	240.6	264.1	288.8
9.9	64.4	78.2	92.6	107.6	122.9	138.9	156.0	173.9	192.5	212.2	233.3	255.8	279.4
10.2	62.5	76.0	90.1	104.7	119.7	135.3	151.9	169.2	187.2	206.2	226.6	248.2	270.7
10.4	73.9	87.7	102.0	116.7	131.8	148.0	164.9	182.3	200.6	220.3	241.0	262.7
10.7	71.9	85.5	99.5	113.8	128.6	144.3	160.7	177.6	195.4	214.3	234.4	255.2
10.9	69.9	83.3	97.0	111.0	125.5	140.8	156.8	173.2	190.4	208.8	228.1	248.2
11.2	68.0	81.1	94.6	108.3	122.5	137.5	153.0	169.0	185.7	203.5	222.2	241.6
11.4	79.1	92.4	105.8	119.7	134.3	149.5	165.1	181.3	198.6	216.7	235.4
11.7	77.1	90.2	103.3	116.9	131.2	146.1	161.3	177.1	193.9	211.5	229.6
11.9	75.2	88.0	101.0	114.3	128.3	142.8	157.7	173.1	189.5	206.5	224.1
12.2	73.4	86.0	98.7	111.8	125.5	139.7	154.2	169.3	185.2	201.9	218.9
12.4	71.6	84.0	96.5	109.4	122.9	136.8	151.0	165.7	181.2	197.4	214.0
12.7	69.9	82.1	94.4	107.1	120.3	133.9	147.8	162.2	177.4	193.2	209.3
13.0	80.3	92.4	104.8	117.8	131.2	144.8	158.9	173.7	189.1	204.9
13.2	78.5	90.4	102.7	115.4	128.6	141.9	155.7	170.2	185.3	200.6
13.5	76.7	88.5	100.6	113.1	126.0	139.1	152.6	166.8	181.6	196.6
13.7	75.0	86.7	98.5	110.9	123.6	136.4	149.7	163.6	178.0	192.7
14.0	73.4	84.9	96.6	108.7	121.2	133.8	146.9	160.5	174.6	189.0
14.2	83.1	94.7	106.6	118.9	131.3	144.1	157.5	171.3	185.4
14.5	81.4	92.8	104.6	116.7	128.9	141.5	154.6	168.2	182.0
14.7	79.7	91.0	102.6	114.6	126.6	139.0	151.9	165.2	178.7
15.0	78.1	89.2	100.7	112.5	124.3	136.5	149.2	162.3	175.5
15.2	76.5	87.5	98.9	110.5	122.1	134.1	146.6	159.4	172.5
15.5	85.9	97.1	108.5	120.0	131.8	144.1	156.7	169.5
15.7	84.2	95.3	106.6	118.0	129.6	141.7	154.1	166.7
16.0	82.6	93.6	104.8	116.0	127.4	139.3	151.5	163.9
16.3	81.1	91.9	102.9	114.0	125.3	137.0	149.1	161.2
16.5	90.3	101.2	112.1	123.2	134.8	146.7	158.7
16.8	88.7	99.5	110.3	121.3	132.7	144.4	156.2

Table 3-10M Values of L for Pipe Sizes ≥ 1 219 mm and < 1 320 mm O.D. (Cont'd)

Depth, d , mm	Wall Thickness, t , mm														
	8.7	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6
17.0	87.1	97.8	108.5	119.3	130.6
17.3	85.6	96.2	106.7	117.4	128.5
17.5	84.1	94.6	105.0	115.6	126.6
17.8	82.7	93.0	103.3	113.8	124.6
18.0	91.5	101.7	112.0	122.8
18.3	90.0	100.1	110.3	120.9
18.5	88.5	98.5	108.6	119.1
18.8	87.0	97.0	107.0	117.4
19.1	85.6	95.5	105.4	115.7
19.3	94.0	103.8	114.0
19.6	92.5	102.3	112.4
19.8	91.1	100.8	110.7
20.1	89.7	99.3	109.2
20.3	88.4	97.9	107.6
20.6	96.4	106.1
20.8	95.0	104.7
21.1	93.7	103.2
21.3	92.3	101.8
21.6	100.4
21.8	99.0
22.1	97.6
22.4	96.3
22.6	95.0
22.9	93.7

