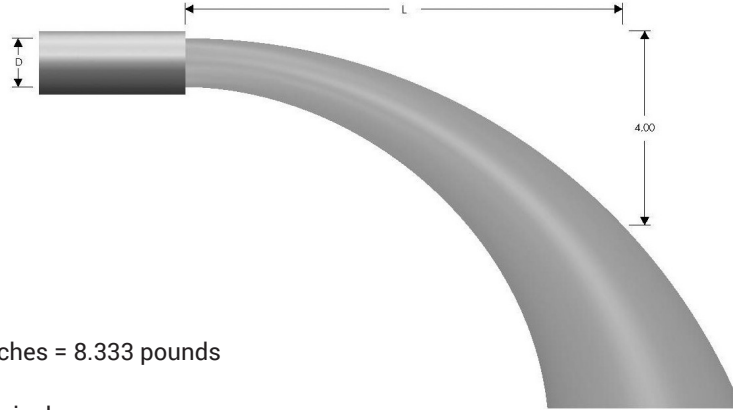


Water Constants and Formulas



1 gallon water = 231 cubic inches = 8.333 pounds

1 pound of water = 27.7 cubic inches

1 cubic foot water = 7.5 gallons = 62.5 pounds (salt water weighs approximately 64.3 pounds per cubic foot)

Pounds per square inch at bottom of a column of water = height of column in feet x .434

1 miner's inch = 9 to 12 gallons per minute

Horsepower to raise water:

If pumping liquid other than water, multiply the gallons per minute below by the liquid's specific gravity

$$\text{Horsepower} = \frac{\text{gallons per minute} \times \text{total head in feet}}{3,960}$$

Gallons per minute through a pipe:

$$\text{GPM} = .0408 \times \text{pipe diameter inches}^2 \times \text{feet/minute water velocity}$$

Weight of water in a pipe:

$$\text{Pounds water} = \text{pipe length feet} \times \text{pipe diameter inches}^2 \times .34$$

L Distance (inches)	Gallons per Minute Discharge for a Given Nominal Pipe Diameter D (inches)				
	5	6	8	10	12
5	163	---	---	---	---
6	195	285	---	---	---
7	228	334	580	---	---
8	260	380	665	1060	---
9	293	430	750	1190	1660
10	326	476	830	1330	1850
11	360	525	915	1460	2020
12	390	570	1000	1600	2220
13	425	620	1080	1730	2400
14	456	670	1160	1860	2590
15	490	710	1250	2000	2780
16	520	760	1330	2120	2960
17	550	810	1410	2260	3140
18	590	860	1500	2390	3330
19	620	910	1580	2520	3500
20	650	950	1660	2660	3700
21	685	1000	1750	2800	3890
22	720	1050	1830	2920	4060
23	750	1100	1910	3060	4250
24	---	1140	2000	3200	4440

Water Discharge Table

This table is intended for general reference and general applicability only and should not be relied upon as the sole or precise source of information available with respect to the subject covered. The user should also refer to and follow manufacturers' specific instructions and recommendations with regard to such information, where they exist.

Flow of water through 100 foot lengths of hose, Straight - Smooth Bore - US gallons per minute

PSI at Hose Inlet	Nominal Hose I.D. Diameters - Inches							
	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"
20	26	47	76	161	290	468	997	2895
30	32	58	94	200	360	582	1240	3603
40	38	68	110	234	421	680	1449	4209
50	43	77	124	264	475	767	1635	4748
60	47	85	137	291	524	846	1804	5239
75	53	95	154	329	591	955	2035	5910
100	62	112	180	384	690	1115	2377	6904
125	70	126	203	433	779	1258	2681	7788
150	77	139	224	478	859	1388	2958	8593
200	90	162	262	558	1004	1621	3455	10038

Figures are to be used as a guide since the hose inside diameter tolerance, the type of fittings used, and orifice restriction all influence the actual discharge. Thus, variations plus or minus from the table may be obtained in actual service.

