Use & Care Manual
With Installation Instructions for the Installer

Electric Residential
Water Heaters

Residential Electric and Point-of-Use Electric Models
for 23 - 38 - 57 - 72 - 76 - 114 - 151 - 189 - 246 - 303 - 454 Liter Capacity Models

The purpose of this manual is twofold: one, to provide the installer with the basic directions and recommendations for the proper installation and adjustment of the water heater; and two, for the owner–operator, to explain the features, operation, safety precautions, maintenance and troubleshooting of the water heater. This manual also includes a parts list.

It is imperative that all persons who are expected to install, operate or adjust this water heater read the instructions carefully so they may understand how to perform these operations. If you do not understand these instructions or any terms within it, seek professional advice.

Any questions regarding the operation, maintenance, service or warranty of this water heater should be directed to the seller from whom it was purchased. If additional information is required, refer to the section on "If you need service."

Do not destroy this manual. Please read carefully and keep in a safe place for future reference.

Recognize this symbol as an indication of Important Safety Information!

Do not attempt to repair or replace any part of your water heater unless it is specifically recommended in this manual. All other servicing should be referred to a qualified technician.

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General Instructions

Be sure to read and understand the entire Use & Care Manual before attempting to install or operate this water heater. It may save you time and cost. Pay particular attention to the General Safety Precautions. Failure to follow these warnings could result in serious bodily injury or death. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Should you have problems understanding the instructions in this manual, or have any questions, STOP, and get help from a qualified installer, service technician, or the local electric utility.

AP14866-4 (08/17)

FOR YOUR RECORDS

Write the model and serial numbers here:

#

#

You can find them on a label on the appliance.

Staple sales slip or cancelled cheque here.

Proof of the original purchase date is needed to obtain service under the warranty.

READ THIS MANUAL

Inside you will find many helpful hints on how to use and maintain your water heater properly. Just a little preventive care on your part can save you a great deal of time and money over the life of your water heater.

You'll find many answers to common problems in the Before You Call For Service section. If you review our chart of Troubleshooting Tips first, you may not need to call for service at all.

READ THE SAFETY INFORMATION

Your safety and the safety of others are very important. There are many important safety messages in this manual and on your appliance. Always read and obey all safety messages.

This is the safety alert symbol. Recognize this symbol as an indication of Important Safety Information!
This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word "DANGER", "WARNING", "CAUTION" or "NOTICE".

These words mean:

⚠ DANGER	An imminently hazardous situation that will result in death or serious injury.
⚠ WARNING	A potentially hazardous situation that could result in death or serious injury and/or damage to property.
⚠ CAUTION	A potentially hazardous situation that may result in minor or moderate injury.
NOTICE:	Attention is called to observe a specified procedure or maintain a specific condition.

Installing the water heater.

The location chosen for the water heater must take into consideration the following:

Local Installation Regulations

This water heater must be installed in accordance with these instructions, local authorities and codes or regulations, utility codes or utility company requirements, which must be followed and take precedent over any recommendation in this manual. Installation must be performed by a licensed plumber.

High Altitude

This appliance is intended for use at a maximum altitude of 4000 m.

Location

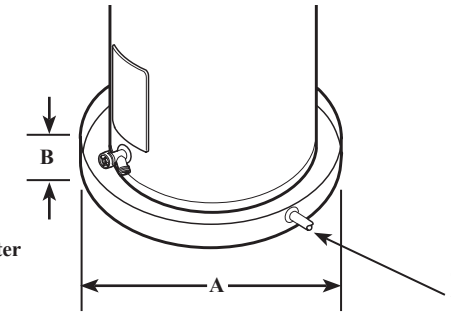
This water heater is designed to meet a wide range of applications. The Point-of-Use water heaters fulfill a demand for a small water heater that can be installed in a limited space. Locate the water heater in a clean dry area as near as practical to the area of greatest heated water demand. Long uninsulated hot water lines can waste energy and water.

Place the water heater in such a manner that the thermostat and element access panels can be removed to permit inspection and servicing such as removal of elements or checking controls.

Where possible, locate the water heater near a floor drain for convenient flushing and draining.

The water heater and water lines should be protected from freezing temperatures. **DO NOT** install the water heater in outdoor, unprotected areas.

⚠CAUTION: The water heater should not be located in an area where leakage of the tank or connections will result in damage to the area adjacent to it or to lower floors of the structure. Where such areas cannot be avoided, it is recommended that a suitable catch pan, adequately drained, be installed under the water heater.



A—Diameter of water heater plus 5 cm (2") min.

B—Maximum 5 cm (2")

To open drain, line should be at least 1.9 cm (¾") ID and pitched for proper drainage.

NOTICE: Auxiliary catch pan MUST conform to local codes. Drain Pan Kits are available from the store where the water heater was purchased, or any water heater distributor.

Inspect Shipment

Inspect the water heater for possible damage. Check the markings on the rating plate of the water heater to be certain the power supply corresponds to the water heater requirements.

Installing the water heater.

Thermal Expansion

Determine if a check valve exists in the inlet water line. It may have been installed in the cold water line as a separate back flow preventer, or it may be part of a pressure reducing valve, water meter or water softener. A check valve located in the cold water inlet line can cause what is referred to as a **"closed water system"**. A cold water inlet line with no check valve or back flow prevention device is referred to as an "open" water system.

