

# WATER PRESSURE BOOSTER SYSTEMS

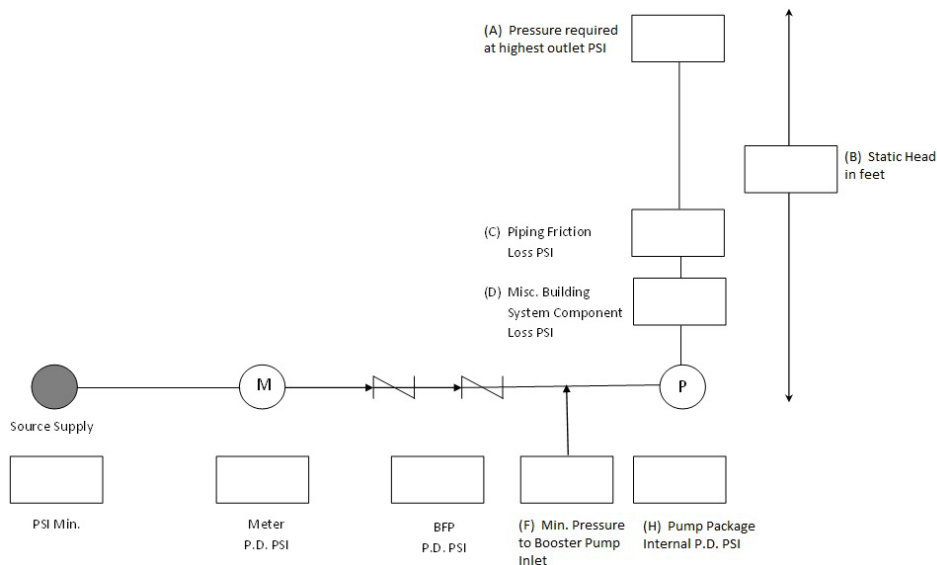
## SYSTEM SIZING WORKSHEET

**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		=
<b>Total Flow Fixture Units</b>					<b>=</b>

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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## SELECT THE PROPER SYSTEM

### 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		Pump HP	Header Size Suction Discharge	Pump Model	Model Number	GPM Each Pump	Pump Head		Pump HP	Header Size Suction Discharge	Pump Model
		PSI	Feet						PSI	Feet			
WPB-6020	60	20	45	2		323JM	WPB-16020	160	20	45	3		324JM
6030		30	70	2		323JM	16030		30	70	5		324JM
6040		40	95	3		3" Duplex	323JM		16040	40	95		7.5
6050		50	115	5	3" Triplex	324JM	16050		50	115	7.5	6" Triplex	324JM
6060		60	140	5		324JM	16060		60	140	10		324JM
6070		70	160	5		324JM	16070		70	160	10		327JM
6080		80	185	7.5		327JM	16080		80	185	15		327JM
WPB-8020		80	20	45	2		323JM		WPB-18020	180	20	45	3
8030	30		70	3	323JM		18030	30	70		5	326JM	
8040	40		95	5	3" Duplex		323JM	18040	40		95	7.5	4" Duplex
8050	50		115	5	3" Triplex	324JM	18050	50	115		7.5	6" Triplex	324JM
8060	60		140	5		324JM	18060	60	140		10		324JM
8070	70		160	7.5		324JM	18070	70	160		15		327JM
8080	80		185	10		325JM	18080	80	185		15		327JM
WPB-10020	100		20	45	2		323JM	WPB-20020	200		20	45	3
10030		30	70	3	323JM		20030	30		70	5	326JM	
10040		40	95	5	3" Duplex		323JM	20040		40	95	7.5	4" Duplex
10050		50	115	5	4" Triplex	324JM	20050	50		115	10	6" Triplex	327JM
10060		60	140	7.5		324JM	20060	60		140	10		327JM
10070		70	160	7.5		324JM	20070	70		160	15		328JM
10080		80	185	10		325JM	20080	80		185	15		328JM
WPB-12020		120	20	45	2		324JM	WPB-25020		250	20	45	5
12030	30		70	3	324JM		25030	30	70		7.5	326JM	
12040	40		95	5	3" Duplex		324JM	25040	40		95	7.5	4" Duplex
12050	50		115	7.5	4" Triplex	324JM	25050	50	115		10	6" Triplex	327JM
12060	60		140	7.5		324JM	25060	60	140		15		327JM
12070	70		160	7.5		324JM	25070	70	160		15		328JM
12080	80		185	10		325JM	25080	80	185		20		328Z
WPB-14020	140		20	45	3		324JM	WPB-30020	300		20	45	7.5
14030		30	70	5	324JM		30030	30		70	7.5	326JM	
14040		40	95	5	3" Duplex		324JM	30040		40	95	10	4" Duplex
14050		50	115	7.5	4" Triplex	324JM	30050	50		115	15	6" Triplex	327JM
14060		60	140	7.5		324JM	30060	60		140	15		327JM
14070		70	160	10		324JM	30070	70		160	20		328Z
14080		80	185	15		325JM	30080	80		185	20		328Z

Note: Selections are 3500 RPM.

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# WATER BOOSTER SYSTEMS

## 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.

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