

Plate Water Heaters



Brazed Plate Water Heaters-BPH Series Plate and Frame Water Heaters-PFH Series



- Designed to be used with condensing boilers.
- Increase the boiler efficiency by allowing condensing boilers to condense.
- Lower return temperatures to the boiler.
- Operate the boiler at a lower temperature.

Standard Equipment

Brazed Plate Heater-BPH Series

Plate and Frame Heater-PFH Series

Cemline Brazed Plate Heaters are completely packaged and ready to use. All components are sized, mounted and piped prior to shipment. These heaters come complete and require only connection to services

Advantages of Cemline® Packaged Plate Boiler Fired Water Heater

Cemline Packaged Plate Boiler Water Fired Water Heaters (BPH/PFH) are a perfect choice for domestic water heating systems using hydronic boilers including cast iron, copper tube, water tube, or specialty high efficiency boilers. The BPH uses a brazed plate heat exchanger for smaller loads while the PFH uses a plate and frame heat exchanger for larger loads. The BPH/PFH heat exchanger allows these boilers to operate more efficiently since the BPH/PFH heat exchangers can return the boiler water to the hydronic boiler at lower temperatures than the traditional u-bend heat exchanger. The boiler water can be returned to the boiler as low as 90°F from the BPH/PFH water heaters.

Cemline Plate Heaters (BPH/PFH) are completely packaged and ready for use.

The BPH/PFH can be used in conjunction with an existing tank or used as an instantaneous water heater. The heaters come complete and require only connection to services.

The BPH/PFH heat exchanger has a high heat transfer rate allowing for maximum heat transfer between the boiler water and the domestic water. As the heat is transferred from the boiler water to the domestic water, the boiler water can experience large temperature drops through the heat exchanger. The BPH/PFH can achieve larger temperature drops through the heat exchanger requiring less gallons per minute of boiler water than a traditional U-bend heat exchanger that is performing a 20°F delta T on the boiler water side. The large temperature drops occur without laminar flow on the boiler water side of the heat exchanger. The heat exchanger can even allow for temperature crosses between the boiler water outlet and the domestic water outlet temperature, meaning the domestic water outlet temperature can be greater than the returned boiler water temperature.

The boiler can be run at lower temperatures with the BPH/PFH's ability to perform temperature crosses and to take large delta T's as a lower boiler water temperature can be used to make domestic hot water.

Cemline Corporation Plate Water Heaters are available with a storage tank either a cement lined STONESTEEL® or 316-L stainless steel vessel in sizes 60, 120, 200, 300, 500, and 680 gallon capacity. See Cemline SPH brochure for more details.

The Cemline BPH/PFH comes factory standard with a 2-way electronically operated control valve. The 2-way electronically operated control valve allows for close temperature control of the water heater by modulating flow of the boiler water through the heat exchanger. The BPH/PFH can achieve +/-2°F with a steady state flow and +/- 4°F under normal operating conditions. The 1000:1 turn down ratio of the control valve allows for accurate control of these water heaters.

The Cemline BPH/PFH can be used for a variety of heat recovery systems or in hot water or chilled water systems. Contact Cemline Corporation with your specific application.

Basic BPH/PFH Package Includes:

- 16 gauge steel frame with hammertone enamel paint
- Steel channel base
- Electronic temperature gauge.
- Water pressure gauge
- Brazed Plate Heat Exchanger (BPH)
- Plate & Frame Heat Exchanger (PFH)
- Integral bronze circulator
- Clean out ports
- Single safety system with electronic limit control
- 2-Way Electronic Boiler Water Control Valve
- CEM-TROL® II Control Module

- Boiler water temperature gauge
- Inlet boiler water strainer
- Inlet domestic water strainer
- Pressure temperature relief valve

Optional Trim

- Double Walled Plate Heat Exchanger (Brazed Plate or Plate and Frame)
- Boiler water pump
- Aquastat for boiler water pump
- Balance valve
- 3-way electronic boiler water control valve
- Multiple Brazed Plate units can be piped together with by-passes for larger flow rates or for redundancy
- Blowdown valves on strainers
- PT plugs
- California AB-1953 "Lead-Free" components

Standard Equipment

Cemline Brazed Plate Heaters and Plate and Frame Heaters

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CEM-TROL® II Control Module and Electronically Operated Control Valve

Cemline CEM-TROL® II Solid State Water Heater Control Module incorporates operating and limit functions in one solid state controller. The controller features a LCD touch screen display of the temperature and on board operating PID temperature control along with high temperature safety cut offs and alarm indications. The CEM-TROL® II simplifies the control of Cemline Water Heaters, enhances the look of the product, and follows the industry trend to solid state controls.

