EZ Plate® Instantaneous

Packaged Instantaneous Domestic Hot Water Generator

Energy Source: Boiler Water

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Packaged Instantaneous Domestic Hot Water

EZ Plate Instantaneous is a factory-packaged, skid-mounted instantaneous water heater that uses high or low temperature boiler water as the energy source. The heat exchanger is double-wall, brazed plate and temperature control is provided entirely on the domestic water side through a thermostatic mixing valve. This valve modulates infinitely in response to hot water demand.

Ideal for Condensing Boiler Systems

EZ Plate Instantaneous can work with all types of boilers, but is especially suited for condensing boilers where low return temperatures are beneficial to the operating efficiency of the system.

Inside the plate exchanger, counter-flows of boiler and domestic water maximize the temperature differentials and allow the temperatures of the opposing liquids to “cross” with boiler return water becoming cooler than domestic outlet water.

Due to their unique heat transfer characteristics, plate-type heat exchangers excel when applied in low-temperature boiler water loops. A plate-type exchanger, when supplied with 145°F boiler water, can produce 140°F domestic hot water while reducing boiler water return temperature to 110°F or lower. This is highly beneficial in condensing boiler systems where efficiency improves with reductions in both supply and return water temperatures.

By comparison, u-tube heat exchangers are typically sized for a 20°F difference between the entering boiler water temperature and the desired domestic hot water outlet temperature.

Features and Benefits

- Up to 6,000,000 Btuh output from 12 ft^2 of floor space
- Units are available to produce 10, 15 20, 30, 40, 50, 60, 75, 90 and 105 gpm of water with domestic outlet temperatures of 120, 140 or 160°F
- Designed to operate with lower boiler water supply and return temperatures to optimize condensing boiler operation
- Brazed plate heat exchangers
- Skid-mounted with factory pre-assembled piping
- Electronic communication with BAS optional

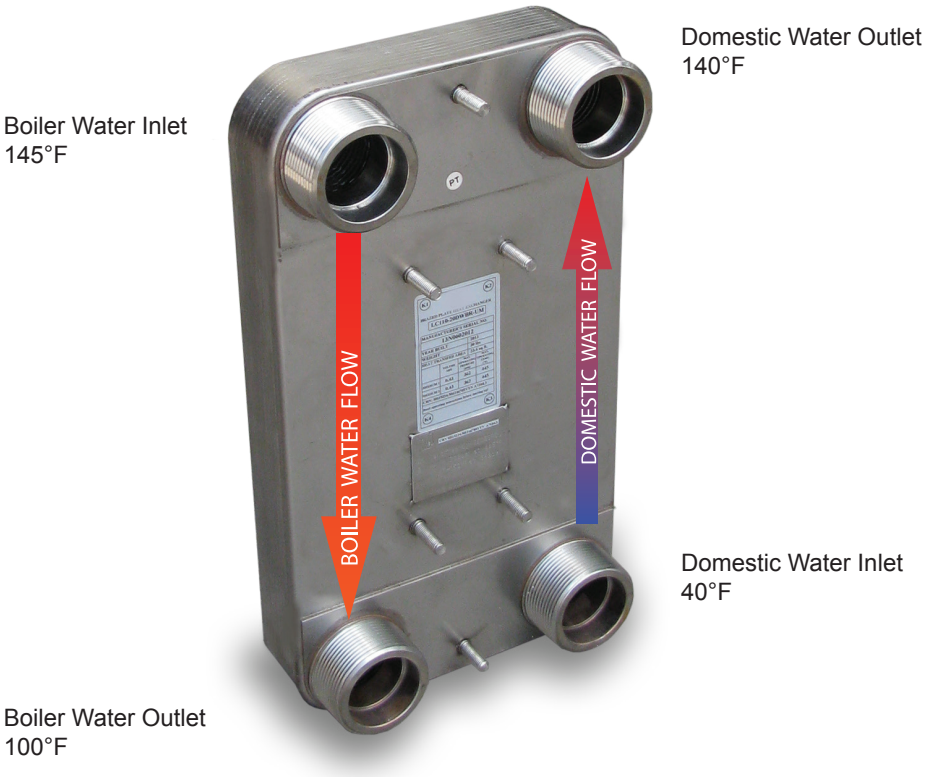
How It Works

Domestic-Side Temperature Control – No Boiler Water Valve Needed

Demand for hot water causes cold water to flow into the water heater. The cold water can take either of two paths; through the cold port of the thermostatic temperature control valve or through the plate heat exchanger. Cold water entering the exchanger is heated to within 5°F of the boiler water temperature on the opposite side.