Table 3-11 Values of L for Pipe Sizes \geq NPS 52 and $<$ NPS 56

Depth, <i>d</i> , in.	Wall Thickness, <i>t</i> , in.															
	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062	1.125	1.188	1.250
0.04	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.05	20.58	21.38	22.12	22.84	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.06	20.58	21.38	22.12	22.84	24.22	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.07	20.58	21.38	22.12	22.84	24.22	25.54	26.80	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.08	14.29	18.42	22.12	22.84	24.22	25.54	26.80	27.98	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.09	11.01	13.42	16.47	20.64	24.22	25.54	26.80	27.98	29.11	30.22	No limit	No limit	No limit	No limit	No limit	No limit
0.10	9.13	10.82	12.81	15.28	22.77	25.54	26.80	27.98	29.11	30.22	31.29	29.55	No limit	No limit	No limit	No limit
0.11	7.89	9.19	10.66	12.41	17.11	24.97	26.80	27.98	29.11	30.22	31.29	29.55	33.29	No limit	No limit	No limit
0.12	7.00	8.06	9.24	10.58	13.98	18.99	26.80	27.98	29.11	30.22	31.29	32.31	33.29	34.27	35.21	No limit
0.13	6.32	7.23	8.21	9.31	11.96	15.60	20.83	27.98	29.11	30.22	31.29	32.31	33.29	34.27	35.21	36.12
0.14	5.78	6.58	7.42	8.36	10.55	13.39	17.20	22.54	29.11	30.22	31.29	32.31	33.29	34.27	35.21	36.12
0.15	5.34	6.05	6.80	7.61	9.49	11.83	14.82	18.72	24.20	30.22	31.29	32.31	33.29	34.27	35.21	36.12
0.16	4.97	5.62	6.29	7.02	8.66	10.65	13.11	16.18	20.21	25.93	31.29	32.31	33.29	34.27	35.21	36.12
0.17	4.65	5.25	5.86	6.52	7.99	9.73	11.82	14.35	17.52	21.76	27.63	32.31	33.29	34.27	35.21	36.12
0.18	4.38	4.93	5.50	6.10	7.43	8.99	10.81	12.96	15.58	18.92	23.29	29.19	33.29	34.27	35.21	36.12
0.19	4.14	4.65	5.18	5.74	6.96	8.37	9.99	11.86	14.09	16.85	20.31	24.72	30.71	34.27	35.21	36.12
0.20	3.92	4.41	4.90	5.43	6.56	7.84	9.31	10.97	12.91	15.26	18.11	21.62	26.13	32.31	35.21	36.12
0.21	3.73	4.19	4.66	5.15	6.20	7.39	8.73	10.23	11.95	14.00	16.42	19.32	22.91	27.60	33.89	36.12
0.22	3.55	3.99	4.43	4.90	5.89	7.00	8.24	9.61	11.16	12.97	15.08	17.54	20.52	24.26	29.05	35.31
0.23	3.39	3.81	4.23	4.67	5.61	6.65	7.80	9.07	10.48	12.11	13.98	16.13	18.66	21.76	25.60	30.39
0.24	3.24	3.64	4.05	4.47	5.36	6.34	7.42	8.59	9.89	11.38	13.06	14.96	17.17	19.81	23.00	26.85
0.25	3.10	3.49	3.88	4.28	5.13	6.07	7.08	8.18	9.39	10.75	12.28	13.99	15.94	18.25	20.96	24.17
0.26	2.97	3.35	3.73	4.11	4.92	5.81	6.78	7.81	8.93	10.20	11.61	13.16	14.91	16.95	19.32	22.06
0.27	2.85	3.22	3.58	3.95	4.73	5.58	6.50	7.47	8.53	9.71	11.02	12.44	14.04	15.87	17.97	20.35
0.28	2.74	3.10	3.45	3.81	4.56	5.37	6.25	7.17	8.17	9.28	10.50	11.82	13.28	14.94	16.83	18.94
0.29	2.64	2.98	3.32	3.67	4.39	5.18	6.01	6.90	7.85	8.89	10.03	11.26	12.62	14.14	15.85	17.75
0.30	2.54	2.87	3.20	3.54	4.24	5.00	5.80	6.64	7.55	8.54	9.62	10.77	12.03	13.44	15.01	16.73
0.31	2.44	2.77	3.09	3.42	4.10	4.83	5.60	6.41	7.28	8.22	9.24	10.32	11.51	12.82	14.26	15.84
0.32	2.35	2.67	2.98	3.30	3.97	4.67	5.42	6.20	7.03	7.93	8.90	9.92	11.03	12.26	13.61	15.07
0.33	...	2.57	2.88	3.19	3.84	4.52	5.25	6.00	6.80	7.66	8.58	9.56	10.61	11.76	13.02	14.38
0.34	...	2.49	2.79	3.09	3.72	4.39	5.09	5.81	6.58	7.41	8.29	9.22	10.22	11.31	12.50	13.76

Table 3-11 Values of L for Pipe Sizes \geq NPS 52 and $<$ NPS 56 (Cont'd)

Depth, <i>d</i> , in.	Wall Thickness, <i>t</i> , in.															
	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062	1.125	1.188	1.250
0.35	...	2.40	2.69	2.99	3.61	4.26	4.93	5.64	6.38	7.18	8.02	8.91	9.86	10.90	12.02	13.21
0.36	2.61	2.90	3.50	4.13	4.79	5.47	6.19	6.96	7.78	8.63	9.54	10.52	11.59	12.71
0.37	2.52	2.81	3.40	4.01	4.66	5.32	6.01	6.76	7.55	8.36	9.24	10.18	11.19	12.25
0.38	2.72	3.30	3.90	4.53	5.17	5.85	6.57	7.33	8.12	8.95	9.86	10.82	11.83
0.39	2.64	3.20	3.80	4.41	5.04	5.69	6.39	7.13	7.89	8.69	9.56	10.48	11.45
0.40	2.56	3.11	3.69	4.29	4.90	5.54	6.22	6.94	7.67	8.45	9.28	10.17	11.09
0.41	3.03	3.60	4.18	4.78	5.40	6.06	6.76	7.47	8.22	9.03	9.88	10.76
0.42	2.94	3.50	4.08	4.66	5.27	5.91	6.59	7.28	8.01	8.78	9.60	10.46
0.43	2.86	3.41	3.97	4.55	5.14	5.77	6.42	7.10	7.80	8.56	9.35	10.17
0.44	2.79	3.33	3.88	4.44	5.02	5.63	6.27	6.93	7.61	8.34	9.11	9.90
0.45	3.24	3.78	4.33	4.90	5.50	6.13	6.76	7.43	8.14	8.88	9.65
0.46	3.16	3.69	4.23	4.79	5.38	5.99	6.61	7.26	7.95	8.67	9.41
0.47	3.08	3.61	4.14	4.68	5.26	5.85	6.46	7.09	7.76	8.46	9.18
0.48	3.01	3.52	4.05	4.58	5.14	5.73	6.32	6.94	7.59	8.27	8.97
0.49	2.93	3.44	3.96	4.48	5.03	5.60	6.19	6.79	7.43	8.09	8.77
0.50	2.86	3.37	3.87	4.39	4.93	5.49	6.06	6.65	7.27	7.92	8.58
0.51	3.29	3.79	4.30	4.83	5.38	5.93	6.51	7.12	7.75	8.40
0.52	3.22	3.71	4.21	4.73	5.27	5.81	6.38	6.97	7.59	8.22
0.53	3.14	3.63	4.12	4.64	5.16	5.70	6.25	6.84	7.44	8.06
0.54	3.07	3.55	4.04	4.54	5.06	5.59	6.13	6.70	7.29	7.90
0.55	3.01	3.48	3.96	4.46	4.97	5.48	6.02	6.58	7.16	7.74
0.56	3.41	3.88	4.37	4.87	5.38	5.91	6.45	7.02	7.60
0.57	3.34	3.80	4.29	4.78	5.28	5.80	6.34	6.89	7.46
0.58	3.27	3.73	4.21	4.69	5.19	5.69	6.22	6.77	7.32
0.59	3.20	3.66	4.13	4.61	5.10	5.59	6.11	6.65	7.19
0.60	3.14	3.59	4.05	4.53	5.01	5.50	6.01	6.53	7.07
0.61	3.52	3.98	4.45	4.92	5.40	5.90	6.42	6.95
0.62	3.45	3.91	4.37	4.83	5.31	5.81	6.31	6.83
0.63	3.39	3.84	4.29	4.75	5.22	5.71	6.21	6.72
0.64	3.32	3.77	4.22	4.67	5.13	5.62	6.11	6.61
0.65	3.70	4.15	4.59	5.05	5.52	6.01	6.50
0.66	3.63	4.08	4.52	4.97	5.44	5.92	6.40
0.67	3.57	4.01	4.44	4.89	5.35	5.82	6.30
0.68	3.51	3.94	4.37	4.81	5.27	5.73	6.20
0.69	3.45	3.87	4.30	4.74	5.19	5.65	6.11
0.70	3.39	3.81	4.23	4.66	5.11	5.56	6.02

