

**REDRING**

**For Service & Installation  
in the U.S. contact:**

CONTROLLED ENERGY CORPORATION



COMMON SENSE HEAT & HOT WATER TECHNOLOGY



**Controlled Energy Corp.**

**340 Mad River Park**

**Waitsfield VT 05673**

**TOLL FREE**

**866-330-2729**

**[www.controlledenergy.com/tech](http://www.controlledenergy.com/tech)**

# **POWERSTREAM HANDBOOK**

## **MODELS**

<b>RP1</b>	<b>RP2</b>	<b>RP3</b>	<b>RP7</b>
<b>240V</b>	<b>277V</b>	<b>120V</b>	<b>240V</b>
<b>208V</b>		<b>110V</b>	<b>220V</b>

**IMPORTANT:** This booklet should be given to the customer after installation and demonstration.

# Important safety Instructions

When using this electrical equipment, basic safety precautions should always be followed, including the following:

## 1. READ AND FOLLOW ALL INSTRUCTIONS

2. This appliance must be grounded.
3. Disconnect this product from the electrical supply before cleaning, servicing or removing the cover.
4. To reduce the risk of injury, close supervision is necessary when the product is used near children or elderly persons.
5. Warning: Do not install the heater in a location where it may be subject to freezing.
6. Warning: Do not install a check valve or any other type of back flow preventer within six feet of the cold water inlet.
7. The electrical installation must conform to current National Electrical Codes.
8. Warning: Do not switch the the heater on if you suspect that it may be frozen. Wait until you are sure that it has completely thawed out.
9. The Powerstream is designed to heat potable cold water for domestic purposes. Contact Controlled Energy before specifying or installing the appliance in any other application.

### 10. Additional Canadian Safety Instructions

- (a) A green terminal (or a wire connector marked "G", "GR", "GROUND", OR GROUNDING ) is provided within the control box. To reduce the risk of electric shock, connect this terminal or connector to the grounding terminal of the electric service of supply panel with a continuous copper wire in accordance with the Canadian Electrical Code, Part I.
- (b) This product shall be protected by a Class A ground fault circuit interrupter.

## Contents

Using the Powerstream	3
Installing the Powerstream	3
Accessories and Spares	6
Starting up the Powerstream	7
How the Powerstream works	8
If you have a problem...	10
Warranty	Back Cover

## SAVE THESE INSTRUCTIONS

Keep this guide in a safe place once your Powerstream unit has been installed. You may need to refer to it for general instructions or future maintenance.

# Using the Powerstream

## WARNING

Do not use the unit if you think it may be frozen, as this could result in serious damage to the unit. Wait until you are sure that it has completely thawed out before you switch it on.

## Sink

- Check that the power is switched on at the circuit breaker panel.
- Turn on the hot water tap FULLY. If you do not turn the tap full on, you will find that the temperature of the water will vary. The hot water temperature can then be set by adjusting the flow.
- If the unit has been used recently, run the water through for a few seconds to let the temperature settle down. You may initially get a short burst of very hot water from the unit.
- If a second tap connected to the unit is also turned on, the hot water will be shared between the two, therefore the flow and/or the temperature of the water will decrease.

# Installing the Powerstream

## WARNING

Do not install the Powerstream in a room where there is a chance of freezing.

## IMPORTANT - Read entire instructions

Check the pressure of the main water supply. To operate correctly, the unit needs the following running pressures-

### Sink

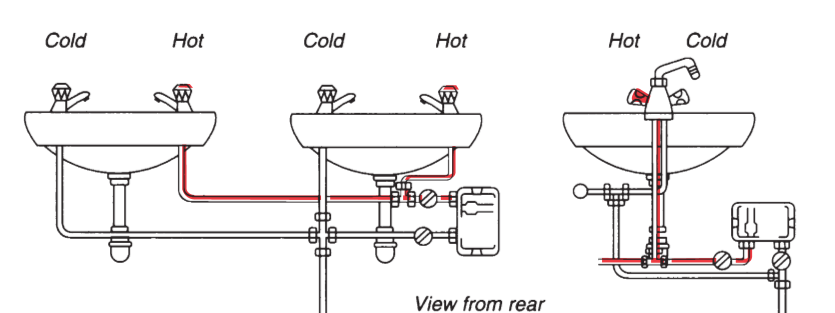
Min:	10 psi	(0.7 bar)
	20 psi	(1.4 bar) RP 12 Model
Max:	150 psi	(10.3 bar)

