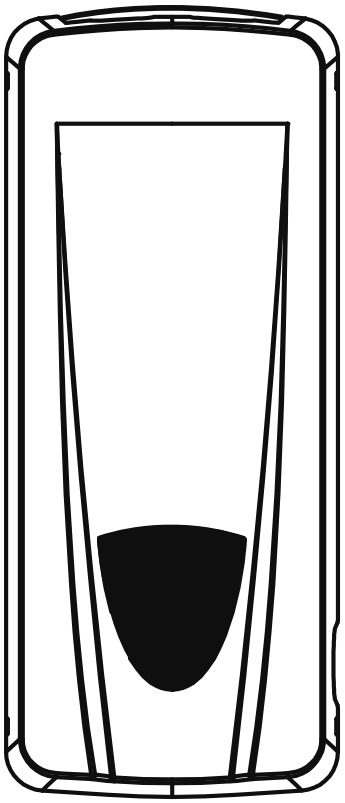
Installation Instructions and Use & Care Guide

Electric Tankless Point-of-Use Water Heater



Read this manual and the labels on the water heater before you install, operate, or service it. If you have difficulty following the directions, or aren't sure you can safely and properly do any of this work yourself, call the Technical Support Hotline which is listed on your warranty. We can help you with installation, operations, troubleshooting, or maintenance. Before you call, write down the model and serial number from the water heater's data plate.

Incorrect installation, operation, or service can damage the water heater, your house and other property, and present risks including fire, scalding, electric shock, and explosion, causing serious injury or death.

Table of Contents .....Page

IMPORTANT SAFETY INFORMATION 2
GENERAL INFORMATION 5
INSTALLATION 9
OPERATION 13
TROUBLESHOOTING 14
SERVICE 17
WIRING DIAGRAMS 21

Keep this manual near the water heater for future reference whenever maintenance, adjustment or service is required.

Retain your original receipt as proof of purchase.

0118
100298160_2000552193 (REV. A)

IMPORTANT SAFETY INFORMATION

Read and follow all safety messages and instructions in this manual.



This is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible property damage, serious injury or death. Do not remove any permanent instructions, labels, or the data plate from either the outside of the water heater or on the inside of the access panels. Keep this manual near the water heater.

DANGER	**DANGER indicates hazardous situation that, if not avoided, will result in death or serious injury.**
WARNING	**WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.**
CAUTION	**CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.**
NOTICE	**NOTICE indicates practices not related to physical injury.**

Important information to keep...

Fill out this section and keep this manual for reference.

Date Purchased:

_____

Model number:

_____

Serial number:

Maintenance performed: Date:

To reduce the risk of property damage, serious injury or death, read and follow the precautions below, all labels on the water heater, and the safety messages and instructions throughout this manual.

General Requirements

- Install and properly ground the unit in accordance with local codes, or in the absence of local codes, with the current edition of the National Electrical Code: ANSI/NFPA 70 in the USA or CSA standard C22.1 Canadian Electrical Code, Part 1 in Canada.
- Follow all applicable plumbing, heating, and air conditioning codes during installation.

RISKS DURING INSTALLATION AND MAINTENANCE

⚠ WARNING

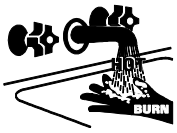


Electric Shock Risk
Contact with the electrical parts inside the water heater can result in severe injury or death from electrical shock:

- **Disconnect power by opening the circuit breaker(s) before installing or servicing.**
- **SOME MODELS ARE CONNECTED TO MORE THAN ONE BRANCH CIRCUIT, AND MORE THAN ONE DISCONNECT SWITCH MAY BE REQUIRED TO DE-ENERGIZE THE EQUIPMENT. ALL BRANCH CIRCUITS MUST BE DISCONNECTED PRIOR TO SERVICE.**
- Use a non-contact circuit tester to confirm that power is off before working on or near any electrical parts.
- **Be sure the cover is reinstalled and secured after servicing to reduce the risk of fire and electric shock.**

RISKS DURING OPERATION

⚠ WARNING



Scalding Risk
This water heater can make water hot enough to cause severe burns instantly, resulting in severe injury or death.

- Feel water before bathing or showering.
- To reduce the risk of scalding, install Thermostatic Mixing Valves (temperature limiting valves) at each point-of-use. These valves automatically mix hot and cold water to limit the temperature at the tap. Mixing valves are available at your local hardware store or from your plumbing supplier. Follow the manufacturer's instructions for installation and adjustment of the valves.
- Point-of-use models are factory set to approximately 105°F.
- Higher temperatures increase the risk of scalding, but even at 120°F, hot water can scald. If you choose a higher temperature, Thermostatic Mixing Valves located at each point-of-use are particularly important to help avoid scalding.

Temperature	Time to Produce a Serious Burn
120°F (49°C)	More than 5 minutes
125°F (52°C)	1½ to 2 minutes
130°F (54°C)	About 30 seconds
135°F (57°C)	About 10 seconds
140°F (60°C)	Less than 5 seconds
145°F (63°C)	Less than 3 seconds
150°F (66°C)	About 1½ seconds
155°F (68°C)	About 1 second

For information about changing the factory temperature setting, refer to "Water Temperature Adjustment" on page 13.

Even if you set the water heater set point to a low setting, higher temperatures may occur in certain circumstances:

- Water temperature will be hotter if someone adjusted the temperature set point to a higher setting.
- If the water supplied to the water heater is pre-heated (for example, by another water heater), the temperature of the water may be higher than the temperature set point.

To reduce the risk of unusually hot water reaching the fixtures in the house, install Thermostatic Mixing Valves at each point-of-use.

If anyone in your home is at particular risk of scalding (for example, the elderly, children, or people with disabilities) or if there is a local code or state law requiring a certain water temperature at the hot water tap, then these precautions are particularly important.

According to a national standard, American Society of Sanitary Engineering (ASSE 1070), and most local plumbing codes, the water heater's temperature set point should not be used as the sole means to regulate water temperature and avoid scalds.

Properly adjusted Thermostatic Mixing Valves installed at each point-of-use allow you to set the water heater's set point to a higher setting without increasing the risk of scalds. A higher temperature can help provide proper water temperatures for appliances such as dishwashers and washing machines.

⚠ WARNING



Fire Risk

To reduce the risk of a fire that could destroy your home and seriously injure or kill people:

- Do not store things that can burn easily such as paper or clothes next to the water heater.
- Be sure the water heater's cover is in place. This cover keeps debris from entering and potentially being ignited, and helps keep any internal fires from spreading.
- Keep the water heater from becoming wet. Immediately shut the water heater off and have it inspected by a qualified person if you find that the wiring or control board have been exposed to water in any way (e.g., leaks from plumbing or leaks from the water heater itself). Such leaks can damage property and could cause a fire risk. If the water heater is subjected to flood conditions or has been submerged in water, the entire water heater must be replaced.
- Make electrical connections properly according to the instructions on page 11. Use a UL listed or CSA approved strain relief. Connect the ground wire to the ground lug. (The ground lug is identified by a green and white ground label inside the water heater.)

Water Contamination Risk

Do not use chemicals that could contaminate the potable water supply. Do not use piping that has been treated with chromates, boiler seal, or other chemicals.

Introduction

- This manual provides information necessary for the installation, operation, and maintenance of the water heater.
- The model description is listed on the rating plate which is attached to the side panel of the water heater.
- Please read all installation instructions completely before installing this product.
- If you have any problems or questions regarding this equipment, consult the manufacturer or its local representative.

This appliance is an on-demand, electric tankless water heater. It is designed to efficiently supply endless hot water for your needs.

It includes on-board self diagnostics. If an issue arises, your water heater will display a flash code on the control board inside the unit. See "Troubleshooting" on page 14.

A built-in alarm is also included. If water leaks inside your electric water heater, an alarm will sound to provide warning. Simply turn off power to the water heater at the circuit breakers, turn off the water supply, then correct the leak.

Component Descriptions

Temperature and Pressure Relief Valve

In most cases, you are not required to install a temperature and pressure relief valve (T&P valve). However, some local codes do require the installation of a T&P Valve. If a T&P valve must be installed, install it on the hot outlet pipe according to the valve manufacturer's instructions and local code.