Table 3-11 Values of L for Pipe Sizes \geq NPS 52 and $<$ NPS 56 (Cont'd)

Depth, <i>d</i> , in.	Wall Thickness, <i>t</i> , in.															
	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062	1.125	1.188	1.250
0.71	3.75	4.17	4.59	5.03	5.48	5.93
0.72	3.69	4.10	4.52	4.95	5.40	5.84
0.73	3.63	4.04	4.45	4.88	5.32	5.76
0.74	3.57	3.97	4.38	4.81	5.24	5.68
0.75	3.51	3.91	4.32	4.74	5.17	5.60
0.76	3.85	4.25	4.67	5.09	5.52
0.77	3.79	4.19	4.60	5.02	5.44
0.78	3.73	4.13	4.54	4.95	5.37
0.79	3.68	4.07	4.47	4.88	5.29
0.80	3.62	4.01	4.41	4.82	5.22
0.81	3.95	4.35	4.75	5.15
0.82	3.89	4.29	4.69	5.08
0.83	3.84	4.23	4.62	5.02
0.84	3.78	4.17	4.56	4.95
0.85	4.11	4.50	4.89
0.86	4.06	4.44	4.83
0.87	4.00	4.38	4.76
0.88	3.95	4.33	4.70
0.89	3.89	4.27	4.64
0.90	3.84	4.21	4.58
0.91	4.16	4.53
0.92	4.10	4.47
0.93	4.05	4.41
0.94	4.00	4.36
0.95	3.95	4.31
0.96	4.25
0.97	4.20
0.98	4.15
0.99	4.10
1.00	4.05

Table 3-11M Values of L for Pipe Sizes ≥ 1 320 mm and < 1 422 mm O.D.

Depth, <i>d</i> , mm	Wall Thickness, <i>t</i> , mm															30.2	31.8
	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6			
1.0	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	
1.3	522.8	543.1	562.0	580.2	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	
1.5	522.8	543.1	562.0	580.2	615.2	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	
1.8	522.8	543.1	562.0	580.2	615.2	648.7	680.6	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	
2.0	363.1	467.7	562.0	580.2	615.2	648.7	680.6	710.6	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	
2.3	279.7	340.9	418.4	524.3	615.2	648.7	680.6	710.6	739.4	767.6	No limit	No limit	No limit	No limit	No limit	No limit	
2.5	231.9	274.8	325.3	388.2	578.3	648.7	680.6	710.6	739.4	767.6	794.7	750.6	No limit	No limit	No limit	No limit	
2.8	200.4	233.5	270.8	315.1	434.5	634.3	680.6	710.6	739.4	767.6	794.7	750.6	845.6	No limit	No limit	No limit	
3.0	177.7	204.8	234.6	268.7	355.0	482.3	680.6	710.6	739.4	767.6	794.7	820.6	845.6	870.3	894.4	No limit	
3.3	160.5	183.6	208.5	236.4	303.9	396.2	529.1	710.6	739.4	767.6	794.7	820.6	845.6	870.3	894.4	917.4	
3.6	146.8	167.0	188.5	212.2	267.9	340.2	437.0	572.4	739.4	767.6	794.7	820.6	845.6	870.3	894.4	917.4	
3.8	135.6	153.7	172.7	193.4	241.0	300.5	376.3	475.5	614.7	767.6	794.7	820.6	845.6	870.3	894.4	917.4	
4.1	126.2	142.7	159.8	178.2	219.9	270.6	333.0	410.9	513.4	658.7	794.7	820.6	845.6	870.3	894.4	917.4	
4.3	118.2	133.3	148.9	165.6	202.9	247.2	300.3	364.4	445.1	552.8	701.9	820.6	845.6	870.3	894.4	917.4	
4.6	111.2	125.2	139.7	155.0	188.7	228.3	274.6	329.1	395.6	480.6	591.7	741.4	845.6	870.3	894.4	917.4	
4.8	105.0	118.2	131.6	145.8	176.8	212.6	253.8	301.3	357.9	427.9	515.8	628.0	780.0	870.3	894.4	917.4	
5.1	99.6	112.0	124.6	137.8	166.5	199.3	236.5	278.7	328.0	387.5	460.0	549.0	663.7	820.8	894.4	917.4	
5.3	94.6	106.4	118.3	130.7	157.5	187.8	221.9	259.9	303.6	355.5	417.1	490.7	582.0	701.0	860.7	917.4	
5.6	90.2	101.3	112.6	124.4	149.6	177.8	209.2	244.0	283.4	329.4	383.0	445.6	521.1	616.2	737.9	897.0	
5.8	86.1	96.8	107.5	118.7	142.5	169.0	198.2	230.3	266.2	307.6	355.1	409.6	473.9	552.7	650.1	772.0	
6.1	82.3	92.6	102.9	113.5	136.1	161.1	188.5	218.3	251.3	289.0	331.8	380.0	436.1	503.2	584.1	682.0	
6.4	78.8	88.7	98.6	108.8	130.4	154.1	179.9	207.7	238.4	273.0	311.9	355.3	404.9	463.4	532.4	613.9	
6.6	75.6	85.1	94.6	104.4	125.1	147.7	172.1	198.3	226.9	259.1	294.8	334.3	378.8	430.6	490.7	560.3	
6.9	72.5	81.8	91.0	100.4	120.2	141.8	165.1	189.8	216.8	246.8	279.9	316.1	356.6	403.1	456.3	516.9	
7.1	69.7	78.6	87.5	96.7	115.8	136.5	158.6	182.2	207.6	235.8	266.6	300.1	337.3	379.6	427.4	481.1	
7.4	67.0	75.7	84.3	93.2	111.6	131.5	152.8	175.2	199.3	225.9	254.9	286.1	320.4	359.2	402.6	450.8	
7.6	64.4	72.9	81.3	89.9	107.7	126.9	147.3	168.8	191.8	217.0	244.3	273.5	305.5	341.4	381.1	424.9	
7.9	62.0	70.3	78.5	86.8	104.1	122.7	142.3	162.9	184.9	208.8	234.7	262.2	292.2	325.6	362.3	402.4	
8.1	59.7	67.8	75.8	83.9	100.7	118.7	137.6	157.4	178.5	201.4	226.0	252.0	280.3	311.5	345.7	382.7	
8.4	...	65.4	73.2	81.1	97.5	114.9	133.3	152.4	172.6	194.5	218.0	242.8	269.4	298.8	330.8	365.2	
8.6	...	63.1	70.8	78.5	94.5	111.4	129.2	147.6	167.1	188.2	210.6	234.2	259.6	287.3	317.4	349.6	

