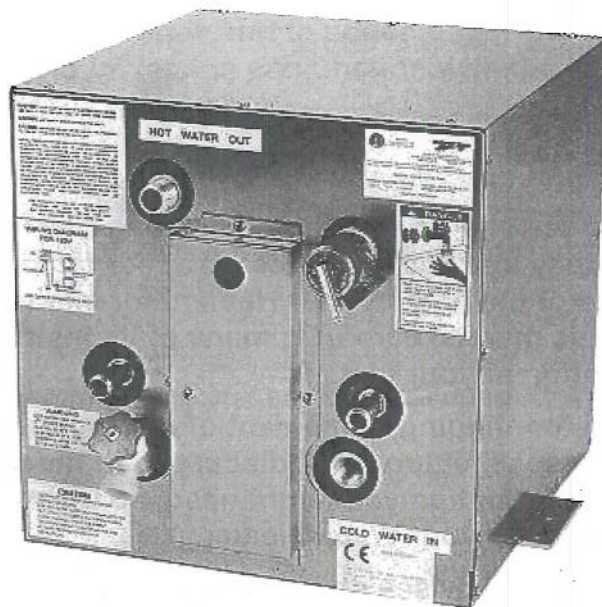


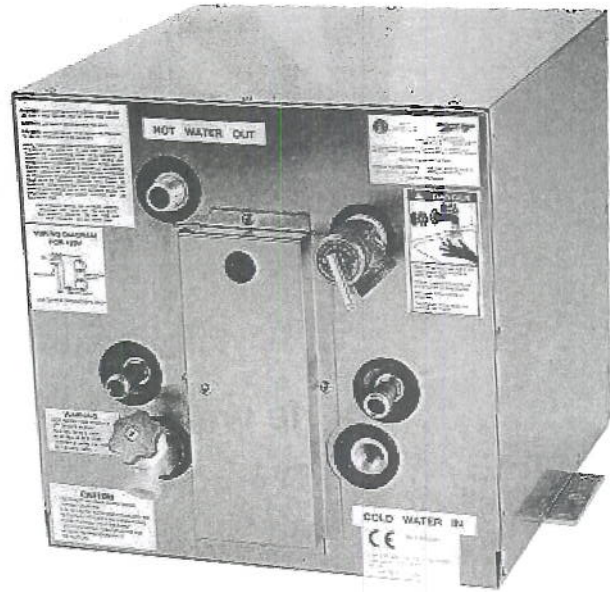


Marine water heater operation manual



Kuuma Innovation 121 Landmark Drive, Greensboro, NC, 27409, US

**Do not return your water heater to the dealer,
Call 1-800-334-2004 Or email : info@camco.net**



Thank you for selecting a Kuuma Innovations Electric Water Heater. Your unit was carefully inspected and tested at our factory. We take pride in producing one of the finest Water Heaters for marine use. Please take the time to read this manual carefully; many of its instructions are essential to the safe operation of your unit.

Because of the continuing refinement of our product designs, your Water Heater may possess features not discussed in the manual. We have tried to supply all the information you might need, so please take time to read this manual before using your Water Heater.

Kuuma Innovations advises strongly against unauthorized modification of this product, but we do encourage you to correct problems which may arise.

Please make note of the model and serial number of your Water Heater for future reference.

Model # _____ Serial # _____

Any recommendation or advice by Kuuma Innovations, or any of its employees, is given with the understanding that it is solely as an accommodation to the customer, and should not be relied upon by the customer without an independent verification of its applicability to the customer's particular situation.

IMPORTANT SAFEGUARDS

When using appliances, basic safety precautions should always be followed including the following: Read all instructions before use

This manual contains important information about the assembly, operation and maintenance of this product and system. General safety information is presented in these first few pages and is also located throughout the manual. Particular attention should be paid to information accompanied by the safety alert symbols:



“DANGER”,



“WARNING”,



“CAUTION”.

Keep this manual for future reference and to educate new users of this product. This manual should be read in conjunction with the labelling on the product.