As water is heated, it expands in volume and creates an increase in the pressure within the water system. This action is referred to as **"thermal expansion"**. In an "open" water system, expanding water which exceeds the capacity of the water heater flows back into the city main where the pressure is easily dissipated.

A **"closed water system"**, however, prevents the expanding water from flowing back into the main supply line, and the result of **"thermal expansion"** can create a rapid and dangerous pressure increase in the water heater and system piping. This rapid pressure increase can quickly reach the safety setting of the relief valve, causing it to operate during each heating cycle. Thermal expansion, and the resulting rapid and repeated expansion and contraction of components in the water heater and piping system can cause premature failure of the relief valve, and possibly the heater itself. Replacing the relief valve **will not** correct the problem!

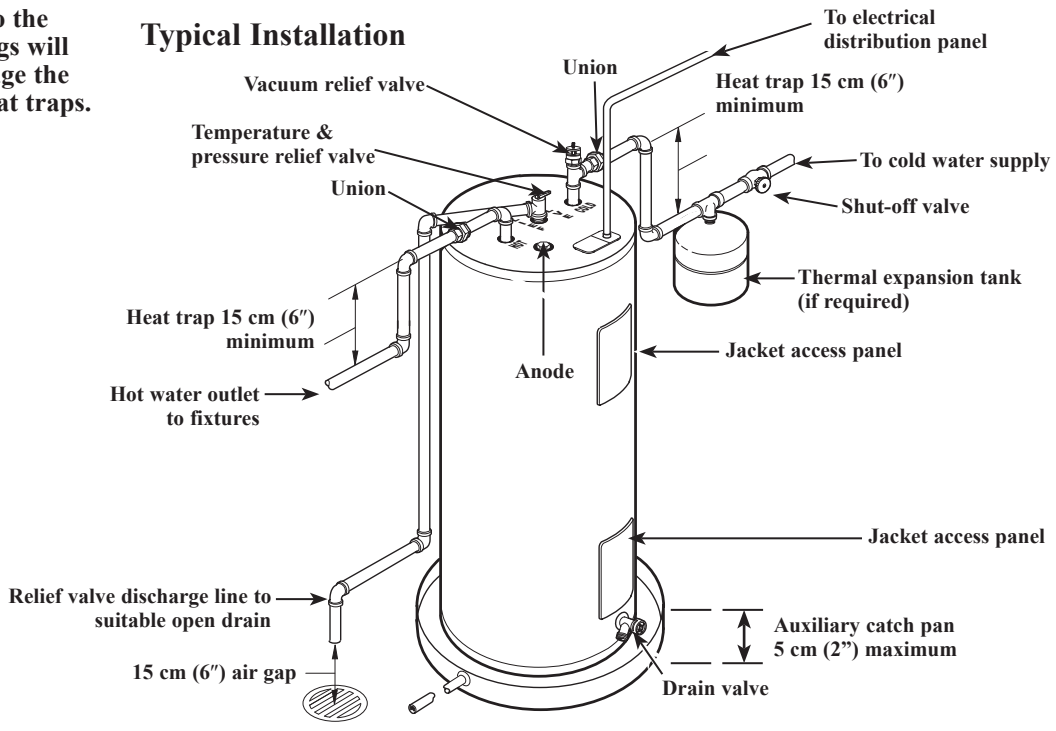
The suggested method of controlling thermal expansion is to install an expansion tank in the cold water line between the water heater and the check valve (refer to the illustration below). The expansion tank is designed with an air cushion built in that compresses as the system pressure increases, thereby relieving the over pressure condition and eliminating the repeated operation of the temperature and pressure relief valve. Other methods of controlling thermal expansion, like installing pressure valves, are also available. Contact your installing contractor, water supplier or plumbing inspector for additional information regarding this subject.

Water Supply Connections

NOTICE: DO NOT apply heat to the HOT or COLD water connections. If sweat connections are used, sweat tubing to adapter before fitting adapter to the water connections on heater. Any heat applied to the water supply fittings will permanently damage the dip tube and or heat traps.

Refer to the illustration below for suggested typical installation. Use unions or flexible copper connectors on the hot and cold water connections so that the water heater may be easily disconnected for servicing if necessary. The HOT and COLD water connections are clearly marked and are 3/4″ NPT on all models. Install a shut-off valve and a vacuum relief valve in the cold water line near the water heater. A drain valve may be installed near the cold water inlet of the water heater if necessary.

Typical Installation



A new combination temperature and pressure relief valve (T&P relief valve), complying with the Standard for Relief Valves and Automatic Gas Shut-Off Devices for Hot Water Supply Systems, ANSI Z21.22/CSA 4.4 M99, is provided with the water heater and must be installed in the opening provided and marked for the purpose on the water heater. No valve of any type should be installed between the relief valve and the tank. Local codes shall govern the installation of relief valves.

Relief Valve

⚠WARNING: The pressure rating of the T&P relief valve must not exceed 1 034 kPa (150 PSI), the maximum working pressure of the water heater as marked on the rating plate.

The BTU/h rating of the relief valve must not be less than the input rating of the water heater as indicated on the rating label located on the front of the heater (1 watt=3.412 BTU/h).

Connect the outlet of the relief valve to a suitable open drain so that the discharge water cannot contact live electrical parts or persons and to eliminate potential water damage.