Table 3-11M Values of L for Pipe Sizes ≥ 1 320 mm and < 1 422 mm O.D. (Cont'd)

Depth, <i>d</i> , mm	Wall Thickness, <i>t</i> , mm															
	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	30.2	31.8
8.9	...	60.9	68.4	76.0	91.6	108.1	125.3	143.2	162.0	182.3	203.8	226.4	250.6	276.9	305.3	335.6
9.1	66.2	73.6	88.9	104.9	121.7	139.0	157.3	176.8	197.5	219.2	242.3	267.3	294.3	322.8
9.4	64.1	71.4	86.3	101.9	118.3	135.1	152.8	171.7	191.6	212.5	234.6	258.5	284.2	311.2
9.7	69.2	83.8	99.1	115.0	131.4	148.6	166.9	186.2	206.2	227.5	250.4	274.9	300.6
9.9	67.1	81.4	96.4	112.0	127.9	144.6	162.3	181.0	200.4	220.8	242.8	266.3	290.8
10.2	65.0	79.1	93.8	109.0	124.6	140.8	158.1	176.2	194.9	214.6	235.8	258.3	281.8
10.4	76.9	91.3	106.2	121.4	137.2	154.0	171.6	189.7	208.8	229.2	250.9	273.4
10.7	74.8	88.9	103.5	118.4	133.8	150.2	167.3	184.9	203.3	223.1	243.9	265.6
10.9	72.8	86.7	101.0	115.5	130.6	146.5	163.2	180.3	198.2	217.3	237.4	258.3
11.2	70.8	84.5	98.5	112.7	127.5	143.1	159.3	175.9	193.3	211.9	231.3	251.5
11.4	82.3	96.1	110.1	124.5	139.8	155.6	171.8	188.7	206.7	225.6	245.1
11.7	80.3	93.8	107.6	121.7	136.6	152.0	167.9	184.3	201.8	220.1	239.0
11.9	78.3	91.6	105.1	119.0	133.6	148.7	164.1	180.2	197.2	215.0	233.3
12.2	76.4	89.5	102.8	116.4	130.7	145.5	160.5	176.2	192.8	210.1	227.9
12.4	74.5	87.5	100.5	113.9	127.9	142.4	157.1	172.4	188.6	205.5	222.8
12.7	72.7	85.5	98.3	111.4	125.2	139.4	153.9	168.8	184.6	201.1	217.9
13.0	83.5	96.2	109.1	122.6	136.6	150.7	165.4	180.8	196.8	213.2
13.2	81.7	94.1	106.9	120.1	133.8	147.7	162.1	177.2	192.8	208.8
13.5	79.8	92.1	104.7	117.7	131.2	144.8	158.9	173.6	189.0	204.6
13.7	78.1	90.2	102.6	115.4	128.6	142.0	155.8	170.3	185.3	200.6
14.0	76.3	88.3	100.5	113.2	126.2	139.3	152.9	167.1	181.7	196.7
14.2	86.5	98.5	111.0	123.8	136.7	150.0	163.9	178.3	193.0
14.5	84.7	96.6	108.9	121.5	134.2	147.3	161.0	175.1	189.4
14.7	83.0	94.7	106.8	119.2	131.8	144.6	158.1	171.9	186.0
15.0	81.3	92.9	104.9	117.1	129.4	142.1	155.3	168.9	182.7
15.2	79.6	91.1	102.9	115.0	127.1	139.6	152.6	165.9	179.5
15.5	89.4	101.0	112.9	124.9	137.2	150.0	163.1	176.4
15.7	87.7	99.2	111.0	122.8	134.9	147.5	160.4	173.5
16.0	86.0	97.4	109.0	120.7	132.6	145.0	157.7	170.6
16.3	84.4	95.7	107.2	118.7	130.4	142.6	155.2	167.8
16.5	94.0	105.3	116.7	128.3	140.3	152.7	165.1
16.8	92.3	103.5	114.8	126.2	138.1	150.3	162.5
17.0	90.7	101.8	112.9	124.2	135.9	147.9	160.0
17.3	89.1	100.1	111.1	122.2	133.8	145.6	157.5
17.5	87.6	98.4	109.3	120.3	131.7	143.4	155.2
17.8	86.0	96.8	107.5	118.4	129.7	141.3	152.8

Table 3-11M Values of L for Pipe Sizes ≥ 1 320 mm and < 1 422 mm O.D. (Cont'd)

