



### Energy Star 5.0 Certified

**Transfers heat from surrounding air  
to heat the water in the tank**

**Insulated with 3" thick CFC free polyurethane  
foam insulation to minimize stand-by heat loss**

### Thermoplastic lined tank

- User friendly electronic controller simplifies operation, maintenance, and troubleshooting
- Designed for simple installation and service by a professional plumber
- With no anode rod, maintenance is minimum
- Rebates available – check with AHRI/Energy Star websites
- Quiet application (54 dBA)
- Ducting capabilities available
- Four run modes
- Freeze protection

### Energy Star rated water heating solution

The Vaughn Featherweight Heat Pump Water Heater combines the latest in heat pump technology with the proven longevity of a thermoplastic lined tank. Three inches of high quality, CFC-free foam insulation, adds to the Featherweight efficiency providing the lowest standby heat-loss rating in the industry. A streamlined user interface on the controller ensures ease of use and is highly versatile. The Vaughn Featherweight offers a low-maintenance, affordable way to take advantage of green technologies.

### Applications

Residential, restaurants, schools, office buildings, and much more.



## Featherweight HP Highly Efficient Heat Pump Water Heater

Available in 55, 80, & 119 Gallon Capacities



# FW SERIES

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## HEATER SPECIFICATIONS

|                                   |                        |
|-----------------------------------|------------------------|
| <b>Tank</b>                       | Thermoplastic Lined    |
| <b>Storage</b>                    | 55, 80, & 119 Gallons  |
| <b>Orientation</b>                | Vertical               |
| <b>Pressure Rating:</b>           | 150 psi WP, 300 psi TP |
| <b>Inlet Size:</b>                | 3/4" Female NPT        |
| <b>Outlet Size:</b>               | 3/4" Male NPT          |
| <b>Drain Size:</b>                | 3/4" GHT               |
| <b>Condensate Size</b>            | 3/8" Tube              |
| <b>Relief Valve Size</b>          | 3/4" Tube              |
| <b>Relief Valve Type</b>          | T&P, 210°F, 150 psi    |
| <b>Insulation:</b>                | 3" Polyurethane Foam   |
| <b>Jacket:</b>                    | High Impact Composite  |
| <b>Voltage:</b>                   | 208-240 Volt           |
| <b>Phase:</b>                     | Single                 |
| <b>Frequency:</b>                 | 60 Hz                  |
| <b>Element:</b>                   | Incoloy Sheathed       |
| <b>Hi-Limit</b>                   | 190°F Manual Reset     |
| <b>Thermostat Range:</b>          | 50-160°F               |
| <b>Error Indication:</b>          | Visual and Audible     |
| <b>Demand Response Capable:</b>   | Yes (with option CN)   |
| <b>Child Lock Capable:</b>        | Yes                    |
| <b>Refrigerant:</b>               | R134A                  |
| <b>Ozone Depleting Potential:</b> | 0                      |
| <b>Global Warming Potential:</b>  | 1430                   |
| <b>Over Pressure Safety:</b>      | Manual Reset           |
| <b>Field Chargeable:</b>          | No                     |
| <b>Air Flow (High Fan):</b>       | 450 CFM                |
| <b>Air Flow (Low Fan):</b>        | 250 CFM                |
| <b>Temperature Range:</b>         | 35-110°F               |

## INSTALLATION REQUIREMENTS

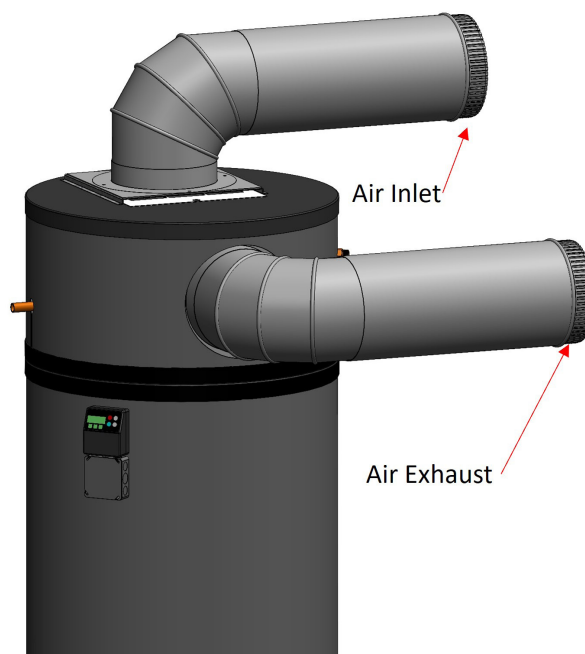
- The installed location must be at least a 10' x 10' x 7' room (700 cubic feet of air space)\*. If smaller, there must be a louver installed to provide sufficient airflow.
- The installed room location must not be cooler than 35°F.
- Installed locations with warmer ambient air temperature (e.g., furnace room) provide abundant “free” heat and are advantageous.
- The heat pump dehumidifies the air and as a result, produces condensate which must be piped to a drain, outdoors, or an appropriate condensate pump.
- The washable air filter requires periodic cleaning. Frequency depends upon environmental conditions.

