



Heat Pump Water Heater

Fully integrated heat pump water heater (HPWH) 40-119 gallon capacity

User friendly HubbellConnect Lite digital controller simplifies operation, maintenance, and trouble-shooting

Easily replaces a standard electric water heater

Hydrastone cement lining ensures long tank life

- Industry leading efficiency
- 3" thick CFC free polyurethane foam insulation to minimize stand-by heat loss
- Incoloy sheathed back-up electric heaters resist corrosion and mineral build up
- Simple installation and easily serviced by a professional plumber

Applications

Residential, restaurants, schools office buildings, and much more.



PBX

OMNI SERIES

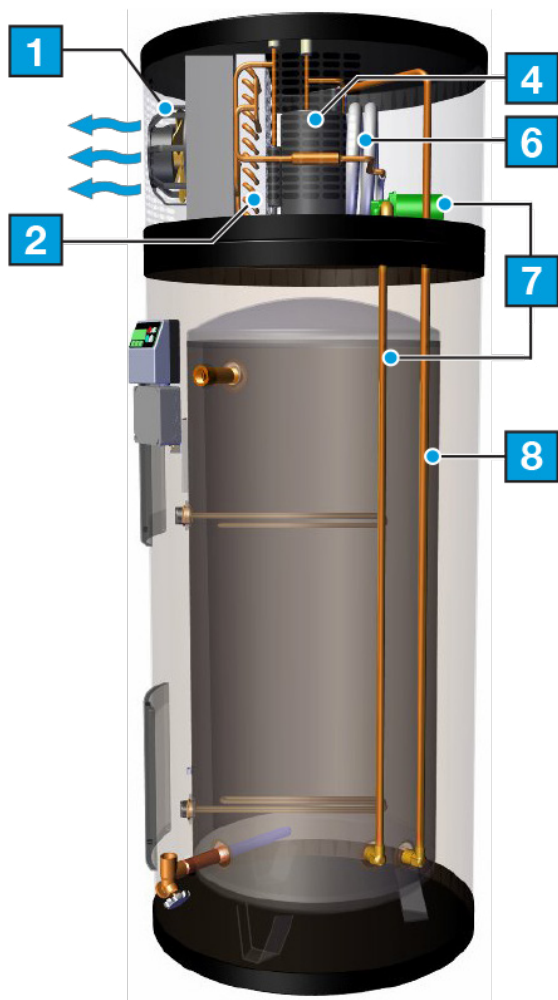
A long lasting and reliable heat pump water heater

The Omni PBX Heat Pump Water Heater uses small amounts of electricity to transfer heat from the air to the water. This process is more energy efficient than a conventional electric water heater because less electricity is required to produce the same amount of hot water. The Omni PBX can pull heat out of air that is as cool as 40°F and includes back-up resistive heating elements to ensure the unit provides sufficient hot water. The heat pump process creates an exhaust of cooler dryer air, with as much as 0.4 gallons per hour of “free” dehumidification provided by the heat pump when it is heating water.

Hubbell water heaters are the right choice for your commercial and industrial applications. We have water heating solutions for all energy sources with storage capacities from 6–5,000 gallons — all designed, engineered, and manufactured for reliability and longevity coupled with unparalleled support and service.

