Utilizing Low Temperature Boiler Water To Heat Domestic Water

**Plate Heat Exchanger**
**Indirect Fired Water Heater**

THE MODEL BWP

A Heavy Duty Indirect Fired Water Heater

The Model BWP is a fully packaged indirect fired water heater utilizing boiler water from a condensing boiler as the energy source for heating potable water. By utilizing a plate type heat exchanger, the system can provide efficient heat transfer at boiler water temperatures below the capabilities of traditional U-tube bundles. The entire package is designed to be a reliable and long lasting source of hot water. Each component is carefully selected to ensure high performance in even the most demanding applications. All components on the potable water side will be constructed with non-ferrous material. Whether you are heating potable water in a commercial building or process water for an industrial application, you can select a Hubbell BWP to do the job. When you specify and install a Hubbell water heater, you will be provided with a quality product that is a long lasting and trouble free source of hot water.

**Features**
- **Reliable**
  - Only non-ferrous components on domestic wetted side
  - Replaceable brazed plate or serviceable plate and frame heat exchanger
  - Heavy duty construction withstands demanding commercial/industrial use
- **Packaged System**
  - Factory selected and sized boiler water control valve & domestic water circulator simplifies installation and ensures reliable operation
- **Versatile**
  - Full range of styles, sizes, and optional features to meet your exact heating needs

**Applications**
- Schools
- Office Buildings
- Sports Venues
- Hotels
- Industrial Facilities
- Nursing Homes
- Hospitals
- Heat Recovery Systems

**A Packaged Water Heater Ready For Installation**
Cement Lined Tanks Provide Longer Service Life

**Q**

What is the most common reason why a water heater fails?

**A**

Failure of a tank’s protective lining allows water to come into direct contact with the steel tank, causing it to corrode and leak. **Therefore**, the type of protective lining is the single most important feature when determining the quality of any water heater. The ability of a lining to protect the steel tank is primarily based upon its thickness and complete coverage of all steel surfaces.

**Two common internal tank linings are** Glass & Cement.

**Glass**

Glass lining is approximately 5 mils (0.005") thick & **does not cover** all internal surfaces. To compensate, all glass lined tanks require a sacrificial anode rod which must be periodically inspected and replaced.

**Cement**

Hydrastone cement lining is a minimum of 1/2" thick (100 times thicker than glass lining) and is guaranteed to uniformly cover 100% of all internal tank surfaces. The result is a significantly longer lasting tank which does not require a sacrificial anode.

**Threaded tapping material is critical for tank longevity.**

Glass lined tanks are constructed with regular steel tappings which are continuously attacked by corrosive hot water due to the lack of glass lining on the internal threads. The Hubbell Model BWP water heater tank is constructed with solid non-ferrous tank tappings which are impervious to the corrosive effects of hot water.

**The Hubbell Storage Tank** is a longer lasting water heater based on the construction features found in the Hydrastone cement lining. When you specify and install a Hubbell Model BWP, you will have confidence in knowing that the owner will be provided with a trouble-free source of hot water.

- **Thickness**
  
  Each Hubbell Model BWP is lined with a minimum of 1/2" thick Hydrastone cement to ensure protection of the steel tank.

- **Coverage**
  
  The Hydrastone cement lining covers a guaranteed 100% of all interior tank surfaces and is free from flaws or imperfections. Full coverage is achieved by injecting the precise amount of Hydrastone cement into each tank and then centrifugally spinning it at 250 RPM to ensure complete and uniform coverage of the lining on all interior surfaces.

- **Corrosion Resistance**
  
  Hydrastone cement is a specifically formulated high density lining designed to provide maximum protection from the corrosive effects of hot water.

- **Reduced Operating Costs**
  
  The Hubbell Model BWP water heater significantly reduces the total ownership cost of a water heater due to the longer life and maintenance-free benefits derived from a Hydrastone cement lined tank. Longer tank life is directly attributable to the unmatched tank protection provided by the Hydrastone cement lining and copper-silicon tappings. Additionally, the Hubbell Model BWP reduces operating expenses by eliminating the periodic inspection and replacement costs associated with maintaining a sacrificial anode in a glass lined tank.
### STANDARD EQUIPMENT

#### Vessel Construction

1. All welded carbon steel pressure vessel designed and built in strict accordance with the ASME Code Section VIII and stamped, certified, and registered with the National Board of Boiler and Pressure Vessel Inspectors.
2. All internal tank surfaces are lined with a minimum 1/2” thick Hydrastone cement for superior protection and tank longevity.
3. Designed for 150 psi working pressure and hydrostatically tested.

#### Plate Type Heat Exchanger

1. Factory sized and installed with a generous heating surface designed to ensure reliable operation.
2. Insulation and housing.
3. Single wall brazed plate type heat exchanger.
5. T&P gauges.