Piping used should be of a type approved for hot water distribution. The discharge line must be no smaller than the outlet of the valve and must pitch downward from the valve to allow complete drainage (by gravity) of the relief valve and discharge line. The overflow piping must discharge in a position such that it can be readily seen 15cm above the floor drain. The end of the discharge line must be left open to the atmosphere. The piping should be installed in a frost-free environment. No valve of any type, restriction or reducer coupling should be installed in the discharge line.

To Fill the Water Heater

⚠WARNING: The tank must be full of water before heater is turned on. Heating elements will be damaged if energized for even a short time while tank is dry. The water heater warranty does not cover damage or failure resulting from operation with an empty or partially empty tank.

Make certain the drain valve is completely closed.

Open the shut-off valve or stop cock in the cold water supply line.

Open each hot water faucet slowly to allow the air to vent from the water heater and piping.

A steady flow of water from the hot water faucet(s) indicates a full water heater.

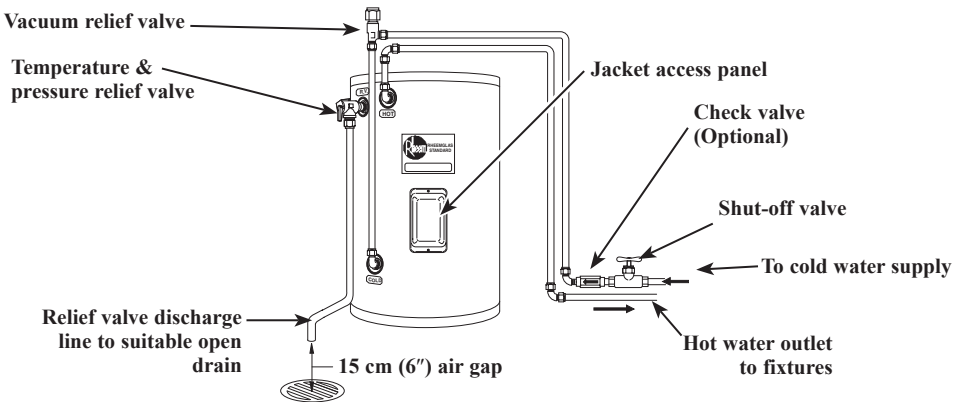
Condensation

Condensation can form on the tank when it is first filled with water. Condensation might also occur with a heavy water draw and very cold inlet water temperature.

This condition is not unusual, and will disappear after the water becomes heated. If, however, the condensation continues, examine the piping and fittings for possible leaks.

Typical Installation (Point-of-Use Models)

⚠CAUTION: The cold inlet piping should be routed as shown to aviod accidental drainage of water from the water heater.



Installing the water heater.

Electrical installation MUST be carried out by a licensed electrician only.

⚠CAUTION: The presence of water in the piping and water heater does not provide sufficient conduction for a ground. Non-metallic piping, dielectric unions, flexible connectors etc. can cause the water heater to be electrically isolated.

⚠CAUTION: The voltage requirement and wattage load of the heater is specified on the heater identification plate. The heater MUST be earthed.

Electrical Connections

A separate branch circuit with copper conductors, overcurrent protective device and suitable disconnecting means must be provided by a qualified electrician.

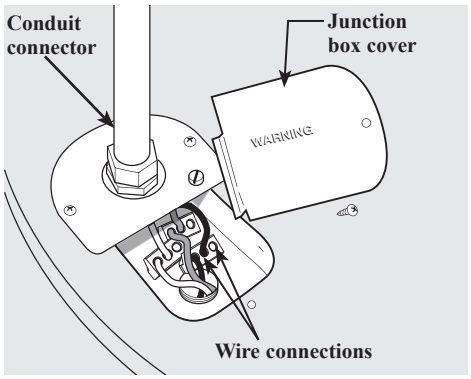
All wiring must conform to local codes, or the latest edition of the National Electrical Code. Refer to wiring diagrams in the back of this manual for wiring connections.

The voltage requirements and wattage load for the water heater are specified on the rating plate on the front of the water heater.

The water heater is completely wired to the junction bracket or box inside the water heater. An opening for 16 mm (1/2") or 21 mm (3/4") electrical fitting is provided for field wiring connections.

The branch circuit wiring should include either:

1. Metallic conduit or metallic sheathed cable approved for use as a grounding conductor and installed with fittings approved for the purpose, sized appropriately for the openings found in the water heater,
2. Non-metallic sheathed cable, metallic conduit or metallic sheathed cable not approved for use as a ground conductor shall include a separate conductor for grounding, sized appropriately for the openings found in the water heater. It should be attached to the ground terminals of the water heater and the electrical distribution box.



Water heater junction box.

NOTICE: This guide recommends minimum branch circuit sizing and wire size. Refer to wiring diagrams in this manual for field wiring connections.

For single element models rated at 400V the intended power supply is 230V/400V (230V line-to-neutral / 400V line-to-line) on a 3-Phase power supply system.

Branch Circuit Sizing and Wire Size Guide

Imput (Watts)	Recommended Over Current Protection (Fuse or circuit breaker amperage rating)			Recommended Copperwire size mm2 based on I. E. C. requirements		
	220V	230V	240V	220V	230V	240V
1500	16	16	16	2.5	2.5	2.5
2500	16	16	16	2.5	2.5	2.5
3000	20	20	20	2.5	2.5	2.5
3500	20	20	20	2.5	2.5	2.5
4500	32	25	25	6.0	6.0	6.0
5500	40	32	32	10	6.0	6.0
6000	40	40	40	10	10	10

Installation Checklist

A. Water Heater Location

- ❑ Close to area of heated water demand.
- ❑ Indoors and protected from freezing temperatures.
- ❑ Area free of flammable vapours.
- ❑ Provisions made to protect area from water damage.
- ❑ Sufficient room to service heater.

