



# Electric Water Heater

## *Operation and Installation Manual*

**(LIMITED WARRANTY AND  
TANK REPLACEMENT POLICY)**

**The following information should be noted at time of installation  
and retained for future reference.**

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

Date Installed: \_\_\_\_\_

# GENERAL INFORMATION

**PLEASE READ INSTRUCTIONS COMPLETELY**

**BEFORE INSTALLING WATER HEATER**

## **IMPORTANT OWNER'S RESPONSIBILITY**

This appliance is designed to store water heated only by the electrical elements provided, **at temperatures of not more than 125°F** and pressures of **not more than 150 psi**. Heat input from any external or additional source will void the warranty.

The design anticipates the proper installation and care in use of the product. **There is a risk of property damage and personal injury inherent in the use of any hot water system.** The company cannot supervise the installation and therefore makes it a specific condition of the warranty that the customer will supervise the installation and use of this product to be sure they are performed in accordance with safe guidelines and proper local or national codes.

Generalized instructions and procedures cannot anticipate all situations. For this reason, only qualified installers should perform the installation. A qualified installer is a person who has licensed training and a working knowledge of the applicable codes, regulations, tools, equipment and methods necessary for safe installation of an electrical resistance water heater.

An installation checklist has been provided to help the customer ensure that all procedures for a safe installation have been followed.

If questions regarding installation arise, check with your local plumbing and electrical inspectors for proper procedures and codes. Local codes take a precedent over instructions in this manual.

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\*To fully understand the purchaser's responsibility in installing the water heater, please read the warranty on the back cover.



P.O. Box 7124 · Fort Worth, TX 76111 · 800-433-5654

# INSTALLATION GUIDELINES

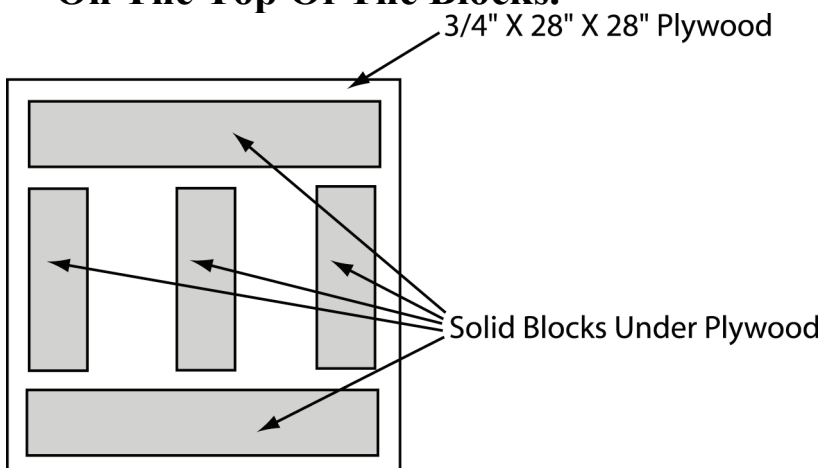
## A. INSPECTING AND PREPARING THE HEATER

- Do not cover or damage the temperature and pressure relief valve opening located in the topside of the tank (see Figure I).

## B. LOCATION

- **CAUTION:** All tanks will eventually leak at some unpredictable time.
- Do not place the heater where there is a risk of property damage in the event of a leak.
- Place the heater on a solid foundation in a clean, dry location.
- The heater should be protected from freezing and water lines should be insulated to reduce energy and water waste.
- Leave sufficient room to service the heat exchanger and electrical controls.
- Do not install in an area where flammable liquids or combustible vapors are present.
- **CAUTION:** The heater's outer jacket is plastic and can melt.
- Do not install in close proximity to wood burning stove or other high temperature apparatus.

**NOTE:** If Heater is Placed On Blocks To Raise It From The Floor, Be Sure to Support The Entire Bottom With At Least  $\frac{3}{4}$ " Plywood On The Top Of The Blocks.



## C. PROTECTION FROM WATER DAMAGE

- **CAUTION:** All water heaters have a risk of leakage at some unpredictable time. **IT IS THE CUSTOMER'S RESPONSIBILITY TO PROVIDE A CATCH PAN OR OTHER ADEQUATE MEANS, SO THAT THE RESULTANT FLOW OF WATER WILL NOT DAMAGE FURNISHINGS OR PROPERTY.** (See Figure I).

