

A.O. Smith
Water Heaters

www.aosmithwaterheaters.com

NOTES:

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RESIDENTIAL ELECTRIC WARRANTY

THIS WARRANTY IS APPLICABLE TO THE ORIGINAL OWNER ONLY. In accordance with the warranty terms and conditions specified below.

A. O. Smith Corporation (the warrantor) will furnish the ORIGINAL OWNER, 1) a replacement A. O. Smith water heater of equivalent size and current model if the glasslined tank in this water heater leaks and, 2) a replacement part for any component part which fails.

THE A. O. SMITH WATER HEATERS REPLACEMENT MODEL OR PART WILL BE WARRANTED FOR ONLY THE UNEXPIRED PORTION OF THE ORIGINAL WARRANTY. The warranty period will be determined by the original date of purchase of the water heater, or in the absence of a Bill of Sale verifying said date, from the date of manufacture indicated on rating plate affixed to this water heater. This warranty is not transferrable and applies to models listed below:

Series	Tank	Parts
Conservationist®	10-year	10-year
PXHT, PXHS		
ProMax® 10-Year Models	10-year	6-year
PCRT, PCRS, PCT, PCS, PCL, PCLN, PCJ, PLJC, PLSC		
ProMax® 6-Year Models	6-year	6-year
ECRT, ECRS, ECT, ECS, ECL, EJC, EJCT, ECJ, ELJC, ESTT, ELSC, ECLN, ECJN, EJCS		
Energy-Saver 5-Year Models	5-year	1-year
ESM,		

When the water heater has been used for other than single family residential application;

1. The tank warranty shall be reduced to 1 year for 6 year models and to 3 years for 10 year models.
2. The parts warranty shall be reduced to 1 year for all models.

CONDITIONS AND EXCEPTIONS

This warranty shall apply only when the water heater is installed and operated in accordance with 1) all local fire codes and plumbing codes, ordinances and regulations, 2) the printed instructions provided with it, 3) good industry practices, and 4) proper safety practices such as but not limited to a properly sized drain pan if installed in an area where leakage from the tank or its connections would result in damage to the area adjacent to the heater. In addition, a new temperature and pressure relief valve, certified by the Canadian Gas Association must have been properly installed and piped to the nearest drain.

This warranty shall apply only when the heater is:

- owned by the original purchaser;
- installed for indoor operation only;
- used at temperatures not exceeding the maximum calibrated setting of its thermostat;
- used at water pressure not exceeding the working pressure shown on the heater;
- filled with potable water, free to circulate at all times and with the tank free of damaging water sediment or scale deposits;
- used in a non-corrosive and non-contaminated atmosphere;
- used with factory approved anode(s) installed;
- in its original installation location;
- in the United States, its territories or possessions, and Canada;
- sized in accordance with proper sizing techniques for residential water heaters;
- bearing a rating plate which has not been altered, defaced or removed except as required by the warrantor;
- used in an open system or in a closed system with a properly sized and installed thermal expansion tank;
- connected to the proper voltage or;
- operated at the factory rated input;
- installed with no attempted, nor actual modification or alteration of the water heater's design in any way, including but not limited to, the attachment of non-company approved appliances or equipment.

Any accident to the water heater or any part thereof (including freezing, fire, floods, or lightning), any misuse, abuse or alteration of it, any operation of it in a modified form, any operation of the water heater on desalinated (deionized) water, or any damage caused by attempts to repair tank leaks or parts, will void this warranty. This warranty does not cover water heaters replaced for cosmetic reasons or for reasons of noise, taste, odor, discolored and/or rusty water. This warranty does not apply to water heaters used to heat pools, whirlpools or hot tubs or used for space heating where its sizing does not conform with specifications of the heating component manufacturer.

This warranty gives you specific legal rights, and you may have other rights which vary under the laws of each state. If any provision of this warranty is prohibited or invalid under applicable state law, that provision shall be ineffective to the extent of the prohibition or invalidity.

