

American Standard Water Heaters

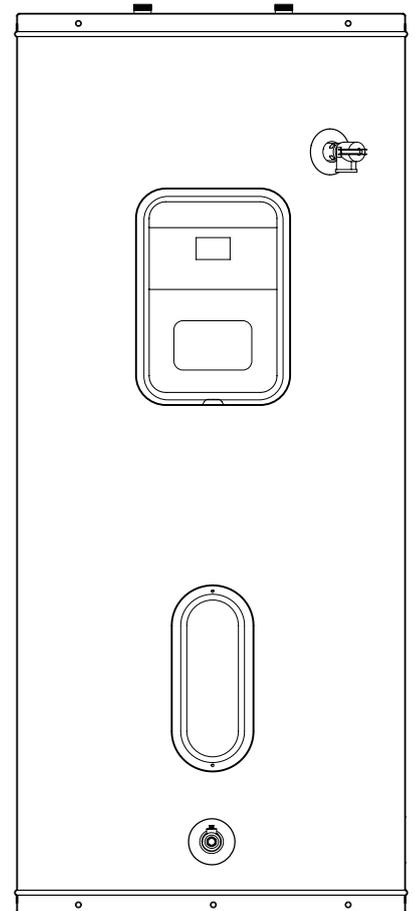
Operating and Installation Service Manual

Electric Residential

Water Heaters

IMPORTANT SAFETY INSTRUCTIONS

- READ ALL INSTRUCTIONS BEFORE USING THIS WATER HEATER.
Install or locate this water heater only in accordance with the installation instructions. Use this water heater only for its intended use as described in this manual.
- Check the data plate on the water heater before installation to make certain the voltage shown is the same as the electric supply to the water heater.
- This water heater must be connected only to a properly grounded electrical supply. Do not fail to properly ground this water heater (see "Electrical Connections").
- Turn off the electrical supply before servicing this water heater.
- SCALD INJURY is heightened by increased water temperatures. Hot water can produce 3rd degree burns in 6 seconds at 140°F and in 30 seconds at 130°F.
- As with any appliance, close supervision is necessary when used by children.
- This water heater should be serviced only by qualified service personnel.
- Do not use this water heater if it has damaged wiring, is not working properly, or has been damaged or dropped.



WARNING: The information in these instructions must be followed exactly. Improper installation, adjustment, service or maintenance can cause property damage, personal injury or death

SAVE THESE INSTRUCTIONS

INSTALLER:

- Affix these instructions to or adjacent to the water heater.
- Before leaving the premises, review this operating and service manual to be sure that the water heater has been installed correctly. Start and operate the unit for one complete cycle and make sure the water temperature is acceptable to the consumer at the outlet fixtures.

OWNER:

- Retain these instructions and warranty for future reference. Retain the original receipt as proof of purchase.



WARNING: This appliance shall not be installed in any location where flammable liquids are stored or vapors are likely to be present. Flammable vapors may be drawn to this water heater from other areas of the structure by air currents.

INSTALLATION AND SERVICE MUST BE PERFORMED BY A QUALIFIED INSTALLER OR SERVICE AGENCY

All technical and warranty questions should be directed to the local dealer from whom the water heater was purchased. If you are unsuccessful, please write to the company listed on the warranty or data plate which came with your water heater.



CALL THIS TOLL FREE TELEPHONE NUMBER 1-888-883-0788 WITH ANY QUESTIONS DURING OR AFTER INSTALLATION.

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WARNING: Improper installation, adjustment, aeration, service or maintenance can cause injury, death, or property damage.

Read and refer to this owner's manual.

OWNER:
 READ AND RETAIN THESE
INSTRUCTIONS
 AND **WARRANTY**
 FOR FUTURE **REFERENCE.**

INSTALLER: Please complete the following information at the time of installation, retain and present along with the warranty in the event that a claim is necessary.

MODEL NUMBER _____ TYPE _____
 SERIAL NUMBER _____

THIS WATER HEATER HAS BEEN INSTALLED IN ACCORDANCE WITH THESE
 INSTALLATION INSTRUCTIONS AND LOCAL CODE REQUIREMENTS ON

_____ *Date*

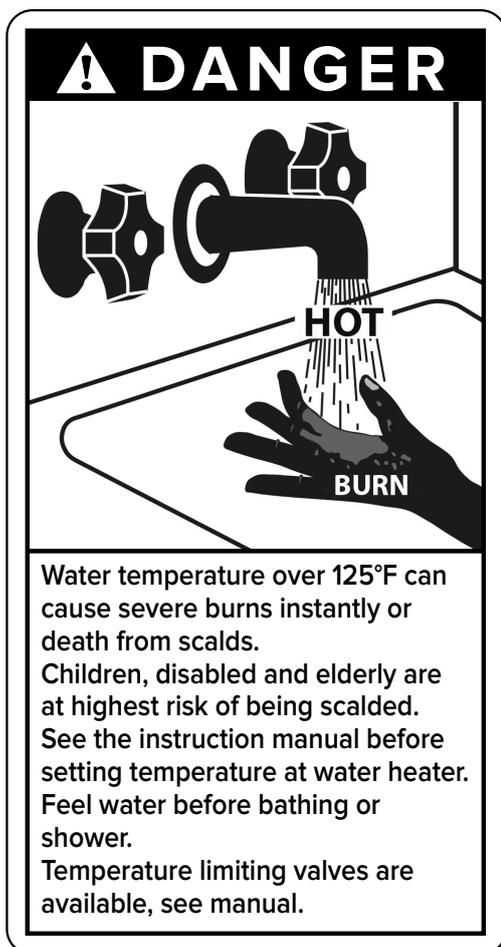
INSTALLER _____

IMPORTANT SAFETY INFORMATION READ ALL INSTRUCTIONS BEFORE USING

⚠ WARNING: If the Water Heater thermostat is set too high there is Serious Potential for SCALDING.

NOTE: When this water heater is supplying general purpose hot water requirements for use by individuals, a thermostatically controlled mixing valve for reducing point-of-use water temperature is recommended to reduce the risk of scald injury. Contact a licensed plumber or the local plumbing authority for further information.

THE WARRANTY ON THIS WATER HEATER IS IN EFFECT ONLY WHEN THE WATER HEATER IS INSTALLED, ADJUSTED, AND OPERATED IN ACCORDANCE WITH THESE INSTRUCTIONS. THE MANUFACTURER OF THIS WATER HEATER WILL NOT BE LIABLE FOR ANY DAMAGES RESULTING FROM FAILURE TO COMPLY WITH THESE INSTRUCTIONS. READ THESE INSTRUCTIONS THOROUGHLY BEFORE PROCEEDING.



SAFETY INFORMATION

Water piping, fittings, and valves must be properly installed for the correct and safe operation of this water heater. Please note the following:

DO NOT install this water heater with iron piping. The system should be installed only with new piping that is suitable for potable (drink-able) water such as copper, CPVC or polybutylene. DO NOT use PVC water piping.

DO NOT use any pumps, valves, or fittings that are not compatible with potable water.

DO NOT use valves that may cause excessive restrictions to water flow. Use full flow ball or gate valves only.

DO NOT use 50/50 tin-lead solder (or any lead based solder) in potable water lines. ONLY use 95/5 Tin/antimony or other equivalent materials.

DO NOT tamper with thermostat heater elements, electrical connections, or temperature and pressure relief valve. Tampering with any of these components is DANGEROUS and can result in property damage, severe injury or death. Tampering voids all warranties. Only qualified technicians should service the above components.

DO NOT use with piping that has been treated with chromates, boiler seal, or other chemicals.

DO NOT add any chemicals to the system piping which will contaminate the potable water supply.

DO NOT install check valves on the cold water supply line to the water heater.

FOR INSTALLATIONS IN THE STATE OF CALIFORNIA

California Law requires that residential water heaters must be braced, anchored or strapped to resist falling or horizontal displacement due to earthquake motions. For residential water heaters up to 52 gallon capacity, a brochure with generic earthquake bracing Instructions can be obtained from: 2808 Metropolitan Place Pomona, CA 91767 USA 1-888-883-0788 or ask a water heater dealer.

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.

Applicable local codes govern installation. For residential water heaters with a capacity greater than 52 gallons, consult the local building jurisdiction for acceptable bracing procedures.

ELECTRIC RESIDENTIAL WATER HEATER INSTRUCTIONS

GENERAL INFORMATION

WARNING

The manufacturer's warranty does not cover any damage or defect caused by installation or attachment or use of any special attachment such as energy saving devices (other than those authorized by the manufacturer) into, onto or in conjunction with the water heater. The use of such unauthorized devices may shorten the life of the water heater and may endanger life and property. The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized devices.

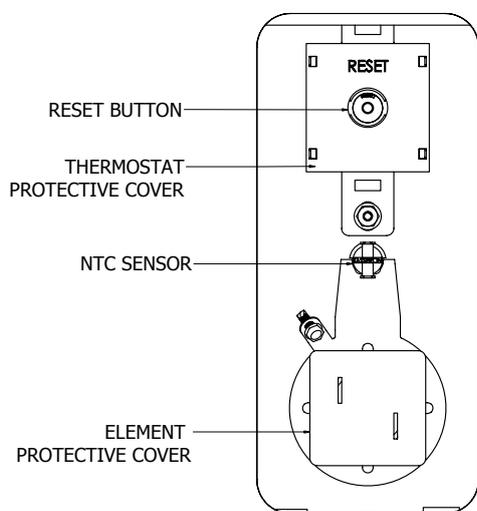
INSPECT SHIPMENT- for possible damage. The manufacturer's responsibility ceases upon delivery of goods to the shipper in good condition. Any claims for damage, shortage in shipments, or no delivery must be filed immediately against carrier by consignee.

