VAUGHN
a nudyne company

HydraStone® MK II
Highly Efficient Heat Pump Water Heater

Available in 50, 65, 80, & 119 Gallon Capacities

MK II



HS SERIES

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

HydraStone® tank lining ensures long tank life

- 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 MK II Heat Pump Water Heater combines the latest in heat pump technology with the proven longevity of a HydraStone lined tank. Three inches of high quality, CFC-free foam insulation, adds to the MK II 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. Suitable for even the coldest climates, the Vaughn MK II offers a low-maintenance, affordable way to take advantage of green technologies.

Applications

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

ETL Intertek · AHRI CERTIFIED · MADE IN USA BUY AMERICAN ACT COMPLIANT CONTAINS IMPORTED COMPONENTS

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HEATER SPECIFICATIONS

Tank	HydraStone® Lined Steel
Storage	50, 65, 80, & 119 Gallons
Orientation	Vertical
Pressure Rating:	150 psi WP, 300 psi TP
Inlet Size:	3/4" Female NPT
Outlet Size:	3/4" Male NPT
Drain Size:	3/4" GHT
Condensate Size	3/8" Tube
Relief Valve Size	3/4" Female NPT
Relief Valve Type	T&P, 210°F, 150 psi
Insulation:	3" Polyurethane Foam
Jacket:	High Impact Composite
Voltage:	208-480 Volt
Phase:	Single
Frequency:	60 Hz
Elements:	Incoloy Sheathed
Hi-Limit	190°F Manual Reset
Thermostat Range:	50-160°F
Error Indication:	Visual and Audible
Demand Response Capable:	Yes (with option CN)
Child Lock Capable:	Yes
Refrigerant:	R134A
Ozone Depleting Potential:	0
Global Warming Potential:	1430
Over Pressure Safety:	Manual Reset
Field Chargeable:	No
Air Flow (High Fan):	450 CFM
Air Flow (Low Fan):	250 CFM
Temperature Range:	35-110°F

INSTALLATION REQUIREMENTS

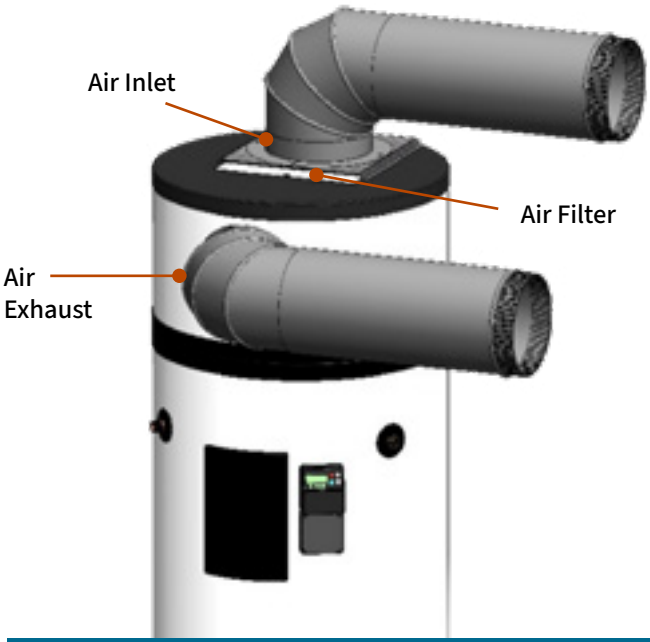
- The installed location must be at least a 10' x 10' x 7' room (700 cubic feet of air space)*. If smaller, there must be a louver installed to provide sufficient airflow.
- The installed room location must not be cooler than 35°F.
- Installed locations with warmer ambient air temperature (e.g., furnace 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 120-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 MK II HEAT PUMP WORKS

