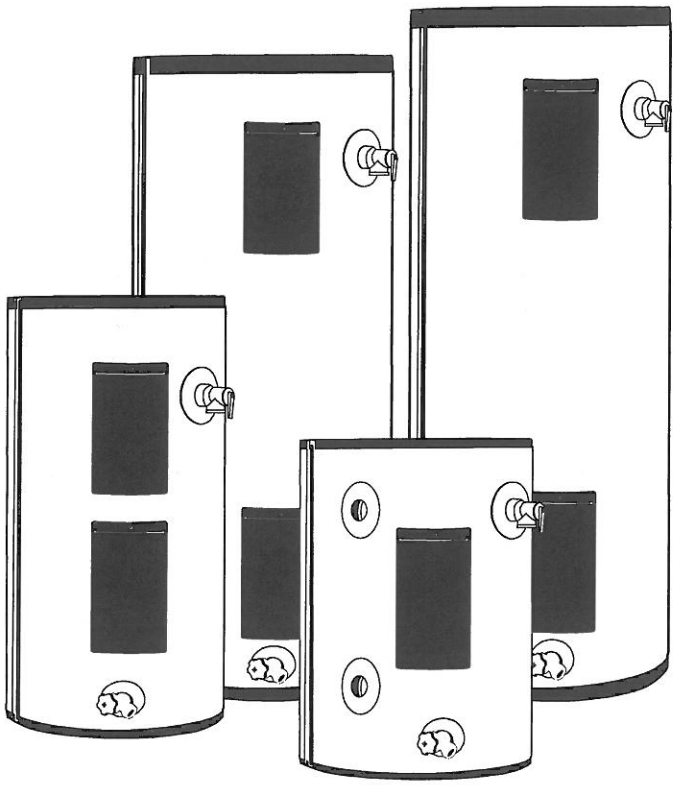
Residential Electric Water Heater

Installation Instructions and Use & Care Guide



To obtain technical, warranty or service assistance during or after the installation of this water heater, call toll free 1-800-999-9515.

When calling for assistance, please have the following information ready:

1. Model number
2. 7 Digit product number
3. Serial number
4. Date of installation
5. Place of Purchase

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INSTALLING YOUR WATER HEATER

Consumer Information

This water heater should be installed in accordance with the local code authority having jurisdiction, the power company or electric utility, and this installation manual. In the absence of local code requirements, follow the regulations set forth in the current edition of The National Electric Code, NFPA 70. This is available from the following:

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02269

American National Standards Institute
1430 Broadway
New York, NY 10018

Check your phone listings for the local authorities having jurisdiction over your installation.

Consumer Responsibilities

This manual has been prepared to acquaint you with the installation, operation and maintenance of your electric water heater and to provide important safety information in these areas.

We urge you to read all of the instructions thoroughly before attempting the installation or operation of this water heater. This manual should be kept for future reference.

The manufacturer of this water heater will not be liable for any damages caused by failure to comply with the installation and operating instructions outlined in this manual.

If you lack the necessary skills required to properly install this water heater or you have difficulty following the directions, you should not proceed but have a qualified person perform the installation of this water heater.

Examples of a qualified person include: licensed plumbers, authorized gas company personnel, and authorized service personnel.

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.

A data plate identifying your water heater can be found adjacent to the element door. When referring to your water heater always have the information listed on the data plate readily available.

Retain your original receipt as proof of purchase.

Unpacking the Water Heater

⚠WARNING

Excessive Weight Hazard

Use two or more people to move and install water heater.

Failure to do so can result in back or other injury.

Removing Packaging Materials

IMPORTANT: Do not remove any permanent instructions, labels, or the data label from either the outside of the water heater or on the inside of water heater panels.

- Remove exterior packaging and place installation components aside.
- Inspect all parts for damage prior to installation and start-up.
- Completely read all instructions before attempting to assemble and install this product.
- After installation, dispose of/recycle all packaging materials.

Electrical Requirements

⚠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.

⚠WARNING

Fire Hazard

Use proper size solid copper wire.

Use a UL listed or CSA approved strain relief.

Connect ground wire to green ground screw.

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

If you lack the necessary skills required to properly install the electrical wiring to this water heater, do not proceed but have a qualified electrician perform the installation.