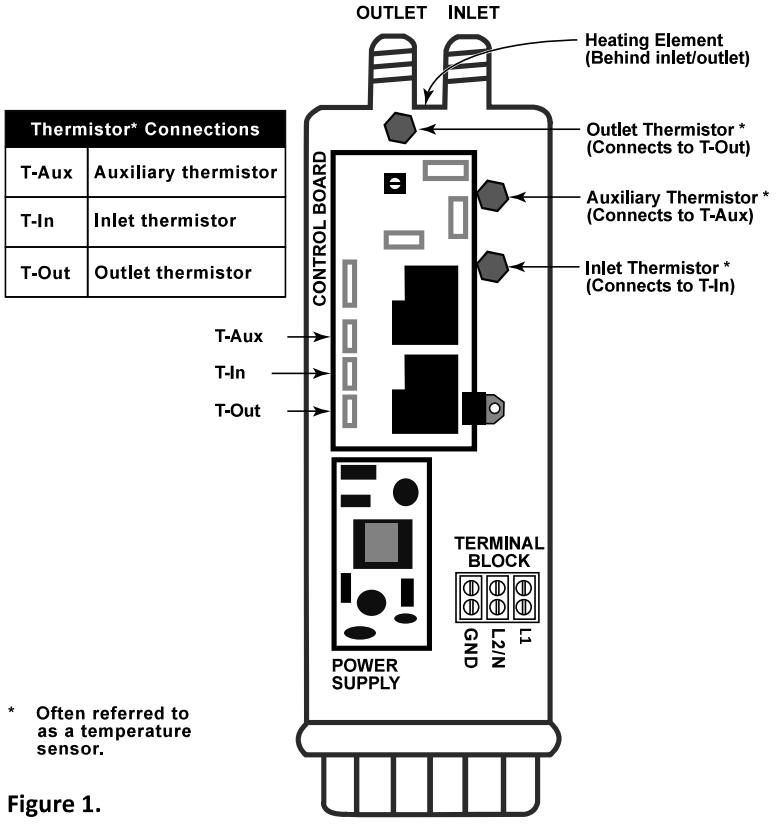
If you install a T&P valve, turn on the water supply to ensure that no water drips from it. Next, operate the valve manually two or three times to purge the trapped air from the top of the heater's chamber, then close the valve. Verify that water has stopped flowing completely before connecting the discharge pipe to the valve.

NOTICE: If a temperature and pressure relief valve is installed, it must be piped by minimum 1 inch pipe to a suitable drain capable of discharging 10 GPM. A splash cover must be included to protect the area of attachment to the wall. The manufacturer will not be responsible for any water damage that may occur.

⚠ **WARNING!** Do not cap or plug the T&P relief valve or discharge pipe.

Component Identification: Single Chamber Models (RPV, CPV)

Thermistor* Connections	
T-Aux	Auxiliary thermistor
T-In	Inlet thermistor
T-Out	Outlet thermistor



* Often referred to as a temperature sensor.

Figure 1.

Continued on the next page...

General Specifications

Models	Single Chamber: RPV/CPV
Wiring & Circuit Breaker Requirements	See “Electrical Requirements” on page 7.
Water Connections	3/4” NPT
Weight lbs. (kg)	8 lbs. (3.6 kg)
Water Heater Dimensions*	H 16-5/8” x W 6-1/2” x D 7-3/16” (H 42.2cm x W 16.5cm x D 18.3 cm)

* Height dimension includes the distance from the bottom of the heater to the highest point of the inlet/outlet.

NOTE:

- Check the rating plate to ensure this product matches your specifications.
- The manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.
- The maximum working pressure is 150 psi. The water supply pressure should not exceed 80 psi. If this occurs, a pressure reducing valve with a bypass should be installed in the cold water inlet line.
- Maximum flow may require water pressure equal to or greater than 40 psi.

Electrical Requirements

- **Follow these steps to determine the electrical requirements for your water heater:**
  - **1.) Find your model number on your water heater's rating plate.**
  - **2.) Locate that model number in one of the tables listed below.**

    For example, if your model is *RPVA-24-K5*, find **P-24-K5* in the appropriate table. Models within each table are sorted by *Voltage* first, then by *Wattage per Element (KW)*.**
- **Follow the requirements listed for your model. (Find your model listed in the table below; the table spans two pages.)**
- **Use copper conductors only.**

Single-Chamber Models

(For potable water heating only. Not for space heating.)

NOTICE: Models sorted by *Voltage*, then by *Wattage per Element*.

Model	Recommended Breaker Size (Amps)	Voltage	Number of Elements	Wattage per Element (KW)	Current per Breaker (Amps)	Recommended Wire Size* (AWG)	Element Type
***P**-24-K5**	25	**120**	1	**2.4**	20.00	10	Single
***P**-30-K5**	30	**120**	1	**3**	25.00	10	Single
***P**-35-K5**	30	**120**	1	**3.5**	29.17	10	Single
***P**-40-X5**	20	**208**	1	**4**	19.23	12	Single
***P**-78-X5**	40	**208**	1	**8**	38.46	8	Single
***P**-35-E5**	20	**240** ‡	1	**3.5**	14.58	12	Single
***P**-45-E5**	20	**240** ‡	1	**4.5**	18.75	12	Single
***P**-55-E5**	25	**240** ‡	1	**5.5**	22.92	10	Single
***P**-70-E5**	30	**240** ‡	1	**7**	29.17	10	Single
***P**-80-E5**	40	**240** ‡	1	**8**	33.33	8	Single
***P**-90-E5**	40	**240** ‡	1	**9**	37.50	8	Single
***P**-120-E5**	60	**240** ‡	1	**12**	50	6 †	Dual

* **All wiring/conductors must be rated for 90°C or greater.**
† **Maximum recommended wire size is #6 cu AWG.**
‡ **This model may used with a 208 VAC supply. Use of 208 VAC may require different breaker and/or wire sizes. Follow all code requirements.**

Continued on the next page...

Single-Chamber Models

(For potable water heating only. Not for space heating.)

NOTICE: Models sorted by *Voltage*, then by *Wattage per Element*.

Model	Recommended Breaker Size (Amps)	Voltage	Number of Elements	Wattage per Element (KW)	Current per Breaker (Amps)	Recommended Wire Size* (AWG)	Element Type
***P**-30-Y5**	15	**277**	1	**3**	10.83	14	Single
***P**-40-Y5**	20	**277**	1	**4**	14.44	12	Single
***P**-60-Y5**	25	**277**	1	**6**	21.66	10	Single
***P**-73-Y5**	30	**277**	1	**7.3**	26.35	10	Single
***P**-90-Y5**	40	**277**	1	**9**	32.49	8	Single

* **All wiring/conductors must be rated for 90°C or greater.**

† **Maximum recommended wire size is #6 cu AWG.**

‡ **This model may used with a 208 VAC supply. Use of 208 VAC may require different breaker and/or wire sizes. Follow all code requirements.**

Getting Started

Clearances

See Figure 2.

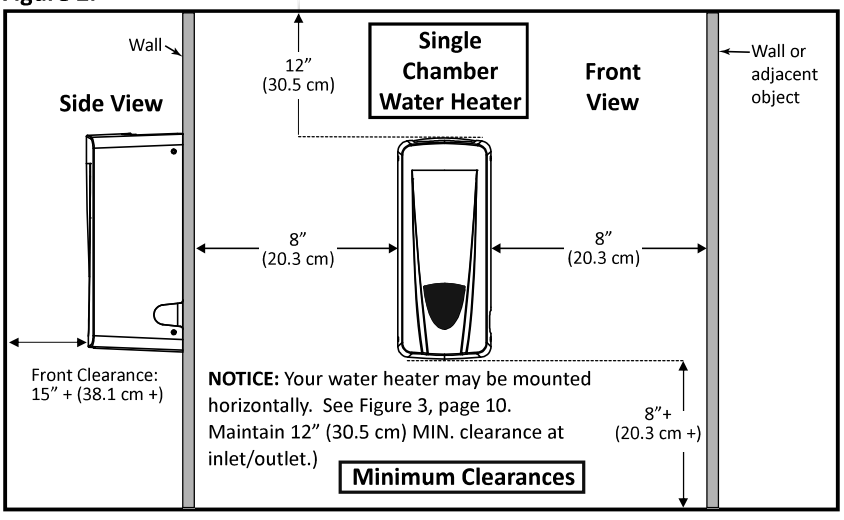
Top Clearance: A minimum of 12 inches (30.5 cm) is required for removal and maintenance of heating elements and to provide access for plumbing connections.

Side Clearance: Allow an 8 inch (20.3 cm) minimum horizontal space for the heater. This horizontal clearance will allow for the removal of protective cover screws and provide access to electrical wires that will enter the heater from the side.