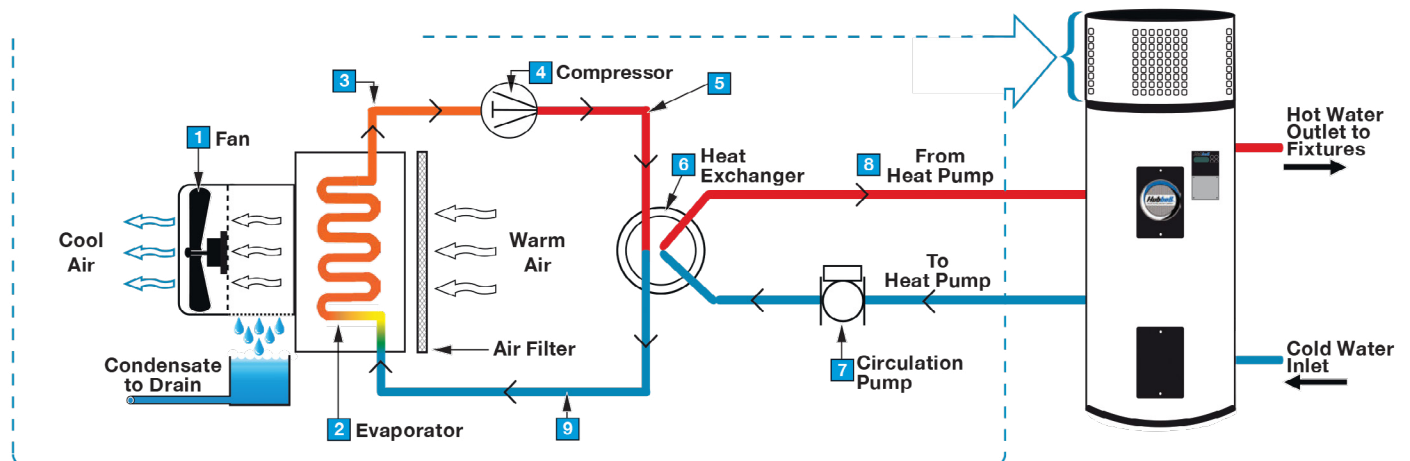


Heat Pump Stages of Operation



- 1** The built-in fan draws room air into the water heater heat pump compartment and across an evaporator coil, and exhausts cooler and slightly dryer (dehumidified) air.
- 2** The evaporator coil captures heat energy in the air and transfers that energy to a specially formulated CFC free refrigerant contained within the evaporator.
- 3** The refrigerant changes from a liquid to a gas as it gets warmer.
- 4** The refrigerant, now as a warm gas, exits the evaporator and passes into a compressor.
- 5** The warm gas is compressed, causing it to become a superheated hot gas and then flows to the heat exchanger.
- 6** The heat exchanger transfers heat energy from the superheated hot gas to the cold water from the tank.
- 7** The pump circulates cold water from the tank through the heat exchanger resulting in a continuous transfer of heat energy from the superheated gas to the water.
- 8** Hot water exits the heat exchanger and is stored in the tank.
- 9** The superheated gas condenses back to a liquid and awaits to repeat the process.

Heat Pump Operational Diagram



How HubbellConnect works on the Omni PBX

Giving you control when and where you need it.

Operating Modes

Economy

This mode controls the heater, where the heat pump provides essentially all the heating capacity. This is typically the lowest operating cost mode.

Hybrid

This mode, the default setting, controls the heater in a way that optimizes its efficiency and user experience. This mode operates the water heater so that the heat pump provides most of the heating capacity and automatically switches to electric resistance heater mode only when necessary to meet high demand or to optimize efficiency.

Electric

This mode controls the heater so that it only heats using the electric resistance heaters and operates as a traditional electric water heater. The heat pump will not operate in this mode.

Super

This mode controls the heater so that both the heat pump and the electric resistance elements can operate simultaneously. This mode provides the fastest recovery option possible by providing heating capacity from both the heat pump and the electric resistance heaters at the same time.

Vacation

This mode prevents the heater from heating (regardless of what mode it is in) to improve efficiency during long periods of no usage (i.e., vacation). In this mode, the only time the heater will heat is if the unit is in danger of freezing. The user sets the number of days to be in vacation mode (adjustable from 2 to 99 days or OFF), and the unit resumes its previous mode of operation at the end of this period.

Temporary Modes

Max Heat

Simply pressing one button maximizes heating capacity by temporarily putting the heater into super mode.

Fan Off

Simply pressing one button temporarily lowers the fan speed which reduces the airflow and minimizes operating noise. Pressing the button twice turns the fan off for a user-adjustable time period.