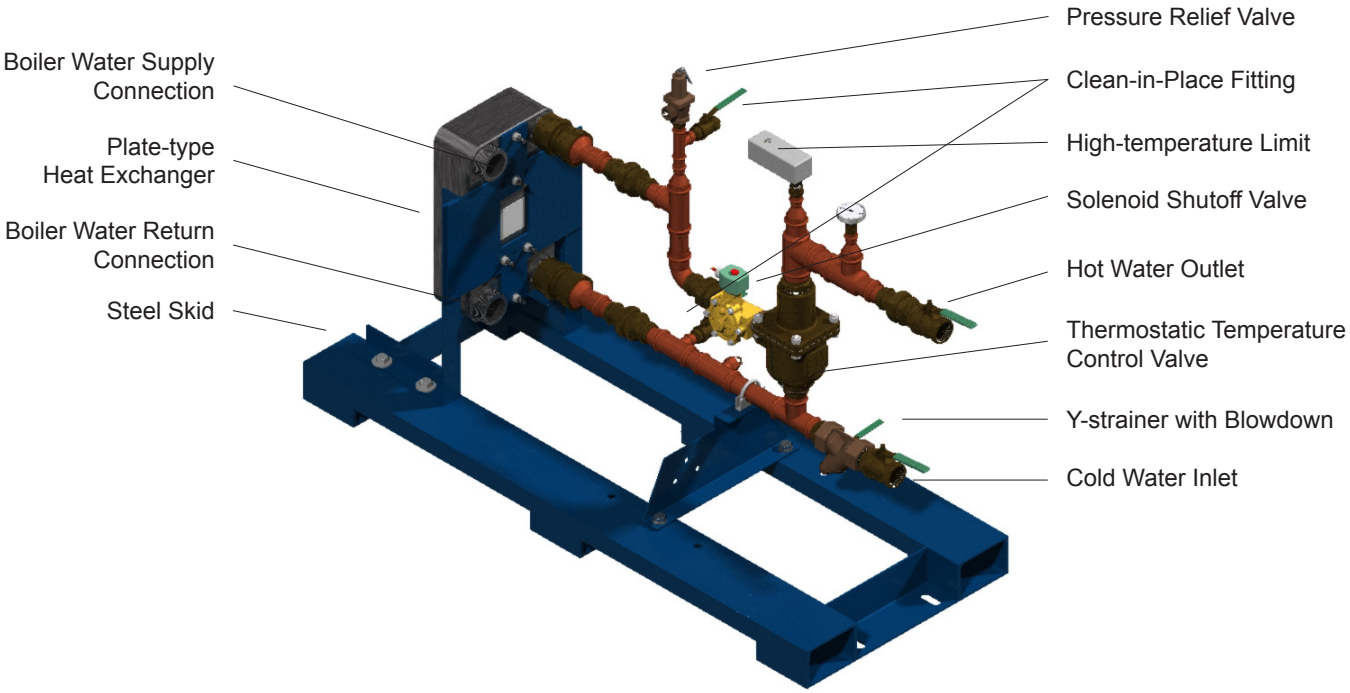
Hot water exiting the heat exchanger enters the hot port of the control valve. The valve is self-contained with the ability to infinitely modulate the flows of cold and hot water as required to maintain the outlet temperature. The temperature setting on the valve is determined by the temperature sensing thermostatic element inside the valve. Under all flow conditions, the domestic outlet water is controlled to within 4°F of the valve set point. Outlet temperature is constantly monitored by a high-limit thermostat. In the event of an over-temperature condition, a solenoid valve will shut off the flow of water to the valve's hot port allowing water to flow only through the cold port of the valve.

No boiler water valve is necessary to control domestic hot water temperature. The optional boiler water control valve restricts the boiler water, when demand is low. This can reduces the amount of boiler water passing through the heat exchanger.

