HEAT PUMP WATER HEATER WITH DEMAND RESPONSE READY AND WATER LEAK DETECTION ENGINEERING MANUAL

With Demand Response Ready
APHWC501D
APHWC801D

With Demand Response Ready and Water Leak Detection
APHWC501L
APHWC801L

PROPRIETARY DATA NOTICE

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A summary list of safety precautions is on page 4.

For more technical materials such as submittals, catalogs, installation, owner's, and service manuals, visit www.lghvac.com.

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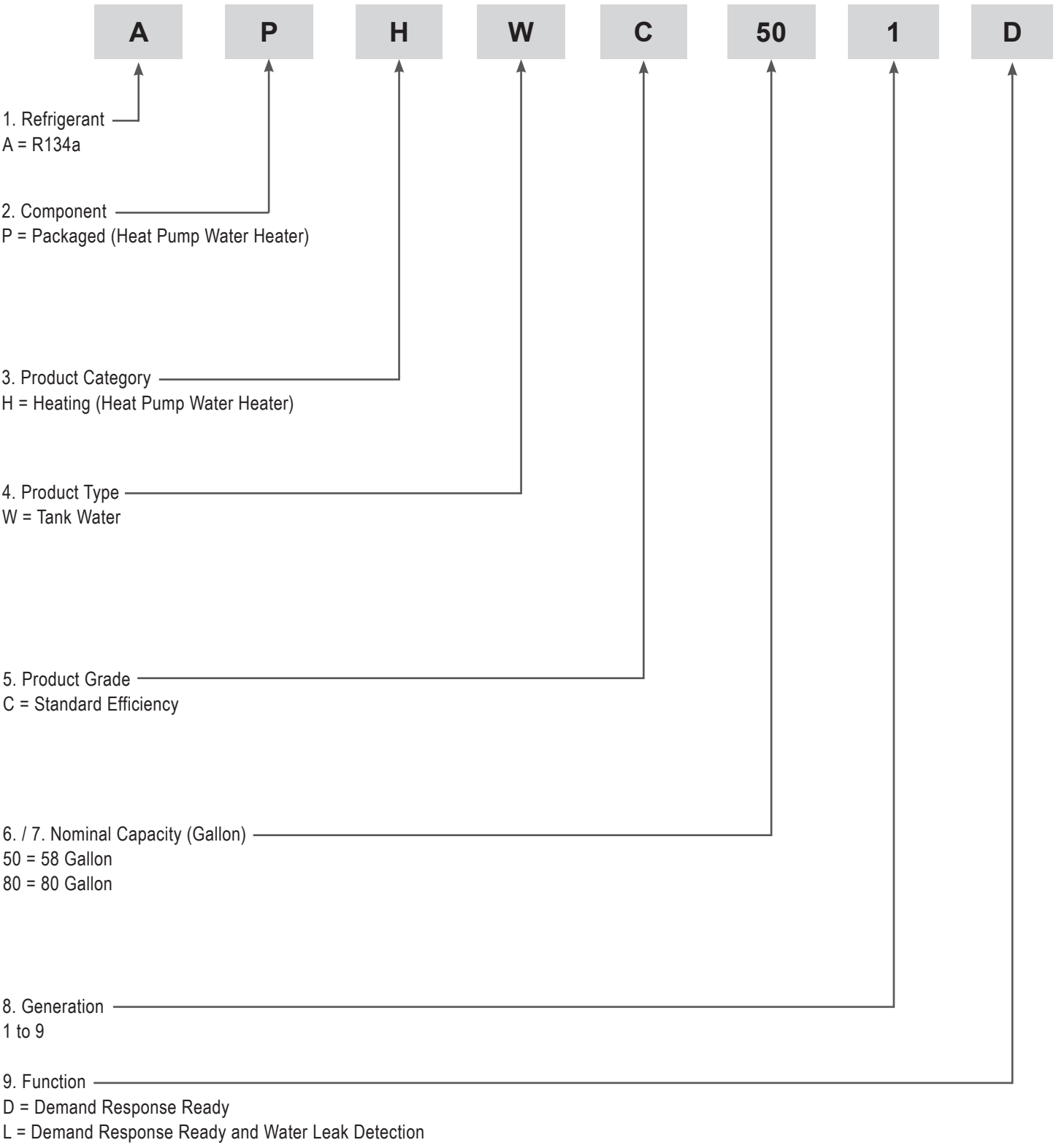
TABLE OF SYMBOLS

⚠ **DANGER**	*Indicates a hazardous situation that, if not avoided, WILL RESULT IN DEATH OR SERIOUS INJURY.*[1]
⚠ **WARNING**	*Indicates a hazardous situation that, if not avoided, COULD RESULT IN DEATH OR SERIOUS INJURY.*[1]
⚠ **CAUTION**	*Indicates a hazardous situation that, if not avoided, COULD RESULT IN MINOR OR MODERATE INJURY.*[1]
NOTICE	*Indicates information considered important, but not hazard-related; indicates situations that may result in equipment or property damage accidents.*[1]
	*This symbol indicates an action that should not be performed.*

[1]*Signal words, symbols, and definitions taken from American National Standards Institute (ANSI) Z535.6. See https://www.ansi.org/ for more information.*

PRODUCT DATA

NOMENCLATURE

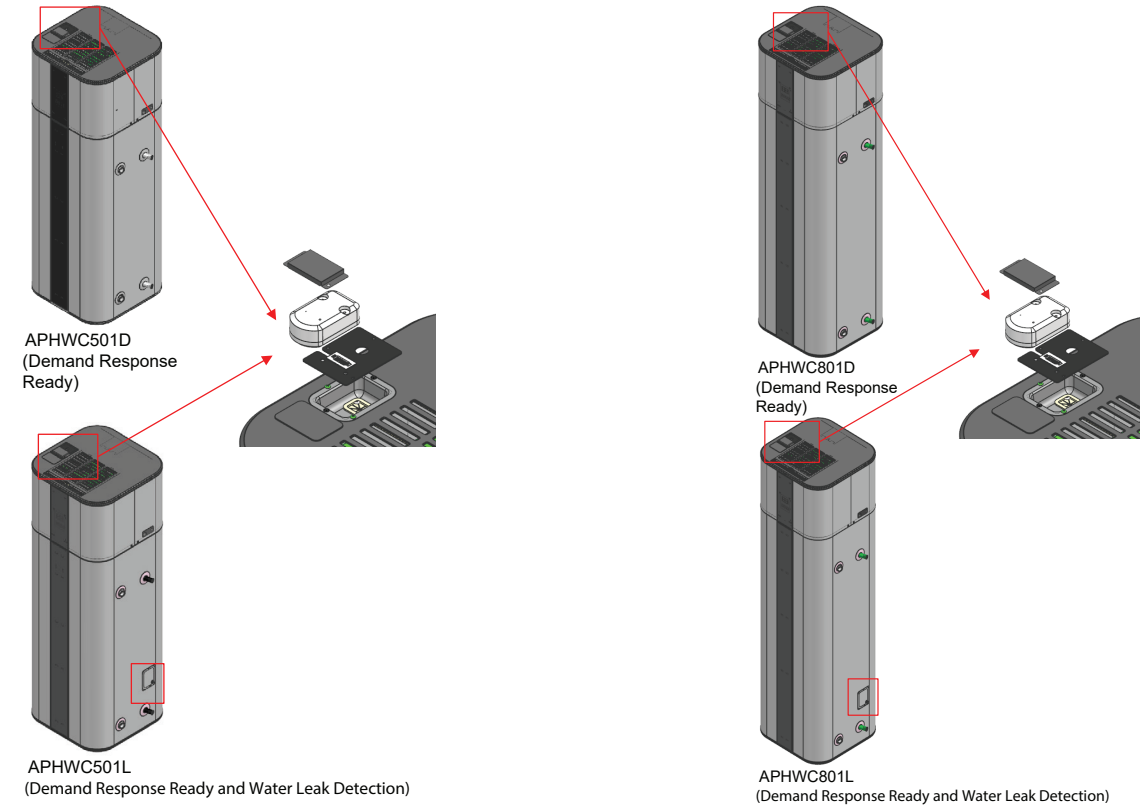


The following table shows the available heat pump water heaters.

Table 1: Heat Pump Water Heater Line Up.