When making the electrical connections, always make sure:

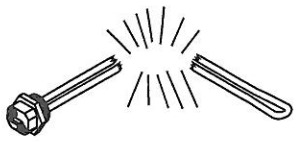
- The electrical supply has the proper overload fuse or breaker protection.
- Wire sizes and connections comply with all applicable codes.
- Wiring enclosed in approved conduit (if required by local codes).
- The water heater and electrical supply are properly grounded.

Figures 3, 4, and 5 are provided as reference drawings for the 120/240v 2-wire models only. Always reference the wiring diagram located on the water heater for the correct electrical connections and connect the electrical supply to the water heater in accordance with local utility requirements and codes.

When installing the electrical wiring to the water heater:

1. Be sure tank is completely filled with water before making any electrical connections. (See Figure 2)
2. Disconnect the electric power.
3. Loosen the screw holding the junction box cover to the top of the water heater and set aside.
4. Connect the electrical supply to the water heater. A standard 1/2 inch opening has been made in the junction box for conduit connections.
5. Connect ground wire to green ground screw in the junction box of the water heater. Reinstall the junction box cover.

Figure 2
Heating Element



NOTE: Applying electrical power to elements that are not submerged in water will destroy them. The manufacturer will not warranty any elements damaged in this manner.

Figure 3
120/240V 2-Wire Models

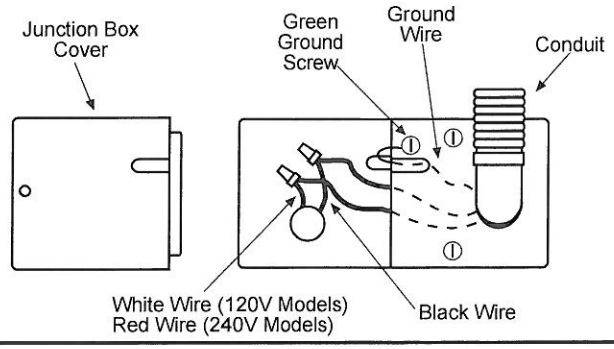


Figure 4
Wiring Diagram
120V Models Only

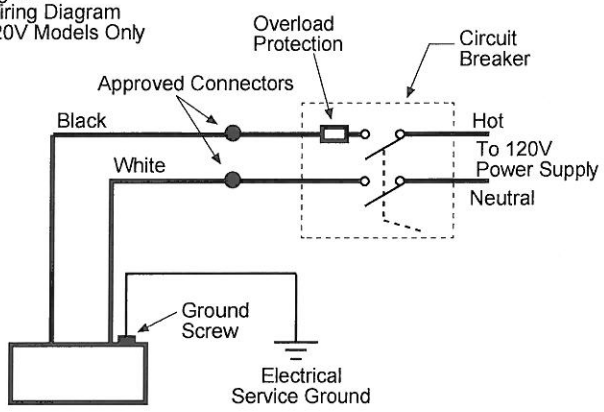
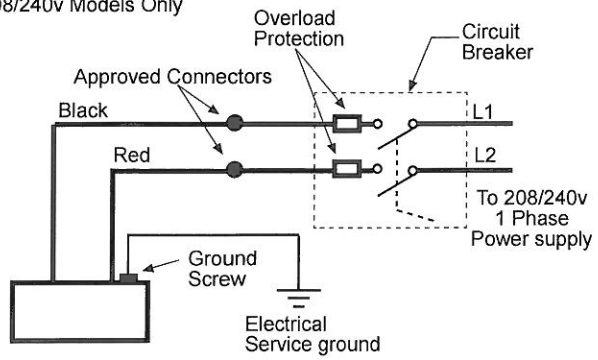


Figure 5
Wiring Diagram
208/240v Models Only



Please note the following:

- The system should be installed only with piping that is suitable for potable (drinkable) water such as copper, CPVC, or polybutylene. This water heater must not be installed using iron piping or PVC water piping.
- Use only pumps, valves, or fittings that are compatible with potable water.
- Use only full flow ball or gate valves. The use of valves that may cause excessive restriction to water flow is not recommended.
- Use only 95/5 tin-antimony or other equivalent solder. Any lead based solder must not be used.
- Piping that has been treated with chromates, boiler seal, or other chemicals must not be used.
- Chemicals that may contaminate the potable water supply must not be added to the piping system.

Closed System/Thermal Expansion

⚠WARNING

Explosion Hazard

If the temperature and pressure relief valve is dripping or leaking, have a qualified person replace it.