The warranty provided assures replacement within its terms, but specifically does not warrant against consequential damage caused by failure to follow these instructions.

## D. TEMPERATURE & PRESSURE RELIEF VALVE

- **WARNING: A POTENTIAL HAZARD TO LIFE AND PROPERTY MAY EXIST IN ANY WATER HEATER IF AN APPROVED TEMPERATURE-AND-PRESSURE RELIEF VALVE IS NOT PROPERLY INSTALLED.**
- **CAUTION:** For protection against excessive pressures and temperatures in this water heater, install temperature-and-pressure protective equipment required by local codes, but not 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 of materials, as meeting the requirements for Relief Valves and Automatic Gas Shutoff for Hot Water Supply Systems. ANSI Z21.22.1971. This valve must be marked with a maximum set pressure not to exceed the marked maximum allowable working pressure of the water heater (150psi). Install the valve into an opening provided and marked for this purpose in the water heater, and orient it 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. The discharge opening must not be blocked or reduced in size under any circumstances.

- **CAUTION:** A relief valve is designed to discharge excessively hot water. **THE CUSTOMER IS RESPONSIBLE TO PROTECT PROPERTY AND PERSONNEL FROM HARM WHEN THE VALVE FUNCTIONS.**
- A 3/4" NPT brass connection is provided on the topside of the heater for the field installation of a relief valve (see Figure I).
- Care must be taken to be sure that the stem of the pressure and temperature relief is immersed in the water within the top 6" of the tank.
- The drain line must not be concealed or blocked and must be protected from freezing.
- No valve of any kind should be installed between the relief valve and tank or in the drain line.

## **E. WATER SUPPLY CONNECTIONS**

- All water supply fittings on this heater are brass. Do not over tighten or strip threads.
- The cold water fitting is a combination drain and inlet. It is not a shut off valve.
- Provide a shut off valve in the cold water line. Mark for future emergency use.
- Do not apply heat directly to the cold-water inlet.
- The hot water outlet is a threaded connection to the tank. Do not over tighten.
- **WARNING: Some local codes mandate the use of a backflow preventer or check valve or pressure-reducing valve. An adequate expansion tank (or other adequate means) must be installed to prevent pressure build up or damage from thermal expansion when a check valve or backflow preventer or pressure-reducing valve is used. Failure to do so could result in tank leakage and therefore void the warranty.**

## F. FILLING THE HEATER

- **CAUTION:** Do not put electrical power to the elements **until** after the heater is completely filled with water.
- Check that the necessary relief valve has been properly installed.
- Completely close the drain valve.
- Open the highest hot water faucet to allow all air to escape from piping.
- Open the valve to the cold water and allow the heater and piping system to completely fill, as indicated by a steady flow of water from the open faucet.

## G. WIRING CONTROLS

- **WARNING:** The heater elements will be damaged instantly if energy is supplied before the tank is completely filled with water, thus voiding any warranty.
- A qualified electrician must provide a separate fused branch circuit, conforming to local or National Electric Codes.
- Supply to the heater only the voltage stamped on the rating plate.
- Mark the electrical shut off clearly for future emergency use.
- Read wiring diagrams before making electrical connections (see Table I)
- Field connections with aluminum conductors must use connectors approved for copper to aluminum connection.
- **CAUTION:** There is a risk of electric shock in an ungrounded service. It is critical that this unit be wired with a power supply that has a service ground wire available. Be sure to connect the ground wire to the green ground screw in the junction box.

## H. SUPPLEMENTAL HEAT WARNINGS

- When a supplemental heat source is connected to the Certified Household Electric Storage Tank Water Heater, provision must be made to limit the heat source temperature not to exceed that of the water heater thermostat setting.
- **Caution:** If the water heater has been retrofitted with supplemental heating equipment, you must adjust both the thermostat controlling the supplemental heat source (located in the water piping) and the thermostat on the water heater (behind the access panel) to the same temperature. Failure to adjust both thermostats to the same temperature can cause loss of proper temperature control.

# INSTALLATION CHECKLIST

## A. INSPECTION AND PREPARING THE HEATER

- Do not cover T and P relief valve opening.

## B. LOCATION

- Solid foundation and dry location.
- Protect heater water lines from freezing.
- Area free of flammable vapors.
- Sufficient room to service heater.

