



Packaged Instantaneous Domestic Hot Water Generator
Energy Source: Boiler Water



Shown with optional boiler water valve
and electronic feed-forward control.

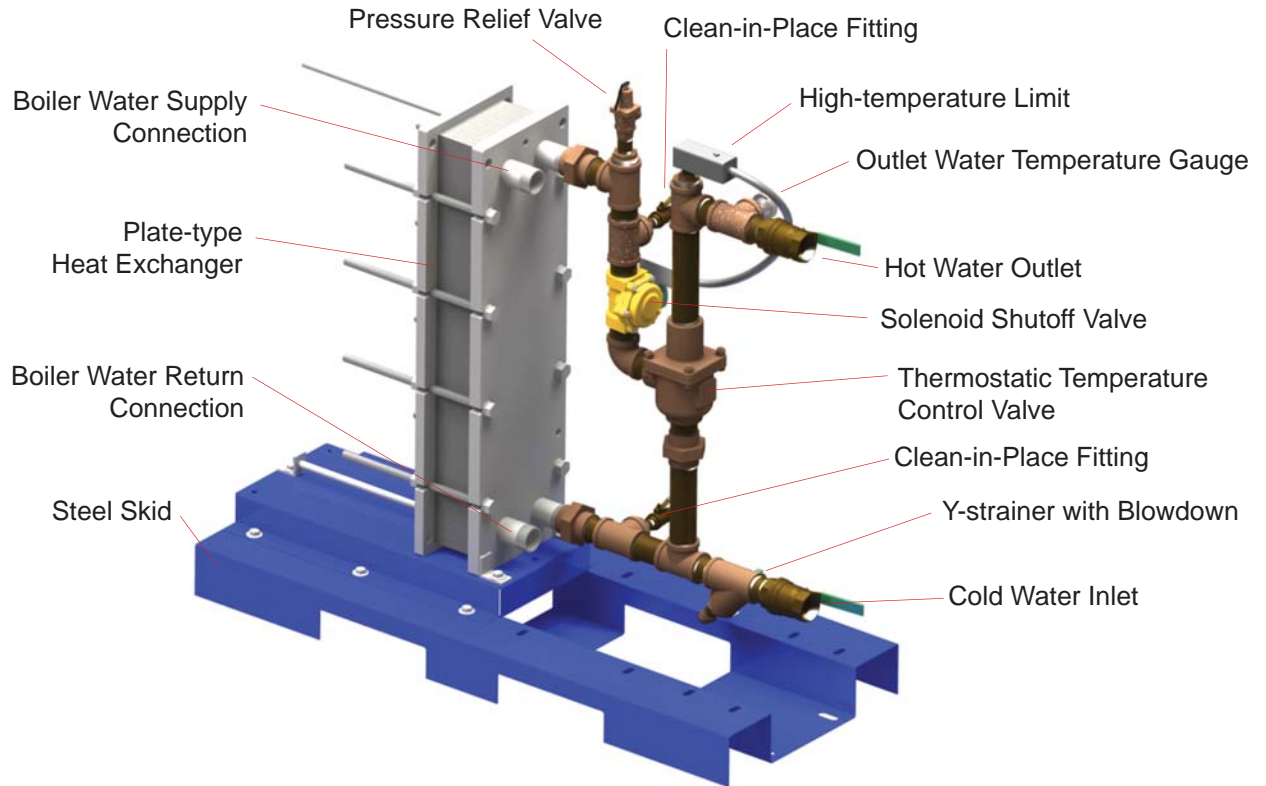
**Operates with low boiler water supply and return temperatures
to optimize condensing boiler operation**

- Up to 6,000,000 Btuh Output from 12.5ft² of floor space
- Single-wall Brazed Plate Heat Exchangers
- Double-wall Plate-and-Frame Exchangers
- Domestic Water Temperature to 180°F
- Skid-mounted with Factory Pre-assembled Piping