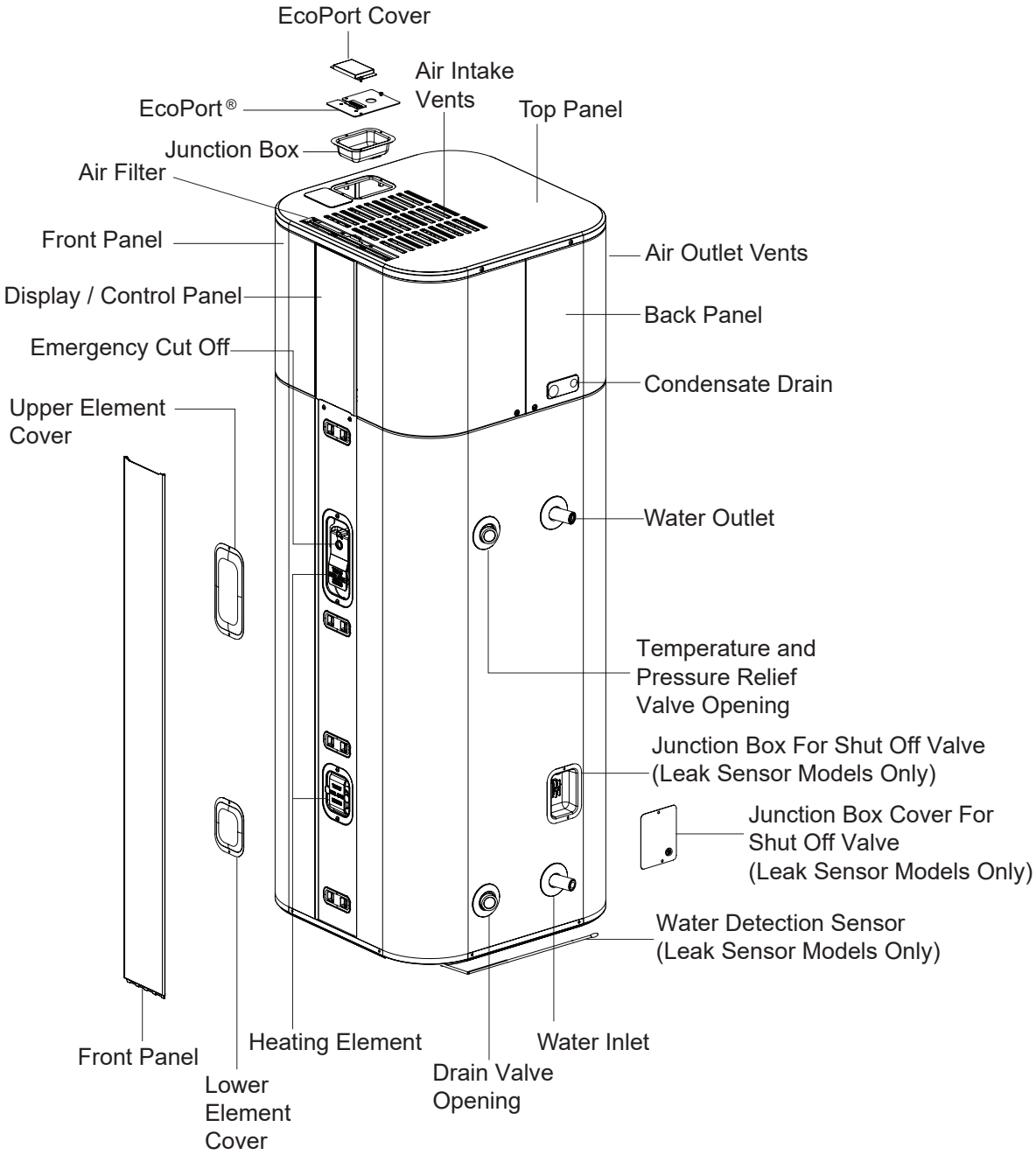
Image	Model Number	Nominal Volume (gal. [L])
	APHWC501D (Demand Response Ready) APHWC501L (Demand Response Ready and Water Leak Detection)	58 (220)
	APHWC801D (Demand Response Ready) APHWC801L (Demand Response Ready and Water Leak Detection)	80 (303)

Figure 1: Location of Demand Response Ready and Water Leak Detection.



COMPONENTS

Figure 2: Heat Pump Water Heater Components.



EcoPort is a registered trademark of OpenADR Alliance.

Table 2: Specifications of Heat Pump Water Heaters with Demand Response Ready.

	Model No.	APHWC501D	APHWC801D
Capacity	Nominal Volume (gal. / L)	58 (220)	80 (303)
	Rated Volume (gal. / L)	53 (273)	72 (273)
	UEF (High)	3.93	3.9
	FHR (Gal.)	76	94
	Annual Energy Consumption (kWh)	1,262	1,272
Power Input	Upper Heating Elements (208 / 240V) (kW)	3.8 / 5.0	3.8 / 5.0
	Lower Heating Element (208 / 240V) (kW)	3.8 / 5.0	3.8 / 5.0
ENERGY STAR®		Yes	Yes
Power Supply (Ø, V, Hz)		1, 208 / 240, 60	1, 208 / 240, 60
Rated Air Flow (CFM)		155.4	155.4
Sound Pressure Level (dB[A])	Auto	42	42
	Turbo / Heat Pump	45	45
Dimensions	Net (W x H x D) (in.)	22-27/32 x 63-31/32 x 22-29/32	22-27/32 x 79-1/16 x 22-29/32
	Shipping (W x H x D) (in.)	29-1/16 x 69-7/8 x 27-5/32	29-1/16 x 84-31/32 x 27-5/32
Weight	Net (lbs.)	224	264
	Shipping (lbs.)	264	306
Heating Operation Range (°F) (D.B.)		23 ~ 120	23 ~ 120
Exterior Color		Luxury Silver	Luxury Silver
Compressor	Type	Twin Rotary	Twin Rotary
	Model	EST092MBA	EST092MBA
	Model Type	Brushless Digitally Controlled	Brushless Digitally Controlled
	Oil Type	POE / PVE	POE / PVE
	Oil Charge (cc)	220	220
Fan	Type	Propeller	Propeller
	Motor Type	Brushless Digitally Controlled	Brushless Digitally Controlled
Heat Exchanger (Evaporator)	Quantity	1	1
	Rows	3	3
	Columns	15	15
	FPI	21	21
System Design Pressure	High (psi)	290	290
	Low (psi)	130.5	130.5
Max. Working Pressure (Water Tank) (psi)		150	150
Power Wiring (AWG)[1]		10 x 3C	10 x 3C
Drain Hose Size (I.D.) (Primary, Secondary)		1/2, 3/4	1/2, 3/4
Refrigerant	Type	R134a	R134a
	Pre-Charge (oz.)	23	26
	Control	Electronic Expansion Valve	Electronic Expansion Valve
Defrost Method		Reverse Cycle	Reverse Cycle
Anode		Sacrificial	Sacrificial
Foam Insulation (in.)		1.6 ~ 2.4	1.6 ~ 2.4
Temperature and Pressure Relief Valve		Yes	Yes
Water Connection Location		Side	Side
Water Connection Size (in.)		3/4	3/4

[1]Wiring must comply with all applicable local, state, and national codes.

Maximum heating capacity is for heating operation without defrost.

(ENERGY STAR and the ENERGY STAR mark are registered trademarks owned by the U.S. Environmental Protection Agency.)

GENERAL DATA

Table 3: Specifications of Heat Pump Water Heaters with Demand Response Ready and Water Leak Detection.

Model No.		APHWC501L	APHWC801L
Capacity	Nominal Volume (gal. / L)	58 (220)	80 (303)
	Rated Volume (gal. / L)	53 (273)	72 (273)
	UEF (High)	3.93	3.9
	FHR (Gal.)	76	94
	Annual Energy Consumption (kWh)	1,262	1,272
Power Input	Upper Heating Elements (208 / 240V) (kW)	3.8 / 5.0	3.8 / 5.0
	Lower Heating Element (208 / 240V) (kW)	3.8 / 5.0	3.8 / 5.0
ENERGY STAR®		Yes	Yes
Power Supply (Ø, V, Hz)		1, 208 / 240, 60	1, 208 / 240, 60
Rated Air Flow (CFM)		155.4	155.4
Sound Pressure Level (dB[A])	Auto	42	42
	Turbo / Heat Pump	45	45
Dimensions	Net (W x H x D) (in.)	22-27/32 x 63-31/32 x 22-29/32	22-27/32 x 79-1/16 x 22-29/32
	Shipping (W x H x D) (in.)	29-1/16 x 69-7/8 x 27-5/32	29-1/16 x 84-31/32 x 27-5/32
Weight	Net (lbs.)	224	264
	Shipping (lbs.)	264	306
Heating Operation Range (°F) (D.B.)		23 ~ 120	23 ~ 120
Exterior Color		Luxury Silver	Luxury Silver
Compressor	Type	Twin Rotary	Twin Rotary
	Model	EST092MBA	EST092MBA
	Model Type	Brushless Digitally Controlled	Brushless Digitally Controlled
	Oil Type	POE / PVE	POE / PVE
	Oil Charge (cc)	220	220
Fan	Type	Propeller	Propeller
	Motor Type	Brushless Digitally Controlled	Brushless Digitally Controlled
Heat Exchanger (Evaporator)	Quantity	1	1
	Rows	3	3
	Columns	15	15
	FPI	21	21
System Design Pressure	High (psi)	290	290
	Low (psi)	130.5	130.5
Max. Working Pressure (Water Tank) (psi)		150	150
Power Wiring (AWG)[1]		10 x 3C	10 x 3C
Drain Hose Size (I.D.) (Primary, Secondary)		1/2, 3/4	1/2, 3/4
Refrigerant	Type	R134a	R134a
	Pre-Charge (oz.)	23	26
	Control	Electronic Expansion Valve	Electronic Expansion Valve
Defrost Method		Reverse Cycle	Reverse Cycle
Anode		Sacrificial	Sacrificial
Foam Insulation (in.)		1.6 ~ 2.4	1.6 ~ 2.4
Temperature and Pressure Relief Valve		Yes	Yes
Water Connection Location		Side	Side
Water Connection Size (in.)		3/4	3/4

[1]Wiring must comply with all applicable local, state, and national codes.

Maximum heating capacity is for heating operation without defrost.

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Table 4: Heat Pump Water Heater Electrical Data Table.