## C. PROTECTION FROM WATER DAMAGE

- Be sure to make provisions to protect area from water damage if a leak should occur in the tank or any connected fittings.

## D. TEMPERATURE & PRESSURE RELIEF VALVE

- WARNING:** Improper installation will present potential hazard to life and property.
- A T&P Relief Valve with an 8-inch stem should be used
- Check to be sure that proper relief valve requirements are met.
- Opening on top side.
- Valve stem immersed in the water within the top 6" of the tank.
- ¾" discharge pipe—properly protected from freezing and restrictions.
- No valve between tank and relief valve or in drain line.
- Provision for hot water discharge from relief valve.

## E. WATER SUPPLY CONNECTIONS: (SEE FIGURE I)

- Do not over tighten brass threads.
- Mark the water shut off for future reference.
- Do not apply heat to combination inlet and drain.



## F. FILLING THE HEATER

- Completely fill heater before turning on elements.
- Water connections completed and free of leaks.
- Check for proper installation of relief valve.
- Close drain valve.
- Open highest hot water faucet.
- Open cold water inlet valve and fill system.

## G. WIRING

- TANK MUST BE FULL OF WATER BEFORE POWER IS ON.**
- Separate fused branch circuit (refer to local codes).
- Mark the electrical shut off for future reference.
- Wiring diagram (see Table I)
- Aluminum conductors (see wiring instructions).
- Check to see that voltage on rating plate and supply agree.
- CAUTION:** Unit must be properly grounded.

## H. INSTALLATION COMPLETED AND CHECKLIST FILLED OUT

**BY** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SPECIAL NOTE:** Test of hot water after installation is necessary to be sure temperature controls are working properly. (See water temperature regulation information on page 8.)

# SERVICE INFORMATION



- A. Water temperature over 125° F can cause severe burns instantly or death from scalds.
- B. Children, disabled and elderly are at the highest risk of being scalded.
- C. See instruction manual before setting temperature at the water heater.
- D. Feel water before bathing or showering.
- E. Temperature limiting valves are available, see manual.

The temperature of the water in the heater is regulated by adjustable, automatic, surface mounted thermostats located behind the jacket access panels. These automatic controls are set at the factory to maintain a water temperature of 125°f. Although these thermostats are designed to industry standards, they can fail to control temperature properly without any notice, and therefore should be tested periodically for your protection.

The test is very simple: Turn on the hot water faucet and measure the maximum temperature with an accurate thermometer. If the temperature is above the safe limits for your circumstances call a service man to adjust or replace the control.

**DANGER: IF YOU DISCOVER EXTREME HOT WATER COMING FROM THE FAUCET, IMMEDIATELY SHUT OFF THE ELECTRICITY AT THE MAIN SWITCH AND CALL COMPETENT SERVICE PERSONNEL. ANY OVERHEATED WATER HEATER IS A POTENTIAL HAZARD TO LIFE AND PROPERTY. DO NOT OPERATE UNTIL THE SOURCE OF THE PROBLEM HAS BEEN DETERMINED AND ELIMINATED.**

Any temperature adjustments of thermostats must be made by qualified service personnel as follows:

1. Shut off or disconnect all electrical service to the heater.
2. Remove the cover panel with an insulated handle screwdriver.
  - a. Adjust the pointer on both thermostats with the insulated screwdriver to the desired temperature and check to see that the proper temperature is achieved. (Do not remove protective cover from thermostat.)\*
3. Replace the cover panel and reconnect electrical service.
4. Be sure that insulation is replaced carefully. Malfunction of the thermostat will occur if voids are left in the insulation.

\*Both upper and lower thermostats should be set at the same temperature under normal residential conditions.

### **SAFETY CONTROLS**

The heater has a combination thermostat and hi-limit control that is located above the top-heating element.

**This surface mounted hi-limit is designed to interrupt the flow of electricity to all elements when it senses temperatures of approximately 170°F or greater. If this switch operates, do not attempt to reset. A dangerous situation is indicated and a qualified service man should be called to find the source before the unit is operated again.**

Temperature of the water should be tested periodically at the faucet to be sure thermostats are working properly.

# MAINTENANCE

Properly maintained, your water heater can provide years of dependable, trouble free service. It is suggested that the purchaser follow the preventive maintenance program outlined below.

## CONTROLS

A periodic inspection of the operating controls, heating elements and wiring should be made by a qualified service personnel. Temperature of the water should be tested periodically at the faucet to be sure thermostats are working properly.