CAUTION: Before installation check rating plate on water heater to make sure voltage and phase shown is the same as the electric supply to which the water heater is going to be connected.

CAUTION: Do not turn on electrical current to water heater elements until tank has been completely filled with water. Open several hot water faucets to allow air to escape from the system while tank is filling. The heating elements will be damaged if not completely immersed in water if energized for even a short time. Such damages ARE NOT covered by warranty.

WARNING: HAZARD OF ELECTRICAL SHOCK!

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 may result in DEATH, SERIOUS BODILY INJURY OR PROPERTY DAMAGE.



The previous illustration shows the sensor system used to set the temperature through the HMI and the safety thermostat (ECO), for Reset the ECO by pushing in the red button marked "RESET" Do not remove thermostat protective cover.

DANGER

WARNING

DO NOT INSTALL OUTDOORS. This water heater is certified for indoor installation only. Failure to follow these instructions could result in FIRE, PROPERTY DAMAGE, and/or PERSONAL INJURY OR DEATH.

DANGER

Areas where Flammable liquids (Gasoline, solvents, liquid propane, butane, etc.), or other substances which emit flammable vapors are stored may not be suitable for water heater installation. Natural air movements can carry flammable vapors varied distances from where they are stored or used. The water heater thermostat contacts can arc and ignite these vapors causing property damage, serious burns or death. Never store or use flammable substances in the same room or area containing an electric water heater. Gasoline or other flammable substances must never be used in the same room or area containing a water heater or other spark-producing device.

IMPORTANT: LOCAL CODES AND REQUIREMENTS IN YOUR AREA MAY REQUIRE THAT THE WATER HEATER BE INSTALLED IN SUCH WAY THAT THE BOTTOM THERMOSTAT IS ELEVATED AT LEAST 18 INCHES FROM THE FLOOR.

The temperature of the water in the heater is regulated by the adjustable surface mounted thermostat(s) located behind the jacked access panel(s). Dual element water heaters have two thermostats. To comply with safety regulations the thermostat(s) are set at 125°F before the water heater is shipped from the factory.

INSULATION BLANKET

Some governing bodies may require the use of external insulation blankets when water heaters are installed in newly constructed homes and/or additions. If an insulation blanket is used on this water heater CAUTION must be exercised so as to not restrict its proper function and operation. Please note the following:

- Do not cover the temperature and pressure relief valve or any labels or instruction materials applied to the water heater. These labels must remain visible for reference by the user.
- Do not remove any labels as they are a permanent part of the water heater as required by certification agencies and/or the Federal Government.
- Do not cover any access panels leading to element compartments.
- Do not cover or obstruct ventilation openings in electrical compartment or place insulation in contact with electrical compartment panel door.

1. LOCATION AND INSTALLATION

Do not turn on electrical current to water heater elements unit. This residential water heater should be installed in a clean, dry location close to where a good electrical connection can be made and as close to the major usage of hot water as possible. The unit can be installed on a combustible floor with 0 inches minimum clearance to combustible walls. The heater should be located so that all electrical controls, heating elements, drain valve and water connections are accessible. Adequate clearance must be provided for the access panel.

This water heater should be installed in accordance with all national, state and local codes and ordinances.

If additional information is desired, the latest edition of the National Electric Code "NFPA 70" are recommended.

**The above information is available from:
National Fire Protection Agency
1 Battery March Park Quincy, MA 02269
American National Standards Institute,
1430 Broadway, New York, NY 10018**

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

CAUTION: This water heater must be located in an area where leakage of the tank or connections will not result in damage to the area adjacent to the water heater or to lower floors of the structure. When such locations cannot be avoided suitable drain pan must be installed under the water heater. Such pans must be at least 2 inches deep having a minimum length and width of at least 2 inches greater than the diameter of the water heater and should be piped to an adequate drain. Warranty do not cover any damage if adequate drain/draining pan is not installed
This electric residential water heater is not intended for space heating applications.

NOTE: BEFORE PROCEEDING WITH THE INSTALLATION, CLOSE THE MAIN WATER SUPPLY VALVE. OPEN A WATER FAUCET TO RELIEVE THE WATER PRESSURE, AND THEN CLOSE THE FAUCET.

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 evaporate after the water becomes heated. If, however, the condensation continues, examine the piping and fittings for possible leaks.

2. WATER LINES AND CONNECTIONS

The hook-up connections will be determined by the need for hot water. The cold water line connects to the inlet nipple at the Top of the water heater. The hot water line connects to the outlet nipple on top of the water heater. By providing unions on the water connections and a shut off valve in the cold water line the water heater may be disconnected for servicing when necessary. Two temperatures of hot water can be achieved by a mixing valve. The valves, piping, and pipe connection should be of the same type and manufacturer. The pipe lengths from the center line of inlets and outlets to the water heater must be exactly equal. All hook-ups must comply with all local codes. Install a vacuum relief anti-siphon device on the cold water inlet line. Do not install a check valve or other devices that would prevent reverse flow of water unless required by local codes because a closed system will result and frequent operation of the relief valve will occur.

IMPORTANT SAFETY INFORMATION READ ALL INSTRUCTIONS BEFORE USING

PIPING INSTALLATION

Water supply pressure should not exceed 80% of the working pressure of the water heater. The working pressure is stated on the water heaters' data plate. If this occurs, a pressure limiting valve with a by-pass may need to be installed in the cold water inlet line. This should be placed on the supply to the entire building in order to maintain equal hot and cold water pressures.

IMPORTANT: Heat cannot be applied to the water fittings on the water heater as they may contain nonmetallic parts. If solder connections are used, solder the pipe to the adapter before attaching the adapter to the hot and cold water fittings.

IMPORTANT: Always use a good grade of joint compound and be certain that all fittings are drawn up tight.

CLOSED SYSTEM / THERMAL EXPANSION

Periodic discharge of the temperature and pressure relief valve may be due to thermal expansion in a closed water supply system. The water utility supply meter may contain a check valve, back flow pre venter or water pressure reducing valve. This will create a closed water system. During the heating cycle of the water heater, the water expands causing increased pressure inside the water heater. The temperature and pressure relief valve may discharge hot water under these conditions which results in a loss of energy and a build-up of lime on the relief valve seat. To prevent this from happening, there are two requirements:

Install a diaphragm-type expansion tank that is suitable for potable water on the cold water supply line. The expansion tank must have a minimum capacity of 1.5 US gallons for every 50 gallons of stored water. Contact the local water supplier or plumbing inspector for information on how to control this situation. Do not plug up the temperature and pressure relief valve. Warranty will not cover a leak if expansion tank (or any other system to prevent thermal expansion) is not installed.

IMPORTANT: Do not fail to install a suitable drain pan under the water heater and pipe the drain line to an adequate drain.

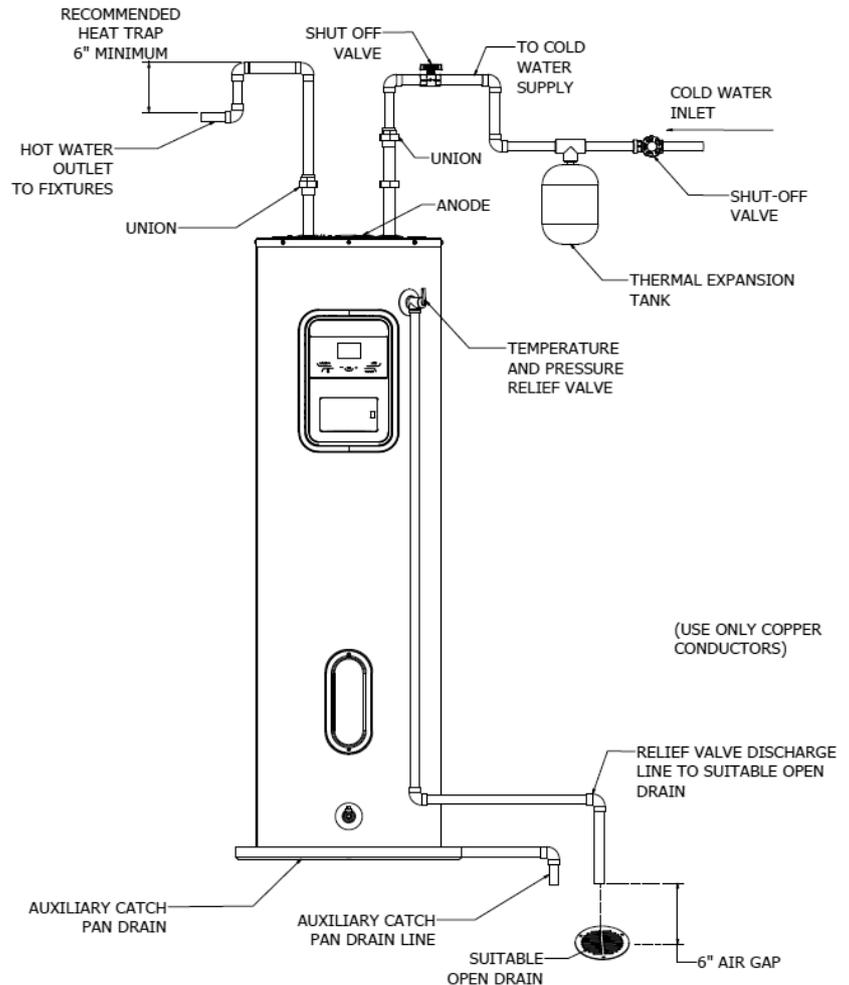
SIDE OPTION INSTALLATION

WARNING!