#### Boiler Water Operating Controls

1. Operating controls are factory selected, sized, piped and tested to ensure reliable operation.
2. All components are factory piped and ready for boiler water connections.
3. Modulating control valve (Specify: 2-way or 3-way) to regulate the flow of boiler water through the heat exchanger.
4. Non-ferrous material on domestic side of system.

#### General

1. Heavy duty rigid foam insulation for maximum operating efficiency and minimal stand-by heat loss.
2. High impact composite protective outer jacket.
3. Heavy duty integrally welded steel supports for floor mounting.
4. Full five (5) year Non Pro-Rated tank warranty and a one (1) year component warranty.
5. ASME rated combination T&P relief valve set at the tank working pressure and 210°F.
6. Tank to heat exchanger circulation pump.

---

**Hydrastone Lining**

A seamless 1/2” thick cement lining is impervious to adverse water conditions and is proven to be the most effective method of preventing tank failure due to corrosion. Hydrastone lining absorbs and traps water, which then loses its oxygen and becomes inert, thus preventing tank corrosion.

**HOW IT WORKS**

[Diagram showing the flow of water through the system]
Note:
Any and all optional equipment for a water heater must be called out in the written specifications. A model number in and of itself does not reflect any optional equipment selected. Please note: optional equipment may impact overall dimensions and weight. Please request submittal drawing from factory.

MODEL NUMBER DESIGNATION

- Step 1
  Model:
  BWP = Vertical
  BWPH = Horizontal

- Step 2
  Storage Capacity:
  80-5000 Gallons

- Step 3
  Vessel Type:
  SL = Cement lined steel
  CN = 90/10 Copper-nickel
  SS = Stainless steel (specify Type 304 or 316L)

- Step 4
  Recovery Rating:
  In GPH at 100°F ∆T

- Step 5
  Plate Exchanger:
  BPS = Single Wall, Brazed
  BPD = Double Wall, Brazed
  PFS = Single Wall, Plate & Frame
  PFD = Double Wall, Plate & Frame

Example:
BWP200SL-850BPS
A vertically installed 200 gallon storage capacity indirect fired water heater with a cement lined steel storage tank and a single wall brazed plate exchanger rated to heat 850 GPH at a 100°F temperature rise.
### OVERALL DIMENSIONS

<table>
<thead>
<tr>
<th>Actual Storage Capacity (Gallons)</th>
<th>Overall Dimensions (Inches)</th>
<th>Storage Tank</th>
<th>Nominal Storage Capacity (Gallons)</th>
<th>Inlet Outlet Sizing (NPT)</th>
<th>Approx. Shipping Weight (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vertical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diameter &quot;A&quot;</td>
<td>Height &quot;B&quot;</td>
<td>Diameter Length</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80*</td>
<td>26</td>
<td>65</td>
<td>22 x 54</td>
<td>90</td>
<td>1.5</td>
</tr>
<tr>
<td>120*</td>
<td>28</td>
<td>75</td>
<td>24 x 64</td>
<td>140</td>
<td>1.5</td>
</tr>
<tr>
<td>150*</td>
<td>30</td>
<td>79</td>
<td>26 x 68</td>
<td>170</td>
<td>1.5</td>
</tr>
<tr>
<td>200</td>
<td>34</td>
<td>82</td>
<td>30 x 72</td>
<td>220</td>
<td>1.5</td>
</tr>
<tr>
<td>250</td>
<td>40</td>
<td>74</td>
<td>36 x 64</td>
<td>285</td>
<td>1.5</td>
</tr>
<tr>
<td>300</td>
<td>40</td>
<td>88</td>
<td>36 x 78</td>
<td>345</td>
<td>1.5</td>
</tr>
<tr>
<td>350</td>
<td>40</td>
<td>94</td>
<td>36 x 84</td>
<td>370</td>
<td>1.5</td>
</tr>
<tr>
<td>400</td>
<td>46</td>
<td>85</td>
<td>42 x 75</td>
<td>450</td>
<td>1.5</td>
</tr>
<tr>
<td>450</td>
<td>46</td>
<td>93</td>
<td>42 x 83</td>
<td>500</td>
<td>1.5</td>
</tr>
<tr>
<td>500</td>
<td>52</td>
<td>82</td>
<td>48 x 72</td>
<td>565</td>
<td>2</td>
</tr>
<tr>
<td>550</td>
<td>52</td>
<td>89</td>
<td>48 x 79</td>
<td>620</td>
<td>2</td>
</tr>
<tr>
<td>600</td>
<td>52</td>
<td>95</td>
<td>48 x 85</td>
<td>665</td>
<td>2</td>
</tr>
<tr>
<td>800</td>
<td>52</td>
<td>119</td>
<td>48 x 109</td>
<td>850</td>
<td>2</td>
</tr>
<tr>
<td>1000</td>
<td>52</td>
<td>145</td>
<td>48 x 135</td>
<td>1060</td>
<td>2</td>
</tr>
<tr>
<td>1500</td>
<td>58</td>
<td>174</td>
<td>54 x 164</td>
<td>1625</td>
<td>2</td>
</tr>
<tr>
<td>2000</td>
<td>64</td>
<td>185</td>
<td>60 x 175</td>
<td>2145</td>
<td>3</td>
</tr>
<tr>
<td>3000</td>
<td>76</td>
<td>197</td>
<td>72 x 187</td>
<td>3300</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: All dimensions are approximate and subject to change. Please reference the submittal drawing for actual dimensions. The tank selections above are shown for convenience. A full selection of storage capacities is available by entering the desired capacity into the model number.