Bottom Clearance: At a minimum, maintain 8 inches (20.3 cm) bottom clearance. **Do not store any items underneath the water heater.**

Front Clearance: Maintain a minimum clearance of 8 inches (20.3 cm). In the absence of a door or removable access panel in front of the heater, allow a minimum of 15 inches (38.1 cm) front clearance. This will allow for cover removal and ease of service. See Figure 2.

Figure 2.



Code Compliance

- Install and properly ground the unit in accordance with local codes, or in the absence of local codes, with the current edition of the National Electrical Code: ANSI/NFPA 70 in the USA or CSA standard C22.1 Canadian Electrical Code, Part 1 in Canada.
- Follow all other applicable plumbing, heating, and air conditioning codes during installation.

1 Choose a Location

- Your water heater is designed to be installed indoors only.
- Locate your water heater in a clean, dry area that is as close to the point of use as possible. Do not install it in a bath enclosure or shower stall.
- Your water heater and water lines must be protected from freezing. Do not install your water heater where it may be subjected to freezing temperatures.
- Avoid locations that are prone to dampness, high humidity, moisture, or dust. Such locations include crawl space under a house or building, in the garage (in regions prone to high humidity) and in the attic (unless the attic has been converted to a living space).
- Locate your water heater where it will not be accessible to children. ⚠ **WARNING!** This water heater can make water hot enough to cause severe burns instantly, resulting in severe injury or death.
- Be sure that your water heater is accessible and that minimum clearances are observed. Do not store any items underneath the water heater, and do not store flammable liquids or other flammable materials near the water heater. This is important for safety and future service. See "Clearances."
- Do not install your water heater underneath condensate lines.
- A drain pan, or other means of protection against water damage, is recommended to be installed under the water heater in case of leaks. In addition, you may install an active water leak detector with a shutoff valve which can turn off the water supply in the event of a leak. The manufacturer is not responsible for damage due to water leaks.

Continued on the next page...

2 Mount Your Water Heater

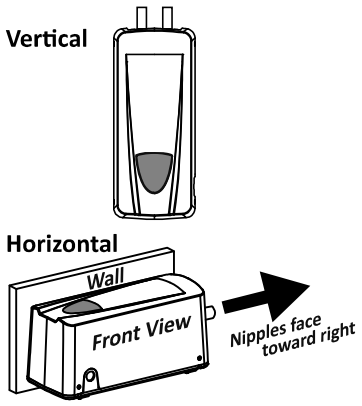
1. Unpack the heater from the shipping carton, but do not cut the shipping carton with a sharp instrument.
2. Stand the unit upright and remove the plastic wrap.
3. Remove the screws that secure the protective cover.
4. Remove the cover.
5. Locate the four mounting holes in the back plate.
6. Determine the mounting location on the wall, then verify your clearances. (See "Clearances" on page 9.)
7. Position the unit against the wall. Make sure that the unit is level.

   NOTICE: Point-of-use (POU) models may be oriented horizontally as described in Figure 3. To mount a POU water heater horizontally, follow the instructions on page 23.

8. Secure the water heater to the wall or other suitable structure with screws, bolts, or anchors as appropriate. Ensure that the mounting surface and fasteners will support the weight of the water heater. (You will reinstall the water heater's protective cover later.)

Figure 3.

Acceptable orientations for mounting a point-of-use (POU) water heater:



NOTICE:

Use mounting brackets (provided) for horizontal mounting. Nipples must point toward the right.

3 Connect the Water Lines

NOTICE:

- **DO NOT** apply heat to the water lines, nipples, or any fitting on the water heater. Heat from soldering may damage the heat exchanger.
- Thread sealing tape (plumber's tape) is the only sealer that may be used on the threads of the inlet and outlet fittings. **DO NOT** use pipe dope or PVC/CPVC primer and glue on the threads of the inlet and outlet fittings. Exposure to these compounds will damage the nipples, causing leaks.
- Flexible water supply hoses are recommended for your installation.
- Well water must be treated.
- Only potable water can be used with this water heater. Do not introduce pool or spa water, or any chemically treated water into the water heater.
- Do not connect to a salt-regenerated water softener or a water supply of salt water.
- The warranty will not cover damage caused by water quality.
- Recommended operating pressure: 50 to 60 psi. Higher pressures require a pressure reducing valve.
- Installations above the ceiling or in an attic require a bleed air separator.
- A properly-sized arrestor should be installed where water hammer exists.

NOTICE: Do not supply electrical power to your water heater yet. If you do so at this point, you will damage your heating element(s).

1. Make sure that the water supply is turned off.
2. Connect the hot water line to the hot outlet of the water heater. (Figure 4.)
3. Connect the cold water line to the cold inlet of the water heater. (Figure 4.)
4. Open the valve on the main water line to supply water to the heater.
5. Open several hot water fixtures and allow water to run through the water heater for several minutes to purge air from the water lines.
6. Check for water leaks. Correct any that are found.
7. If you installed a T&P valve to meet local code requirements,

operate it manually several times to allow any trapped air to escape.

NOTICE: Failure to purge air from the water lines can leave air pockets, causing damage to the heating elements when power is applied.

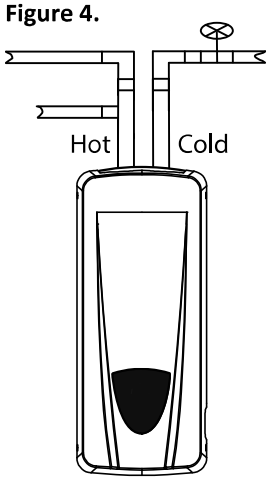
4 Install Electrical Service

⚠ WARNING

Failure to observe these warnings could lead to an improper installation, and the risks include fire, electrical shock, and/or death:

- **Installation must be performed by a qualified installer. The installer (licensed professional) is responsible for the correct installation of the water heater and for compliance with all national, state / provincial, and local codes.**
- **Refer to the electrical requirements and electrical schematic during installation and service.**

Figure 4.



- **Turn off power service at the main circuit breaker(s) prior to installation. Working on an energized circuit can result in severe injury or death from electrical shock.**
- **Some models must be connected to more than one branch circuit, and more than one disconnect switch may be required to de-energize the equipment. All branch circuits must be disconnected during installation or service.**
- **Install and properly ground the unit in accordance with local codes, or in the absence of local codes, with the current edition of the National Electrical Code: ANSI/NFPA 70 in the USA or CSA standard C22.1 Canadian Electrical Code, Part 1 in Canada.**

NOTICE:
When using stranded wire, make sure that all strands are secure inside the terminal block. A loose strand can cause a short circuit and damage the circuit board.

1. Be sure the electrical power to the water heater is turned OFF at the circuit breaker panel (or remove the circuit's fuses).
2. Using a non-contact circuit tester, check the wiring to make certain the power is OFF.
3. Check the water heater's rating plate and ensure that the electrical service's voltage, wiring size (ampacity) and circuit breaker rating/type are correct for this water heater.

   NOTICE: The electrical requirements for your model are listed in "Electrical Requirements" which starts on page 7.
4. Connect the electrical service as described in "Electrical Requirements" (starting on page 7).

   There is a wiring diagram label on the inside of your water heater's protective cover. See also "Wiring Diagrams" on page 21 of this manual.
5. Do the following:
   - □ Check all electrical connections to make sure that they are correct and secure.
   - □ Make sure that the supply voltage, wiring size (ampacity), circuit breaker rating and type are correct. (Refer to "Electrical Requirements" which starts on page 7).
   - □ Label all breakers/connections to the water heater.
6. Ensure that all air has been purged from the water lines by opening several hot water fixtures near the water heater. Run water through the water heater until all air is purged from the lines.
7. Reinstall the water heater's cover.

   ⚠ WARNING! Be sure the cover is secured to reduce the risk of fire and electric shock.
8. Turn on power to the water heater.

Continued on the next page...

5 Test Water Heater Operation

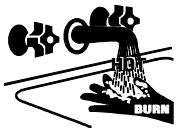
1. At nearby hot water faucets, turn water on medium-low.
   - □ You should hear a “click” as the heater’s relays engage.
   - □ You may hear a hissing or crackling noise from the heat exchanger after the unit begins to heat water. This is normal.
2. Check water at the fixtures to make sure that the water is being heated.

NOTICE:

Your water heater includes on-board self diagnostics. These flash codes are displayed on the water heater’s control board inside the unit. For more information, see “Troubleshooting” on page 14.