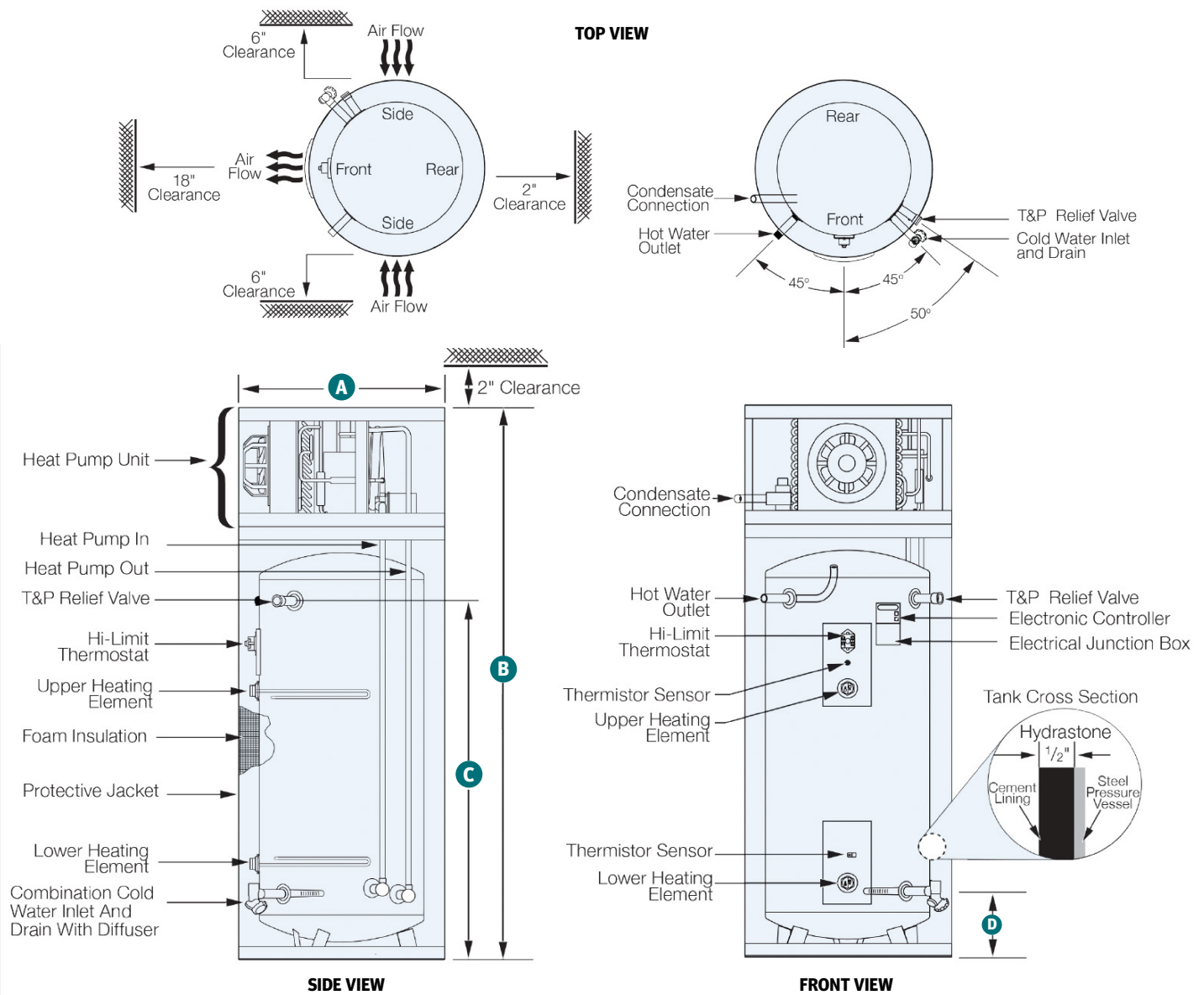


Heater Specifications

Tank	Hydrastone Cement Lined Steel
Storage	40, 50, 65, 80, 119 Gallons
Orientation	Vertical
Voltages	208 - 240 Volt
Phase	1Φ
Frequency	60 Hz
Inlet Size	3/4" Female NPT
Outlet Size	3/4" Male NPT
Drain Size	3/4" GHT
Condensate Size	1/4" Tube
Relief Valve Size	3/4" Female NPT
Relief Valve Type	T&P, 210°F, 150 psi
Heat Pump	
Refrigerant:	RT426A (CFC Free)
ODP:	0
GWP:	1349
Over Pressure Safety:	Manual Reset
Field Chargeable:	No
Ambient Air	
Air Flow (High Fan):	450 CFM
Air Flow (Low Fan):	250 CFM
Air Filtration:	Washable/Removable
Temperature Range:	40-110°F
Thermostat Range	50-160°F (°F or °C) +/- 3°F
Error Indication	Visual and Audible
Demand Response Capable	Yes
Child Lock Capable	Yes
Hi-Limit	190°F Manual Reset
Pressure Rating	150 psi WP, 300 psi TP