Examples of a qualified person include: licensed plumbers, authorized gas company personnel, and authorized service personnel.

Do not plug valve.

Do not remove valve.

Failure to follow these instructions can result in death or explosion.

As water is heated, it expands (thermal expansion). In a closed system, the volume of water will grow. As the volume of water grows, there will be a corresponding increase in water pressure due to thermal expansion. Thermal expansion can cause premature tank failure (leakage). This type of failure is not covered under the limited warranty. Thermal expansion can also cause intermittent temperature-pressure relief valve operation: water discharged from the valve due to excessive pressure build up. The temperature-pressure relief valve is not intended for the constant relief of thermal expansion. This condition is not covered under the limited warranty.

A properly-sized thermal expansion tank should be installed on all closed systems to control the harmful effects of thermal expansion. Contact a plumbing service agency or your retail supplier regarding the installation of a thermal expansion tank.

IMPORTANT: Do not plug or remove the temperature and pressure relief valve.

Temperature and Pressure Relief Valve

⚠WARNING

Explosion Hazard

If the temperature and pressure relief valve is dripping or leaking, have a qualified person replace it.

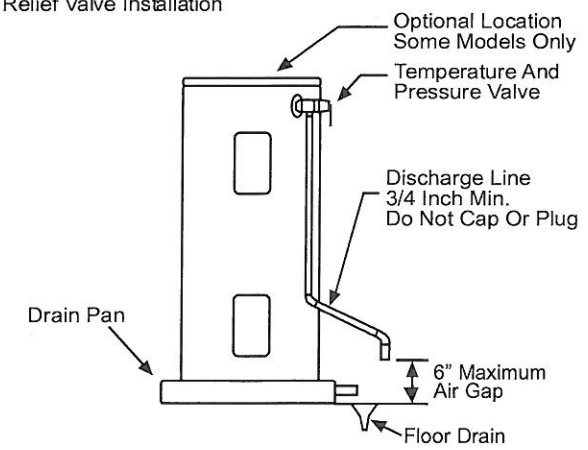
Examples of a qualified person include: licensed plumbers, authorized gas company personnel, and authorized service personnel.

Do not plug valve.

Do not remove valve.

Failure to follow these instructions can result in death or explosion.

Figure 9
Temperature And Pressure Relief Valve Installation



For protection against excessive pressures and temperatures, a temperature and pressure relief valve must be installed in the opening marked "T & P RELIEF VALVE" (See Figure 9).

CAUTION: To reduce the risk of excessive pressures and temperatures in this water heater, install temperature and pressure relief protective equipment required by local codes, but no less than a combination temperature and pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of the production of listed equipment or materials, as meeting the requirements for Relief Valves and Automatic Shutoff Devices for Hot

OPERATING YOUR WATER HEATER

Before Using

1. Make sure the water heater has been properly installed. See "Installing Your Water Heater" section.
2. Completely fill the tank with water. (See Figure 2)
3. After the water heater tank is completely filled with water, connect electrical power to the water heater.
4. Read the "Water Temperature Regulation" section of this manual. If the instructions are not clear, contact a qualified person.
5. Adjust the thermostat to the desired temperature setting as described under "Adjusting the Thermostat/ High Limit Control" section.

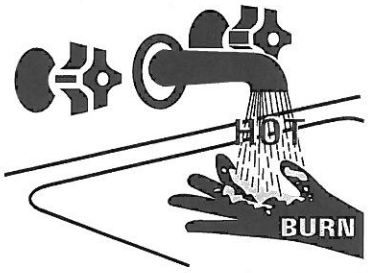
IMPORTANT: Do not attempt to operate this water heater if the thermostat(s), or surrounding insulation has been exposed to water in any way. Immediately call a qualified person to inspect the water heater and replace any thermostat or insulation that has been exposed to water. Do not attempt to repair these parts. Water heaters subjected to flood conditions or any time the thermostat(s) have been submerged in water require replacement of the entire water heater.

Safety Shut-off

This water heater is designed to automatically shut-off in the event that the water temperature exceeds 170°F or 77°C (190°F or 88°C in LDCE Models). A high limit control switch is used to shut off the power to the elements if the water temperature exceeds 170°F or 77°C (190°F or 88°C in LDCE Models). The high limit control can be reset by firmly pushing in the red reset button located on the thermostat. Follow the instructions under "Adjusting the Thermostat/High Limit Control", section to properly reset the high limit control. If the high limit control switch continues to shut-off the water heater contact a qualified person for service.