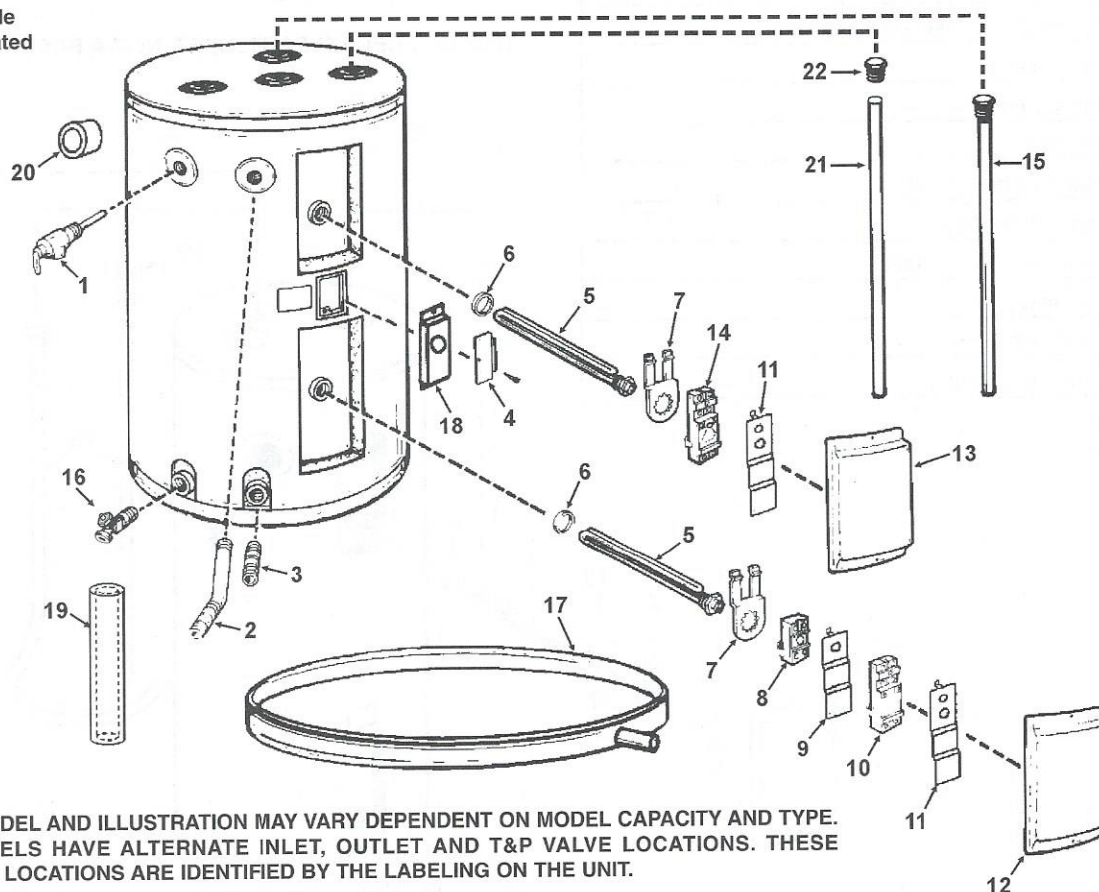
REPAIR PARTS LIST

COMPACT OR MANUFACTURED (MOBILE) HOME ELECTRIC MODELS

Key No.	Part Description		
1	Temperature-Pressure Relief Valve	13	Upper Outer Door
2	Outlet Nipple Assembly	14	Upper Thermostat w/Hi/Limit
3	Inlet Nipple	15	Anode Rod
4	Junction Box Cover	16	Drain Valve
5	Upper and Lower Element	17	Base Pan w/Side Drain
6	Element Gasket	18	Conduit Bracket
7	Thermostat Bracket (ea.)	19	Pipe Insulation*
8	Lower Thermostat	20	T & P Insulation*
9	Terminal Cover	21	Dip Tube
10	Lower Thermostat w/Hi Limit	22	Plug
11	Terminal Cover	**	Instruction Manual
12	Lower Outer Door		

* If Applicable

** Not Illustrated



ACTUAL MODEL AND ILLUSTRATION MAY VARY DEPENDENT ON MODEL CAPACITY AND TYPE. SOME MODELS HAVE ALTERNATE INLET, OUTLET AND T&P VALVE LOCATIONS. THESE ALTERNATE LOCATIONS ARE IDENTIFIED BY THE LABELING ON THE UNIT.

Now that you have purchased this water heater, should a need ever exist for repair parts or service, simply contact the company it was purchased from or the manufacturer listed on the rating plate on the water heater.

Be sure to provide all pertinent facts when you call or visit.

Selling prices will be furnished on request or parts will be shipped at prevailing prices and you will be billed accordingly.

The model number of your Water Heater will be found on the rating plate located above or adjacent to outer door.

WHEN ORDERING REPAIR PARTS, ALWAYS GIVE THE FOLLOWING INFORMATION:

- MODEL NUMBER
- SERIAL NUMBER
- VOLTAGE AND ELEMENT WATTAGE
- PART DESCRIPTION

THIS IS A REPAIR PARTS LIST, NOT A PACKING LIST.

TROUBLESHOOTING GUIDELINES

These guidelines should be utilized by a qualified service agent.

Problem	Possible Cause(s)	Corrective Action
WATER LEAKS (See Leakage Checkpoints on 19)	Improperly sealed, hot or cold supply connection, relief valve or drain valve.	Tighten threaded connections.
	Leakage from other appliances or water lines.	Inspect other appliances near water heater.
NO HOT WATER	No power to heater.	Turn on electrical switch. Check for blown fuses or tripped breaker.
	High Temperature Limit Switch open.	Reset. Check for source of trouble and correct.
	Non-functioning upper thermostat.	Replace thermostat.
INSUFFICIENT HOT WATER	Non-functioning thermostats.	Replace thermostats.
	Non-functioning lower element.	Replace element.
	Improper calibration.	Replace thermostats.
	Thermostats set too low.	Set thermostats to desired temperature.
	Sediment or lime in tank.	Drain. Determine if water treatment is needed.
	Heater too small for job.	Install adequate water heater.
	Wrong piping connections.	Correct piping.
	Leaking faucets.	Repair faucets.
	Wasted hot water.	Review and reduce hot water consumption.
	Long runs of exposed pipe.	Insulate piping.
	Hot water piping on outside wall.	Insulate piping.
HIGH OPERATION COSTS	Improper Calibration.	Replace thermostats.
	Thermostats set too high.	Set thermostat to desired setting.
	Sediment or lime in tank.	Drain. Flush-Provide water treatment if needed.
	Heater too small for job.	Install adequate heater.
	Wrong piping connections.	Correct piping.
	Leaking faucets.	Repair faucets.
	Wasted hot water.	Review and reduce hot water consumption.
	Long runs of exposed piping.	Insulate piping.
	Hot water piping in exposed wall.	Insulate piping.
SLOW HOT WATER RECOVERY	Non-functioning upper element.	Replace element.
	Non-functioning lower element.	Replace element.
DRIP FROM RELIEF VALVE	Excessive water pressure.	Use Pressure Reducing Valve and Pressure Relief Valve.
	Closed system.	See "Thermal Expansion" in the For Your Information section.
THERMOSTAT DOES NOT SHUT OFF	Non-functioning thermostats.	Replace thermostats.
	Improper calibration.	Replace thermostats.
WATER ODOR	Sulfides in the water.	See "Operational Conditions" in the For Your Information section.
WATER HEATER SOUNDS	Scale accumulation on elements.	Contact dealer to clean or replace elements.