Depth, <i>d</i> , mm	Wall Thickness, <i>t</i> , mm															
	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	30.2	31.8
18.0	95.2	105.8	116.6	127.8	139.2	150.6
18.3	93.6	104.1	114.8	125.9	137.1	148.4
18.5	92.1	102.5	113.1	124.0	135.1	146.3
18.8	90.6	100.9	111.4	122.2	133.2	144.2
19.1	89.1	99.4	109.7	120.4	131.2	142.1
19.3	97.8	108.1	118.6	129.4	140.2
19.6	96.3	106.5	116.9	127.6	138.2
19.8	94.8	104.9	115.3	125.8	136.3
20.1	20.1	...	...	...	113.6	124.1	...	93.4	103.4	113.6	124.1	134.5
20.3	112.0	122.4	...	92.0	101.9	112.0	122.4	132.7
20.6	100.4	110.5	120.7	130.9
20.8	98.9	108.9	119.0	129.2
21.1	97.5	107.4	117.4	127.5
21.3	96.1	105.9	115.9	125.8
21.6	104.5	114.3	124.2
21.8	103.0	112.8	122.6
22.1	22.1	...	...	...	101.6	111.3	...	...	...	101.6	111.3	121.0
22.4	100.2	109.9	119.4
22.6	98.9	108.4	117.9
22.9	22.9	...	...	...	...	...	...	...	...	97.5	107.0	116.4
23.1	105.6	115.0
23.4	104.3	113.5
23.6	23.6	...	...	...	...	...	...	...	...	...	102.9	112.1
23.9	101.6	110.7
24.1	100.3	109.4
24.4	24.4	...	...	...	...	...	...	...	...	...	...	108.0
24.6	106.7
24.9	105.4
25.1	25.1	...	...	...	...	...	...	...	...	...	...	104.1
25.4	102.8

Table 3-12 Values of L for Pipe Sizes \geq NPS 56 Through NPS 60

Depth, <i>d</i> , in.	Wall Thickness, <i>t</i> , in.															
	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062	1.125	1.188	1.250
0.04	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.05	21.36	22.19	22.96	23.71	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.06	21.36	22.19	22.96	23.71	25.13	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.07	21.36	22.19	22.96	23.71	25.13	26.50	27.81	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.08	14.83	19.11	22.96	23.71	25.13	26.50	27.81	29.03	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
0.09	11.43	13.93	17.09	21.42	25.13	26.50	27.81	29.03	30.21	31.36	No limit	No limit	No limit	No limit	No limit	No limit
0.10	9.48	11.23	13.29	15.86	23.63	26.50	27.81	29.03	30.21	31.36	32.47	33.53	No limit	No limit	No limit	No limit
0.11	8.19	9.54	11.07	12.87	17.75	25.91	27.81	29.03	30.21	31.36	32.47	33.53	34.55	No limit	No limit	No limit
0.12	7.26	8.37	9.59	10.98	14.50	19.70	27.81	29.03	30.21	31.36	32.47	33.53	34.55	35.56	36.54	No limit
0.13	6.56	7.50	8.52	9.66	12.42	16.19	21.62	29.03	30.21	31.36	32.47	33.53	34.55	35.56	36.54	37.48
0.14	6.00	6.82	7.70	8.67	10.95	13.90	17.85	23.39	30.21	31.36	32.47	33.53	34.55	35.56	36.54	37.48
0.15	5.54	6.28	7.06	7.90	9.84	12.28	15.37	19.43	25.11	31.36	32.47	33.53	34.55	35.56	36.54	37.48
0.16	5.16	5.83	6.53	7.28	8.98	11.06	13.61	16.79	20.98	26.91	32.47	33.53	34.55	35.56	36.54	37.48
0.17	4.83	5.45	6.08	6.77	8.29	10.10	12.27	14.89	18.19	22.58	28.68	33.53	34.55	35.56	36.54	37.48
0.18	4.54	5.12	5.71	6.33	7.71	9.33	11.22	13.45	16.16	19.63	24.17	30.29	34.55	35.56	36.54	37.48
0.19	4.29	4.83	5.38	5.96	7.22	8.68	10.37	12.31	14.62	17.48	21.07	25.66	31.87	35.56	36.54	37.48
0.20	4.07	4.57	5.09	5.63	6.80	8.14	9.66	11.39	13.40	15.83	18.79	22.43	27.12	33.53	36.54	37.48
0.21	3.87	4.35	4.83	5.34	6.44	7.67	9.06	10.62	12.41	14.52	17.04	20.05	23.78	28.64	35.17	37.48
0.22	3.68	4.14	4.60	5.08	6.11	7.27	8.55	9.97	11.58	13.46	15.65	18.21	21.29	25.18	30.15	36.65
0.23	3.52	3.95	4.39	4.85	5.82	6.90	8.10	9.41	10.87	12.57	14.51	16.73	19.36	22.58	26.56	31.54
0.24	3.36	3.78	4.20	4.64	5.56	6.58	7.70	8.92	10.27	11.81	13.56	15.53	17.82	20.56	23.86	27.86
0.25	3.22	3.62	4.03	4.44	5.33	6.29	7.35	8.49	9.74	11.16	12.74	14.52	16.54	18.93	21.75	25.08
0.26	3.09	3.48	3.87	4.27	5.11	6.03	7.03	8.10	9.27	10.58	12.05	13.66	15.48	17.59	20.05	22.89
0.27	2.96	3.34	3.72	4.10	4.91	5.79	6.74	7.76	8.86	10.08	11.43	12.91	14.57	16.47	18.64	21.12
0.28	2.85	3.21	3.58	3.95	4.73	5.58	6.48	7.44	8.48	9.63	10.89	12.26	13.78	15.51	17.46	19.65
0.29	2.74	3.09	3.45	3.81	4.56	5.37	6.24	7.16	8.14	9.23	10.41	11.69	13.09	14.68	16.45	18.42
0.30	2.63	2.98	3.32	3.67	4.40	5.19	6.02	6.90	7.84	8.86	9.98	11.18	12.48	13.95	15.57	17.36
0.31	2.53	2.87	3.21	3.55	4.25	5.01	5.81	6.65	7.55	8.53	9.59	10.71	11.94	13.30	14.80	16.44
0.32	2.44	2.77	3.10	3.43	4.11	4.85	5.62	6.43	7.29	8.23	9.23	10.30	11.45	12.73	14.12	15.64
0.33	...	2.67	2.99	3.32	3.98	4.70	5.44	6.22	7.05	7.95	8.91	9.92	11.01	12.21	13.52	14.92
0.34	...	2.58	2.89	3.21	3.86	4.55	5.28	6.03	6.83	7.69	8.61	9.57	10.61	11.74	12.97	14.28