\* Additional clearance required for 119-Gal

## OPTIONAL DUCTING KIT

- The ducting kit is designed to work with 10-inch diameter ducting.
- To ensure maximum performance, keep the duct as short and as straight as possible. Additionally try to make all necessary bends as wide of an angle as possible.

### Example of possible ducting orientation



## HOW THE VAUGHN FEATHERWEIGHT HEAT PUMP WORKS

The Featherweight Heat Pump is significantly more energy efficient than an electric water heater because the heat pump utilizes considerably less electricity. A heat pump works like a refrigerator in reverse. A refrigerator moves heat from inside the refrigerator and transfers it to the surrounding room; a heat pump water heater captures heat from the ambient air and transfers it to the tank, heating the water.

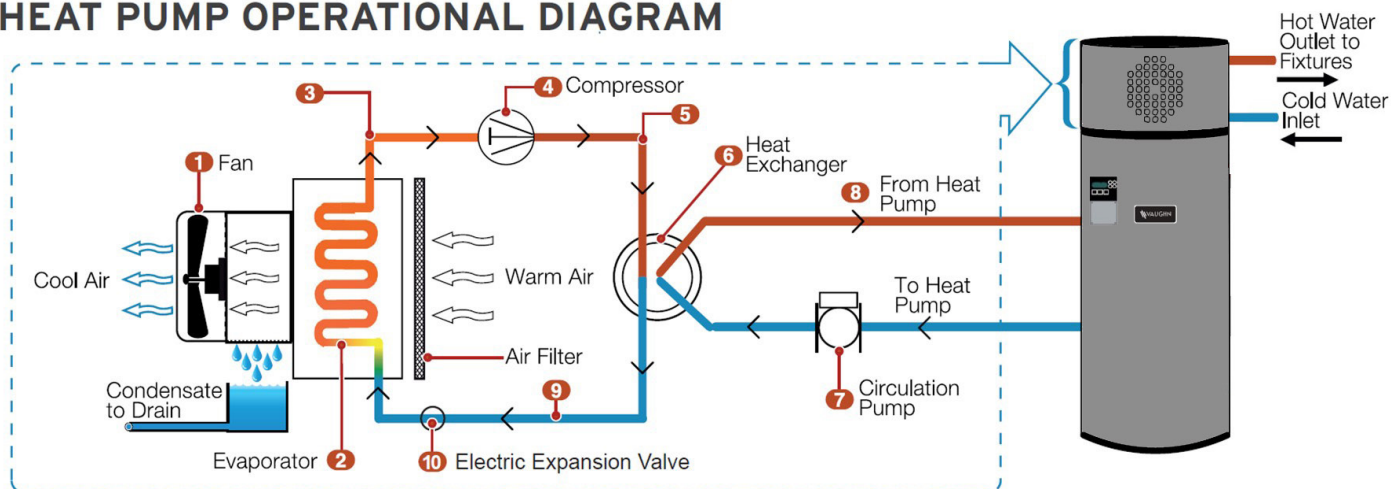
The Vaughn Featherweight Heat Pump can capture heat from air as cool as 35° F. The process of removing heat from the air and transferring it to the water results in the exhaust of cooler, dryer air. This added benefit of dehumidifying the surrounding air can provide as much as 0.4 gallons per hour of “free” dehumidification. When ducted properly, the cool air can help support the building cooling system.

If the unit cannot provide enough heating capacity to meet demand, the back-up resistive heating element will activate to ensure the unit provides sufficient hot water.