## Securing the unit to the wall

### Deciding the position

- If being used in a public place, position the unit out of easy reach to discourage vandalism.
- Mount the unit onto a flat section of wall, well away from any potential splashes of water or spray.
- Position the unit either upright or length ways (diagram 1), whichever is most convenient for plumbing and wiring. Remember to keep the lengths of hot water pipe to a minimum in order to save energy.
- If the unit is to supply a sink, you can fit it either above or below the sink.

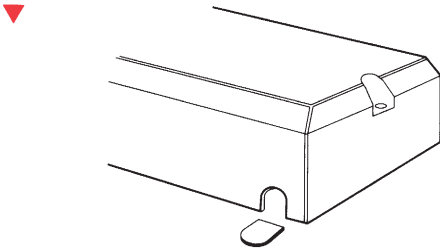
Diagram 1: Examples of installations



## Deciding the wiring route

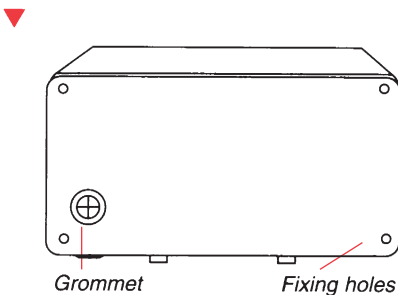
- You have a choice of whether to feed the electric cable through the side or through the back of the unit.
- If it is going through the side of the unit, cut out the plastic lug to expose the rubber sleeve (diagram 2).

Diagram 2: Lug cut out



- If it is going through the back of the unit, cut through the grommet on the backplate with a sharp knife. Make sure that you do not remove the grommet from the backplate (diagram 3). Feed the cable through the grommet before you mount the unit to the wall. If you are using an approved cable clamp fitting or conduit fitting, remove the grommet.

Diagram 3: Back of unit



## Mounting on the wall

- Undo the retaining screws on the cover and take the cover off the unit. Hold the backplate in position against the wall while you mark the four mounting holes.
- Drill the holes and secure the unit to the wall using the four No. 8 wood screws supplied.

### Warning IMPORTANT

- *Do not install a non-return check valve within 6 feet of the inlet.*

## Plumbing in the unit

### Fitting the pipes

- The unit should be connected directly to the main cold water supply and not to pre-heated water. The unit should be installed with service valves on both the inlet and outlet.
- We recommend that you use 1/2" or 3/8" copper or high pressure flex connections.
- Use Teflon tape for sealing pipe threads. Do NOT use a pipe dope.
- Remember to keep the the hot water pipe runs as short as possible. In some cases it may be worth fitting a second unit to serve an additional fixture.
- If the unit is to supply more than one sink, the aerator should be the same at each tap if they are to be used at the same time. If not, one outlet will take all the water.
- After the unit has been plumbed in, and before you wire it, flush it with water to remove any debris or loose particles. Failure to do so may make the unit inoperable.

## Connecting the unit to the pipes

- The inlet and outlet are clearly marked on the unit. They each have a  $\frac{3}{8}$ " NPT connector.
- Install a ball valve in the cold water line. This valve can be used to turn off the water supply to the unit if it needs servicing, or to reduce the water flow if it is too high.
- If the unit is to supply a sink, we recommend that you use aerators, which you can get from your local distributor/dealer.

## Making the electrical connections

Model	Rated Voltage	Rated Current	Recommended Wire Size
RP1	240V	40A	8
RP1	208V	35A	8
RP2	277V	25A	10
RP3	110V	30A	10
RP7	240V	30A	10
RP12*	240V	50A	6
RP9	277V	35A	8

\* This model has been discontinued.