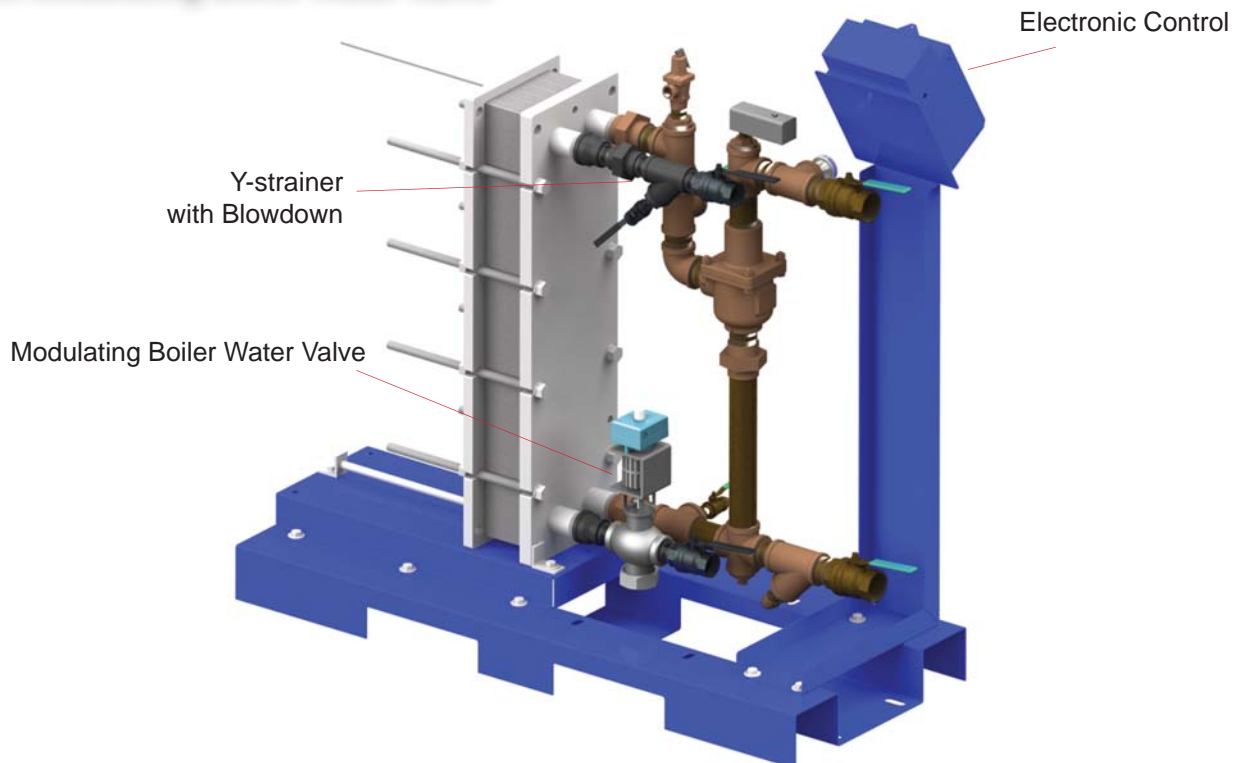




Standard Configuration



Optional Configuration with Modulating Boiler Water Valve

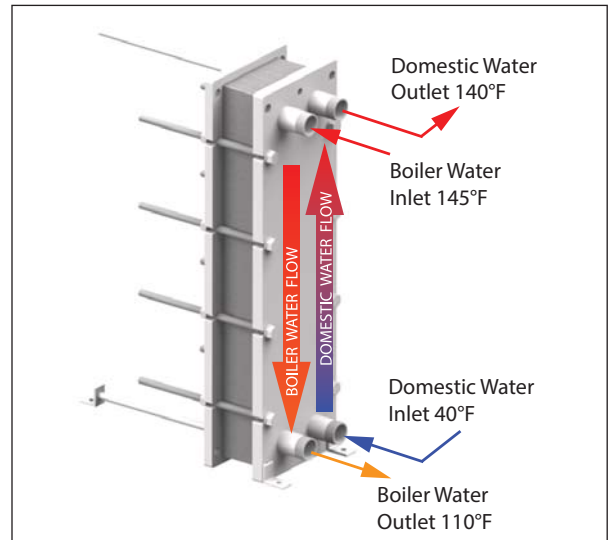


Heat Transfer Characteristics of Plate Heat Exchangers

Ideal for Condensing Boiler Systems

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. In addition, the boiler return water cannot be lower than the domestic hot water outlet temperature. For example, to produce 140°F domestic hot water, a u-tube exchanger would require 160°F entering boiler water and return boiler water would be no less than 141°F; temperatures above the ideal range for condensing boilers.