11. Close the water heater drain valve by turning the handle to the right (clockwise). The drain valve is on the lower front of the water heater.
12. Open the cold water supply valve to the water heater.

NOTE: The cold water supply valve must be left open when the water heater is in use.

13. To insure complete filling of the tank, allow air to exit by opening the nearest hot water faucet. Allow water to run until a constant flow is obtained. This will let air out of the water heater and the piping.

CAUTION

Improper installation and use may result in property damage.

- Fill tank with water before operation.

Never use this water heater unless it is completely full of water. To prevent damage to the tank and heating element, the tank must be filled with water. Water must flow from the hot water faucet before turning "ON" power. The manufacturer will not warrant any elements damaged by failure to follow instructions.

14. Check element for water leaks. If leakage occurs, tighten element or repeat Steps 2 and 3, remove element and reposition gasket. Then repeat Steps 10 through 14.
15. Reconnect the two wires to the element and then check to make sure the thermostat remains firmly against the surface of the tank.

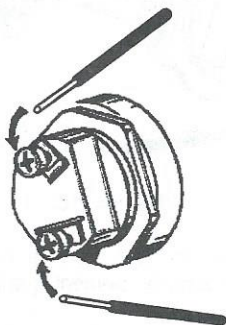


FIGURE 20.

16. Replace terminal cover on thermostat making sure the locking tabs on the terminal cover are in place.
17. Replace the insulation so that it covers the thermostat and element, see Figure 21.
18. Replace outer door.
19. Turn "ON" electric power to water heater.

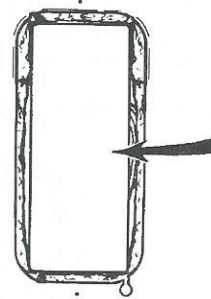


FIGURE 21.

DRAIN VALVE WASHER REPLACEMENT

(See Figure 22)

1. Follow "Draining" instructions.
2. Turning counter clockwise (↺), remove the hex cap below the screw handle.
3. Remove the washer and put the new one in place.
4. Screw the handle and cap assembly back into the drain valve and retighten using a wrench. **DO NOT OVER TIGHTEN.**
5. Follow instructions in the "Filling The Water Heater" section.
6. Check for leaks.

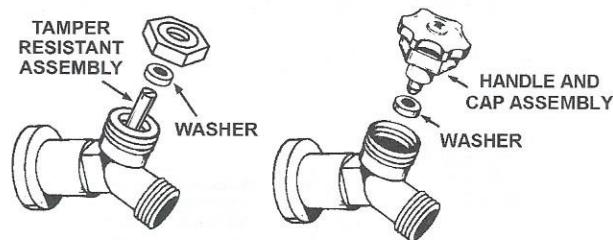


FIGURE 22.

SERVICE

If a condition persists or you are uncertain about the operation of the water heater contact a service agency.

Use this guide to check a "Leaking" water heater. Many suspected "Leakers" are not leaking tanks. Often the source of the water can be found and corrected.

If you are not thoroughly familiar with your water heater and safety practices, contact a qualified installer to check the water heater.

1. Turn "OFF" the electric power supply to the water heater.
2. Remove the outer door. Remove or fold up the insulation pad.
3. A. **Models with lower thermostat without high limit:** Lift out the tab as shown below to unclip the terminal cover from the thermostat. The terminal cover can now be removed from the thermostat.

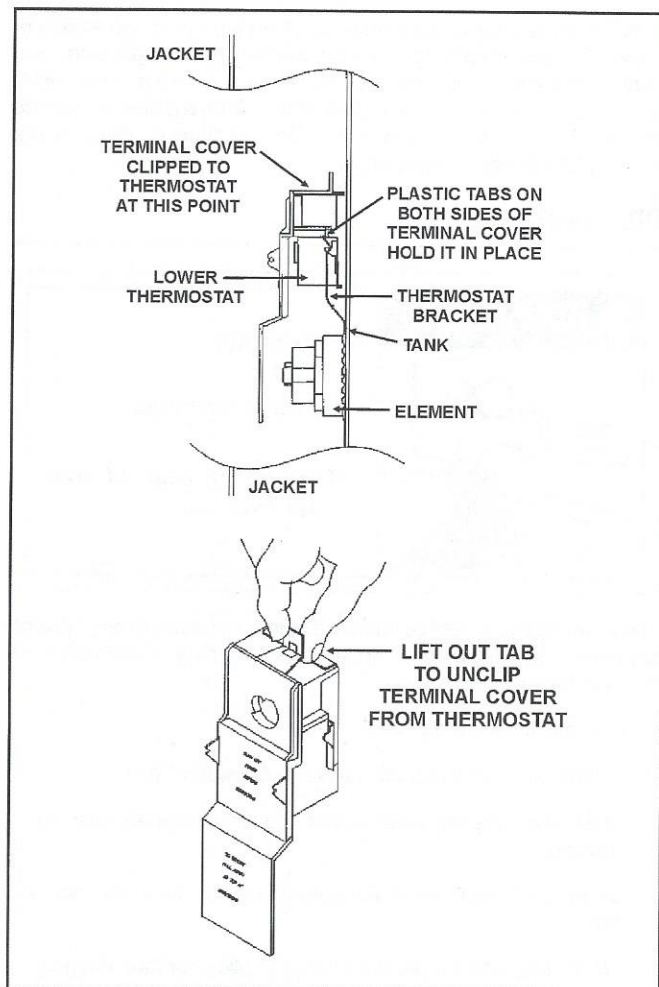


FIGURE 10.