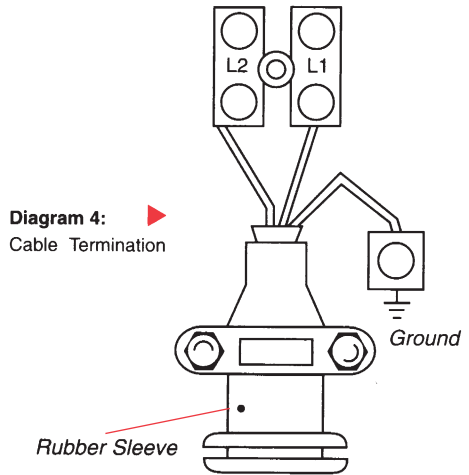
### WARNING

- *The unit must be installed by a qualified electrician.*
- *The unit must be grounded.*

When the Powerstream is not within sight of the electrical circuit breakers, a circuit breaker lockout or additional local means of disconnection for all non grounded conductors must be provided that is within sight of the appliance. (REF NEC 422.31)

## Connecting the unit to power

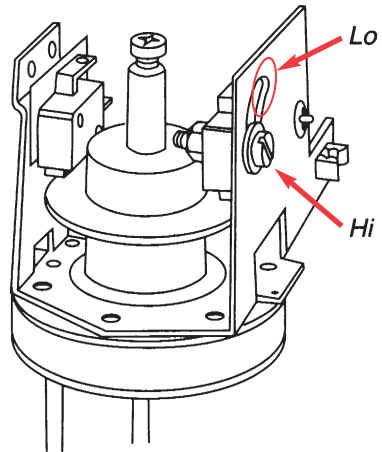
- Strip back the insulation on the power wires about  $\frac{3}{8}$ ". Any insulation on the ground should be stripped back about  $\frac{3}{4}$ ".
- Feed the cable through the side or rear entry grommets, as appropriate.
- Connect the cables to the terminal block and ground stud (diagram 4).



- Make sure that all the terminal block screws are tightened securely. Loose connections can cause wires to heat up.
- Make sure that the ground wire is wrapped around it's terminal stud and into the saddle washer. The nut should be tightened securely.

- Set the Power Selector Screw (diagram 5) on the desired setting. If it is set to LO, only one heating element will operate and the output will be half power. See the table on page 8 for temperature rise at various flow rates. If the element is set on HI, both heating elements will operate and the output will be full power. When setting the Power Selector Screw, it is important that the screw be adjusted all the way to the end of the slot and that it be well tightened.

NOTE: If operating on 'LO' change the Venturi as described on page 10.



▲ **Diagram 5:**  
Power selector screw

- Attach the front cover and tighten the retaining screws.

## Spare Parts

93.793701	Backplate
.....	Heat Exchange Assy. (please quote loading/voltage on rating plate when ordering).
93.793703	Terminal Block
93.793704	Front Cover
93.793723	High Temperature Thermal Cut-Out Assembly (Manual Re-set)
93.793726	Low Temperature Thermal Cut-Out Assembly (Automatic Re-set)
93.793706	Flow Switch
93.793707	Neon Light & Clip
.....	Wiring Assy. (please quote loading/voltage on rating plate when ordering).
93.793709	Cable Clamp & Rubber Boot
.....	Orifice and Filter Assy. (please quote loading/voltage on rating plate when ordering).
93.793713	Cover Retaining Screws

For further information ask your local dealer.

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# Starting up the Powerstream

## Checking for leaks

- Let the water run through the unit for a few seconds. Check that no pipe joints leak.

## Adjusting the flow

Turn the service valves on, then -

- turn on the hot water tap fully at the sink.
- adjust the outlet service valve until the water comes out of the tap at the required temperature, (increase flow for cooler, decrease for hotter).

- Check that the unit works correctly when the sink tap is closed and then opened again; if not, adjust the service valve slightly.

- the inlet service valve should not be used to regulate temperature.

