NORITZ®

TANKLESS WATER HEATERS

Operation and Installation Manual

Hybrid Electric Heat Pump Water Heater

INDEX

SAFETY INFORMATION

WARNING / CAUTION

1. Tank is to be completely filled with water and all air is to be vented before energizing. Do not turn on the water heater if cold water supply shut off valve is closed.

2. Due to the rigors of transportation, all connections should be checked for tightness before the heater is placed in operation.

3. Safety relief valve must be installed in tapping provided.

4. The refractory material used in heating elements may absorb some moisture during transit, periods of storage, or when subjected to a humid environment. This moisture absorption results in a cold insulation resistance of less than twenty (20) megohms. If this heater has been subjected to the above condition, each heating element must be checked for insulation resistance before energizing. A low megohm condition can be corrected by removing the terminal hardware and baking the element in an oven at 350°F -700°F for several hours or until the proper megohm reading is obtained.

5. KEEP AWAY FROM LIVE ELECTRICAL CIRCUITS. Do not perform any maintenance, make any adjustments, or replace any components inside the control panel with the high voltage power supply turned on. Under certain circumstances, dangerous potential may exist even when the power supply is off. To avoid casualties, always turn the power supply safety switch off, turn the charge or ground the circuit before performing any maintenance or adjustment procedure.

6. The unit is designed to operate at pressure not more than 150 psi.

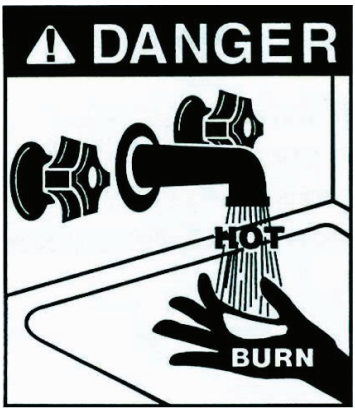
7. Generalized instructions and procedures cannot anticipate all situations. For this reason, only qualified installers should perform the installations. A qualified installer is a person who has licensed training and a working knowledge of the applicable codes regulation, tools, equipment, and methods necessary for safe installation of an electric resistance water heater. If questions regarding installation arise, check your local plumbing and electrical inspectors for proper procedures and codes. If you cannot obtain the required information, contact the company.

8. In the event of overheating, fire, flood, or physical damage, turn off all power to your water heater. Do not power up the heater until it has been examined by a trained professional.

9. Do not store or use gasoline or other flammable vapors and liquids, such as adhesives or paint thinner, in the vicinity of this water heater. If such flammable materials must be used near the unit, open nearby doors and windows to allow for ventilation.

10. California law requires, and other states may require, that all new and replacement water heaters, and all existing water heaters, must be braced, anchored, or strapped to resist falling or horizontal displacement due to earthquake motion. At a minimum, any water heater shall be secured in accordance with the California Plumbing Code.

Please read the following safety information before proceeding:



Water temperature over 125°F (51.6°C) can cause severe burns instantly or death from scalds.

Children, the disabled, and the elderly are at highest risk of being scalded.

See instruction manual before setting the temperature at the water heater.

Feel water before bathing or showering.

Temperature-limiting valves are available. See manual.

The temperature of the water in the heater is regulated by an adjustable, automatic, temperature control which uses surface mounted thermistors located behind the jacket access panels. These automatic controls are set at the factory to maintain a water temperature of 125°F. Although these controls are designed to meet industry standards, they can fail to control temperature properly without any notice, and therefore should be tested periodically for your protection.

To perform the test:
Turn on the hot water faucet and measure the maximum temperature with an accurate thermometer. If the temperature is above the safe limits for your circumstances call a service technician to adjust or replace the control.

DANGER: IF YOU DISCOVER EXTREME HOT WATER COMING FROM THE FAUCET, IMMEDIATELY SHUT OFF THE ELECTRICITY AT THE MAIN SWITCH AND CALL A COMPETENT SERVICE PERSONNEL. ANY OVERHEATED WATER HEATER IS A POTENTIAL HAZARD TO LIFE AND PROPERTY. DO NOT OPERATE UNTIL THE SOURCE OF THE PROBLEM HAS BEEN DETERMINED AND ELIMINATED.

GENERAL INFORMATION

PLEASE READ INSTRUCTIONS COMPLETELY

BEFORE INSTALLING WATER HEATER

IMPORTANT OWNER'S RESPONSIBILITY

Noritz America Corp. (herein called the Company) specifically does not expressly or impliedly warrant the merchantability or the fitness for any particular purpose or the performance of the heater within that system, nor does it assume liability for any consequential damage to general property or other components of the system.

The Noritz Heat Pump Water Heater uses a small amount of electricity to transfer heat from the air to water. In comparison, traditional electric water heaters use resistive heating elements to directly heat the water. A benefit of the heat pump water heater is that it uses less than a third of the electricity of a traditional electric water heater to produce the same amount of hot water and therefore the Noritz Heat Pump Water Heater is significantly more energy efficient compared to a conventional electric water heater.

In principle, a heat pump works like a refrigerator in reverse. A refrigerator moves heat from inside the refrigerator and transfers that heat energy to the surrounding room. A heat pump water heater on the other hand, pulls free heat from the surrounding air and transfers that heat to the water stored in the tank. The Noritz Heat Pump Water Heater can pull heat out of air as cool as 40°F, and if it cannot provide enough heating capacity to meet demand, the water heater includes back-up resistive heating elements to ensure the unit provides sufficient hot water. In addition, the heat pump process of removing heat from the air and transferring it to the water results in the exhaust of cooler dryer air, with as much as 0.4 gallons per hour of "free" dehumidification provided, while the unit is heating water.

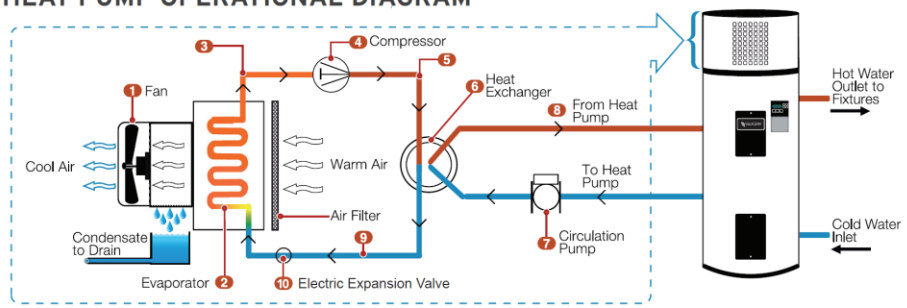
Generalized instructions and procedures cannot anticipate all situations. For this reason, only qualified installers should perform the installation. A qualified installer is a licensed person who has appropriate training and a working knowledge of the applicable codes, regulations, tools, equipment, and methods necessary for safe installation of the heat pump water heater.

If questions regarding installation arise, check with your local plumbing and electrical inspectors for proper procedures and codes. Local codes take precedence over instructions in this manual.

