



INSTALLATION INSTRUCTIONS AND OWNER'S MANUAL

ELECTRIC INSTANTANEOUS WATER HEATERS WITH **PhD**

208 and 480 VAC three phase 32 – 126 kW



BEFORE ATTEMPTING ANY INSTALLATION OR SERVICE OF THIS HEATER, MAKE SURE THE ELECTRICAL POWER IS DISCONNECTED. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY, DEATH AND/OR PROPERTY DAMAGE.

Read and understand these instructions thoroughly before attempting the installation or service of this water heater. This heater must be used to heat water only and be in a location where it is not subject to freezing temperatures. If a water softener is used, the softener must be well-maintained and in good working order. Any maintenance issues with a water softener could be detrimental to the operation or longevity of your Eemax tankless water heater. The manufacturer is not liable for any damages resulting from improper installation or misuse. The warranty of this water heater will depend upon the proper installation according to these instructions. Refer to the warranty card packaged with this heater.

This installation must conform to the latest requirements of the National Electrical Code and all applicable state and local codes. This information is available through your local authorities. You must understand and comply with these requirements before beginning this installation. Eemax recommends your heater be installed by a licensed plumber and electrician. User instructions for the unit controls start on page 6.

This unit is not required by UL 499 to have a Temperature and Pressure relief valve (T&P). You should check with local codes to find out if one is required in your area. If it is, it must be installed in the outlet hot water pipe between the heater and the isolation valve.

This heater features a user friendly digital interface for ease of operation. Information is displayed through a 16 character alpha numeric LCD and is controlled by 4 simple push buttons. The unit features silent operation and internal diagnostics. The desired temperature can easily be set or altered as necessary. Once the desired temperature is achieved, the control can be locked to avoid tampering.

SAVE THESE INSTRUCTIONS

TABLE OF CONTENTS

1) MOUNTING THE HEATER TO THE WALL	PAGE 3
2) PLUMBING HOOK-UP	PAGE 3
3) ELECTRICAL HOOK-UP	PAGE 4
4) COMMISSIONING THE HEATER	PAGE 5
5) CONTROL FEATURES	PAGE 6
6) REPAIR PARTS	PAGE 9

IMPORTANT SAFETY INSTRUCTIONS

The following instructions are provided pursuant to Canadian UL/Electrical Code requirements:

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 or supply panel with a continuous copper wire in accordance with the Canadian Electrical Code, Part I. (Canadian Installations Only)


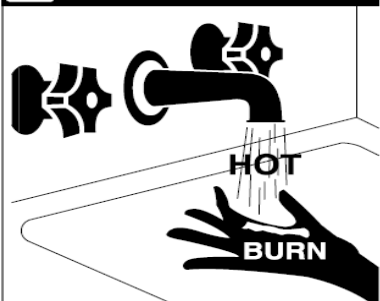
CAUTION

Connect only to a circuit protected by a Class A ground fault circuit interrupter. Attention: Brancher uniquement à un circuit protégé par un disjoncteur de fuite de terre de Classe A. (Canadian Installations Only)

CAUTION

Do not install in a bath enclosure or shower stall or connect to a salt-regenerated water softener or a water supply of salt water. Attention: Ne pas installer dans une baignoire ou une cabine de douche et ne pas brancher à un adoucisseur d'eau régénéré avec du sel ou à un approvisionnement en eau salée. (Canadian Installations Only)

Use copper conductors only. Use bonding conductor in accordance with the Canadian Electrical Code Part I. Utilisez des conducteurs en cuivre uniquement. Utilisez des conducteurs de mise à la masse conformément au Code Canadien de L'Électricité, Partie I. (Canadian Installations Only)

 DANGER	Hot water can be dangerous, especially for infants or children, the elderly, or infirm. There is hot water scald potential if the thermostat is set too high.
	Water temperatures over 125° F (51° C) can cause severe burns or scalding resulting in death.
	Hot water can cause first degree burns with exposure for as little as:
	3 seconds at 140° F (60° C)
	20 seconds at 130° F (54° C)
	8 minutes at 120° F (48° C)
	Test the temperature of the water before placing a child in the bath or shower.
	Do not leave a child or an infirm person in the bath unsupervised.