B. Water Supply

- ❑ Water heater completely filled with water.
- ❑ Air purged from water heater and piping.
- ❑ Water connections tight and free of leaks.

C. Relief Valve

- ❑ Temperature and Pressure Relief Valve properly installed and discharge line run to open drain.
- ❑ Discharge line protected from freezing.

D. Wiring

- ❑ Power Supply voltage agrees with water heater rating plate.
- ❑ Branch circuit wire and fusing or circuit breaker of proper size.
- ❑ Electrical connections tight and unit properly grounded.

Operating the water heater.

⚠CAUTION: Hydrogen gas can be produced in a hot water system served by this water heater that has not been used for a long period of time (generally two weeks or more). HYDROGEN GAS IS EXTREMELY FLAMMABLE!! To dissipate such gas and to reduce risk of injury, it is recommended that the hot water faucet be opened for several minutes at the kitchen sink before using any electrical appliance connected to the hot water system. If hydrogen is present, there will be an unusual sound such as air escaping through the pipe as the water begins to flow. DO NOT smoke or use an open flame near the faucet at the time it is open.

Safety Precautions

- **A** **DO** turn off power to water heater if it has been subjected to over heating, fire, flood, physical damage.
- **B** **DO NOT** turn on water heater unless it is filled with water.
- **C** **DO NOT** turn on water heater if cold water supply shut-off valve is closed.
- **D** If there is any difficulty in understanding or following the Operating Instructions or the Care and Cleaning section, it is recommended that a qualified person or serviceman perform the work.

⚠WARNING: If the water heater has been subjected to flood, fire, or physical damage, turn off power and water to the water heater.

DO NOT operate the water heater again until it has been thoroughly checked by qualified service personnel.

Safety Controls

The water heater is equipped with a combination thermostat and temperature limiting control (ECO) that is located above the heating element in contact with the tank surface. If for any reason the water temperature becomes excessively high, the temperature limiting control (ECO) breaks the power circuit to the heating element. Once the control opens, it must be reset manually.

⚠CAUTION: The cause of the high temperature condition must be investigated by qualified service technician and corrective action must be taken before placing the water heater in service again.

To reset the temperature limiting control:

1. Turn off the power to the water heater.
2. Remove the jacket access panel(s) and insulation.

   The thermostat protective cover should not be removed.
3. Press the red RESET button.
4. Replace the insulation and jacket access panel(s) before turning on the power to the water heater.

Water Temperature Setting

⚠DANGER: There is a hot water SCALD potential if the thermostat is set too high. Households with small children, disabled, or elderly persons may require a 49°C (120°F) or lower thermostat setting to prevent contact with HOT water.

The EU Drinking Water Directive (98/83/EG) and IEC62395-2:2013 require that a water heater provide the means to inhibit growth of Legionella bacteria in potable water. This water heater can satisfy these requirements provided it is operating and the thermostat is set between 50 and 60°C, or higher, including when it is used as an in series booster water heater for a solar water heater.

With this in mind, please review the information below regarding hazards associated with exposure scalding from hot water. Always test the water and mix with cold to ensure the water is at a safe temperature for use.

The temperature of the water in the water heater can be regulated by setting the temperature dial of the adjustable surface mounted thermostat(s) located behind the jacket access panel(s).

Safety and energy conservation are factors to be considered when selecting the water temperature setting of the water heater's thermostat(s). The lower the temperature setting, the greater the savings in energy and operating costs.

Water temperatures above 52°C (125°F) can cause severe burns or death from scalding. Be sure to read and follow the warnings outlined in this manual and on the label on the water heater. This label is located on the water heater near the thermostat access panel.

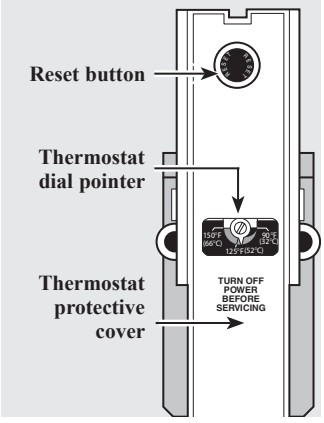
Mixing valves for reducing point of use water temperature by mixing hot and cold water in branch water lines are available. Contact a licensed plumber or the local plumbing authority for further information.

The chart below may be used as a guide in determining the proper water temperature for your home.

Time/Temperature Relationship in Scalds

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

Table courtesy of Shriners Burn Institute



Thermostat and protective cover.

If adjustment is necessary…

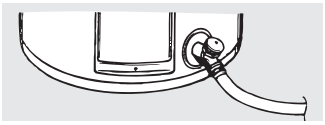
The thermostat was factory set at 60ºC (140ºF). However the installer or user can adjust the thermostat to the desired setting upon completion of installation.

1. Turn off the power to the water heater.
2. Remove the jacket access panel(s) and insulation exposing the thermostat(s).

