Draining and Flushing

It is recommended that the tank be drained and flushed every 6 months to remove sediment which may build up during operation. The water heater should be drained if being shut down during freezing temperatures. To drain the tank, perform the following steps:

1. Turn off the power to the water heater at the circuit breaker/fuse box.
2. Open a nearby hot water faucet until the water is no longer hot.
3. Close the cold water inlet valve.
4. Connect a hose to the drain valve and terminate it to an adequate drain or external to the building.
5. Open the water heater drain valve and allow all of the water to drain from the tank. Flush the tank with water as needed to remove sediment.
6. Close the drain valve, refill the tank (open the cold water inlet valve), and restart the heater as directed in this manual.
   IMPORTANT: Do not turn on power to the water heater unless it is completely filled with water. To ensure that the tank is full, open a hot water faucet and allow the water to run until the air is purged and the water flows uninterrupted from the faucet.
   NOTE: The water heater will conduct a system diagnostic prior to operation.

If the water heater is going to be shut down for an extended period, the drain valve should be left open.

Heating Element Replacement

⚠WARNING

Electric Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

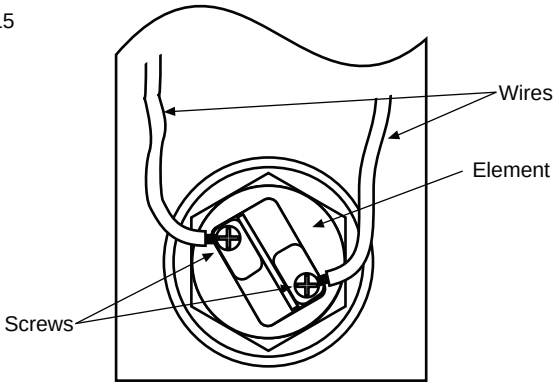
Replacement heating elements must be of the same style and voltage/wattage rating as the ones originally in the water heater. This information can be found on the flange or terminal block of the element or on the water heater data plate.

IMPORTANT: Before replacing any element, confirm that you have the correct replacement element (wattage). This water heater has a 4500 watt upper element and a 4500 watt lower element. DO NOT replace the element(s) with a wattage different than the ones specified for the upper and/or lower element.

IMPORTANT: Using an element greater than 4500 watts will damage the water heater and void the warranty.

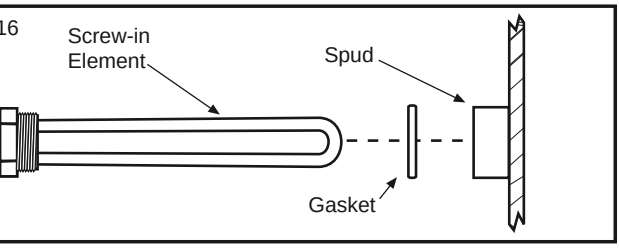
1. Turn off the power to the water heater.
2. Drain the water heater as directed in the “Draining and Flushing” section.
3. Remove the access cover(s), then take off the white fiber dam.
4. Remove the protective plastic cover(s) over the elements from their attachment point.
5. Disconnect the electrical wires from the heating element(s) by loosening the screws (Figure 15). Remove the screw-in element(s) by turning the element(s) counterclockwise with a 1-1/2 inch socket wrench. Remove the existing gasket(s)

Figure 15



6. Clean the area where the gasket(s) fits to the tank and internal threads. If you are replacing the bottom element, remove any accumulated sediment on the bottom of the tank.
7. Make sure the replacement element(s) has the correct voltage and wattage rating by matching it to the rating plate on the water heater. Position the new gasket(s) on the element and insert it into the water heater tank (Figure 16).

Figure 16



   NOTE: Apply a light coat of hand dishwashing soap and water to the gasket. Tighten the element by turning it clockwise until secure.
8. Close the drain valve and open the nearest hot water faucet. Then open the cold water shut off valve and allow the tank to fill completely with water. To purge the lines of any excess air and sediment, keep the hot water faucet open for 3 minutes after a constant flow of water is obtained.
9. Check for leaks around the element(s).
10. Reconnect the electrical wires to the element and securely tighten the screws (Figure 15).
11. Replace the protective plastic cover(s) removed earlier. Make sure the cover(s) are securely engaged on the attachment point(s).
12. Replace the white fiber dam and access cover(s).
13. Although this water heater is equipped with “Dry Fire” protection circuitry, be sure tank is completely filled with water before applying electrical power to the water heater.
14. Reconnect electrical power to the water heater at the circuit breaker/fuse box.
15. Set the desired water temperature and operating mode.
    NOTE: The water heater will conduct a system diagnostic (approximately 8 minutes) prior to operation.