Table 3-12 Values of L for Pipe Sizes \geq NPS 56 Through NPS 60 (Cont'd)

Depth, <i>d</i> , in.	Wall Thickness, <i>t</i> , in.															
	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062	1.125	1.188	1.250
0.35	...	2.49	2.80	3.11	3.74	4.42	5.12	5.85	6.62	7.45	8.33	9.25	10.24	11.31	12.47	13.71
0.36	2.70	3.01	3.63	4.29	4.97	5.68	6.43	7.22	8.07	8.96	9.90	10.92	12.02	13.19
0.37	2.62	2.92	3.52	4.17	4.83	5.52	6.24	7.01	7.83	8.68	9.58	10.56	11.61	12.72
0.38	2.83	3.42	4.05	4.70	5.37	6.07	6.82	7.61	8.43	9.29	10.23	11.23	12.28
0.39	2.74	3.33	3.94	4.57	5.23	5.91	6.63	7.40	8.19	9.02	9.92	10.88	11.88
0.40	2.66	3.23	3.83	4.45	5.09	5.75	6.46	7.20	7.96	8.77	9.63	10.55	11.51
0.41	3.14	3.73	4.34	4.96	5.61	6.29	7.01	7.75	8.53	9.37	10.25	11.17
0.42	3.06	3.63	4.23	4.84	5.47	6.14	6.83	7.55	8.31	9.11	9.97	10.85
0.43	2.97	3.54	4.13	4.72	5.34	5.99	6.67	7.37	8.10	8.88	9.70	10.55
0.44	2.89	3.45	4.02	4.61	5.21	5.85	6.51	7.19	7.90	8.66	9.45	10.27
0.45	3.36	3.93	4.50	5.09	5.71	6.36	7.02	7.71	8.45	9.22	10.01
0.46	3.28	3.83	4.39	4.97	5.58	6.21	6.86	7.53	8.25	8.99	9.76
0.47	3.20	3.74	4.29	4.86	5.46	6.07	6.71	7.36	8.06	8.78	9.53
0.48	3.12	3.66	4.20	4.75	5.34	5.94	6.56	7.20	7.88	8.58	9.31
0.49	3.04	3.57	4.11	4.65	5.22	5.82	6.42	7.05	7.71	8.39	9.10
0.50	2.97	3.49	4.02	4.55	5.12	5.70	6.29	6.90	7.54	8.21	8.90
0.51	3.41	3.93	4.46	5.01	5.58	6.16	6.76	7.39	8.04	8.71
0.52	3.34	3.85	4.37	4.91	5.47	6.03	6.62	7.24	7.88	8.53
0.53	3.26	3.76	4.28	4.81	5.36	5.92	6.49	7.09	7.72	8.36
0.54	3.19	3.69	4.19	4.72	5.26	5.80	6.37	6.96	7.57	8.19
0.55	3.12	3.61	4.11	4.62	5.15	5.69	6.25	6.83	7.43	8.04
0.56	3.53	4.02	4.53	5.06	5.59	6.13	6.70	7.29	7.88
0.57	3.46	3.95	4.45	4.96	5.48	6.02	6.58	7.15	7.74
0.58	3.39	3.87	4.37	4.87	5.38	5.91	6.46	7.02	7.60
0.59	3.32	3.79	4.28	4.78	5.29	5.80	6.34	6.90	7.46
0.60	3.25	3.72	4.20	4.70	5.19	5.70	6.23	6.78	7.33
0.61	3.65	4.13	4.61	5.10	5.60	6.13	6.66	7.21
0.62	3.58	4.05	4.53	5.02	5.51	6.02	6.55	7.09
0.63	3.51	3.98	4.45	4.93	5.42	5.92	6.44	6.97
0.64	3.45	3.91	4.38	4.85	5.33	5.83	6.34	6.86
0.65	3.84	4.30	4.77	5.24	5.73	6.24	6.75
0.66	3.77	4.23	4.69	5.16	5.64	6.14	6.64
0.67	3.71	4.16	4.61	5.07	5.55	6.04	6.54
0.68	3.64	4.09	4.54	4.99	5.47	5.95	6.44
0.69	3.58	4.02	4.46	4.92	5.38	5.86	6.34
0.70	3.51	3.95	4.39	4.84	5.30	5.77	6.24

Table 3-12 Values of L for Pipe Sizes \geq NPS 56 Through NPS 60 (Cont'd)

Depth, <i>d</i> , in.	Wall Thickness, <i>t</i> , in.															
	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062	1.125	1.188	1.250
0.71	3.89	4.32	4.76	5.22	5.69	6.15
0.72	3.83	4.26	4.69	5.14	5.60	6.06
0.73	3.76	4.19	4.62	5.07	5.52	5.98
0.74	3.70	4.12	4.55	4.99	5.44	5.89
0.75	3.64	4.06	4.48	4.92	5.36	5.81
0.76	4.00	4.42	4.85	5.29	5.73
0.77	3.94	4.35	4.78	5.21	5.65
0.78	3.87	4.29	4.71	5.14	5.57
0.79	3.82	4.22	4.64	5.07	5.49
0.80	3.76	4.16	4.58	5.00	5.42
0.81	4.10	4.51	4.93	5.35
0.82	4.04	4.45	4.86	5.28
0.83	3.98	4.39	4.80	5.21
0.84	3.93	4.33	4.73	5.14
0.85	4.27	4.67	5.07
0.86	4.21	4.61	5.01
0.87	4.15	4.55	4.94
0.88	4.10	4.49	4.88
0.89	4.04	4.43	4.82
0.90	3.99	4.37	4.76
0.91	4.32	4.70
0.92	4.26	4.64
0.93	4.20	4.58
0.94	4.15	4.52
0.95	4.10	4.47
0.96	4.41
0.97	4.36
0.98	4.31
0.99	4.25
1.00	4.20

Table 3-12M Values of L for Pipe Sizes ≥ 1 422 mm Through 1 524 mm O.D.