1) MOUNTING THE HEATER TO THE WALL

Your heater may or may not be installed in a NEMA 4/4X cabinet. Please follow the mounting instructions as appropriate to your installation. Whenever possible, locate the heater as close to the point of hot water use as possible. Time-to-temperature performance will improve the closer the heater is installed to the point of use.

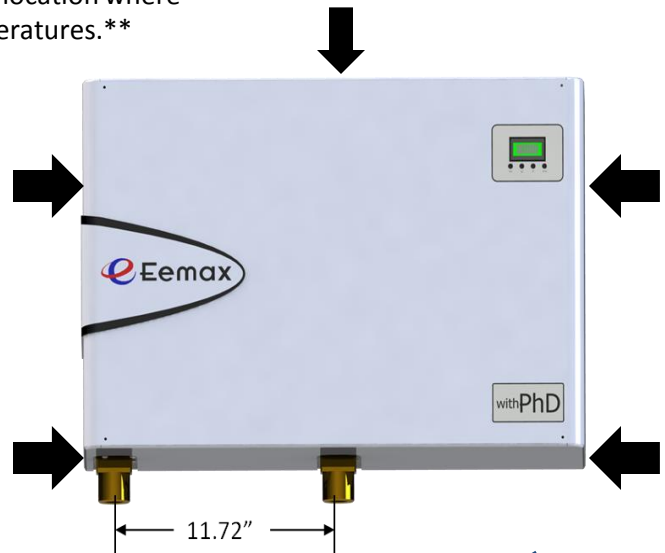
CAUTION

This heater must be installed in a location where it is not subject to freezing temperatures.**

Make sure the brass fittings are at the bottom of the heater and pointing "DOWN". No other heater orientation is permitted. Leave a service clearance of at least 12" inches on the left and right sides of the heater.

SafeAdvantage: Install the heater with cabinet using the supplied mounting feet following the instructions provided with the cabinet. Be sure to use appropriately rated fasteners to hold the cabinet/heater in place.

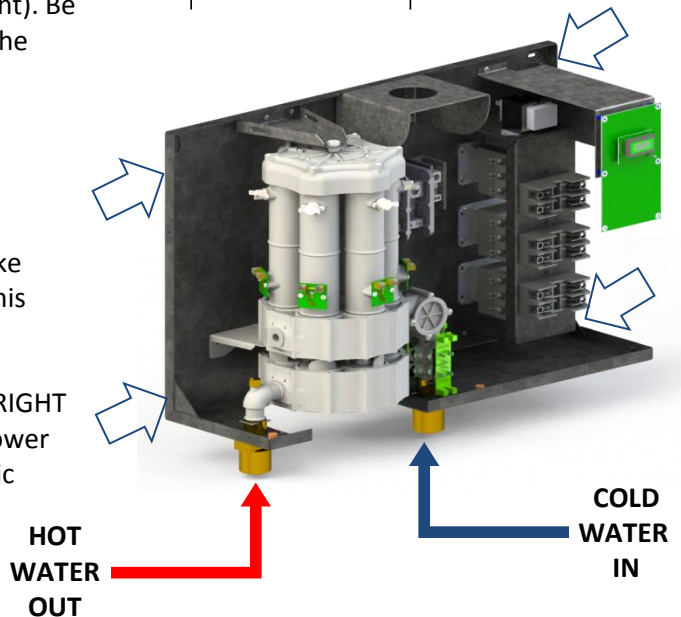
SpecAdvantage: Remove the cover by removing the cover screws as indicated by the arrows (right) and fasten the heater to the wall using the mounting holes located at each corner of the back plate (lower right). Be sure to use appropriately rated fasteners to hold the heater in place.



2) PLUMBING HOOK-UP

The heater is equipped with NPT brass fittings. Make sure ONLY NPT fittings are used for connection to this heater.

Make the cold water inlet connection to the lower RIGHT fitting and the hot water outlet connection to the lower LEFT fitting. Reversed connections will cause erratic operation and premature heater failure.



CAUTION

NEVER USE PIPE DOPE WHEN MAKING PLUMBING CONNECTIONS TO THIS HEATER. FOLLOW STANDARD INDUSTRY PRACTICE WITH CAREFUL APPLICATION OF TEFLON TAPE. DO NOT ALLOW TEFLON TAPE TO GET INTO THE HEATER.