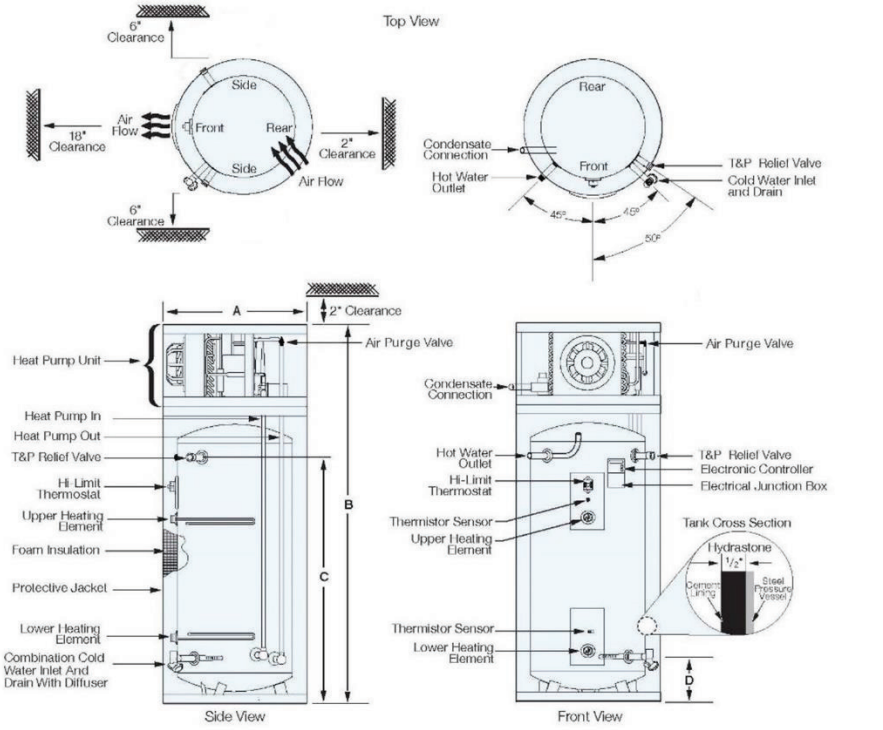
OPERATING PRINCIPLE

1. The built-in fan draws room air into the heat pump compartment and 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 awaits to repeat the process.

HEAT PUMP OPERATIONAL DIAGRAM



HEAT PUMP DESIGN



OPTIONS

- 1-1/2” Male NPT inlet and outlet water connections.
- ASME tank construction.
- Tank installed heat exchanger for use with solar or radiant heating systems.
- Alternate single and 3 phase voltages and alternate wattages.
- Condensate removal pump (120V plug-in) to remove and lift condensate to drain.
- Ducting Options available- 10”

SPECIFICATIONS

Vessel:	Hydrastone Lined Steel
Pressure Rating:	150 psi WP, 300 psi TP
Orientation:	Vertical
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:	208-240 Volt AC
Phase:	Single
Frequency:	60 Hz
Elements:	Refer to Rating Plate
Hi-Limit:	190°F Manual Reset
Thermostat Range:	50-160°F
Error Indication:	Visual and Audible
Demand Response Capable:	Yes
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
Air Filtration:	Washable / Removable
Temperature Range:	35-110°F

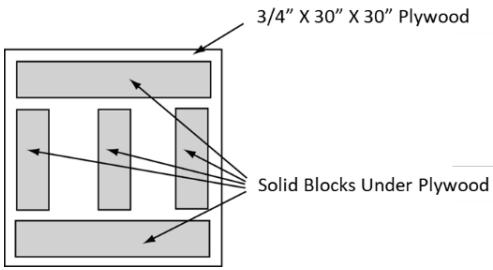
INSTALLATION GUIDELINES

A. INSPECTING AND PREPARING THE HEATER

- Disassemble the crate and remove the shrink wrap packaging. The packaging will contain a T&P valve (temperature and pressure relief valve).
- Do not cover or damage the T&P relief valve opening located on the top right of the tank.

B. LOCATION

- **CAUTION: All water heaters have a risk of leakage at some unpredictable time.**
- **CAUTION: The heater's outer jacket is plastic and can melt.**
- Do not install in close proximity to wood burning stove or other high temperature apparatus.
- Do not place the heater where there is a risk of property damage in the event of a leak.
- Do not install in an area where flammable liquids or combustible vapors are present.
- Place the heater on a solid foundation in a clean, dry location.
- The heater should be protected from freezing and water lines should be insulated to reduce energy and water waste.
- The space that the water heater is installed must be no less than 10' x 10' x 7' high (700 cubic feet). If a smaller space is used, there must be louvers installed in the space that will allow for 450 CFM air flow.
- The installation location must not be cooler than 40°F. Locations with warmer ambient air (ex. furnace rooms) are more advantageous as they provide abundant "free" heat.
- Face the front of the heat pump water heater away from walls.
- Leave sufficient headroom to service the heat pump unit.
- The heat pump dehumidifies the air and as a result produces condensate which must be piped to a drain or outdoors.
- **NOTE: If the heat pump is placed on blocks to raise it from the floor, be sure to support the entire bottom with at least ¾" plywood on the top of the blocks.**



C. PROTECTION FROM WATER DAMAGE

- **CAUTION: All water heaters have a risk of leakage at some unpredictable time.**
- It is the customer's responsibility to provide a catch pan or other adequate means, so that the resultant flow of water will not damage furnishings or property.
- The warranty provided assures replacement within its terms, but specifically does not warrant against consequential damage caused by a leaking water heater.

D. TEMPERATURE & PRESSURE RELIEF VALVE

- **WARNING: A POTENTIAL HAZARD TO LIFE AND PROPERTY MAY EXIST IN ANY WATER HEATER IF AN APPROVED TEMPERATURE-AND-PRESSURE RELIEF VALVE IS NOT PROPERLY INSTALLED.**
- For protection against excessive pressures and temperatures in this water heater, install temperature-and-pressure protective equipment required by local codes, but not less than a combination temperature-and-pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment of materials, as meeting the requirements for Relief Valves and Automatic Gas Shutoff for Hot Water Supply Systems. ANSI Z21.22.1971. This valve must be marked with a maximum set pressure not to exceed the marked maximum allowable working pressure of the water heater (150psi). Install the valve into an opening provided and marked for this purpose in the water heater and orient it or provide tubing so that any discharge from the valve will exit only within 6 inches above, or at any distance below the structural floor and cannot contact any live electrical part. The discharge opening must not be blocked or reduced in size under any circumstances.
- **CAUTION: A relief valve is designed to discharge excessively hot water. THE CUSTOMER IS RESPONSIBLE TO PROTECT PROPERTY AND PERSONNEL FROM HARM WHEN THE VALVE FUNCTIONS.**
- The temperature and pressure relief valve opening is a ¾" NPT female threaded fitting for all models and is located at the top of the tank.
- Install the provided temperature and pressure relief valve in the provided fitting on the side of the tank as shown in FIGURE 1 on page 13.
- The drain line from the relief valve must not be concealed or blocked and must be protected from freezing.
- No valve of any kind should be installed between the relief valve and tank or in the drain line.

- **WARNING: If the water supply is from a well, or known to have hard water, it is recommended to use a pressure relief valve in the cold-water line as well as a temperature and pressure relief valve in the hot water line.**

E. PIPING INSTALLATION

- **WARNING: Some local codes mandate the use of a backflow preventer or check valve or pressure-reducing valve. An adequate expansion tank (or other adequate means) must be installed to prevent pressure build up or damage from thermal expansion when a check valve or backflow preventer or pressure-reducing valve is used. Failure to do so could result in tank leakage and therefore void the warranty.**
- The hot and cold-water fittings are a threaded connection to the tank. Do not over tighten.
- Water inlet connections are ¾" NPT female threaded fittings on ME models. This connection serves as an inlet and drain combination. See FIGURE 1 on page 13.
- Water inlet connection is a 1.5" NPT male threaded fitting on D models. This connection is separate from the drain valve.
- Provide a shut off valve on the cold-water line. Mark for future emergency use.
- **Do not apply heat directly to the cold-water inlet as it includes a plastic dip tube which can melt.**
- Water outlet connections are ¾" NPT male threaded fittings on ME models. See FIGURE 1 on page 13.
- Water outlet connection is a 1.5" NPT male threaded fitting on D models.
- **NOTE:** The orientation of the hot water outlet pipe nipple must not change during installation to ensure water is taken from the highest level inside of the tank. There is a marking on the outlet nipple for reference.
- Pipe the condensate removal tube into a drain in the floor, or a condensate removal pump.

F. FILLING THE WATER HEATER

- Completely close the drain valve.
- Open the highest hot water faucet to allow all air to escape from piping.
- Open the valve to the cold-water inlet and allow the heater and piping system to completely fill, as indicated by a steady flow of water from the open faucet.
- Close the faucets.
- Lift the top cover of the heat pump unit.

- ❑ Carefully open the air purge valve at the top of the heat pump unit to let air escape. See the Heat Pump Design illustration for the location.
- ❑ Fully tighten air purge valve.