Water Temperature Adjustment

⚠ WARNING



Scalding Risk
This water heater can make water hot enough to cause severe burns instantly, resulting in severe injury or death. Before attempting to adjust the temperature set point, read "RISKS DURING OPERATION" on page 3. If the instructions are not clear, contact a qualified person.

To adjust the temperature setting, turn the temperature adjustment knob as described below. This knob can be found at the top of the circuit board next to the plumbing connections. (See Figure 5.)

The factory setting is approximately 105°F (+/-1°F).

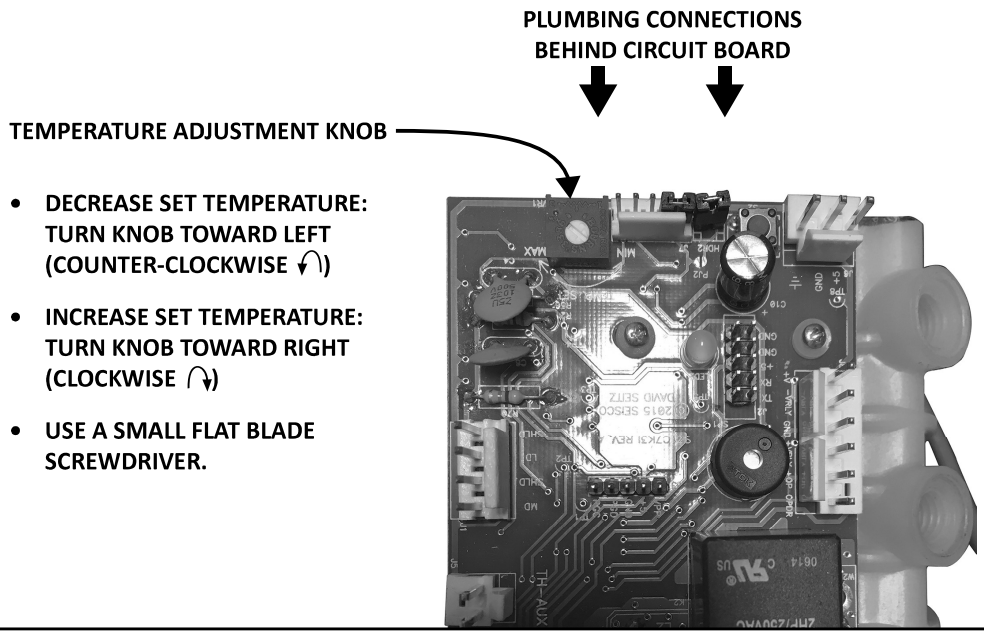
Temperature Adjustment

- To decrease the set temperature, turn the knob to the left (counter clockwise).
- To increase the set temperature, turn the knob to the right (clockwise).
- Use a small flat blade screwdriver to turn the knob.

The water temperature set point can be adjusted within a range of 90°F (32C) and 140°F (60 °C).

Figure 5.

TEMPERATURE ADJUSTMENT KNOB ON INTERNAL CIRCUIT BOARD



TROUBLESHOOTING

Error Codes

⚠ WARNING



Electric Shock Risk

Contact with the electrical parts inside the water heater can result in severe injury or death from electrical shock:

- **Disconnect power by opening the circuit breaker(s) or removing the fuses before installing or servicing.**
- **Some models are connected to more than one branch circuit, and more than one disconnect switch may be required to de-energize the equipment. All branch circuits must be disconnected prior to service.**

The LED on the circuit board will display a series of **RED** flashes, and each series of flashes represents one digit in the code. After each sequence, the LED will flash **GREEN**. See the examples below. (Components are identified in Figure 6, page 15.)

NOTICE:

- There may be multiple codes; verify all sequences.
- If you want to ***hear*** the flash code, press the mode button for two seconds. This will turn the audible beeper on. See Figure 6, page 15.

Examples from the Table Below:

Flash Code Sequence: **12/14** (Temperature Sensor Failure). The 12/14 code would be displayed like this:

1 **2** **/** **1** **4**

1 red flash—pause—2 red flashes—pause—green flash—one red flash—pause—four red flashes—pause—green flash

Flash Code Sequence: **22** (Temperature Sensor Failure). The 22 code would be displayed like this:

2 **2**

2 red flashes—pause—two red flashes—pause—green flash

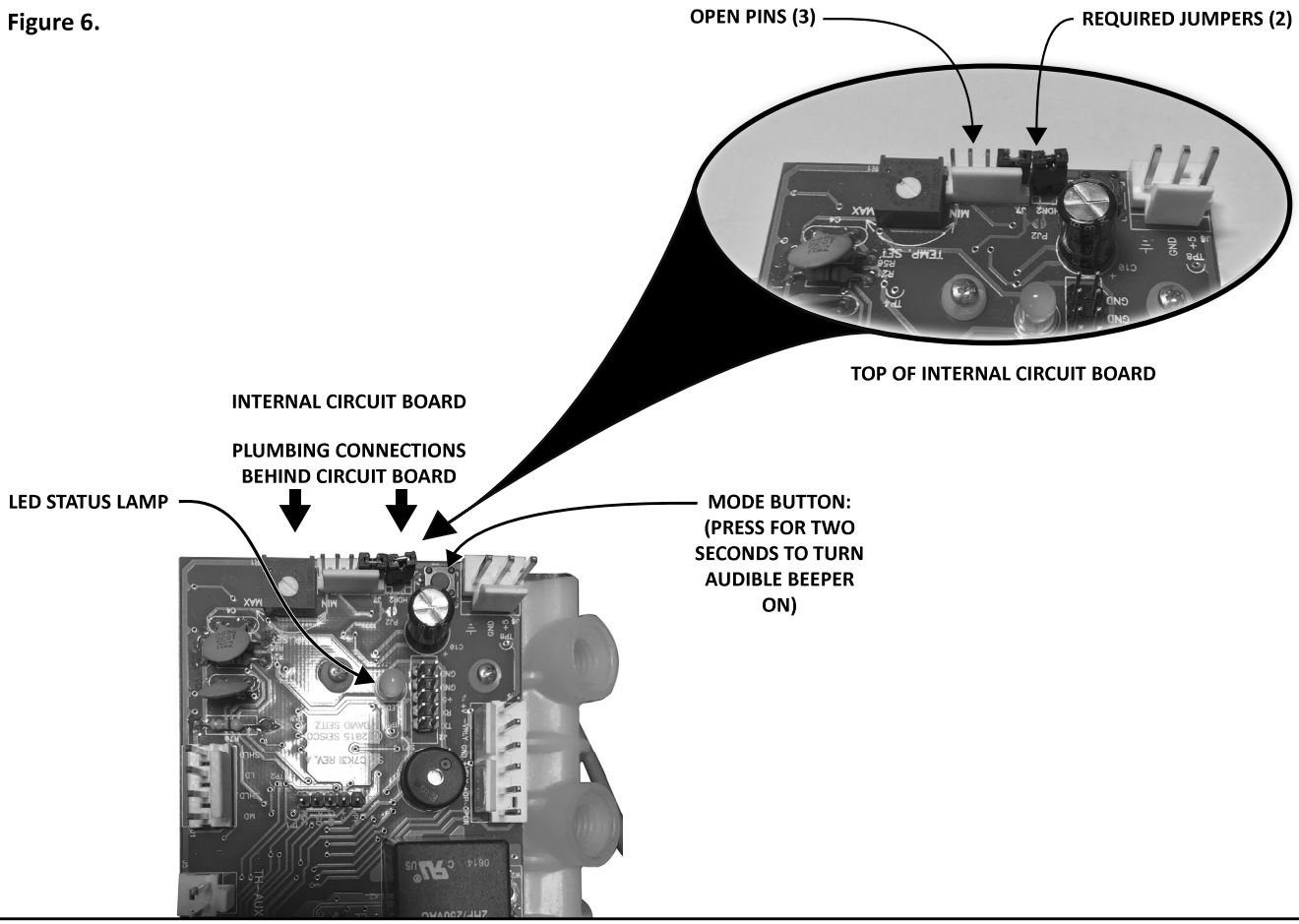
After you identify the code, locate its description and solution in the table.

