

Rheem Hybrid (Heat Pump) Hot Water Heaters

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<http://www.roperld.com/personal/roperldavid.htm>

<http://www.roperld.com/personal/InterdisciplinaryStudies.htm>

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Introduction

There are three [Rheem Prestige Hybrid \(Heat-Pump\) Electric Hot Water Heaters](#):



Models	50-Gallons	65-Gallons	80-Gallons
Height/Diameter	61"/22 ¼"	64"/24 ¼"	74"/24 ¼"
Gallons	45	59	72
First-Hour Gallons	67	75	89
8-minute hot showers	4	5	6
Energy Factor	3.50	3.50	3.50
Weight (lbs)	178	225	244

- [Movie about Rheem Prestige Hybrid HWH](#)
- [Use and Care Manual](#)
- <http://www.rheem.com/product/water-heating-heat-pump-performance-platinum-series-hybrid-heat-pump>
- https://en.wikipedia.org/wiki/Heat_pump_and_refrigeration_cycle
- [Residential Energy Federal Tax Credit](#)

Professional *Prestige*[®] Hybrid Electric is the most efficient water heater available

Efficiency

- High 3.55 - 3.70 UEF reduces operating cost
- ENERGY STAR[®] rated

Performance

- Delivers hot water faster than most standard electric water heaters – 67 gallons first-hour delivery for 50-gallon model, 75 gallons FHD for 65-gallon model and 89 gallons FHD for 80-gallon model (30 Amp models)
- Ambient operating range: 37-145° F is widest in class, offering more days of HP operation annually; designed to meet Northern Climate Spec (Tier 3)

Easy Installation

- Easy access side connections
- Quick access to electrical junction box
- Easily replaces a standard electric water heater

Integration

- LCD Screen with built-in water sensor alert with audible alarm



- Integrated EcoNet[®] WiFi-connected* technology and free mobile app gives users control over water systems, allowing for customizable temperature, vacation settings, energy savings and system monitoring at home or away. Visit Rheem.com/hybridsolutions
- Water sensor detects water outside of the unit and sends an alert via the free Rheem EcoNet[®] mobile app to the homeowner

Operation Modes

- Energy Saver
- Heat Pump
- High Demand
- Electric
- Vacation: 2-28 days (or placed on hold indefinitely)

Plus...

- Premium grade anode rod with resistor extends the life of the tank
- 3/4" NPT water inlet and outlet; 3/4" condensate drain connections
- Incoloy stainless steel resistor elements
- Dry-fire protection
- Easy access, top mounted washable air filter
- 2" Non-CFC foam insulation
- Enhanced flow brass drain valve
- Temperature and pressure relief valve installed
- Low lead compliant

Warranty

- 10-Year limited tank and parts warranty
See Residential Warranty Certificate for complete information

Units meet or exceed ANSI requirements and have been tested according to D.O.E. procedures. Units meet or exceed the energy efficiency requirements of NAECA, ASHRAE standard 90, ICC Code and all state energy efficiency performance criteria.

*WiFi broadband internet connection required.