G. ELECTRICAL INSTALLATION

- ❑ Enter junction box with properly sized feeder leads. Note that overcurrent circuit protection is required. For the standard model the overcurrent protection must be rated 25 amp minimum.
- ❑ Connect these power leads to wires enclosed in junction box with wire nuts.
- ❑ All other electrical connections are made at the factory; therefore, no other electrical connections are necessary.

H. DUCTING

- ❑ The heat pump water heater is capable of air intake and/or air exhaust ducting. The ducting adapters can be purchased with the assembled tank or as a retro installation kit.
- ❑ Heat Pump ducting kit part number = WP35100052
- ❑ Always check with local building and HVAC codes before designing the duct system.
- ❑ **DO NOT connect this water heater to existing duct work; it must be ducted separately from other appliances.**
- ❑ UL Certified terminations must be used for ducting to the outside. These terminations have been evaluated to ensure there is sufficient protection from rainwater entry and resistance to air flow is minimized.
- ❑ The ducting adapters are for 10” standard ducting.
- ❑ The air inlet adapter is located on the top of the unit over the air filter.
- ❑ The air exhaust adapter is located at the front of the unit in front of the fan.
- ❑ See FIGURE 2 on page 14.
- ❑ Calculated duct length is the inlet plus exhaust length. This combination is to not exceed the table below.

Duct Type	10” Diameter
Flexible	100’
Rigid	300’

I. STATE OF CALIFORNIA

- ❑ The water heater must be braced, anchored, or strapped to avoid moving during an earthquake.
- ❑ Contact local utilities for code requirements in your area, visit http://www.dsa.dgs.ca.gov, or call 1-916-445-8100 and request instructions.

FIGURE 1

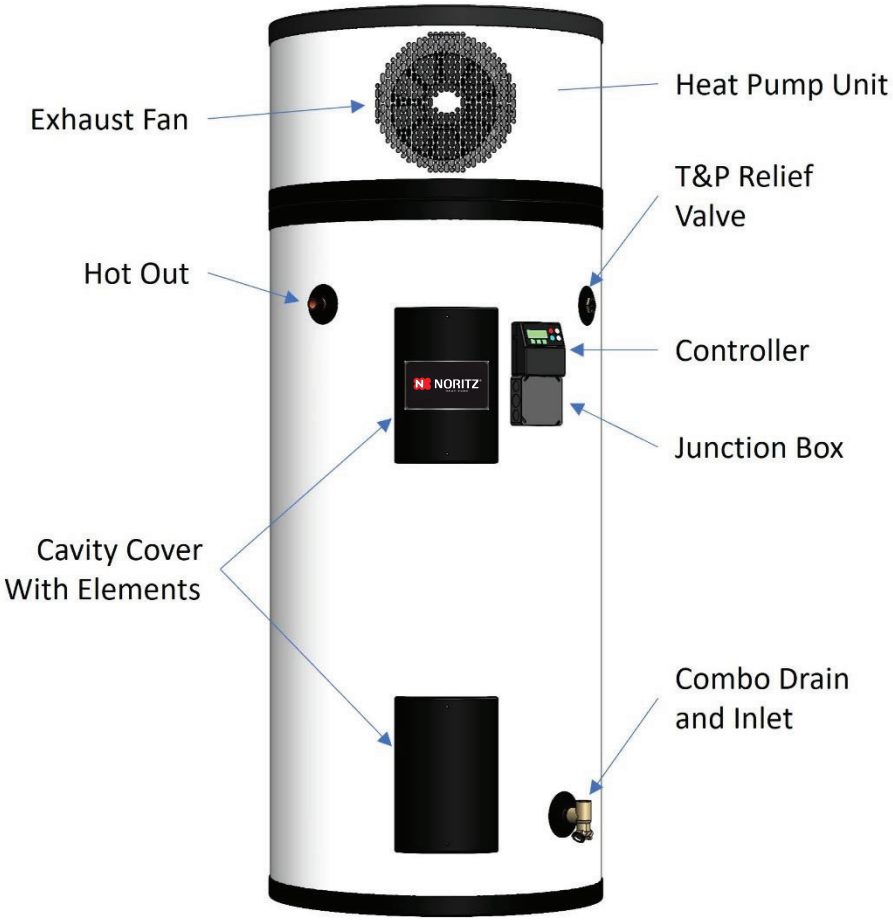

Exhaust Fan
Heat Pump Unit
T&P Relief Valve
Hot Out
Controller
Junction Box
Cavity Cover With Elements
Combo Drain and Inlet
NORITZ

FIGURE 2

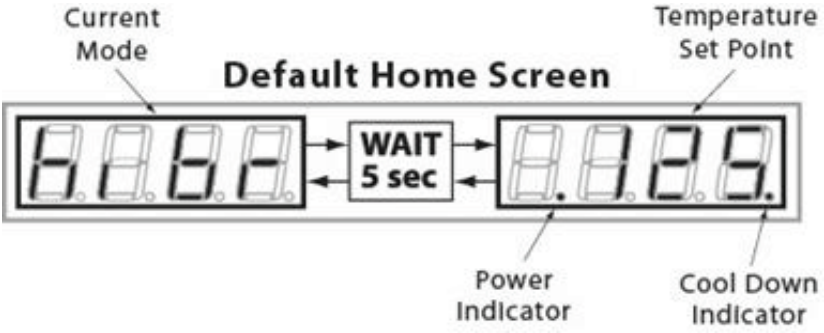
CONTROLLER OPERATION

A. ABOUT THE CONTROLLER

- The Noritz Heat Pump Water Heater Controller provides the user with the ability to control and customize the operation of their heat pump water heater. The 4-digit display shows the current status of the water heater and can display useful information such as current temperature conditions inside the tank, error notifications, and more. It allows basic customization, such as mode and temperature set point, as well as more advanced options, such as temperature differential, and display options. Once the setup is complete the water heater is automatic in operation and will maintain a full tank of water at the temperature setting of the controller.

B. FIRST TIME POWER UP

- When the unit is first powered up, the default home screen is shown, see diagram below. This screen consists of two alternating displays; one shows the current mode (e.g., hibr), and the other shows the temperature set point (e.g., S125). These displays will switch every 5 seconds.



- By default, the Noritz Hot Water Heat Pump comes programmed with a temperature setpoint of 125°F and set to hybrid mode (“hibr”).

C. THE HOME SCREEN

- The home screen provides a quick reference to the current status of the water heater and can be modified to fit the user’s preference. If desired, the temperature readouts can be displayed in Celsius (see “**Changing the Temperature Scale**”) and the user has the option to display either the temperature set point, or the current temperature conditions inside the tank, denoted by “t” and “b” preceding the top and

bottom temperatures, respectively (see "**Changing the Home Screen**").

- If an error condition is detected, the error code is displayed until the error condition is resolved. There are several error conditions which may result in this behavior (see "**Maintenance Alerts and Procedures**").
- As shown in the diagram in section B, the home screen also has two indicators: power and cool down. The power indicator denotes whether active heating of the water is taking place. If the power indicator light is not visible, the water in the tank has reached the desired temperature, and no active heating is taking place. A blinking power indicator light means that the unit has not yet reached the temperature set point, and that current is being drawn to power the heating elements. A solid power indicator light means that the unit is calling for power but is not detecting amperage draw to the elements. This may indicate a problem with the elements or that only the heat pump is running (normal for Hybrid and Economy modes). Set the tank to Electric or Super mode to check operation of both elements.
- When the compressor is running, pressure builds up within the heat pump module. The cool down indicator shows whether the heat pump has had sufficient time to allow the pressure within the system to stabilize. The duration of this cool down period is 10 minutes and starts from the time when the compressor turns off. If the cool down indicator light is not visible, either the cool down period is complete, or the unit does not currently require the use of the compressor. A solid cool down indicator light indicates that the unit requires the use of the compressor and is currently within the cool down period.

D. BUTTON OVERLAY

- The button overlay provides the user with a means to alter the configuration settings and control the operation of the water heater. A brief description of the basic functionality of each button is provided below. Detailed descriptions of how to use these buttons to perform certain functions is provided throughout this manual.

