Water Pressure Booster Systems

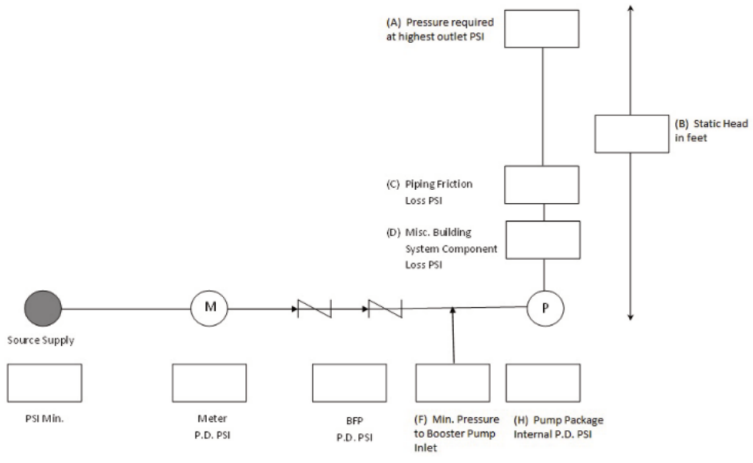
System Sizing Worksheet

Instructions: Follow steps 1, 2, and 3 to select the proper water pressure booster system.

Step 1

Since municipal water pressure is often sufficient to handle the needs of many buildings, first determine if a water pressure booster system is required.

Project Criteria	PSI
A. Pressure required at the highest outlet	
B. Static Head from Pump Package Inlet (Elevation in feet x .433psi/ft)	
C. Piping friction loss (Estimate 10% of static head in PSI)	
D. Pressure loss through building system components such as water filters, softeners, etc.	
E. Required building system pressure (Add A+B+C+D)	
F. Subtract the minimum suction pressure at the pump (The minimum pressure after water meter and backflow preventer)	(-)
G. Total (E minus F)	
H. Add internal water booster pressure loss (5psig)	(+) 5
I. Required pump differential pressure “Boost” (G+H)	



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Fixture Flow Units

Step 2

Instructions: Use this table to determine peak flow capacity. Do not include fixtures not serviced by the water pressure booster system.

Fixture	Occupancy	Load in Fixture Units	x	Number of Fixtures	Total
Bathroom Group F.V.*	Private	8	x		=
Bathroom Group F.T.*	Private	6	x		=
Water Closet F.V.*	Public	10	x		=
Water Closet F.T.*	Public	5	x		=
Urinal-Stall or Wall	Public	5	x		=
Lavatory	Public	2	x		=
Bathtub	Public	7	x		=
Showerhead Each**	Public	7	x		=
Kitchen Sink	Public	7	x		=
Service Sink	Public	3	x		=
Clothes Washer	Private	2	x		=
Clothes Washer	Public	4	x		=
Dishwasher	Public	6	x		=
Drinking Fountain	Public	2	x		=
¾" Connection	Public	6	x		=

Total Flow Fixture Units =

F.V.* = Flush Valve; F.T.* = Flush Tank

** A showerhead over a bathtub does not add a fixture unit to the group.

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System GPM Load

Step 3

Instructions: After determining the total fixture flow units, convert to gallon per minute load (GPM).

Fixture Flow Units	GPM		
	School, Office, Apt.	Hotel	Hospital
100	70	80	100
300	80	90	100
600	100	100	120
900	120	125	135
1200	135	145	155
1500	150	165	185
1750	170	185	200
2000	190	200	220
3000	250	275	300
4000	300	340	365
5000	350	400	430
6000	400	450	490
7000	450	500	540
8000	490	550	600

Table No. 3

Required System GPM: _____

Planned "Added Service": _____

Total Peak Load GPM: _____

Added Service: Flow required for any special duty such as future expansion, irrigation systems, and cooling tower evaporation make up (Use (1) GPM per 20 tons cooling).

Laundries: In the case of hotels and hospitals, where a laundry is operated, increase the total pumping capacity by 10%.

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Step 4

Instructions: After determining the required pump differential pressure in step 1 and the gpm load in step 3, record the **total peak load** _____ GPM (GPM from step 3) and the **pressure boost required** _____ (PSI from step 1). Then select the corresponding water pressure booster system below. If you do not see your model number listed below, please note that custom sizes and splits are available. Contact us at 215-997-6100 for selection assistance.