First Hour Rating	(Gallons per hour)
PBX40SL:	46
PBX50SL:	57
PBX65SL:	70
PBX80SL:	88
PBX120SL:	94
Standby Heat Loss	(°F/hr)
PBX40SL:	0.45
PBX50SL:	0.36
PBX65SL:	0.35
PBX80SL:	0.28
PBX120SL:	0.28
Energy Factor (UEF)	2.30 max
PBX40SL:	2.20
PBX50SL:	2.10
PBX65SL:	2.16
PBX80SL:	2.30
PBX120SL:	2.18
COP @ 70°F	2.6
Average Power Consumption	
High Fan:	680 Watts
Low Fan:	614 Watts
Electric Elements	Incoloy Sheathed 3800 W @ 240V
Insulation	3" Polyurethane Foam
Sound Level	62db Average @ 3 feet
Warranty	
Tank	10 Years
Parts	6 Years
Approvals	cETLus
Jacket	High Impact Composite
Color	White with Black Trim

Outline Dimensions

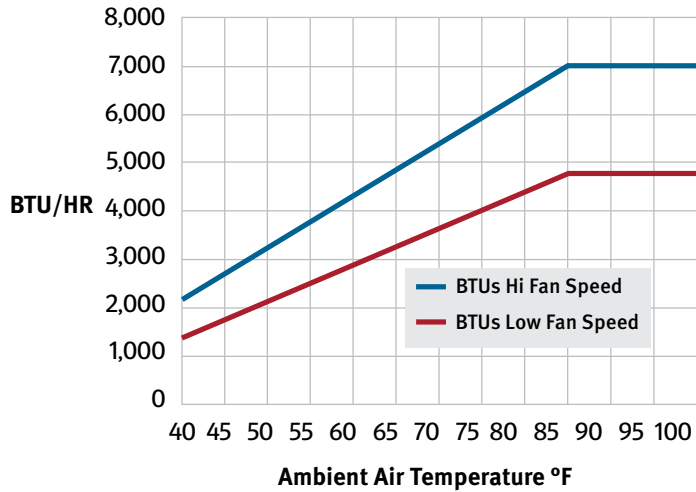


Dimension Data

Storage Capacity (Gallons)	Base Model Number	Dimensions (inches)				Shipping Weight (lbs.)
		Overall Diameter "A"	Overall Height "B"	Floor to T&P and HW Outlet "C"	Floor to CW Inlet "D"	
40	PBX40SL	28	47	25.375	8.875	450
50	PBX50SL	25	65	42.875	8.875	500
65	PBX65SL	28	62.25	39.375	8.875	540
80	PBX80SL	28	73.5	49.875	8.875	615
119	PBX120SL	30	83	60.375	8.875	695

These units are designed to meet or exceed American National Standards Institute (ANSI) requirements and have been tested according to D.O.E. test procedures and meet or exceed the energy efficiency requirements of NAECA, ASHRAE standard 90, ICC Code, and all state energy efficiency performance criteria for energy consuming appliances.

Hubbell Heat Pump Water Heater Performance



Amperage Rating Chart (Amps)

Supply Voltage	Total Maximum AMP Draw in Various Operating Modes			
	Economy	Hybrid	Electric	Super
240V	2.6	15.8	15.8 (3800 Watts)	18.4
220V	2.8	14.5	14.5 (3200 Watts)	17.3
208V	3.0	13.7	13.7 (2850 Watts)	16.7

Over current circuit protection rated minimum 25 amp required, reference all local, state and national codes.

Annual Energy Consumption (EST)

Ambient Air Temp.	Energy Factor EF	Coefficient of Performance (COP)	Annual Energy Consumption in Various Operating Modes			
			Economy	Hybrid	Electric	Super
			KW•Hrs	KW•Hrs	KW•Hrs	KW•Hrs
50°F	1.39	1.42	3159	3159	4671	4368
70°F	2.33	2.36	1884	1884	4671	3851
90°F	3.07	3.07	1430	1430	4671	3521

Energy Factor and Average Annual Operating Costs based on 2007 D.O.E. (Department of Energy) test procedures. D.O.E. national average fuel electricity 10.65 ¢/KWH. Energy Factor (EF) based upon heater in Hybrid mode.