Model No.	Nominal Gallons	Phase	Hertz	Voltage	Voltage Range (Min. to Max.)	MCA	MOP	LRA	Compressor Motor RLA (Heating)	Fan Motor	
										W	FLA
Demand Response Ready											
APHWC501D,	58	1	60	208 / 240	176 ~ 276	30	30	N / A (Inverter)	3.3 / 3.1	43	0.22
APHWC801D	80										
Demand Response Ready and Water Leak Detection											
APHWC501L	58	1	60	208 / 240	176 ~ 276	30	30	N / A (Inverter)	3.3 / 3.1	43	0.22
APHWC801L	80										

Voltage tolerance is ±10%.

Maximum allowable voltage unbalance is 2%.

Voltage supplied must fall within the voltage range.

MCA = Minimum Circuit Ampacity.

MOP = Maximum Overcurrent Protection

LRA = Locked Motor Amps
RLA = Rated Load Amps

FLA= Full Load Amps

MOP is calculated as follows: (Largest motor FLA x 2.25) + (Sum of other motor FLA) rounded down to the nearest standard fuse size.

FUNCTIONS

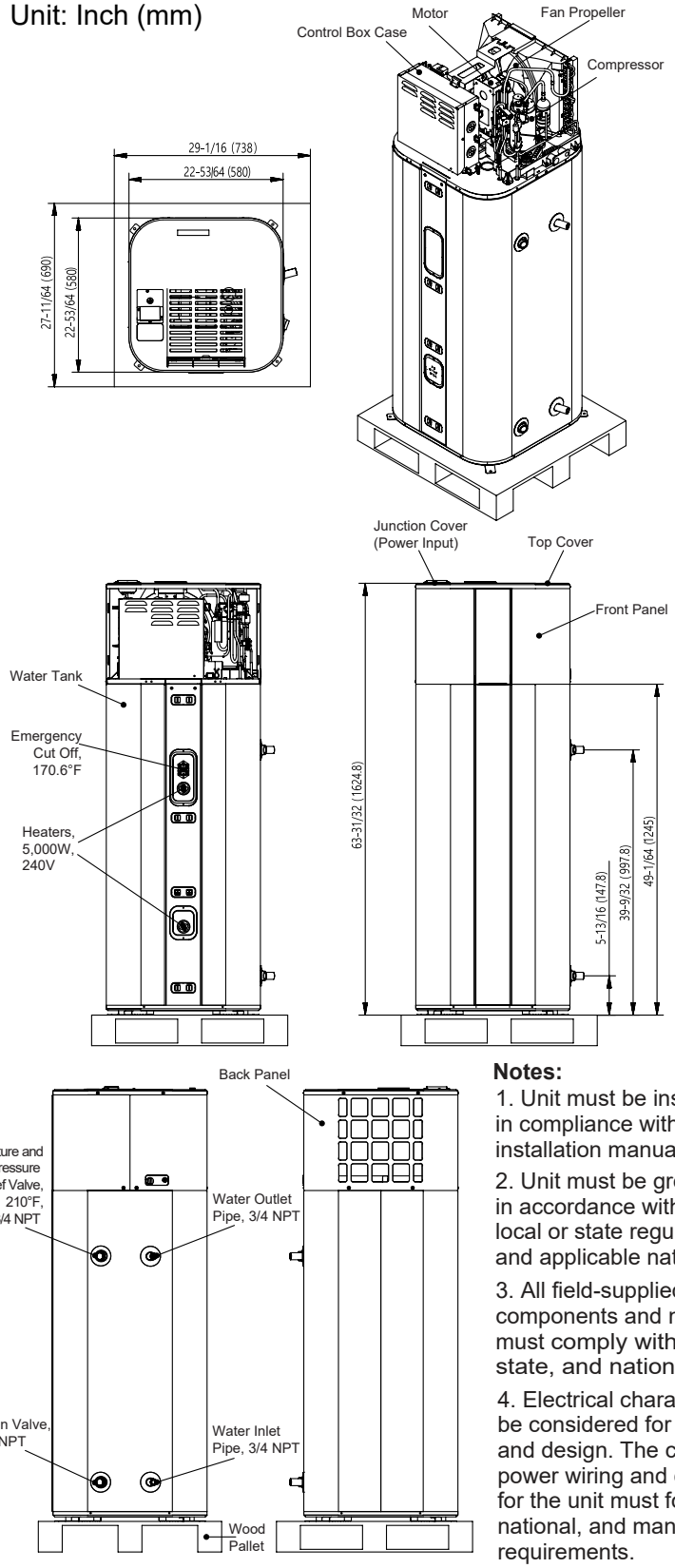
Table 5: Heat Pump Water Heater Functions Table.

Category	Function	Description
Filters	Washable Pre-Filter	Captures duct particles larger than 10 µm.
Reliability	Self Diagnosis	Self diagnostics for heat pump water heater protection.
	Defrost Control	Defrost automatically operates during heating mode (heat exchanger).
Convenience	Heat Pump	Operates only the heat pump for water heating; minimizes power consumption.
	Auto	Operates only the heat pump for water heating; provides relatively low power consumption and high recovery. Factory set mode for shipping.
	Turbo	Operates the heat pump and the heating element simultaneously; provides the highest recovery.
	Vacation	Tank temperature will be maintained at around 68°F to minimize energy consumption and to prevent the heat pump water heater from freezing. Recommended when the heat pump water heater will not be used for an extended period.
	Schedule	Operation time and mode can be set up based on demand conditions (Only available through the ThinQ™ app).
	Auto Restart Operation	Heat pump water heater restarts automatically after a power outage.
	Display Type	Digital
Special Function Kit	Wi-Fi[1]	Access and control the heat pump water heater functions remotely.
	Water Level Sensor Connection[1]	Detect water levels in the drain pan.
	Demand Response Ready	Allows the product to be operated according to the Demand Response signal received from the utility or aggregator.
Other	Temperature Control	Basic Cycle Control Method

[1]Optional accessories must be purchased separately.
*Wi-Fi function is only compatible with 2.4 GHz.

Figure 3: APHWC501D Heat Pump Water Heater with Demand Response Ready Dimensions.

Unit: Inch (mm)

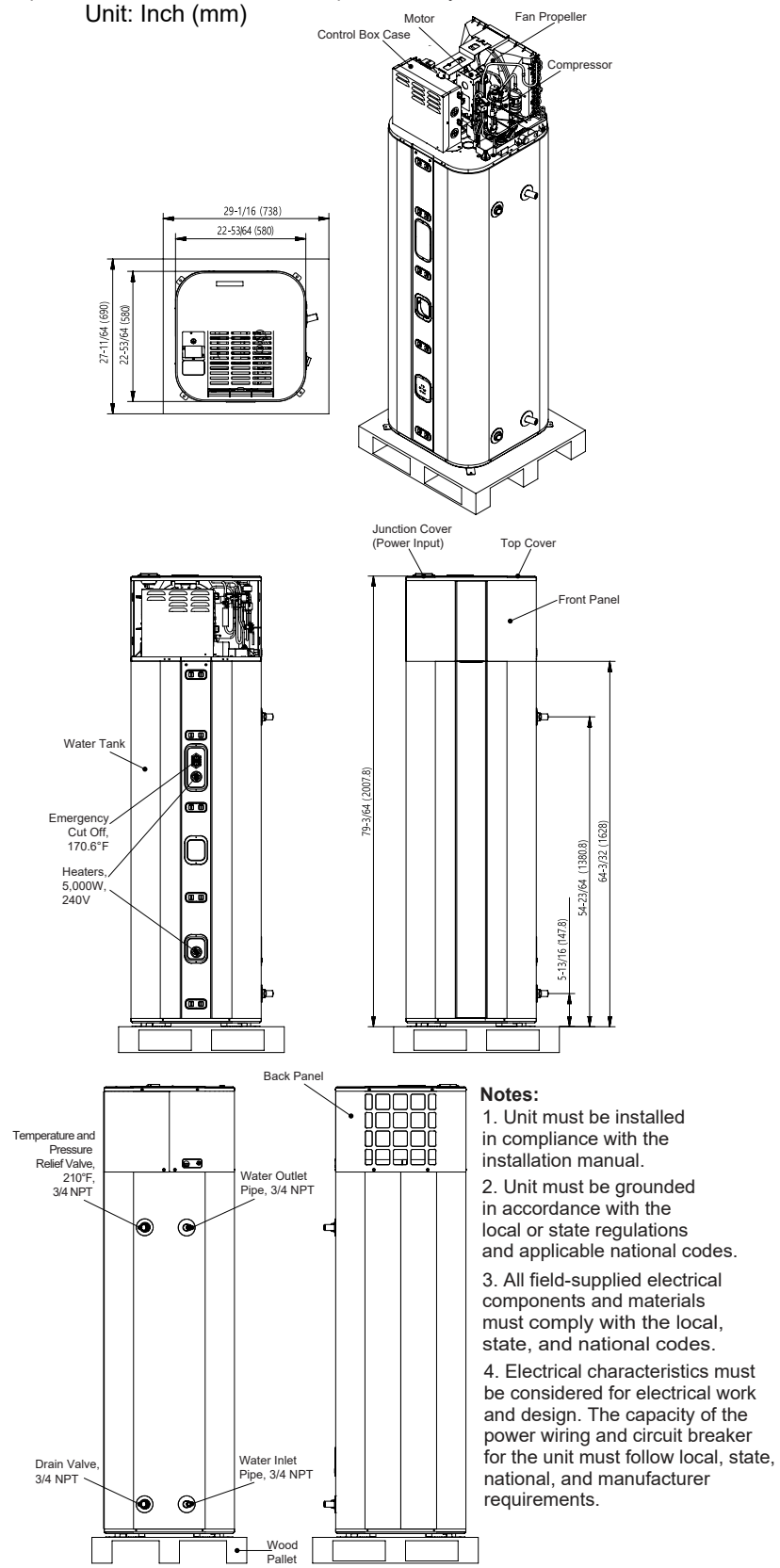


Notes:

1. Unit must be installed in compliance with the installation manual.
2. Unit must be grounded in accordance with the local or state regulations and applicable national codes.
3. All field-supplied electrical components and materials must comply with the local, state, and national codes.
4. Electrical characteristics must be considered for electrical work and design. The capacity of the power wiring and circuit breaker for the unit must follow local, state, national, and manufacturer requirements.