Safety precautions are essential when any electrical equipment is involved. These precautions are necessary when using, storing, and servicing. Using this equipment with the respect and caution demanded will reduce the possibilities of personal injury or property damage.

The following symbols shown below are used extensively throughout this manual. Always heed these precautions, as they are essential when using any electrical equipment.



WARNING Fire hazard

Do not smoke or have any flame near an open faucet.

If you have not used this water heater for more than two weeks, hydrogen gas may result. Under these conditions to reduce the risk of injury, open the hot water faucet for several minutes at the kitchen sink before you use any electrical appliance connected to hot water system.

If hydrogen is present, you will probably hear sounds like air escaping through the pipe as water begins to flow. Allow the water to flow until these sounds disappear.

INSTALLATION

Position water heater on floor. Locate at or below engine level.

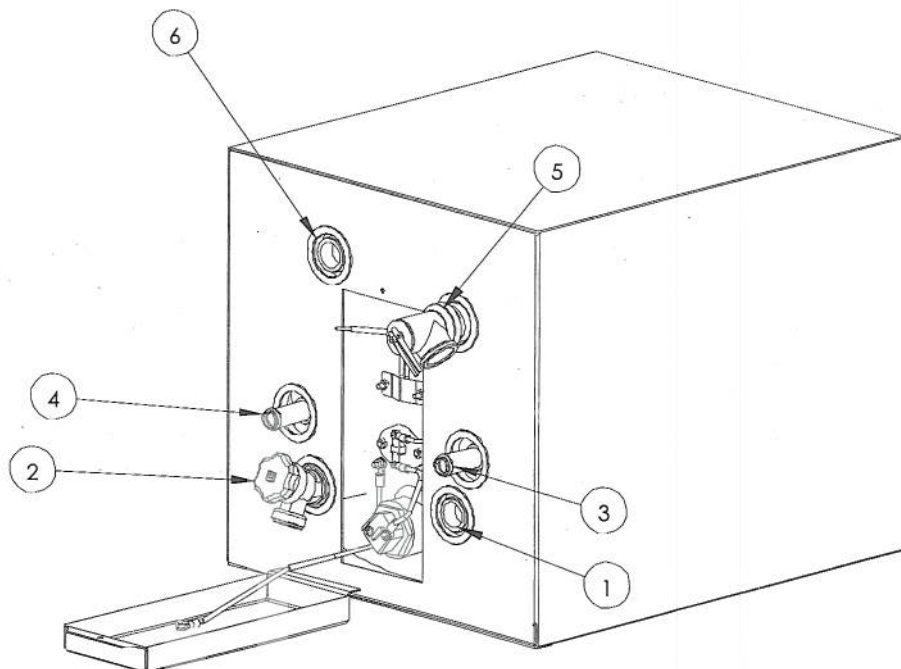
All MODELS secure to flooring through the front and rear hold-down bracket Or left and right side hold down brackets.

Connect both 1/2" NPT Hot Water Out and Cold Water In

Always use pipe lubricant on threads when connecting hot and cold water couplings. It is recommended that a suitable plastic fitting be used.

If using engine heat exchanger connect 5/8" diameter SAE 20R3 or equivalent coolant hose to heat exchange tubes at rear or front of water heater. Use a SAE J536a type E hose clamp or equivalent.