Standby 

- Used for taking the water heater in and out of standby mode. When the unit is in standby, "StbY" will be displayed. The tank will come on at very low temperatures to prevent freezing. Also serves as an execute button in certain menus. Used to cancel setpoint selection without saving.

Mode MODE

- Used for changing modes. Serves as a cancel button in certain menus. Used for navigating the options menu.

Up

- Used for increasing numeric settings. Also scrolls up when changing options. Can be held for auto scroll.

Down

- Used for decreasing numeric settings. Also scrolls down when changing options. Can be held for auto scroll.

Away AWAY

- Used for entering/exiting vacation override. Also used to set/unset child lock.

Max Heat MAX HEAT

- Used for entering/exiting max heat override.

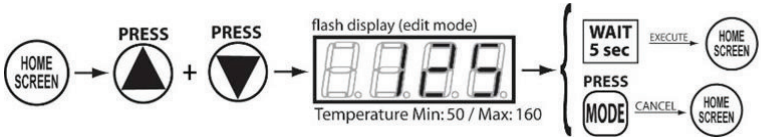
Fan Off FAN OFF

- Used for entering/exiting fan off and fan speed overrides.

E. TEMPERATURE SETPOINT 

- The temperature setpoint represents the desired approximate temperature of the water inside the heat pump water heater. The setpoint may be adjusted to your liking as high as 160°F degrees or low as 50°F, these are pre-defined temperature limits to prevent boiling and freezing water in the unit and surrounding piping. Standby mode lowers the setpoint to 50°F.
- To change the temperature set point for hot water output, from the home screen, press the ▲ AND ▼ buttons on the controller. The setpoint temperature will flash quickly on the display. The temperature is adjusted up or down as the ▲ or ▼ buttons are pressed. Pressing and holding the ▲ or ▼ will allow fast scrolling through the temperatures. Once the desired temperature setting has been reached, press the ▲ AND ▼ buttons to save the new setpoint. The

setpoint will also auto save 5 seconds after single button presses. The temperature will NOT auto save after fast scrolling without pressing the ▲ AND ▼ buttons to save the new setpoint. The display will now alternate between the current mode setting (e.g., “hibr”) and the newly set temperature (e.g., “116”).



F. OPERATING MODES

- The Noritz Heat Pump Water Heater is equipped with four operating modes: Economy, Hybrid, Electric, and Super. A brief overview of each mode and setting is listed below.

Economy

- Economy mode allows only the heat pump portion of the unit to operate; the electric heating elements will not operate in this mode. This is the most efficient mode but may not meet high demand situations.

Hybrid

- Hybrid mode makes efficient use of the electric heating elements. In Hybrid mode, the heat pump provides the vast majority of the heating capacity. The top electric element will be automatically switched on only when necessary to meet high demand situations.

Electric

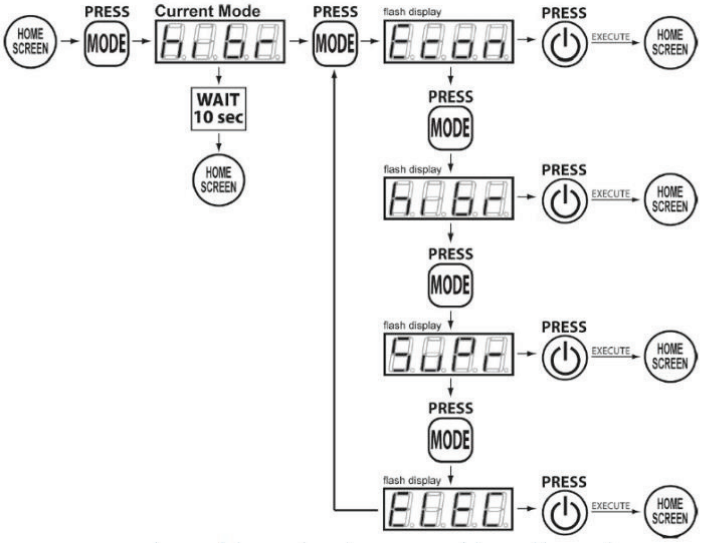
- Electric Mode disables the heat pump unit, allowing only the electric heating elements to heat the water in the tank.

Super

- Super mode allows either of the electric elements as well as the heat pump to function simultaneously, providing the fastest recovery option for the unit. This is the least efficient mode but provides the fastest heating rate in high demand situations.

G. CHANGING THE MODE

- To display the current mode, from the home screen, press the MODE button once. This will display the current mode the water heater is operating on for 10 seconds. This feature is useful if the home screen is displaying an error condition. Allow the display to timeout or press any button other than the MODE button to return to the home screen.
- To switch between modes, from the home screen, press the MODE button once. This displays the current mode. Before 10 seconds elapses, press the MODE button again. The display will show a flashing "Econ" (economy). If this is the desired mode, either allow the display to timeout by not pressing any buttons for 5 seconds or press the ⏻ button to set the mode. If this is not the desired mode, within 5 seconds continue to press the MODE button until the desired mode is selected (flashing). Press the ⏻ button or allow the 5 second timeout to elapse to set the mode.
- **Note:** To cancel out of the mode select menu without changing the mode, press any button other than the MODE or ⏻ buttons.

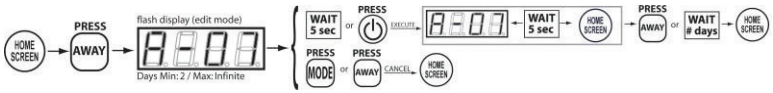


H. TEMPORARY MODES

- The Noritz Heat Pump Water Heater is equipped with three temporary modes: Vacation, Fan Off Override, and Max Heat Override. A brief overview of each mode and setting is listed below.

Vacation

- Vacation mode deactivates the water heater for extended periods of time by overriding the current mode. This is useful for saving energy when the water heater will not be used for a period of several days. Using only the heat pump, the unit will maintain a water temperature of 50°F to prevent freezing.
- To activate vacation override, press the AWAY button on the controller. The display will show “A-07,” indicating the default vacation length of 7 days. The minimum vacation length is 2 days, and the maximum is 99 days. Use the ▲ or ▼ buttons to adjust the desired length of time to use vacation mode. To set the water heater to vacation mode for an indefinite period, use the ▲ or ▼ buttons to adjust the display until “AOFF” is visible.
- Once the desired time period is set, press the ⏻ button or allow the 5 second timeout to elapse. The water heater will now be in Vacation mode. While in Vacation mode, the display will show “A-##”, where “##” is the number of days remaining in the vacation mode period.
-
- The heat pump will exit vacation mode automatically one day before the specified time period has elapsed. It is designed this way such that when the user returns from being away, hot water will be available. To manually cancel or end Vacation mode, press the AWAY button once. The display should now show the home screen.



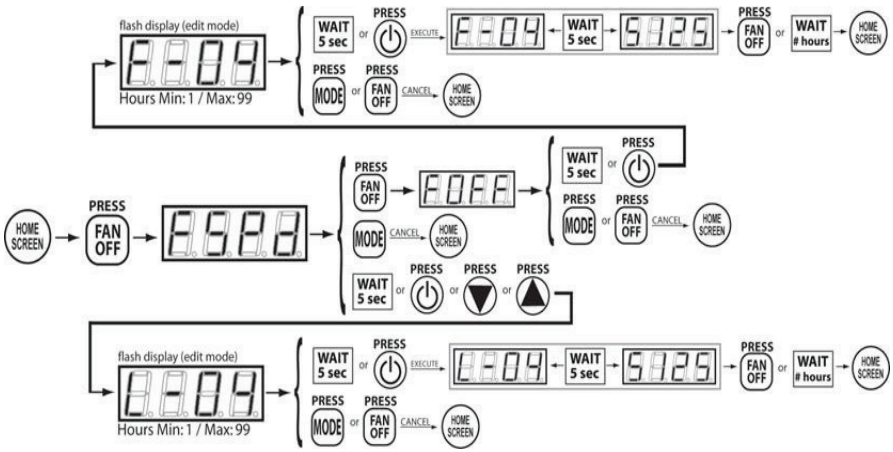
- **Note:** Use the ▲ or ▼ buttons to modify the setting or value on any screen designated as an “edit mode” display.