Depth, d , mm	Wall Thickness, t , mm															30.2	31.8
	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	No limit		
1.0	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
1.3	542.6	563.6	583.2	602.1	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
1.5	542.6	563.6	583.2	602.1	638.4	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
1.8	542.6	563.6	583.2	602.1	638.4	673.2	706.3	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
2.0	376.8	485.4	583.2	602.1	638.4	673.2	706.3	737.5	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
2.3	290.3	353.8	434.2	544.1	638.4	673.2	706.3	737.5	767.3	796.5	No limit	No limit	No limit	No limit	No limit	No limit	No limit
2.5	240.7	285.1	337.6	402.9	600.1	673.2	706.3	737.5	767.3	796.5	824.7	851.5	No limit	No limit	No limit	No limit	No limit
2.8	207.9	242.3	281.1	327.0	450.9	658.2	706.3	737.5	767.3	796.5	824.7	851.5	877.5	No limit	No limit	No limit	No limit
3.0	184.4	212.6	243.5	278.9	368.4	500.5	706.3	737.5	767.3	796.5	824.7	851.5	877.5	903.2	928.1	No limit	No limit
3.3	166.5	190.5	216.3	245.3	315.4	411.1	549.1	737.5	767.3	796.5	824.7	851.5	877.5	903.2	928.1	952.1	952.1
3.6	152.3	173.3	195.7	220.2	278.0	353.0	453.5	594.0	767.3	796.5	824.7	851.5	877.5	903.2	928.1	952.1	952.1
3.8	140.7	159.5	179.2	200.7	250.1	311.8	390.5	493.4	637.9	796.5	824.7	851.5	877.5	903.2	928.1	952.1	952.1
4.1	131.0	148.1	165.8	185.0	228.2	280.8	345.6	426.4	532.8	683.6	824.7	851.5	877.5	903.2	928.1	952.1	952.1
4.3	122.6	138.3	154.6	171.9	210.5	256.5	311.7	378.1	461.9	573.6	728.4	851.5	877.5	903.2	928.1	952.1	952.1
4.6	115.4	130.0	144.9	160.8	195.9	236.9	285.0	341.6	410.5	498.7	614.0	769.4	877.5	903.2	928.1	952.1	952.1
4.8	109.0	122.7	136.6	151.3	183.5	220.6	263.4	312.7	371.4	444.0	535.2	651.7	809.5	903.2	928.1	952.1	952.1
5.1	103.3	116.2	129.3	143.0	172.8	206.8	245.4	289.2	340.4	402.2	477.4	569.8	688.8	851.7	928.1	952.1	952.1
5.3	98.2	110.4	122.7	135.7	163.5	194.9	230.2	269.7	315.1	368.9	432.9	509.2	603.9	727.5	893.2	952.1	952.1
5.6	93.6	105.2	116.9	129.1	155.2	184.5	217.1	253.2	294.1	341.8	397.5	462.4	540.8	639.5	765.7	930.8	930.8
5.8	89.3	100.4	111.6	123.2	147.9	175.4	205.7	238.9	276.2	319.2	368.5	425.0	491.8	573.6	674.7	801.2	801.2
6.1	85.4	96.1	106.7	117.8	141.3	167.2	195.7	226.5	260.8	299.9	344.3	394.4	452.5	522.2	606.2	707.8	707.8
6.4	81.8	92.0	102.3	112.9	135.3	159.9	186.7	215.5	247.4	283.3	323.7	368.7	420.2	480.9	552.5	637.0	637.0
6.6	78.4	88.3	98.2	108.4	129.8	153.2	178.6	205.8	235.5	268.9	306.0	346.9	393.1	446.9	509.3	581.4	581.4
6.9	75.3	84.8	94.4	104.2	124.8	147.2	171.3	197.0	224.9	256.1	290.4	328.0	370.0	418.3	473.6	536.5	536.5
7.1	72.3	81.6	90.8	100.3	120.1	141.6	164.6	189.0	215.4	244.7	276.7	311.5	350.0	393.9	443.5	499.2	499.2
7.4	69.5	78.5	87.5	96.7	115.8	136.5	158.5	181.8	206.8	234.4	264.5	296.9	332.5	372.8	417.8	467.8	467.8
7.6	66.8	75.7	84.4	93.3	111.8	131.7	152.9	175.1	199.0	225.2	253.5	283.8	317.1	354.2	395.5	440.9	440.9
7.9	64.3	72.9	81.4	90.1	108.1	127.3	147.7	169.0	191.8	216.7	243.5	272.1	303.3	337.9	376.0	417.6	417.6
8.1	61.9	70.3	78.6	87.1	104.5	123.1	142.8	163.4	185.2	209.0	234.5	261.6	290.9	323.2	358.7	397.1	397.1
8.4	...	67.9	76.0	84.2	101.2	119.3	138.3	158.1	179.1	201.9	226.2	251.9	279.6	310.1	343.3	379.0	379.0
8.6	...	65.5	73.4	81.5	98.0	115.6	134.1	153.2	173.4	195.3	218.6	243.1	269.4	298.2	329.4	362.8	362.8

Table 3-12M Values of L for Pipe Sizes ≥ 1 422 mm Through 1 524 mm O.D. (Cont'd)