The thermostat protective cover(s) should not be removed

3. Using a small screwdriver, set the thermostat(s) dial pointer(s) to the desired temperature.
4. Replace the insulation and jacket access panel(s). Turn on the power to the water heater.

Care and cleaning of the water heater.



Draining the Water Heater

⚠CAUTION: Shut off power to the water heater before draining water.

⚠DANGER: Before manually operating the relief valve, make certain no one will be exposed to the hot water released by the valve. The water drained from the tank may be hot enough to present a scald hazard and should be directed to a suitable drain to prevent injury or damage.

In order to drain the water heater, turn off the cold water supply. Open a hot water faucet or lift the handle on the relief valve to admit air to the tank.

Attach a garden hose to the drain valve on the water heater and direct the stream of water to a drain. Open the valve.

Vacation and Extended Shut-Down

NOTICE: Refer to the Hydrogen Gas Caution in the Operating Instructions.

If the water heater is to remain idle for an extended period of time, the power and water to the appliance should be turned off to conserve energy and prevent a build-up of dangerous hydrogen gas.

The water heater and piping should be drained if they might be subjected to freezing temperatures.

After a long shut-down period, the water heater's operation and controls should be checked by qualified service personnel. Make certain the water heater is completely filled again before placing it in operation.

Routine Preventative Maintenance

⚠DANGER: Before manually operating the relief valve, make certain no one will be exposed to the danger of coming in contact with the hot water released by the valve. The water may be hot enough to create a scald hazard. The water should be released into a suitable drain to prevent injury or property damage.

NOTICE: If the temperature and pressure relief valve on the hot water heater discharges periodically, this may be due to thermal expansion in a closed water system. Contact the water supplier or your plumbing contractor on how to correct this. DO NOT plug the relief valve outlet.

Properly maintained, your water heater will provide years of dependable trouble-free service.

It is suggested that a routine preventive maintenance program be established and followed by the user.

It is further recommended that a periodic inspection of the operating controls, heating element and wiring should be made by service personnel qualified in electric appliance repair.

Most electrical appliances, even when new, make some sound when in operation. If the hissing or singing sound level increases excessively, the electric heating element may require cleaning. Contact a qualified installer or plumbing contract to inspect.

At least once every 6 months, lift and release the lever handle on the temperature pressure relief valve, located near the top of the water heater, to make certain the valve operates freely. Allow several litres to flush through the discharge line to an open drain.

A water heater's tank can act as a settling basin for solids suspended in the water. It is therefore not uncommon for hard water deposits to accumulate in the bottom of the tank. It is suggested that a few litres of water be drained from the water heater's tank every month to clean the tank of these deposits.

Rapid closing of faucets or solenoid valves in automatic water using appliances can cause a banging noise heard in a water pipe. Strategically located risers in the water pipe system or water hammer arresting devices can be used to minimize the problem.

Before You Call For Service…

Troubleshooting Tips
Save time and money! Review the chart on this page first and you may not need to call for service.

Problem	Possible Causes	What To Do
Rumbling noise	Water conditions in your home caused a build up of scale or mineral deposits on the heating elements.	● Remove and clean the heating elements.
Relief valve producing popping noise or draining	Pressure build up caused by thermal expansion in a closed system.	● This is an unacceptable condition and must be corrected. Contact the water supplier or plumbing contractor on how to correct this. **DO NOT** plug the relief valve outlet.
Rattling noise during periods of water usage	Internal heat trap fittings in operation.	● This is normal for heat trap fittings when in operation and does not indicate a need for service.
Not enough or no hot water	Water usage may have exceeded the capacity of the water heater.	● Wait for the water heater to recover after an abnormal demand.
	A fuse is blown or a circuit breaker tripped.	● Replace fuse or reset circuit breaker.
	Electric supply may be off.	● Make sure electric supply to water heater and disconnect switch, if used, are in the ON position.
	The thermostat may be set too low.	● See the Temperature regulation of the water heater section of this manual.
	Leaking or open hot water faucets.	● Make sure all faucets are closed.
	Electric service to your home may be interrupted.	● Contact the local electric utility.
	Improper wiring.	● See the Installing the water heater section of this manual.
	Manual reset limit (ECO).	● See the Temperature regulation of the water heater section of this manual.
	Cold water inlet temperature may be colder during the winter months.	● This is normal. The colder inlet water takes longer to heat.
Water is too hot	The thermostat is set too high.	● See the Temperature regulation of the water heater section of this manual.

⚠CAUTION: For your safety DO NOT attempt repair of electrical wiring, thermostats, heating elements or other safety devices. Refer repairs to qualified service personnel.

Replacement Parts.