DIMENSIONS

Figure 4: APHWC801D Heat Pump Water Heater with Demand Response Ready Dimensions.
Unit: Inch (mm)

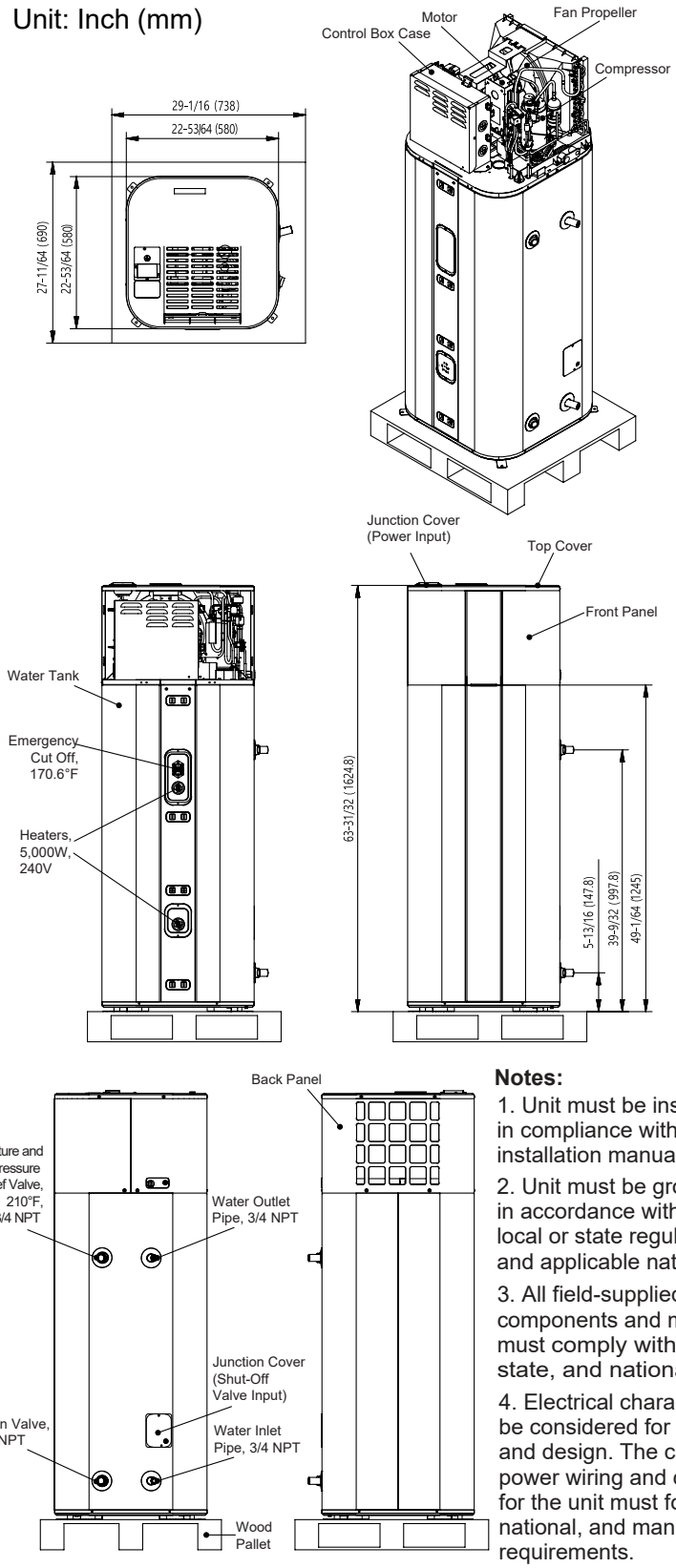


Notes:

1. Unit must be installed in compliance with the installation manual.
2. Unit must be grounded in accordance with the local or state regulations and applicable national codes.
3. All field-supplied electrical components and materials must comply with the local, state, and national codes.
4. Electrical characteristics must be considered for electrical work and design. The capacity of the power wiring and circuit breaker for the unit must follow local, state, national, and manufacturer requirements.

Figure 5: APHWC501L Heat Pump Water Heater with Demand Response Ready and Water Leak Detection Dimensions.

Unit: Inch (mm)

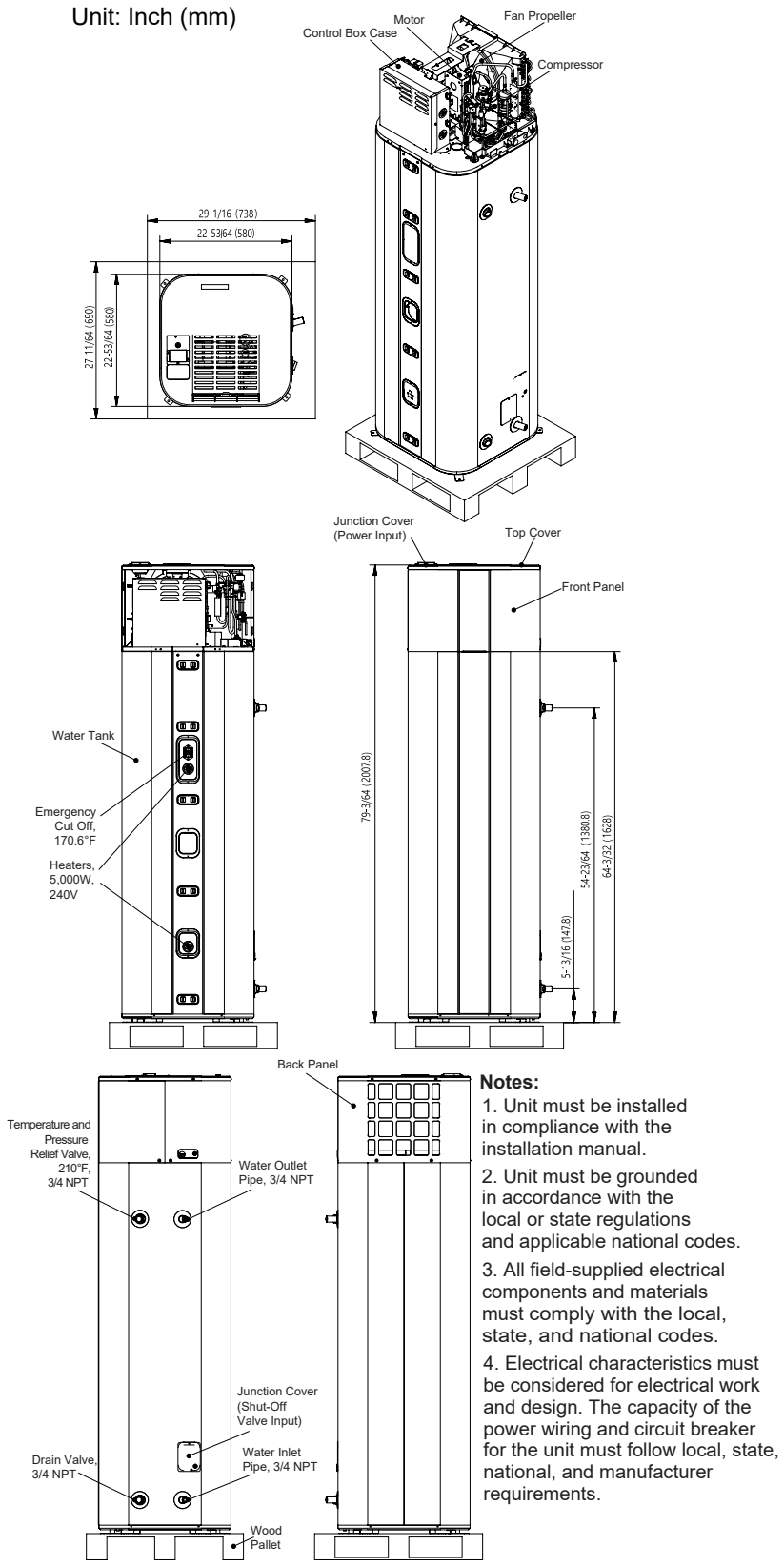


Notes:

1. Unit must be installed in compliance with the installation manual.
2. Unit must be grounded in accordance with the local or state regulations and applicable national codes.
3. All field-supplied electrical components and materials must comply with the local, state, and national codes.
4. Electrical characteristics must be considered for electrical work and design. The capacity of the power wiring and circuit breaker for the unit must follow local, state, national, and manufacturer requirements.