Depth, d, mm	Wall Thickness, t, mm															
	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	30.2	31.8
8.9	...	63.3	71.0	78.9	95.1	112.2	130.1	148.6	168.2	189.2	211.5	235.0	260.0	287.4	316.8	348.2
9.1	68.7	76.4	92.2	108.9	126.3	144.3	163.2	183.5	205.0	227.5	251.4	277.4	305.4	335.0
9.4	66.5	74.1	89.5	105.8	122.8	140.2	158.5	178.2	198.9	220.5	243.4	268.3	294.9	323.0
9.7	71.8	86.9	102.8	119.4	136.4	154.2	173.2	193.2	214.0	236.0	259.8	285.2	312.0
9.9	69.6	84.5	100.0	116.2	132.7	150.0	168.5	187.8	207.9	229.2	252.0	276.3	301.8
10.2	67.5	82.1	97.3	113.1	129.3	146.1	164.0	182.8	202.2	222.7	244.7	268.0	292.4
10.4	79.8	94.8	110.2	126.0	142.4	159.8	178.1	196.9	216.7	237.9	260.3	283.7
10.7	77.6	92.3	107.4	122.9	138.9	155.8	173.6	191.8	211.0	231.5	253.1	275.6
10.9	75.5	89.9	104.8	119.9	135.5	152.1	169.3	187.1	205.7	225.5	246.4	268.1
11.2	73.5	87.6	102.2	117.0	132.3	148.5	165.3	182.6	200.6	219.9	240.1	261.0
11.4	85.4	99.8	114.3	129.2	145.0	161.5	178.3	195.8	214.5	234.1	254.3
11.7	83.3	97.4	111.6	126.3	141.8	157.8	174.2	191.3	209.4	228.4	248.0
11.9	81.3	95.1	109.1	123.5	138.6	154.3	170.3	187.0	204.6	223.1	242.1
12.2	79.3	92.9	106.6	120.8	135.6	150.9	166.6	182.9	200.1	218.0	236.5
12.4	77.3	90.8	104.3	118.2	132.7	147.7	163.1	179.0	195.7	213.2	231.2
12.7	75.4	88.7	102.0	115.7	129.9	144.7	159.7	175.2	191.6	208.6	226.1
13.0	86.7	99.8	113.2	127.3	141.7	156.4	171.6	187.6	204.3	221.3
13.2	84.8	97.7	110.9	124.7	138.9	153.3	168.2	183.8	200.1	216.7
13.5	82.9	95.6	108.6	122.2	136.1	150.3	164.9	180.2	196.1	212.3
13.7	81.0	93.6	106.4	119.8	133.5	147.4	161.7	176.7	192.3	208.1
14.0	79.2	91.7	104.3	117.4	130.9	144.6	158.6	173.4	188.6	204.1
14.2	89.8	102.2	115.2	128.5	141.9	155.7	170.1	185.1	200.3
14.5	87.9	100.2	113.0	126.1	139.3	152.8	167.0	181.7	196.6
14.7	86.1	98.3	110.9	123.8	136.7	150.1	164.0	178.4	193.0
15.0	84.4	96.4	108.8	121.5	134.3	147.4	161.1	175.3	189.6
15.2	82.7	94.5	106.8	119.3	131.9	144.9	158.3	172.2	186.3
15.5	92.7	104.9	117.2	129.6	142.4	155.6	169.3	183.1
15.7	91.0	103.0	115.2	127.4	140.0	153.0	166.4	180.0
16.0	89.3	101.1	113.1	125.2	137.6	150.5	163.7	177.0
16.3	87.6	99.3	111.2	123.1	135.3	148.0	161.0	174.2
16.5	97.5	109.3	121.1	133.1	145.6	158.4	171.4
16.8	95.8	107.4	119.1	131.0	143.3	155.9	168.7
17.0	94.1	105.6	117.1	128.9	141.0	153.5	166.0
17.3	92.5	103.9	115.2	126.8	138.8	151.1	163.5
17.5	90.9	102.1	113.4	124.8	136.7	148.8	161.0
17.8	89.3	100.4	111.6	122.9	134.6	146.6	158.6

Table 3-12M Values of L for Pipe Sizes ≥ 1 422 mm Through 1 524 mm O.D. (Cont'd)

Depth, <i>d</i> , mm	Wall Thickness, <i>t</i> , mm															
	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	30.2	31.8
18.0	98.8	109.8	121.0	132.6	144.4	156.3
18.3	97.2	108.1	119.2	130.6	142.3	154.0
18.5	95.6	106.4	117.3	128.7	140.2	151.8
18.8	94.0	104.7	115.6	126.8	138.2	149.6
19.1	92.5	103.1	113.8	124.9	136.2	147.5
19.3	101.5	112.2	123.1	134.3	145.4
19.6	100.0	110.5	121.4	132.4	143.4
19.8	98.4	108.9	119.6	130.5	141.5
20.1	96.9	107.3	117.9	128.7	139.6
20.3	95.4	105.7	116.3	127.0	137.7
20.6	104.2	114.6	125.2	135.8
20.8	102.7	113.0	123.5	134.0
21.1	101.2	111.5	121.9	132.3
21.3	99.7	109.9	120.2	130.5
21.6	108.4	118.6	128.8
21.8	106.9	117.1	127.2
22.1	105.5	115.5	125.6
22.4	104.0	114.0	124.0
22.6	102.6	112.5	122.4
22.9	101.2	111.1	120.8
23.1	109.6	119.3
23.4	108.2	117.8
23.6	106.8	116.4
23.9	105.4	114.9
24.1	104.1	113.5
24.4	112.1
24.6	110.7
24.9	109.4
25.1	108.0
25.4	106.7

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ASME B31G INTERPRETATIONS VOLUME 1

Replies to Technical Inquiries October 30, 2009 through April 30, 2012

FOREWORD

It has been agreed to publish interpretations issued by the B31 Committee concerning B31G as part of the update service to the Manual. The interpretations have been assigned numbers in chronological order. Each interpretation applies either to the latest Edition at the time of issuance of the interpretation or the Edition stated in the reply. Subsequent revisions to the Manual may have superseded the reply.

These replies are taken verbatim from the original letters, except for a few typographical and editorial corrections made for the purpose of improved clarity. In some instances, a review of the interpretation revealed a need for corrections of a technical nature. In these cases, a revised reply bearing the original interpretation number with the suffix R is presented. In the case where an interpretation is corrected by errata, the original interpretation number with the suffix E is used.

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Interpretation: G-1-01

Subject: ASME B31G-2009

Date Issued: September 29, 2011

File: 11-1259

Question (1): When calculating the term $z = L^2/Dt$, is t in this case the corroded pipe wall thickness?

Reply (1): No. Dimension t is the uncorroded pipe wall thickness.

Question (2): When calculating the failure stress (S_F), is t the corroded pipe wall thickness?

Reply (2): Yes.

Question (3): When calculating the hoop stress (S_O or S_h), is t in this case the corroded pipe wall thickness?

Reply (3): No. Dimension t is the uncorroded pipe wall thickness.

Question (4): Does t represent the uncorroded pipe wall thickness?

Reply (4): Yes.

ASME CODE FOR PRESSURE PIPING, B31

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