**When using the hot water open the tap fully so that the water temperature is always the same. If hotter water is desired decrease the flow.**

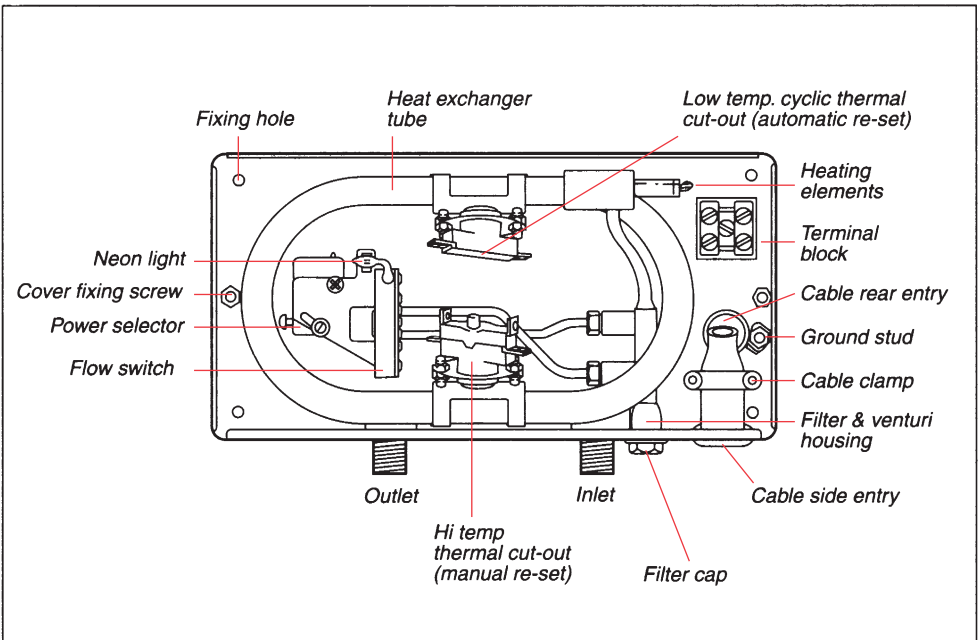
### Note

If the unit is servicing a single lever faucet you may need to restrict the cold water supply to the faucet to balance water pressure and improve performance.

### IMPORTANT

Before leaving the site, the installer should demonstrate the unit to the user and give him/her this guide.

▼ **Diagram 6:** Inside view



# How the powerstream works

Water comes in through the inlet tube.

The flow switch senses how much water is passing through the unit. If it detects more than the preset level, the units heating elements switch on. This is shown by the neon light glowing. The neon light will glow less brightly if only one element is operating.

The water is heated instantly as it passes through the copper heat exchanger tube.

The temperature of the water coming out of the unit depends on:-

- the voltage of the electrical supply,
- the temperature of the incoming water supply,
- the setting of the power selector,
- the flow rate,
- 

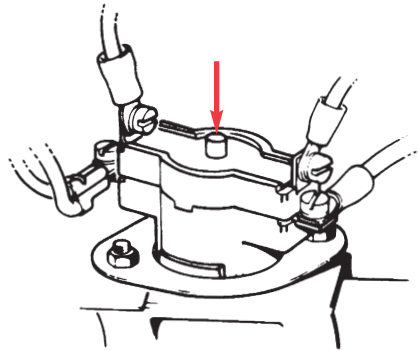
Depending on the region of the country, the temperature of the water supply can vary from 40°F in winter to about 70°F in summer, with an average of about 50°F.

The chart below shows the rise in water temperature you can expect from the unit.

The unit has two thermal cut-outs (diagram 6) which are mounted on the heat exchanger tube. They will switch off the heater elements if the water flow is reduced too much and the temperature goes above 135°F. One cut-out is cyclic and will automatically reset as the water temperature falls. The unit will then function normally again.

The other cut-out when tripped needs to be reset manually inside the unit. This cut-out will only operate in exceptional circumstances (diagram 7). Call your service person or Controlled Energy if this happens frequently.