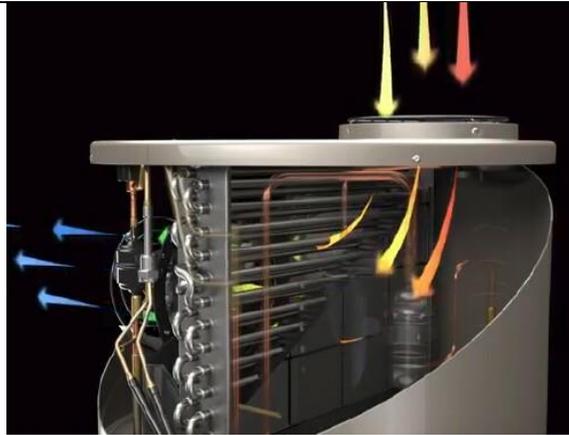
Professional *Prestige* Hybrid

50, 65 and 80-Gallon Capacities
208-240 Volt / 1 PH
Electric



LEED Points - 3

How the Heat Pump Works



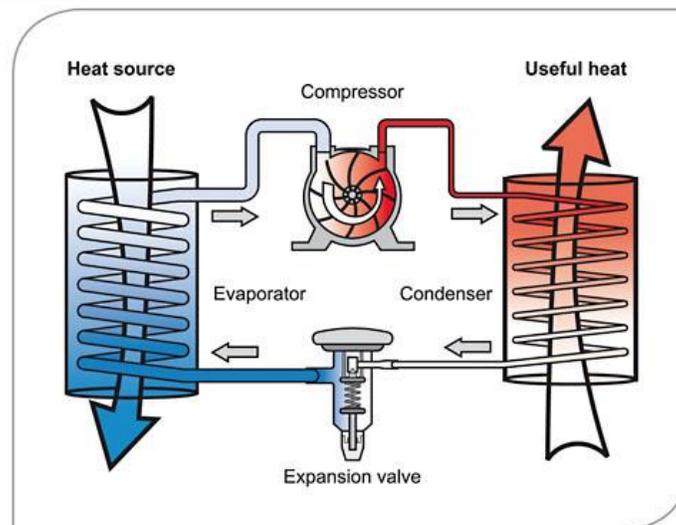
Warm air brought in at the top heats the [refrigerant](#) liquid/vapor in the coils, turning it into vapor, and the cooler air is expelled at the side.



The compressor [superheats](#) the vapor from the coils.



The hot coils are wrapped around the tank to transfer heat to the water in the tank. The vapor in the coils is converted to liquid.

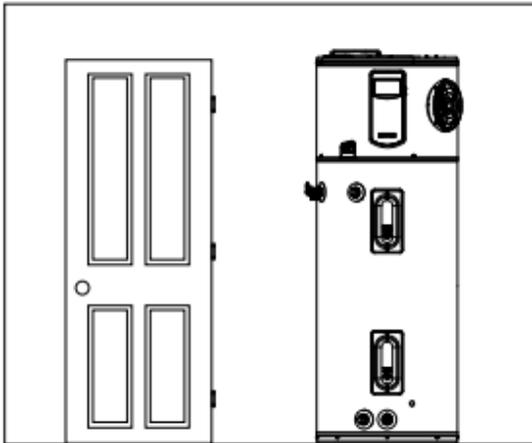


“The liquid refrigerant goes through the [expansion valve](#) (also called a throttle valve) where its pressure abruptly decreases, causing [flash evaporation](#) and auto-refrigeration of, typically, less than half of the liquid. That results in a mixture of liquid and vapor at a lower temperature and pressure.” Rheem uses an [Electric Expansion Valve \(EXV\)](#) rather than the usual mechanical Thermal Expansion Valve (TXV), EXV is more efficient than TXV.

Hybrid Water Heater Installation Guidelines to Provide Optimal Efficiency

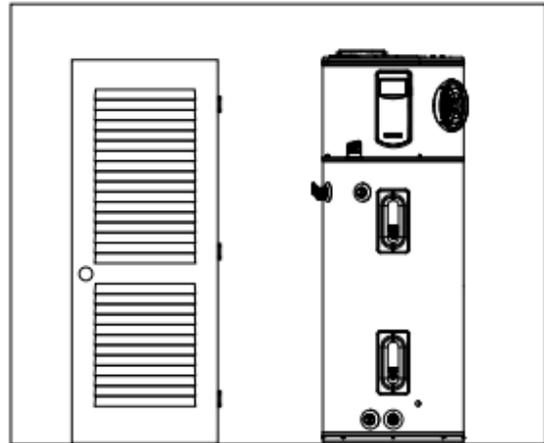
Heater: Not Ducted

Room size: Larger than 700 ft³ (e.g. 7' x 10' x 10').
Requirements: No additional ventilation needed.



Heater: Not Ducted

Room size: Smaller than 700 ft³ (e.g. 7' x 10' x 10').
Requirements: Full louvered door OR two louvers top and bottom. See below.



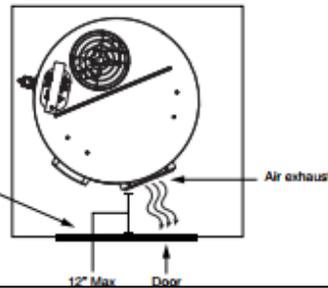
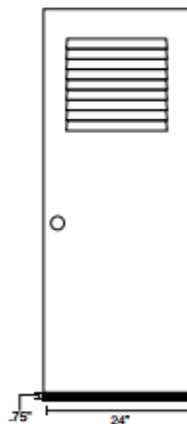
Heater: Not ducted

Room: Small Closet

Requirements: * Air gap under door equal to 18 in² (0.75" clearance).