## THE VAUGHN FEATHERWEIGHT HEAT PUMP STEP BY STEP OPERATION

1. The built in fan draws air from the room into the water heater heat pump compartment, across an evaporator coil, and exhausts cooler and slightly dryer (dehumidified) air.
2. The evaporator coil captures heat energy in the air and transfers that energy to a specially formulated, CFC free refrigerant contained within the evaporator.
3. The refrigerant changes from a liquid/gas mixture to 100% vapor as it gets warmer.
4. The refrigerant, now entirely vapor, exits the evaporator and passes into a compressor.
5. The vapor is compressed, causing it to become a superheated hot gas and then flows to the heat exchanger.
6. The heat exchanger transfers heat energy from the superheated hot gas to the cold water from the tank.
7. The pump circulates cold water from the tank through the heat exchanger in the upper unit, resulting in a continuous transfer of heat energy from the superheated gas to the water.
8. Hot water exits the heat exchanger and is stored in the tank.
9. The superheated gas condenses back to a liquid.
10. The liquid refrigerant expands when passing through the expansion valve, becoming a vapor/liquid mixture, and then waits to repeat the process.

## HEAT PUMP OPERATIONAL DIAGRAM

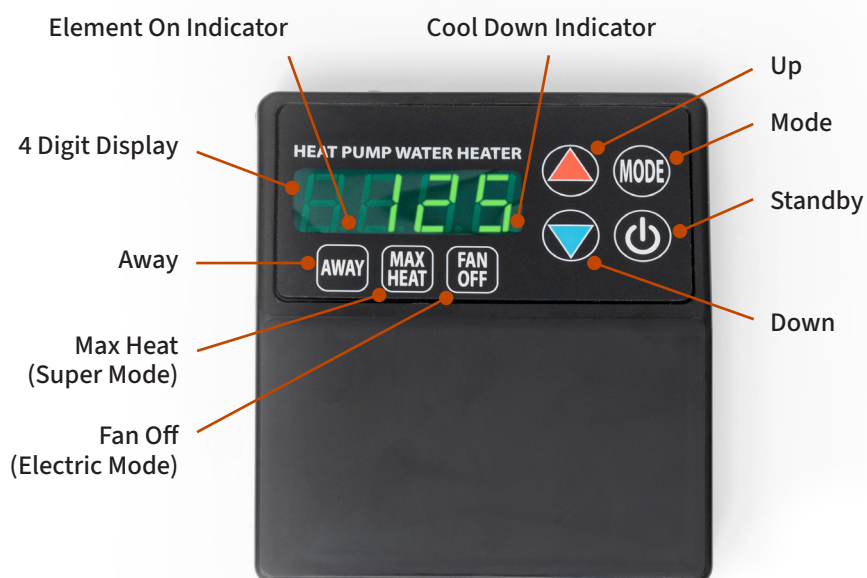


## SELECTABLE OPERATING MODES

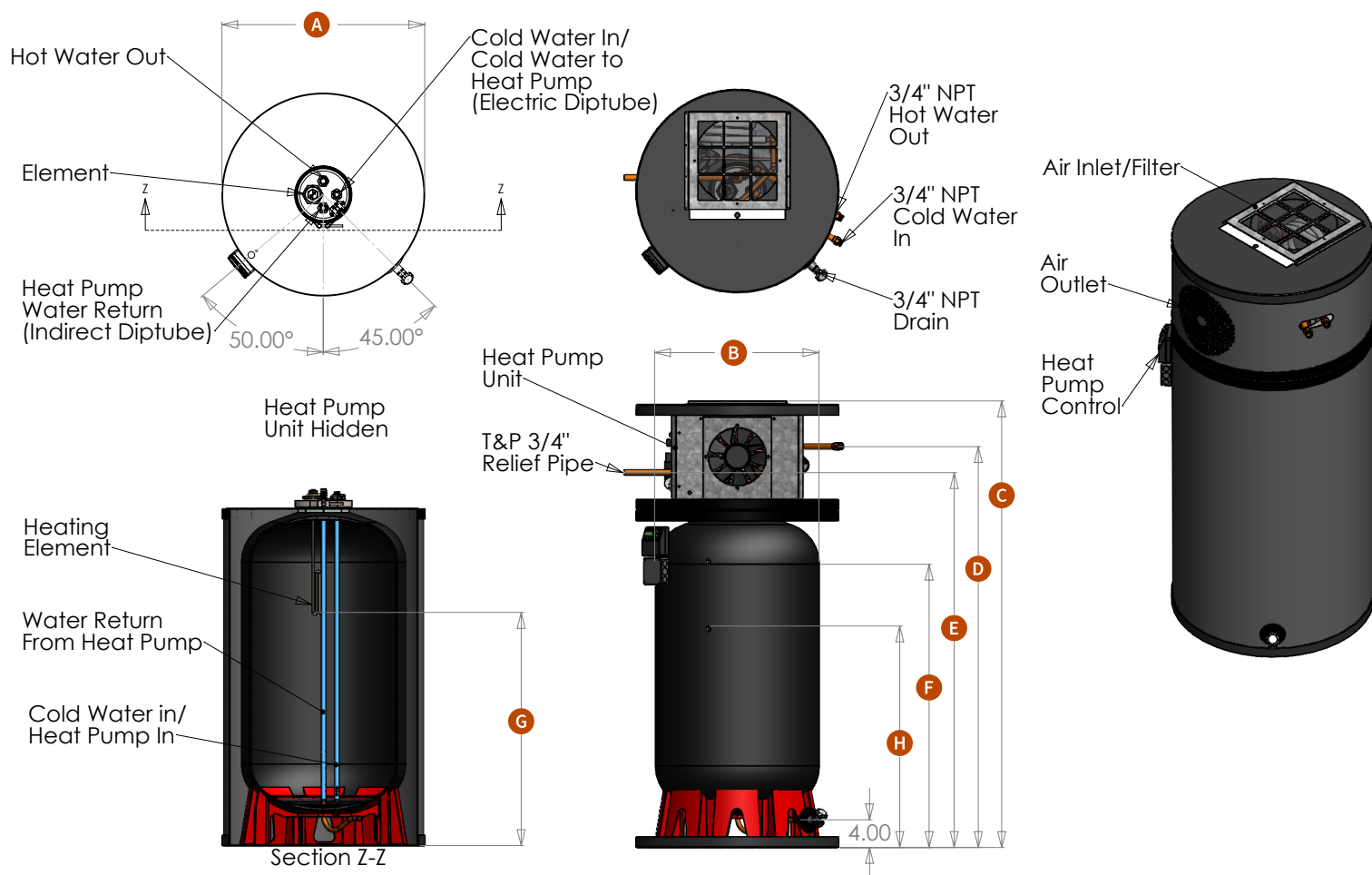
|                      |                                                                                                                                                                                                                                                                                                              |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Economy Mode</b>  | In the Economy Mode the heat pump provides essentially all of the heating capacity. This is typically the mode with the lowest operating cost.                                                                                                                                                               |
| <b>Hybrid Mode</b>   | This mode optimizes both efficiency and user experience. It is the default setting. In the Hybrid Mode the heat pump provides the vast majority of the heating capacity and automatically switches to the electric resistance heater mode only when necessary to meet high demand or to optimize efficiency. |
| <b>Electric Mode</b> | The Electric Mode tells the heater to operate using only the electric resistance element and to operate like a traditional electric water heater. The heat pump is not used in this mode.                                                                                                                    |
| <b>Super Mode</b>    | This mode allows both the heat pump and the electric resistance element to operate simultaneously. Due to this simultaneous operation, Super Mode provides the fastest recovery option possible.                                                                                                             |

