

# Friction Loss - Schedule 40 Pipe

For Water at 60°F per 100 Feet of Pipe

Pipe Size	3/4"			1"			1-1/4"			1-1/2"			2"			2-1/2"		
	U.S. Gallons Per Min.	VEL Ft. Per Sec.	Head Loss Feet	U.S. Gallons Per Min.	VEL Ft. Per Sec.	Head Loss Feet	U.S. Gallons Per Min.	VEL Ft. Per Sec.	Head Loss Feet	U.S. Gallons Per Min.	VEL Ft. Per Sec.	Head Loss Feet	U.S. Gallons Per Min.	VEL Ft. Per Sec.	Head Loss Feet	U.S. Gallons Per Min.	VEL Ft. Per Sec.	Head Loss Feet
2	1.20	1.93	1.04	0.80	0.60	0.32												
4	2.40	6.94	3.74	1.50	2.14	1.16	0.86	0.56	0.30	0.63	0.20	0.11						
6	3.60	14.70	7.95	2.20	4.54	2.45	1.29	0.85	0.46	0.95	0.56	0.31	0.57	0.17	0.09			
8	4.80	25.00	13.50	3.00	7.78	4.20	1.72	1.20	0.65	1.26	0.96	0.52	0.77	0.28	0.15	0.54	0.12	0.06
10	6.00	37.80	20.40	3.70	11.70	6.32	2.15	2.04	1.10	1.58	1.45	0.78	0.96	0.43	0.23	0.67	0.18	0.10
12	7.20	53.00	28.60	4.50	16.40	8.86	2.57	3.08	1.66	1.89	2.04	1.10	1.15	0.60	0.33	0.80	0.25	0.14
15	9.00	80.00	43.30	5.60	24.80	13.39	3.17	6.54	3.53	2.37	3.09	1.67	1.53	1.03	0.56	0.98	0.36	0.19
18	10.80	112.00	60.50	6.70	34.70	18.74	3.86	6.72	3.63	2.84	4.31	2.33	1.72	1.28	0.69	1.21	0.54	0.29
20	12.00	136.00	73.50	7.40	42.10	22.73	4.29	9.13	4.93	3.15	5.24	2.83	1.91	1.55	0.84	1.34	0.65	0.35
25				9.30	63.60	34.34	5.36	11.10	5.99	3.80	7.30	3.94	2.55	2.73	1.47	1.63	0.92	0.50
30				11.10	89.20	48.17	6.43	16.80	9.07	4.72	11.00	5.94	2.87	3.29	1.78	2.01	1.39	0.75
35				13.00	119.00	64.26	7.51	23.50	12.69	5.51	14.70	7.94	3.35	4.37	2.36	2.35	1.84	0.99
40				14.90	152.00	82.08	8.58	31.20	16.85	6.30	18.30	9.88	3.82	5.60	3.02	2.68	2.36	1.27
45				16.70	189.00	102.06	9.64	50.20	27.11	7.03	23.20	12.53	4.30	6.96	3.76	3.02	2.93	1.58
50							10.70	60.40	32.62	7.87	23.40	12.64	4.78	8.46	4.57	3.35	3.56	1.92
55							11.80	72.55	39.18	8.66	34.00	18.36	5.26	10.10	5.45	3.69	4.24	2.29
60							12.90	84.70	45.74	9.44	39.60	21.38	5.74	11.90	6.43	4.02	4.99	2.69
65							13.95	99.35	53.65	10.23	45.90	24.79	6.21	13.70	7.40	4.36	5.79	3.13
70							15.00	114.00	61.56	11.02	53.00	28.62	6.69	15.80	8.53	4.69	6.64	3.59
75							16.10	129.00	69.66	11.80	60.00	32.40	7.17	17.90	9.67	5.03	7.55	4.08
80							17.20	144.00	77.76	12.59	68.00	36.72	7.65	20.20	10.91	5.36	8.50	4.59
85							18.25	161.50	87.21	13.38	75.00	40.50	8.13	22.60	12.20	5.70	9.51	5.14
90							19.30	179.00	96.66	14.71	84.00	45.36	8.61	25.10	13.55	6.03	10.60	5.72
95										14.95	93.00	50.22	9.08	27.70	14.96	6.37	11.70	6.32
100										15.74	102.00	55.08	9.56	30.50	16.47	6.70	12.80	6.91
110										17.31	122.00	65.88	10.50	36.40	19.66	7.37	15.30	8.26
120										18.89	143.00	77.22	11.50	42.70	23.06	8.04	18.00	9.72
130										20.46	166.00	89.64	12.40	49.60	26.78	8.71	20.90	11.29
140										22.04	190.00	102.60	13.40	56.90	30.73	9.38	23.90	12.91
150										23.60	218.00	117.72	14.30	64.70	34.94	10.00	27.30	14.74
160										25.20	245.00	132.30	15.30	72.80	39.31	10.70	30.70	16.58
170										26.80	275.00	148.50	16.30	81.40	43.96	11.40	34.30	18.52
180										28.40	305.00	164.70	17.20	90.50	48.87	12.10	38.10	20.57
190													18.20	100.00	54.00	12.70	42.10	22.73
200													19.10	110.00	59.40	13.40	46.30	25.00
220													21.00	131.00	70.74	14.70	55.30	29.86
240													22.90	154.00	83.16	16.10	66.40	35.86
260													24.90	179.00	96.66	17.40	75.30	40.66
280													26.80	205.00	110.70	18.80	86.30	46.60
300													28.70	233.00	125.82	20.10	98.10	52.97
320																20.92	103.00	55.62
340																22.22	116.00	62.64
360																23.53	123.00	66.42
380																24.84	142.00	76.68
400																26.80	167.00	90.18
450																30.20	208.00	112.32