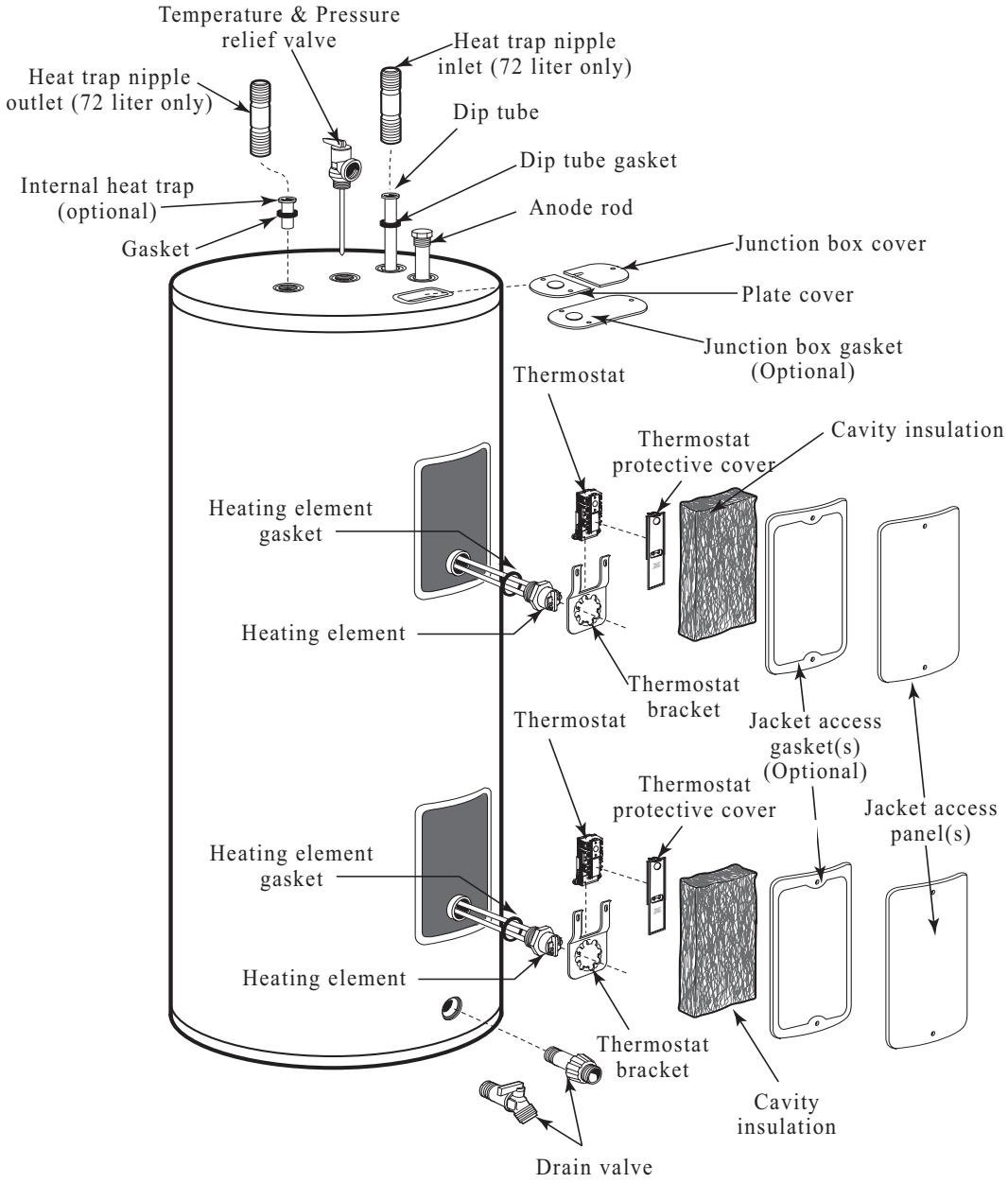
Instructions For Placing a Parts Order

Address parts orders to the distributor or store where the heater was purchased.

All parts orders should include:

1. The model and serial number of the water heater from the rating plate.
2. Specify voltage and wattage as marked on the rating plate.
3. Part description (as noted below) and number of parts desired.

⚠CAUTION: For your safety DO NOT attempt repair of electrical wiring, thermostat(s), heating elements or other operating controls. Refer repairs to qualified service personnel.



NOTICE: Some parts may vary in appearance from model to model.

Replacement Parts.

