



Electric Water Heater

OWNER'S MANUAL

(AUSTRALIA)

ESO Approval No. Q080349

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**If your water Heater is Damaged or you have questions regarding installation, performance or operation please contact Kuuma Products: Marine Customer Service at Tel: (920) 321-1880
***Email: sales@kuumaproducts.com
***Preferred contact - answered within 24 hours weekdays**

INTRODUCTION

Thank you for selecting a Force 10 Marine 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.

Force 10 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 Force 10 Marine Company, 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 SAFETY INSTRUCTIONS

When using electrical appliances, basic safety precautions to reduce the risk of fire, electric shock, or injury to persons should be followed, including:

- Read all Instructions before Operating.
- This water heater must be grounded. Connect only to properly grounded circuit.
- Install or locate this water heater only in accordance with the provided installation instructions.
- Use this water heater only for its intended use as described in this manual.
- Do not use an extension cord set with this water heater.

CAUTION:

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.

Children should be supervised to ensure that they do not play with the appliance.

- Do not operate this water heater if it has a damaged power line, if it is not working properly, or if it has been damaged or dropped.
- This water heater should be serviced only by qualified service personnel. Contact nearest authorized service facility for examination, repair, or adjustment.

WARNING:

*This is an electrical appliance that requires a specific energy source. Each unit is manufactured to run on either 120 **OR** 240 volt circuitry. Be sure you have purchased the correct unit based on your power source.*

This heater is equipped with a heat exchanger so that the water may be heated by the coolant from your engine. This may cause the water temperature to get excessively hot unless your unit is equipped with a Temperature Control Valve which holds the temperature at approximately 140 deg F.

Do not operate this water heater if there is damage to the heater or if not performing properly. Contact Force 10 for assistance.

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.

CAUTION

Hydrogen gas is produced in a hot water system served by this heater that has not been used for a long period of time (2 weeks or more). Hydrogen gas is extremely flammable. To reduce the risk of injury under these conditions, 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. When hydrogen is present, there will probably be an unusual sound such as air escaping through the pipe as the water begins to flow. There should be no smoking or open flame near the faucet at the time it is open.

NOTE: 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.

INSTALLATION

MOUNTING

1. If you are using the heat exchange feature, locate the water heater as close to the engine as possible. The heat exchanger port (or TCV inlet if equipped) must be lower than the coolant output port of the engine.
2. Your unit is equipped with mounting brackets located either on the sides of the tank or the front and back of the tank. Use stainless steel screws to securely fasten the heater.

PLUMBING

1. Connect cold water supply and hot water outlet to the heater as indicated on the front of the tank. (The tank is supplied with 1/2" NPT Female fitting) Force 10 recommends the installation of a check valve on the cold water inlet. Seal all pipe fittings with Teflon tape or Loctite thread sealant.

Note: The maximum inlet water pressure is 500kPa.

Thermal Expansion: When a Water Heater is installed in a closed water-supply system, such as one having a back flow preventer in the cold water supply, means shall be provided to control thermal expansion.

2. The heat exchanger inlet or TVC inlet (if equipped) and the outlet is a 5/8" hose barb fitting. Connect hoses to the hose barb fitting using stainless steel hose clamps.
3. If your unit is equipped with a TCV (Temperature Compensation Valve) the coolant loop to the water heater exchanger must be an auxiliary loop in the engine coolant circulation system. The TCV can not be installed inline with the engine coolant system. *Figure 1 on page 5*
4. To reduce the risk of excessive pressures and temperatures in this water heater, a Pressure & Temperature Relief Valve (Reliance RMC model HT-575, 30kW capacity, maximum 99°C temperature, pressure setting 1000 kPa) is fitted to this appliance.
A discharge pipe is to be connected to the P&T valve in a continuously downward direction and in a frost free environment; piping should be terminated so that any discharge from the valve exits only within 15cm's 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.