Values are for estimating purposes only.

# Friction Loss - Schedule 40 Pipe

For Water at 60°F per 100 Feet of Pipe

Pipe Size	3"		4"		6"		8"		10"		12"	
	VEL Ft. Per Sec.	Head Loss Feet	VEL Ft. Per Sec.	Head Loss Feet	VEL Ft. Per Sec.	Head Loss Feet	VEL Ft. Per Sec.	Head Loss Feet	VEL Ft. Per Sec.	Head Loss Feet	VEL Ft. Per Sec.	Head Loss Feet
U.S. Gallons Per Min.	Steel	Plastic	Steel	Plastic	Steel	Plastic	Steel	Plastic	Steel	Plastic	Steel	Plastic
45	1.95	1.02	0.55									
50	2.17	1.24	0.67									
55	2.39	1.47	0.79									
60	2.60	1.74	0.94									
65	2.82	2.01	1.09									
70	3.04	2.31	1.25	1.76	0.62	0.33						
75	3.25	2.62	1.41	1.91	0.73	0.39						
80	3.47	2.96	1.60	2.02	0.79	0.43						
85	3.69	3.31	1.79	2.17	0.91	0.49						
90	3.91	3.67	1.98	2.27	0.98	0.53						
95	4.12	4.06	2.19	2.42	1.12	0.60						
100	4.34	4.47	2.41	2.52	1.19	0.64						
110	4.77	5.33	2.88	2.77	1.42	0.77						
120	5.21	6.26	3.38	3.02	1.67	0.90						
130	5.64	7.26	3.92	3.28	1.93	1.04						
140	6.08	8.32	4.49	3.53	2.22	1.20	1.56	0.30	0.16			
150	6.51	9.48	5.12	3.78	2.53	1.37	1.70	0.36	0.19			
160	6.94	10.70	5.78	4.03	2.84	1.53	1.78	0.39	0.21			
170	7.37	12.02	6.47	4.29	3.18	1.72	1.92	0.45	0.24			
180	7.81	13.20	7.13	4.54	3.53	1.91	2.00	0.48	0.26			
190	8.24	14.50	7.87	4.79	3.90	2.11	2.16	0.55	0.30			
200	8.68	16.10	8.69	5.05	4.29	2.32	2.22	0.58	0.32			
220	9.55	19.20	10.37	5.55	5.12	2.76	2.44	0.70	0.38			
240	10.40	22.60	12.20	6.05	6.01	3.25	2.67	0.82	0.44			
260	11.30	26.20	14.15	6.55	6.97	3.76	2.89	0.95	0.51			
280	12.20	30.00	16.20	7.08	8.00	4.32	3.11	1.09	0.59	1.80	0.29	0.15
300	13.00	34.10	18.41	7.57	9.09	4.91	3.33	1.24	0.67	1.92	0.32	0.18
320	13.90	38.40	20.74	8.07	10.20	5.51	3.56	1.39	0.75	2.05	0.37	0.20
340	14.80	43.00	23.22	8.58	11.50	6.21	3.78	1.56	0.84	2.18	0.41	0.22
360	15.60	47.80	25.81	9.08	12.70	6.86	4.00	1.73	0.93	2.30	0.45	0.24