DO NOT ATTEMPT TO OPERATE THIS WATER HEATER WITH THE COLD WATER SHUT OFF VALVE CLOSED. THIS CAN RESULT IN SERIOUS DAMAGE TO THE WATER HEATER TANK.

WARNING!

The pressure rating of the relief valve must not exceed 150 PSI, and not exceed the maximum working pressure of the water heater as marked on the rating plate.



3. RELIEF VALVES

IMPORTANT: FAILURE TO INSTALL A LISTED ADEQUATELY SIZED TEMPERATURE & PRESSURE RELIEF VALVE WILL RELEASE THE MANUFACTURER FROM ANY CLAIM WHICH MIGHT RESULT FROM EXCESSIVE TEMPERATURE AND PRESSURES.

To reduce the risk of excessive pressures and temperatures in this water heater, install temperature and pressure protective equipment required by local codes and no less than a combination temperature and pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment or materials, as meets the requirements for Relief Valves and Automatic Gas Shut-off Devices for Hot Water Supply Systems, ANSI Z21.22. This valve must be marked with a maximum set pressure not to exceed the marked maximum working pressure of the water heater. Install the valve into opening provided and marked for this purpose on the water heater, and orient it or provide tubing so that discharge from the valve is 6 inches above, or at any distance below, the structural floor, and does not contact any live electrical part. The discharge opening must not be blocked or reduced in size under any circumstances.

Your local jurisdictional authority, while mandating the use of a temperature-pressure relief valve complying with ANSI Z21.22 • CSA 4.4 and ASME, may require a valve model different from the one furnished with the water heater.

Compliance with such local requirements must be satisfied by the installer or end user of the water heater with a locally prescribed temperature-pressure relief valve installed in the designated open-

ing on the water heater in place of the factory furnished valve.

For safe operation of the water heater, the relief valve must not be removed from its designated opening or plugged. As an option the T&P relief valve could be placed at its designated opening on the top of the water heater (Refer to Part reference illustration). If other components within the system have a lower working pressure, the relief pressure rating should be selected accordingly. The BTU rating of the valve must not be less than the input rating of the water heater.

Only a new temperature and pressure relief valve should be used with this water heater. Do not use an old or existing valve as it may not be adequate for the working pressure of the new water heater.

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 end of the discharge line should not be threaded or concealed and should be protected from freezing. No valve of any type, restriction or reducer coupling should be installed in the discharge line.

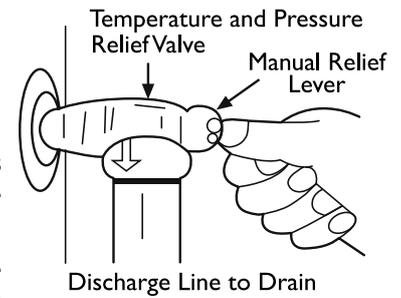
Excessive length, over 30 feet, or use of more than four elbows can cause restriction and reduce the discharge capacity of the valve.

THE TEMPERATURE & PRESSURE RELIEF VALVE

- Must not be in contact with any electrical part.
- Must be connected to a proper discharge line which terminates at an adequate drain.
- Must not exceed the working pressure shown on the data plate of the water heater.
- Must be of materials listed for hot water distribution.

Manually operate the temperature and pressure relief valve at least once a year to make sure it is working properly. To prevent water damage the valve must be properly connected to a discharge line which terminates at an adequate drain.

Standing clear of the outlet (discharged water may be hot), slowly lift and release the lever handle on the temperature and pressure relief valve to allow the valve to operate freely and return to its closed position. If the valve fails to completely reset and continues to release water, immediately shut off the electrical power and the cold water inlet valve and call a qualified service technician.



DANGER: DISCHARGING WATER MAY BE HOT AND CAN CAUSE SCALD INJURIES AND PROPERTY DAMAGE DISCHARGE LINES MUST BE PROPERLY INSTALLED AND PIPE TO AN ADEQUATE DRAIN.

THE DISCHARGE LINE:

- Must not be smaller than the pipe size of the relief valve.
- Must not be capped, blocked, plugged or contain any valve between the relief valve and the end of the discharge line.
- Must terminate 6 inches above a floor drain or external to the building.
- Must be capable of withstanding 250°F (121 °C) without distortion.
- Must be installed to allow complete drainage of both the temperature and pressure relief valve and discharge line.

RECIRCULATING LINES

In some installations a return circulation line may be installed. The recirculation line can be connected to the drain valve or hot water inlet connection using a tee.

TURNING ON WATER TO HEATER

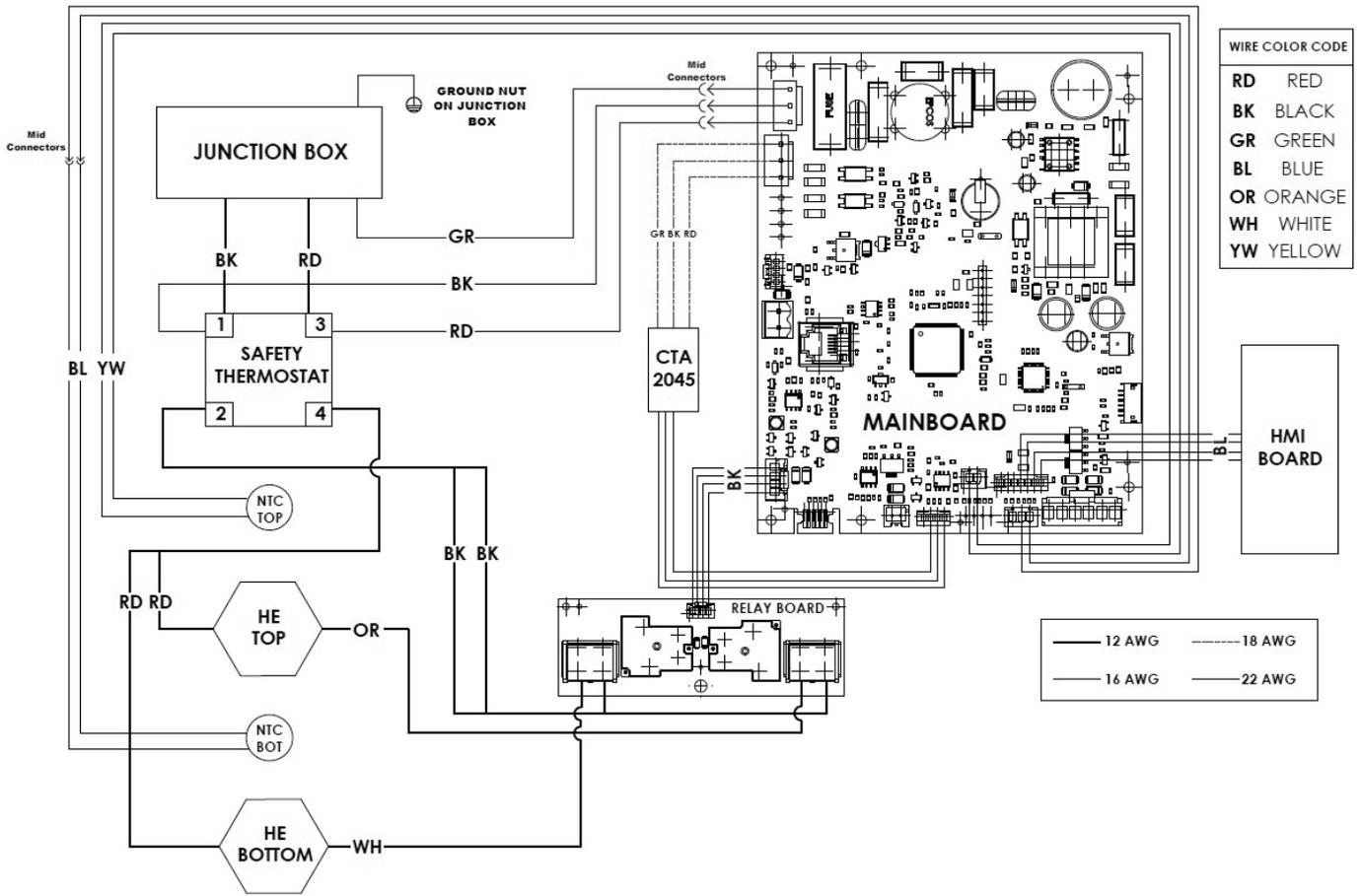
After piping and hook-ups are completed, open all hot water outlets. Open cold water inlet valve to fill tank. As each hot water outlet delivers water free from air, it can be shut off. Check the system for leaks.