## LONG TERM SHUT DOWN

If the water heater is to remain idle for an extended period of time, the power and water to the heater should be turned off to conserve energy.

The water heater and piping should be drained, if they might be subjected to freezing temperatures.

After a long shutdown period, qualified service personnel should check the heater's operations and controls.

Make certain the water is filled before placing it in operation.

## DRAINING THE HEATER

**CAUTION:** Shut off all power to the heater before draining water. To drain the tank, a hot water faucet must be opened to admit air to the tank.

- 1.** Attach a hose to the drain valve on the heater.
- 2.** Close valve on the cold water line to the heater.
- 3.** Open the drain valve and direct the water to a drain.

## EMERGENCY

Should the heater be subject to flood, fire or other damaging conditions, turn off the power and water to the heater.

**DO NOT** place water heater in operation again until it has been thoroughly checked by qualified service personnel.

# TROUBLESHOOTING

FOR QUALIFIED SERVICE PERSONNEL ONLY.

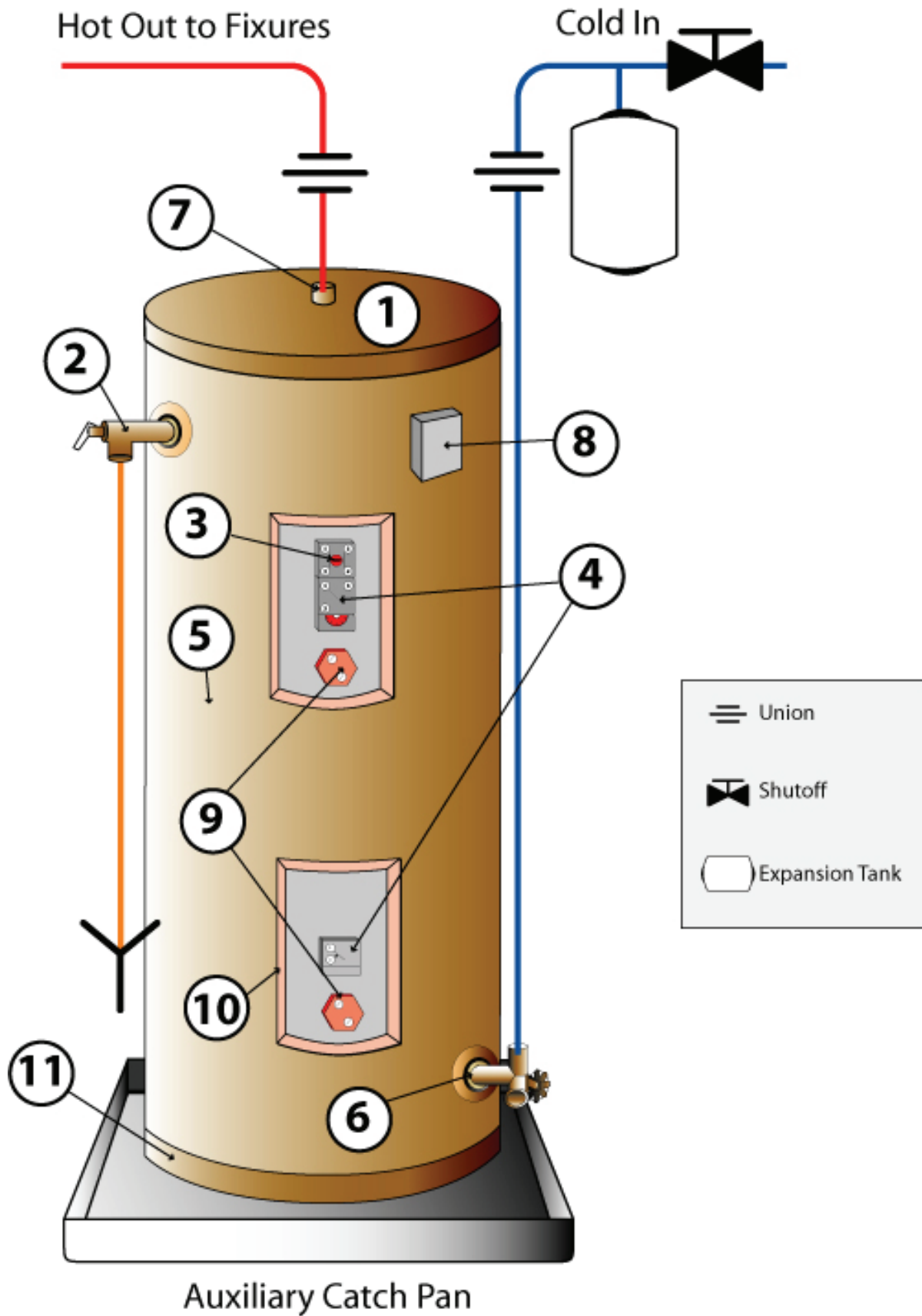
**CAUTION:** Make certain power to heater is **OFF** before removing jacket access panel(s) for any reason.