Electronically operated control valve used for boiler water applications.

Electronically operated control valves use a solid state temperature sensor which is wired to the CEM-TROL® II control module. The CEM-TROL® II has an adjustable set point. The control module compares the set point with the sensed temperature and sends an electric signal to a magnetic linear actuator on the control valve. The magnetic linear actuator modulates the control valve and regulates the amount of boiler water through the valve to maintain the set point of the controller. When the set point is achieved the CEM-TROL® II sends a signal to the valve actuator and the valve closes. In the event of high temperature or loss of building power the CEM-TROL® II shuts off the electric power to the control valve closing the valve.

Digital Electronic Temperature Limit Control. BPH/PFH Water Heaters have a Digital Electronic Limit Control with LCD readout.

The ASME code requires that water heaters utilizing boiler water as the energy source have a high limit temperature control. The CEM-TROL® II has an easily field-programmable high limit set point and differential.

CEM-TROL® II Features

Built in PID Control Signal

PID Control Signal to control electronic valve or control I-P transducer on Air operated control valve

Built in LCD Touch Screen Display

Display of operating temperature, setpoint temperature, control output signal along with user friendly interface of the controller

Built in On-Off Switch

Built in Single Point Wiring

Built in High Temperature Set Point

Closes control valve in event of a high temperature situation

Built in Secondary High Temperature Set Point

Opens a water solenoid to dump over heated water down the drain

Built in Remote Temperature Setting

Building Automation System can remotely set the operating temperature using a 4-20 mA signal

Built in LCD Touch Screen Display of Functions

Power On

Primary High Temperature Indication

Secondary High Temperature Indication

Built in Modbus Interface

Building automation system can remotely communicate with the CEM-TROL® II via RF-485 Connection.

Built in contacts to notify BAS (Building Automation System) of functions

Power On

Primary High Temperature

Secondary High Temperature

Operating Temperature (4-20 mA)

Any Limit

CEM-TROL® II Ratings

- Input Selectable 120/220 VAC-50/60 HZ
- Output Contacts: 1 amp at 24 VAC
- Building Automation outputs:
 - Dry contacts, NO/NC 0.5 amp maximum, non inductive
- Display: LCD display with resolution of 0.3% of scale
- Available temperature ranges:
 - 32°F – 200°F
- Operating ambient temperature:
 - Min 32°F Max 140°F
- Operating Humidity: 5% to 95% relative humidity (RH) non-condensing
- NEMA 4 enclosure
- UL listed



Recovery Capacities

Cemline Brazed Plate and Plate Frame Heaters

Heat exchanger sizing for BPH/PFH can be obtained by using Cemline Corporation's automatic sizing program on the Cemline website at www.cemline.com. Please contact Cemline or your local representative for sizing or for access to the on-line sizing program.

Domestic Water Recovery				Boiler Water as Energy Source		
Hex Model #	Flow Rate gpm	Inlet Temp. (°F)	Outlet Temp. (°F)	Inlet Temp. (°F)	Outlet Temp. (°F)	gpm
250	5	40	140	200	160	13
500	10	40	140	200	160	26
750	15	40	140	200	160	39
1000	20	40	140	200	160	52
1250	25	40	140	200	160	65
1300	30	40	140	200	160	78
1750*	35	40	140	200	160	91
2000*	40	40	140	200	160	104
2250*	45	40	140	200	160	117
2500*	50	40	140	200	160	130
3000*	60	40	140	200	160	156
4000*	80	40	140	200	160	208
5000*	100	40	140	200	160	260

