

Filters, Water & Instrumentation Tank Based Water Systems



Tank Flow Rate Table													
Tank Size Diameter (Inches)	Typical Valve Sizes (Inches)	Square Feet SF	Gallons per Minute per Square Foot of Bed Area										
			1.0	1.25	1.85	2	3	4	5	10	12	15	20
9	1	0.44	0.44	0.60	0.8	0.9	1.3	1.8	2.2	4.4	5.3	6.6	8.8
12	1	0.79	0.79	1.0	1.5	1.6	2.4	3.1	3.9	7.9	9.4	11.8	15.8
16	1	1.40	1.40	1.7	2.6	2.8	4.2	5.6	7.0	14.0	16.8	20.9	28.0
20	2	2.18	2.18	2.7	4.0	4.4	6.5	8.7	10.9	21.8	26.2	32.7	43.6
24	2	3.14	3.14	3.9	5.8	6.3	9.4	12.6	15.7	31.4	37.7	47.1	62.8
30	2	4.91	4.91	6.1	9.1	9.8	14.7	19.6	24.5	49.1	58.9	73.6	98.2
36	2 & 3	7.07	7.07	8.8	13.1	14.1	21.2	28.3	35.3	70.7	84.8	106.0	141.4
42	3	9.62	9.62	12.0	17.8	19.2	28.9	38.5	48.1	96.2	115.5	144.3	192.4
48	3 & 4	12.57	12.57	15.7	23.2	25.1	37.7	50.3	62.8	125.7	150.8	188.5	251.4
60	4 & 6	19.64	19.64	24.5	36.3	39.3	58.9	78.5	98.2	196.4	235.6	294.5	392.8
72	6	28.27	28.27	35.3	52.3	56.5	84.8	113.1	141.4	282.7	339.3	424.1	565.4

Service & Reconditioning Values

Softener - Hardness Removal

Service Flow Rates 5 to 15 GPM/SF - Standard 10
 Backwash - 5 Minutes @ 5 GPM/SF
 Regen Draw - 17 Minutes @ 1.25 GPM/SF
 Slow Rinse - 60 Minutes @ 1.85 GPM/SF
 Fast Rinse - 6 Minutes @ 2 GPM/FT³ of resin

Carbon - Dechlorination

Service Flow Rates 10 to 15 GPM/SF - Standard 10
 Backwash - 5 to 15 Minutes @ 10 GPM/SF
 Forward Rinse - 2 Minutes @ 10 GPM/SF

Carbon - Organics Removal

Service Flow Rates 3 to 5 GPM/SF - Standard 3
 Backwash - 5 to 15 Minutes @ 10 GPM/SF
 Forward Rinse - 2 Minutes @ 10 GPM/SF

Neutralizer - pH Correction

Service Flow Rates 4 to 6 GPM/SF - Standard 5
 Backwash - 5 to 15 Minutes @ 8 to 12 GPM/SF
 Forward Rinse - 2 Minutes @ 10 GPM/SF

Greensand - Iron, Manganese & Sulfide

Service Flow Rates 3 to 4 GPM/SF - Standard 3
 Backwash - 10 to 15 Minutes @ 12 GPM/SF
 Forward Rinse - 2 Minutes @ 10 GPM/SF

Multi-Media Filters - Particle Removal

Service Flow Rates 5 to 15 GPM/SF - Standard 10
 Backwash - 10 to 15 Minutes @ 15 GPM/SF
 Forward Rinse - 2 Minutes @ 10 GPM/SF

Water Softener Calculation Example

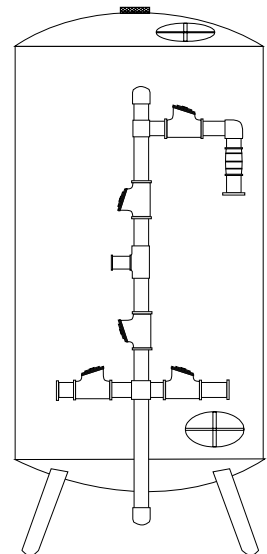
We use the Tank Flow Rate Table and the Service & Reconditioning Values to estimate how a Tank Based Water System will work. First you determine how large a tank based system you will need by looking at the Service Flow Rates and then checking for Tank Size in the table.

For example, for Boiler Feedwater Softening, to remove hardness at a flow rate of 25 GPM, use 10 GPM/SF as the Standard Service flow rate. To get to 25 gpm in the table, at 10 GPM/SF we see a 24 inch tank will work.

Finally, we also determine from the table, how much water the softener will use for regeneration.

Backwash - 5 Minutes @ 5 GPM/SF	$5 \times 10.9 = 54.5$
Regen Draw - 17 Minutes @ 1.25 GPM/SF	$17 \times 3.9 = 66.3$
Slow Rinse - 60 Minutes @ 1.85 GPM/SF	$60 \times 5.8 = 348$
Fast Rinse - 6 Minutes @ 2 GPM/FT ³ of resin	$6 \times 6(\text{FT}^3) \times 2 = 72$
Total Gallons Used = 540.8	

You can use this approach for any Tank Type treatment process.



FILTERS, WATER & INSTRUMENTATION, INC.

www.FiltersWater.com

23 Londonderry Road, Unit 13

Londonderry, NH 03053

PH 603 434-9577 FX 603 434-2832