Fan Off Override

- The Fan Off setting allows the user to temporarily stop the heat pump portion from operating for a specified number of hours. This is useful if the water heater is located in a populated part of a building, and the user wishes to temporarily eliminate any noise or airflow created by the heat pump unit.
- To activate the Fan Off or Fan Speed overrides, from the home screen, press the FAN OFF button on the controller. The display will show “FSPd”, this represents the fan speed override. Press the ⏻ button or wait 5 seconds to continue to adjust the Fan Speed override duration or within 5 seconds, press the FAN OFF button again, and the unit will display

"FOFF" on the screen, this represents the fan off override. Once "FOFF" is selected, either wait 5 seconds or press the ⏻ button to adjust the duration of this override.

- To adjust the fan override duration, the display will show "L-04" for low speed override (if the fan speed is currently set to high speed), "h-04" for high speed override (if the fan speed is currently set to low speed), or "F-04" for fan off override, as applicable, with "04" indicating the default time setting for this feature as 4 hours. To adjust the duration, use the ▲ or ▼ buttons on the controller until the display indicates the desired amount of time in hours (e.g., "F-10" for a 10-hour period of Fan Off).
- Once the desired time has been set, to begin any fan override features, press the ⏻ button or wait 5 seconds to allow the screen to time out. While the fan override feature is engaged, the display will alternate between "###," where "###" is the temperature setting for the unit (e.g., "125" for a setting of 125 degrees) and "L-##", "h-##", or "F-##," where "##" is the number of hours remaining in the fan override session.
- The Fan Off and Fan Speed feature will automatically turn off after the specified number of hours has elapsed. To end the session prematurely, press the FAN OFF button once. The display should now alternate between the unit's temperature setting (e.g., "120") and the mode in use prior to engaging the fan override, (e.g., "hibr" for Hybrid mode).

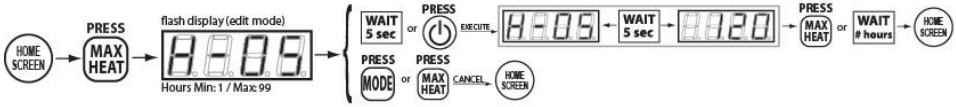


Max Heat Override

- The Max Heat setting will override the heater's current mode setting and temporarily change to Super Mode, which will activate one of the electric heating elements as well as the heat pump unit for a set period

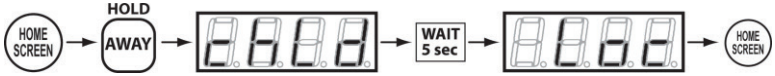
of time. This is useful if the user is expecting high demand hot water usage for a specified number of hours.

- To activate the Max Heat override, press the MAX HEAT button on the controller. The display should show “H-05,” indicating the default time setting of 5 hours. The minimum duration for this override is 1 hour and the maximum is 99 hours. To adjust the Max Heat duration, use the ▲ or ▼ buttons on the controller until the display indicates the desired amount of time in hours (e.g., “H-10” for a 10-hour period of Max Heat).
- Once the desired time has been set, begin the Max Heat feature either by allowing the screen to time out after 5 seconds, or by pressing the ⏻ button. While the Max Heat feature is engaged, the display will alternate between “###,” where “###” is the temperature setting for the unit (e.g., “120” for a setting of 120 degrees) and “H-##,” where “##” is the number of hours remaining in the Max Heat session.
- The Max Heat feature will automatically turn off after the specified number of hours has elapsed. To end the session prematurely, press the MAX HEAT button once. The display should now alternate between the unit’s temperature setting (e.g., “125”) and the unit mode in use prior to Max Heat, (e.g., “hibr”).

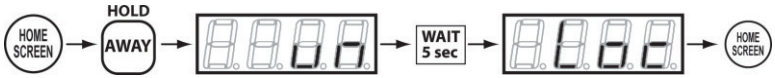


Child Lock

- Child Lock is essentially a button locking mechanism. If the user wishes, he/she may set the child lock, which will disrupt any future attempt to change modes, change the set point, etc. The user will be locked out of performing any function on the device until the child lock is released.
- To activate the Child Lock feature, press and hold the AWAY button until “chLd” is displayed on the screen. The controller is now locked.



- To deactivate the child lock, press and hold the AWAY button until “un” is displayed. You will be returned to the home screen.



I. CONTROLLER OPTIONS AND SETTINGS

- The Noritz Heat Pump Water Heater is equipped with various customizable options and settings. A brief overview of each option/setting is listed below.
- To access the options menu, from the home screen, press and hold the MODE button until the display reads “FLtr”, this is the first selection in the options menu.
- To navigate the options menu, if “FLtr” is not the desired option, continue to press the MODE button to cycle through the available options until the desired option is displayed. When the option to be changed is displayed, press the ▲ or ▼ buttons to enter the edit mode. The edit mode is active when the display is flashing, and the option may be altered by pressing the ▲ or ▼ buttons until the desired choice is displayed. To set the change, let the display timeout after 5 seconds, press the MODE button, or press the ⏻ button. The change will be made, and the controller will return the user to the options menu.

Filter 

- A display alternating between “Err” (error) and “FLtr” indicates that the filter needs to be cleaned. The error will have to be cleared manually, using this menu, after the filter has been cleaned.
- To clear the filter warning, in the edit mode press the ▲ or ▼ buttons until “cLr” is displayed (“no” will cancel this operation). To finish clearing the warning, let the display timeout after 5 seconds, press the MODE button, or press the ⏻ button.

Fan Speed 

- The fan speed option gives the user the ability to adjust the fan speed between two levels, high and low. While it is recommended to keep the fan speed on high for best efficiency, it can be changed to low for noise and air flow reduction purposes.
- To change the fan speed, in the edit mode press the ▲ or ▼ buttons to alternate between high speed, “Hi”, or low speed, “Lo”. To set the change, let the display timeout after 5 seconds, press the MODE button, or press the ⏻ button.

Diagnostics 

- Enabling this option causes the control to perform various checks, including making sure each element works correctly. Any errors will be displayed after all the tests are complete.

Differential

- A temperature differential represents how far the water temperature can fall before the water heater must call for heat again. For example, if the setpoint is 125°F and the differential is 10°F, then after satisfying at 125°F, the water temperature must fall to 115°F before the water heater will call for heat.

Top Differential 

- The top differential controls the temperature differential in the upper section of the water heater. The top differential can be adjusted between 15 and 30°F. Typically, the top differential is larger than the bottom differential.

Bottom Differential 

- The bottom differential controls the temperature differential in the lower section of the water heater. The bottom differential can be adjusted between 5 and 20°F. Typically, the bottom differential is smaller than the top differential.
- <u>To change the top or bottom differential</u>, in the edit mode press the ▲ or ▼ buttons to the desired differential. To set the change, let the display timeout after 5 seconds, press the MODE button, or press the ⏻ button.

Buzzer 

- The buzzer is programmed to sound every 30 seconds whenever a critical error has been detected. It is designed to attract the attention of the user, and it is highly recommended that the user leave this buzzer on. However, this option allows the user to turn the buzzer off if desired.
- <u>To turn the buzzer on or off</u>, in the edit mode press the ▲ or ▼ buttons to alternate between buzzer on, “bOn”, or buzzer off, “bOFF”. To set the change, let the display timeout after 5 seconds, press the MODE button, or press the ⏻ button.

Display 

- By default, the home screen will show the set point (designated by an ‘S’ preceding the set point). The display option provides the ability to change the temperature on the home screen to show the measured water temperature inside the tank for both the upper and lower

sections. If this option is selected, the home screen will cycle the display to show the current mode for 5 seconds, followed by the top temperature (designated by a 't' preceding the measurement) for 5 seconds, followed by the bottom temperature (designated by a 'b' preceding the measurement) for 5 seconds.