Flash Code Sequence	Description	Action / Solution
12/14 **22** **13/16**	Temperature sensor failure	**Turn off all power to the water heater.** Open a nearby hot water fixture and allow water to run through the heater for about 5 minutes. Check the resistance of all temperature sensors (thermistors), then compare the readings. The failed sensor will be the one that has a resistance reading (ohms) that is at least 10% to 15% different from all of the others.
14/16	Temperature sensor shorted	Check wiring. Replace as necessary.
12/13	Temperature sensor open	Check wiring. Replace as necessary.
11	Disable switch open	Install the missing jumper(s) on the circuit board as shown in Figure 6, page 15. Both jumpers must be in place.
17	High temperature shutdown (*This code will clear when the condition is corrected.)*	This code is triggered when the temperature of the water has exceeded the set point by more than 8°F. **1.** Turn off all power to the water heater. Open a nearby hot water fixture and allow water to run through the heater for about 5 minutes. Check the resistance of the temperature sensors (thermistors). If one of the thermistors has a resistance that is much higher than the others, replace that thermistor. **2.** If the issue persists, the circuit board (control board) may need to be replaced. Contact Technical Support.

Continued on the next page...

Flash Code Sequence	Description	Action / Solution
18	Moisture detected	Shut off all power to the water heater. Check for water leaks. Correct any leaks found. Dry the control board completely before restoring power.
21	Level Detect	Ensure that the heater is filled with water and that there is no air trapped inside. Check the operation of back flow preventer or check valve. If the heater is filled and there are no leaks, connect level detect spades on the circuit board to ground. If the code is accompanied by a clicking sound that is present when water is running, check the elements.
23	No temperature rise (water is not being heated sufficiently)	Check elements. Check temperature sensors. Check wiring and circuit breakers. Verify proper heater sizing. If necessary, reduce the unit temperature from maximum setting and reduce flow rate with shut-off valve.
22, 24, 25, 31, 32, 34, 35	Data reading error	Reset the water heater. Turn off all circuit breakers to the heater for approx. 30 seconds. Turn on breakers. The LED should flash all green and the heater should produce hot water. If the code persists, reset the breakers again. If that does not work, test the temperature sensors. Replace the temperature sensors and/or circuit board as needed.

Figure 6.



General Troubleshooting

The following chart provides an overview of basic troubleshooting. Use it in conjunction with the Error Codes chart on page 14.

Symptom	Possible Cause	Corrective Action
Unit "clicks" periodically when no hot water is being used.	Cold water used causes reverse flow through water heater.	Install check valve on outlet.
	Unit has been in standby for an extended period with no hot water use.	NORMAL OPERATION. Unit will activate as needed to maintain a reference temperature to ensure quick start-up on next use.
Hot water supply is warm, but it does not get hot.	Temperature set point too low.	Increase the temperature set point.
	Flow is too high.*	Reduce flow.
	One of the main circuit breakers may be tripped. (For units with more than one branch circuit only.)	Check power panel. Reset breaker if tripped.
	Failed heating element or temperature sensor.	Replace element or sensor (thermistor).
Hot water supply is cold.	Flow is too high.*	Reduce flow.
	High temperature limit switch may be tripped.	Verify if limit switch is tripped. Reset if tripped.
	The circuit breaker(s) may be tripped.	Check power panel. Reset breaker if tripped.
	Failed heating element or temperature sensor.	Replace element or sensor (thermistor).
	Control board failure.	Contact Technical Support.
Hot water temperature fluctuates.	Flow is too high*	Reduce flow.
	One of the main circuit breakers may be tripped. (For units with more than one branch circuit only.)	Check power panel. Reset breaker if tripped.
	Failed heating element or temperature sensor.	Replace element or sensor (thermistor).

* If your water heater runs out of hot water too quickly, it may be too small for your needs. Consider replacing it with a larger model or adding additional heater(s) to meet flow demand. Please refer to the product specification sheet for proper flow rates based on incoming water temperature.



⚠ WARNING!
Electric Shock Risk
Servicing should be performed on this water heater only after it has been disconnected from the power supply circuit(s). Failure to do so can result in severe injury or death from electrical shock:

- Disconnect power by opening the circuit breaker or removing the fuses before installing or servicing.
- Some models are connected to more than one branch circuit, and more than one disconnect switch may be required to de-energize the equipment.
- All branch circuits must be disconnected prior to service.
- Use a non-contact circuit tester to confirm that power is off before working on or near any electrical parts.
- Replace the water heater's cover after servicing to reduce the risk of fire and electric shock.

NOTICE:
A built-in alarm is also included. If water leaks inside your electric water heater, an alarm will sound to provide warning. Simply turn off power to the water heater at the circuit breakers, turn off the water supply, then correct the leak.

Element Removal and Replacement

⚠ WARNING!

- **Working on an energized circuit can result in severe injury or death from electrical shock. Turn power off.**
- **Some models are connected to more than one branch circuit. Disconnect all branch circuits before servicing unit.**
- **Check wires with a non-contact circuit tester to make sure power is off. When you are finished, be sure all covers are secured to reduce the risk of fire and electric shock.**



Figure 7: Non-Contact circuit tester

If you are not comfortable replacing a heating element yourself, have this work done by a qualified person. To replace the heating element, you'll need the following tools and supplies:

- Phillips head screwdriver
- Adjustable wrench
- Pipe wrench or slip joint pliers
- Bucket
- Rag
- Hair dryer or compressed air

1 Check your water heater's data plate for the correct wattage and voltage. Verify that your new heating element has the correct wattage rating and is sized correctly for your water heater.



Figure 8: Heating elements

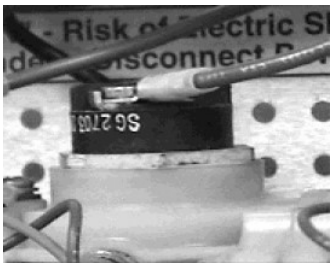


Figure 9: Installed heating element

2 Confirm that power is off by checking the wires with a non-contact circuit tester.

3 Open a nearby **hot** water faucet and run the water until it is cool.

⚠ WARNING! Be sure the water runs cool to reduce the risk of scalding.

4 **Close the inlet valve to the water heater**, but leave the **hot** water faucet open to relieve pressure.

Continued...

5 Remove the heater's front cover, then place a bucket under the water heater to catch any water that spills.

6 **Remove the heater's top plate:**

A.) Remove both screws which secure the top plate to the water heater. (See Figure 10.)

B.) Lift and remove the top plate.

Figure 10.

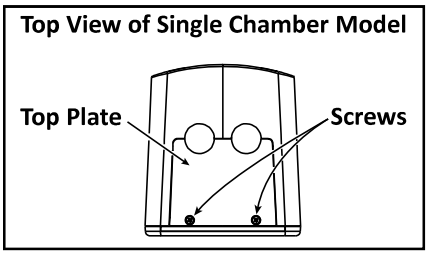
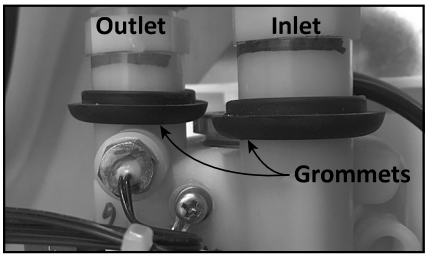


Figure 11.
Single chamber models:
Grommet Orientation



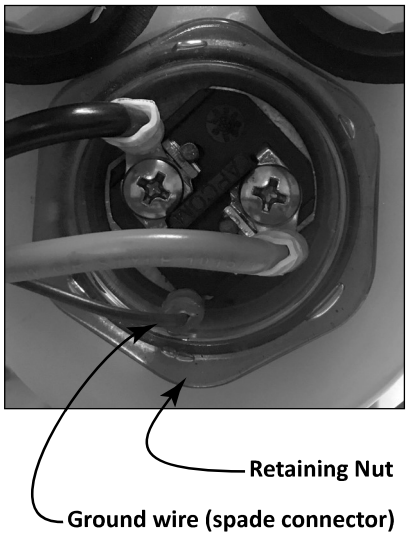
7 **Remove the old element:**

A.) Remove the grommets from the inlet and outlet (Figure 11).

B.) Remove the screws that secure the red and black wires to the top of the heating element. (Use the Phillips screwdriver. Save both screws for later use.)

C.) Disconnect the green ground wire from the heating element. (See Figure 12.) It is secured with a spade connector. Pull it straight up from the element to slide it off the terminal.