DIMENSIONS

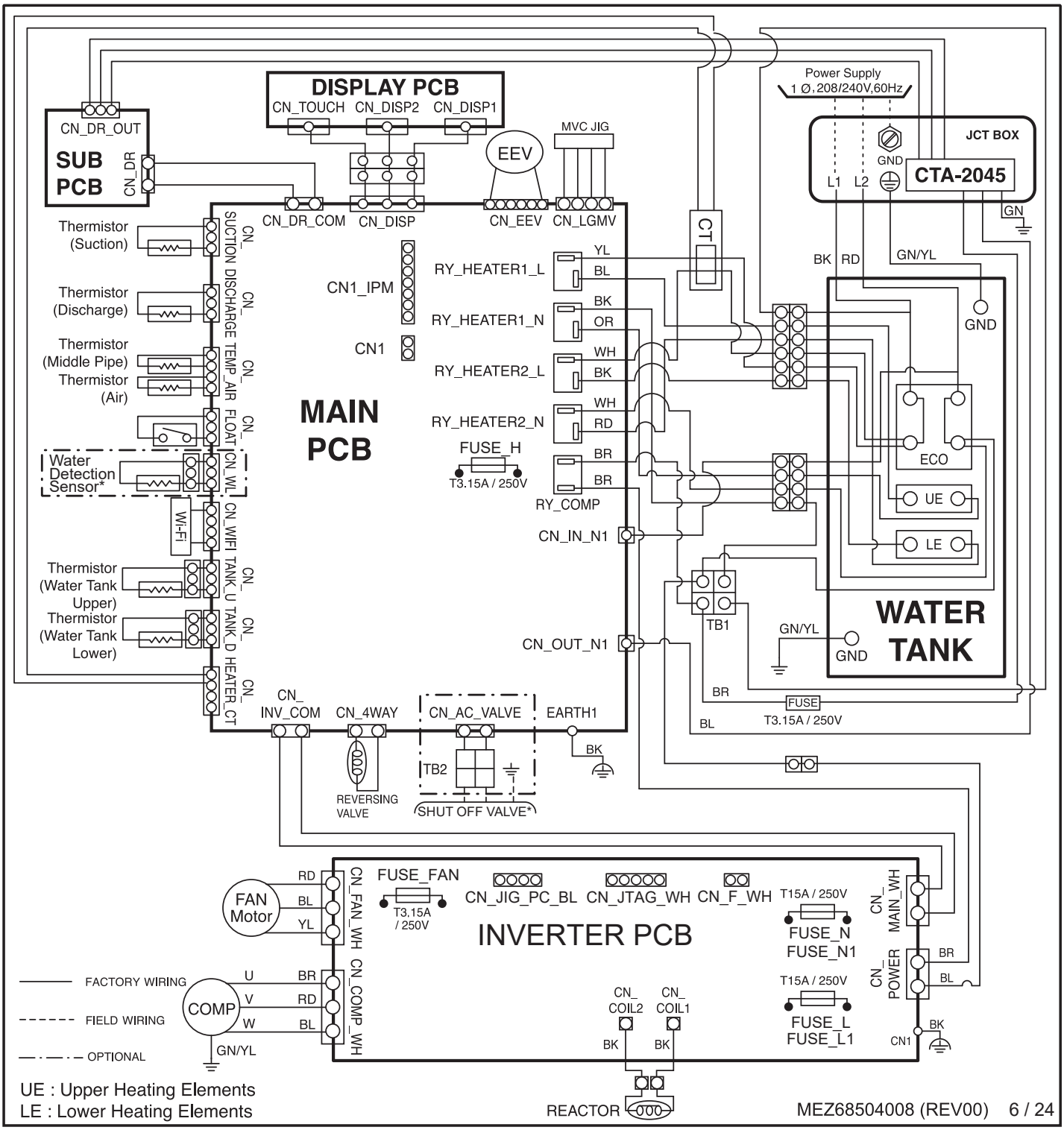
Figure 6: APHWC801L Heat Pump Water Heater with Demand Response Ready and Water Leak Detection Dimensions.



Notes:

1. Unit must be installed in compliance with the installation manual.
2. Unit must be grounded in accordance with the local or state regulations and applicable national codes.
3. All field-supplied electrical components and materials must comply with the local, state, and national codes.
4. Electrical characteristics must be considered for electrical work and design. The capacity of the power wiring and circuit breaker for the unit must follow local, state, national, and manufacturer requirements.

Figure 7: APHWC501D, APHWC801D, APHWC501L, APHWC801L Heat Pump Water Heater Wiring Diagram.



**Only for APHWC501L and APHWC801L models.*

WIRING DIAGRAM

Table 6: APHWC501D, APHWC801D, APHWC501L, APHWC801L Heat Pump Water Heater Wiring Diagram Legend.

Terminal	Function
CN_DR_COM	Communication with DR Sub-PCB
CN_DISP	Display
CN1_IPM	On-Boarding
CN_EEV	EEV Control Output
CN_LGMV	LGMV
RY_HEATER1_L	Relay for Upper Heater
RY_HEATER1_N	Relay for Upper Heater
RY_HEATER2_L	Relay for Lower Heater
RY_HEATER2_N	Relay for Lower Heater
RY_COMP	Relay for Compressor
CN_IN_N1	Power Supply for Main PCB
CN_OUT_N1	Power Supply for CTA-2045 EcoPort
CN_AC_VALVE	Shut Off Valve
CN_4WAY	Reversing Valve
CN_INV_COM	Communication with Inverter PCB
CN_HEATER_CT	CT Sensor
CN_TANK_D	Lower Water Tank Thermistor
CN_TANK_U	Upper Water Tank Thermistor
CN_WIFI	Wi-Fi
CN_WL	Water Detection Sensor
CN_FLOAT	Float Switch Input
CN_TEMP_AIR	Mid-Pipe Air Thermistor
CN_DISCHARGE	Discharge Thermistor
CN_SUCTION	Suction Thermistor

REFRIGERANT FLOW DIAGRAM

Figure 8: APHWC501D, APHWC801D, APHWC501L, APHWC801L Heat Pump Water Heater Refrigerant Flow Diagram.

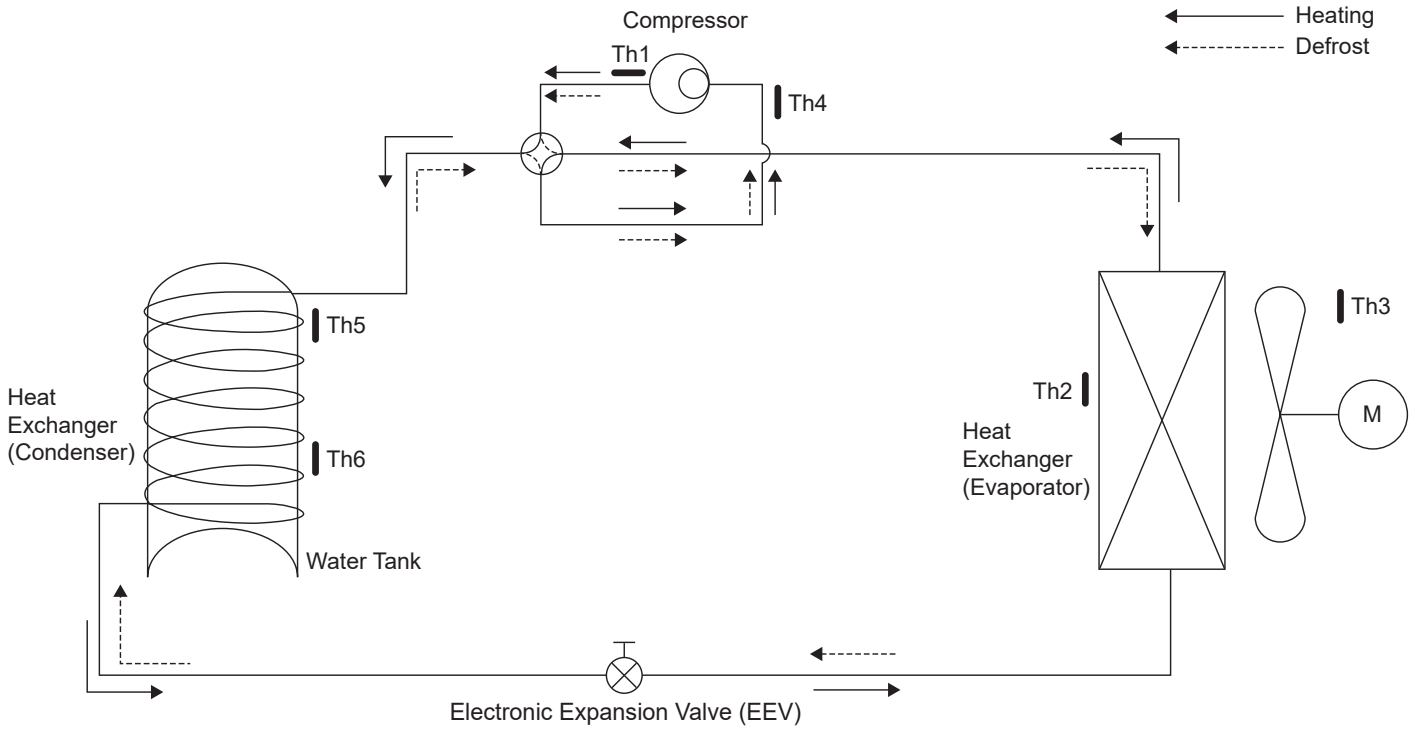


Table 7: Heat Pump Water Heater Thermistors.