- B. **Models with Upper or Lower Thermostat with High Limit:** Lift out the tab as shown below to unclip the terminal cover from the thermostat. The terminal cover can now be removed from the thermostat.

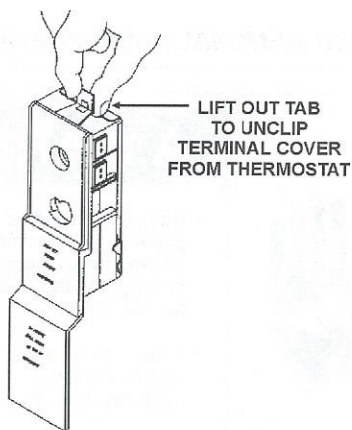


FIGURE 11.

4. Disconnect wires from thermostat and slide out of the bracket.
5. Remove the thermostat from behind the thermostat bracket.
6. Place the new lower thermostat in the bracket making sure it fits firmly against the tank.
7. Attach the wires to the new thermostat.

NOTE: Some of the terminals may require straight-in wiring through an eye-opening. If wires are now looped, recut and strip wire 3/8" to a straight length and insert.

8. Put plastic terminal cover back in place.
9. Replace the insulation to cover the thermostat.
10. Replace outer door then turn the electric power on.

ELEMENT CLEANING / REPLACEMENT

NOTE: These instructions are written for element cleaning and element replacement for the lower element.

	⚠ WARNING • Before removing any access panels or servicing the water heater, make sure the electrical supply to the water heater is turned "OFF." • Failure to do this could result in death, serious bodily injury, or property damage.
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To remove the element from the tank in order to clean or replace it:

1. Before beginning turn "OFF" the electric power supply to the water heater.
2. Turn off the water supply to the water heater at the water shut-off valve or water meter, see Figure 12.

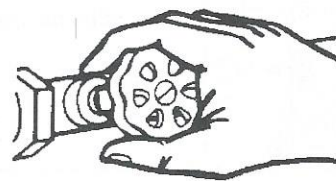


FIGURE 12.

3. Attach a hose to the water heater drain valve and put the other end in a floor drain or outdoors. Open the water heater drain valve. Open a nearby hot water faucet which will relieve pressure in the water heater and speed draining.

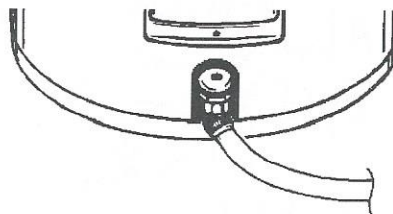


FIGURE 13.

FOR YOUR INFORMATION

THERMAL EXPANSION

CAUTION

Property Damage Hazard

- Avoid water heater damage.
- Install thermal expansion tank or device if necessary.
- Contact qualified installer or service agency.

Water supply systems may, because of such events as high line pressure, frequent cut-offs, the effects of water hammer among others, have installed devices such as pressure reducing valves, check valves, back flow preventers, etc. to control these types of problems. When these devices are not equipped with an internal by-pass, and no other measures are taken, the devices cause the water system to be closed. As water is heated, it expands (thermal expansion) and closed systems do not allow for the expansion of heated water.

The water within the water heater tank expands as it is heated and increases the pressure of the water system. If the relieving point of the water heater's temperature-pressure relief valve is reached, the valve will relieve the excess pressure. **The temperature-pressure relief valve is not intended for the constant relief of thermal expansion.** This is an unacceptable condition and must be corrected. It is recommended that any devices installed which could create a closed system have a by-pass and/or the system have an expansion tank or device to relieve the pressure built by thermal expansion in the water system. Expansion tanks are available for ordering through a local plumbing contractor. Contact the local water heater supplier or service agency for assistance in controlling these situations.

STRANGE SOUNDS

Possible noises due to expansion and contraction of some metal parts during periods of heat-up and cool-down do not necessarily represent harmful or dangerous conditions.

OPERATIONAL CONDITIONS

WATER ODOR

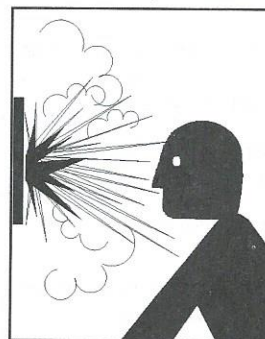
In each water heater there is installed at least one anode rod (see parts sections) for corrosion protection of the tank. Certain water conditions will cause a reaction between this rod and the water. The most common complaint associated with the anode rod is one of a "rotten egg smell" in the hot water. This odor is derived from hydrogen sulfide gas dissolved in the water. The smell is the result of four factors which must all be present for the odor to develop:

- A. A concentration of sulfate in the supply water.
- B. Little or no dissolved oxygen in the water.
- C. A sulfate reducing bacteria which has accumulated within the water heater (this harmless bacteria is nontoxic to humans).
- D. An excess of active hydrogen in the tank. This is caused by the corrosion protective action of the anode.