380	16.50	52.80	28.51	9.59	14.10	7.61	4.22	1.92	1.04	2.43	0.50	0.27
400	17.40	58.00	31.32	10.10	15.50	8.37	4.44	2.11	1.14	2.57	0.55	0.30
450	20.40	78.00	42.12	11.49	19.00	10.26	5.00	2.62	1.41	2.88	0.69	0.37
500	21.70	87.70	47.36	12.60	23.40	12.64	5.56	3.19	1.72	3.20	0.84	0.45
550	23.90	105.00	56.70	13.90	27.90	15.07	6.11	3.80	2.05	3.52	1.00	0.54
600	26.00	123.00	66.42	15.10	32.80	17.71	6.66	4.46	2.41	3.85	1.17	0.63
650	28.20	143.00	77.22	16.40	38.00	20.52	7.22	5.17	2.79	4.17	1.36	0.73
700				17.60	43.60	23.54	7.78	5.93	3.20	4.49	1.56	0.84
750				18.90	49.50	26.73	8.34	6.74	3.64	4.81	1.77	0.96
800				20.20	55.80	30.13	8.90	7.60	4.10	5.13	1.99	1.07
850				21.40	62.40	33.70	9.45	8.50	4.59	5.45	2.23	1.20
900				22.70	69.30	37.42	10.00	9.44	5.10	5.77	2.48	1.34
950				24.00	76.60	41.36	10.50	10.20	5.51	6.09	2.74	1.48
1000				25.20	84.30	45.52	11.10	11.50	6.21	6.41	3.02	1.63
1100				27.70	101.00	54.54	12.20	13.70	7.40	7.05	3.60	1.94
1200							13.30	16.10	8.69	7.69	4.23	2.28
1300							14.40	18.60	10.04	8.33	4.90	2.65
1400							15.60	21.40	11.56	8.97	5.62	3.03
1500							16.70	24.30	13.12	9.61	6.39	3.45
1600							17.80	27.40	14.80	10.30	7.20	3.89
1800							20.00	34.10	18.41	11.50	8.95	4.83
2000							22.20	41.40	22.36	12.80	10.90	5.89
2200							24.40	49.40	26.68	14.10	13.00	7.02
2400							26.70	58.00	31.32	15.40	15.20	8.21
2600										16.70	17.70	9.56
2800										18.00	20.30	10.96
3000										19.20	23.00	12.42
3200										20.80	26.80	14.47
3500										22.40	30.60	16.52
3800										24.00	34.90	18.85
4200										27.20	44.00	23.76
4500										28.80	48.80	26.35
5000										32.00	59.30	32.02
5500										35.30	70.70	38.18
6000											24.40	27.50
6500											26.40	31.80
7000											28.50	36.50
7500												

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