NATURE OF TROUBLE	POSSIBLE CAUSE	SERVICE
No Hot Water	1. Water Heater Switch turned off.	Turn ON
	2. Improper Wiring	*Rewire per wiring diagram
	3. No Power—blown fuse	
	a. Shorted wiring	*Replace or repair
	b. Circuit over load	*Provide adequate circuit
	c. Improper wiring	*Recheck wiring
	d. Grounded Element or Thermostat	*Replace safety controls
	4. Manual reset limit open	
	a. Thermostat malfunction	*Adjust setting or replace
		b. Heat build-up due to loose wires
	c. Switch malfunctions	*Replace
Not enough Hot Water	1. Heater undersized	*Install proper size heater
	2. Element malfunction	*Replace element
	3. Thermostat malfunction	*Check wiring—replace
Water too hot or Not hot enough	1. Thermostat setting too high or low	* Change setting as required
	2. Thermostat out of calibration	*Adjust setting or replace
	3. Insulation around elements not properly replaced	*Replace insulation properly

**\*CAUTION:** For your safety, DO NOT attempt repair of electrical wiring, thermostat(s), heating elements or other operating controls. Refer repairs to qualified service personnel.

# INSTALLATION DIAGRAM / PARTS LOCATION

Figure I



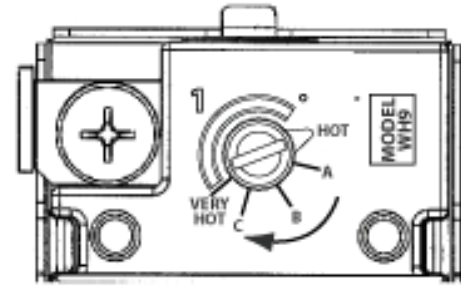
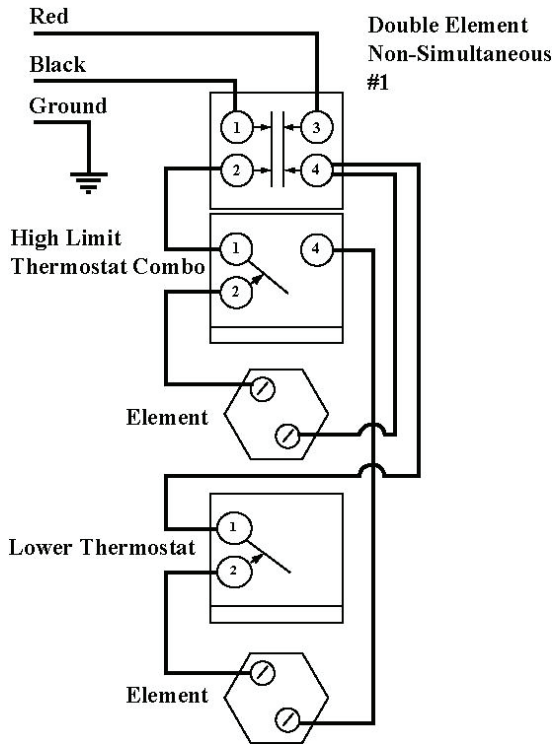
# PARTS LIST