* When side option piping is installed, loosen water outlet pipe plug on tank top to allow escape of trapped air when initially filling tank. Tank should be attended during this process. Plug should be retightened when air leakage is replaced by water escaping at this port. Be careful not to allow escaping water to contact wires.

INTENDED FOR CERTAIN MODELS ONLY

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

4. ELECTRICAL DIAGRAM



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

CAUTION: If wiring from your fuse box or circuit breaker box was aluminium for your old water heater; replace it with copper wire. If you wish to reuse the existing aluminium wire, have the connection at the water heater made by a competent electrician.

Total Water Heater Wattage	Phases	Recommended Over Current Protection (Fuse or Circuit Breaker) Amperage Rating				Copper Wire Size AWG Based on N.E.C. Table 310-16 (75°C)			
		208V	240V	277V	480V	208V	240V	277V	480V
3,000	1	20	20	15	15	12	12	14	14
	3	20	20	--	15	12	12	--	14
4,000	1	25	25	20	15	10	10	12	14
	3	25	25	--	15	10	10	--	14
4,500	1	30	25	25	15	10	10	10	14
	3	30	25	--	15	10	10	--	14
5,000	1	30	30	25	15	10	10	10	14
	3	30	30	--	15	10	10	--	14
5,500	1	35	30	25	15	8	10	10	14
	3	35	30	--	15	8	10	--	14
6,000	1	40	35	30	15	8	8	10	12
	3	35	30	--	15	8	10	--	14
8,000	1	50	45	40	20	8	8	8	10
	3	45	40	--	15	8	8	--	12
9,000	1	--	50	45	25	--	8	8	10
	3	50	45	--	25	8	8	--	10
10,000	1	--	--	50	30	--	--	8	10
	3	--	50	--	25	--	8	--	10
11,000	1	--	--	50	30	--	--	8	10
	3	--	50	--	25	--	8	--	10
12,000	1	--	--	--	35	--	--	--	8
	3	--	--	--	30	--	--	--	10

5. ELECTRICAL CONNECTIONS



DANGER: DO NOT USE THIS WATER HEATER WITH ANY ELECTRICAL SUPPLY VOLTAGE OTHER THAN THE ONE LISTED ON THE DATA PLATE. THIS WATER HEATER IS EQUIPPED FOR USE WITH ONE VOLTAGE RATING ONLY. CHECK THE DATA PLATE ON THE FRONT OF THE WATER HEATER FOR THE CORRECT VOLTAGE RATING. 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 ELECTRICAL UTILITY COMPANY BEFORE INSTALLING THIS WATER HEATER.

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 is enclosed in approved conduit (if required by local codes).
- The water heater and electrical supply are properly grounded.

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.

BEFORE INSTALLING ELECTRICAL WIRING, MAKE SURE THE ELECTRICAL SUPPLY TO THE WATER HEATER IS TURNED "OFF".

NOTE: Before closing the switch to allow the electric current to flow to the water heater; make certain that the water heater is completely full of water and that the cold water inlet valve is open. If the heating elements are not completely immersed in water at all times, they will be damaged if energized for even a short time and this not covered for the warranty. When the switch is closed the operation of the water heater is automatic. This Electric Residential Water Heater is designed for operation as specified on the rating plate. All electrical connections to elements and thermostats have been made at the factory. DO NOT ALTER any of the internal wiring. Wiring connections may loosen in shipment. Check all connections for tightness.

- A. Provide a separate fused disconnect switch for each water heater.
- B. Open cover door of the wiring connection box.
- C. Bring the power leads from an adequately fused disconnect

- switch (not furnished with the water heater due to varying state and local codes) and use wire nuts to connect the power supply wiring to the wires inside the water heater connection box. Where long runs occur; local ordinances or your utility company may necessitate, an increase in size.
- D. This water heater must be properly grounded. A ground lug is provided within the electrical control box for connection of the properly sized ground.
- E. Close the cover door of the wiring connection box.

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

The electrical diagram for this water heater is in the manual. Refer to this diagram when servicing.

6. THERMOSTATS AND CONTROLS

All Electric Residential Water Heaters feature automatic controls to regulate heating elements. Surface mounted thermostats are used on this water heater. The thermostats are pre-set to provide a water temperature of 125°F to reduce the risk of scald injury.

Care must be taken when using hot water to avoid scalding injury. Certain appliances require high temperature hot water (such as dishwashers and automatic clothes washers). In order to prevent potential scald injury, install an anti-scald tempering valve in the water system (optional low temperature are available with temperature range from 90°F to 140°F). If hotter water is required, adjustment of the Control system (HMI) will be necessary.



WARNING

Make sure the thermostat is flush against the tank, the terminal cover is in place, and the insulation is replaced. Failure to do so can result in DEATH, SERIOUS BODILY INJURY, AND/OR PROPERTY DAMAGE.

CAUTION: INCREASING THE TEMPERATURE SETTING ABOVE THE PRE-SET TEMPERATURE MAY CAUSE SEVERE BURNS AND CONSUME EXCESSIVE ENERGY HOTTER WATER INCREASES THE RISK OF SCALD INJURY AND ALSO MIGHT CAUSE THE HIGH-LIMIT TO SHUT OFF POWER TO THE WATER HEATER UNDER CERTAIN OPERATING CONDITIONS.

Each water heater has built in Energy Cut Off devices(s). If for any reason the water temperature becomes excessively high, the high limit switch breaks the circuit to the heating elements. Once the switch opens, it must be manually reset however, the cause of the over temperature condition must be corrected. To reset the high limit, follow the written instructions on "SETTING THE TEMPERATURE".



DANGER:

ADJUSTING THE TEMPERATURE ABOVE THE 125°F BAR ON THE TEMPERATURE DIAL WILL INCREASE THE RISK OF SCALD INJURY.



WARNING:

Never allow small children to use a hot water tap, or to draw their own bath water. Never leave a child or handicapped person unattended in a bathtub or shower.

INSTALLATION CHECK LIST

A. Water Heater Location

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

B. Water Supply

- Water heater completely filled with water.
- Water heater and piping air vented.
- Water connections tight and free of leaks.

C. Relief Valve

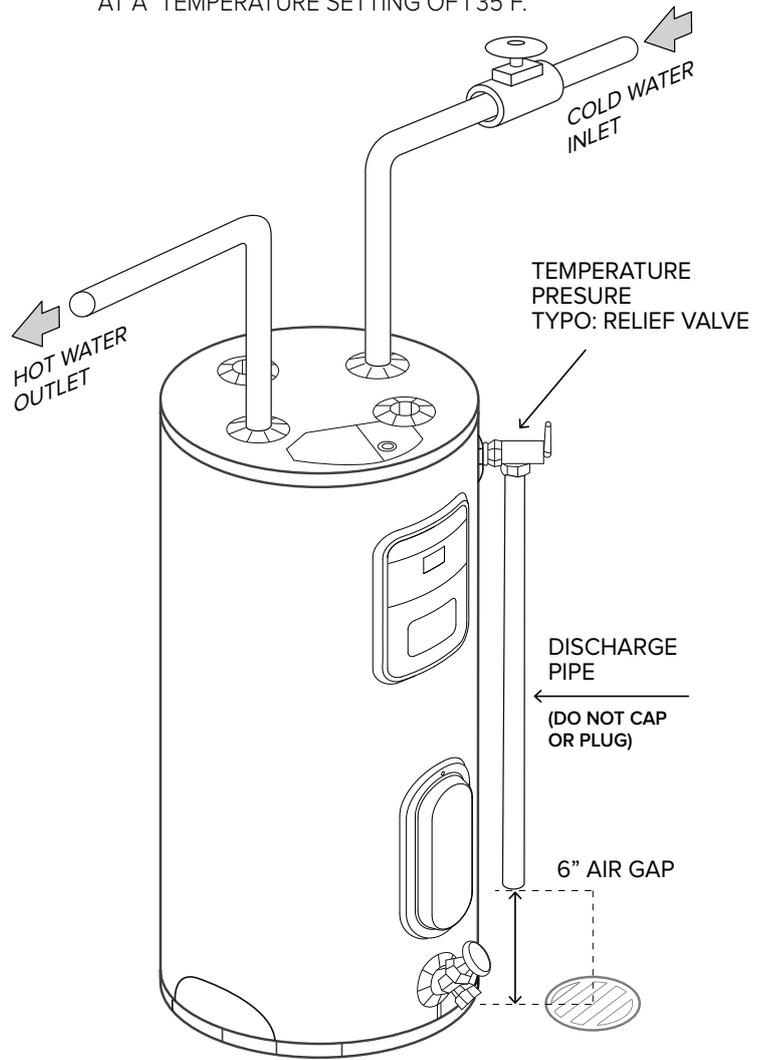
- Temperature and Pressure Relief Valve properly installed and discharge line run to open drain.
- Discharge line protected from freezing.

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.

CAUTION:

SCALDING MAY OCCUR WITHIN (5) SECONDS AT A TEMPERATURE SETTING OF 135°F.