WARNING:

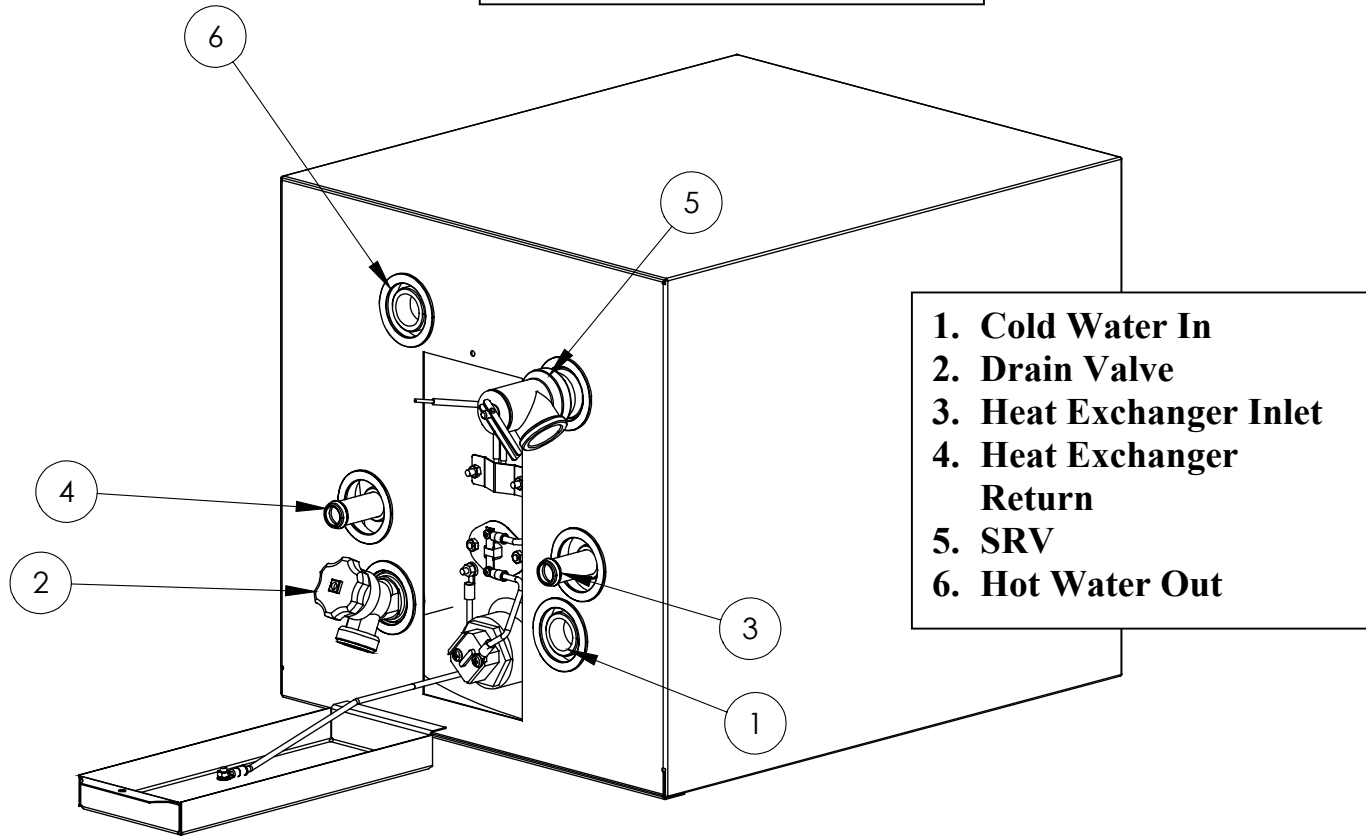
Following installation, the valve lever **MUST** be operated **AT LEAST ONCE EVERY SIX MONTHS** by the hot water tank owner to ensure that the water-ways are clear.