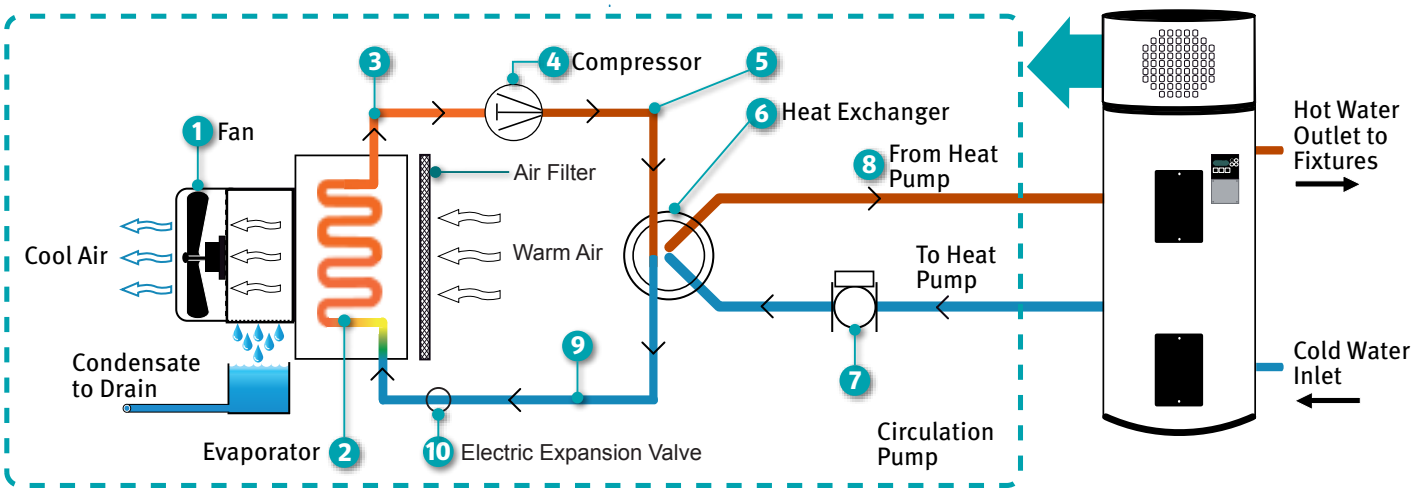
The MK II is significantly more energy efficient than an electric water heater because the heat pump utilizes considerably less electricity. A heat pump works like a refrigerator in reverse. A refrigerator moves heat from inside the refrigerator and transfers it to the surrounding room; a heat pump water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

The Vaughn MK II 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 elements will activate to ensure the unit provides sufficient hot water.

THE VAUGHN MK II 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.

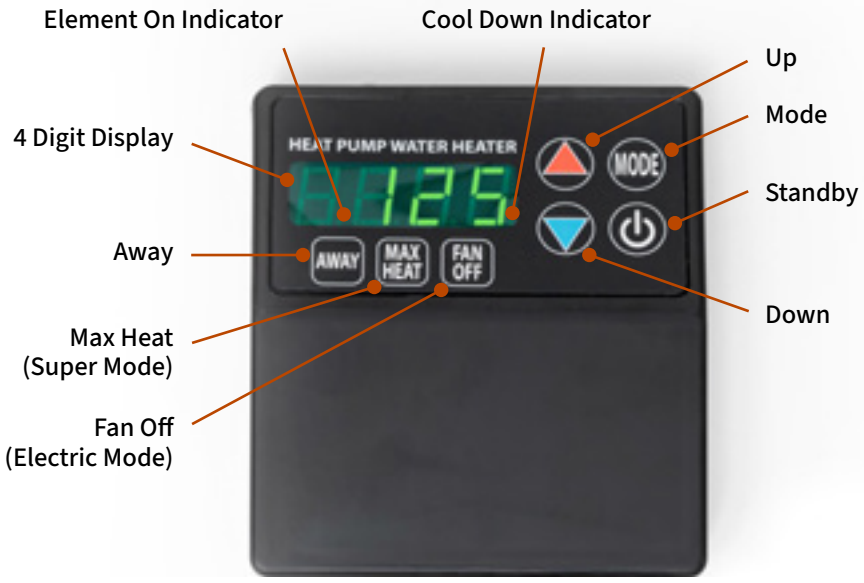


SELECTABLE OPERATING MODES

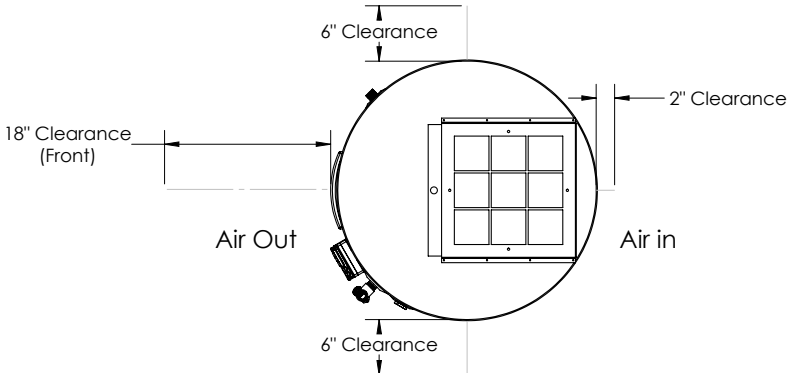
Economy Mode	In the Economy Mode the heat pump provides essentially all of the heating capacity. This is typically the mode with the lowest operating cost.
Hybrid Mode	This mode optimizes both efficiency and user experience. It is the default setting. In the Hybrid Mode the heat pump provides the vast 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.
Electric Mode	The Electric Mode tells the heater to operate using only the electric resistance elements and to operate like a traditional electric water heater. The heat pump is not used in this mode.
Super Mode	This mode allows both the heat pump and the electric resistance elements to operate simultaneously. Due to this simultaneous operation, Super Mode provides the fastest recovery option possible.

