



Flo-Rite-Temp Instantaneous Water Heater Sizing Instructions

Step 1

Determine the total fixture unit load for all the fixtures serviced by your water heater application using the fixture units' table.

Table 2-1. See example below.

Step 2

Using the total fixture units for your application enter the Hunter Curves (Table 1-1) from the bottom. On the total fixture units line for your application. Read up vertically to the curve that best fits the application. Then read to the left for the corresponding gpm requirement.

Step 3

Select the proper Armstrong Flo-Rite-Temp Instantaneous Water Heater from Pages WHM-7 or WHM-12.

Table 1-1

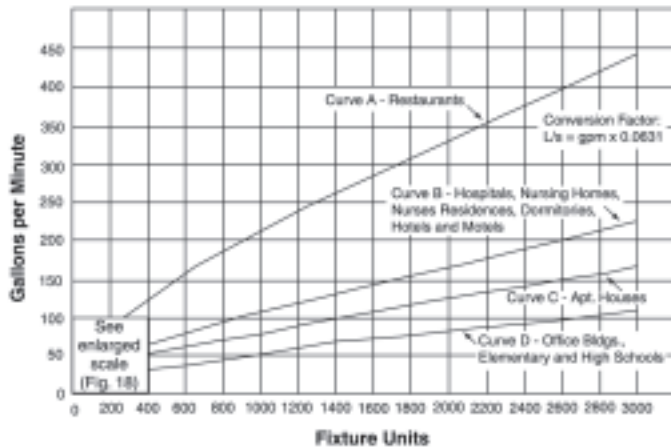
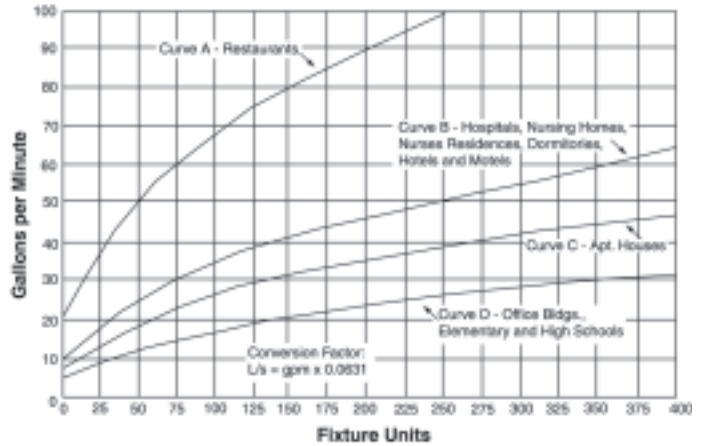


Table 1-2



Reprinted from the 1999 ASHRAE Handbook - HVAC with permission from the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. Hunter curves should be used for intermittent, insignificant fixtures only

Example: College Dormitory

No. Fixtures	Type of Fixtures	Fix. Units	Demand Fix. Units
150	Private Lavatory	.75	113
120	Private Shower	1.5	180
20	Slop Basins	2.5	50
8	Clothes Washer	2.0	16
Total Fixture Units			359

Refer to the modified Hunter Curves in Table 1-2. Curve B represents dormitories. Enter the graph from the bottom at 359 fixture units and go vertically up to curve B. Then move to the left horizontally to read approximately 60 gallons per minute of hot water capacity required. **Note: remember to add any constant flow capacities as were determined under "Important Note:" to this 60 gpm.**

Important Note:

Special consideration should be given to applications involving periodic use of gang showers, process equipment, laundry machines, etc., as may occur in field houses, gymnasiums, factories, hospitals, etc. Because these applications could have all equipment on at the same time, their total hot water capacity should be determined and then added to the maximum hot water demand as read from the modified Hunter Curves. Use the following formula to determine total hot water capacity needed for these applications when final water temperatures are lower than that of the water heater.

$$\frac{B - C}{H - C} \times \left(\frac{\text{Total water flow from all gang}}{\text{shower heads in gpm}} \right) = \text{Hot water needed in gpm}$$

Where: B = Blended water temperature out of the fixture
 H = Hot water temperature to the fixture
 C = Cold water temperature to the fixture