* 80, 120 and 150 gallon tanks do not come equipped with a manway. Please consult factory if desired on these sizes.
General

Provide a quantity of ______ packaged BWP plate type indirect fired storage heater(s) Model No. ______ as manufactured by Hubbell Water Heaters, Stratford, CT. The pressure vessel shall be mounted on structural supports and be suitably insulated, jacketed, painted, and provided with lifting lugs. The entire unit is to be packaged ready for service connections.

Pressure Vessel

The pressure vessel shall be all welded construction and ASME Code Section VIII stamped for a working pressure of 150 psi (Optional specification: _____ psi) and contain a minimum of ______ gallons of storage. The storage vessel shall be carbon steel and lined with seamless Hydrastone cement to a minimum thickness of ½” on 100% of all interior tank surfaces (Optional specifications: solid type 304 or 316L stainless steel tank, solid 90/10 copper-nickel tank). The pressure vessel shall be insulated with a minimum 2” thick polyurethane foam insulation at minimum value of R-7 per inch and for a minimum total value of R-14. Insulating value shall exceed the ASHRAE standard 90.1-2013, requiring an R-value of 12.5 for stand-by heat loss by a minimum of 10%. (Optional specification: 3” R-21) 3” thick polyurethane foam insulation at minimum value of R-7 per inch and for a minimum total value of R-21. Insulating value shall exceed the ASHRAE standard 90.1-2013, requiring an R-value of 12.5 for stand-by heat loss by a minimum of 60%. An ASME approved automatic reseating combination temperature and pressure relief valve set at the tank WP and 210°F shall protect the vessel.

Heating Section

The heat exchanger shall be single wall brazed plate design (Optional specification: double wall brazed plate, single wall plate and frame, double wall plate and frame) shall be rated to heat ______ GPH from ______°F to ______°F when supplied with ______ GPM of boiler water from ______°F to ______°F. The domestic heating section will include an integral recirc pump sized for the demand and T&P gauges on both the inlet and outlet of the domestic side of the heat exchanger.

Controls

The water heater controls shall be factory assembled and piped. A two-way diverting valve will regulate the flow of boiler water to the heat exchanger without diverting back to the boiler. (Optional specification: three-way temperature regulating valve) will regulate the flow of boiler water to the heat exchanger and divert unused boiler water back to the hydronic loop. (Optional specification: thermostat to provide ON/OFF control of pump or solenoid). In addition, the water heater may be supplied with the following optional features: Single solenoid safety system to close the boiler water supply to the heat exchanger should the water temperature in the tank reach the hi-limit set point. Requires 5 AMP, 120 Volt service.

Warranty

The water heater manufacturer shall warranty all components against defects in workmanship and material for a period of one (1) year from date of start-up, and the pressure vessel for a full five (5) years Non Pro-Rated (Optional specification: full ten (10) years Non Pro-Rated) from date of start-up, provided that the unit is started within three (3) months of date of shipment and installed and operated within the scope of the tank design and operating capability. Each water heater shall be shipped with a complete set of installation and operating instructions, including a spare parts list and approved drawing.

About Us

Hubbell water heaters and water heating systems are trusted all over the world by engineers, mechanical contractors, building owners, specifiers, architects, and more. Whatever the application, fuel source, or industry, Hubbell can provide a solution to your water heating needs. We offer an extensive range of water heating products and turnkey/modular packages for Commercial, Industrial, Foodservice, Marine/Offshore and Naval markets.
Hubbell is a leader in the design, engineering and manufacturing of water heaters for use in demanding Commercial, Industrial, Marine/Offshore and Naval markets. Hubbell products are engineered and manufactured in the U.S., and built with only the highest quality materials and technologies including Hydrastone cement, stainless steel, and digital controls. Hubbell is ISO 9001 meeting all the current standards including: cULus, ASME, ASHRAE, ANSI/NSF5, USCG, ABS, DNV, ASME, NR13 and MIL. With dependability, long life, and trouble-free service design, Hubbell water heaters are trusted all over the world adding value to every installation.