Heating Capacity Chart (BTU/Hr)

Ambient Air Temp.	BTU/Hr Rating in Various Operating Modes			
	Economy	Hybrid	Electric	Super
50°F	3,240	12,965	12,965	16,205
70°F	5,400	12,965	12,965	18,365
90°F	7,020	12,965	12,965	19,985

Heating Capacity based on 240V power to heater and fan operating in high speed mode.

Continuous Recovery Rating (GPH)

Ambient Air Temp.	Continuous Recovery Rating (GPH) in Various Operating Modes											
	Economy			Hybrid			Electric			Super		
	60°F ΔT	70°F ΔT	80°F ΔT	60°F ΔT	70°F ΔT	80°F ΔT	60°F ΔT	70°F ΔT	80°F ΔT	60°F ΔT	70°F ΔT	80°F ΔT
50°F	6.5	5.6	4.9	25.9	22.2	19.4	25.9	22.2	19.4	32.4	27.8	24.3
70°F	10.9	9.4	8.2	25.9	22.2	19.4	25.9	22.2	19.4	36.8	31.6	27.6
90°F	14.2	12.2	10.6	25.9	22.2	19.4	25.9	22.2	19.4	40.1	34.4	30.0

Continuous Recovery rating based upon 240V power supplied to heater and fan operating in high-speed mode. ΔT represents the °F temperature rise for hot water.

Variables to Solve For

Solve for the unknown using the formulas below.

BTU/Hr Requirement:

$$\text{_____ GPM} \times \text{_____ } ^\circ\text{F}\Delta\text{T} \times 8.33 = \text{_____ BTU/Hr}$$

Temperature Rise:

$$\text{_____ BTU/Hr} \times 8.33 \div \text{_____ GPH} = \text{_____ } ^\circ\text{F}\Delta\text{T}$$

Flow Rate:

$$\text{_____ BTU/Hr} \times 8.33 \div \text{_____ } ^\circ\text{F}\Delta\text{T} = \text{_____ GPH}$$

Electrical

$$\frac{\text{Watts}}{\text{Volts}} = \text{Amps } 1 \Phi \quad \frac{\text{Watts}}{\text{Volts}} \div 1.73 = \text{Amps } 3 \Phi$$

Installation Requirements

- The installed location must be at least a 10' x 10' x 7' room (700 cubic feet of air space). If smaller, there must be a louver installed to provide sufficient airflow.
- The installed room location must not be cooler than 40°F.
- Installed locations with warmer ambient air temperature (i.e., furnace room) provide abundant “free” heat and are advantageous.
- The heat pump dehumidifies the air and as a result, produces condensate which must be piped to drain or outdoors.
- The washable air filter requires periodic cleaning. Frequency depends upon environmental conditions.



Optional Equipment

Note: *Optional equipment must be called out in the written specifications. Use the codes in this section to specify optional equipment below.*

General

Note A condensate pump to remove and lift condensate to drain is available, use part number “CONDENSATE PUMP 115V”

Vessel

- V1** Full 10 year non pro-rated tank warranty
- V10** 1-1/2" Male NPT inlet and outlet water connections
- V50** Tank installed heat exchanger for use with solar or radiant heating systems

Electrical

Note Alternate voltages (1 or 3 phase), alternate wattages or 50 Hz available. Please consult factory

Omni PBX Model Number Designation

MODEL	BASE MODEL NUMBER	STYLE	TANK	LOWER KW	VOLTAGE / PHASE / HZ	OPTIONAL EQUIPMENT
PBX	40 50 65 80 120	A = ASME <i>Optional, leave blank if non-ASME</i>	SL = Hydrastone cement lined tank CN = Solid copper-nickel tank SS = Stainless steel (specify 304L or 316L)	3.8 – 57 KW	A = 120/1/60 RS = 208/1/60 S = 240/1/60 W = 277/1/60 T4S = 480/1/60 Balanced 3Φ and 3Φ open delta R = 208/3/60 T = 240/3/60 T4 = 480/3/60	Select option code from above and write code in the gray box below in alphabetical order. For multiple options separate codes with a dash (-).

PBX

Example: PBX-40SL-20T4-V1

Model PBX heat pump water heater with 40 gallon storage tank optional 20KW, 480V, 3Φ heating element, tank is cement lined and carries an optional 10-year non-pro-rated tank warranty.