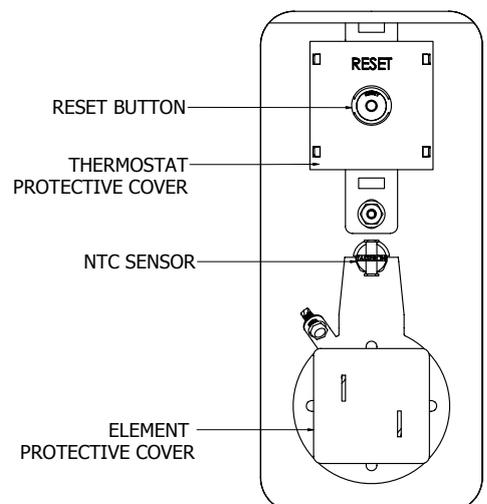
SAFETY CONTROLS

⚠ DANGER: HOT WATER CAN PRODUCE FIRST DEGREE BURNS WITHIN 3 SECONDS AT 140°F (60°C), 20 SECONDS AT 130°F (54°C) AND 8 MINUTES AT 120°F (49°C).

The water heater is equipped with combination thermostat and temperature limiting controls (ECO) that are 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.

NOTE: Water temperature ranges of 120° - 140°F recommended by most dishwasher manufacturers.

CAUTION: The cause of the high temperature conditions must be investigated by a qualified service technician and corrective actions must be taken before placing the water heater into service again.



WARNING: HOUSEHOLDS WITH SMALL CHILDREN, ELDERLY, IMPAIRED OR DISABLE MEMBERS AND ANYONE WITH TEMPERATURE SENSITIVE SKIN MAY REQUIRE LOWER TEMPERATURE SETTINGS TO REDUCE THE RISK OF SCALD INJURY.

HEATING ELEMENTS

The electric elements are mounted inside the tank to transfer heat directly into the water: To replace an element DISCONNECT POWER to the water heater; drain tank and replace element. 1 1/2 screw-type element wrenches are available from most supply houses. Do not over tighten new element, as this will cause distortion of the new element gasket Fill tank with water, opening hot water faucet(s) to allow air to escape from the system while tank is filling. The heating elements will burn out if not immersed in water: Check for leaks before closing door panel or turning on power:



WARNING: REMOVAL AND REPLACEMENT OF THE HEATING ELEMENTS INVOLVES THE DISCONNECTION OF ELECTRICAL WIRING. THESE PROCEDURES MUST ONLY BE PERFORMED BY A QUALIFIED SERVICE TECHNICIAN .

7. MAINTENANCE OF WATER HEATER SYSTEM

Good maintenance practice requires that the tank be frequently drained, inspected and cleaned of deposits. Foreign material can wash in and unless the water supply is naturally soft (0 to 5 grains hardness), scale or lime deposits will accumulate in the tank Hard water scale precipitates at an increasingly high rate in proportion to an increase in water temperature.

Failure of the tank or heating elements due to accumulated deposits does not fall within the scope of the warranty.

WATER HEATER SOUNDS

1. Possible noises due to expansion and contraction of some metal parts during periods of heat-up and cool-down do not represent harmful or dangerous conditions.
2. Sediment build-up in the tank bottom will create varying amounts of noise and may cause premature tank failure.

CAUTION: Hydrogen gas can be produced in a hot water system served by this heater that has not been used for a long period of time (generally two weeks or more). Hydrogen gas is extremely flammable. To reduce the risk of injury under these conditions, it is recommended that a hot water faucet be opened for several minutes before using any electrical appliance connected to the hot water system. If hydrogen is present, there will probably be an unusual sound, such as air escaping through the pipe as water begins to flow.

There should be no smoking or open flame near the faucet at the time it is open.

DRAINING HEATER



WARNING

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 water heater; turn off cold water supply, then open a hot water faucet or lift the handle on the relief valve to admit air to the tank. Attach one end of a garden hose to the drain valve on the water heater and direct the stream of water; coming from the other end of the hose, to a drain where it will not cause damage. If periodic draining of this unit is desired, drain valve can be turned slightly clockwise with a wrench to allow easier connection of the hose. Make sure water heater is completely filled with water before reenergizing.

CAUTION: When draining the water heater; make sure that the power source to the water heater is shut off before draining water.

WATER HEATER MODIFICATION TAMPERING

DANGER

TAMPERING WITH THE THERMOSTAT, HEATER ELEMENTS, ELECTRICAL CONNECTIONS OR TEMPERATURE AND PRESSURE RELIEF VALVE IS DANGEROUS AND MAY RESULT IN SERIOUS INJURY OR DEATH. TAMPERING VOIDS ALL WARRANTIES. ONLY PROPERLY TRAINED, QUALIFIED SERVICE PERSONNEL SHOULD SERVICE THESE COMPONENTS. DO NOT ATTEMPT TO MODIFY OR CHANGE THIS WATER HEATER IN ANYWAY.

LEAKAGE CHECKPOINTS

- A. *Condensation may be seen on pipes in humid weather or pipe connections may be leaking.
- B. The primary anode rod may be leaking.
- C. Small amounts of water from temperature pressure relief valve may be due to thermal expansion or high water pressure in your area.
- D. *The temperature-pressure relief valve may be leaking at the tank fitting.
- E. The elements may be leaking at the tank fitting. Turn electrical power "OFF", remove access panels and insulation block and pad. If leaking is visible around element, follow proper draining instructions and remove element. Reposition or replace gasket on element. Place element into opening and tighten securely. Then follow "Filling the Water Heater" instructions in the "Installation Instructions" section.
- F. Water from drain valve may be due to the valve being opened slightly.
- G. *The drain valve may be leaking from the tank fitting.
- H. *Water in the water heater bottom or on the floor may be from condensation, loose connections or the temperature-pressure relief valve.

DO NOT replace the water heater until full inspections of all possible water sources are determined and necessary corrective steps have been taken.

NOTE: *To check where threaded portion enters tank, insert cotton swab between jacket opening and fitting. If cotton is wet, follow "Draining" instructions in the "Service and Adjustment" section and then remove fitting. Put pipe dope or Teflon tape on the threads and replace. Then follow "Filling the water heater" instructions in the "Installation Instruction" section.

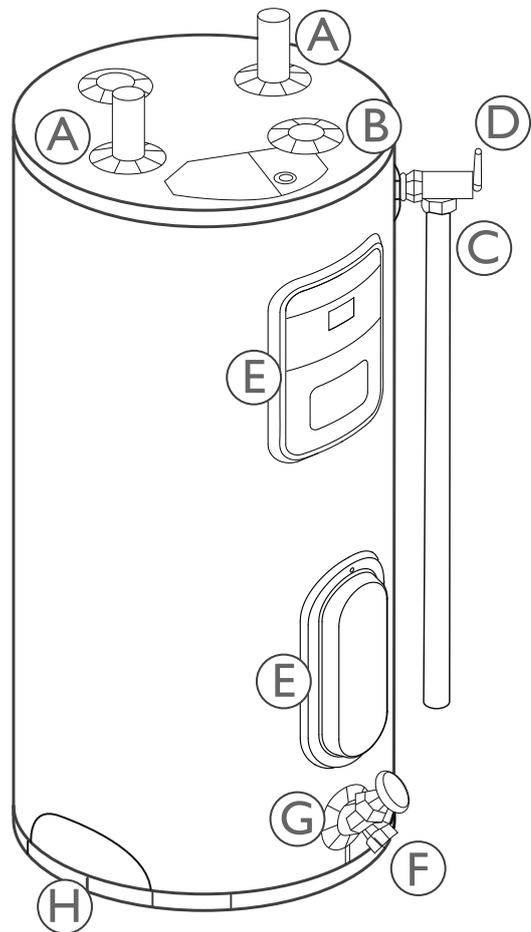
SEASONAL OPERATION

VACATION/FREEZING TEMPERATURES

If the water heater remains idle for 30 days or longer and/or is subject to freezing temperatures while shut off, the water heater and piping should be drained (refer to Draining Heater, section) and the drain valve should be left open. Refer to Hydrogen Gas Warning.

CAUTION: EXPOSURE TO WATER

Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system which has been under water.



ANODE ROD

In each water heater there is installed at least one anode rod (see Parts section) for protection of the tank. Certain water conditions will cause a reaction between this rod and the water. Conditions are defined as smelly water, removal of the rod, chlorides and hardness limit will void any warranties stated or implied. The parts list includes a special anode rod that can be ordered if odor and/or discoloration occur. However; this rod is only good to a certain point, after which we can only suggest that a water conditioning company be contacted to supply filtration equipment. As requested limits for hardness, chlorides level where warranty will be nullified if above those limits.

CONVERSION OR REWIRING BY UNAUTHORIZED PERSONS WILL VOID THE WARRANTY, CAN NULLIFY THE UNDERWRITER'S LABORATORIES (UL) CERTIFICATION OF THE WATER HEATER AND COULD RESULT IN PROPERTY DAMAGE OR PERSONAL INJURY FOR WHICH THE MANUFACTURER CANNOT BE RESPONSIBLE.

READ THE LIMITED WARRANTY INCLUDED WITH THIS WATER HEATER FOR A FULL EXPLANATION OF THE LENGTH OF TIME THAT THE PARTS AND TANK ARE WARRANTED.