Domestic Water Recovery				Boiler Water as Energy Source		
Hex Model #	Flow Rate gpm	Inlet Temp. (°F)	Outlet Temp. (°F)	Inlet Temp. (°F)	Outlet Temp. (°F)	gpm
250	5	40	140	180	140	13
500	10	40	140	180	140	26
750	15	40	140	180	140	39
1000	20	40	140	180	140	52
1250	25	40	140	180	140	65
1300*	30	40	140	180	140	78
1750*	35	40	140	180	140	91
2000*	40	40	140	180	140	103
2250*	45	40	140	180	140	116
2500*	50	40	140	180	140	129
3000*	60	40	140	180	140	155
4000*	80	40	140	180	140	207
5000*	100	40	140	180	140	258



BPH water heaters are not recommended for water with hardness over 140 parts per million. If water hardness exceeds 140 ppm either put a water softener in the system or use Cemline SEH, SSH, or SWH series water heaters.

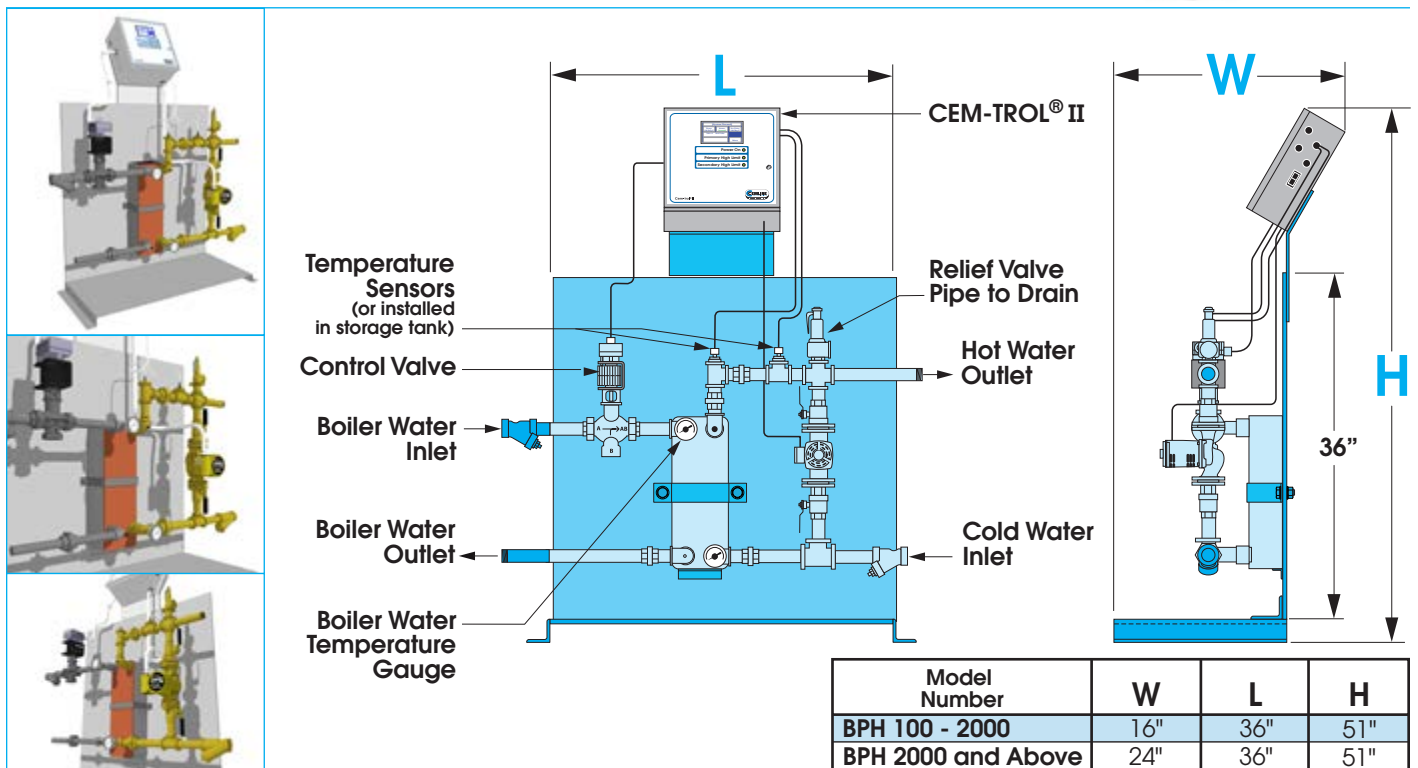
* When using a double wall heat exchanger a plate and frame style is required for these conditions.

