FRICTION LOSS IN WATER HOSE

Pounds per Square Inch per 100 Foot Length Straight Smooth Bore

Flow of Water in U.S. Gal. per Min.	ACTUAL INERNAL DIAMETER — INCHES														
	1/2	5/8	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
1	1.41														
2	5.09	1.72	0.71												
5	27.7	9.36	3.85	0.95	0.32	0.13									
10	100	33.7	13.9	3.42	1.15	0.47	0.12								
15		71.4	29.4	7.24	2.44	1.00	0.25	0.08							
20		122	50.0	12.3	4.16	1.71	0.42	0.14							
25			75.6	18.6	6.28	2.59	0.64	0.21							
30			106	26.1	8.80	3.62	0.89	0.30	0.12						
35			141	34.7	11.7	4.82	1.19	0.40	0.16						
40				44.4	15.0	6.17	1.52	0.51	0.21						
45				55.3	18.6	7.67	1.89	0.64	0.26						
50				67.1	22.7	9.32	2.30	0.77	0.32						
60				94.1	31.7	13.1	3.22	1.09	0.45						
70				125	42.2	17.4	4.28	1.44	0.59						
80					54.0	22.2	5.48	1.85	0.76						
90					67.2	27.7	6.81	2.30	0.95	0.23					
100					81.7	33.6	8.28	2.79	1.15	0.28					
125					123	50.8	12.5	4.22	1.74	0.43					
150						71.1	17.5	5.91	2.43	0.60	0.20				
175						94.6	23.3	7.86	3.24	0.80	0.27				
200						121	29.8	10.1	4.14	1.02	0.34				
225							37.1	12.5	5.15	1.27	0.43				
250							45.1	15.2	6.26	1.54	0.52				
275							53.8	18.1	7.47	1.84	0.62				
300							63.2	21.3	8.77	2.16	0.73	0.30			
350							84.0	28.3	11.7	2.87	0.97	0.40			
400							108	36.3	14.9	3.68	1.24	0.51			
450								45.1	18.6	4.57	1.54	0.64			
500								54.8	22.6	5.56	1.88	0.77	0.19		
600								76.8	31.6	7.79	2.63	1.08	0.27		
700								102	42.1	10.4	3.49	1.44	0.35	0.12	
800								131	53.8	13.3	4.47	1.84	0.45	0.15	
1000									81.4	20.0	6.76	2.78	0.69	0.23	0.10
1200									114	28.1	9.47	3.90	0.96	0.32	0.13
1400									152	37.3	12.6	5.18	1.28	0.43	0.18
1600										47.8	16.1	6.64	1.64	0.55	0.23
1800										59.5	20.0	8.25	2.03	0.69	0.28
2000										72.2	24.4	10.0	2.47	0.83	0.34
2500											36.8	15.2	3.73	1.26	0.52
3000											51.6	21.2	5.23	1.76	0.73

To convert PSI to Megapascals (MPa) multiply by 0.006895
To convert from PSI to feet of Hydraulic Head multiply by 2.309
To convert from U.S. gallons per minute to cubic feet per minute multiply by 0.1337
To convert from U.S. gallons per minute to cubic meters per second multiply by 6.309×10^{-5}

$$\triangle P = 4.51 \left(\frac{Q}{C}\right)^{1.85} \times \frac{L}{d^{4.87}} \quad or \quad \triangle P = \frac{0.0483Q^{1.85}}{d^{4.87}} \quad @60^{\circ}\ F\ (1536^{\circ}\ C)$$

where: $\triangle P$ = pressure loss in lbs. per square inch
Q = quantity in U.S. gallons per minute
C = 140 for clean, extremely smooth bore and straight hose
L = Length of hose in feet
d = Inside diameter of hose in inches

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NOTE: Friction loss can vary by 20% due to temperature. Bends can increase friction loss by 50%.

C value is the Hazen-Williams coefficient; smaller values must be used for rougher tube surfaces.