Thermistor	Description	PCB Connector
Th1	Discharge Pipe Temperature Thermistor	CN_TH2
Th2	Evaporator Temperature Thermistor	CN_TEMP_AIR
Th3	Indoor Air Temperature Thermistor	CN_TEMP_AIR
Th4	Suction Pipe Temperature Thermistor	CN_TH1
Th5	Upper Water Tank Temperature Thermistor	CN_TANK_U
Th6	Lower Water Tank Temperature Thermistor	CN_TANK_D

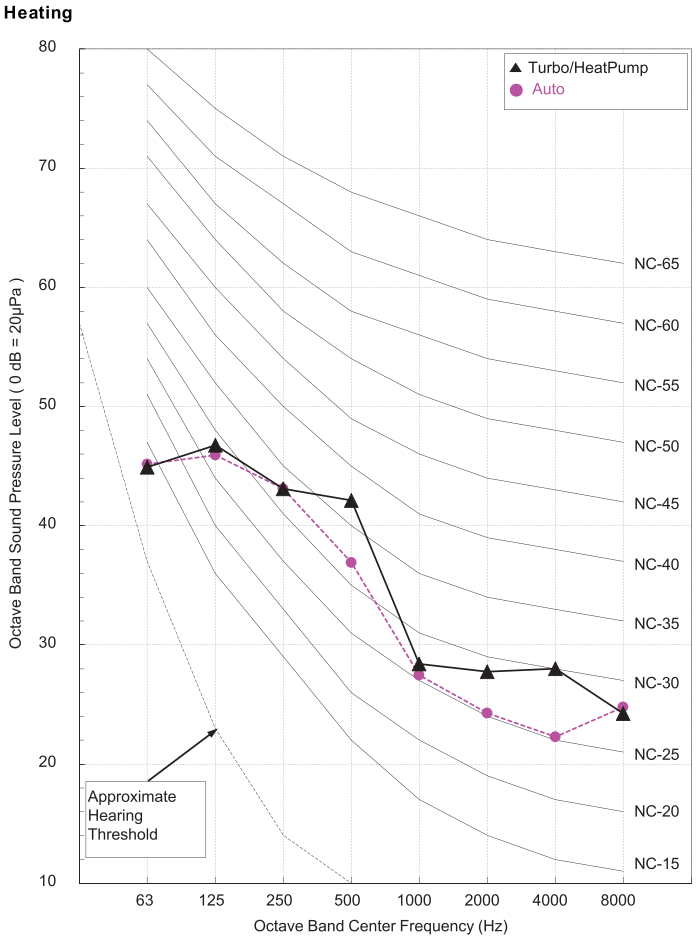
SOUND PRESSURE LEVEL

Table 8: Sound Pressure Level Table.

Model Nos.	Heating	
	Auto	Turbo / Heat Pump
APHWC501D, APHWC801D, APHWC501L, APHWC801L	42	45

- Measurements are taken 3.3 feet away from the unit.
- Data is valid under field conditions.
- Data is valid under nominal operating conditions; the operating conditions are assumed to be standard.
- Reference acoustic pressure: 0dB = 20µPA
- Sound level will vary depending on a range of factors such as construction (acoustic absorption coefficient) of particular area in which the unit is installed.
- Sound pressure levels are measured using rated conditions and tested in an anechoic room under ISO Standard 3745.

Figure 9: APHWC501D, APHWC801D, APHWC501L, APHWC801L Sound Pressure Level Diagram.



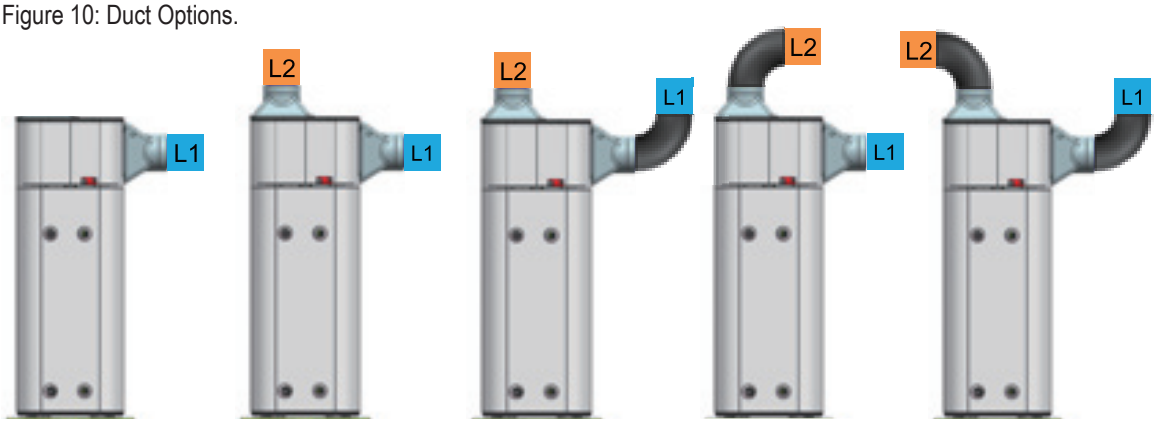
Capacity Change Rate

Table 9: Capacity Change Rate % Table.

Model Nos.	Duct Length (3.3 Feet)			
APHWC501D, APHWC801D, APHWC501L, APHWC801L	Duct Type			
	Diameter	Not Ducted	8 inches (Ø200)	6 inches (Ø150)
	COP (%)	100.0%	96.7%	92.0%

Maximum Allowable Duct Lengths

Figure 10: Duct Options.



Case 1 **Case 2** **Case 3** **Case 4** **Case 5**

Table 10: Maximum Allowable Duct Length Table.

System Static Pressure		Case	Case 1		Case 2		Case 3		Case 4		Case 5	
1,150 rpm	in. W.G.	Size	Ø8 in.	Ø6-5/16 in.	Ø8 in.	Ø6-5/16 in.	Ø8 in.	Ø6-5/16 in.	Ø8 in.	Ø6-5/16 in.	Ø8 in.	Ø6-5/16 in.
		Type	Outlet Only		No Elbow		Elbow x 1		Elbow x 1		Elbow x 2	
127 CFM	0.22	L1 + L2 (ft.)	203	82	180	72	171	62	171	62	161	53
159 CFM	0.17		102	39	89	33	79	23	79	23	69	13

NOTICE

⃠ *Total static pressure must NOT exceed 0.17 in. W.G.*

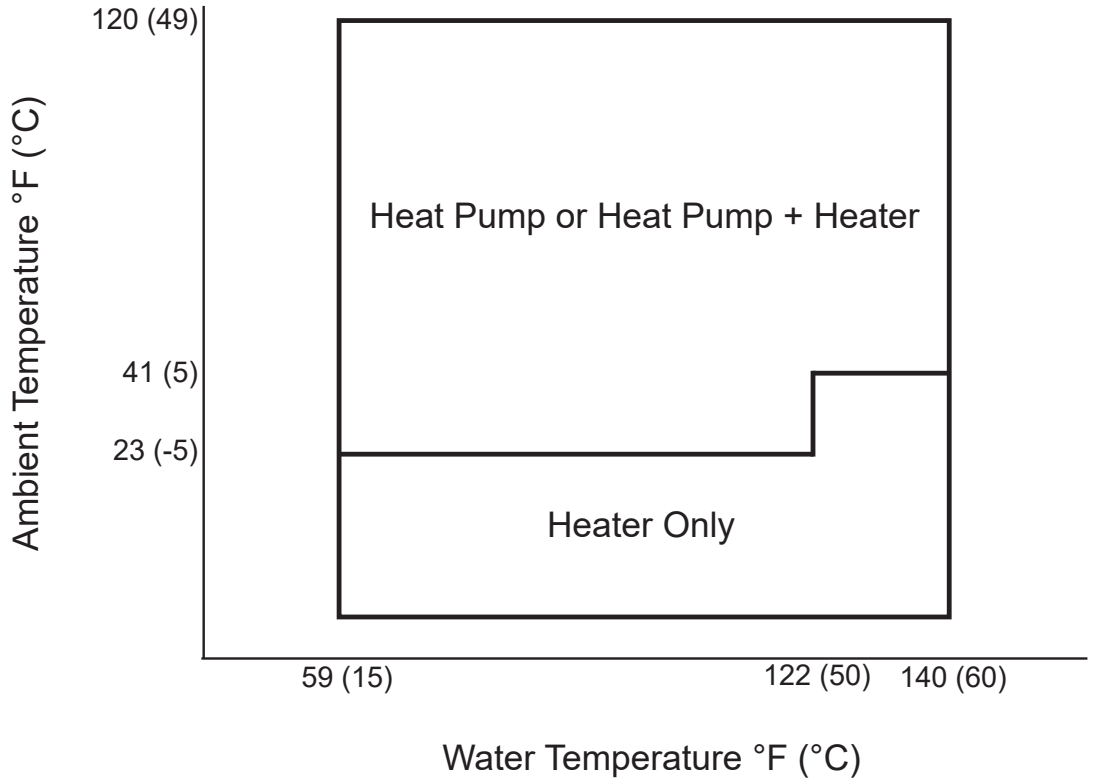
Static Pressure Calculations

Table 11: Static Pressure Calculation Table.