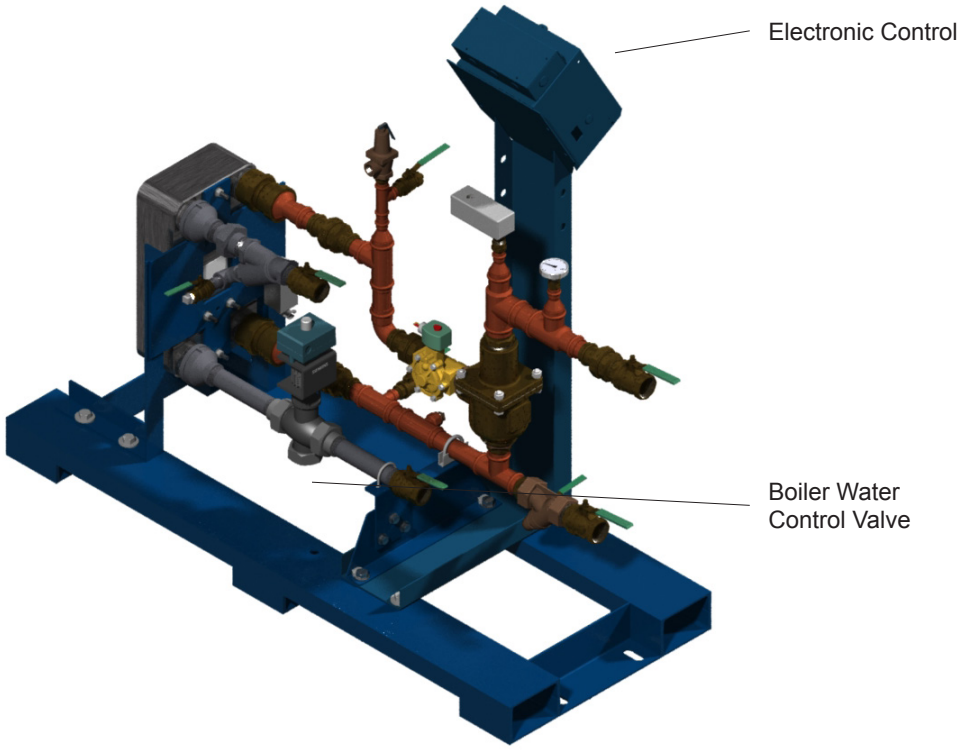


Configurations

Standard Configuration



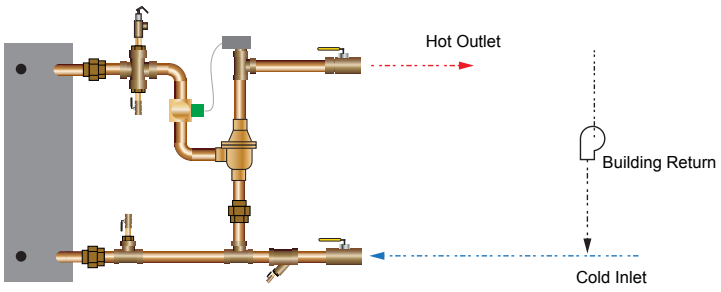
Optional Configuration with Modulating Boiler Water Control Valve



Convenient Package With Low Cost

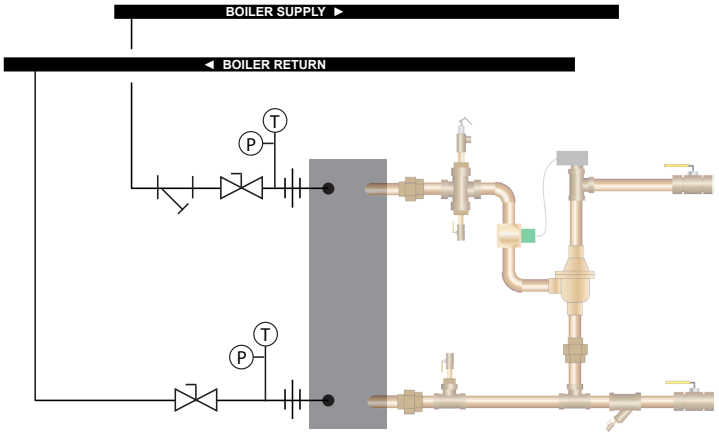
Domestic Side Piping

EZ Plate water heaters are completely factory piped and include all components shown in solid lines; including the hot and cold isolation valves.
The heater only needs to be connected to domestic water lines and a building return circulation line with a minimum of 4 gpm flow. If a building circulator is not available, a small pump can be installed between the hot outlet piping and the cold inlet.



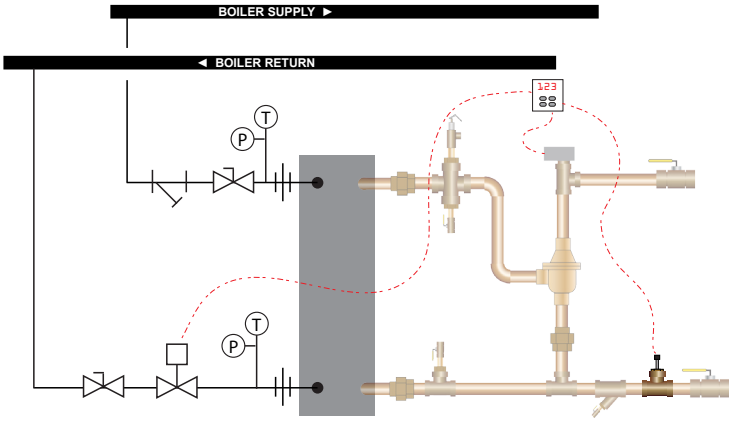
Boiler Side Piping - Standard Product

The standard EZ Plate configuration is intended to be installed with constant boiler water flow through the heat exchanger provided by the pressure drop between the supply and return headers or, if needed a zone pump. Even with VFD controlled boiler pumps, constant flow at the water heater is logical due to the year-round demand for domestic hot water and the requirement for a boiler loop flow path to establish a minimum run rate on the building circulator. This water heater also represents the lowest possible equipment cost.



