

# WATER PRESSURE BOOSTER SYSTEMS

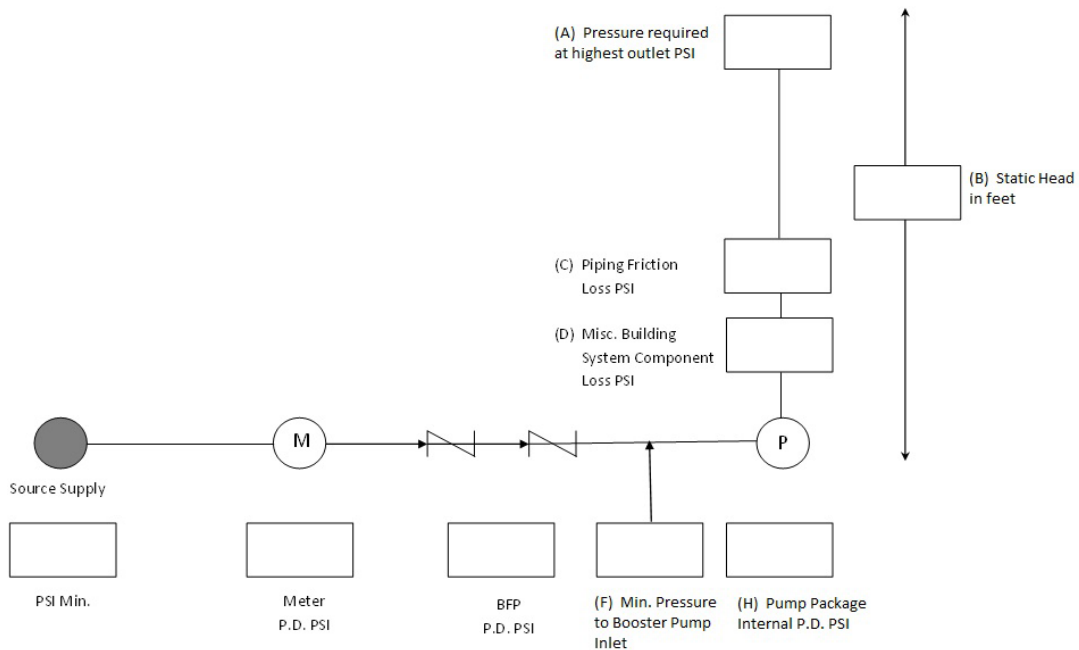
## SYSTEM SIZING WORKSHEET

**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>					=

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%.

# WATER BOOSTER SYSTEMS

## 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.

Model Number	GPM Each Pump	Pump Head		Pump HP	Header Size Suction Disch.	Pump Model	Model Number	GPM Each Pump	Pump Head		Pump HP	Header Size Suction Disch.	Pump Model		
		PSI	Feet						PSI	Feet					
WPB-6020	60	20	45	1.5	2" Simplex	1250	WPB-16020	160	20	45	3	4" Duplex	1550		
6030		30	70	2		1250			16030	30	70		5	1550	
6040		40	95	3		1550			16040	40	95		7.5	1550	
6050		50	115	5	3" Duplex	1070	16050		50	115	7.5	6" Triplex	1270		
6060		60	140	5		1070	16060		60	140	10		1270		
6070		70	160	5		1070	16070		70	160	10		1270		
6080		3" Triplex	80	185	7.5	1070	16080		80	185	15	1270			
6090			90	210	7.5	1070	16090		90	210	20	1595			
60100			100	231	10	1270	160100		100	231	20	1595			
WPB-8020		80	20	45	1.5	2" Simplex	1550		WPB-18020	180	20	45	5	4" Duplex	1550
8030			30	70	3		1550				18030	30	70		5
8040	40		95	5	1550		18040	40			95	7.5	1550		
8050	50		115	5	3" Duplex	1070	18050	50	115		10	6" Triplex	1570		
8060	60		140	7.5		1070	18060	60	140		10		1570		
8070	70		160	7.5		1070	18070	70	160		15		1570		
8080	3" Triplex		80	185	7.5	1070	18080	80	185		15	1570			
8090			90	210	7.5	1070	18090	90	210		20	1595			
80100			100	231	10	1595	180100	100	231		20	1595			
WPB-10020	100		20	45	2	2" Simplex	1550	WPB-20020	200		20	45	3	4" Duplex	2050
10030			30	70	3		1550				20030	30	70		5
10040		40	95	5	1550		20040			40	95	7.5	1570		
10050		50	115	5	3" Duplex	1070	20050	50		115	10	6" Triplex	1570		
10060		60	140	7.5		1070	20060	60		140	10		1570		
10070		70	160	7.5		1070	20070	70		160	15		1570		
10080		4" Triplex	80	185	10	1070	20080	80		185	15	1570			
10090			90	210	10	1270	20090	90		210	20	1595			
100100			100	231	15	1595	200100	100		231	25	1595			
WPB-12020		120	20	45	2	2" Simplex	1550	WPB-25020		250	20	45	5	4" Duplex	2050
12030			30	70	3		1550				25030	30	70		7.5
12040	40		95	5	1550		25040		40		95	10	2070		
12050	50		115	7.5	3" Duplex	1070	25050	50	115		10	6" Triplex	2070		
12060	60		140	7.5		1070	25060	60	140		15		2070		
12070	70		160	10		1070	25070	70	160		15		2070		
12080	4" Triplex		80	185	10	1270	25080	80	185		20	2070			
12090			90	210	10	1270	25090	90	210		25	1595			
120100			100	231	15	1595	250100	100	231		25	2095			
WPB-14020	140		20	45	3	3" Simplex	1550	WPB-30020	300		20	45	7.5	4" Duplex	2070
14030			30	70	5		1550				30030	30	70		10
14040		40	95	5	1550		30040			40	95	15	2070		
14050		50	115	7.5	3" Duplex	1270	30050	50		115	15	6" Triplex	2070		
14060		60	140	7.5		1270	30060	60		140	15		2070		
14070		70	160	10		1270	30070	70		160	20		2070		
14080		4" Triplex	80	185	10	1270	30080	80		185	20	2070			
14090			90	210	15	1270	30090	90		210	30	2095			
140100			100	231	15	1595	300100	100		231	30	2095			

Note: Selections are 3500 RPM. For 1750RPM and larger systems, please consult the factory.

# 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.

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

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

#### Model Number Selection Example:

WPB-10050-S (simplex) will provide 100gpm at a 50psig boost

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.