- To change the home display mode, in the edit mode press the ▲ or ▼ buttons to alternate between display setpoint, "diSS", or display water temperature, "diSt". To set the change, let the display timeout after 5 seconds, press the MODE button, or press the ⏻ button. When set to "diSt", if the heat pump or lower heating element is actively heating, the power indicator will blink when "b" is displayed, if the upper heating element is actively heating, the power indicator will blink when "t" is displayed.

Defaults 

- Enabling this option will reconfigure the controller to factory defaults. The factory defaults are shown below.
  - Setpoint: 125°F
  - Mode: Hybrid
  - Top Differential: 30
  - Bottom Differential: 10
  - Fan Speed: High
  - Display: Show Set Point
  - Degrees: Fahrenheit
  - Buzzer: On
- To set the unit back to factory defaults, in the edit mode press the ▲ or ▼ buttons to alternate between cancelling the operation, "no", or resetting to default, "YES". To set the change, let the display timeout after 5 seconds, press the MODE button, or press the ⏻ button.

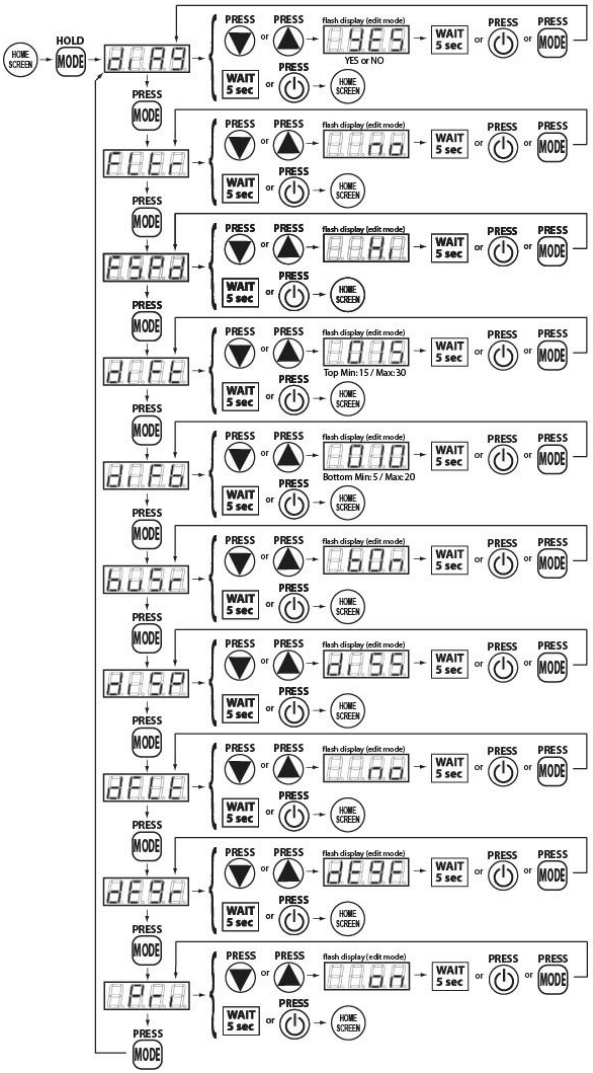
Degrees 

- The degrees option provides the user with the ability to switch between standard and metric temperature readings. The "dEgF" choice will set the temperatures to be displayed in Fahrenheit, and the "dEgC" choice will set the temperatures to be displayed in Celsius.
- To change the display units, in the edit mode press the ▲ or ▼ buttons to alternate between degrees Fahrenheit, "dEgF", or degrees Celsius, "dEgC". To set the change, let the display timeout after 5 seconds, press the MODE button, or press the ⏻ button.

Prime

- Press the ▲ or ▼ buttons to select ON or OFF. Activating this feature will turn on just the water pump to help itself prime. “Pri” will show on the display in place of the mode. Use this feature for about 2 minutes if a pressure error occurs after installation or after the tank is drained. Prime is automatically activated for two minutes upon power-up if the power was off to the control for two days or more.

Settings Overview



MAINTENANCE

Properly maintained, your water heater can provide years of dependable, trouble-free service. It is suggested that the purchaser follow the preventive maintenance program outlined below.

Before performing any maintenance procedure, make certain the power supply is OFF and cannot accidentally be turned on.

A. CONTROLS

- A periodic inspection of the operating controls and wiring should be made by qualified service personnel. The temperature of the water should be tested periodically at the faucet to be sure temperature controllers are working properly.

B. CLEANING THE HEAT PUMP FILTER

- When the filter needs to be cleaned, the controller will alternate between “Err” and “FLtr”. The filter is located on the top of the heat pump water heater. To remove and clean the filter, pull the filter towards the front of the tank and out of the filter slot. Clean the filter either by vacuuming or with soap and water. Allow filter to dry thoroughly before replacing.
- To clear the filter error, press and hold the MODE button to access the options menu. “FLtr” will be displayed. Use the up or down arrows to scroll to “cLr,” and then let the display timeout, press the MODE button, or press the ⏻ button. The Filter error will be cleared. The error may also be cleared by turning off power to the unit momentarily, and then turning the unit back on.

C. ELECTRICAL TESTING

- Always turn the power OFF to the water heater before examining any electrical component.
- Always reinstall insulation and plastic covers after servicing or replacing elements, thermostats, or thermistors.
- Never energize elements unless the tank is completely filled with water.
- The standby power button on the controller does not turn power off or disconnect power from the heater. Circuits remain energized even when in standby.

D. VERIFYING ELEMENTS

Verifying Element Resistance:

- Set the multimeter to read Ohms. Place leads on both element terminals. Verify Ohm reading to chart.
- Note: Element must NOT be energized for this test.

Verify Element Operation:

- Set the multimeter to read amps. Place meter clamp around either wire to element. Verify amp reading to chart.
- Note: Element must be energized for this test.

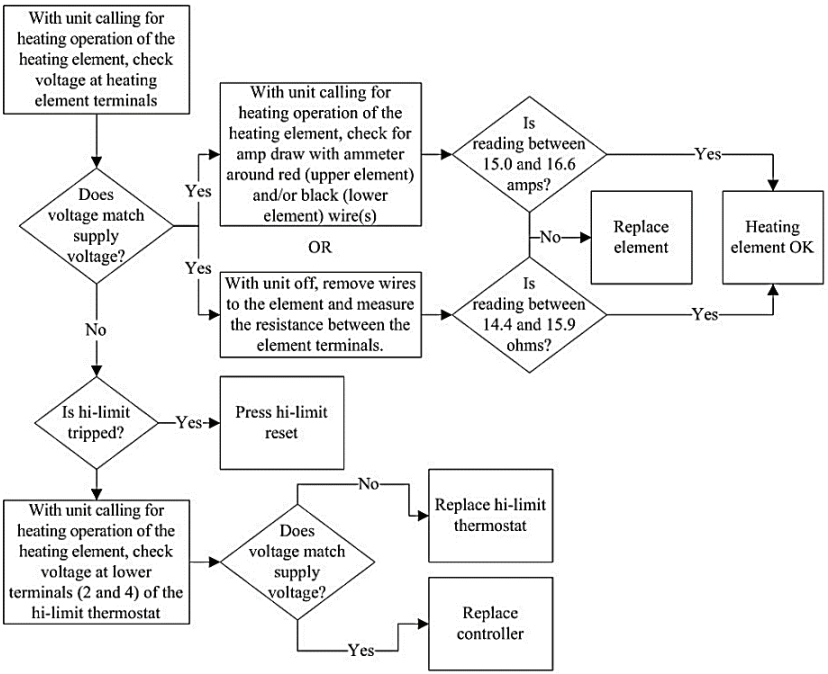
Verifying Voltage at Element:

- Set the multimeter to read volts AC. Place leads on both element terminals. Verify correct voltage as listed on nameplate.
- Note: Element must be energized for this test.

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

E. CHECKING HEATING ELEMENT OPERATION

- The following flowchart assumes that supply voltage is present to the unit and all connections are tight.