Certain naturally occurring mineral deposits may adhere to the valve, rendering it inoperative. When manually operating the lever, water will discharge and precautions must be taken to avoid contact with hot water and to avoid water damage. The lever should be operated smoothly as a sudden influx of water may cause the blow-out cage to activate

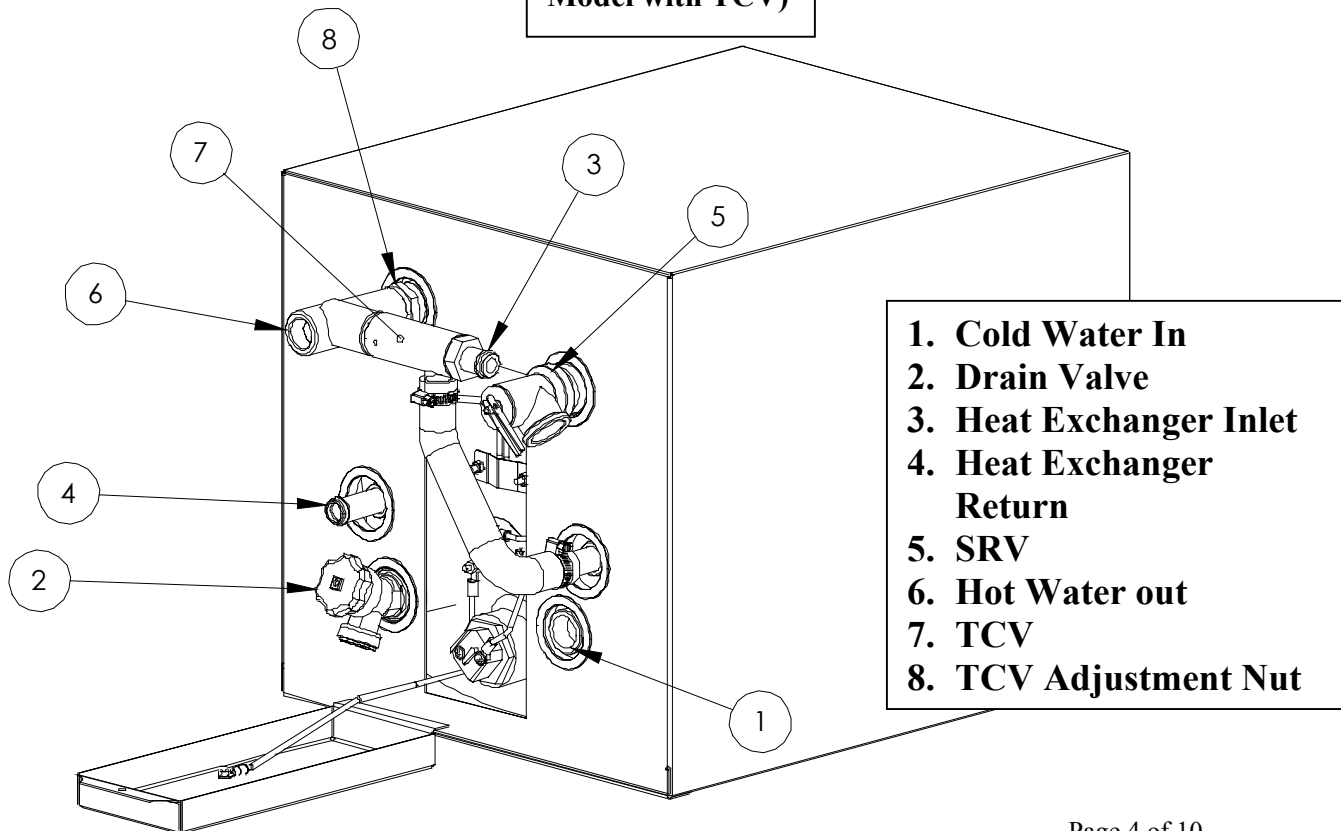
BEFORE operating lever, check to see that a discharge line is connected to this valve directing the flow of hot water from the valve to a proper place of disposal otherwise personal injury may result. If no water flows, valve is inoperative. **TURN OFF THE WATER HEATER AND CALL A PLUMBER IMMEDIATELY.**