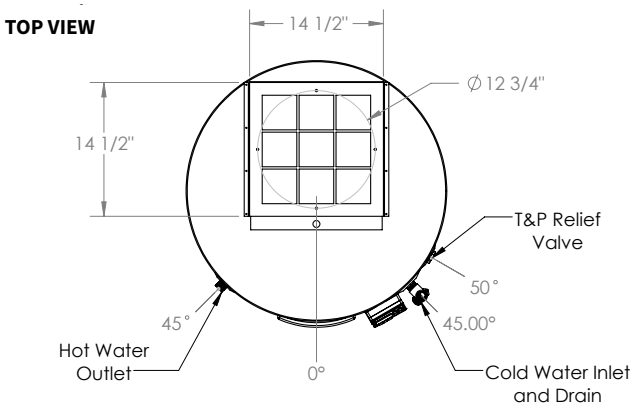
TEMPORARY MODES

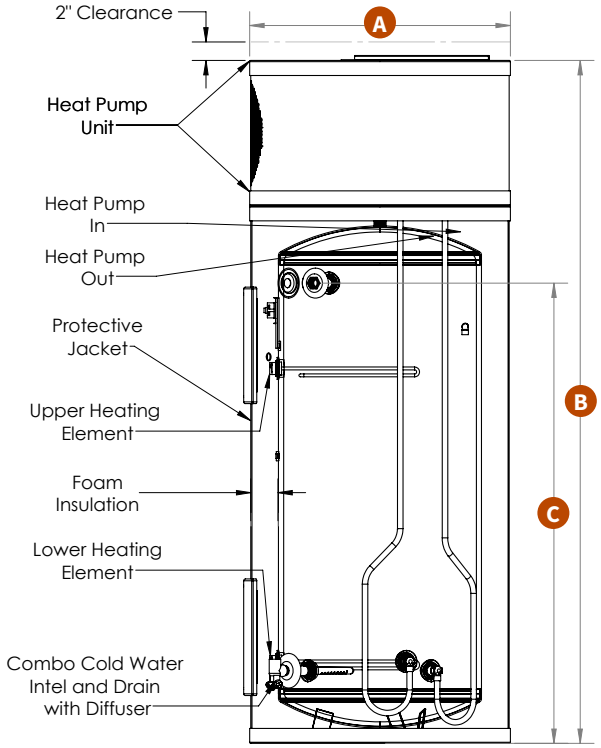
Vacation Mode	This mode prevents the heater from heating (regardless of what mode it is in) as a way to improve efficiency during long periods of non usage (i.e. vacation). In Vacation Mode the only time the heater will operate is if the unit is in danger of freezing. The user sets the number of days to be in Vacation Mode (adjustable from 2 to 99 days or Off), and the unit resumes its previous mode of operation at the end of this period.
Max Heat	By using the Max Heat button, you will maximize the heating capacity by temporarily putting the heater into Super Mode.
Fan Off	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.



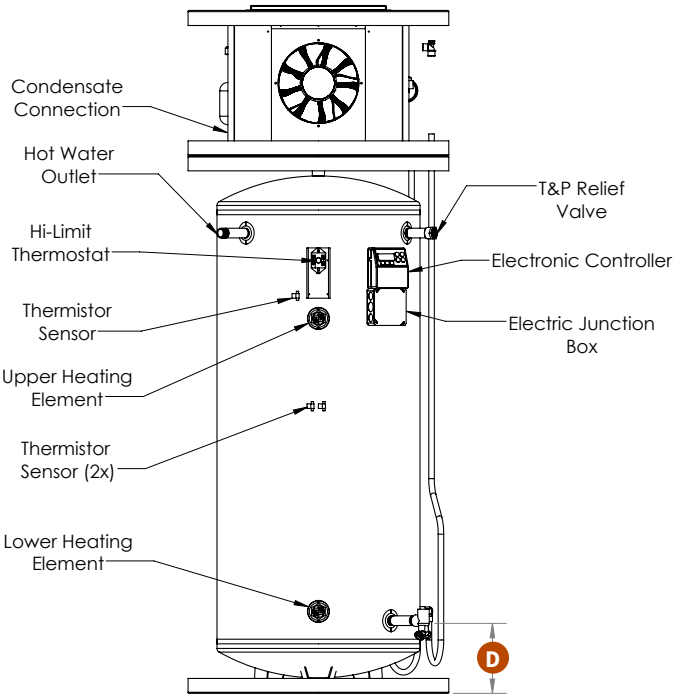
DIMENSIONS







SIDE VIEW



FRONT VIEW

Vaughn MK II Dimensional Data

Storage Capacity (Gallons)	Model Number*	Dimensions (inches)				Shipping Weight (lbs.)
		Overall Diameter A	Overall Height B	Floor to T&P and HW Outlet C	Floor to CW Inlet D	
50	ME50WHPT4545I	28	58.25	33.875	7.875	325
65	ME65WHPT4545I	28	63.75	39.375	7.875	365
80	ME80WHPT4545I	28	74	49.875	7.875	440
120	ME120WHPT4545I	30	84.5	60.375	7.875	525

*Listed model numbers are for a white jacket (W), platinum (P) is also available, consult factory.