The following documents can be obtained from the manufacturer by calling your installer or plumbing contractor or by calling 1-888-883-0788. Residential Electric Limited Warranty / Residential Electric Specification Sheet / Residential Electric Heating Elements Parts List

HOW TO OBTAIN SERVICE ASSISTANCE

To obtain service on your water heater when adjustment, repair; or routine maintenance is required it is suggested that you first contact your installer; plumbing contractor or previously agreed upon service agency. In the event that the firm is unavailable, refer to your local telephone directory under the commercial listings or local utility for qualified service assistance.

TO OBTAIN WARRANTY SERVICE DIAL: 1-888-883-0788.

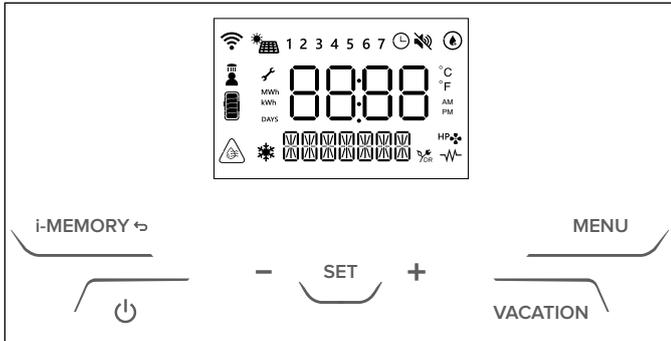
8. CONTROLS

WARNING

The installation and initial start-up of the appliance must be performed by qualified personnel in compliance with the national regulations in force regarding installation.

CONTROL OVERVIEW

The user interface has an LCD display and 7 touch buttons. There are 2 blue LEDs: POWER (when power supplied to the product) and VACATION (when VACATION has been activated).



List of the icons shown on the display:

	String 1: 4 DIGITS x 7 segments and dots The main string shows the target temperature. The main string alternates the target temperature to a warning code if anyone is detected.
	String 2: 7 DIGITS x 14 segments The secondary string the active heating mode.
°C	CELSIUS DEGREE ICON
°F	FAHRENHEIT DEGREE ICON
AM	AM ICON
PM	PM ICON
HP 	HP ICON (NOT USED)
	HE ICON Are steady on to indicate that the corresponding load is on blink to indicate that some malfunctioning is present
MWh	MWh ICON
kWh	kWh ICON
DAYS	DAYS ICON
	ANTIFREEZE ICON Indicates that the antifreeze function is active.
	HOT WATER ICON Indicates a water temperature hotter with respect to the displayed target temperature (e.g. antibacterial cycle).
	ENERGY CONTENT LEVEL i (NOT USED)
	SHOWER ICON Is ON to indicate that one shower at least is available.
	Wi-Fi ICON (NOT USED)
	PV-SG ICON (NOT USED)

1...7	DAY OF THE WEEK (1 = Sunday) The DAY ICON indicates the current day of the week.
	PROGRAM ICON Indicates that COMFORT MODE = TIME BASED.
	SILENT ICON (NOT USED)
	ANTIBACTERIAL ICON (NOT USED) Indicates that the ANTIBACTERIAL function is enabled. When the cycle is active the main string alternates the target temperature with the "Antb" label.
	DR ICON (Demand Response) When ON the DR icon is Highlighted.
	SERVICE ICON

Once the water heater is connected to the water and electric systems, it must be filled with water. To fill the water heater, open the cold water main supply valve and the nearest hot water tap. Ensure that all air is purged from the system. Visually inspect for possible water leaks from the flange and pipe fittings and gently tighten them, if necessary. The Water Heater requires 20 seconds to become fully operational when starting for the first time.

 DANGER: HOT WATER TEMPERATURES ABOVE 120°F (50°C) MAY IMMEDIATELY CAUSE SERIOUS BURNS. CHILDREN, THE DISABLED AND THE ELDERLY RUN A GREATER RISK IN THIS REGARD. THEREFORE, IT IS ADVISABLE TO INSTALL A THERMOSTATIC MIXING VALVE IN THE WATER HEATING SYSTEM.

9. INSTRUCTIONS FOR USE

Press the "  " button to turn the water heater on. The display shows the set temperature and operation mode.

POWER ON

As soon as the product is supplied, the display is turned on for few seconds (all icons and leds) then it enters and initialization phase necessary to recover settings information from the main board. During this phase all icons are off and:

- **String1** shows the following segments cycling



- **String2** shows the "INIT" labels fixed
 - If Wi-Fi module has never been configured (if present), the product asks to enter the Wi-Fi configuration procedure (see the paragrapher dedicate)
 - If DATE and TIME are not available, the product asks to insert Date and Time (see User Menu)
 - If DATE and TIME are available and Wi-Fi module has been configured or Wi-Fi is not present, the product enters the Working state.

OFF STATE

In OFF state the main string shows the "OFF" label on the display, all icons are off except for the ANTIFREEZE icon in case of antifreeze function active or WI-FI icon that depends only on Wi-Fi state. After 15 s of no activity by the user the display turns off; the led ON remains always on. The display turns on if any button is pressed.

To turn on the product the user has to press the "  " button when the display is on. After 30 min of no activity by the user the display turns off; the led ON remains always on. The display turns on if any button is pressed.

DATE AND TIME SETTING

Date and Time can be set by the user within the proper parameter of the User Menu.

However if this data is not available it shall be asked to the user to set it; the main screen will show the Year blinking until the user enters the setting procedure or data is recovered (e.g. from Internet if auto update is enabled, product is Wifi and connected).

SETTING THE TEMPERATURE

Press the “+” and “-” buttons to set the desired hot water temperature (The display will temporarily flash “T SET POINT”). Press “SET” button to display the temperature of the water in the tank; it will be shown for 3 seconds.

Every touch will increase or decrease the target temperature by 1 degree within the allowed range. After 3 seconds without action, the set point will be confirmed and stored.

The min/max temperatures are 104°F/151°F (40°C/66°C), by default settings. This range can be modified to 122°F/149°F (50°C/65°C) in the installer menu.

WARNING!

If the water temperature is higher than 131°F, the display shows this icon 

TEMPERATURE INFO

Press “SET” button to display, the user will be able to display the outlet water temperature (T TOP) steady on the main string. If the probe is in error (short/open) then “--” are shown.

After 3 seconds without actions the Display will come back to the main screen.

SHOWERS AVAILABLE "

When the display shows the icon above, at least one shower is available. The available showers depend on the availability of hot water. One shower is calculated as: 10 gal at 104°F (40°C).

ANTI-FREEZE "

The anti-freeze function is the appliances automatic protection to avoid damages caused by very low temperatures below 41°F (5°C), in the event in which the product is turned off during winter. It is recommended that the product remains plugged in to the mains power, even if is inactive for a long time. Attention: the function is enabled, but it is not indicated in case of activation. Once the temperature rises to a safer level such as to avoid damage from ice and frost, the water heating is switched off again.

ANTIBACTERIAL FUNCTION "

The antibacterial function is enabled/disabled by installer menu only (default state is OFF). If the enabled the corresponding icon on the display switches on.

The antibacterial function heats water up to avoid bacterial formation in the internal tank. The antibacterial cycle is performed at power on or after 30 days from the last time the antibacterial condition is considered satisfied. This happens when average water temperature has been greater than antibacterial set point (default 65 °C) for 1 hour at least.

CAUTION!

If the water temperature is higher than 131°F, the display shows this icon 

MODE OF OPERATION

• I-MEMORY

This mode is designed to prioritize energy consumption and maximize comfort by monitoring the hot water need of the user to optimize the use of the Water Heater/heating element. The control meets daily need by averaging use profiles over the previous four (4) weeks. In the first week of acquisition, the set point temperature entered by the user remains constant. From the second week on the control automatically adjusts the set point temperature to meet daily needs. To reset the I-Memory profile use U9. (I-Memory mode is visible when U1: PROGRAM is "OFF").

• VACATION

Use this mode when hot water will not be needed for an extended time (such as a vacation). After the chosen time period Vacation mode will deactivate and the product will operate at its previous setting. Vacation mode is set in the User Menu. In this mode, no heating is performed; anti-freeze protection and antibacterial cycle are guaranteed.

10. MENU PARAMETERS

Two levels of parameters are available on the product: the user and installer menu. User menu can be accessed by pressing the «MENU» button.

Installer Menu can be accessed by pressing MENU button for 3 seconds and by inserting the password 234.

Both menus are active for 10 minutes from the last action on buttons. Press the «+», «-», «SET», «↶» buttons can be used to navigate the menu. If parameter value is writable its value can be changed by pressing «+» or «-», and «SET» to confirm.