▼ **Diagram 7:** Manual re-set Thermal cut-out



Model	Volts	Amps	Element Resistance	High Setting	Low Setting	Temperature Rise (deg F) at Flow Rate (GPM)					
						0.5GPM	0.75GPM	1.0GPM	1.5GPM	2.0GPM	2.5GPM
RP1	240	40	2x12Ω	9.5kW		NA	84F	64F	42F	32F	NA
RP1	240	20	1x12Ω		4.75kW	64F*	42F	32F	21F	16F	NA
RP1	208	35	2x12Ω	7.1kW		NA	64F	48F	32F	24F	NA
RP1	208	18	1x12Ω		3.5kW	41F*	32F	24F	16F	12F	NA
RP2	277	22	2x25Ω	6.0kW		NA	55F	42F	27F	NA	NA
RP2	277	11	1x25Ω		3.0kW	41F*	28F	21F	14F	NA	NA
RP3	120-110	27	2x8Ω	3.4-3.0kW		41F	28F	20F	NA	NA	NA
RP7	240-220	30	2x16Ω	7.2-6.1kW		NA	63F	48F	32F	24F	NA
RP7	240-220	15	1x16Ω		3.6-3.05kW	48F	32F	24F	16F	12F	NA
RP12#	240	50	2X9.4Ω	12.0kW		NA	NA	81F	54F	41F	33F
RP12#	240	25	1x9.4Ω		6.0kW	NA	NA	41F	27F	20F	16F
RP9	277	35	2x15.8Ω	9.5kW		NA	84F	64F	42F	32F	NA
RP9	277	17.5	1x15.8Ω		4.75kW	64F*	42F	32F	21F	16F	NA

Note: \* Requires alternative venturi - see page 10

# This model has been discontinued.



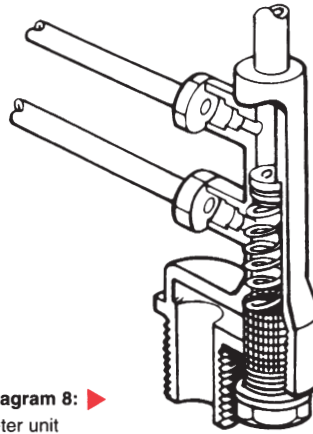
## Cleaning the filter

If the flow rate drops over a period of time, the filter unit (diagram 8) may be restricting the flow of water through the unit.

It can be cleaned as follows-

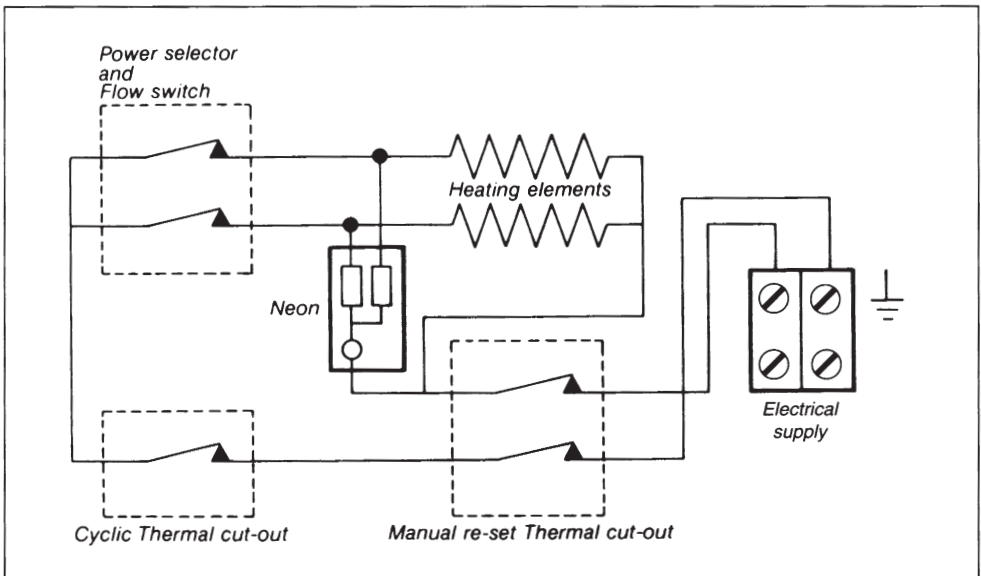
- Switch off the power to the unit at the breaker.
- Turn off the water supply at the inlet service valve.
- Unscrew the filter cap, remove the filter and clean it under the cold tap.
- Replace the filter, compression spring and brass Venturi. Make sure that the Venturi is firmly in place against its seating.