- 1. Top Pan**
- 2. Relief Valve** - Located above and to the left of hot water outlet.
- 3. High Limit Safety Switch** – Manual reset switch designed to shut off all electrical circuits if water reaches the setpoint of 170°F or greater.
- 4. Automatic Thermostats** – For constant temperature control, thermostats are specifically designed for Hydrastone® water heaters. Located under access plates.
- 5. Plastic Jacket** – Durable & easy-to-clean jacket is hi density plastic.
- 6. Water Diffuser** – Introduces cold water at the bottom of the tank in a flat, gentle swirl, preventing turbulent mixing with heated water above. Tank drain is also a part of the cold water diffuser.
- 7. Hot Water Outlet Nipple with Heat Trap**
- 8. Wiring & Connections** – Located in front of the heater for easy installation and access. All wiring is designed for operation up to 6KW @ 240volts.
- 9. Long-Life Heating Elements** – Waster is reduced with immersed heating elements because all available heat passes directly into the water. Low watt density elements assure longer life – and reduce mineral buildup.
- 10. High-Density Insulation** – Two inches of high-density foam blanket the storage tank. Extra thickness on top and bottom significantly reduce heat loss.
- 11. Bottom Pan**

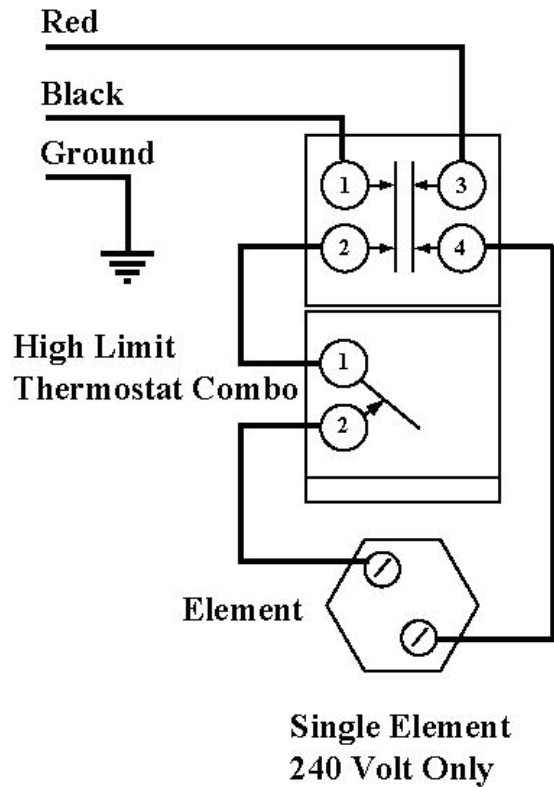
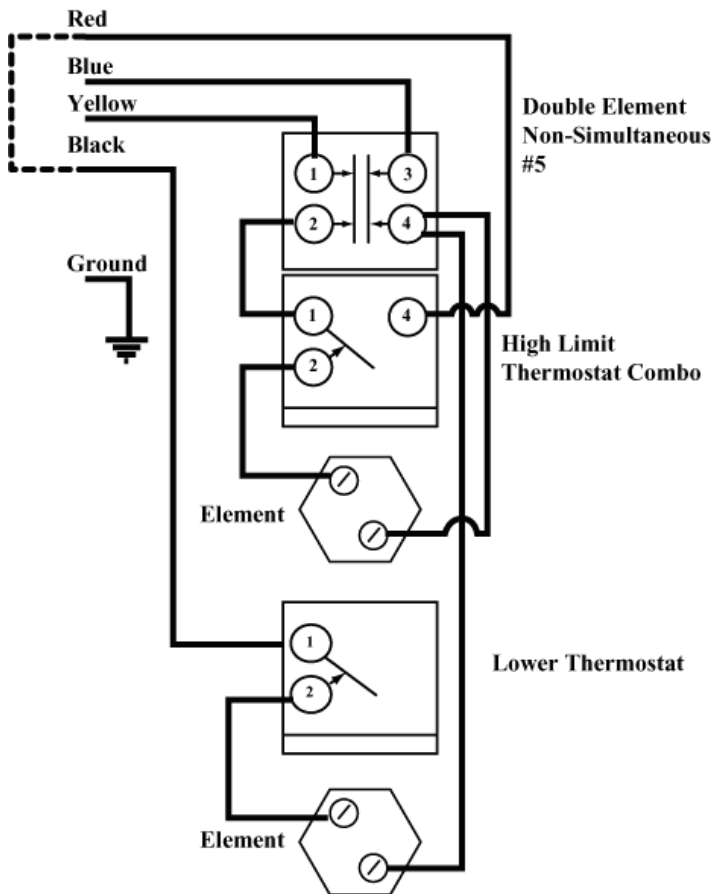
NOTE: When ordering parts, please specify model and serial number of tank, shown on the rating plate, as well as parts name, information and number.