Figure 12.
Element in single chamber heater

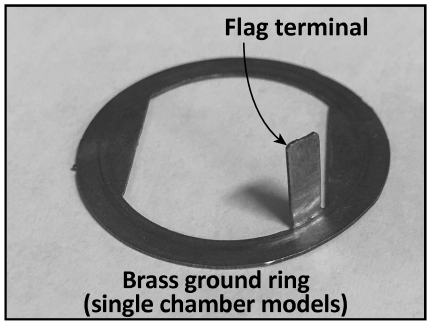


D.) Unscrew and remove the retaining nut that secures the heating element (See Figure 12). Use an adjustable wrench. You may also purchase an element replacement kit which includes a thin-walled socket. Call the Technical Support number listed on your warranty for ordering information.
During the next step, protect the circuit board from dripping water!

E.) Lift the element out of the water heater. **NOTICE:** As you lift the element out of the opening, wrap it with a rag to keep water from dripping onto the circuit board.

F.) Remove the brass ground ring from the top of the element. (See Figure 13: Brass ring and flag terminal.) Set it aside for later use.

Figure 13: Brass ring and flag terminal



8 **Install the new element:**

NOTICE: Ensure that there is an O-ring installed above the threads of the element. (See Figure 16, page 19.)

A.) Insert the new element into its water heater opening.

B.) Place the brass ground ring on top of the element. Make sure that the flag terminal is positioned so that the ground wire can be reconnected easily (Figure 14.)

C.) Secure the element by installing and tightening the retaining nut (Figure 12). **Do not overtighten.**

D.) Secure the red and black wires onto the top of the heating element. Use the two screws that you removed earlier.

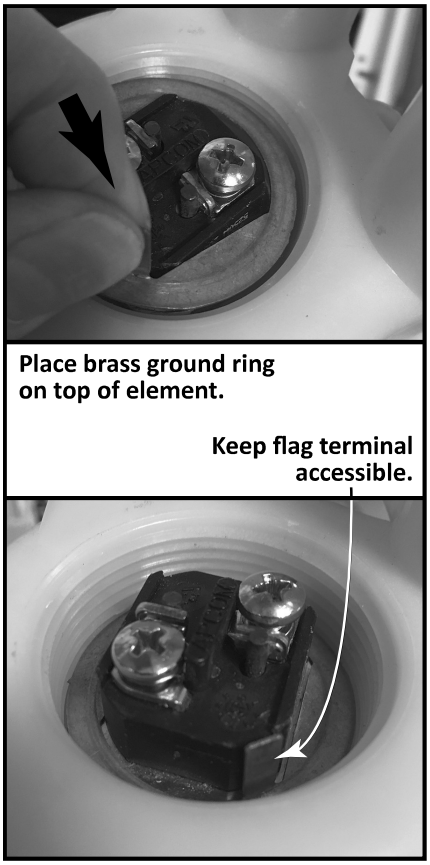
E.) Reconnect the green ground wire to the element's ground terminal (flag terminal).

9 **Reassemble the water heater:**

A.) Reinstall both grommets as shown in Figure 15. Orient them as shown, and ensure that their flat surfaces press firmly against the top plate when you reinstall it.

SERVICE

Figure 14.
Brass ring on single chamber models.



B.) Reinstall the top plate and secure it with the two screws that you removed earlier. (See Figure 10, page 18.)

Figure 15.
Grommet Orientation

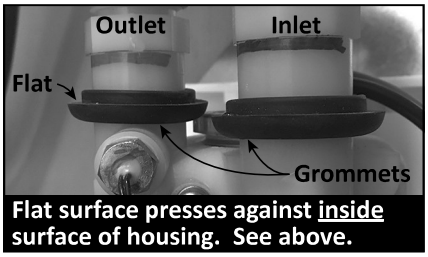
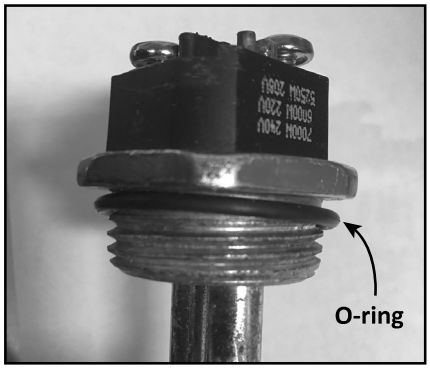


Figure 16.



10 Turn on the **WATER** supply to the heater.

11 Turn on a nearby hot water faucet to fill the heater with water. Continue until all air has been expelled from the heater and pipes. If a T&P valve is installed, operate it manually several times to allow any trapped air to escape.

12 Check for water leaks. Correct any leaks that are found.

NOTICE: Do not restore power until the circuit board and components are completely dry. If water has dripped anywhere inside the heater (during element replacement or leak check), dry it with a hair dryer or compressed air. **Be sure to dry behind the circuit board.**

13 **If there are no water leaks, complete these steps:**

A.) Reinstall the water heater's cover. **⚠ WARNING! Be sure the cover is reinstalled and secured to reduce the risk of fire and electric shock.**

B.) Restore power to the water heater.

C.) Run hot water from a faucet to make sure that the water heater is working as expected.

Thermistor (Temperature Sensor) Replacement

⚠ WARNING!

- **Working on an energized circuit can result in severe injury or death from electrical shock. Turn power off.**
- **Some models are connected to more than one branch circuit. Disconnect all branch circuits before servicing unit.**
- **Check wires with a non-contact circuit tester to make sure power is off. When you are finished, be sure all covers are secured to reduce the risk of fire and electric shock.**

If you are not comfortable replacing a thermistor yourself, have this work done by a qualified person. To replace a thermistor, you'll need the following tools/supplies:

- Phillips head screwdriver
- 1/2-inch open end wrench
- Bucket (for draining the heater)
- Siphon Transfer Pump
- Heavy towels

1 Turn off power to the water heater. Allow the water heater's element to cool.

2 Close the inlet water valve to the water heater, but leave the hot water faucet open to relieve pressure.

NOTICE! During the next steps, protect the circuit board from dripping water!

3 Cover the top of the water heater with heavy towels (to prevent water from dripping through the openings). After the towels are in place,

SERVICE

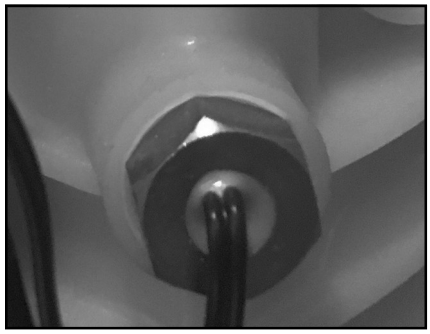
disconnect the inlet and outlet water lines from the water heater.

4 Remove the heating element as described in "Element Removal and Replacement" on page 17.

5 Insert the pump hose into the water heater's chamber and pump all of the water out.

6 Locate the thermistor to be replaced (Figure 18). Most likely, it was identified during the troubleshooting process which starts on page 14.

Figure 17.
Thermistor



7 Unplug the thermistor's wires from the control board.

8 Remove the thermistor by turning it counter-clockwise with a 1/2-inch open end wrench.

9 Install the new thermistor in the opening by turning it clockwise with a 1/2-inch open end wrench.

- □ Make sure that the O-ring is in place before you install the thermistor.
- □ Tighten the thermistor hand tight, then carefully tighten it with a wrench until it is seated. Do not overtighten.

10 Plug the thermistor's wires into the control board. The proper location is shown in Figure 18.

11 Reinstall the heating element as described on page 18.

12 Reinstall the inlet and outlet water lines to the water heater.

13 Return the water heater to service. To do so, follow the instructions in "Returning the Water Heater to Service."

Returning the Water Heater to Service

1 After you have serviced the water heater and are ready to return it to service, turn on the **WATER** supply to the heater.

2 Turn on a nearby hot water faucet to fill the heater with water. Continue until all air has been expelled from the heater and pipes. If a T&P valve is installed, operate it manually several times to allow any trapped air to escape.

3 Check for water leaks. Correct any leaks that are found.

NOTICE: Do not restore power until the circuit board and components are completely dry.
If water has dripped anywhere inside the heater, dry it with a hair dryer or compressed air. **Be sure to dry behind the circuit board.**

4 If there are no water leaks, complete these steps:

A.) Reinstall the water heater's grommets and cover. (See pages 18 and 19.)
⚠ WARNING! Be sure the cover is reinstalled and secured to reduce the risk of fire and electric shock.

B.) Restore power to the water heater.