Water Temperature Regulation

⚠WARNING



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

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

Feel water before bathing or showering.

Temperature limiting valves are available.

The thermostat is adjusted to a temperature setting of 120°F or lower when it is shipped from the factory. Water temperature can be regulated by adjusting the thermostat to the preferred setting as shown in "Adjusting the Thermostat/High Limit Control." The preferred starting point is 120°F. There is a hot water scald potential if the thermostat is set too high.

IMPORTANT: Adjusting the thermostat past 120°F on the thermostat will increase the risk of scald injury in the times shown below.

Water Temperature °F	Time for 1st Degree Burn (Less Severe Burns)	Time for Permanent Burns 2nd & 3rd Degree (Most Severe Burns)
110	(normal shower temp.)	
116	(pain threshold)	
116	35 minutes	45 minutes
122	1 minute	5 minutes
131	5 seconds	25 seconds
140	2 seconds	5 seconds
149	1 second	2 seconds
154	instantaneous	1 second

(U.S. Government Memorandum, C.P.S.C., Peter L. Armstrong, Sept. 15,1978)

NOTE: During low demand periods when hot water is not being used, a lower thermostat setting will reduce energy losses and may satisfy your normal hot water needs. If hot water use is expected to be more than normal, a higher thermostat setting may be required to meet the increased demand.

When leaving your home for extended periods (vacations, etc.) turn the thermostat to its lowest setting. This will maintain the water at low temperatures with minimum energy losses and prevent the tank from freezing during cold weather.

Operational Conditions

Anode Rod/Water Odor

Each water heater contains at least one anode rod, which will slowly deplete while protecting the glass-lined tank from corrosion and prolonging the life of the water heater. Once the anode is depleted, the tank will start to corrode, eventually developing a leak. Certain water conditions will cause a reaction between this rod and the water. The most common complaint associated with the anode rod is a "rotten egg smell" produced from the presence of hydrogen sulfide gas dissolved in the water.

IMPORTANT: Do not remove this rod permanently as it will void any warranties. The parts list includes a special anode that can be ordered if water odor or discoloration occurs.

NOTE: This rod may reduce but not eliminate water odor problems. The water supply system may require special filtration equipment from a water conditioning company to successfully eliminate all water odor problems.

Artificially softened water is exceedingly corrosive because the process substitutes sodium ions for magnesium and calcium ions. The use of a water softener may decrease the life of the water heater tank.

The anode rod should be inspected after a maximum of three years and annually thereafter until the condition of the anode rod dictates its replacement. NOTE: Artificially softened water requires the anode rod to be inspected annually.

The following are typical (but not all) signs of a depleted anode rod:

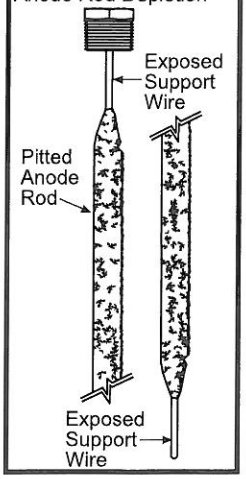
- The majority of the rods diameter is less than 3/8".
- Significant sections of the support wire (approx. 1/3 or more of the anode rod's length) are visible.

If the anode rod shows signs of either or both, it should be replaced.

NOTE: Whether reinstalling or replacing the anode rod, check for any leaks and immediately correct if found. In replacing the anode:

1. Turn off power to the water heater.
2. Shut off the water supply and open a nearby hot water faucet to depressurize the water tank.
3. Drain approximately 5 gallons of water from tank (Refer to the "Draining and Flushing" section for proper procedures). Close drain valve.
4. Remove old anode rod.
5. Use Teflon® tape or approved pipe sealant on threads and install new anode rod.
6. Turn on water supply and open nearby hot water faucet to purge air from water system. Check for any leaks and immediately correct any if found.
7. Restart the water heater as directed under the "Operating Your Water Heater" section. See the "Repair Parts Illustration" section for anode rod location.

Figure 11:
Anode Rod Depletion



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Water Heater Sounds

During the normal operation of the water heater, sounds or noises may be heard. These noises are common and may result from the following:

1. Normal expansion and contraction of metal parts during periods of heat-up and cool-down.
2. Sediment buildup in the tank bottom will create varying amounts of noise and may cause premature tank failure. Drain and flush the tank as directed under the "Draining and Flushing" section.