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 colder than domestic outlet water. This illustration is just one example. Lower boiler water return temperatures are possible with different operating conditions and heat exchangers.

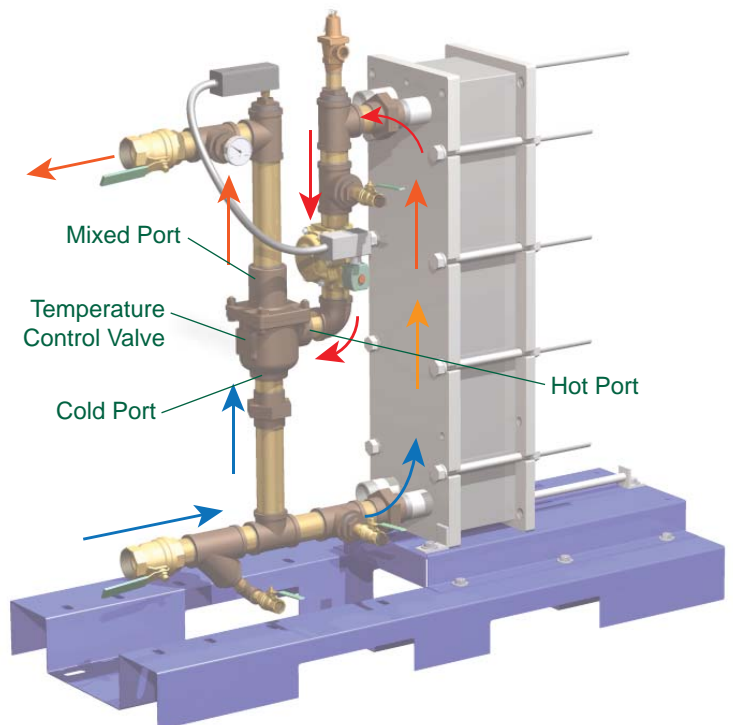
Domestic-Side Temperature Control - No Boiler Water Valve Needed *(but available if desired for VFD boiler systems)*

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.

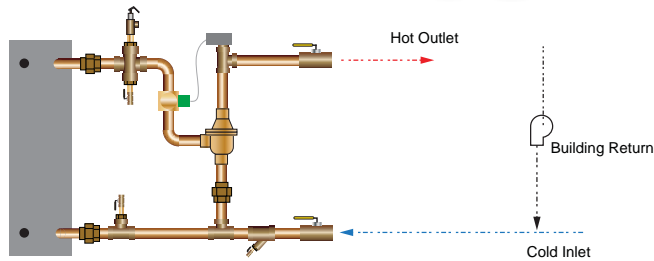
Hot water exiting the heat exchanger enters the hot port of the control valve. The valve is self-contained with the ability to infinitely modulate the flows of cold and hot water as required to maintain the outlet temperature. The temperature setting on the valve is determined by the temperature sensing 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 valve is available for installations with VFD controlled boiler pumps where variable flow to the heat exchanger is desired.