Boiler Side Piping - Modulating Boiler Water Valve

When variable flow at the water heater is desired due to the operation of a VFD controlled boiler loop circulator, the EZ Plate can be configured with a modulalting boiler water valve. In this configuration, blended domestic return water to the water heater is monitored in a feed-forward control method to position the boiler water valve. The valve does not actually control the domestic hot outlet temperature but only modulates boiler water into the heat exchanger as required. Domestic hot water temperature is still controlled by the thermostatic valve.



Note: The piping illustrations are generalized. When applying low-water-volume instantaneous water heaters such as EZ Plate, there are additional considerations for the boiler loop. Characteristics such as boiler loop water volume, the number and type of boilers and the energy requirements of the domestic water system relative to the total boiler system BTU output must be taken into consideration. Contact with your PVI representative for design assistance.

Features

Heat Exchanger

- ASME Section VIII, Div. 1 stamped for MAWP
- Brazed-plate heat exchanger double-wall

Domestic Piping and Controls

- Fully assembled copper, brass and bronze waterside piping
- Infinitely modulating, self-contained, thermostatic temperature control valve; standard outlet temperatures include 120°F, 140°F, and 160°F
- ASME pressure relief valve
- Over-temperature solenoid shutoff valve
- Immersion temperature limiting device
- Clean-in-place valves for heat exchanger
- Bronze y-strainer with blow down valve
- Factory ready for connection to the building's domestic water re-circulation piping
- Heavy-duty painted steel skid
- Hot outlet temperature gauge
- Isolation valves
- 18-month heat exchanger warranty

Optional Features and Equipment

Field Installed Optional Equipment

- Water pressure gauge
- Inlet water temperature gauge

Factory Installed Optional Equipment

- 2-way modulating boiler water control valve with fast-acting magnetic solenoid actuator (includes electronic control with LED temperature readouts and communication port)
- Boiler water temperature and pressure gauge on the inlet and outlet
- Y-strainer with blow down valve on boiler water inlet
- Electronic temperature monitor with LED readout (Modbus serial connection)
- Protocol gateway for Modbus TCP/IP, BacNet IP or BacNet MSTP

Specifications and Dimensions

Boiler Water Side			Domestic Water Side		
Boiler Water Supply 150°F			40°F to 140°F		
Model	Boiler Water Flow (gpm)	Boiler Water Pressure Drop	Recovery (gpm)	Hourly BTU Output	Domestic Water Pressure Drop
EZ-10-DW	10	0.9	5.9	295,000	1.1
EZ-15-DW	15	0.8	8.9	450,000	1.9
EZ-20-DW	20	0.8	11.9	600,000	2
EZ-30-DW	30	1.1	16.9	850,000	1.4
EZ-40-DW	40	1.0	22.7	1,125,000	1.2
EZ-50-DW	50	1.2	27.6	1,375,000	1.6
EZ-60-DW	60	1.4	32.6	1,625,000	2.1
EZ-75-DW	75	1.4	40.3	2,000,000	2.5
EZ-90-DW	90	1.5	48.4	2,450,000	3.3
EZ-105-DW	105	1.4	57.5	2,875,000	4

Boiler Water Side			Domestic Water Side		
Boiler Water Supply 180°F			40°F to 140°F		
Model	Boiler Water Flow (gpm)	Boiler Water Pressure Drop	Recovery (gpm)	Hourly BTU Output	Domestic Water Pressure Drop
EZ-10-DW	10	0.9	10	500,000	3
EZ-15-DW	15	0.8	15.5	775,000	5.75
EZ-20-DW	20	0.8	21	1,050,000	6
EZ-30-DW	30	1.1	30.3	1,500,000	4.3
EZ-40-DW	40	1.0	40.8	2,000,000	3.5
EZ-50-DW	50	1.2	50.2	2,500,000	5
EZ-60-DW	60	1.4	58.9	3,000,000	6.2
EZ-75-DW	75	1.4	74.3	3,750,000	7.8
EZ-90-DW	90	1.5	88.2	4,500,000	11.6
EZ-105-DW	105	1.4	97.5	4,875,000	11

Electrical Requirements
115/120VAC 60Hz. 15 amps

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Hot Water Solutions

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