Smelly water may be eliminated or reduced in some water heater models by replacing the anode(s) with one of less active material, and then chlorinating the water heater tank and all hot water lines. Contact the local water heater supplier or service agency for further information concerning an Anode Replacement Kit and this chlorination treatment. If the smelly water persists after the anode replacement and chlorination treatment, we can only suggest that chlorination or aeration of the water supply be considered to eliminate the water problem.

Do not remove the anode leaving the tank unprotected. By doing so, all warranty on the water heater tank is voided.

"AIR" IN HOT WATER FAUCETS



WARNING

Explosion Hazard

- Flammable hydrogen gases may be present.
- Keep all ignition sources away from faucet when turning on hot water.

HYDROGEN GAS: Hydrogen gas can be produced in a hot water system that has not been used for a long period of time (generally two weeks or more). Hydrogen gas is extremely flammable and explosive. To prevent the possibility of injury under these conditions, we recommend the hot water faucet, located farthest away, be opened for several minutes before any electrical appliances which are connected to the hot water system are used (such as a dishwasher or washing machine). If hydrogen gas is present, there will probably be an unusual sound similar to air escaping through the pipe as the hot water faucet is opened. There must be no smoking or open flame near the faucet at the time it is open.

HIGH WATER TEMPERATURE SHUT OFF SYSTEM

A non-adjustable high temperature limit control operates before steam temperatures are reached. The high limit is in the same area as the upper thermostat and must be reset manually when it operates. **BECAUSE THE HIGH LIMIT OPERATES ONLY WHEN ABNORMALLY HIGH WATER TEMPERATURES ARE PRESENT, IT IS IMPORTANT THAT A QUALIFIED SERVICE AGENT BE CONTACTED TO DETERMINE THE REASON FOR OPERATION BEFORE RESETTING.**



WARNING

- Before removing any access panels or servicing the water heater, make sure the electrical supply to the water heater is turned "OFF."
- Failure to do this could result in death, serious bodily injury, or property damage.

- Turn off the heater electrical supply. Do not attempt to reset thermostat with power on.
- Remove the screw(s) securing the outer door and remove door.
- Remove or fold up the insulation to expose the reset button.
- Reset the high limit by pushing in the red button marked "RESET".
- Replace the insulation so that it completely covers the thermostat and element.
- Replace the outer door.
- Turn "ON" electric power to the water heater.

WIRING

CAUTION

Improper installation and use may result in property damage.

- Fill tank with water before operation.

Never use water heater unless it is completely full of water. To prevent damage to the tank and heating element, the tank must be filled with water. Water must flow from the hot water faucet before turning on power.

You must provide all wiring of the proper size outside of the water heater. You must obey local codes and electric company requirements when you install this wiring.

If you are not familiar with electric codes and practices, or if you have any doubt, even the slightest doubt, in your ability to connect the wiring to this water heater, obtain the service of a competent electrician. Contact a local electrical contractor and/or the local electric utility.

! WARNING

Fire Hazard / Electric Shock Hazard



- Do not use this water heater with any voltage other than shown on the model rating plate.
- Failure to use the correct voltage shown on the model rating plate could result in death, serious bodily injury, or property damage.

WATER HEATERS EQUIPPED FOR ONE VOLTAGE ONLY: This water heater is equipped for one type voltage only. Check the rating plate near the bottom access panel for the correct voltage. **DO NOT** use this water heater with any voltage other than the one shown on the model rating plate. Failure to use the correct voltage can cause problems which can result in **DEATH, SERIOUS BODILY INJURY, OR PROPERTY DAMAGE**. If you have any questions or doubts consult your electric company.

If wiring from your fuse box or circuit breaker box was aluminum for your old water heater, replace it with copper wire. If you wish to reuse the existing aluminum wire, have the connection at the water heater made by a competent electrician. Contact a local electrical contractor and/or the local electric utility.

1. Provide a way to easily shut off the electric power when working on the water heater. This could be with a circuit breaker or fuse block in the entrance box or a separate disconnect switch.
2. Install and connect a circuit directly from the main fuse or circuit breaker box. This circuit must be the right size and have its own fuse or circuit breaker.
3. If metal conduit is used for the grounding conductor:
 - A. The grounding electrode conductor shall be of copper, aluminum, or copperclad aluminum. The material shall be of one continuous length without a splice or joint.
 - B. Rigid metal conduit, intermediate metal conduit, or electrical, metallic tubing may be used for the grounding means if conduit or tubing is terminated in fittings approved for grounding.
 - C. Flexible metal conduit or flexible metallic tubing shall be permitted for grounding if all the following conditions are met:
 - The length in any ground return path does not exceed 6 feet.
 - The circuit conductors contained therein are protected by overcurrent devices rated at 20 amperes or less.
 - The conduit or tubing is terminated in fittings approved for grounding.

For complete grounding details and all allowable exceptions, refer to the current edition of the National Electrical Code NFPA 70.

4. A standard 1/2" conduit opening has been made in the water heater junction box for the conduit connections.
5. Use wire nuts and connect the power supply wiring to the wires inside the water heater's junction box.
6. The water heater must be electrically "grounded" by the installer. A green ground screw has been provided on the water heater's junction box. Connect ground wire to this location.
7. Replace the wiring junction cover using the screw provided.

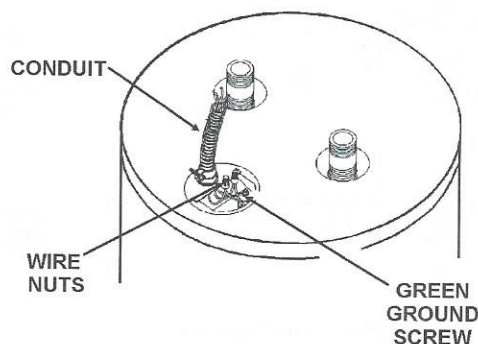


FIGURE 7.