- Re-insert the filter cap and sealing washer. Do not overtighten.
- Turn on the water supply and switch on the power.



**Diagram 8:** ▶  
Filter unit

**Diagram 9:** Internal wiring plan ▼

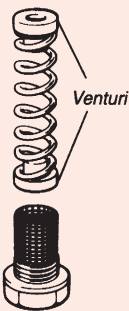


**- Warning**

*Always switch off the electricity supply to the unit before you remove the cover.*

## If you have a problem...

### For the Installer

Symptom	Cause	What to do
<b>Cold water only</b> - neon light off.	Electricity not on.	Check electrical supply
	The water supply is connected to the OUTLET of the unit.	Reconnect the water supply to the INLET (marked in blue).
	The high temperature thermal cut-out has tripped.	Reset it by opening the unit and pushing the button on the cut-out (diagram 7 on page 8). Before you do this you must find the cause of the problem
	The flow switch is not working.	Turn off the power, open the unit and observe if the flow switch activates when the water is turned on. If not contact CEC 866-330-2729 or visit <a href="http://www.controlledenergy.com/tech">www.controlledenergy.com/tech</a>
<b>Water too cold</b> - neon light on.	Water flow too high.	Adjust water flow (see chart on page 8)
	The power selector screw not all the way to 'HI' (neon dim)	Change the power select screw to 'HI' (see page 6).
	One element is not working (neon dim).	Switch off the electricity & check the resistance of the elements (See chart on page 8).
	The power supply voltage has dropped.	Check the supply voltage to the heater (see chart on page 8).
	Venturi is not correct for HI/LO setting and water conditions.	Change the brass venturi for one with a smaller hole located on the opposite end . of the venturi spring (see diagram 10)
<b>Water flow too low, or temperature too high.</b>	There are restrictions in the plumbing.	Check the plumbing. Only use Teflon tape for sealing pipe joints.
	Inlet filter dirty	Remove and clean filter

▲  
Diagram 10

## For the User

<b>Symptom</b>	<b>Cause</b>	<b>What to do</b>
<b>Little or no water flows.</b>	<i>The water supply is turned off.</i>	<i>Turn on the main supply fully at the stop valve.</i>
	<i>Inlet filter is dirty.</i>	<i>Remove and clean filter.</i>
<b>Cold water only - neon light off.</b>	<i>The flow is not high enough to activate.</i>	<i>Open the inlet service valve fully.</i>
	<i>The filter is blocked or the brass venturi is wrongly positioned.</i>	<i>Clean and reassemble the filter as described on page 9.</i>
<b>Water too cold - neon light on.</b>	<i>The water flow rate is too high.</i>	<i>Adjust the flow rate (see page 7).</i>
	<i>The inlet water temperature has dropped.</i>	<i>Adjust the flow rate (see page 7).</i>
<b>Water flow too low, or temperature too high.</b>	<i>The main supply of water flow is too low.</i>	<i>Increase the water flow.</i>
	<i>The hot tap is not fully open.</i>	<i>Adjust the stop/ball valve so that water is at the right temperature with the tap fully open (see page 7). Always turn the hot tap full on.</i>
	<i>Venturi is not correct for the setting and water conditions</i>	<i>Change the brass venturi for the one on the opposite end of the venturi spring.</i>
<b>Water temperature fluctuates.</b>	<i>Fluctuating water pressure and/or flow is causing the flow switch to cycle on and off.</i>	<ul style="list-style-type: none"> <li>- Increase the flow rate.</li> <li>- Be sure that the isolation valves are properly adjusted.</li> <li>- Be sure that the inlet filter screen is clean.</li> <li>- Be sure that the outlet restrictors and aerators on showers and/or faucets are clear.</li> <li>- Be sure that there is no plumbing crossover by shutting off the inlet isolation valve and opening all hot water outlets served by the Powerstream. If there is a steady flow, then cold water is flowing into hot water service lines and back-pressuring the Powerstream. This condition must be fixed or the heater will not work properly.</li> </ul>
	<i>High Inlet water temperature is causing the thermal cut-out to cycle on and off at normal flow rates.</i>	<i>Match the flow sensor venturi to the inlet water temperature and power setting. NOTE: In areas with inlet water temperatures over 65deg F it may be necessary to install a special order venturi to correct this.</i>