## TEMPORARY MODES

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Away Mode</b> | This mode prevents the heater from heating (regardless of what mode it is in) as a way to improve efficiency during long periods of non usage (i.e. vacation). In Away Mode the only time the heater will operate is if the unit is in danger of freezing. The user sets the number of days to be in Away Mode (adjustable from 2 to 99 days or Off), and the unit resumes its previous mode of operation at the end of this period. |
| <b>Max Heat</b>  | By using the Max Heat button, you will maximize the heating capacity by temporarily putting the heater into Super Mode.                                                                                                                                                                                                                                                                                                              |
| <b>Fan Off</b>   | By using the Fan Off button, you will temporarily lower the fan speed which reduces the airflow and minimizes operating noise. Pressing the button twice temporarily disables the fan for a programmable amount of time.                                                                                                                                                                                                             |



## DIMENSIONS



### Vaughn Featherweight Dimensional Data

| MODEL            | A               | B             | C              | D                    | E                    | F                         | G                 | H                          |
|------------------|-----------------|---------------|----------------|----------------------|----------------------|---------------------------|-------------------|----------------------------|
|                  | Jacket Diameter | Tank Diameter | Overall Height | Height to Hot Outlet | Height to T&P Outlet | Height to Top Thermistors | Height to Element | Height to Bottom Termistor |
| <b>MP55FHPT</b>  | 30              | 24            | 54.5           | 47.8                 | 44                   | 30                        | 17                | 20                         |
| <b>MP80FHPT</b>  | 30              | 24            | 66.5           | 59.8                 | 56                   | 42                        | 29                | 32                         |
| <b>MP119FHPT</b> | 30              | 24            | 86             | 79.3                 | 75                   | 62                        | 48                | 36                         |

## VAUGHN HP ENERGY FACTS



The Vaughn HP is designed to meet or exceed American National Standards Institute (ANSI) requirements and has been tested according to D.O.E. test procedures. It also meets or exceeds the requirements of the National Appliance Energy Conservation Act (NAECA), efficiency ASHRAE standard 90, ICC Code and all state energy efficiency performance criteria for energy consuming appliances.