Replacement Parts

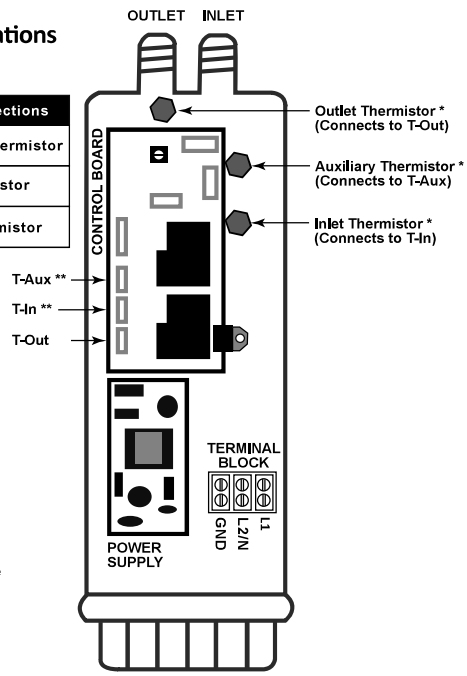
The following parts may be ordered through your retailer or local plumbing wholesaler:

- Heating Elements
- Thermistors (temperature sensors)

When ordering replacement parts, please be ready to provide your water heater model and serial number.

Figure 18.
Thermistor locations

Thermistor* Connections	
T-Aux	Auxiliary thermistor
T-In	Inlet thermistor
T-Out	Outlet thermistor



* Often referred to as a temperature sensor.

** If the inlet thermistor fails, there is no need to replace it. Simply switch the T-Aux and T-In plugs on the control board.

SERVICE

WIRING DIAGRAMS

The wiring diagrams for various models are listed in this section. Locate the one that corresponds with your model.

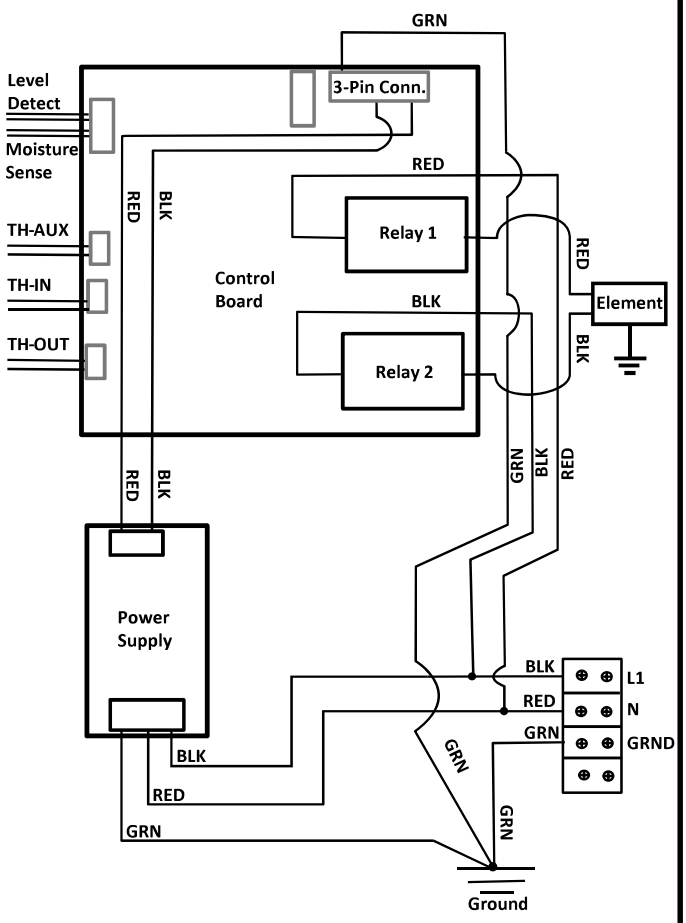
NOTICE: The correct wiring diagram for your model can be found on the inside of your water heater's cover.

The wiring diagrams are listed as follows:

- 1 Chamber, 1 Element, 120 VAC (see below).
- 1 Chamber, 1 Element, 240/208 VAC (see below).
- 1 Chamber, 1 Dual Element, 240/208 VAC, p. 22.
- 1 Chamber, 1 Element, 277 VAC, p. 22.

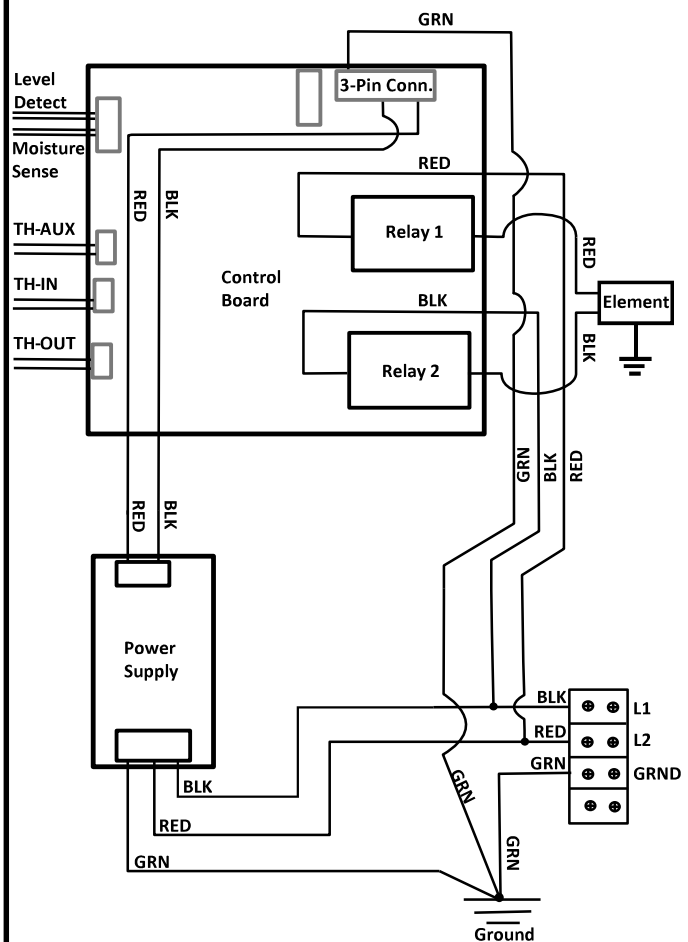
See also "Electrical Requirements" on page 7.

1 Chamber, 1 Element, 120 VAC



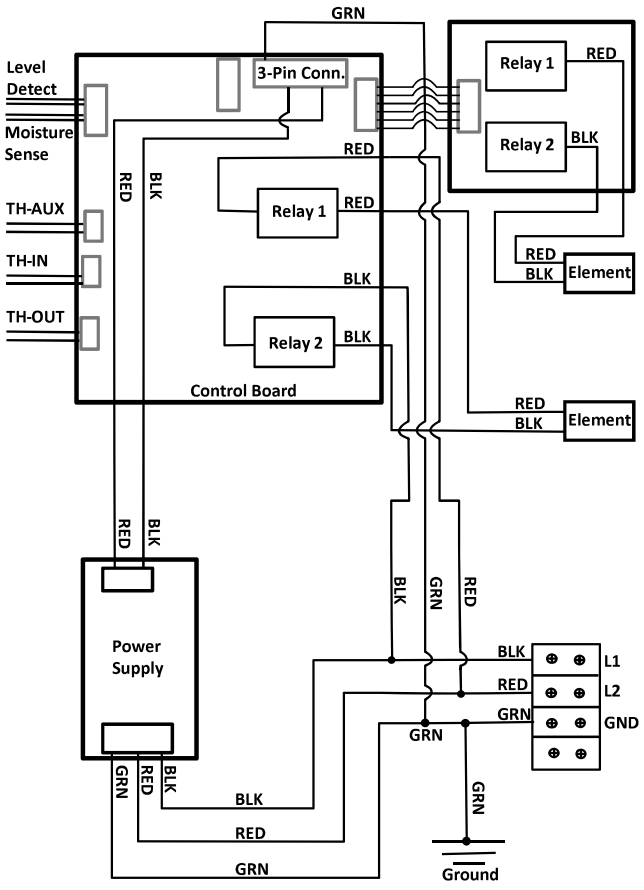
USE COPPER CONDUCTORS ONLY WHEN CONNECTING TO ELECTRICAL SERVICE.