If after manually operating the valve, it fails to completely reset and continues to release water, immediately close the cold water inlet to the water heater, follow the draining instructions, and replace the temperature-pressure relief valve with a new one.

FILLING THE WATER HEATER

CAUTION

Property Damage Hazard

- Avoid water heater damage.
- Fill tank with water before operating.

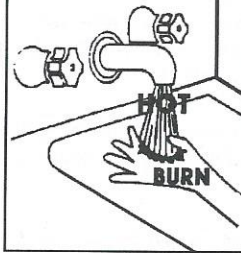
Never use this water heater unless it is completely full of water. To prevent damage to the tank and heating element, the tank must be filled with water. Water must flow from the hot water faucet before turning "ON" electrical supply to the water heater. The manufacturer will not warrant any elements damaged by failure to follow instructions.

To fill the water heater with water:

1. Close the water heater drain valve by turning the handle to the right (clockwise). The drain valve is on the lower front of the water heater.
2. Open the cold water supply valve to the water heater.
NOTE: The cold water supply valve must be left open when the water heater is in use.
3. To insure complete filling of the tank, allow air to exit by opening the nearest hot water faucet. Allow water to run until a constant flow is obtained. This will let air out of the water heater and the piping.
4. Check all water piping and connections for leaks. Repair as needed.
5. Never alter or modify the certified construction of the water heater or its components, or bypass any safety features. Doing so voids all warranties.

T&P VALVE and PIPE INSULATION (On Selected Models)

⚠ DANGER



When a supplemental heat source such as a solar storage tank is connected to the water heater, a remote temperature control device should be installed in the water piping to limit water temperatures. The temperature setting of this control should not exceed that of the water heater thermostat setting. Failure to adjust both thermostats can cause loss of proper temperature control, and could potentially produce water temperature in excess of 180°F.

Remove insulation for T&P Valve and pipe connections from carton.

Fit pipe insulation over the incoming cold water line and the hot water line. Make sure that the insulation is against the top cover of the heater.

Fit T&P Valve insulation over valve. Make sure that the insulation does not interfere with the lever or outlet of the T&P valve.

Secure all insulation using tape.

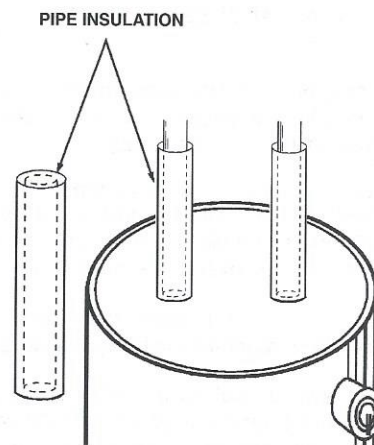


FIGURE 5.

NOTE: To protect against untimely corrosion of hot and cold water fittings, it is strongly recommended that di-electric unions or couplings be installed on this water heater when connected to copper pipe.

CAUTION

Property Damage Hazard

- Avoid water heater damage.
- Install thermal expansion tank if necessary.
- Do not apply heat to cold water inlet.
- Contact qualified installer or service agency.

Figure 3 shows the typical attachment of the water piping to the water heater. The water heater is equipped with 3/4 inch NPT water connections.

NOTE: If using copper tubing, solder tubing to an adapter before attaching the adapter to the cold water inlet connection. Do not solder the cold water supply line directly to the cold water inlet, it will harm the dip tube and damage the tank.

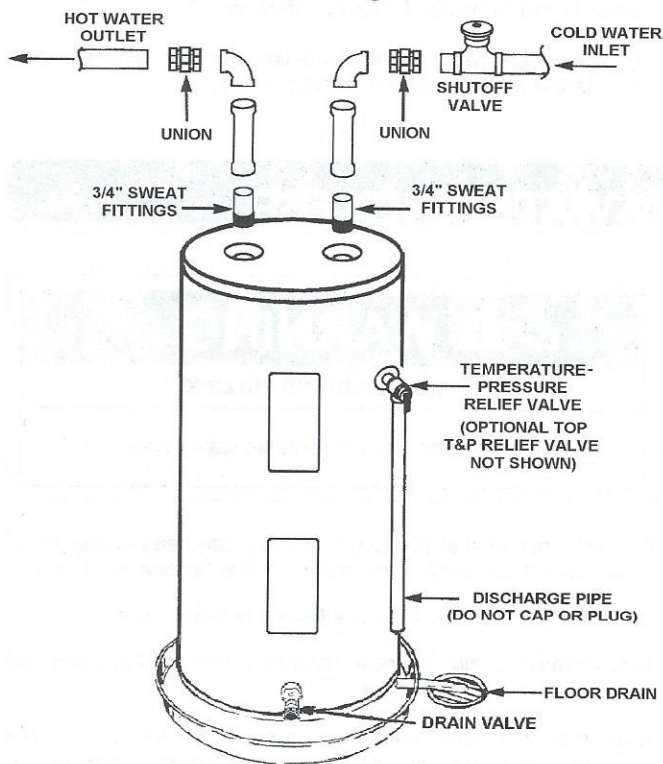


FIGURE 3.