Point-of Use Models

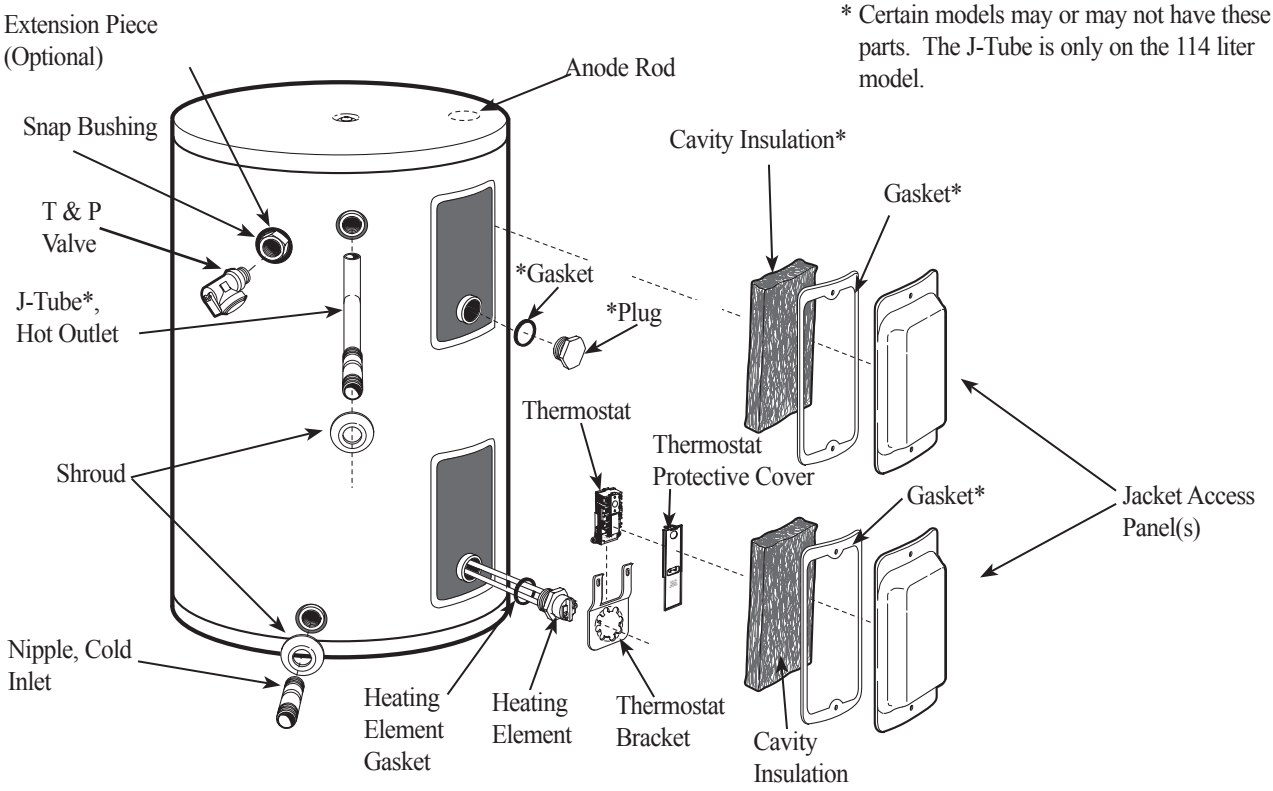
Instructions For Placing a Parts Order

Address parts orders to the distributor or store where the heater was purchased.

All parts orders should include:

1. The model and serial number of the water heater from the rating plate.
2. Specify voltage and wattage as marked on the rating plate.
3. Part description (as noted below) and number of parts desired.

⚠CAUTION: For your safety DO NOT attempt repair of electrical wiring, thermostat(s), heating elements or other operating controls. Refer repairs to qualified service personnel.

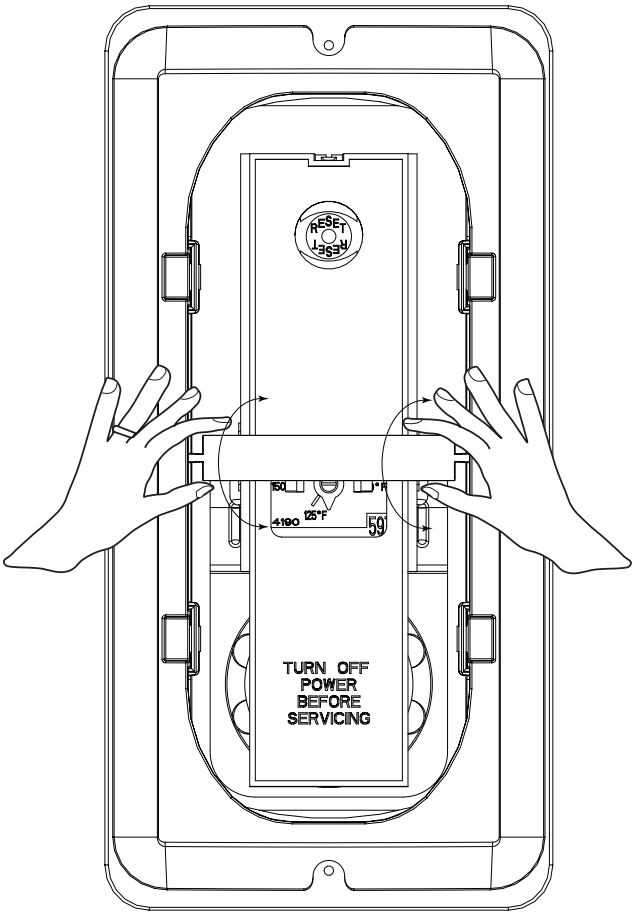


* Certain models may or may not have these parts. The J-Tube is only on the 114 liter model.

NOTICE: Some parts may vary in appearance from model to model.

Cavity Insert Instructions (for certain models)

The following instructions are intended for qualified service personnel ONLY, and should only be done when necessary.



In order to replace the thermostat or heating element, remove the cavity insert crossbar by following the instructions below:

1. Turn off the power to the water heater.
2. Remove the jacket access panel(s) and insulation.
3. Rotate the crossbar up and down until it breaks away from the remainder of the cavity insert. (See illustration to the left)

   Discard the crossbar. It cannot and need not be replaced.
4. Replace the thermostat and/or element as necessary.
5. Replace the insulation and jacket access panel(s) before turning on the power to the water heater.

NOTICE: The cavity insert crossbar is necessary for the manufacturing process only. The removal of the crossbar will not interfere with the operation of the water heater.

IF YOU NEED SERVICE

1. Should you have any questions about your new water heater, or if it requires adjustment, repair, or routine maintenance, it is suggested that you first contact your installer, plumbing contractor or previously agreed upon service agency. In the event the firm has moved, or is unavailable, refer to the telephone directory, commercial listings or local utility for qualified service assistance.