# SINGLE PHASE WIRING DIAGRAMS

Table 1



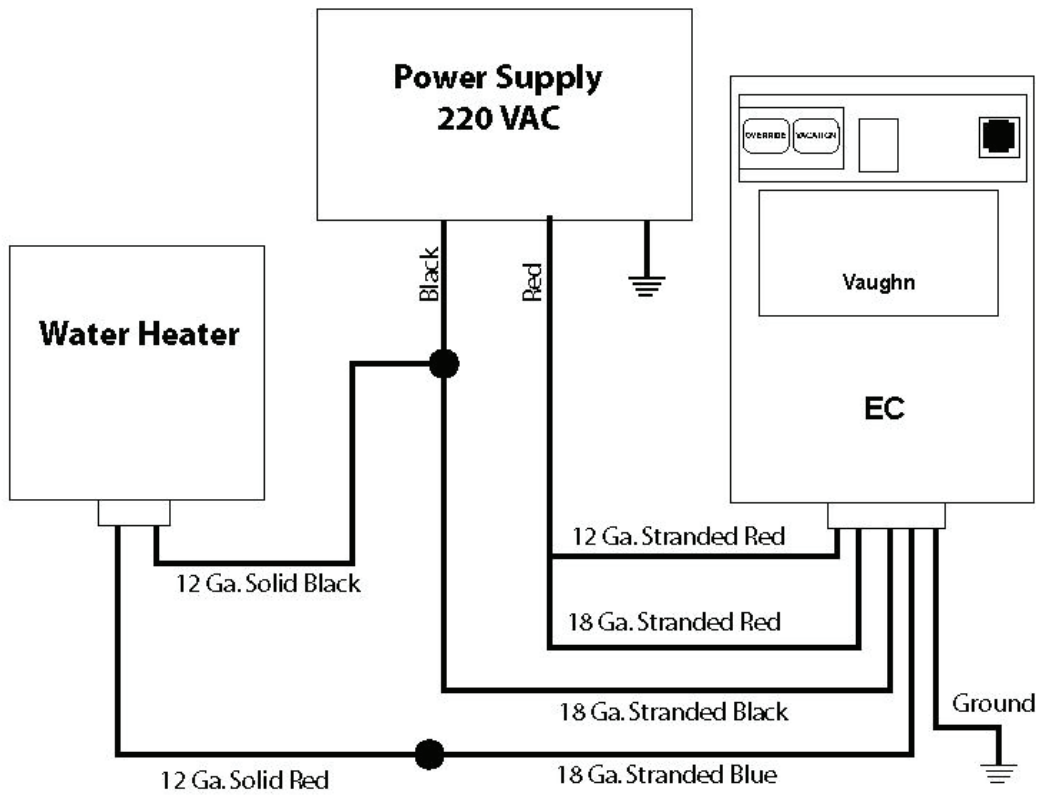
Position	Temp (F)
(minimum)	110°
HOT	120°
A	130°
B	140°
C	150°
VERY HOT	160°