PLUMBING CONNECTIONS

Standard model without (TCV)

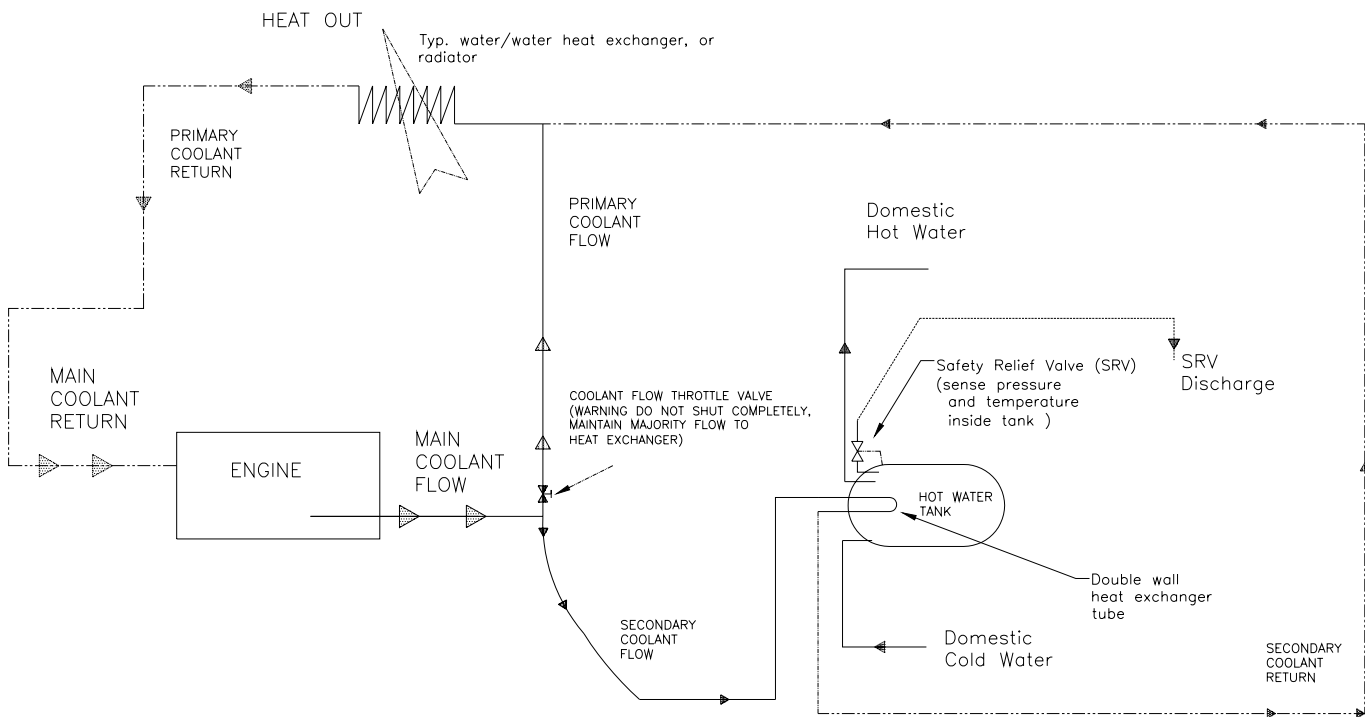


Model with TCV)



HEAT EXCHANGER INSTALLATION DIAGRAM

(Figure1)



ELECTRICAL

1. Remove the AC wiring access cover by unscrewing the screw at the top of the cover. The bottom is held in by a tab. The tab should be between the front case and the insulation.
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. *See figure 2 on page 7 for Wiring Diagrams.*

