

# INDIRECT WATER HEATER

## Installation and Operating Instruction Manual

### CAUTION

Maximum supply temperature to heat exchanger must not exceed 180°F (82°C).

**Safety Warning:** Indirect water heaters are heat-producing appliances. To avoid damage or injury, there must be no materials stored against the indirect water heater and proper care shall be taken to avoid unnecessary contact (especially by children) with the indirect water heater. **UNDER NO CIRCUMSTANCES SHALL FLAMMABLE MATERIALS, SUCH AS GASOLINE OR PAINT THINNER, BE USED OR STORED IN THE VICINITY OF THIS INDIRECT WATER HEATER OR IN ANY LOCATION FROM WHICH FUMES COULD REACH THE WATER HEATER.**

### CAUTION

Do not store or use gasoline or other flammable liquids or materials in the vicinity of this water heater or any other appliance.

***For your family's comfort, safety and convenience, we recommend this water heater be installed and serviced by a plumbing professional.***

## **TABLE OF CONTENTS**

	page
<b>GENERAL INFORMATION .....</b>	<b>3</b>
<b>INSTALLATION .....</b>	<b>4</b>
<b>WATER CONNECTIONS.....</b>	<b>5</b>
Potable Water .....	5
Heat Exchanger .....	9
<b>ELECTRICAL CONNECTIONS .....</b>	<b>10</b>
<b>OPERATION .....</b>	<b>12</b>
<b>MAINTENANCE.....</b>	<b>14</b>

### **CONGRATULATIONS!**

You have just purchased one of the finest water heaters on the market today!

This installation, operation and instruction manual will explain in detail the installation and maintenance of your new indirect water heater. We strongly recommend that you contact a plumbing professional for the installation of this water heater.

We require that you carefully read this manual, as well as the enclosed warranty, and refer to it when questions arise. If you have any specific questions concerning your warranty, please consult the plumbing professional from whom your water heater was purchased. For your records we recommend that you write the model, serial number and installation date of your water heater in the maintenance section in the back of this manual.

This manual should be kept with the water heater.

We're committed to providing you with the finest water heater made.

## GENERAL INFORMATION

The warranty on this indirect water heater is in effect only when it is installed, adjusted, and operated in accordance with these instructions. The manufacturer will not be held liable for any damage resulting from alteration and/or failure to comply with these instructions.

**Special Note:** Operation of this product at temperatures exceeding those herein may cause irreparable damage and will nullify the warranty.

This indirect water heater has been designed and certified for the purpose of heating potable water. The installation and use of this indirect water heater for any purpose other than the heating of potable water may cause damage to the indirect water heater and create a hazardous condition and will void the warranty.

Do not use this appliance if any part has been submerged in water. You should contact the plumbing professional who installed the indirect water heater to inspect the appliance and to replace any part of the control system that has been submerged in water.

Improper installation, adjustment, alteration, service or maintenance can result in injury or property damage. For assistance or additional information, please contact the plumbing professional who installed this indirect water heater.

Be aware that this indirect water heater is capable of producing hot water at a temperature high enough to cause scalding injury. Water temperatures over 125°F (52°C) can cause severe burns or death from scalds. Please read these instructions carefully before putting this indirect water heater into operation.

**NOTICE TO THE INSTALLER:** Before connecting this indirect water heater, please read these instructions carefully. We will call your attention to all items, specifically the instructions on locating the indirect water heater.

**NOTICE TO THE USER:** Before operating this indirect water heater, please read these instructions thoroughly. Then please refer to this manual for future reference.

### CAUTION

Hotter water increases the risk of scald injury. Scalding may occur within five (5) seconds at a temperature setting of 140°F (60°C). To protect against hot water injury, install an ASSE approved mixing valve in the water system. This valve will reduce point of discharge temperature by mixing cold and hot water in branch water lines. A qualified plumber should be consulted.