1. Cold Water In
2. Drain Valve
3. Heat Exchanger Inlet
4. Heat Exchanger Return
5. SRV
6. Hot Water Out

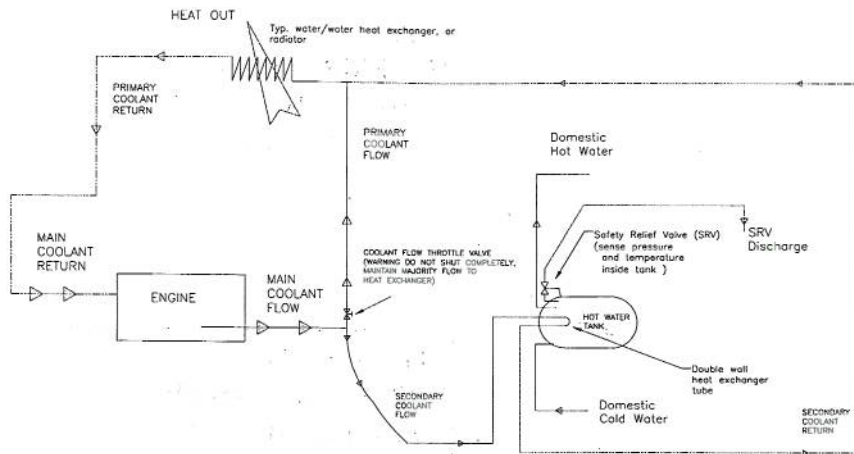




CAUTION PRODUCT DAMAGE

The tank and heat exchanger are aluminum. Do not use any chemicals in the heat exchanger that may cause damage to it. Use only the engine manufacturer's recommended coolant.

Do not use raw water in heat exchanger circuit. Damage caused by a damaging chemical or salt reaction is not covered under warranty.



Bleed air from the entire coolant system for proper operation of both engine and water heater.

ELECTRICAL

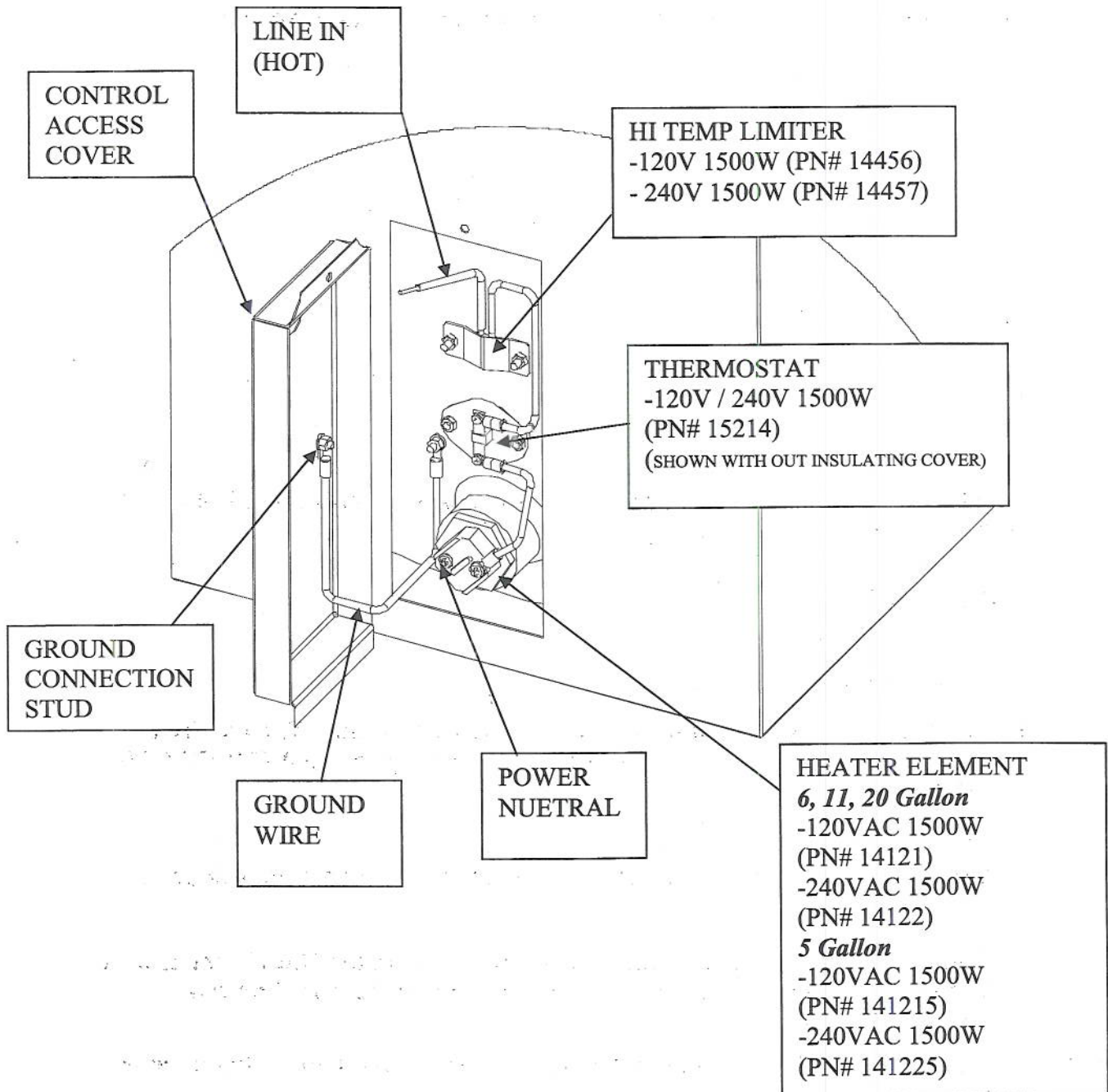
1. Remove the AC wiring access
2. Connect the electrical supply by a qualified electrician. The electrical supply shall be armored cable or conduit per NEC code ANSI/NFPA 70-1993.