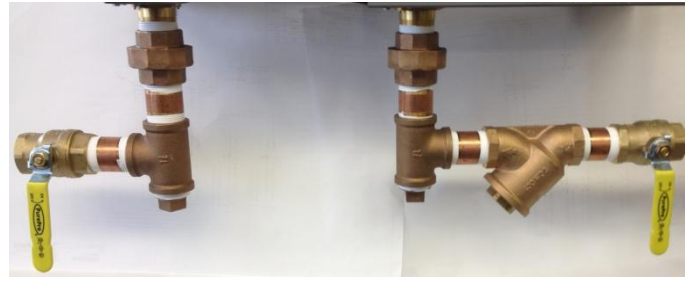
CAUTION

NEVER SOLDER ANY PIPE CONNECTIONS WHILE ATTACHED TO THIS HEATER - DAMAGE TO THE HEATER WILL RESULT. DOING THIS WILL VOID THE WARRANTY.

** Does not apply to SafeAdvantage with Freeze Protection option.

Eemax requires an inlet Y-strainer be installed for unit debris protection and warranty coverage.

Eemax also commends 2 unions, 2 full flow ball valves and two drain plugs be installed for future serviceability. These components are supplied by others. (See photo to right.)



Run water through the cold water inlet pipe to purge it of any debris before making final plumbing connections to the heater.

Open both ball valves, check for leaks and repair as needed. Finally, open all hot water outlets – one at a time – and purge the system from any air pockets. Allow water to run until water flow is continuous and then close the hot water outlets

3) ELECTRICAL HOOK-UP



Installation and service is to be performed by a licensed electrician or qualified serviceman.



BEFORE BEGINNING ANY WORK ON THIS INSTALLATION, BE SURE THAT THE ELECTRICAL BREAKER IS "OFF" AND THAT ALL MOUNTING AND PLUMBING WORK HAS BEEN COMPLETED PER THESE INSTRUCTIONS.

This heater must have its own independent circuit using insulated, UL listed wire conductors of the appropriate size suitable for up to 75° C and protected by the correctly rated circuit breaker.

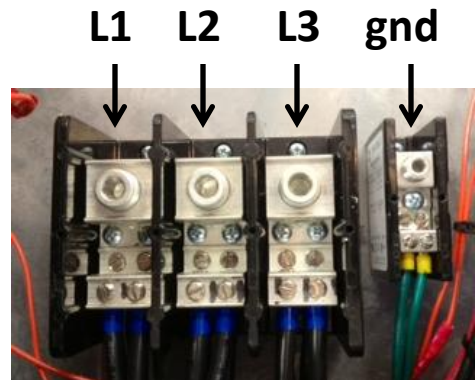
See chart on next page.



Before starting any electrical work VERIFY there is no power at the heater before proceeding !

The power conductors are to be secured to the L1, L2 and L3 connectors on the terminal block. The ground is to be secured to the GND connector to the right of the terminal block. Replace the cover.

(SpecAdvantage only).



FAILURE TO GROUND THE SYSTEM MAY RESULT IN SERIOUS INJURY, DEATH AND/OR PROPERTY DAMAGE.

ELECTRICAL SPECIFICATIONS

MODEL	VOLTS		AMPS PER PHASE	RECOMMENDED WIRE SIZE (CU) 75° C
	3-PHASE DELTA	Kw		
AP032208	208	32	89	3 AWG
AP041208	208	41	114	2 AWG
AP054208	208	54	150	1/0
AP064208	208	64	178	3/0
AP036480	480	36	44	8 AWG
AP048480	480	48	58	6 AWG
AP054480	480	54	65	6 AWG
AP072480	480	72	86	3 AWG
AP108480	480	108	130	1 AWG
AP126480	480	126	152	2/0

4) COMMISSIONING THE HEATER



BEFORE SWITCHING THE ELECTRICAL BREAKER “ON”, MAKE SURE THE INLET AND OUTLET BALL VALVES ARE FULLY OPEN AND WATER IS FLOWING THROUGH ALL POINTS OF USE FOR A MINUTE OR TWO UNTIL THE FLOW IS CONTINUOUS AND FREE FROM AIR POCKETS.