USER MENU

PARAMETER	LABEL	TYPE	PARAM MIN	PARAM MAX	COMMENTS
U1	PROGRAM	NUMBER	0	2	COMFORT MODES
U2	PRGTIME	SUB MENU 1 (SCHEDULING SETTING)	--	--	PROGRAM SCHEDULING SUBMENU
U3	PRG SET	SUB MENU 1 (PROGRAMMING)	U3.1	U3.2	PROGRAMMING SUBMENU
U4	VACA	SPECIAL (HOLIDAY SETTING)	1	180	HOLIDAY SETTING
U6	DATE	SPECIAL (DATE SETTING STATE)	--	--	DATE AND TIME SETTING
U7	REPORTS	SUB MENU 1 (STATISTICS)	U7.1	U7.1	STATISTICS
U8	IMEM RS	0: RESET OFF 1: RESET ON	0	1	I-MEMORY RESET
U10	UN-TYPE	SPECIAL (UNIT TYPE SETTING)	0	1	0 (°C) / 1 (°F)
U11	HR-TYPE	SPECIAL (HOUR TYPE SETTING)	0	1	0 (24H) / 1 (12H)
U12	DRBREAK	SPECIAL (DR OVERRIDE SETTING)	1	72	HOUR
U13	DR SET	ON / OFF	0	1	W0 (OFF) / 1 (ON)

If a parameter is not available in a particular configuration the string1 shall show “not” and string2 shall show “defined” as the parameter value is entered.

NOTE: U9 parameter is available only for Wi-Fi model.

U1 - PROGRAM

This parameter shall be used to set the DHW comfort by the user to select the kind of domestic hot water comfort desired:

- PROGRAM ON (TIME BASED), the comfort temperature (**Comfort Temp**) shall be guaranteed in the selected time slots according to the set operation mode, a minimum temperature (**Reduced Temp**) shall be guaranteed outside
- PROGRAM OFF (ALWAYS ACTIVE), the comfort temperature (**Comfort Temp**) shall be guaranteed 24 hours according to the set operation mode.

The DHW comfort selection determines the operation modes available. In particular:

VALUE	DHW COMFORT	OP MODE
PROGRAM ON	TIME BASED	STANDARD
PROGRAM OFF	ALWAYS ACTIVE	STANDARD I-MEMORY

U2 - PRGTIME

Enter this parameter to select the desired time slots. In particular 4 different time slots can be set for each day of the week with a 15 minutes resolution:

[START 1, STOP 1]

[START 2, STOP 2]

[START 3, STOP 3]

[START 4, STOP 4]

PARAMETER	LABEL	PARAM MIN	PARAM MAX	COMMENTS
U2.1	ALL_DAYS_STRING	--	--	Program Time Setting state (Days = All)
U2.2	SUNDAY_STRING	--	--	Program Time Setting state (Days = Sunday)
U2.3	MONDAY_STRING	--	--	Program Time Setting state (Days = Monday)
U2.4	TUESDAY_STRING	--	--	Program Time Setting state (Days = Tuesday)
U2.5	WEDNESDAY_STRING	--	--	Program Time Setting state (Days = Wednesday)
U2.6	THURSDAY_STRING	--	--	Program Time Setting state (Days = Thursday)
U2.7	FRIDAY_STRING	--	--	Program Time Setting state (Days = Friday)
U2.8	SATURDAY_STRING	--	--	Program Time Setting state (Days = Saturday)

If ALL_DAYS is entered the first 4 different time slots from Sunday to Saturday are shown by default; if any value is modified and confirmed the same slots are assigned from Sunday to Saturday. Elsewhere time slots can be customized singularly for each day of the week selecting the corresponding parameter: if a day of the week is entered and none value is modified there is no request of confirmation elsewhere the final setting step asks to confirm modifications. If a time slot is not set or has to be reset then START 1 = STOP 1 = 00:00.

If heating has to be active the whole day then :

START 0 = 00:00 and STOP 0 = 24:00.

NOTE: if time slot selected is too short Comfort Temp could be not guaranteed.

U3 – PRG SET

The programming submenu allows the user to customize the time programming.

PARAMETER	LABEL	TYPE	PARAM MIN	PARAM MAX	COMMENTS
U3.1	T MIN	NUMBER	16°C	COMFORT TEMP	PROGRAM SCHEDULING SUBMENU
U3.2	PREHEAT	ON / OFF	0 [OFF]	1 [ON]	PROGRAMMING SUBMENU

• U3.1 - T MIN

This is the minimum temperature that has to be guaranteed to the final user outside the selected time slots.

It corresponds to the antifreeze temperature set point (16 °C) by default: if so the antifreeze function only is performed.

• U3.2 - PREHEAT

This parameter has to be set if the user wants to be enable/disable (OFF by default) the program preheating function: this allows the Comfort Temp to be already achieved at the beginning of the selected time slots.

U4 – VACATION

This parameter has to be set if the user wants to enable the Vacation mode.

As the parameters is entered the ON/OFF selection has to be done: if ON is confirmed the user has to enter the Vacation Days [1, 180] that are the days of absence. If Vacation Days != 0 are set the Vacation mode is entered.

U6 - DATE

This parameter has to be selected if the user wants to set the date and time. These data have to be asked even at the power on if not available (this could happen if a long black-out occurred and the super capacitor on the board discharges).

In particular Year, Month, Day, Time (hours and minutes) have to be set, Finally, the user has to enable/disable the automatic switch among solar/legal hour.

NOTE: in case of Wi-Fi product (with Wi-Fi configured) and Date available the enable/disable of the Auto update of Date and Time by Internet is firstly asked; if On is confirmed the parameter setting is exited as its value is set automatically within the Wi-Fi connection, if Off is confirmed next steps are shown as for not Wi-Fi products.

U7 - REPORTS

Estimated energy consumption can be shown within these parameters, in particular:

Overall energy consumption (kWh or MWh) from first power on

U8 - IMEM-RS

This parameter has to be set (On) to reset the tapping profiles learnt by the I-memory mode (data stored are lost and learning restart from the current week) and Weekly Program time slots (reset to default values).

U10 - TEMPERATURE UNIT

This parameter allows to set the temperature unit for the machine, depending on the setting the display will switch ON the °F icon (Fahrenheit) or the °C icon (Celsius)

U11 - HOUR FORMAT

This parameter allows to set the hour format in 12H or 24H, if the 12H mode is set then the display will use the AM and PM icon.

U12 - DR BREAK

DR BREAK set the hour for Demand Response is not active. It can be set by the user menu in the [MIN, MAX] range.

U13 - DEMAND & RESPONSE

This parameter allows to set the DR functionality ON or OFF, when ON the DR icon is Highlighted.

DEMAND RESPONSE (DR)

If the CTA 2045 module (or EcoPort module) is connected to the product through the EcoPort and the parameter P20 is enabled, the product will be ready to receive commands from the utility.

Several commands can be received, such as:

- SHED
- LOAD UP

When the command is received from the grid, the product should stop normal operation and follow the action of the command. The display will show the text "SHED" or "LOAD UP" instead of the working mode. If necessary, the user can override the command by choosing a different operating mode or by parameter U13 for max. 72 hours ICON DR:

OFF: DR disabled

ON: DR enabled

BLINKING: DR enabled and override is in progress

INSTALLER MENU



CAUTION: THE FOLLOWING PARAMETERS MUST ONLY BE ADJUSTED BY QUALIFIED PERSONNEL.

The main product settings can be modified via the installer menu. The changeable parameters are shown on the display together with the wrench symbol .

To enter the installer menu press the **«MENU»** button for 3 seconds, press the **«+»** and **«-»** buttons and enter the access code 234.

PARAMETER	NAME	PARAMETER DESCRIPTION
P0	CODE	Entering the code to access the installer menu. The display will show the number 222, press the "+" and "-" and enter the code 234, press the "SET" button to confirm. It will then be possible to access the installer menu.
P01	ANTIBACT	To disable/enable the antibacterial function 0 = OFF (function disabled) 1 = ON (function enabled)
P02	T ANTB	Gives the temperature to be achieved 149°F/151°F [65/66°C] with the antibacterial cycle and to be maintained for 1 hour at least.
P03	F ANTB	Gives the frequency of the antibacterial cycle [1 - 30 DAYS] It can be set by the installer
P04	T MAX	Adjustment of the maximum obtainable temperature 149°F/151°F [65/66°C]. A higher temperature value allows for using a greater amount of hot water.
P05	T MIN	Adjustment of the minimum obtainable temperature 104°F/ 122°F [40/50°C]. A lower temperature setting allows for more energy-efficient operation in the event of limited hot water consumption.
P06	I-M TMIN	Minimum temperature to be guaranteed in I-Memory mode when no with draws have been detected by the algorithm.
P07	HE1 PW	This parameter gives the power for heater HE BOTTOM. It can be set by the installer in the [1000 - 5000] range.
P08	HE2 PW	This parameter gives the power for heater HE TOP. It can be set by the installer in the [1000 - 5000] range.
P09	T HYST	Hysteresis (offset) value that allows the product to restart after having achieved the target temperature. It can be set by the installer in the [MIN, MAX] range.
P10	TANKVOL	Displays tank capacity. Useful for spare part ordering. Tank Volume: 40 & 50 Gal. (150 & 200 lts.) It can be set by the installer.