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

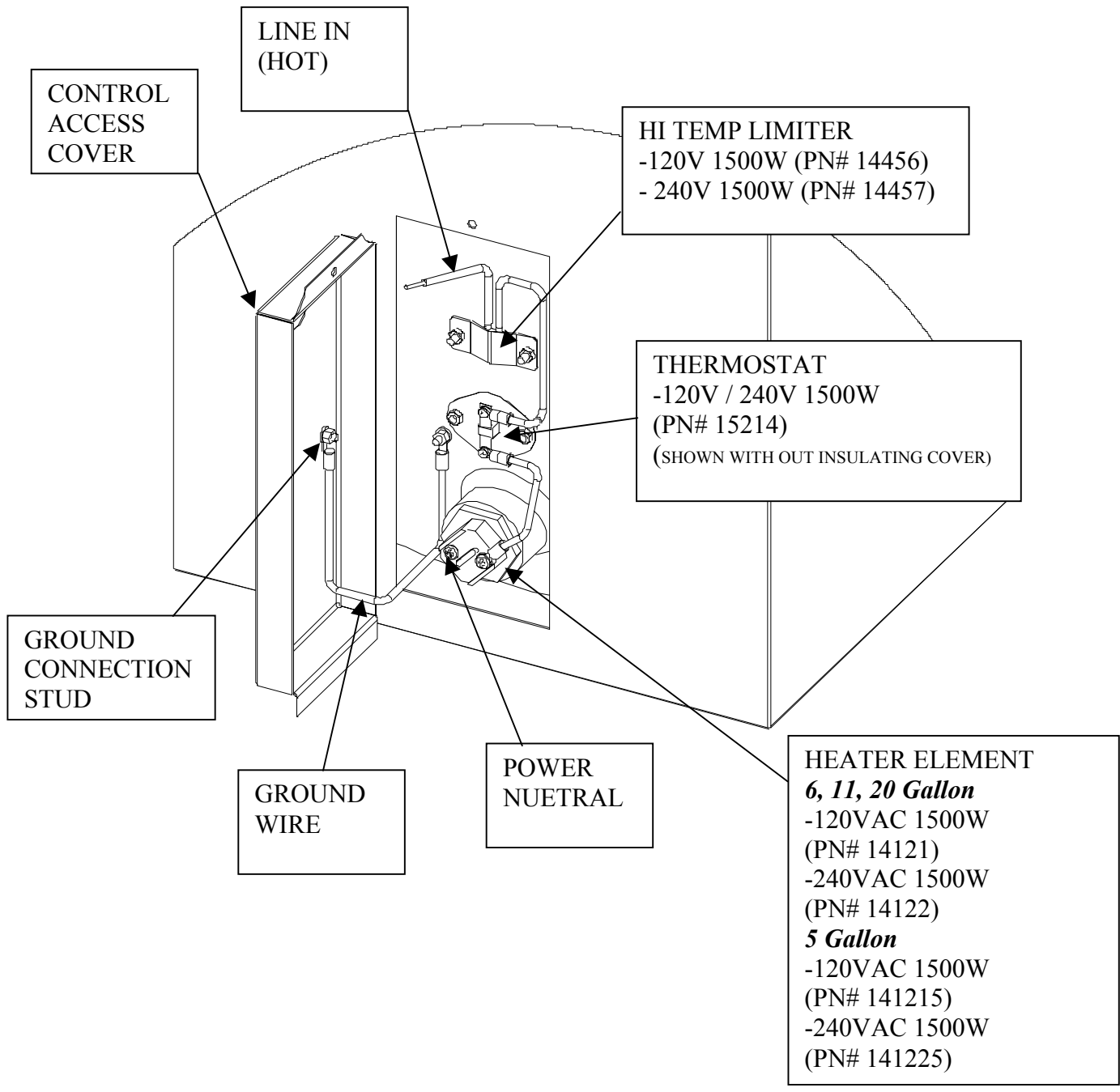
Attention:

A means for complete all pole disconnection must be incorporated in the wiring of this appliance.

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 marked with a white "N".
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.

Caution: In order to avoid a hazard due to inadvertent resetting of the thermal cutout this appliance must not be supplied through an external switching device, such as a timer or connected to a circuit that is regularly switched on and off by the utility.