### Annual Energy Consumption Tested at 67.5°F Ambient Air

| Model            | Annual Energy Consumption kWh |
|------------------|-------------------------------|
| <b>MP55FHPT</b>  | 982                           |
| ME55             | 3500                          |
| <b>MP80FHPT</b>  | 1375                          |
| ME80             | 5390                          |
| <b>MP119FHPT</b> | 1418                          |
| ME119            | 5500                          |

Note: Ratings are not AHRI Certified

### Amperage Rating Chart (Amps for 4500-Watt Element)

| Supply Voltage | Total Maximum AMP Draw in Various Operating Modes |        |          |       |
|----------------|---------------------------------------------------|--------|----------|-------|
|                | Economy                                           | Hybrid | Electric | Super |
| <b>240V</b>    | 2.6                                               | 18.75  | 18.75    | 21.35 |
| <b>220V</b>    | 2.8                                               | 20.45  | 20.45    | 23.25 |
| <b>208V</b>    | 3.0                                               | 21.63  | 21.63    | 24.63 |

Over current circuit protection rated minimum 25 amp required, reference all local, state and national codes.

### Recovery Rating (GPH) at 67.5°F Ambient Air

| Recovery Capacity (Gallons per Hour for MK II Heat Pump) |        |                                     |      |      |      |      |       |       |       |       |       |
|----------------------------------------------------------|--------|-------------------------------------|------|------|------|------|-------|-------|-------|-------|-------|
| Heating Power                                            |        | Water Temperature Rise (Degrees °F) |      |      |      |      |       |       |       |       |       |
| Wattage                                                  | BTU/Hr | 100                                 | 90   | 80   | 70   | 60   | 50    | 40    | 30    | 20    | 10    |
| 1,400                                                    | 4,777  | 5.73                                | 6.36 | 7.16 | 8.18 | 9.55 | 11.46 | 14.32 | 19.09 | 28.64 | 57.28 |

### Heat Pump Ratings

| AHRI CERTIFIED      |                  |                      |            |     |           | RATINGS NOT AHRI CERTIFIED |             |     |
|---------------------|------------------|----------------------|------------|-----|-----------|----------------------------|-------------|-----|
| Model               | Nominal Capacity | Rated Storage Volume | First Hour | UEF | Usage Bin | NEEA                       | Sound Level | CTA |
|                     | GALLONS          | GALLONS              | GPH        |     |           |                            | dBa         |     |
| <b>MP55FHPT</b>     | 55               | 55                   | 62         | 3.3 | Medium    | N/A                        | 54          | No  |
| <b>MP55FHPT-CN</b>  | 55               | 55                   | 62         | 3.3 | Medium    | Tier 3                     | 54          | Yes |
| <b>MP80FHPT</b>     | 80               | 80                   | 86         | 3.5 | High      | N/A                        | 54          | No  |
| <b>MP80FHPT-CN</b>  | 80               | 80                   | 86         | 3.5 | High      | Tier 3                     | 54          | Yes |
| <b>MP119FHPT</b>    | 119              | 119                  | 115        | 3.5 | High      | N/A                        | 54          | No  |
| <b>MP119FHPT-CN</b> | 119              | 119                  | 115        | 3.5 | High      | Tier 3                     | 54          | Yes |

