Water Flow Chart #1 The chart below takes into consideration the potential damage from hydraulic hammer (shock) and noise considerations due to excessive fluid velocity. You can flow more than what is shown in the chart (see **Chart #2** below) however, you may run into problems if you do.

			Assume Gravity to Low Pressure. About 6f/s flow velocity, also suction side of pump		Assume Average Pressure. (20-100PSI) About 12f/s flow velocity		Assume "High Pressure" PEAK flow. About 18f/s flow velocity*	
Sch 40 Pipe Size	ID (range)	OD	**GPM** (with minimal pressure loss & noise)	**GPH** (with minimal pressure loss & noise)	**GPM** (with minimal pressure loss & noise)	**GPH** (with minimal pressure loss & noise)	**GPM** (with significant pressure loss & noise)	**GPH** (with significant pressure loss & noise)
1/2"	.50-.60"	.85"	7 gpm	420 gph	14 gpm	840 gph	21 gpm	1,260 gph
3/4"	.75-.85"	1.06"	11 gpm	660 gph	23 gpm	1,410 gph	36 gpm	2,160 gph
1"	1.00-1.03"	1.33"	16 gpm	960 gph	37 gpm	2,220 gph	58 gpm	3,510 gph
1.25"	1.25-1.36"	1.67"	25 gpm	1,500 gph	62 gpm	3,750 gph	100 gpm	5,940 gph
1.5"	1.50-1.60"	1.90"	35 gpm	2100 gph	81 gpm	4,830 gph	126 gpm	7,560 gph
2"	1.95-2.05"	2.38"	55 gpm	3300 gph	127 gpm	7,650 gph	200 gpm	12,000 gph
2.5"	2.35-2.45"	2.89"	80 gpm	4800 gph	190 gpm	11,400 gph	300 gpm	17,550 gph
3"	2.90-3.05"	3.50"	140 gpm	8400 gph	273 gpm	16,350 gph	425 gpm	25,650 gph

GPM/GPH Flow based on PVC Pipe Size

There are now 3 charts on this page showing water flow through a pipe. These 3 charts come from 3 different sources, and they all are just general guidelines. and should not be relied on as a precise source for information or as a substitute for engineering. The data between them does vary. In the chart to the left is a general guideline for how much liquid a pipe of specific size can flow in GPM (Gallons Per Minute) & GPH (Gallons Per Hour.) There are three

4"	3.85-3.95"	4.50"	240 gpm	14,400 gph	480 gpm	28,800 gph	700 gpm	42,000 gph
5"	4.95-5.05"	5.563"	380 gpm	22,800 gph	750 gpm	45,000 gph	1100 gpm	66,000 gph
6"	5.85-5.95"	6.61"	550 gpm	33,000 gph	1100 gpm	66,000 gph	1700 gpm	102,000 gph
8"	7.96"	8.625"	950 gpm	57,000 gph	1900 gpm	114,000 gph	2800 gpm	168,000 gph

Water Flow Chart #2

Here is yet another set of data predicting the amount of flow through a straight piece of pipe. If you add any direction change (90's, 45's Tees, Wyes, etc) or potention restrictions (valves, elevation change, obstruction, etc) these estimates will also change.

Pressure	Flow in GPM through pipe ID in inches							
PSI	1"	1.25"	1.5"	2"	2.5"	3"	4"	5"
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	153	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

Water Flow Chart #3

Below is another data set we've run across. What is shows is how much flow you will get across a stainless metal ball valve of the length specified with a 1PSI pressure drop from one side of the valve to the other.

Size (ID, inches)	Length (inches)	Flow (GPM)
1/2	4.25	26
3/4	4.62	50
1	5.00	94
1-1/2	6.50	260
2	7.00	480
2-1/2	7.50	750
3	8.00	1300
4	9.00	2300

columns. (Well there are really six, but each colum is shown in Gallons per minute, and then again as Gallons per Hour.) The first set of columns would be the minium you would expect for the pipe size shown using nothing but gravity in a low head pressure situation to power the flow. The 2nd set of columns show what you can expect using an average pump with a pressure from 20 to 100psi. The 3rd set of columns is the maximum flow based on maximum recommended velocity of the liquid in the pipe. You may exceed this, but you will have to contend with excessive noise and exceedingly high inertial impacts. (I.e. Possible system failure due to hydraulic hammer effects.) This is a very general guide and is subject to many variables. Pressure, noise allowance, bends, fittings, viscosity, etc. affect how much liquid will flow through a pipe of given size. If you can accept more noise and have higher pressure, you can pump more at the risk of system failure. If you have a lot of bends and fittings you will flow less. The flow rates shown should not produce unacceptable noise, however, many variables affect noise, so this is no

6	15.50	5400

Note: The data is for water through the valve only, and does not take into account the rest of the system. It does not give flow velocity, so there is some question as to the applicability of the data. The data comes from a book for industrial piping and probably assumes a massive pump, high flow velocities and metallic pipes. (Ie, where water hammer and noise are less of a concern than with PVC pipe.) As always, "you mileage may vary."

guarantee that the system will be noiseless. Sometimes experimentation is the only sure way to know if a system will be noisy or not. The flow rates shown are for water, with viscosity of 1. Higher viscosity liquids will flow less, lower viscosity liquids may flow more.

Note: One of the benefits of using Flex PVC pipe is being able to make long gradual bends instead of using fittings which will allow more flow with less noise, less back pressure, and less load on the pump. **In other words, a more efficient system.**

*"High Pressure" is a general and non-specific figure. What might be "high pressure" for 1/2" pipe (600psi) may not be "high pressure" for 2" pipe (280psi). There are just too many variables to consider to give a real world number. The fact of the matter is, on a pressurized system, the pump will dictate the flow and pressure as much as the pipe used. To achieve the flow figures in the peak column, it's assuming there are no bends and a short straight flow path. If your system has bends and T's, Wyes, etc, you should go to a larger pipe to achieve the flow desired. Also feed pressure effects the system. If the feed pressure is too low, you can get cavitation and you'll damage the pump and flow very little.

Specifications:

Pipe Size Chart
Flow Chart
Flex PVC Pipe Specs
Rigid Sch 40/80 Pipe Specs
Clear Braided PVC Tubing Specs
Clear PVC Hose/Tubing Specs
Flexible PVC Pipe Application Guidelines
FlexPVC Hose and Tubing Selection Guide
Why it's important to buy Made In The USA FlexPVC.

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