PARAMETER	NAME	PARAMETER DESCRIPTION
P11	FACT RS	Restoring the factory settings This command has to be set if the installer wants to resume the factory settings configuration; all user settings will be re-set at default value with the only exception of energy statistics, tank volume and Wi-Fi enabling.
P12	MB SW	This parameter gives the mainboard software version as MM.mm.bb.
P13	HMI SW	This parameter gives the HMI software version as MM.mm.bb
P14	T LOW	This Parameter gives the water temperature in °C/°F (The unit of measure depends on P18 setting). Read by the NTC placed at the bottom position in water tank. If the NTC is in error "--" is shown.
P15	T TOP	This parameter gives the water temperature in °C/°F (The unit of measure depends of the P18 setting). read by the NTC placed at the top position in the water tank. if the NTC is in error "--" is shown.
P16	ERRORS	This parameter allows navigation among last 10 errors that occurred.
P18	UN-TYPE	This parameter allows to set the temperature unit for the machine. Depending on the setting the display will switch: 0 - (°C) 1 - (°F)
P19	HR-TYPE	This parameter allows to set the hour format in 12H or 24H, if the 12H mode is set then the display will use the AM and PM icon.
P20	DR SET	This parameter allows to set the DR functionality: 0 - ON (Enable) 1 - OFF (disable) When ON the DR icon is Highlighted.
P21	MXVALV	This parameter allows to define if a water mixing valve is present or not. 0 - NOT PRESENT 1 - PRESENT When present the ADVANCED LOAD UP command of DR functionality will be available.

11. MAINTENANCE CHECKLIST AND ERROR CODES



CAUTION: BEFORE INTERVENING BY FOLLOWING THE RECOMMENDATIONS BELOW, CHECK FOR THE CORRECT ELECTRICAL CONNECTION OF THE COMPONENTS TO THE MAIN BOARD AND THE CORRECT POSITIONS OF THE NTC SENSORS IN THEIR SEATS.

LOCKOUT STATE

There are two possible lockout states

- **TOUCH LOCKOUT STATE**

If touch comm error is detected, buttons cannot be controlled. This state is indicated by corresponding error code blinking on the main string (together with service icon "🔧").

- **LOCKOUT STATE**

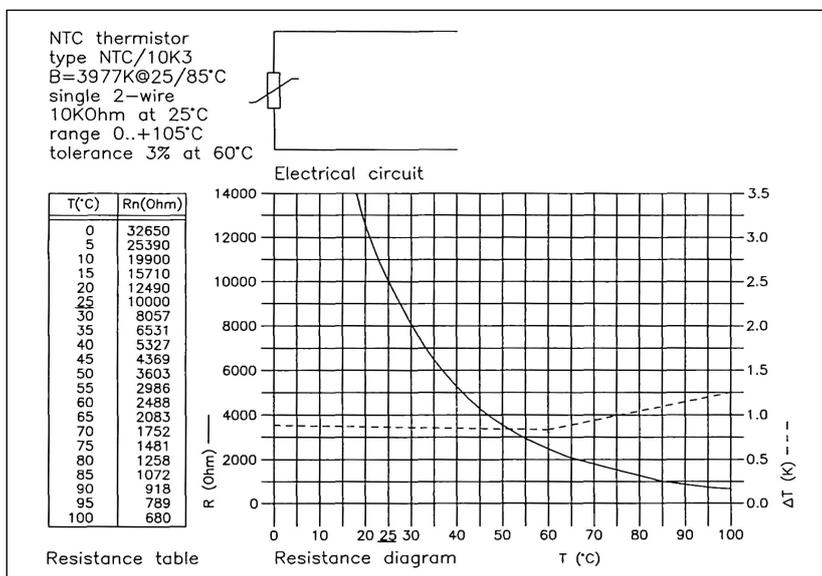
In lockout state (Not Volatile Errors or Volatile Errors detected) all icons are off with the exception of the service icon "🔧" that blinks together with the error code displayed on the main string of the HMI. If more than one occurs, the prior one is shown. For error codes refer to the Table Error Code.

NOTE: If any warning is detected (and no errors) the warning code is alternated to the main string every 3 s on the main screen.

TABLE ERROR CODE

Error code	Cause	Heating element operation	What to do
218	Upper NTC sensor: open or hort circuit.	OFF	Check the correct assembly of sensor wiring on related mainboard connector. Verify sensor proper functioning.
230	BOTTOM NTC sensor: open or Short Circuit	OFF	Check the correct assembly of sensor wiring on related mainboard connector. Verify sensor proper functioning.
	Mechanical safety device intervention	OFF	Check the mechanical safety device .
231	Dry heating	OFF	Verify sensor proper functioning. Reset the product by pushing the ON/OFF button twice (do not remove the power from domestic switch!)
232	Overheating	OFF	Verify sensor proper functioning. Reset the product by pushing the ON/OFF button twice (do not remove the power from domestic switch!)
321	Corrupted data	OFF	Reset the product by pressing the ON / OFF button twice. If the error persists, replace the motherboard. Reset the product by pushing the ON/OFF button twice (do not remove the power from domestic switch!)
331 332	Missing communication between Main Board and HMI	OFF	Reset the product by pushing the ON/OFF button twice. If the error persists, replace the mainboard-display communication wiring.
336	Touch screen not working	ON	Reset the product by pressing the ON / OFF button twice. If the error persists, replace the HMI.

NTC Resistance table



TROUBLESHOOTING CHART

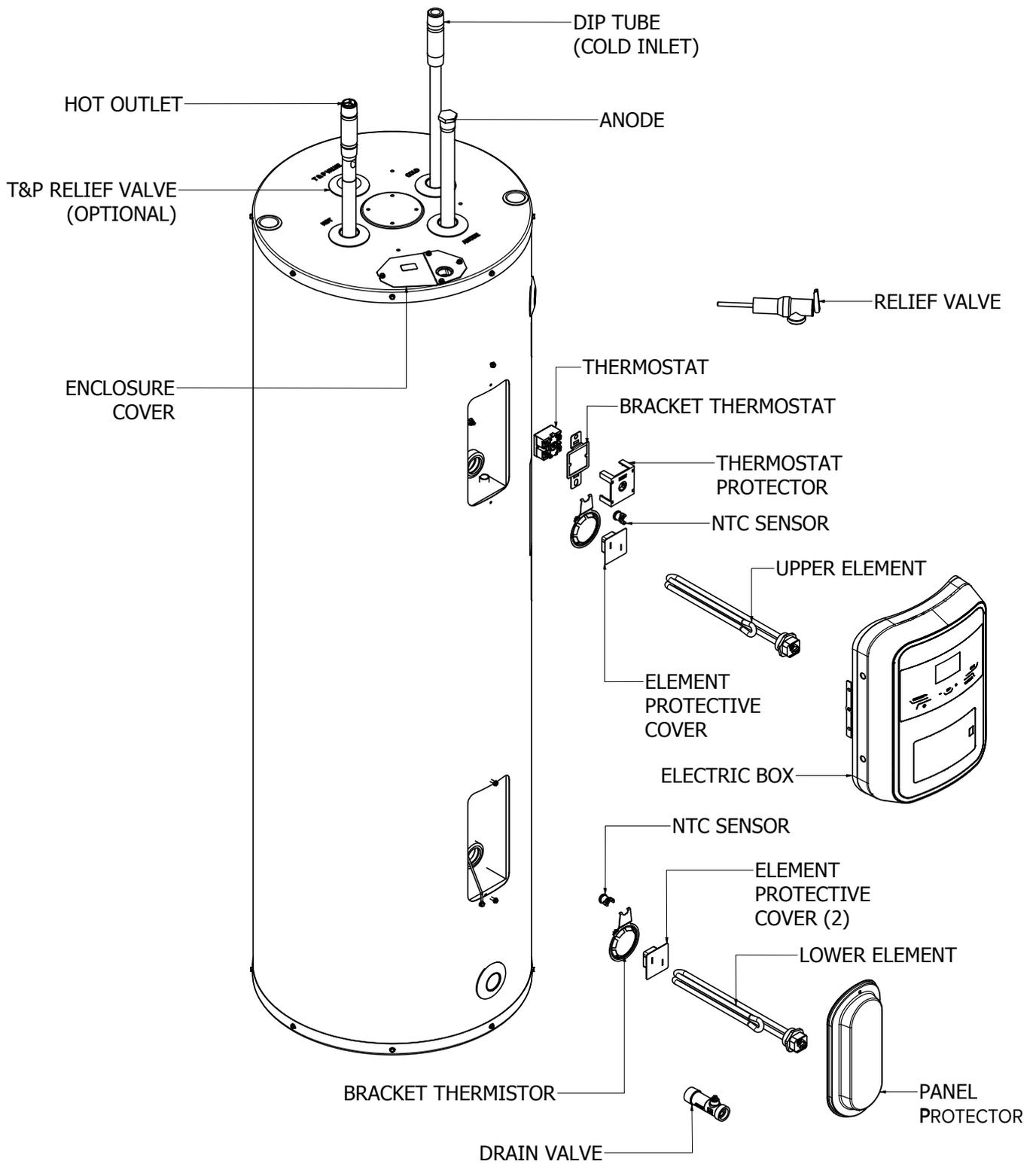
Water heater service must only be performed by a qualified service technician

TROUBLESHOOTING TIPS

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

	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 to 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	This is normal for heat trap fittings when in operation and does not indicate a need for service.
Not enough or no hot water	Operation.	Remove and clean the heating elements.
	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 HMI 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. Manual reset limit (ECO).	See the Installing the water heater section of this manual. 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 HMI is set too high.	See the Temperature regulation of the water heater section of this manual.

**PART REFERENCE
ILLUSTRATION**



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