Wiring diagram is located on the inside of the removable access panel.

3. Connect Line (Hot) to the pigtail wire coming from the High Temperature Limiter. Connect the Neutral to the unused screw terminal on the heating element.
4. A strain relief should be installed in the hole on the front of the access panel to secure the AC wire.

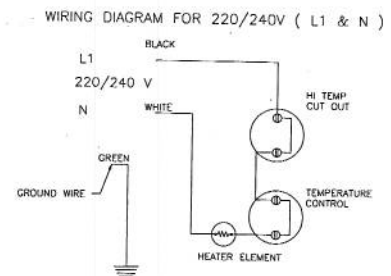
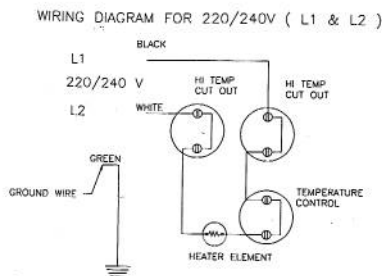
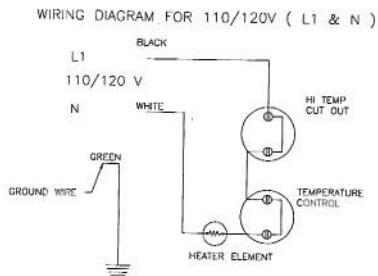
5. Ground the water heater using the ground connection screw on the inside of the access cover. Do not use a switch in the grounding circuit.

For marine installation, use conductors as specified by sub chapter S, part 183.425, table 5 of chapter 1 - Coast Guard Department of Transportation Code of Federal Regulations Title 33.



Wiring Diagrams

USE COPPER CONDUCTORS ONLY



WARNING EXPLOSION MARINE INSTALLATION ONLY

Locate circuit breaker switch in an area where ignition protection is not required.



CAUTION PRODUCT DAMAGE

Small DC electric currents move between boat and shore through the safety ground wire in the shore cord, causing galvanic damage to your water heater. To prevent galvanic damage, this product should be used in conjunction with a galvanic isolator. These devices are inexpensive and easily installed. Galvanic corrosion is not covered by warranty.

120V models use UL LISTED ON/OFF switch rated for 15 amps/125V AC.

240V models use UL LISTED ON/OFF switch rated for 10 amps/220-240V AC.

Fill the heater with water.

Open the hot water faucet closest to the water heater to allow the air in the system to bleed out. When the water is running steady you can close the hot water faucet.

At least once a year manually operate pressure-temperature relief valve.

Thermostat is factory set and is not adjustable.

 **CAUTION** PRODUCT DAMAGE

Do not operate without water in tank

Turn remote switch to ON. Your water heater is now operating.

This water heater is equipped with temperature & pressure relief valve that complies with the standard for Relief Valves & Automatic Gas Shutoff Devices for Hot Water Systems, ANSI Z21.22. (FIG 2).

Allow for complete drainage of both valve and discharge line.