Stacking

Stacking occurs when a series of short draws of hot water (3 gallons or less) are taken from the water heater tank. This causes increased cycling of the heater elements and can result in increased water temperatures at the hot water outlet. An anti-scald device is recommended in the hot water supply line to reduce the risk of scald injury.

Figure 13

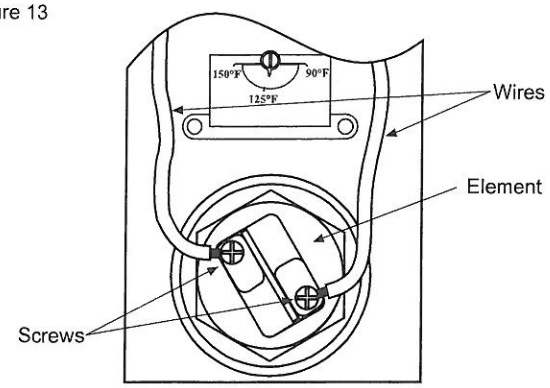
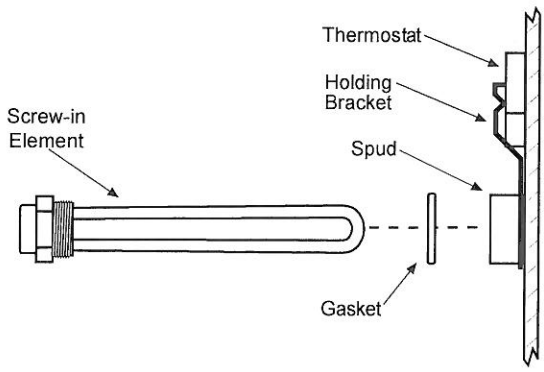