1 Chamber, 1 Element, 240/208 VAC



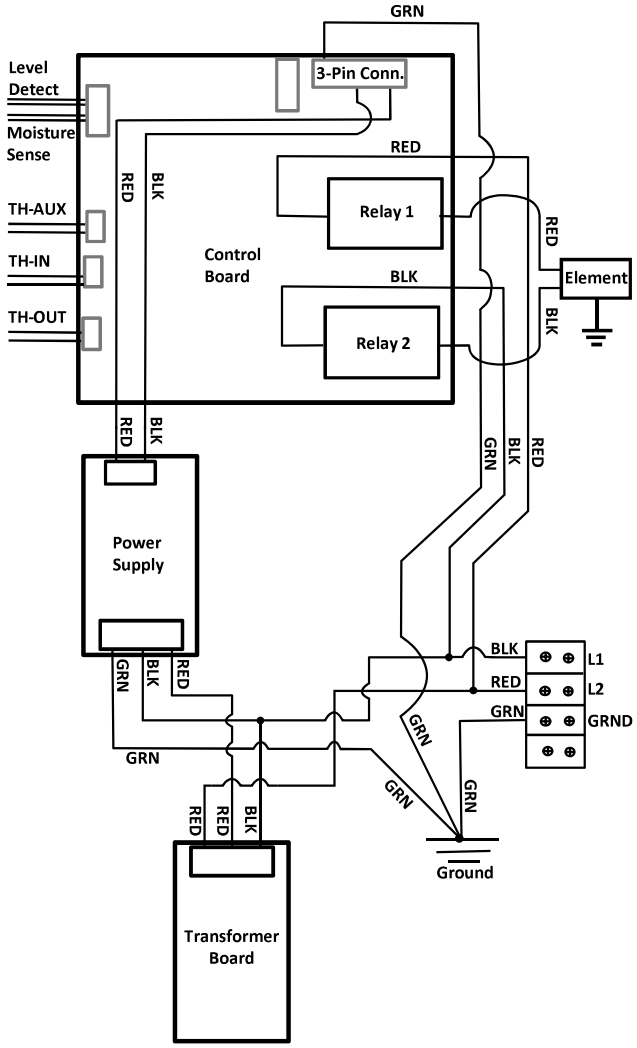
USE COPPER CONDUCTORS ONLY WHEN CONNECTING TO ELECTRICAL SERVICE.

1 Chamber, 1 Dual Element, 240/208 VAC



USE COPPER CONDUCTORS ONLY WHEN CONNECTING TO ELECTRICAL SERVICE.

1 Chamber, 1 Element, 277 VAC



USE COPPER CONDUCTORS ONLY WHEN CONNECTING TO ELECTRICAL SERVICE.

DIAGRAMS

APPENDIX: HORIZONTAL MOUNTING OF POU MODELS

As stated on page 10, point-of-use (POU) models may be mounted horizontally. Note the following:

- If a POU model is to be mounted horizontally, it must be mounted with brackets (provided). The nipples must face toward the right as shown in Figure 19.
- This procedure is a supplement to "Mount Your Water Heater," page 10.

NOTICE: Read "Minimum Clearances" (Figure 2, page 9) before you start.

1 Complete the installation steps on pages 9 and 10. Stop when you have completed step 6 on page 10.

2 Secure both brackets to the wall. (See Figure 20.) Use screws, bolts, or anchors as appropriate. NOTE: To drill pilot holes for the #10 screws that are provided, use a 7/64" drill bit.

Ensure that the mounting surface and fasteners will support the weight of the water heater.

Continued on the next page.

Figure 19.
Horizontally-mounted POU water heater:

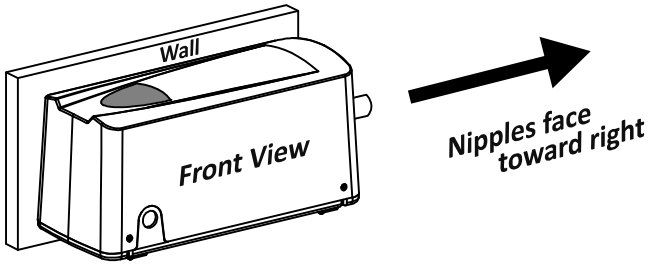


Figure 20.

Mount the brackets to the surface as shown.

See Figure 21 for fastener locations.

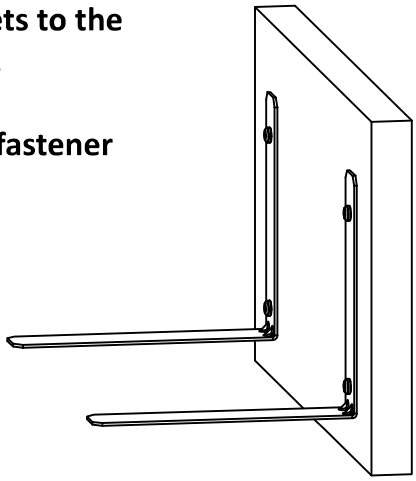
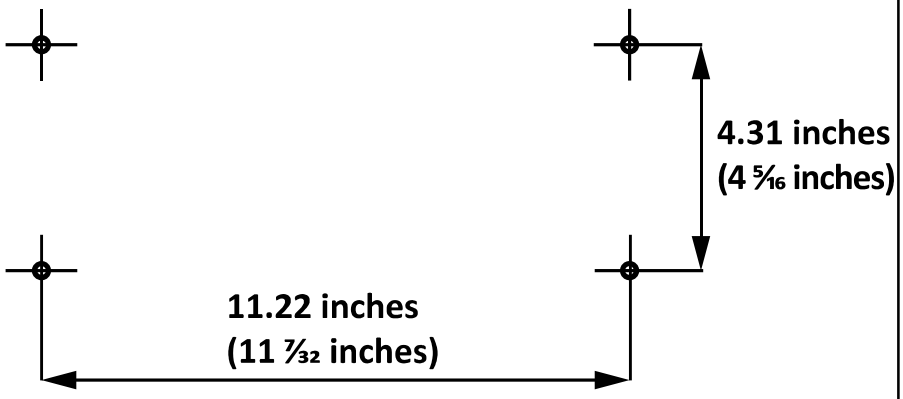


Figure 21.

Pilot hole center distances:



3 Set the water heater on the brackets, base plate down, and secure it with four sets of bolts and nuts. See Figure 22 and Figure 23.

NOTICE: Ensure that the nipples face toward the right as shown in Figure 19, page 23.

4 Return to page 10 to complete the water heater installation.

Figure 22.

Internal water heater components are represented by hidden lines.

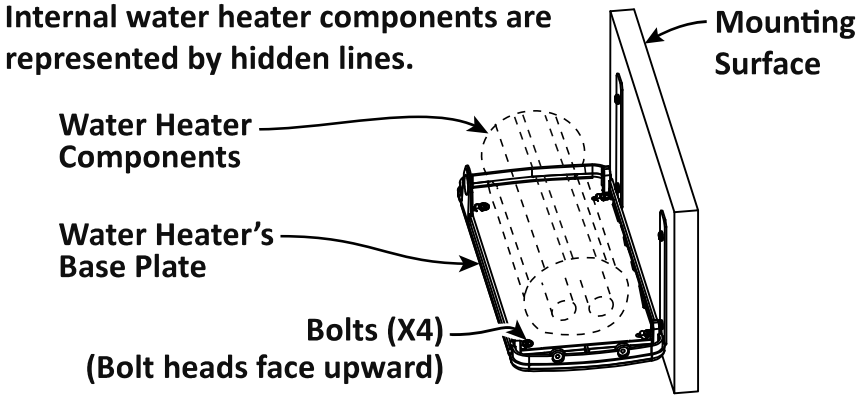
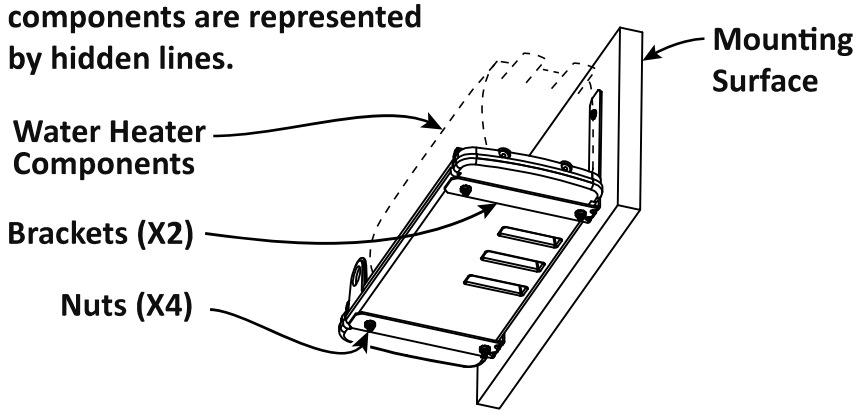


Figure 23.

Internal water heater components are represented by hidden lines.



Copyright © 2018. All rights reserved.