WATER PIPING PRESSURE TEST

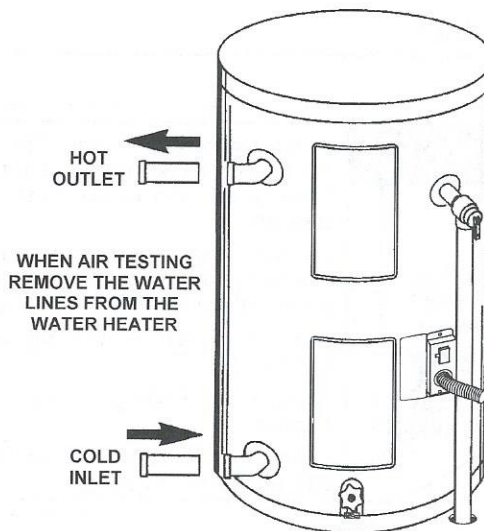
This section is only for the manufacturer installing the water heater when the installation is to comply with H.U.D. Standards.

When testing the water ways, H.U.D. Standards state: "Water distribution system: All water piping in the water distribution system shall be subjected to a pressure test. The test shall be made by subjecting the system to air or water at 100 psi for 15 minutes without loss of pressure. **When air pressure is used, the water heater shall not be connected during the test.**"

! WARNING

Air Pressure Hazard

- If water piping system is to be air pressure tested, the water heater must be disconnected from the water piping system.
- Failure to disconnect the water heater during air pressure testing of the water system could result in DEATH, SERIOUS BODILY INJURY, OR PROPERTY DAMAGE.



MIXING VALVE USAGE

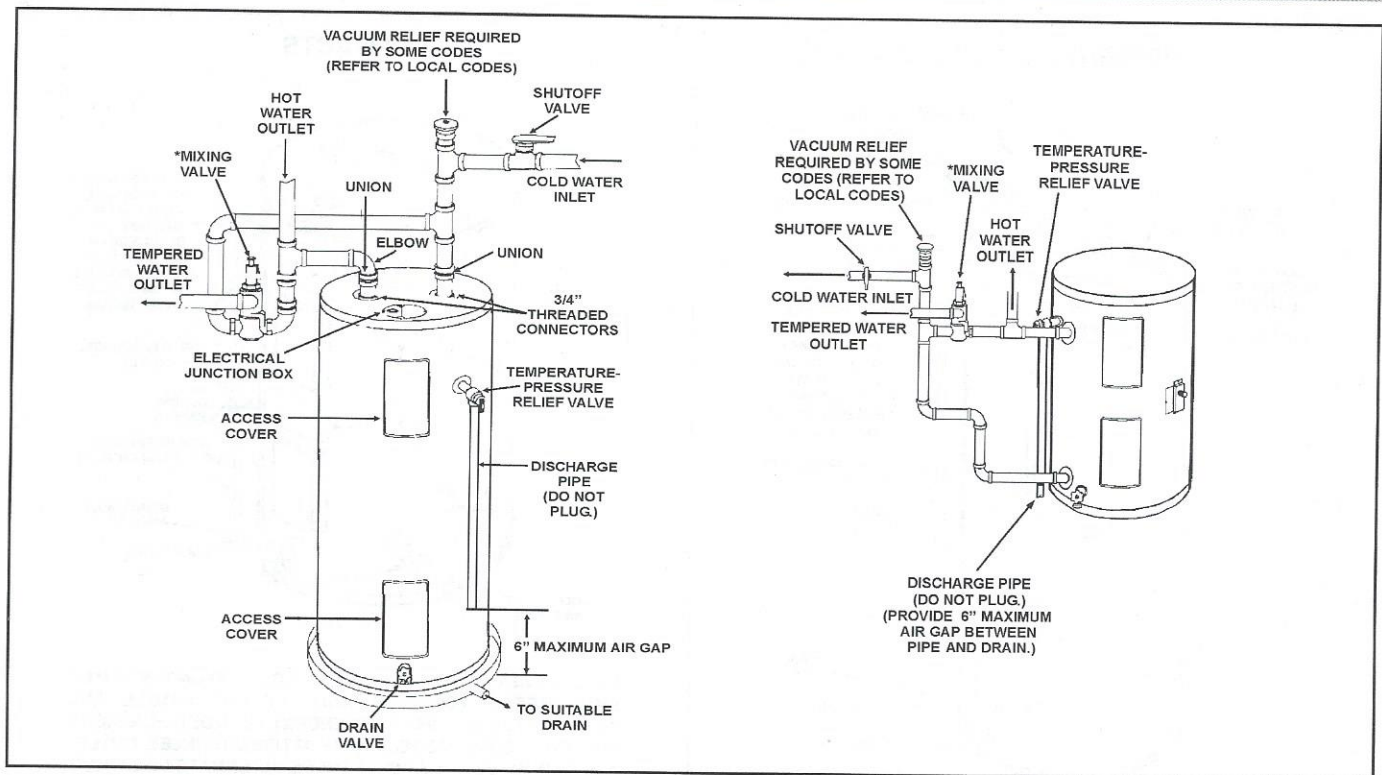
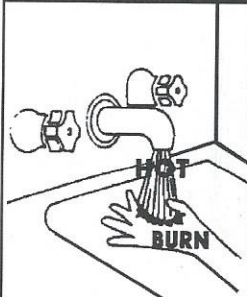


FIGURE 2.

Water (Potable) Heating: All models are considered suitable for water (potable) heating only.

HOTTER WATER CAN SCALD:



⚠ DANGER

Water temperature over 125°F (52°C) can cause severe burns instantly resulting in severe injury or death.

Children, the elderly, and the physically or mentally disabled are at highest risk for scald injury.

Feel water before bathing or showering.

Temperature limiting valves are available.