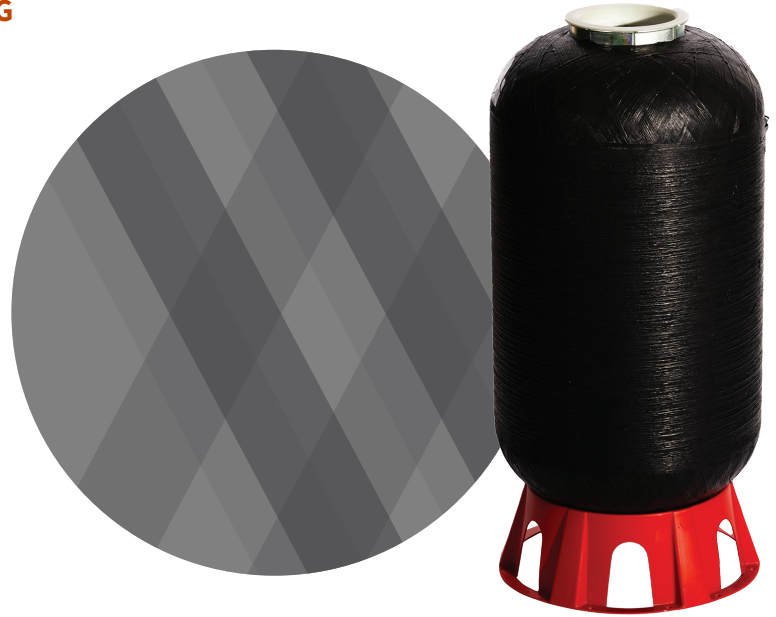


## THE DIFFERENCE: THERMOPLASTIC LINING

Thermoplastic lined tanks offer significant longevity, trouble-free operation and a lower lifetime cost.

**Thermoplastic lining provides guaranteed 100% coverage with a minimum thickness of 0.125"**  
**Thermoplastic over all internal tank surfaces. In comparison, glass lining is approximately 0.005" thick (thickness of a single piece of paper).**

- Made with polybutene and polypropylene
- Accelerated age and temperature testing = **40+ year service life**
- NSF-61 material
- 100% Recyclable
- Lightweight (**<150 lbs shipping weight**)



**The inner liner structure and the reinforced structure are highly compatible. During the manufacturing process both structures are fused together while molten to form a single structure called a monolithic structure.**

## How does Featherweight interact with water?

The two bonded layers of the Featherweight tank continuously replenish and rebalance antioxidant levels throughout the vessel over several decades of service.

### Phase 1

The vessel filled with water

### Phase 2

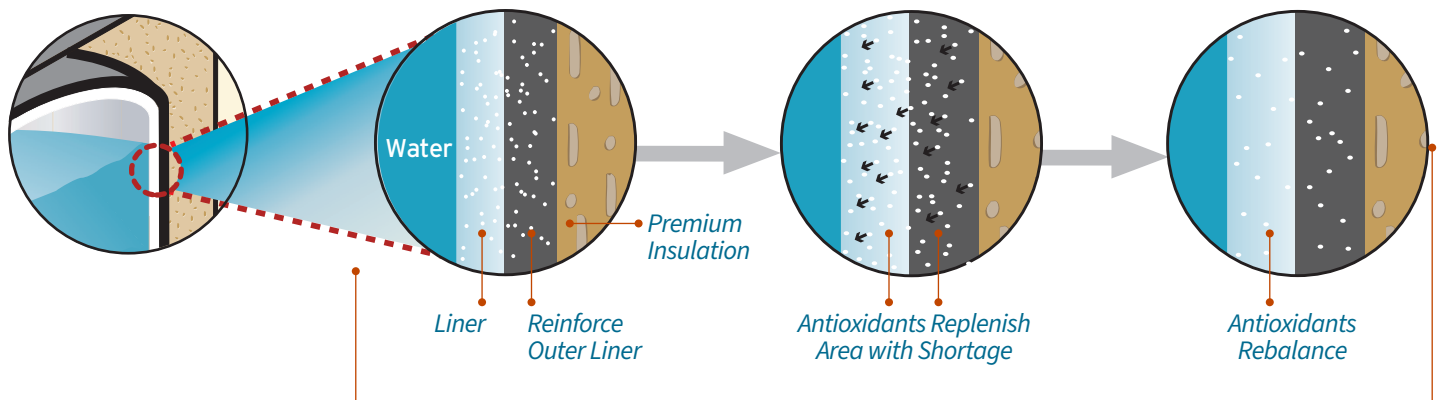
Aggressive water with oxygen attacks liner, depleting antioxidants

### Phase 3

Antioxidants migrate to areas where antioxidants have been depleted

### Phase 4

Antioxidants Rebalance



\*Please note that this cycle as depicted above is continuous and takes place over several decades.



Vaughn is the leading manufacturer of HydraStone (HS) lined and Featherweight (FW) Thermoplastic water heaters. We manufacture 30-120 gallon electric, hybrid, indirect, and solar water heaters for residential and commercial applications as well as energy controllers and electronic devices.

### To learn more, contact us

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