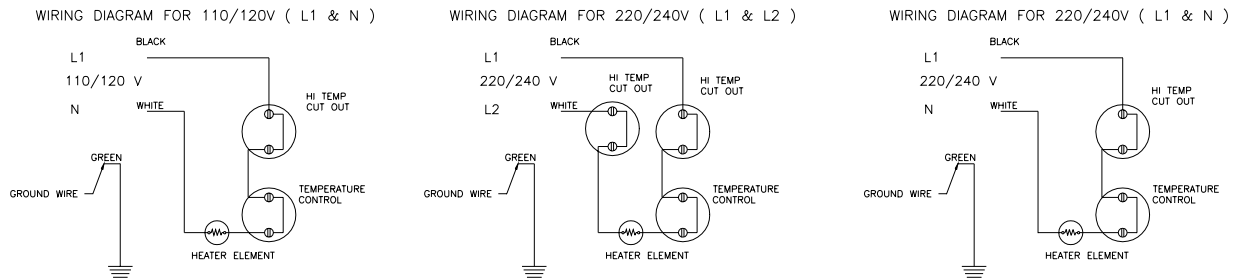
ELECTRICAL CONNECTIONS



WIRING DIAGRAMS

(Figure 2)

USE COPPER CONDUCTORS ONLY



DO NOT CONNECT LINE (HOT) DIRECTLY TO THE ELEMENT

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.

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. If the Heater is equipped with a Temperature Control Valve (TCV) the water temperature in the tank will be regulated at approximately 140 deg F (60 deg C).

The Temperature Control Valve (TCV) regulates the flow of coolant through the Heat Exchanger by sensing the output temperature of the water in the tank. As the output water temperature rises, the thermal actuator closes the valve and restricts the coolant flow through the Heat Exchanger limiting the water temperature to approximately 140 deg F (60 deg F) . When the output water temperature cools the valve opens and allows engine coolant to flow through the heat exchanger.

START-UP

1. Completely fill the tank and entire water system. Flush water through the tank to eliminate any trapped air.
2. Check all connections for leaks.
3. Apply power to the Water Heater and check to ensure the water is hot. The water will meet maximum temperature within (2) hour.

Caution: Do not operate water heater without the heating element submerged in water.

MAINTENANCE

1. Disconnect AC Power prior to draining the water system.
2. Flush Tank periodically.
3. If the temperature in the tank environment is going to drop below 32 deg F (0 C), drain the tank to prevent freezing and possible damage.

Note: To comply with Australian standards the hand wheel on the drain valve has been removed; an 8mm or 5/16" spanner must be used to operate this valve.

TROUBLE SHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
No output from the tank	Air Lock in the system	Bleed all the water lines
Water does not get hot when plugged into AC Power	High Limiter switch has tripped	Cycle AC Power
	Failed Thermostat	Replace Thermostat
	Element has burned out	Replace Element
Water Dripping from SRV	Thermal Expansion	Install Expansion tank
	Valve poppet not seated properly	Lift lever to flush valve and reseal.
Leaking from TCV Connection	Loose Connection	Tighten the collar hex nut on the TCV.
	Bad seal	Replace "O" Ring
Leak from TCV vent hole	Failed temperature sensor seal	Replace TCV
	Leaking shaft seal	Replace TCV