Model Number	GPM Each Pump	Pump Head PSI	Pump Head Feet	Pump HP	Header Size Suction Discharge	Pump Model
WPB-6020	60	20	45	2		323JM
6030		30	70	2		323JM
6040		40	95	3	3” Duplex	323JM
6050		50	115	5		324JM
6060		60	140	5	3” Triplex	324JM
6070		70	160	5		324JM
6080		80	185	7.5		327JM
WPB-8020	80	20	45	2		323JM
8030		30	70	3		323JM
8040		40	95	5	3” Duplex	323JM
8050		50	115	5		324JM
8060		60	140	5	3” Triplex	324JM
8070		70	160	7.5		324JM
8080		80	185	10		325JM
WPB-10020	100	20	45	2		323JM
10030		30	70	3		323JM
10040		40	95	5	3” Duplex	323JM
10050		50	115	5		324JM
10060		60	140	7.5	4” Triplex	324JM
10070		70	160	7.5		324JM
10080		80	185	10		325JM
WPB-12020	120	20	45	2		324JM
12030		30	70	3		324JM
12040		40	95	5	3” Duplex	324JM
12050		50	115	7.5		324JM
12060		60	140	7.5	4” Triplex	324JM
12070		70	160	7.5		324JM
12080		80	185	10		325JM
WPB-14020	140	20	45	3		324JM
14030		30	70	5		324JM
14040		40	95	5	3” Duplex	324JM
14050		50	115	7.5		324JM
14060		60	140	7.5	4” Triplex	324JM
14070		70	160	10		324JM
14080		80	185	15		325JM

Model Number	GPM Each Pump	Pump Head PSI	Pump Head Feet	Pump HP	Header Size Suction Discharge	Pump Model
WPB-16020	160	20	45	3		324JM
16030		30	70	5		324JM
16040		40	95	7.5	4” Duplex	324JM
16050		50	115	7.5		324JM
16060		60	140	10	6” Triplex	324JM
16070		70	160	10		327JM
16080		80	185	15		327JM
WPB-18020	180	20	45	3		326JM
18030		30	70	5		326JM
18040		40	95	7.5	4” Duplex	324JM
18050		50	115	7.5		324JM
18060		60	140	10	6” Triplex	324JM
18070		70	160	15		327JM
18080		80	185	15		327JM
WPB-20020	200	20	45	3		326JM
20030		30	70	5		326JM
20040		40	95	7.5	4” Duplex	327JM
20050		50	115	10		327JM
20060		60	140	10	6” Triplex	327JM
20070		70	160	15		328JM
20080		80	185	15		328JM
WPB-25020	250	20	45	5		326JM
25030		30	70	7.5		326JM
25040		40	95	7.5	4” Duplex	327JM
25050		50	115	10		327JM
25060		60	140	15	6” Triplex	327JM
25070		70	160	15		328JM
25080		80	185	20		328Z
WPB-30020	300	20	45	7.5		326JM
30030		30	70	7.5		326JM
30040		40	95	10	4” Duplex	326JM
30050		50	115	15		327JM
30060		60	140	15	6” Triplex	327JM
30070		70	160	20		328Z
30080		80	185	20		328Z

Note: Selections are 3500 RPM.

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Selection Overview

Step 5

After the total pumping system capacity in gpm and boost requirements have been calculated, it is necessary to determine the number of pumps that will provide the required performance and economics for the installation. Please note that custom sizes and splits are available. Contact us at 215-997-6100 for selection assistance.

Recommended Pump Splits are as follows (% of total gpm):

- Duplex 50/50, 65/65, 100/100
- Triplex 33/33/33, 50/50/50

Model Number Selection Example:

WPB-10050-D (duplex) will provide 200gpm at a 50psig boost
WPB-10050-T (triplex) will provide 300gpm at a 50psig boost

TL (Tank Level): Option is used with vented supply water storage tanks. Please contact our engineering department for this option.

Model Selected: WPB - _____-_____

Record the model number selected above and proceed to the specifications and dimensional drawing links.

Note: These tables are recommended as a guide and are not intended to conform to any particular code. There are four national plumbing codes that have unique differences between them, as well as many other methods and authorities for sizing water supply systems. The plumbing engineer must design to the engineering practice that will be acceptable to the governing authorities for the project location.