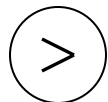
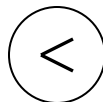


DO NOT SWITCH THE BREAKER “ON” IF THERE IS ANY POSSIBILITY THE WATER IN THE HEATER IS FROZEN.

After verifying the heater has been purged of air (see above) turn the circuit breaker/disconnect “ON” and observe the start-up sequence on the display. The LCD screen will display the SETPOINT TEMPERATURE in degrees F.



Below the display are 4 push buttons that are used to control the function of the heater. Press the UP or DOWN buttons to establish your desired temperature. Refer to the CONTROL FEATURES section of this manual for additional information.



The heater is fully installed and ready for use.

TEMPERATURE RISE AT SPECIFIED FLOW RATE, DEGREES F:

MODEL	TURN-ON GPM	3.0 GPM	4.0 GPM	6.0 GPM	8.0 GPM	12.0 GPM	20.0 GPM	25.0 GPM	30.0 GPM
AP032208	1.5	73	55	36	27	18	-	-	-
AP041208	1.5	93	70	47	35	23	-	-	-
AP054208	1.5	*	92	61	46	31	18	-	-
AP064208	1.5	*	*	73	55	36	22	17	-
AP036480	1.5	82	61	41	31	20	12	-	-
AP048480	1.5	*	82	55	41	27	16	-	-
AP054480	1.5	*	92	61	46	31	18	-	-
AP072480	2.5	*	*	82	61	41	25	20	-
AP108480	2.5	*	*	*	92	61	37	30	-
AP126480	2.5	*	*	*	*	72	43	34	29

* Temperature limited to preset value

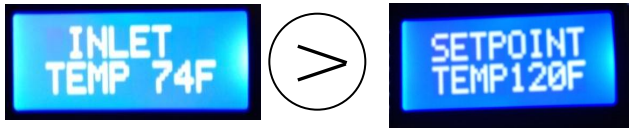
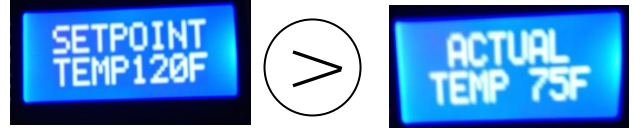
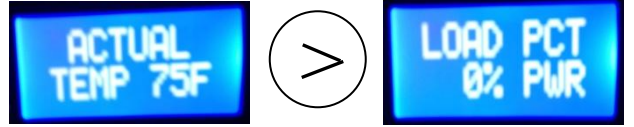
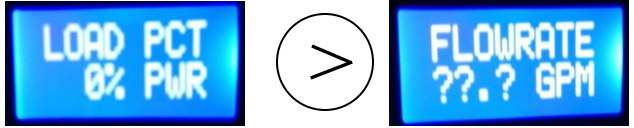
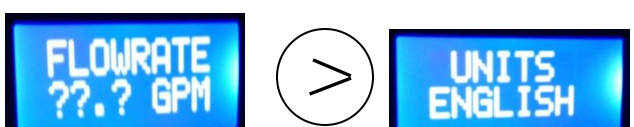
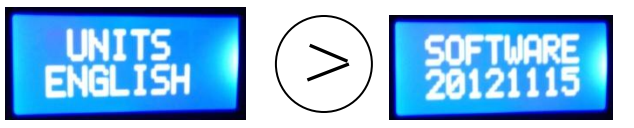
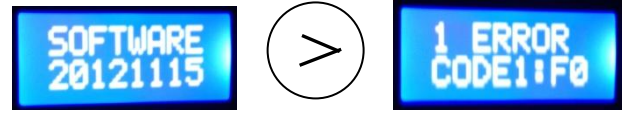
5) CONTROL FEATURES



BEFORE USING THIS CONTROL, MAKE SURE ALL PRIOR INSTALLATION STEPS HAVE BEEN PROPERLY COMPLETED, ELECTRICAL POWER IS ON AND WATER IS PRESENT IN THE HEATER.