Domestic Side Piping

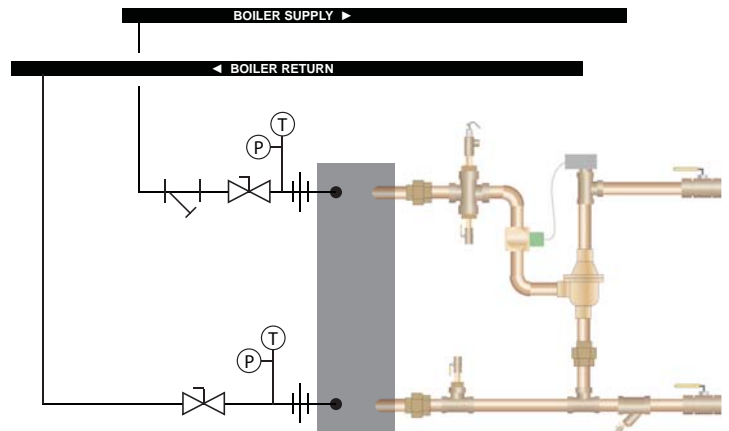


EZ Plate water heaters are completely factory piped and include all components shown in solid lines; including the hot and cold isolation valves. The heater only needs to be connected to domestic water lines and a building return circulation line with a minimum of 4 gpm flow. If a building circulator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

Boiler Side Piping - Standard Product

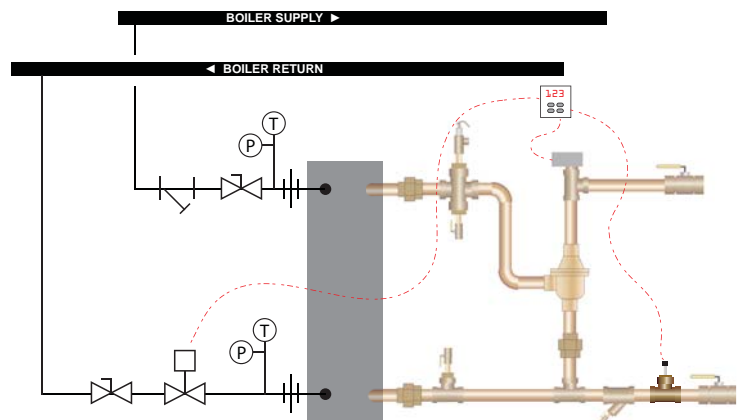
The standard EZ Plate configuration is intended to be installed with constant boiler water flow through the heat exchanger provided by the pressure drop between the supply and return headers or, if needed a zone pump. Even with VFD controlled boiler pumps, constant flow at the water heater is logical 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 modulating 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.

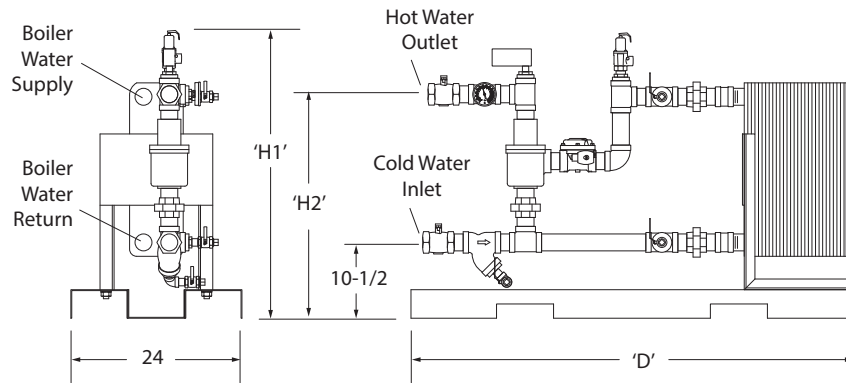


The piping illustrations are generalized. When applying low-water-volume instantaneous water heaters such as EZ Plate, there are additional considerations for the boiler loop. Characteristics such as boiler loop water volume, the number and type of boilers and the energy requirements of the domestic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