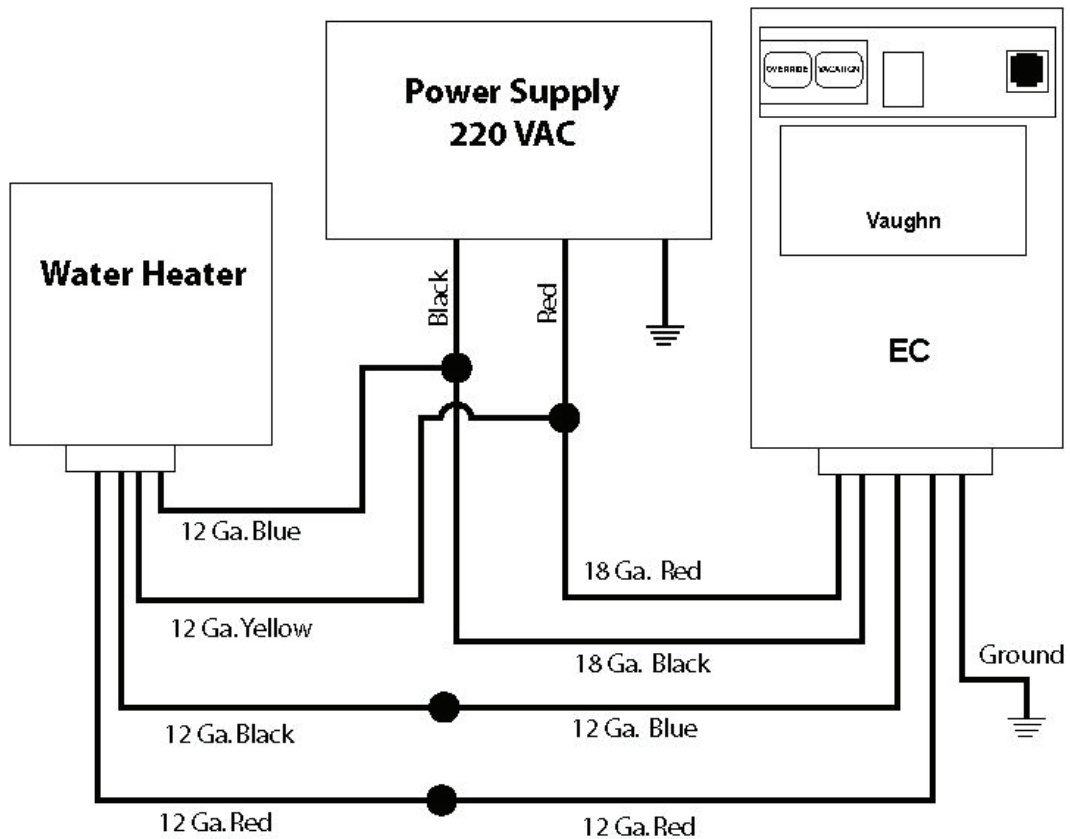
Red and Black leads are intended for time clock control. If not required, connect per dotted lines.



**(For Use with Energy Controller Equipped Heaters Only)  
FOR CONTROL OF UPPER & LOWER ELEMENTS (#1 diagram)**



**FOR CONTROL OF LOWER ELEMENTS ONLY (#5 diagram)**





**FIVE-YEAR LIMITED WARRANTY  
DURAWATT® CL ELECTRIC WATER HEATERS**

**PURPOSE**

PVI is a customer-oriented company and our desire is customer satisfaction. PVI's purpose is to provide the user with protection against failure that could occur during the period detailed within this limited warranty.

**PARTS REPLACEMENT LIMITED WARRANTY**

For one year from the start of this limited warranty, PVI will repair or replace any part, which proves to be defective in workmanship or material. This limited warranty does not include routine maintenance, service labor or other expenses

**TANK REPLACEMENT LIMITED WARRANTY**

For five years from the start of this limited warranty, if the tank in the water heater produces rusty water or leaks, PVI will replace the tank with the then current equivalent model. There will be no cost to the owner for the tank. Labor or freight is not included. Any unused portion of the original warranty will extend to the replacement tank.

**START OF LIMITED WARRANTY**

This limited warranty begins at the time of original installation or 90 days from shipment, whichever occurs first.

**GENERAL CONDITIONS**

Installation and operation must comply with all applicable federal, state, and local regulations, and must be in accordance with applicable instructions and limitations contained in the PVI installation and maintenance manual for the product. The owner shall perform normal maintenance and repair. This limited warranty does not cover abuse or misuse of the product.

This limited warranty is in lieu of all other warranties and guarantees, whether expressed or implied, including statutory warranties, such as warranties of merchantability or fitness for a particular purpose. The sole and exclusive remedy is repair or replacement of defective products pursuant to the terms of this limited warranty. In no event shall PVI be liable for consequential or incidental damages, or contingent liabilities of any kind, resulting from the manufacture, sale, installation, or use of this product.

All legal actions for breach of this limited warranty, or the terms and conditions of the contract for sale of the product, must be commenced on or before the expiration of one year from the date of such breach. Otherwise, such action shall be considered barred by a period of limitations established by agreement. This limited warranty covers the first installation only. PVI shall be entitled to inspect the product prior to repair or replacement.

**TO MAKE A WARRANTY CLAIM**

Contact PVI Industries through prompt telephone notification at **1-800-433-5654**. Be prepared to provide the unit model number, serial number, date of installation and description of the problem.

**FOR YOUR RECORDS:**

Model No.: \_\_\_\_\_

Date of installation: \_\_\_\_\_

Serial No.: \_\_\_\_\_

Date of initial Operation: \_\_\_\_\_

Installation Address: \_\_\_\_\_

\_\_\_\_\_