PUSH BUTTON FLOW CHART

<p>1) The SETPOINT TEMP or ACTUAL TEMP screen can be selected for display as the home screen. Either of these screens will remain on the display when the backlight timer expires.</p>	
<p>2) There is a 5 minute time delay built into the control. Regardless of which screen is being displayed, after 5 minutes of inactivity, the display will revert to the SETPOINT TEMP screen.</p>	
<p>3) The 4 push buttons are used to control the operation of the heater. The LEFT and RIGHT buttons shift the display from one screen to another. The DOWN and UP buttons may change the values within selected screens.</p>	
<p>4) As an example, when the screen displays SETPOINT TEMP, the desired hot water temperature will increase 1 degree for each press of the UP button and decrease 1 degree for each press of the DOWN button. Note that minimum and maximum setpoint temperatures are established at the factory.</p>	

<p>5) The LEFT and RIGHT buttons shift the display from one screen to another. From the INLET TEMP screen, one press of the RIGHT button will shift the display to the SETPOINT TEMP screen. INLET TEMP shows the actual temperature of the water entering the heater.</p>	
<p>6) From the SETPOINT TEMP screen, one press of the RIGHT button will shift the display to the ACTUAL TEMP screen. This shows the actual temperature of the water leaving the heater.</p>	
<p>7) From the ACTUAL TEMP screen, one press of the RIGHT button will shift the display to the LOAD PCT screen. This shows the electrical power consumption as a percentage of full power.</p>	
<p>8) From the LOAD PCT screen, one press of the RIGHT button will shift the display to the FLOWRATE screen. This shows the rate of flow of water through the heater.</p>	
<p>9) From the FLOWRATE screen, one press of the RIGHT button will shift the display to the UNITS screen. This shows the units of measure in either the ENGLISH or METRIC systems. ENGLISH units are degrees Fahrenheit and gallons per minute. METRIC units are degrees Celsius and liters per second. Use the UP and Down buttons to select the desired units of measure.</p>	
<p>10) From the UNITS screen, one press of the RIGHT button will shift the display to the SOFTWARE REVISION screen. This shows the revision level of the software in the control.</p>	
<p>11) From the SOFTWARE REVISION screen, one press of the RIGHT button will shift the display to the ERRORS screen. This shows the error history of the heater. "0 ERRORS" means that no errors have occurred.</p> <p>If the heater has an error history of 4 errors; this history will be displayed on the screen as shown. "CODE 1:E0" refers to the first error and indicates it to be an E0 error. One press of the UP button will show the second error as "CODE 2:E0" and having the same E0 error.</p> <p>Continued pressing of the UP or Down buttons will scroll through each of the errors in the history (in this case a total of 4). ERRORS indicate an undesirable condition but will not shut down the operation of the heater.</p>	

ERROR CODES:

E0: Excessive water flow detected

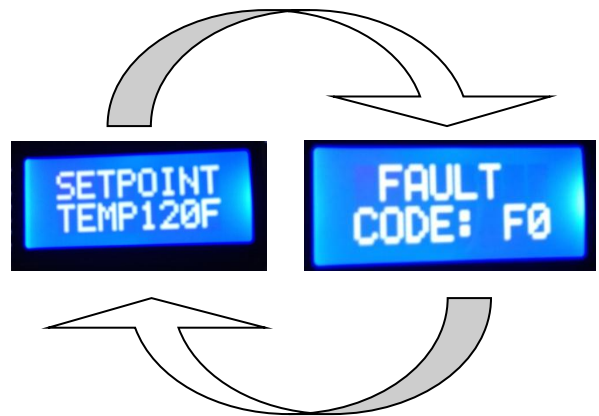
Corrective action: Using the OUTLET BALL VALVE, slowly reduce water flow until the desired temperature is achieved. The temperature is proportional to the flow through the heater; the lower the flow, the higher the temperature and vice versa.



Keep the INLET BALL VALVE fully "OPEN". NEVER RESTRICT THE WATER FLOW USING THE INLET VALVE.

E1: Inlet temperature too hot to generate heat

12) FAULTS are communicated through the LCD display. The display will switch from the SETPOINT screen to the FAULT screen and back again every 3 seconds. FAULTS indicate an undesirable condition and will immediately shut down the operation of the heater. If faults are appearing on your heater call Eemax Technical Support for assistance.