Domestic Water Recovery				Boiler Water as Energy Source		
Hex Model #	Flow Rate gpm	Inlet Temp. (°F)	Outlet Temp. (°F)	Inlet Temp. (°F)	Outlet Temp. (°F)	gpm
250	5	40	140	160	120	13
500	10	40	140	160	120	26
750	15	40	140	160	120	39
1000	20	40	140	160	120	51
1250	25	40	140	160	120	64
1300*	30	40	140	160	120	77
1750*	35	40	140	160	120	90
2000*	40	40	140	160	120	103
2250*	45	40	140	160	120	116
2500*	50	40	140	160	120	129
3000*	60	40	140	160	120	154
4000*	80	40	140	160	120	206
5000*	100	40	140	160	120	257

Cemline Plate Heaters

Dimensional Data - Brazen Plate

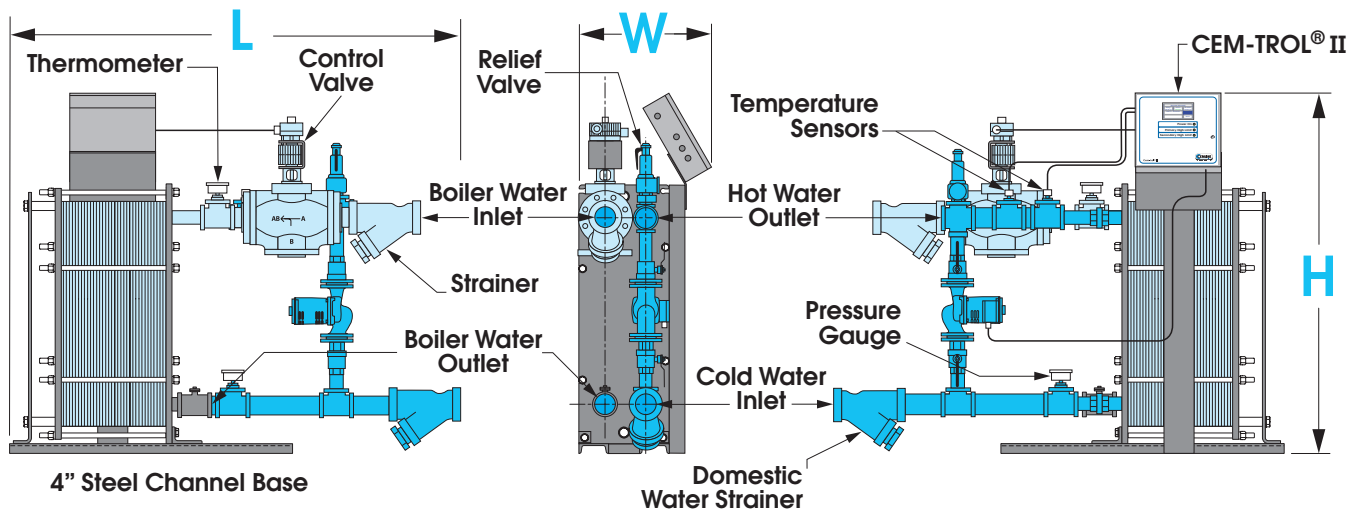
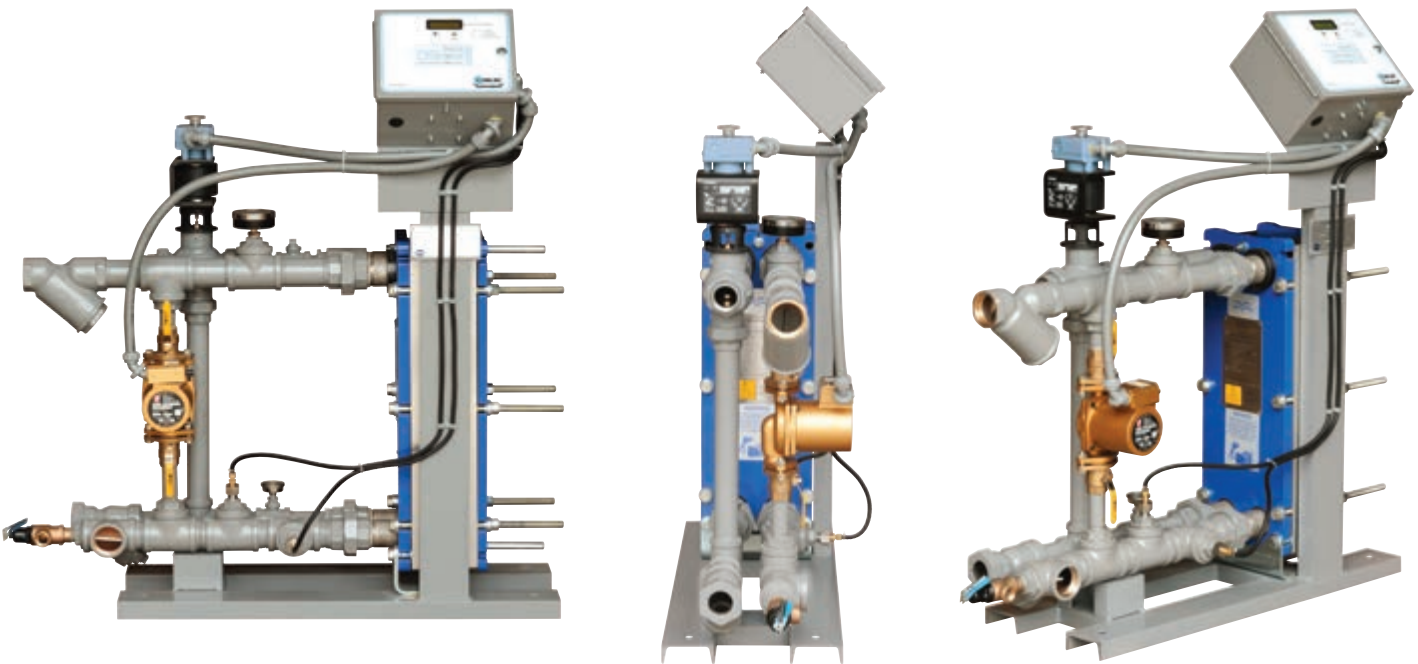
Heat exchanger sizing for BPH/PFH can be obtained by using Cemline Corporation's automatic sizing program on the Cemline website at www.cemline.com. Please contact Cemline or your local representative for sizing or for access to the on-line sizing program.



