

FLOW GALLONS OF WATER PER MINUTE	PRESSURE DROP																	
	IN POUNDS PER SQUARE INCH THRU { V - FULL PORT MAGNATROL OR GLOBE VALVE PIPE - PER LENGTH AS INDICATED																	
	3/8"		1/2"		3/4"		1"		1-1/4"		1-1/2"		2"		2-1/2"		3"	
	V	PIPE 100'	V	PIPE 100'	V	PIPE 100'	V	PIPE 100'	V	PIPE 100'	V	PIPE 100'	V	PIPE 100'	V	PIPE 100'	V	PIPE 100'
1	.35	3.3	0.13	.84														
2	1.3	12	.54	3.0														
3	2.8	25	1.1	6.4	.29	1.4												
5	7.2	66	3.1	17	.77	3.6	.25	1.1										
7	13	120	5.7	31	1.4	6.8	.48	2.0	.22	.55								
10	26	250	11	61	2.8	12	.96	3.9	.42	1.1	.22	.42						
15	56	510	23	130	6.5	28	2.0	8.3	.89	2.3	.46	.88						
20	94	900	40	220	9.7	48	3.4	14	1.5	3.9	.79	1.6	.28	.48				
25	140	1,300	59	330	15	73	5.3	22	2.3	5.9	1.2	2.3	.43	.72	.25	.26		
35	-	-	115	590	29	140	11	41	4.3	11	2.2	4.5	.81	1.3	.47	.55	.22	.20
50	-	-	220	1,200	55	270	19	79	8.4	21	4.3	8.5	1.6	2.6	.95	1.1	.45	.40
75	-	-	-	-	120	570	37	170	18	46	9.5	18	3.4	5.6	1.9	2.3	.93	.85
100	-	-	-	-	200	990	71	290	30	78	16	31	5.7	9.5	3.3	3.9	1.6	1.4
150	-	-	-	-	-	-	150	610	65	170	34	66	12	20	7.2	8.3	3.4	3.1
200	-	-	-	-	-	-	-	-	110	290	58	110	21	35	12	14	5.9	5.3
300	-	-	-	-	-	-	-	-	230	610	120	230	45	70	26	30	12	11
400	-	-	-	-	-	-	-	-	-	-	210	410	77	130	44	52	21	19
500	-	-	-	-	-	-	-	-	-	-	-	-	120	190	67	78	32	29
750	-	-	-	-	-	-	-	-	-	-	-	-	220	410	140	170	70	62
1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	290	120	110
1,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	230

* For light oil up to # 3, use same readings as for water.

For medium heavy oil add 70% to the above pressure drop readings.

PROBLEM: Water is required at the rate of 35 gallons per minute. Pressure in water mains is 40 PSI. Layout calls for one Magnatrol valve, one hand operated globe valve, 50 feet of pipe, various tees, elbows and unions.

SOLUTION: Checking the 1 inch size, the Magnatrol valve is found to have a pressure drop of 11 pounds; therefore the other globe valve also will have a drop of 11 pounds. The pipe at 41 pounds per hundred feet will show a drop of about 21 pounds for a length of 50 feet. Assuming that the other fittings together have a resistance equal to 15 feet of pipe, this comes to a drop of 6 pounds; or a total of about 40 pounds for the whole installation, which is too high. Repeating this procedure with the 1-1/4 inch size, we find that the Magnatrol valve accounts for 4.3 pounds, hand valve 4.3 pounds, 60 feet of pipe about 6 pounds, fittings about 2 pounds, a total of about 17 pounds, amply sufficient for the requirement.

PROBLEM: Same as above, except job calls for a gallonage of 60 per minute.

SOLUTION: Rate of 60 gallons per minute is not shown in the table, but by taking it as roughly half-way between 50 and 75, the various drops can be found by interpolation on the same basis.

Thus for 1-1/4 inch valves the drop of 8.4 plus 18, divided by 2, is 13 pounds each, omitting the fraction; drop for the pipe, taking 21 plus 46, divided by 2, is about 34 pounds per 100 feet, or 17 pounds per 50 feet, plus a about 5 pounds for the miscellaneous fittings, a total indicated pressure drop of 48 pounds, which is rather high. By the same token a layout of 1-1/2 inch pipe size would add up to a drop of 23 pounds, giving a more favorable safety margin.