FAULT CODES:

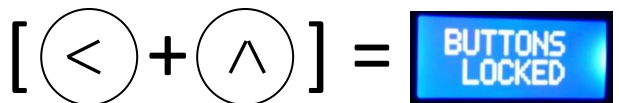
F0: Thermistor out of range

F1: No change in water temperature detected

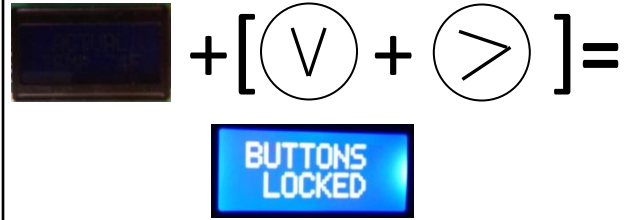
F2: Leak detected

13) The security of the heater settings is provided by pressing and holding the LEFT and UP buttons for 3 seconds to lock the buttons. Once locked, the buttons have no function. Press and hold the same LEFT and UP buttons for 3 seconds to unlock the buttons.

The security status can be checked at any time by pressing any one button. If the system is locked, the screen will display "BUTTONS LOCKED".



13) The display can be turned off or on. Press and hold the DOWN and RIGHT buttons for 3 seconds. If the display is off, it can be turned on by pressing and holding the same DOWN and RIGHT buttons for 3 seconds.