DIAGNOSTIC CODES

DISPLAY SHOWS	INDICATES	CORRECTIVE ACTION
EUC	Upper element is not functioning	1. Turn off power at the circuit breaker/fuse box and check for a loose connection at the element. For access directions see “Heating Element Replacement” section. If error persists proceed to the next step. 2. Replace non-functioning element. See “Heating Element Replacement” section.
ELC	Lower element is not functioning	1. Turn off power at the circuit breaker/fuse box and check for a loose connection at the element. For access directions see “Heating Element Replacement” section. If error persists proceed to the next step. 2. Replace non-functioning element. See “Heating Element Replacement” section.
SF	The air filter is dirty.	1. Turn off power at the circuit breaker/fuse box. 2. Clean the air filter. See “Air Filter Cleaning/Replacement” section.
ECF	The heat pump compressor is starting/stopping frequently.	1. Turn off power at the circuit breaker/fuse box. 2. Clean the air filter. See “Air Filter Cleaning/Replacement” section. 3. If error persist, please contact a qualified person to check the fan wire connection.
E20 or E21	Upper Temperature Sensor is not functioning.	Contact a qualified person to service the unit.
E30 or E31	Lower Temperature Sensor is not functioning.	
E50 or E51	Heat Pump Suction Temperature Sensor is not functioning.	
E10 or E11	Heat Pump Coil Temperature Sensor is not functioning.	
E40 or E41	Heat Pump Discharge Temperature Sensor is not functioning.	
Edr	Not enough water in the tank (tank not full).	Fill completely-Open all hot water taps in home and run until water (uninterupted) flows from all open hot water taps.
EPL	Power supply voltage is too low.	Check the power supply to the unit and make sure it is higher than 204V
EDH	Heat Pump Discharge Temperature is too high.	Contact a qualified technician to service the unit.
EoF (If Accessory Condensate Pump is installed)	Condensate pump failure.	1. Check to see if accessory condensate pump is plugged in and has power. Also check circuit breaker/fuse box and GFCI (if used). If error persists, proceed to the next step. 2. Check condensate pump outlet tube for blockage. If error persists, proceed to the next step. 3. Check control wire connections to condensate pump. If error persists, proceed to the next step. 4. Replace accessory condensate pump. If error persists, contact a qualified technician to service the unit.
ECL	Heat pump suction pressure is too low.	Contact a qualified technician to service the unit
EEE	EEPROM failure	
ECC	Heat pump compressor is not functioning.	
“-”,”--”,”---”	Unit is doing a system diagnostic.	No action is necessary.
ICE	Heat pump is in defrosting cycle.	
HPO	Heat pump is out of operation envelope.	

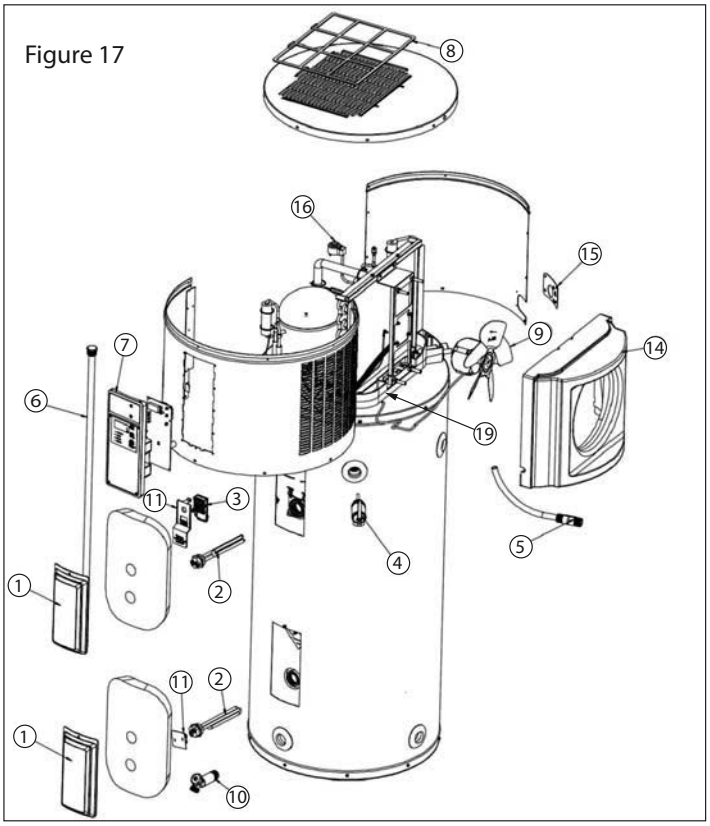
NOTE: The diagnostic codes listed above are the most common. If a diagnostic code not listed above is displayed, contact Residential Technical Assistance referencing the number on the front of this manual.

TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
NO HOT WATER	1. No power to the water heater (No lights on the unit are on). 2. Unit in Vacation mode 3. High temperature limit switch open 4. Hot water usage pattern exceeds the capability of the water heater in current mode 5. Non-functioning upper temperature sensor	1. Check for blown fuse or tripped breaker. Restore power to unit. 2. Press Mode/Enter button and return to desired operating mode. 3. Reset the high temperature limit switch; see “Safety shut-off” section for more information. 4. Change to different mode or modify usage patterns. 5. Contact a qualified person for service.
INSUFFICIENT HOT WATER/ SLOW HOT WATER RECOVERY	1. Temperature set-point too low 2. Air filter dirty 3. Hot water usage pattern exceeds the capability of the water heater in current mode 4. Water connections to unit reversed 5. Heat lost through long run of exposed pipe 6. Hot water leak at faucet or piping 7. Non-functioning heating element 8. Sediment or scale build up in tank	1. Increase set point temperature; see “Adjusting the User Interface Module” section 2. Clean air filter 3. Change to different mode or modify usage patterns (For example if in Efficiency Mode switch to Hybrid Mode) 4. Ensure the cold connection is at the bottom and that the hot connection is at the top 5. Insulate exposed piping 6. Repair hot water leaks 7. Call qualified person for service 8. Drain and flush tank. Water conditioning may be necessary to minimize build up
HIGH OPERATION COSTS	1. Temperature set-point too high 2. Air filter dirty 3. Electric mode selected 4. Water connections to unit reversed 5. Heat lost thru long run of exposed pipe 6. Hot water leak at faucet or piping 7. Sediment or scale build up in tank	1. Decrease set point temperature; see “Adjusting the User Interface Module” 2. Clean air filter 3. Change to Efficiency or Hybrid mode for reduced energy costs 4. Ensure the cold connection is at the bottom and that the hot connection is at the top 5. Insulate exposed piping 6. Repair hot water leaks 7. Drain and flush tank. Water conditioning may be required to minimze build up
DRIP FROM TEMPERATURE & PRESSURE RELIEF VALVE (Warning: Do not plug or cap T&P discharge pipe.)	1. Excessive water pressure 2. Add or service a thermal expansion tank. 3. Non-functioning Temperature & Pressure Relief Valve	1. Check water supply inlet pressure. If higher than 80 PSIG, install a pressure reducing valve (50-60 PSIG is the recommended pressure.) 2. See “Closed System/Thermal Expansion” section 3. Replace the Temperature & PressureRelief Valve
OTHER	1. The water heater does not immediately start 2. The heat pump does not run in Efficiency mode.	1. When first started the water heater takes about 8 minutes to complete a diagnostic routine 2. Contact a qualified person for service

REPAIR PART ILLUSTRATION

Figure 17



REPAIR PARTS LIST

ITEM NO.	PARTS DESCRIPTION
1	Element Access Cover
2	Element (4500 Watts)
3	Energy Cut-Off (ECO) Switch
4	Temperature & Pressure Relief Valve (T&P)
5	Dip Tube (at hot water outlet)
6	Anode
7	Controller
8	Air Filter
9	Fan Assembly
10	Drain Valve
11	Element Terminal Cover
12	Ambient / Coil / Discharge Temperature Sensor*
13	Upper / Lower Tank Temperature Sensor*
14	Fan Shroud
15	Condensate Drain Connection Cover
16	Electronic Expansion Valve Coil
17	Start Capacitor*
18	Relay Kit*
19	Condensate Drain Pan

* NOT SHOWN

REPAIR PARTS

Repair parts may be ordered through your plumber, local distributor, home improvement center, or by calling 1-800-527-1953. When ordering repair parts always give the following information:

1. Model, serial and product number
2. Item number
3. Parts description

500 Tennessee Waltz Parkway, Ashland City, TN 37015
Technical Support: 800-527-1953 • Parts: 800-433-2545 • Fax: 800-644-9306
www.hotwater.com
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