The Vaughn MK II 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
ME50HPT	938
50 gallon electric	3500
ME65HPT	974
65 gallon electric	4445
ME80HPT	1424
80 gallon electric	5390
ME120HPT	1376
120 gallon electric	5500

Note: Ratings are not AHRI Certified

Amperage Rating Chart (Amps) for 4500-Watt Elements)

Supply Voltage	Total Maximum AMP Draw in Various Operating Modes			
	Economy	Hybrid	Electric	Super
240V	2.6	18.75	18.75	21.35
220V	2.8	20.45	20.45	23.25
208V	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	Cold Climate Efficiency (CCE)	NEEA	Sound Level	CTA
	GALLONS	GALLONS	GPH					dBA	
ME50HPT	50	47	58	3.46	Medium	N/A	N/A	54	No
ME50HPT-CN	50	47	58	3.46	Medium	2.8	Tier 3	54	Yes
ME65HPT	65	57	70	3.34	Medium	N/A	N/A	54	No
ME65HPT-CN	65	57	70	3.34	Medium	3.1	Tier 3	54	Yes
ME80HPT	80	74	86	3.48	High	N/A	N/A	54	No
ME80HPT-CN	80	74	86	3.48	High	3.1	Tier 3	54	Yes
ME120HPT	120	109	105	3.38	High	N/A	N/A	54	No
ME120HPT-CN	120	109	105	3.38	High	3.1	Tier 3	54	Yes

KW AND AMPERAGE SELECTION CHARTS

1 and 2 Element Options *(Amperage shown in chart below indicates available models)*

kW	1 Phase Voltages			
	208	240	277	480
1	5	4	4	
1.5	7	6	5	
2	10	8	7	
2.5	12	10	9	5
3	14	13	11	
3.8	18	16	14	
4	19	17	14	
4.5	22	19	16	9
5	24	21	18	10
6	29	25	22	13

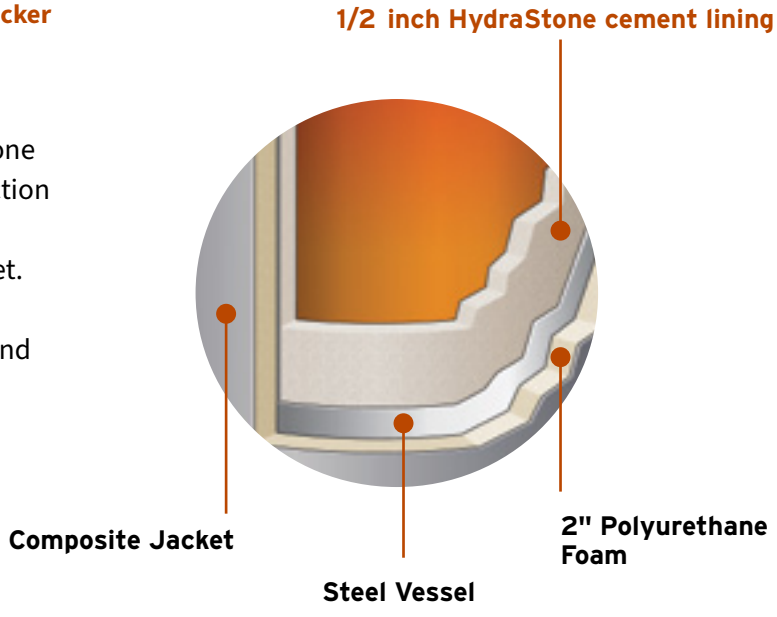
OPTIONS:

- 1 1/2” Male NPT inlet and outlet water connections
- Tank installed heat exchanger for use with solar or radiant heating systems (3/4” or 1” diameter)
- Alternate voltages (1 phase), alternate wattages or 50 Hz available

THE BENEFIT OF HYDRASTONE® LINED TANKS

1/2 inch high density HydraStone cement is 100 times thicker than a glass lining

Full and uniform coverage is achieved by centrifugally spinning the tank with the precise amount of HydraStone cement inside. This process provides maximum protection from the corrosive effects of hot water and makes our water heaters some of the longest lasting on the market. Additionally, **HydraStone lined tanks do not require a sacrificial anode**, eliminating periodic inspections and replacement costs associated with glass lined tanks.





VAUGHN
a **nudyne** company

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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