 **WARNING** SCALDING

Pressure temperature relief valve is not serviceable, it must be replaced.

Tampering with valve will result in scalding injury.

Tampering with valve will void warranty.

 **WARNING** EXPLOSION

Do not place a valve, plug or reducing coupling on outlet port of pressure temperature relief valve or block the discharge opening.

If you use a discharge line, do not use a reducing coupling or other restriction that is smaller than the outlet of the relief valve.

Install temperature and pressure equipment, required by local codes, to protect against excessive pressures and temperatures.

The Combination Temperature and Pressure relief valve must be installed into the water heater coupling provided and marked.

Orient the valve or provide tubing so that any discharge from the valve will exit only within 6 inches above, or at any distance below the structural floor and cannot contact any live electrical part.

A Pressure Temperature Relief Valve, dripping while the water heater is running, does not mean it is defective.

During normal expansion of water, as it is heated in a closed water system the Pressure Temperature Relief Valve will sometimes drip.

The water heater tank is designed with an internal air gap at the top of the tank to reduce the possibility of dripping. In time, the expanding water will absorb this air and it must be restored.



WARNING SCALDING

Turn off water heater before opening pressure-temperature relief valve to establish air space. Storage water must be cool.

TO RESTORE THE AIR GAP FOLLOW THESE STEPS

Turn off main water supply (the pump or water hook up source).

Let water cool or let run until cool.

Open the hot water faucet closest to the water heater.

Pull handle of pressure temperature relief valve straight out and allow water to flow until it stops.

Allow pressure temperature relief valve to snap shut; close faucet and turn on water supply.

Turn on water heater and test.

At least once a year manually operate pressure-temperature relief valve.

When pressure-temperature relief valve discharges again, repeat above

procedure. For a permanent solution, we recommend one of the following:

Install a pressure relief valve in cold water inlet line to water heater and attach a drain line from valve to thru hull fitting. Set to relieve at 100-125 PSI.

Install a diaphragm-type expansion tank in cold water inlet line.

Tank should be sized to allow for expansion of approximately 15 oz. of water and pre-charged to a pressure equal to water supply pressure. These devices can be obtained from a plumbing contractor or service center

OPERATION

ELECTRIC

When the Water Heater is operating from the AC Power, water temperature in the tank is regulated at 140 deg F (60 deg C). The thermostat is non-adjustable.



WARNING HEAT EXCHANGER

When the Water Heater is operating from the Heat Exchanger, water temperature in the tank will approach the temperature of the engine coolant.

MAINTENANCE



WARNING SCALDING

Turn off water heater before opening pressure-temperature relief Valve. Storage water must be cool.

WINTERIZING (FLUSHING) INSTRUCTIONS

To insure the best performance of your water heater and add to the life of the tank, periodically drain and flush the water heater tank.

Before long term storage or freezing weather drain and flush the tank.

Turn off main water supply

Drain Water Heater Tank by opening the drain valve, you can use a garden hose to run the water outside the boat.

We suggest opening the Pressure Temperature Relief Valve to allow air into the tank

After draining the tank, because of the placement of the Drain Plug, Approximately two quarts of water will remain in the tank.

This water contains most of the harmful corrosive particles. To remove these harmful corrosive particles flush the tank with either air or water. Whether using air or water pressure, it may be applied through the inlet or outlet or the Pressure Temperature Relief Valve.

The pressure will force out the remaining water and the corrosive particles.

If you use water pressure, pump fresh water into the tank with the assistance of the on-board pump or use external water for a few minutes to allow the fresh water to agitate the stagnant water on the bottom of the tank and force deposits through the drain opening.

Continue repeating adding water and draining until the particles have been cleared from the water remaining in the tank.

Close the Drain valve and close the Pressure Temperature Relieve Valve.

The approximately two quarts of water remaining in the tank after draining will not cause damage to the tank should freezing occur. However you can use a squirt bottle to add non-toxic marine anti - freeze you are using for the engine winterization.

TROUBLE SHOOTING

High temp limiter can be re-set by cycling the circuit breaker switch

SAVE THESE INSTRUCTIONS