Fixture Units Table 140°F Temperature from Heater

Table 2-1

Hospital		Restaurant**		Factory	
Type of Fixture	Fix. Units	Type of Fixture	Fix. Units	Type of Fixture	Fix. Units
Private Lavatories	.75	Private Lavatory	.7	Private Lavatory	.75
Public Lavatories	1.0	Public Lavatory	2.0	Public Lavatory	1.0
Semi-Private Lavatories	1.2	†Private Shower	1.5	†Private Shower	1.5
†Private Shower	1.5	†Public Shower	1.7	†Public Shower	3.0
†Ward Shower	2.5	Sink - Kitchen	3.0	Sink - Slop	2.5
†Semi-Private Shower	1.5	Sink - Pantry	2.5	36" Half Bradley	1.0
Private Bath	1.5	Sink - Slop	2.0	36" Full Bradley	1.5
Ward Bath	2.0	Sink - Pot (Single)	2.5	54" Half Bradley	1.5
Sink - Flushing Rim	2.0	Sink - Pot (Double)	3.5	54" Full Bradley	2.0
Sink - Scrub Up	1.5	Sink - Pot (Triple)	5.5	Correctional or Mental Institution	
Sink - Laboratory	1.5	Sink - Vegetable	2.0		
Sink - General Purpose	1.0	Sink - Bar	2.5		
Bath - Leg	6.0	Washer - Silver	2.0*		Type of Fixture
Bath - Arm	4.0	Washer - Glass	2.0*	Private Lavatory	.75
Bath - Sitz	3.0	Washer - Can	3.0	Public Lavatory	1.0
Bath - Foot	3.0	Coffee Urn	1.2	†Private Shower	1.5
Bath - Emergency	2.0	Baine Marie	1.0	†Public Shower	3.0
Hydrotherapeutic Showers:		Pot and Pan Washer	2.0*	†Tub and Shower	1.5
#1 Shower Head	8.0	Dish Pre-Rinse	2.5	Sink - Slop	2.0
#2 Spray	12.0	Pre-Scraper	2.0	Janitor Drop	2.0
Continuous Flow Bath:		Pre-Scraper Conveyor	2.5	36" Half Bradley	1.0
Continuous Flow Fill	2.0	36" Half Bradley	1.0	36" Full Bradley	1.5
Continuous Flow Operate	1.5	36" Full Bradley	1.5	54" Half Bradley	1.5
Hubbard	4.0			54" Full Bradley	2.0
Autopsy Table	2.0	*Dishwashers (use booster to heat from 140 to 180°F)		Apartment	
Autopsy Sink and Table	2.5			Type of Fixture	Fix. Units
Club				Private Lavatory	.75
Type of Fixture	Fix. Units	Type of Fixture	Fix. Units	Public Lavatory	1.0
Private Lavatory	.75	Single Tank - Stationary Rack		†Private Shower	1.5
Public Lavatory	1.0	16 x 16 Rack	2.5	†Public Shower	1.5
†Private Shower	1.5	18 x 18 Rack	3.9	†Tub and Shower	1.5
†Public Shower	1.7	20 x 20 Rack	4.2	Sink - Kitchen	.75
†Tub and Shower	1.5	Multiple Tank Conveyor Type		Sink - Slop	1.5
Sink - Slop	2.5	Dishes - Inclined	2.0	Sink - Pantry	1.5
36" Half Bradley	1.0	Dishes - Flat	2.5	Domestic Clothes Washer	1.2
36" Full Bradley	1.5	Single Tank Conveyor Type	2.3	Domestic Dish Washer	1.5
54" Half Bradley	1.5			Laundry Tray	1.5
50" Full Bradley	2.0	Hotel - Motel		Private - Public School	
Gymnasium				Type of Fixture	Fix. Units
Type of Fixture	Fix. Units	Type of Fixture	Fix. Units	Private Lavatory	.75
Private Lavatory	.75	Private Lavatory	.75	Public Lavatory	1.0
Public Lavatory	1.0	Public Lavatory	1.0	†Private Shower	1.5
Private Shower	1.5	†Private Shower	1.5	†Public Shower	1.5
Public Shower	3.0	†Tub and Shower	1.5	†Tub and Shower	1.7
Sink - Slop	1.5	Basin - Barber	2.0	Sink - Slop	2.5
Basin - Foot	1.2	Sink - Slop	2.5	Janitor Drop	1.5
36" Half Bradley	1.0	Basin - Beauty Parlor	2.5	Domestic Clothes Washer	2.0
36" Full Bradley	1.5			Domestic Dish Washer	2.0
54" Half Bradley	1.5	Office Bldg.		Institution - Home	
54" Full Bradley	2.0			Type of Fixture	Fix. Units
Assoc. Bldg. YMCA		Type of Fixture	Fix. Units	Private Lavatory	.75
Type of Fixture	Fix. Units	Private Lavatory	.75	Public Lavatory	1.0
Private Lavatory	.75	Public Lavatory	1.0	†Private Shower	1.5
Public Lavatory	1.0	†Private Shower	1.5	Sink - Slop	2.5
†Private Shower	1.5	Sink - Slop	2.5	Janitor Drop	2.5
†Tub and Shower	1.7	Janitor Drop	2.5	36" Half Bradley	1.0
Sink - Slop	2.5	36" Half Bradley	1.0	36" Full Bradley	1.5
Janitor Drop	2.0	36" Full Bradley	1.5		

*These items require 180°F hot water. The consumption figures are based on supplying 140°F water with a booster heater used to obtain 180°F water.

**Add 20% to all figures when not used in combination with other building services from same heater.

† The fixture units listed for showerheads are based on a flow rate of 3 gpm. These units should be corrected for other flow rates. Multiply the fixture units by Correction Factor "C" from the formula: C = G x .33. Where C = Correction Factor, G = gpm of showerhead being used. Example: Shower head 4 gpm = C = 4 x .33 or 1.32. From fixture Capacity Table, Hotel-Motel (shower) which shows 1.5 fixture units, multiply 1.5 x 1.32 = 2.10 fixture units per shower head using 4 gpm.

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