F. ANNUAL INSPECTION

- Lift test lever on relief valve and let water run through valve for a period of approximately 10 seconds. This will help flush away any sediment that might build up in water passageways.
- Inspect element fittings for leakage as follows:
- Shut off power supply and remove element housing cover.
- Visually inspect heating element gasket for evidence of leakage.
- Rub finger around gasket that is between the heating element and tank flange for any evidence of moisture. If moisture is present or a water drip is observed, replace the heating element gasket.
- Check for loose electrical connections. Tighten as necessary.
- Flush tank at 10 years (or earlier if needed).

TROUBLESHOOTING

Symptom	Probable Cause	Corrective Action / Remedy
Blank display	Circuit breaker tripped at source	Reset circuit breaker.
	Faulty controller	If controller display is not lit and power is available at the controller, check wire connections then replace controller.
No hot water	All hot water used	Wait for tank to recover
	High limit switch tripped	Reset high limit switch.
	Heating element(s) inoperable (only applicable when not in “Econ” mode)	Run Diagnostics
	Check control display for error messages	See heat pump error codes in manual.
Relief valve discharges occasionally	Temperature and pressure relief valves are designed to operate if the water temperature exceeds 210°F or tank pressure exceeds the pressure rating of the safety relief valve.	Could be related to faulty T&P valve or water expansion in system. Contact a service technician to replace T&P and add an expansion tank.
Relief valve discharges continuously	Temperature and pressure relief valves are designed to operate if the water temperature exceeds 210°F or tank pressure exceeds the pressure rating of the safety relief valve.	Could be related to faulty T&P valve or control system issues. Shut down power and contact a service technician.

CONTROLLER ERROR MESSAGES

Symptom	Probable Cause	Corrective Action / Remedy
F-01 or F-02	Indicates that the controller's water temperature sensor has experienced an error. F-01 indicates top sensor (red sensor wires), F-02 indicates bottom sensor (black sensor wires)	Turn off the power to the unit. Examine the connections on the back of the controller to verify that connector is attached, and then repower the unit. If the problem persists, contact your local service professional.
F-03 or F-04	Indicates that one or both elements do not draw power when indicated. F-03 indicates top element failure, F-04 indicates bottom element failure.	Turn off the power to the unit. Examine the connections in the junction box and at the high limit and element terminals. Check resistance of the elements.
F-05	F-05 indicates there is no current through either element.	Turn off the power to the unit. Examine the connections in the junction box and at the high limit and element terminals. Check for a tripped or faulty high limit. Check external timer switch if present. If the problem persists, contact your local service professional.
F-06	Indicates that an error has occurred in communications from the controller in the heat pump unit and the controller on the water heater.	Turn off the power to the unit. Examine the connections on the back of the main control. Check all connections on the heat pump control. Power the unit. If the error continues, contact a service professional.
F-07 or "FLtr"	Indicates when the filter needs to be cleaned. The error will have to be cleared manually after the filter has been cleaned.	This is the only error message that needs to be cleared manually; all other error messages should automatically be cleared upon resolution of the error. See Scheduled Maintenance for how to clean the filter.

CONTROLLER ERROR MESSAGES CONTINUED

Symptom	Probable Cause	Corrective Action / Remedy
F-10	Indicates that the heat pump's water temperature sensor has experienced an error.	Turn off the power to the unit. Check connections on the heat pump control board.
F-11	Indicates that the defroster temperature sensor has experienced an error.	Turn off the power to the unit. Check connections on the heat pump control board.
F-12	Indicates that the water heater has experienced a pressure error in the refrigeration system.	Turn off the power to the unit. Remove the top housing and press the red button on the left side of the heat pump. This will reset the pressure sensor connection. Open air bleeder valve and check that no air comes out. Turn on power to the unit and activate the PRI setting in the options menu for 2 minutes to help prime the water pump. Check that water pump in the heat pump unit is circulating by checking pipe temperature in and out of heat exchanger.
F-13	Indicates that the flow of the condensate tube is blocked.	Check for kinks or blockages in the condensate tube.
F-14 or "dEFr"	Indicates when the unit is in defrost mode.	Defrost mode occurs when ice has built up on the evaporator coil. When the defrost cycle is complete the unit will return to its normal mode of operation. If constantly in defrost mode, check for blocked filters, defective fan, and defrost temperature sensor.

SERVICING & REPLACEMENT OF PARTS

WARNING / CAUTION

Before servicing or replacing any part make sure to turn the power supply switch to the OFF position.

NOTE: Reference wiring diagrams on pages 34 and 35.

Surface Temperature Hi-Limit Cutout Switch

1. Disconnect power from unit.
2. Remove upper access cover.
3. Disconnect the wires from the four terminals.
4. Remove hi-limit switch.
5. Install new high limit switch.
6. Rewire hi-limit switch according to wiring diagram.
7. Reinstall access cover.

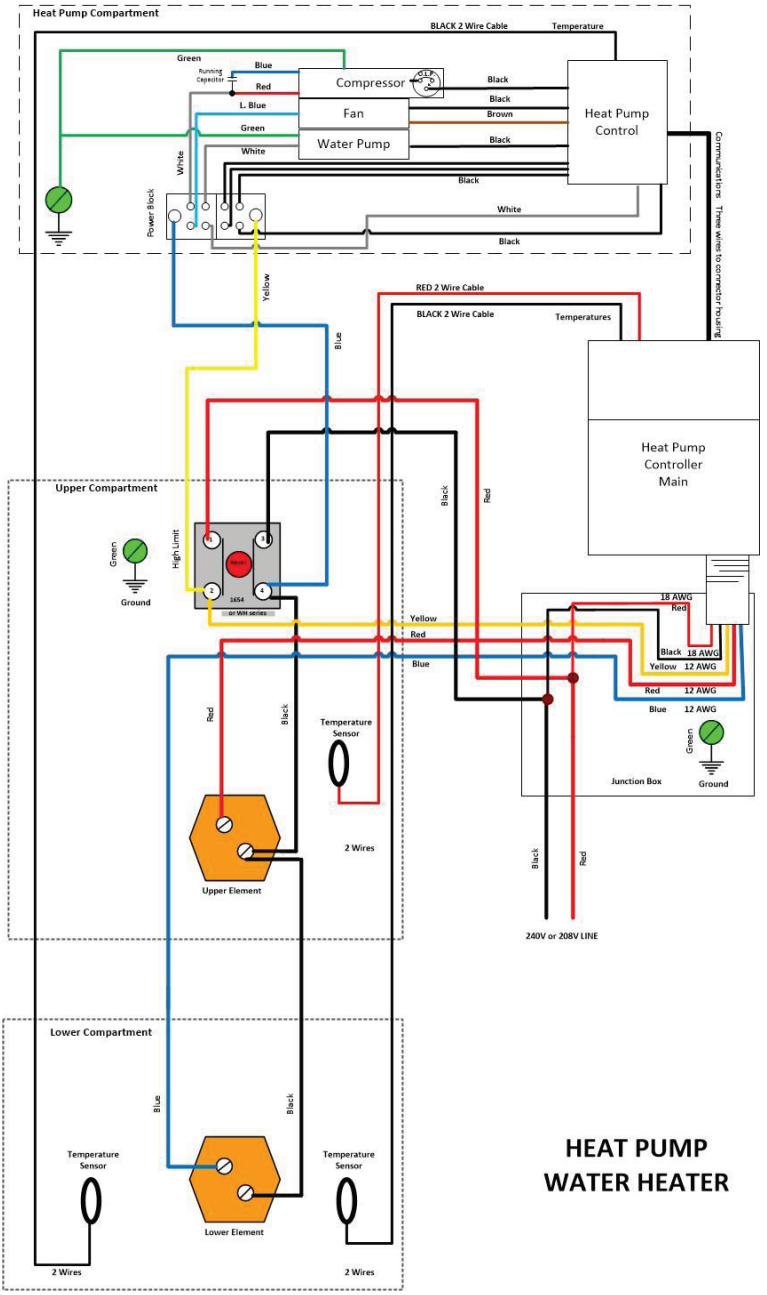
Heating Element

1. Disconnect power from unit.
2. Shut off incoming water supply.
3. Attach hose to drain connection.
4. Lift manual release lever on relief valve to let air into system or break union on outgoing water line and drain water from tank.
5. Remove upper and/or lower access cover, as applicable.
6. Disconnect the wires from the heating element terminals.
7. Remove the element from the tank.
8. Install new gasket and new heating element.
9. Rewire element according to wiring diagram.
10. Fill the tank and check around gasket for any leaks. Tighten nuts as required.
11. Reinstall access cover(s).