### If the problem persists

The person who initially installed the unit is probably the best one to contact for help. You can also call CEC on 866-330-2729 or visit [www.controlledenergy.com/tech](http://www.controlledenergy.com/tech). Please have this guide with you when you call.

# POWERSTREAM LIMITED 5 YEAR WARRANTY

## COVERAGE

APPLIED ENERGY PRODUCTS LTD. THROUGH ITS U.S. DISTRIBUTOR CONTROLLED ENERGY CORP. (here in after CEC) guarantees this water heater to the Owner (here in after "Owner") of the water heater at the original installation location against defects in material and workmanship for the periods specified below.

## WARRANTY PERIOD

1. The Heat Exchanger/Element - if the original heat exchanger leaks or the heating element fails within five (5) years from the date of original installation of the water heater, because of a defect in material or workmanship, CEC will furnish to such Owner a new heater of the then prevailing comparable model.

2. Any Component Part Other than The Heat Exchanger/Element - If any other component part (other than the heat exchanger/element) proves to be defective in material or workmanship within one (1) year from the date of original installation of the water heater, CEC will furnish the Owner with a replacement of the defective part(s).

3. Verification of Date of Original Installation - When Owner cannot verify or document the original date of installation, the warranty period begins on the date of manufacture marked on the tag affixed to water heater.

## EXCLUSIONS

**1. THIS LIMITED WARRANTY SHALL BE THE EXCLUSIVE WARRANTY MADE BY THE MANUFACTURER AND IS MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED (WHETHER WRITTEN OR ORAL), INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

2. Manufacturer shall not be liable incidental, consequential, special or contingent damages or expenses arising, directly or indirectly, from any defect in the water heater or the use of the water heater.

3. Manufacturer shall not be liable for any water damage arising, directly or indirectly, from any defect in the water heater component part(s) or from its use.

4. Manufacturer shall not be liable under this warranty if:

- The water heater or any of its component parts has been subject to misuse, alteration, neglect or accident, or
- The water heater has not been installed in

- accordance with the applicable local plumbing and/or building code(s) and/or regulation(s), or
- The water heater has not been installed in accordance with the printed manufacturers instructions, or
- The water heater is not continuously supplied with potable water.

5. The OWNER and not the Manufacturer or his representative shall be liable for and shall pay for all field charges for labor or other expenses incurred in the removal and/or repair of the product or any expense incurred by the owner in order to repair the product.

**SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER**

## IMPORTANT; OWNER SHALL KEEP THIS CERTIFICATE

NOTE: A water heater should be installed in such a manner that if it should leak, the resulting flow of water will not cause damage to the area in which it is installed.

## HOW THE OWNER CAN SECURE SERVICE OR MAKE A CLAIM

- Owner should contact the dealer who sold the water heater covered by this warranty or
- Owner should submit the warranty claim directly to CEC at the address listed below, and they will arrange for the handling of the claim.
- Whenever any inquiry or service request is made, be sure to include the water heater model number the date of manufacture, date of installation, Dealers name and the watts and voltage.
- When returning the water heater or component part(s) they must be individually tagged and identified with the Returned Goods Authorization # issued by CEC and shipped prepaid to CEC at the address below.

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