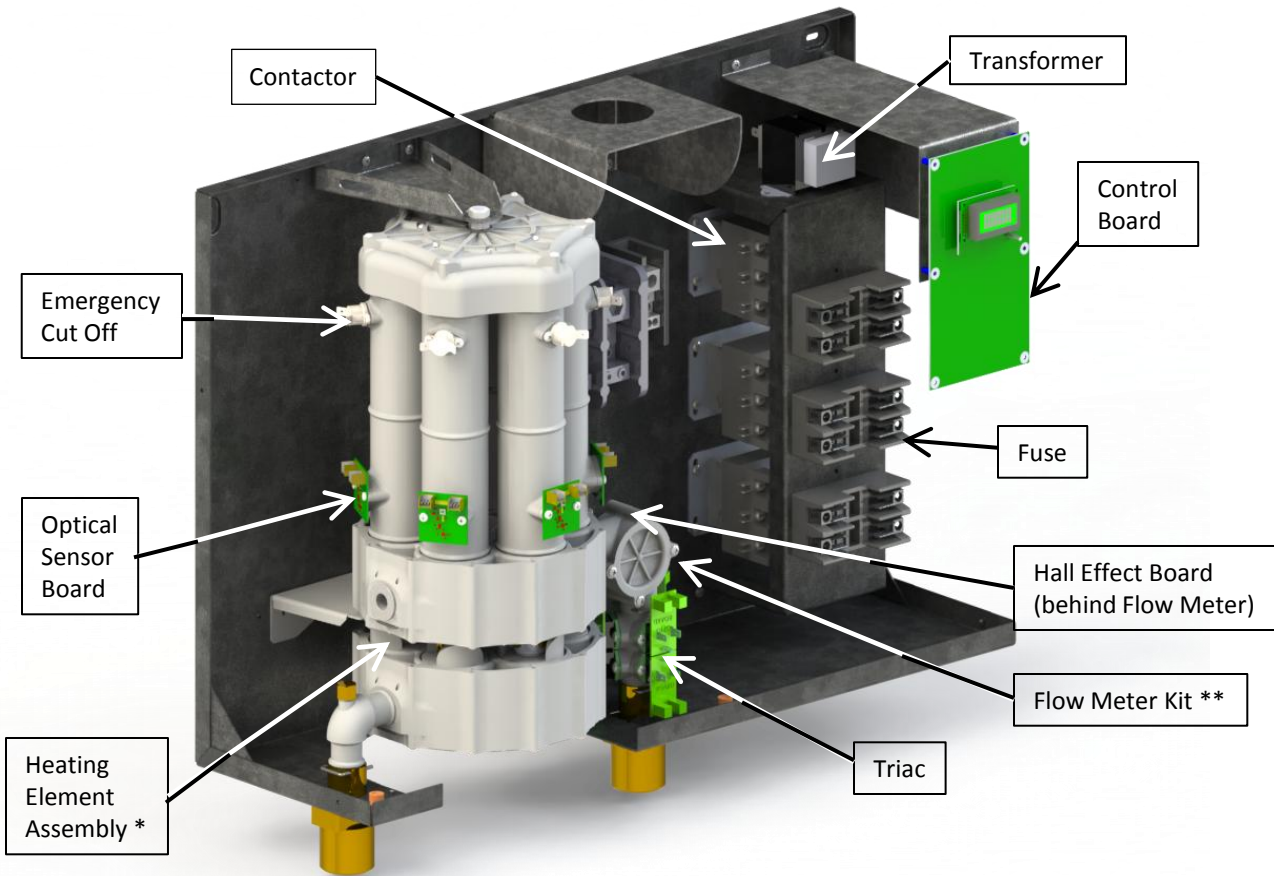
6) REPAIR PARTS



Service and repairs are to be performed by licensed electricians or qualified servicemen.



BEFORE ATTEMPTING ANY REPAIRS TO THE HEATER, MAKE SURE THAT THE ELECTRICAL BREAKER IS "OFF" AND CONFIRM THAT THERE IS NO VOLTAGE AT THE HEATER.



* Heating element assembly consists of one heater core and wire element(s) complete.

** Flow meter kit consists of paddle wheel, dowel pin, O ring and 4 mounting screws.

REPAIR PARTS

Model	Transformer	Control Board	Fuse	Flow Meter Kit	Hall Effect Board
AP032208	EX08303-07	EX08300-00	EX198	EX78000-00	EX08601-00
AP041208	EX08303-07	EX08300-00	EX08200-11	EX78000-00	EX08601-00
AP054208	EX08303-07	EX08300-00	EX198	EX78000-00	EX08601-00
AP064208	EX08303-07	EX08300-00	EX08200-11	EX78000-01	EX08601-00
AP036480	EX08303-05	EX08300-00	N/A	EX78000-00	EX08601-00
AP048480	EX08303-05	EX08300-00	N/A	EX78000-00	EX08601-00
AP054480	EX08303-08	EX08300-00	EX08200-07	EX78000-00	EX08601-00
AP072480	EX08303-08	EX08300-00	EX198	EX78000-01	EX08601-00
AP108480	EX08303-08	EX08300-00	EX198	EX78000-01	EX08601-00
AP126480	EX08303-08	EX08300-00	EX08200-11	EX78000-01	EX08601-00

Model	Triac	Heating Element Assembly	Optical Sensor Board	Emergency Cut Off **	Contactors
AP032208	EX78002-00	EX77000-08.2	EX78001-00	EX278A-KIT	EX08306-02
AP041208	EX78002-00	EX77000-06.4	EX78001-00	EX278A-KIT	EX08306-00
AP054208	EX78002-00	EX77000-04.8	EX78001-00	EX278A-KIT	EX08306-02
AP064208	EX78002-00	EX77000-04.1	EX78001-00	EX278A-KIT	EX08306-02
AP036480	EX78002-00	EX77000-09.6	EX78001-00	EX278A-KIT	EX08306-02
AP048480	EX78002-00	EX77000-14.4	EX78001-00	EX278A-KIT	EX08306-00
AP054480	EX78002-00	EX77000-12.8	EX78001-00	EX278A-KIT	EX08309-00
AP072480	EX78002-00	EX77000-09.6	EX78001-00	EX278A-KIT	EX08309-00
AP108480	EX78002-00	EX77000-06.41	EX78001-00	EX278A-KIT	EX08309-00
AP126480	EX78002-00	EX77000-05.5	EX78001-00	EX278A-KIT	EX08309-00

** Use EX278-A for all models EXCEPT:

- 'S' and 'DB' options use EX278D-KIT
- 'EE' and 'EFD' options use EX278E-KIT

If you need any assistance from our Technical Service Department, make sure you can identify this water heater by having the model no: _____ and serial number: _____. Call 203-267-7890 or toll free: 800-543-6163.

Email: info@eemaxinc.com Web: www.Eemax.com

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