Read this instruction manual for safe temperature setting.

Water heaters are intended to produce hot water. Water heated to a temperature which will satisfy space heating, clothes washing, dish washing, and other sanitizing needs can scald and permanently injure you upon contact. Some people are more likely to be permanently injured by hot water than others. These include the elderly, children, the infirm, or physically/mentally disabled. If anyone using hot water in your home fits into one of these groups or if there is a local code or state law requiring a certain temperature water at the hot water tap, then you must take special precautions. In addition to using the lowest possible temperature setting that satisfies your hot water needs, a means such as a mixing valve, should be used at the hot water taps used by these people or at the water heater. Mixing valves are available from your local plumbing contractor. Consult a Qualified Installer or Service Agency. Follow mixing valve manufacturer's instructions for installation of the valves. Before changing the factory setting on the thermostat, read the "Temperature Regulation" section in this manual.

LOCATING THE NEW WATER HEATER

FACTS TO CONSIDER ABOUT THE LOCATION

CAUTION

Property Damage Hazard

- All water heaters eventually leak
- Do not install without adequate drainage.

Carefully choose an indoor location for the new water heater, because the placement is a very important consideration for the

safety of the occupants in the building and for the most economical use of the appliance.

Whether replacing an old water heater or putting the water heater in a new location, the following critical points must be observed:

1. Select a location indoors as close as practical or centralized to the water piping system as possible. The water heater should be located in an area not subject to freezing temperatures.
2. Selected location must provide adequate clearances (4") for servicing parts such as the thermostats, drain valve, and relief valve. Adequate clearance for servicing this appliance should be considered before installation, such as changing the anodes, etc.

INTRODUCTION

Thank You for purchasing this water heater. Properly installed and maintained, it should give you years of trouble free service.

Abbreviations Found In This Instruction Manual:

- ANSI - American National Standards Institute
- ASME - American Society of Mechanical Engineers
- GAMA - Gas Appliance Manufacturers Association
- NEC - National Electrical Code
- NFPA - National Fire Protection Association
- UL - Underwriters Laboratories Inc.

PREPARING FOR THE INSTALLATION

1. Read the "General Safety" section of this manual first and then the entire manual carefully. If you don't follow the safety rules, the water heater will not operate properly. It could cause DEATH, SERIOUS BODILY INJURY, AND/OR PROPERTY DAMAGE.

This manual contains instructions for the installation, operation, and maintenance of the electric water heater. It also contains warnings throughout the manual that you must read and understand. All warnings and all instructions are essential to the proper operation of the water heater and your safety. **READ THE ENTIRE MANUAL BEFORE ATTEMPTING TO INSTALL OR OPERATE THE WATER HEATER.**

2. The installation must conform with these instructions and the local code authority having jurisdiction and the requirements of the power company. In the absence of local code requirements follow NFPA-70, the National Electrical Code (current edition), which may be ordered from: National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269.
3. If after reading this manual you have any questions or do not understand any portion of the instructions, call the local utility or the manufacturer whose name appears on the rating plate.
4. Carefully plan your intended placement of the water heater. **INSTALLATION OR SERVICE OF THIS WATER HEATER REQUIRES ABILITY EQUIVALENT TO THAT OF A LICENSED TRADESMAN IN THE FIELD INVOLVED. PLUMBING AND ELECTRICAL WORK ARE REQUIRED.**

Examine the location to ensure the water heater complies with the "Facts to Consider About the Location" section in this manual.

5. For California installation this water heater must be braced, anchored, or strapped to avoid falling or moving during an earthquake. See instructions for correct installation procedures. Instructions may be obtained from California Office of the State Architect, 400 P Street, Sacramento, CA 95814.
6. Massachusetts Code requires this water heater to be installed in accordance with Massachusetts 248-CMR 2.00: State Plumbing Code and 248-CMR 5.00.

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SAFE INSTALLATION, USE AND SERVICE

Your safety and the safety of others is extremely important in the installation, use, and servicing of this water heater.

Many safety-related messages and instructions have been provided in this manual and on your own water heater to warn you and others of a potential injury hazard. Read and obey all safety messages and instructions throughout this manual. It is very important that the meaning of each safety message is understood by you and others who install, use, or service this water heater.

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
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 DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, could result in death or injury.
 WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or injury.
 CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
CAUTION	CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, could result in property damage.

All safety messages will generally tell you about the type of hazard, what can happen if you do not follow the safety message, and how to avoid the risk of injury.

The California Safe Drinking Water and Toxic Enforcement Act requires the Governor of California to publish a list of substances known to the State of California to cause cancer, birth defects, or other reproductive harm, and requires businesses to warn of potential exposure to such substances.

This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. This appliance can cause low level exposure to some of the substances listed, including formaldehyde.

IMPORTANT DEFINITIONS

- **Qualified Installer:** A qualified installer must have ability equivalent to a licensed tradesman in the fields of plumbing and electrical installation of these appliances. This would include a thorough understanding of the requirements of the National Electrical Code and applicable local electrical and plumbing codes (and tools necessary to confirm proper installation and operation of the water heater) as they relate to the installation of electric water heaters. The qualified installer must have a thorough understanding of the water heater Instruction Manual.
- **Service Agency:** A service agency also must have ability equivalent to a licensed tradesman in the fields of plumbing and electrical installation of these appliances. This would include a thorough understanding of the requirements of the National Electrical Code and applicable local electrical and plumbing codes (and tools necessary to confirm proper installation and operation of the water heater) as they relate to the installation of electric water heaters. The service agency must have a thorough understanding of the water heater Instruction Manual.