Figure 14

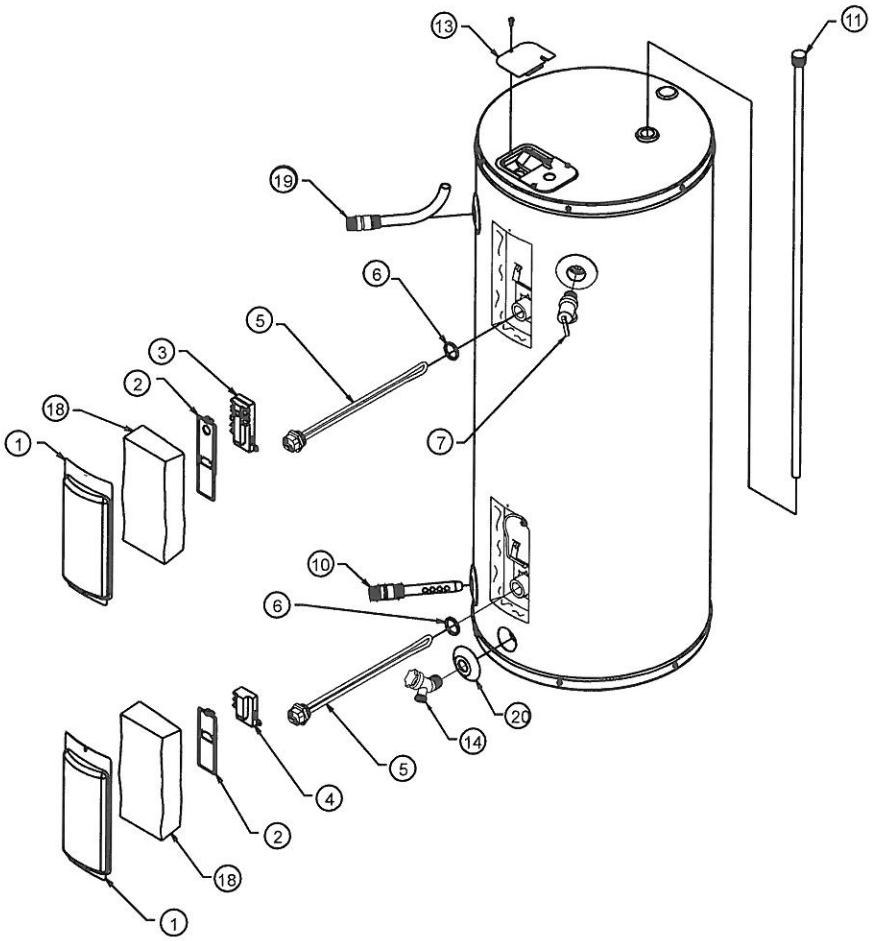


5. Clean the area where the gasket(s) fits to the tank. If you are replacing the bottom element, remove the accumulated sediment on the bottom of the tank.
6. Make sure the replacement element(s) has the correct voltage and wattage rating by matching it to the rating plate on the water heater. Position the new gasket(s) on the element and insert it into the water heater tank (Figure 14). Tighten the element by turning it clockwise until secure.
7. Close the drain valve. Open the nearest hot water faucet 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.
8. Check for leaks around the element(s).
9. Reconnect the electrical wires to the element and securely tighten the screws. Replace the plastic thermostat cover making sure the attachment points are engaged on the thermostat.
10. Replace the access cover(s).
11. Make certain the tank is filled with water. Applying electric current to heater elements not submerged in water will destroy them.
12. Reconnect electrical power to the water heater.

TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
NO HOT WATER	1. No power to heater 2. High Temperature Limit Switch open 3. Non-Functioning upper thermostat or element.	1. Turn on electrical switch. Check for blown fuses or tripped breaker 2. Reset. Check for source of trouble and correct 3. Replace thermostat or element.
INSUFFICIENT HOT WATER	1. Non-Functioning thermostats 2. Non-Functioning lower element 3. Improper calibration 4. Thermostats set too low 5. Sediment or lime in tank 6. Heater too small for job 7. Wrong piping connections 8. Leaking faucets 9. Wasted hot water 10. Long runs of exposed pipe 11. Hot water piping on outside wall	1. Replace thermostats 2. Replace element 3. Replace thermostats 4. Set thermostats to desired temperature 5. Drain. Determine if water treatment is needed 6. Install adequate water heater 7. Correct piping 8. Repair faucets 9. Advise customer 10. Insulate piping 11. Insulate piping
HIGH OPERATION COSTS	1. Improper Calibration 2. Thermostats set too high 3. Sediment or lime in tank 4. Heater too small for job 5. Wrong piping connections 6. Leaking faucets 7. Wasted hot water 8. Long runs of exposed piping 9. Hot water piping in exposed wall	1. Replace thermostats 2. Set thermostat to desired setting 3. Drain. Flush-Provide water treatment if needed 4. Install adequate heater 5. Correct piping 6. Repair faucets 7. Advise customer 8. Insulate piping 9. Insulate piping
SLOW HOT WATER RECOVERY	1. Non-Functioning upper element 2. Non-Functioning lower element	1. Replace element 2. Replace element
DRIP FROM RELIEF VALVE	1. Excessive water pressure 2. Closed system	1. Use Pressure Reducing Valve and Pressure Relief Valve 2. See "Closed System/Thermal Expansion" section
THERMOSTAT DOES NOT SHUT OFF	1. Non-Functioning thermostats 2. Improper calibration	1. Replace thermostats 2. Replace thermostats
WATER ODOR	1. Sulfides in the water	1. See "Anode Rod/Water Odor" section

SIDE WATER CONNECTIONS



REPAIR PARTS

Repair parts may be ordered through your plumber, local distributor, home improvement center, or by calling 1-800-999-9515. When ordering repair parts always give the following information:

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

LEGEND

◆ Special anode rod (See "Anode Rod/Water Odor" section)

■ Temperature and Pressure Relief Valve is required, but may not be factory installed.

▲ Specify thermostat type when ordering

● Exclusive to the Table Top Water Heaters.

REPAIR PARTS LIST

ITEM NO.	PARTS DESCRIPTION
1	ACCESS DOORS
2	THERMOSTAT COVERS (UPPER & LOWER)
3	UPPER THERMOSTAT ▲
4	LOWER THERMOSTAT ▲
5	ELEMENT
6	ELEMENT GASKET
7	TEMPERATURE AND PRESSURE RELIEF VALVES ■
8	HEAT TRAPS
9	DIP TUBE
10	HEAT TRAP/DIP TUBE COMBINATION
11	ANODE ROD ◆
12	HEAT TRAP/ANODE ROD COMBINATION ◆
13	JUNCTION BOX COVER
14	DRAIN VALVE
15	DRAIN ACCESS PANEL ●
16	FRONT PANEL ●
17	TOP PANEL ●
18	INSULATION
19	NIPPLE/J-TUBE COMBINATION
20	FLANGE