## INSTALLATION

### ***Locating The Indirect Water Heater***

The location of the indirect water heater is of the utmost importance. Before installing this appliance, select a location that is accessible to water lines and the hot water supply system where the floor is level. Do not locate the indirect water heater where water lines could be subjected to freezing temperatures. We recommend that you locate the indirect water heater near the center of greatest hot water usage to prevent heat loss through the pipes. Locate the indirect water heater so that the drain valve and access panels are accessible.

For models incorporating a side temperature and pressure relief valve an adequate clearance shall be maintained between the temperature and pressure relief valve and the adjacent side wall for service.

The indirect water heater must be located in an area where leakage of the tank or connections will not result in damage to the area adjacent to the indirect water heater or to the lower floors of the structure. When these locations cannot be avoided, a suitable drain pan must be installed under the indirect water heater. The drain pan must have a minimum length and width of at least 4 in. (10.2 cm) greater than the diameter of the water heater. A drain pan, constructed as described, can be purchased from a local plumbing professional. The drain pan when installed, shall be piped to an open drain. The piping shall be at least 3/4" in diameter and pitched for proper drainage.

#### **CAUTION**

Do not turn on electrical current to the indirect water heater until the tank has been completely filled with water. Open several hot water faucets to allow air to escape from the system while the indirect water heater is filling.

**This water heater MUST be installed indoors out of the wind and weather.**

**Note: For California installation this water heater must be braced, anchored, or strapped to avoid falling or moving during an earthquake. See instructions for correct installation procedures. Instructions may be obtained from California Office of the State Architect, 400 P Street, Sacramento, CA 95814.**

### ***Locating The Water Heater continued-***

**NOTE:** Before proceeding with the installation, close the main water supply valve, open a water faucet to relieve the house pressure, and then close the faucet. If replacing an existing water heating appliance be sure to turn off all electrical current, heating fluid and/or gas supply to the existing appliance.

A combination sacrificial anode/hot water outlet nipple has been installed to extend tank life. The removal of this anode, for any reason other than inspection, will nullify the warranty. In areas where water is unusually reactive, an odor may occur at the hot water faucet due to a reaction between the sacrificial anode and the impurities in the water. If this should happen, an alternative anode may be purchased from the manufacturer or the plumbing professional responsible for this installation. This will minimize the odor while protecting the tank. Additionally, the indirect water heater should be flushed with appropriate dissolvers to eliminate any bacteria. The sacrificial anode should be inspected periodically and replaced when necessary to prolong tank life. Please contact the manufacturer listed on the rating plate for more information regarding the replacement for the anode.

## **Water Connections**

### ***Potable Water***

**NOTE: BEFORE PROCEEDING WITH THE INSTALLATION, CLOSE THE MAIN WATER SUPPLY VALVE.**

After shutting the main water supply valve, open a faucet to relieve the water line pressure to prevent any water from leaking out of the pipes while making the water connections to the water heater. After the pressure has been relieved, close the faucet. The COLD water inlet and HOT water outlet are identified on top of the water heater. The fittings at the cold water inlet and hot water outlet are dielectric waterway fittings with 3/4" NPT tapered male threads. Make the proper plumbing connections between the water heater and the plumbing system in the house. Install a shut-off valve in the cold water supply line.

### **CAUTION**

If sweat fittings are to be used, **DO NOT** apply heat to the nipples on top of the water heater. Sweat the tubing to the adapter before fitting the adapter to the water connections. It is imperative that heat is not applied to the nipples containing a plastic liner.

**IMPORTANT  
FAILURE TO INSTALL AND MAINTAIN A NEW, LISTED 3/4" X 3/4"  
TEMPERATURE-PRESSURE RELIEF VALVE WILL RELEASE THE  
MANUFACTURER FROM ANY CLAIM WHICH MIGHT RESULT FROM  
EXCESSIVE TEMPERATURE AND PRESSURES.**

If this water heater is installed in a closed water supply system, such as one having a back-flow preventer in the cold water supply, provisions must be made to control thermal expansion. DO NOT operate this water heater in a closed system without provisions for controlling thermal expansion. Your water supplier or local plumbing inspector should be contacted on how to control this situation.