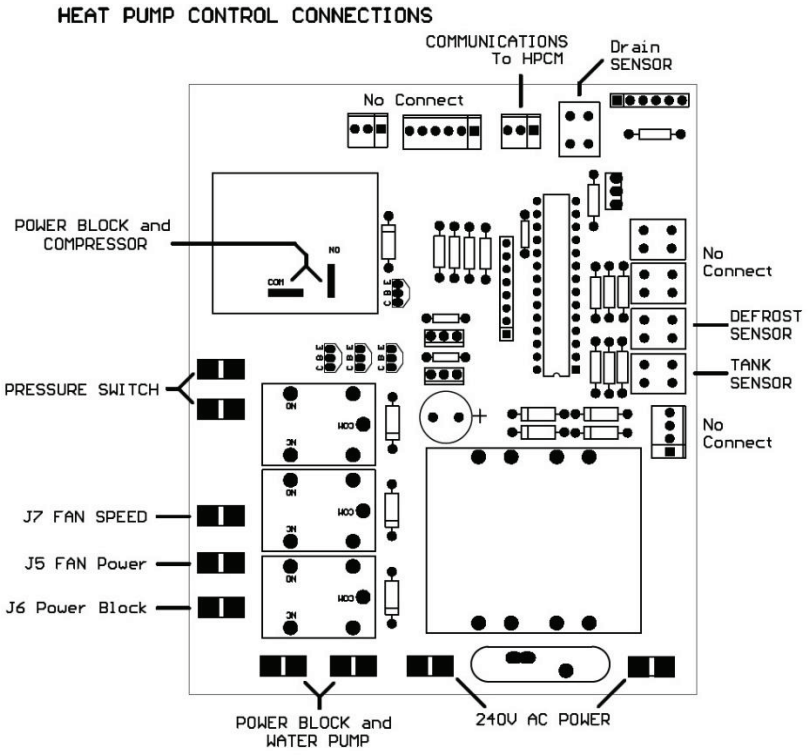
Relief Valve

1. Disconnect power from unit.
2. Shut off incoming water supply.
3. Lift test lever on relief valve to relieve pressure in tank.
4. Disconnect overflow piping.
5. Unscrew relief valve, remove assembly, and replace with new one.
6. Connect overflow piping.
7. Turn on incoming water supply and check for leaks.

WIRING DIAGRAM 1



WIRING DIAGRAM 2



HOW TO OBTAIN SERVICE ASSISTANCE

Noritz America Corporation does not have a service department or personnel to service your heater in the field. A qualified installer or service technician must do all service work. Therefore, if you have any questions about your new water heater concerning service adjustment, repair, routine maintenance, or replacement - **first contact your installer, plumbing contractor, or service agency.**

In the event that the contractor is unable to help, refer to the telephone directory commercial listings for qualified service assistance.

If neither action has solved your problem, please have your plumbing contractor contact us for assistance.

NORITZ AMERICA CORPORATION
11160 Grace Ave.,
Fountain Valley, CA 92708
866-766-7489

When contacting Noritz, the following information should be made available:

1. **The model and serial number of the water heater as listed on the rating plate on the heater.**
2. **Address where water heater is installed.**
3. **Name and address of dealer from whom the heater was purchased and installer's name and address.**
4. **Date of original installation and any service work performed since then.**
5. **Details of the problem as you can best describe.**
6. **List of people who have been contacted regarding the problem.**

WARRANTY

Ten (or Five) Year Limited Tank Replacement Policy

One Year Limited Parts Warranty

Noritz America Corporation, (hereinafter called the company) offers the following Limited Warranty and Tank Replacement Policy to the purchaser/owner of this stone-lined residential water heater.
This Limited Warranty and Tank Replacement Policy is not transferable beyond the original purchaser/owner and is not valid if the tank is removed from initial installation site. The Company reserves the right to require proof of purchase as a condition of this warranty. Excludes any implied warranty of merchantability or fitness for any particular purpose.

LIMITED WARRANTY

DURATION: The warranty is effective for (1) year beginning with the date of original purchase. At the time the claim is filed, If the original purchaser cannot provide an original sales receipt, deed, or equivalent document in the case of a new home purchase, this warranty shall begin from the date of manufacture as indicated by the serial number.
COVERAGE: The warranty covers any component part of the residential electric water heater proven to be defective in workmanship or material. Recovery under the terms of this agreement is subject to prior approval by the company.
COMPANY OBLIGATION: Repair or replacement is the option of the Company and constitutes the fulfillment of **ALL** obligations of the Company hereunder.
LIMITATION: All repairs or replacements will be made F.O.B. the Company. The purchaser must pay for transportation service, labor, installation, administrative fees, or other costs involving the repair or replacement of such component parts.
YOUR ACTION: When you discover a defect, immediately notify the dealer from whom the heater was purchased. If you cannot locate the dealer, contact the Company.

TANK REPLACEMENT POLICY

DURATION: (10) years from the date of original purchase. Exception: (5) years for commercial use, see Limitations below. If the original purchaser cannot provide an original sales receipt, deed, or equivalent document in the case of a new home purchase, this warranty shall begin from the date of manufacture as indicated by the serial number.
COVERAGE: Replacement policy covers only the storage tank for leaks caused by the corrosive effects of the water under normal and proper use. Recovery under the terms of this agreement is subject to prior approval by the company. The tank replacement policy excludes any performance warranty implied or specific of merchantability and fitness for its intended use.
COMPANY OBLIGATION: Repair of the original tank or replacement of the entire heater with a new comparable model is the option of the Company and constitutes the fulfillment of all the obligations of the Company hereunder. In replacing or repairing the residential water heater, the Company reserves the right to make such changes in details of design, construction or material as shall in their judgment constitute an improvement of former practices.

REPLACEMENT: When a replacement is made under the terms of this policy, the replacement unit will have a policy of replacement only for the remaining time under the original policy. The Company reserves the right to require the return of the defective unit at the expense of the purchaser.

LIMITATION: The duration of the tank replacement policy on the tank assembly shall be reduced to a period of five years if (1) the purchaser is a business, partnership, or corporation, or if (2) the water heater is used for a commercial, institutional, industrial, non-residential, or multi-application. All repairs or replacements will be made F.O.B. the Company. The purchaser must pay for transportation, service, labor installation, administrative fees or other costs involving the repair or replacement of such part.

YOUR ACTION: When you discover a defect, immediately notify the dealer from whom the heater was purchased. If you cannot locate the dealer, contact the Company.

EXCLUSIONS AND LIMITATIONS

Limited Warranty and Tank Replacement Policy are valid only if you comply with the following conditions and limitations:

1. The water heater must be correctly installed according to the installation manual provided with the unit and all applicable local and national codes.
2. The unit must be operated within the factory calibrated temperature limits and water pressure not exceeding 150 psi.
3. Any failure or malfunction that results from improper or negligent operation, accident, abuse (including freezing), misuse, unauthorized alteration or improper maintenance is specifically excluded.
4. Any failure or malfunction that results from failure to keep the tank full of potable water, free to circulate at all times, and free of damaging water sediment or scale deposits, is specifically excluded. In areas where adverse water conditions are suspected (i.e., calcium and other minerals), it is essential that the water be tested, and appropriate action be taken to prevent damage to the water heater.
5. This Limited Warranty and Tank Replacement Policy specifically excludes any implied warranty of merchantability or of fitness for any particular purpose, as well as any performance warranty.

IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER.

Some states do not allow the exclusion or limitation of implied warranties or of liability for incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to you.

The following information should be noted At time of installation and retained for future reference.

Model No: _____

Serial No: _____

Date Installed: _____

Dealer's Name: _____

Address: _____

City: _____

State: _____Zip: _____

NORITZ®
TANKLESS WATER HEATERS

Revision 3.4