Packaged Heater Dimensions

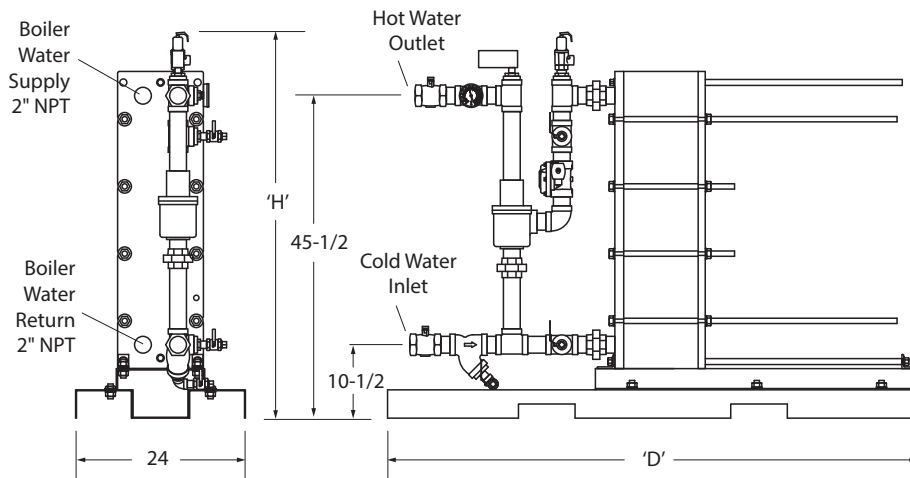
Single-wall Models (model suffix SW)

Model Number ▶	EZ 10	EZ 15	EZ 20	EZ 30	EZ 40	EZ 50	EZ 60	EZ 75	EZ 90	EZ 120
Overall Height 'H1'	36-1/2	36-1/2	39-1/2	39-1/2	40	40	40	40	40	40
Height to Outlet 'H2'	29	29	31-1/2	31-1/2	32	32	32	32	32	32
Overall Depth 'D'	42	42	42	42	56	56	56	62	62	62
Domestic Connections NPT	1	1	1-1/2	1-1/2	2	2	2	2	2	2
Boiler Water Connections NPT	1	1	2	2	2	2	2	2	2	2
Weight Lbs.	245	275	315	325	365	375	395	415	435	475



Double-wall Models (model suffix DW)

Model Number ▶	EZ 10	EZ 15	EZ 20	EZ 30	EZ 40	EZ 50	EZ 60	EZ 75	EZ 90	EZ 120
Overall Height 'H'	53	53	54	54	54-1/2	54-1/2	54-1/2	54-1/2	54-1/2	54-1/2
Overall Depth 'D'	50	50	50	50	60	60	60	60	75	75
Domestic Connections NPT	1	1	1-1/2	1-1/2	2	2	2	2	2	2
Weight Lbs.	737	762	837	857	1017	1067	1117	1192	1291	1451



Electrical requirements: 120V, 60 Hz., 5 amps. Single-point connection.
All dimensions in inches.

Double-Wall Heat Exchanger Performance with Different Boiler Water Temperatures



Double-wall heat exchangers are plate-and-frame design.

ASME Stamp:
Section VIII

Operating Pressure (boiler side):
150 psi (standard)
300 psi (optional)

Operating Temperature (boiler side):
338°F maximum rating
Maximum boiler water temperature when operating EZ Plate water heater is 185°F.
Consult PVI for higher boiler water temperatures.

Connections:
2" NPT Stainless Steel

Gasket Material:
EPDM

Plate Material:
Stainless Steel

Warranty: 3-year

Boiler Water Side			Domestic Water Side		
145°F Entering Boiler Water (Supply) ~ 100°F Leaving Boiler Water (Return)			40°F to 140°F		
Water Heater Model No.	Boiler Water Flow (gpm)	Boiler Water Pressure Drop (psi)	Recovery (gpm)	Hourly BTU Output	Domestic Water Pressure Drop (psi)
EZ 10 DW	10	1.6	4.5	225,000	1
EZ 15 DW	15	2.1	7	350,000	1
EZ 20 DW	20	2.5	9	450,000	1
EZ 30 DW	30	3	13.5	675,000	1
EZ 40 DW	40	3	18	900,000	0.5
EZ 50 DW	50	3.2	22.5	1,125,000	0.5
EZ 60 DW	60	3.5	26.5	1,325,000	0.5
EZ 75 DW	75	3.8	33	1,650,000	1
EZ 90 DW	90	4	40	2,000,000	1
EZ 120 DW	120	4.6	53	2,650,000	1