After installation of the water lines, open the main water supply valve and fill the water heater. While the water heater is filling, open several hot water faucets to allow air to escape from the water system. After a steady stream of water flows through the faucets, close them and check all water connections for possible leaks. **NEVER OPERATE THE WATER HEATER WITHOUT FIRST BEING CERTAIN IT IS FILLED WITH WATER.**

**⚠ WARNING**

For protection against excessive temperatures and pressure, 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 or materials, as meeting the Requirements for *Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems, ANSI Z21.22*, and the Standard *CAN1-4.4 Temperature, Pressure, Temperature and Pressure Relief Valves and Vacuum Relief Valves*. The combination temperature and pressure relief valve must be marked with a maximum set pressure, not to exceed the maximum working pressure of the water heater. The combination temperature and pressure relief valve must also have an hourly rated temperature steam BTU discharge capacity not less than the hourly input rating of the water heater.

Install the combination temperature and pressure relief valve into the opening provided and marked for this purpose on the water heater

Note: Some models may already be equipped or supplied with a combination temperature and pressure relief valve. Verify that the combination temperature and pressure relief valve complies with local codes. If the combination temperature and pressure relief valve does not comply with local codes, replace it with one that does. Follow the installation instructions above on this page.

Install a discharge line so that water discharged from the combination temperature and pressure relief valve will exit within six (6) inches (15.3 cm) above, or any distance below the structural floor and cannot contact any live electrical part. The discharge line is to be installed to allow for complete drainage of both the temperature and pressure relief valve and the discharge line. The discharge opening must not be subjected to blockage or freezing. **DO NOT** thread, plug or cap the discharge line. It is recommended that a minimum of four (4) inches (10.2 cm) be provided on the side of the water heater for servicing and maintenance of the combination temperature and pressure relief valve.

Do not place a valve between the combination temperature and pressure relief valve and the tank.

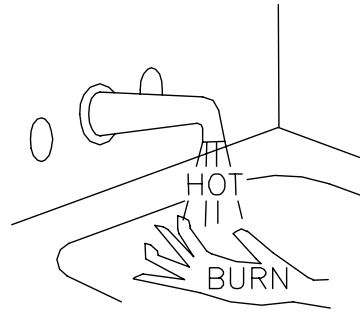
**⚠ WARNING**

Hydrogen gas can be produced in a hot water system served by this water heater that has not been used for a long period of time (generally two 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. If 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.

**⚠ CAUTION**

**INCREASING THE THERMOSTAT SETTING ABOVE THE PRESET TEMPERATURE MAY CAUSE SEVERE BURNS AND CONSUME EXCESSIVE ENERGY. HOTTER WATER INCREASES THE RISK OF SCALD INJURY.**

This water heater can deliver scalding temperature water at any faucet in the system. Be careful whenever using hot water to avoid scalding injury. Certain appliances, such as dishwashers and automatic clothes washers, may require increased temperature water. By setting the thermostat on this water heater to obtain increased temperature water required by these appliances, you might create the potential for scald injury. To protect against injury, you should install an ASSE approved mixing valve in the water system. This valve will reduce point of discharge temperature by mixing cold and hot water in branch supply lines. Such valves are available from the manufacturer of this water heater or a local plumbing supplier. Please consult with a plumbing professional.

<p><b>⚠ DANGER</b></p>	<p>Water temperatures over 125°F can cause severe burns instantly or death from scalds.</p> <p>Children, disabled, and elderly are at highest risk of being scalded.</p> <p>See instruction manual before setting thermostat at water heater.</p> <p>Feel water before bathing or showering</p> <p>Temperature limiting valves are available, see manual.</p>
	



**Water Connections continued-**

**Heat Exchanger (see figure 1)**

**▲WARNING**

The internal heat exchanger and its' components contained in this appliance are designed for a maximum working pressure of 150 p.s.i. (1034 kPa) and a maximum supply temperature of 180°F (82°C). THESE LIMITS MUST NOT BE EXCEEDED UNDER ANY CIRCUMSTANCES. Irreparable damage to the heat exchanger will occur which will nullify the warranty.