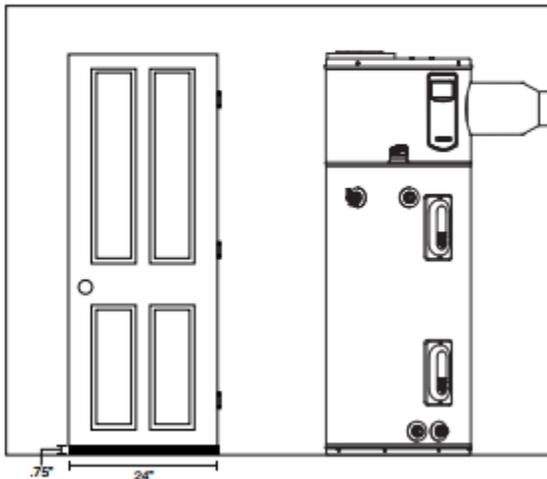
* Louver must be located the same height on door as the air exhaust on heater.

* Heater air exhaust must be positioned towards louver within one foot of door.



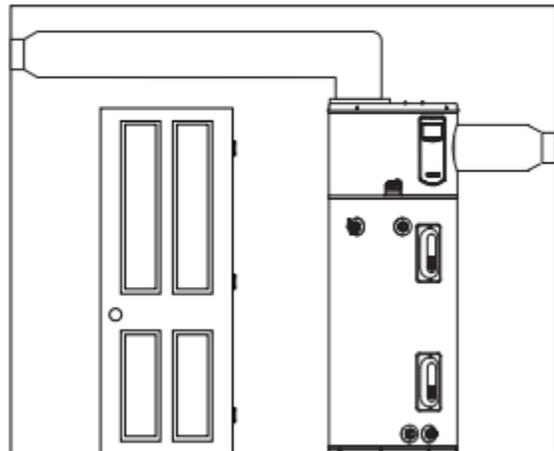
Heater: Ducted with inlet OR outlet duct

Room size: Any size room
Requirements: Air gap under door equal to 18 in² (0.75" clearance)