Boiler Water Side			Domestic Water Side		
160°F Entering Boiler Water (Supply) ~ 87°F Leaving Boiler Water (Return)			40°F to 140°F		
Water Heater Model No.	Boiler Water Flow (gpm)	Boiler Water Pressure Drop (psi)	Recovery (gpm)	Hourly BTU Output	Domestic Water Pressure Drop (psi)
EZ 10 DW	10	1.6	7.5	375,000	1
EZ 15 DW	15	2.1	11	550,000	1
EZ 20 DW	20	2.5	14.5	725,000	1
EZ 30 DW	30	3	21	1,050,000	2
EZ 40 DW	40	3	28.5	1,425,000	0.5
EZ 50 DW	50	3.2	36	1,800,000	1
EZ 60 DW	60	3.5	43	2,150,000	1
EZ 75 DW	75	3.8	53	2,650,000	1
EZ 90 DW	90	4	65	3,250,000	1.5
EZ 120 DW	120	4.6	86	4,300,000	3

For performance with other boiler water and domestic water conditions, refer to PVI web site.

Domestic side standard temperature is 180°F max.
Domestic side standard pressure is 150 psi max.
For higher operating pressure, consult your PVI representative.



Single-Wall Heat Exchanger Performance with Different Boiler Water Temperatures



Single-wall heat exchangers are brazed plate design.

ASME Stamp:
Section VIII

Operating Pressure (boiler side):
435 psi max

Operating Temperature (boiler side):
450°F maximum rating
Maximum boiler water temperature when operating EZ Plate water heater is 185°F.
Consult PVI for higher boiler water temperatures.

Connections:
2" NPT Stainless Steel

Brazing Material:
Copper

Plate Material:
Stainless Steel

Warranty: 3-year

Boiler Water Side			Domestic Water Side		
145°F Entering Boiler Water (Supply) ~ 110°F Leaving Boiler Water (Return)			40°F to 140°F		
Water Heater Model No.	Boiler Water Flow (gpm)	Boiler Water Pressure Drop (psi)	Recovery (gpm)	Hourly BTU Output	Domestic Water Pressure Drop (psi)
EZ 10 SW	10	2.2	4.5	225,000	0.5
EZ 15 SW	15	2.4	6.5	325,000	0.5
EZ 20 SW	20	1.7	7	350,000	1
EZ 30 SW	30	2.1	10.5	525,000	1.5
EZ 40 SW	40	2.3	13	650,000	1
EZ 50 SW	50	2.5	16	800,000	1
EZ 60 SW	60	2.1	21	1,050,000	1
EZ 75 SW	75	2.2	25	1,250,000	1
EZ 90 SW	90	2.4	30	1,500,000	1
EZ 120 SW	120	2.8	40	2,000,000	1

Boiler Water Side			Domestic Water Side		
160°F Entering Boiler Water (Supply) ~ 97°F Leaving Boiler Water (Return)			40°F to 140°F		
Water Heater Model No.	Boiler Water Flow (gpm)	Boiler Water Pressure Drop (psi)	Recovery (gpm)	Hourly BTU Output	Domestic Water Pressure Drop (psi)
EZ 10 SW	10	2.2	7.5	375,000	1
EZ 15 SW	15	2.4	11.5	575,000	1.5
EZ 20 SW	20	1.7	12.5	625,000	1
EZ 30 SW	30	2.1	18.5	925,000	3
EZ 40 SW	40	2.3	24	1,200,000	1
EZ 50 SW	50	2.5	30	1,500,000	1
EZ 60 SW	60	2.1	37.5	1,875,000	1
EZ 75 SW	75	2.2	46	2,300,000	1
EZ 90 SW	90	2.4	55	2,750,000	1.5
EZ 120 SW	120	2.8	73	3,650,000	2

For performance with other boiler water and domestic water conditions, refer to PVI web site.

Domestic side standard temperature is 180°F max.
Domestic side standard pressure is 150 psi max.
For higher operating pressure, consult your PVI representative.





Packaged Instantaneous Domestic Hot Water Generator

STANDARD FEATURES AND EQUIPMENT

HEAT EXCHANGER

- ASME Section VIII, Div. 1 stamped for 150 psi MAWP
- Single-wall brazed-plate heat exchanger or double-wall plate and frame heat exchanger

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
- Three-year 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, BacNet MSTP or LonWorks