Component	127 CFM			159 CFM		
	Smooth	Smooth 90°	Duct Adapter	Smooth	Smooth 90°	Duct Adapter
	PVC Duct (in. W.G. / ft.)	PVC Bend (in. W.G. / ft.)	Suction and Discharge Set (in. W.G. / ft.)	PVC Duct (in. W.G. / ft.)	PVC Bend (in. W.G. / ft.)	Suction and Discharge Set (in. W.G. / ft.)
Ø6-5/16 in.	0.002	0.006	-	0.003	0.009	-
Ø8 in.	0.0008	0.002		0.001	0.004	
Adapter	-	-	0.006 + 0.006	-	-	0.006 + 0.006

OPERATION RANGE

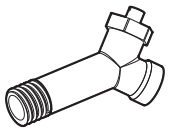
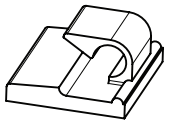
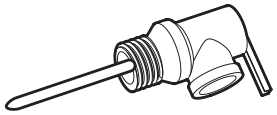
Figure 11: APHWC501D, APHWC801D, APHWC501L, APHWC801L Heat Pump Water Heater Operation Range.



NOTICE

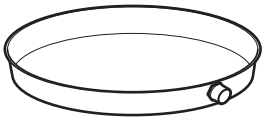
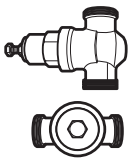
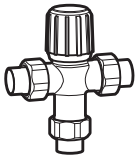
Based on the following conditions: Level difference 0 feet (0 m).

Table 12: Included Accessories.

Accessory	Quantity	Image	Accessory	Quantity	Image
Drain Valve	One (1)		Water Leak Sensor Holder*	Two (2)	
Temperature and Pressure Relief Valve	One (1)				

** Only for models APHWC501L and APHWC801L.*

Table 13: Recommended Accessories (Field-Supplied).

Accessory	Quantity	Image	Accessory	Quantity	Image
Drain Pan	One (1)		Thermal Expansion Tank	One (1)	
Pressure Reducing Valve	One (1)		Thermostatic Mixing Valve	One (1)	
Dielectric Union	One (1)		Automatic Shut Off Valve*	One (1)	 Must be 3/4 in., 220V-240V, Normally Open Type

** Only for models APHWC501L and APHWC801L.*

APPLICATION GUIDELINES

Heat pump water heaters must be properly installed in compliance with the manufacturer's instructions in the installation manual, applicable local and / or state codes, utility codes, utility company requirements, codes, the latest edition of the National Electrical Code and any other federal requirements.

⚠ WARNING

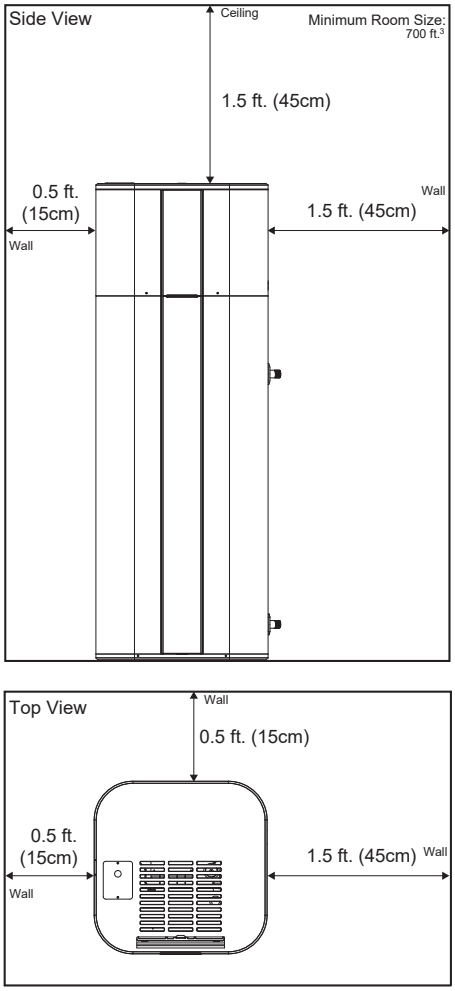
Heat pump water heaters are not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance. There is risk of physical injury or death.

Selecting the Best Location

Do's

- *Select an area where the floor is level, firm, and strong enough to support the weight of a full water heater.*
- *Select an area where there is enough space for future, periodic service and maintenance. Ensure there is enough room so that air filter, front and side panels can be removed to permit inspection. See image at right for minimum clearance requirements. Installing the water heater in a confined space without proper ventilation will lead to higher power consumption.*
- *An auxiliary drain pan MUST be installed in compliance with local codes. Obtain a drain pan kit from the distributor where the water heater was purchased. Install the drain pan so that it does not obstruct the cold water inlet or drain valve.*
- *The ambient temperature of the installation area must remain above 34°F.*
- *Install the water heater in an area where its operating sound will not inconvenience neighboring inhabitants; consider noise prevention where applicable.*
- *Install the drain hose properly for properly drainage of water condensation. Place the water heater where drainage can be obtained easily and to minimize the length of the condensate drain piping.*
- *Install the water heater close to the area of the highest water demand and the center of plumbing system. Long uninsulated hot water lines can waste energy.*
- *Position the heat pump water heater near the power supply.*
- *Properly ground the water heater to minimize the risk of electric shock.*
- *Verify that there are no refrigerant leaks after installing or repairing the water heater.*

Figure 12: Heat Pump Water Heater Minimum Clearance Requirements.



NOTICE

For Use in California.

California requires that residential water heaters must be braced, anchored or strapped to avoid falling or horizontal displacement during an earthquake. Contact utility companies for local and / or state code requirements in the installation location.

Do Not's

- *Do not install the water heater on an unstable surface or in a location where it could fall.*
- *Do not install the water heater outdoor or in an otherwise unprotected area. The water heater and water lines must be protected from freezing and highly corrosive elements.*
- *Do not install the water heater in a location where potential leaks from its tank or connections will damage adjacent areas or the lower floors of the building. If this cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed.*
- *Do not place or store objects on top of the water heater.*

⚠ WARNING

Do not install the water heater where flammable liquids or gases such as propane, paint thinner, etc., are generated, vented into, or stored. There is risk of fire, explosion, and physical injury or death.

The unit may be damaged, may malfunction, and / or will not operate as designed if installed in any of the conditions listed.

WATER SYSTEM COMPONENTS

Water System Components

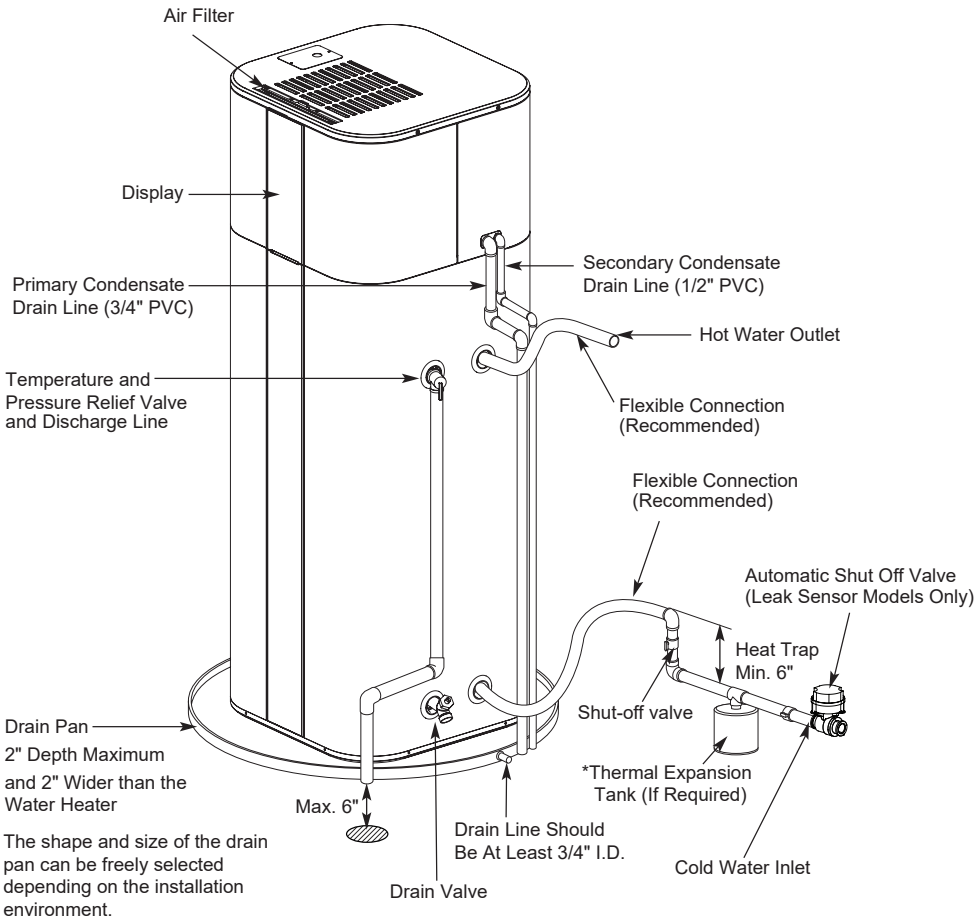
⚠DANGER

High water temperatures increase the potential for hot water scalds.