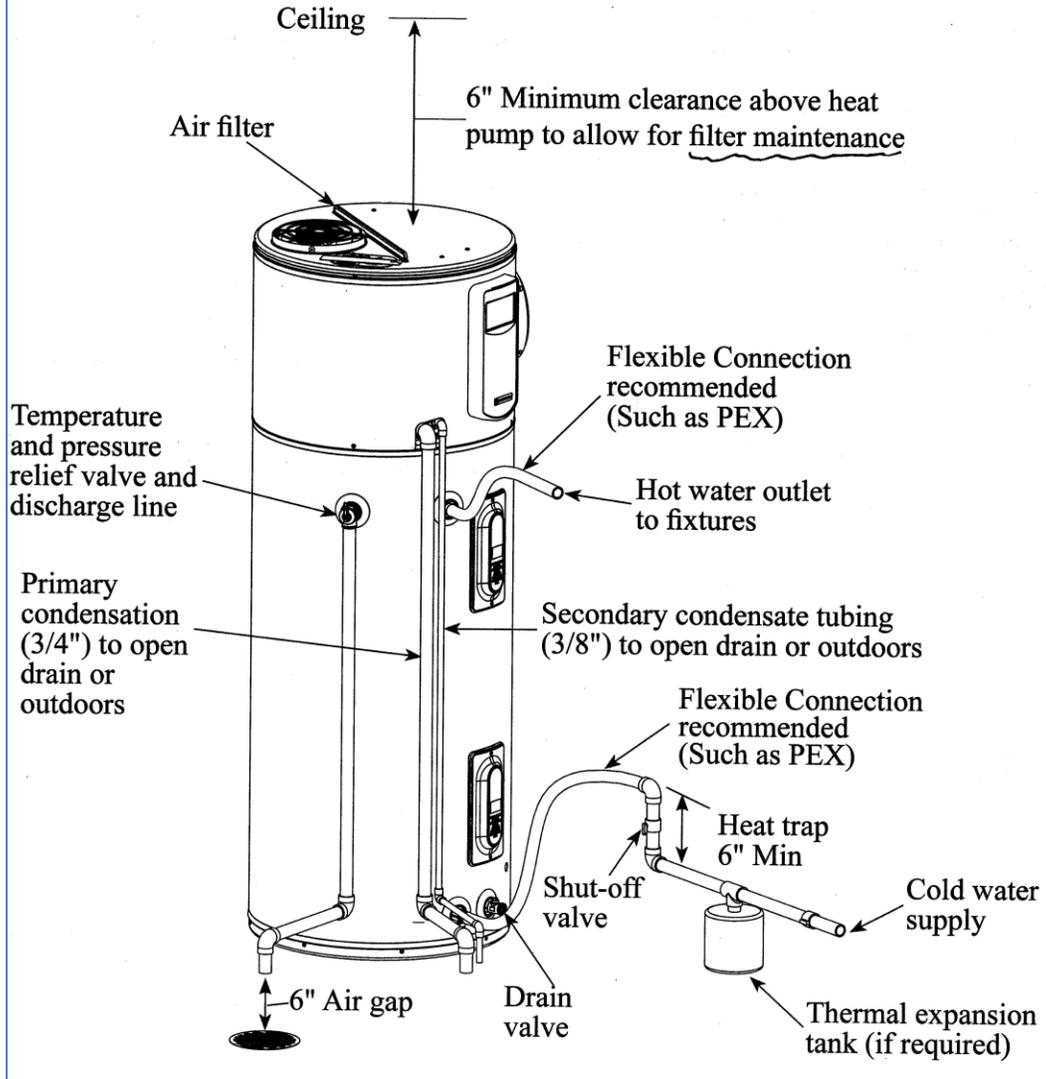


Heater: Ducted with inlet AND outlet duct

Room size: Any size room
Requirements: No additional ventilation needed.



Typical Installation



Operating Modes

Heat Pump

Heat with Heat Pump operation and will not use electric heat during typical heating and demand cycles. This mode has a low recovery, but minimizes power consumption.

Energy Saver

Optimizes Heat Pump and electric heat that results in low power consumption and High recovery.

High Demand

Provides the highest recovery while still providing good energy savings. Water heater operates Heat Pump and electric heat simultaneously.

Electric

Heats with the electric resistance elements. This mode should only be used during filter and condensate drain maintenance periods. This mode will result in maximum power consumption.

Electric Heat Override Time: This setting can be set from 1 to 7 days and will return the unit to the previous (more efficient) mode after the set number of day is complete. To set the days, press "3 days" to highlight, then press up/down buttons to adjust the days.

Vacation

Allows duration setting between 1 and 28 days or set indefinitely with the "Hold" setting. Tank temperature will be maintained at about 65° F.

The water temperature and operating modes can be set using the touch screen on the water heater or by logging into www.rheem.com/econet/wificenter or by using the Rheem app on a smartphone.

Roper Installation of Rheem Hybrid 80-Gallons Hot Water Heater

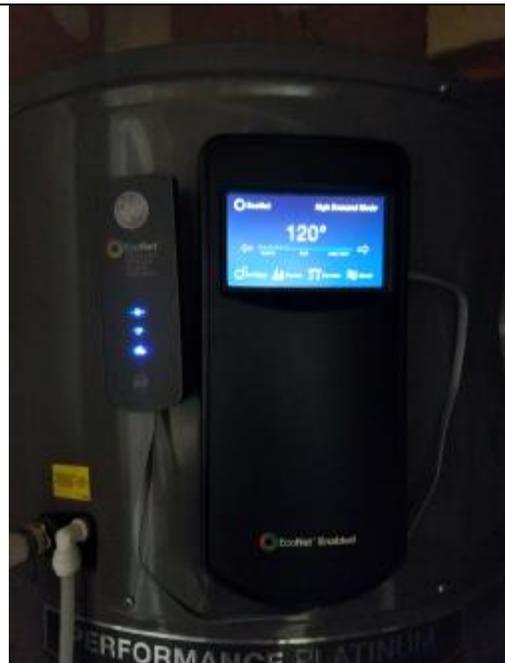
Our 1983 State Electric 80-gallons HWH started leaking near the top in November 2017, so we had it replaced on 21 November 2017 by the [Rheem Hybrid electric 80-gallon HWH](#) bought from [Home Depot](#). It was quickly and beautifully installed by Bobby Mitcham of [Blacksburg Plumbing](#).

Here is a comparison of the two HWHs:

Hot Water Heater	kWh/year for average home	Cost \$/year for average home @ \$0.12/kWh
1983 State Electric	5217	\$626
2017 Rheem Hybrid 80-gallons	1541	\$185



A bucket catches the water condensed from the air by the heat pump. (As air is cooled it loses some of its humidity.) Later installed a pipe to drain the water outside.



The optional [Econet WiFi](#) module is shown on the left with 3 lights. The touch screen on the HWHy has many controls for HWH parameters.

The 4-gallons blue tank in the picture above is the [thermal expansion tank](#) (TEK) that is needed because water expands when heated, approximately 2% when heated from 50° F to 120°. Before installation air pressure in the TEK is set to the water pressure.

The HWHy is in a closet in our garage. The closet has a high small vent and we replaced the solid door with a double-louvered door to let warm air in from the garage and cool air out into the garage.

Most of the time we use Heat Pump mode. When visitors are staying overnight we use Energy Saver mode or High Demand mode as needed.