2. Should your problem not be solved to your complete satisfaction, you should then contact the Manufacturer's National Service Department at the following address:

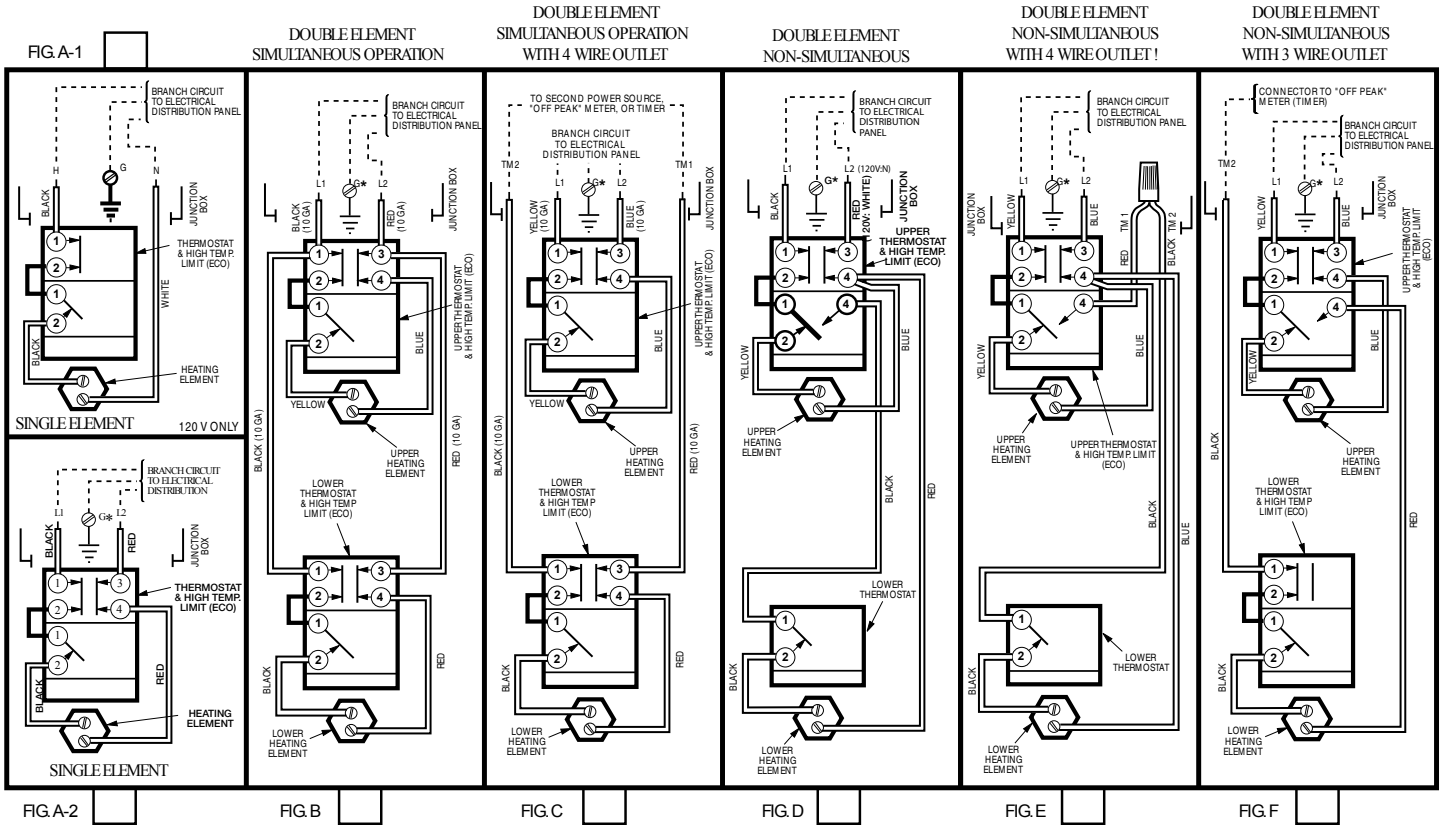
   Rheem Manufacturing MEA FZE
   P.O. Box 371045
   2E, East Wing, Office no 407
   Dubai Airport Free Zone (DAFZA), UAE.

   When contacting the manufacturer, the following information will be requested:

a. Model and serial number of the water heater as shown on the rating plate attached to the jacket of the heater.
b. Address where the water heater is located and physical location.
c. Name and address of installer and any service agency who performed service on the water heater.
d. Date of original installation and dates any service work was performed.
e. Details of the problems as you can best describe them.
f. List of people, with dates, who have been contacted regarding your problem.

Wiring diagram

Wiring Diagrams — Therm-O-Disc Thermostats (Type 59T)



* Grounding conductor may be required. Refer to Wiring Section of Manual

! This water heater is factory equipped for two (2) wire connection to electrical power. For use with "off-peak" meter (timer) remove wire nut from red and black leads and connect to "off-peak" meter (timer).

THIS ELECTRIC WATER HEATER IS WIRED AS INDICATED ABOVE OR BELOW

Wiring Diagrams Electric Water Heaters for 3 - Phase Applications

Therm-O-Disc Thermostats (Type 59T)

For the connection of this water heater to a 3-Phase Branch Circuit, connect field wiring to the water heater as indicated in the appropriate wiring diagram at right. A separate junction box is being supplied with this water heater (check bottom of carton) to accomodate wiring and conduit connections. Install the Junction Box as shown on the Installation/Instruction Sheet included in the plastic bag attached to the heater.