SPECIFICATIONS

		405XXX	406XXX	411XXX	418XXX
Capacity		5 Gallon	6 Gallon	11 Gallon	20 Gallon
Tank Material		Aluminum	Aluminum	Aluminum	Aluminum
Case Material		Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Weight (Dry)		22 lb	25 lb	30 lb	47 lb
Overall Size including mounting plate (W/D/H)					
Front /Back Mount		N/A	13.6" / 20" / 13.6"	16" / 22.5" / 16"	N/A
Front /Back Mount w/ TCV		N/A	13.6" / 20.5" / 13.6"	16" / 23" / 16"	N/A
Side Mount		15.5" / 16.5" / 13.6"	15.5" / 19.5" / 13.6"	18.75" / 21.5" / 16"	N/A
Side Mount w/ TCV		15.5" / 16.75" / 13.6"	15.5" / 20" / 13.6"	18.75" / 22" / 16"	N/A
Cross Mount		N/A	N/A	N/A	18.75" / 18.75" / 29.5"
Standard Heat Exchanger Location					
		Front	Front	Front	Front
Electrical Rating					
120 V		1500 Watts / 12.5A	1500 Watts / 12.5A	1500 Watts / 12.5A	1500 Watts / 12.5A
240 V		1500 Watts / 6.25A	1500 Watts / 6.25A	1500 Watts / 6.25A	1500 Watts / 6.25A
Ignition Protection					
		Yes	Yes	Yes	Yes
Certification					
120 V		UL 174 (Including Marine Supplement) CSA C22.2 No. 110-94	UL 174 (Including Marine Supplement) CSA C22.2 No. 110-94	UL 174 (Including Marine Supplement) CSA C22.2 No. 110-94	UL 174 (Including Marine Supplement) CSA C22.2 No. 110-94
240 V		CE	CE	CE	CE
Fittings					
Water Inlet		1/2" NPT F	1/2" NPT F	1/2" NPT F	1/2" NPT F
Water Outlet		1/2" NPT F	1/2" NPT F	1/2" NPT F	1/2" NPT F
Heat Exchanger SRV		5/8" Hose Barb	5/8" Hose Barb	5/8" Hose Barb	5/8" Hose Barb
		3/4" NPT F	3/4" NPT F	3/4" NPT F	3/4" NPT F
Warranty					
		2 Years	2 Years	2 Years	2 Years

Specifications subject to change without notice

Limited Warranty

Kuuma Products Corporation warrants the Hot Water tank to the original consumer to be free from defective material(s) and workmanship while under normal use and service for a period of (2) years.

During the warranty period, Kuuma Products Corporation will, at it's option and without charge, repair and/or replace but not remove or reinstall the faulty product.

The purchaser will return defective products to the address stated below. No product will be accepted by Kuuma Products Corporation without a Return Authorization Number. Return of defective products must be accompanied by written details of the problems and proof of purchase.

The buyer shall be responsible for shipping and insurance charges, if any, on the products returned for repair or replacement under the terms of the warranty. Kuuma Products Corporation will pay shipping of products returned to the buyer.

This limited warranty applies only to products that have been installed and used in accordance to printed instructions of Kuuma Products Corporation and does not cover improper use, vandalism, negligence or accidents.

Note: if your water heater was supplied as standard equipment in a new vessel the warranty period starts from the date of delivery of the vessel as shown on your your bill of sale.

In North America contact:

KUUMA PRODUCTS CORPORATION

724 Whitney St.

San Leandro, CA 94577

USA

Tel: 1-866-995-8862 or (920) 321-1880

Email: sales@kuumaproducts.com

For parts and servicing inquiries of all Australian standards water heaters contact:

Ocean Solutions Pty. Ltd.

Unit 13 - 37 Blanck Street

Ormeau Qld. Australia

Tel: 1300 791 432 or

International callers dial: +61-7- 5549 - 1212

Email: sales@oceansolutions.com.au

All other regions contact:

KUUMA PRODUCTS CORPORATION

724 Whitney St.

San Leandro, CA 94577

USA

Tel: +1-920-321-1880

Email: sales@kuumaproducts.com

WARRANTY REGISTRATION

Name: _____

Address: _____

City: _____

State/Province: _____

Country: _____

Zip / Postal Code: _____

Telephone: _____

Email address: _____

MODEL # _____ **Purchase Date:** _____

SERIAL # _____

Manufacture of Boat: _____

Model of Boat: _____

Purchased from (Dealer Name): _____

Signature: _____ **Date:** _____

Mail to:

KUUMA PRODUCTS CORPORATION

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USA

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Australian customers please mail email or fax to:

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Fax: 07 5549 1213