Recovery Capacities

Dimensional Data - Plate and Frame Heaters

Heat exchanger sizing for BPH/PFH can be obtained by using Cemline Corporation's automatic sizing program on the Cemline website at www.cemline.com. Please contact Cemline or your local representative for sizing or for access to the on-line sizing program.



Model Number	W	L	H
PFH 1300 - 3000	24"	48"	45"
PFH 3000 and Above	30"	54"	52"

BPH and PFH Water Heaters- Sample Specifications

For specifying Cemline Packaged Brazed Plate Boiler Water Fired Water Heater water heaters, select model from charts and use specification below. Cemline has representation in most major cities, or consult factory.

BPH Water Heaters

Plate heater shall be Cemline Series BPH (or PFH); factory assembled and packaged.

Heater shall be mounted on an enameled metal base, 16 gauge minimum thickness. Heater shall be factory assembled and piped including electronic operated 2-way temperature regulating valve. Heat exchanger shall be single walled brazed copper brazed 316L stainless steel plate type (or double walled copper brazed 316L stainless steel plate type) and shall have an integral valved circulator to re-circulate the water through the heat exchanger.

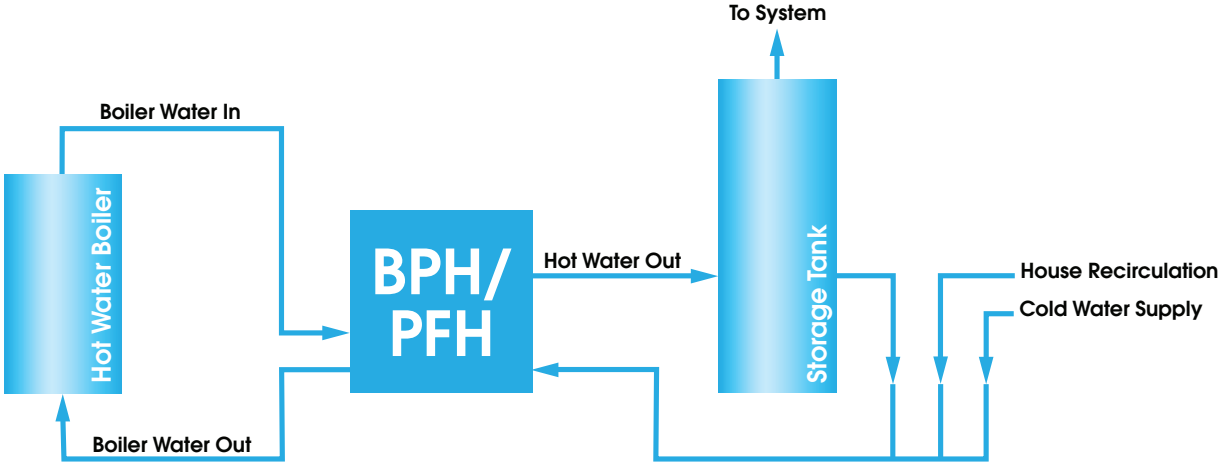
Heater shall be supplied with solid-state control module with LCD touch screen display and LED pilot lights to indicate on-off, primary high limit, and secondary high limit. Solid-state control module shall be provided with a field programmable digital electronic PID controller allowing the owner to set operating and temperature limits on the display screen. Solid-state control module shall have red alarm light and alarm horn with built in alarm silence relay. Solid-state control module shall be supplied with dry contact closure outputs to indicate to building automation system (BAS) the occurrence of power on, primary high temperature, and secondary high temperature. The control module shall allow the BAS to turn the heater on or off through a remote relay. The control module shall allow the BAS to remotely set the temperature of the heater using a 4-20 mA input signal. The control module shall allow the BAS to remotely monitor the operating temperature via a 4-20 mA signal. The control module shall allow the BAS to remotely monitor the operating temperature via 4-20 mA signal. Control module shall communicate with the BAS using Modbus Protocol via an RS-485 connection. Control module shall be supplied with an on-off switch and shall be mounted in a NEMA 4 panel. All solenoids and limits shall be 24 VAC.

Heater shall be furnished with a water pressure gauge and an A.S.M.E. pressure temperature relief valve of sufficient size to relieve total BTU input of heat exchanger.

Manufacturer shall assume responsibility for correct sizing of components to assure performance designated in design criteria.

Heater shall be CEMLINE Corporation Model BPH/PFH _____.
 Unit dimensions _____" width x _____" long x _____" height.
 Plate exchanger to heat _____ GPH from _____ °F to _____ °F with _____ GPM of _____ °F inlet _____ °F outlet Hot Water.

Cemline BPH/PFH Series Packaged Heaters are normally piped as shown below.



Sales Offices



Other Sales Offices:

- Alaska
- Hawaii
- Puerto Rico
- Saudi Arabia
- Taiwan
- U.A.E.

Available Cemline Brochures



- www.cemline.com
- Product Sizing Programs
 - Brochures
 - I.O.M. Manuals
 - Drawings & Specifications
 - Agent Locator
 - Plant Tour

- STONESTEEL®
 - Water Storage Tanks
 - Jacketed Storage Tanks
 - Commercial Electric and Packaged Copper Coil Water Heaters
- Submerged Heating Coils
- Replacement Tube Bundles
- Steel Tanks
- Chilled Water Buffer Tanks
- System Efficiency Buffer Tanks
- Electric Boilers
- Stainless Compact Packaged Copper Coil Water Heaters - Semi-instantaneous, Instantaneous
- Unfired Steam Generators
- Condensed Catalog

*Cemline is represented in all major cities.
Please contact your local representative or call Cemline Corporation.*