The water temperature of LG water heaters is factory set to 120°F to comply with safety regulations; the temperature can be adjusted using the display buttons.

For information on adjusting the water temperature, refer to the operating section in the Owner's and Installation Manual on www.lghvac.com.

Figure 13: Water System Component Diagram.



**In closed system, connect a thermal expansion tank to the water supply line.*

Connecting the Water Supply

NOTICE

⃠ Do not directly solder or braze to hot or cold water connections. If sweat connections are used, sweat piping to the adapter before installing it to the hot or cold water connections. Any heat applied to the water supply fittings will permanently damage the internal plastic lining in the ports.

- Check the type of water piping in the building; use fittings adequate for the piping type found.
- If the building includes copper piping, field-supplied dielectric connections must be installed to avoid corrosion caused by electric currents common in copper water pipes.
- To disconnect the water heater for easier service or replacement, it is recommended that unions be installed on the water connections.

Temperature and Pressure Protection

To reduce the risk of excessive temperatures and pressures, install protective equipment required by applicable local, state, and federal codes. Install a combination temperature and pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of listed equipment or materials, and that meets the requirements for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems (ANSI Z21.22). The temperature and pressure relief valve must be marked with a maximum set pressure that does not exceed the maximum working pressure of the water heater. Install the temperature and pressure relief valve into the specific location provided and indicated in the water heater.

Position the valve or add piping so that any discharge exits within six (6) inches above or at any distance below the structural floor, and does not contact any live electrical components. The discharge opening must NOT be blocked or reduced in size under any circumstances.

Thermal Expansion

Verify with the local water utility company if a check valve is present on the inlet water line. A check valve located on the cold water inlet line will create a “closed water system”, which will impart a pressure increase as the water is heated. A rapid pressure increase can quickly reach the safety setting of the relief valve, and will cause it to open during each heating cycle.

It is recommended that a thermal expansion tank be connected to the cold water supply line. For additional information, contact the contractor, plumbing inspector, or water supplier, and check local, state, and federal codes.

Safety Controls

The water heater includes an emergency cut off (ECO) that is located above the upper heating element. If the water temperature becomes excessively high, the ECO shuts off the power to the heating elements. Once the control opens, it must be reset manually.

⚠ WARNING

A qualified contractor MUST troubleshoot the cause of the high temperature condition and fix the issue before the water heater resumes operation. There is a risk of burns, electric shock, physical injury or death.

Drain Pan

NOTICE

Most applicable codes require placing the water heater in a suitable drain pan piped to an adequate drain. Verify applicable codes before installing the water heater.

A drain pan helps prevent property damage that may occur from condensation or leaks from the piping connections or tank. The drain pan for LG heat pump water heaters should be a maximum of two (2) inches deep, and two (2) inches wider than the unit. The shape and size of the drain pan can be freely selected depending on the installation environment. Verify the water heater is level in the drain pan after installation.

Insulation Blankets

An external, field-supplied insulation blanket is not necessary for LG heat pump water heaters. The LG Warranty does not cover any damage or product failure caused by installing any type of unauthorized energy-saving or other devices. LG is not responsible for any injury or loss resulting from the use of such unauthorized devices.

NOTICE

If applicable local / state codes require the installation of an external insulation blanket, ensure that its addition will not restrict the proper function and operation of the LG heat pump water heater.

- ⃠ *Do NOT block the water heater air vents.*
- ⃠ *Do NOT cover or attempt to relocate the information or warning labels attached to the water heater.*
- ⃠ *Do NOT cover the control panel, temperature and pressure relief valve, drain valve, and junction box.*
- *Inspect the blanket frequently for wear and damage.*

ELECTRICAL GUIDELINES

General Electrical Guidelines

All wiring must conform to all applicable local, state codes, and National Electrical Code ANSI/NFPA 70 and the instructions in the Owner's and Installation Manual. Failure to follow applicable codes may result in risk electric shock, physical injury, or death.

⚠ WARNING

- *Disconnect all power before installing any electrical connections. Verify that there is no power to the power input cable.*
- *Power wiring must be firmly attached to the terminals; connect the wiring so that the wires cannot be easily pulled out. Loose wiring may cause the wires to burnout or the terminal to overheat and catch fire. There is a risk of electric shock, physical injury or death.*
- *Terminal screws will become loose during transport. Properly tighten the terminal connections during installation or risk electric shock, physical injury, or death.*

NOTICE

- *Always use a circuit breaker or fuse when connecting electrical wiring to the water heater.*
- *Power wiring must be firmly attached to the terminals. Loose wiring may cause unit malfunction, the wires to burnout or the terminal to overheat and catch fire. There is a risk of equipment malfunction or property damage.*
- *Terminal screws will become loose during transport. Properly tighten the terminal connections during installation or risk equipment malfunction or property damage. There is a risk of equipment malfunction or property damage.*

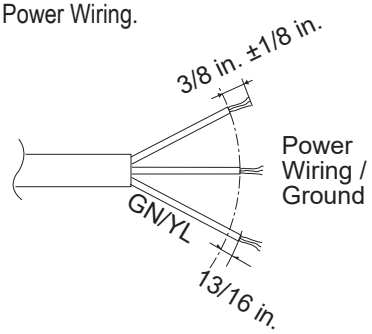
Power Supply / Power Wiring

- LG heat pump water heaters operate at 1Ø, 208 / 240V, 60Hz. The voltage requirements and wattage load for the water heater are specified on the data plate on the right side of the water heater.
- A separate circuit with copper conductors, overcurrent protective device and suitable disconnect capabilities must be provided by a qualified electrician.
- Ensure that the fuse or circuit breaker is properly sized for the water heater (review manufacturer's specifications).
- Maximum allowable voltage fluctuation ±10% or nameplate rated value. Confirm that the electrical capacity is sufficient.

A voltage drop will cause the following problems:

1. Magnetic switch vibration, fuse breaks, or disturbance to the normal function of an overload protection device.
2. Compressor will not receive the proper starting current.

Figure 14: Heat Pump Water Heater Power Wiring.



- Power wiring is field supplied. Wire size is selected based on the MCA value, and must comply with all applicable local, state, and national codes.
- Use flexible conduit only.
- Use a crimp type connector for the wiring.
- Securely connect the power wiring to the L1 and L2 terminal block connections.
- Ground wire must be longer than the common power wires.

EcoPort® CTA-2045

LG heat pump water heaters are equipped with an EcoPort CTA-2045. Where available, grid communication adapters (Universal Communication Modules [UCM]) may be supplied by the local electric company or field-supplied. Contact the local electric company to verify participation, plug-in module availability, and to learn more about potential energy savings opportunities.

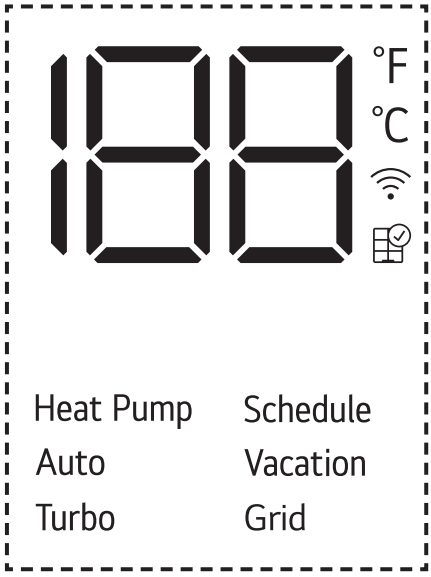
EcoPort is a registered trademark of OpenADR Alliance.

Digital Display

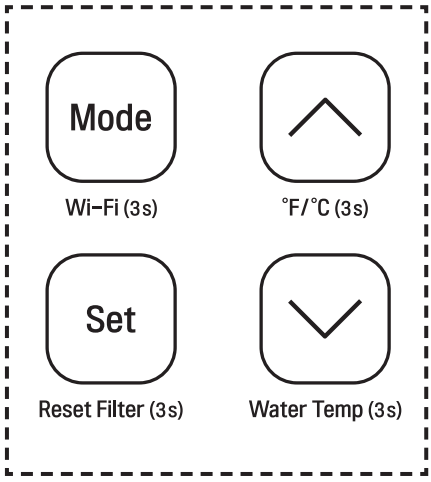
Display Screen - Basic Control

Figure 15: Display Screen and Button Legend.

Display Screen



Buttons



Buttons	Display Screen	Description
Mode	Heat Pump	Selects Heat Pump Mode.
	Auto	Selects Auto Mode.
	Turbo	Selects Turbo Mode.
	Vacation	Select Vacation Mode.
-	Schedule	Sets Schedule Mode (only in LG ThinQ application).
-	Grid	Grid Will Turn On When the Utility Company Has Control of the Unit.
Set	-	Sets the Desired Water Temperature.
^ v	88	Adjusts the Desired Water Temperature.
Wi-Fi (3s)		Enables Wi-Fi Paring.
Reset Filter (3s)		Resets the Filter Alarm.
°F/°C (3s)	°F °C	Switches the Unit Between °F and °C.
Water Temp (3s)	88	Displays the Current Water Temperature for five (5) seconds.

LIMITED WARRANTY (USA)

The product's full Limited Warranty terms and conditions and arbitration requirements are available at https://www.lghvac.com.

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