Before plumbing the heat exchanger inlet or outlet, remove the plastic plugs from the fitting(s). The heat exchanger inlet and outlet fittings are identified on top of the indirect water heater. Connect the heat exchanger inlet and outlet lines with unions. **Caution:** The heat exchanger fittings contain special plastic components. If sweat fittings are used, **do not apply heat to the fittings.** Sweat tubing adapter before fitting adapter to the heat exchanger connections.

The heat exchanger is designed to be used in a closed system where the maximum working pressure does not exceed 150 p.s.i. (1034 kPa) and a maximum flow rate of (5) gallons per minute for the boiler circulation. Provisions may be necessary to prevent thermal expansion. Consult local codes and the boiler installation and operating instructions for proper system flow and connection.

The heat exchanger can be used in conjunction with a hot water space heating system by either using the hot water supply boiler as the heating means for the circulating fluid or as a zone of the hot water supply boiler.

The heat exchanger has been designed for use with a non-potable water heating system. DO NOT connect the heat exchanger connections to the potable water supply.

## **ELECTRICAL CONNECTIONS**

Before any electrical connections are made, be sure that the water heater is full of water and that the manual shut-off valve in the cold water supply line is open. Check the rating plate and wiring diagram before proceeding. All wiring shall be done in accordance with all applicable local and state codes. The thermostat incorporates a manual reset temperature-limiting device. Please refer to the Service section for operation of the manual reset.

The thermostat incorporates a manual adjustable temperature indicator to change the potable water temperature. Please refer to the adjusting thermostat temperature section for proper instruction for adjusting water temperature. Turn off all power related to the boiler and heating system before proceeding with the electrical connections. It is recommended that a disconnect switch be installed between the boiler and the indirect water heater. This will enable safe operation and access for service, thermostat adjustment or over temperature reset.

The thermostat switch is a single throw device. The field connections shall be used as a control for one leg of the electrical circuit. The thermostat switch can be used in the range of 24 to 480 volts with a maximum current load of 15 amps. Any and all wiring shall be sized and installed to satisfy the voltage and amperage used. All wiring shall be done in accordance with all applicable local and state codes. If you should have any questions, please contact the Service Department of the manufacturer listed on the rating plate.

### ***Electrical Connections For General Installations:***

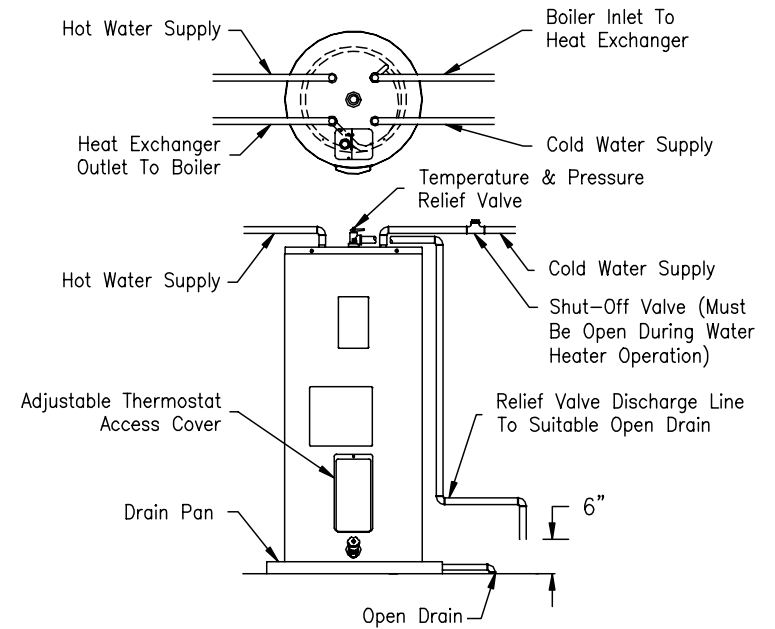
Connect the wire from the boiler, zone valve or circulator, to the black lead in the junction box on the indirect water heater. The white lead should be connected to the return leg to the boiler, zone valve or circulator. This will enable the indirect thermostat to control the boiler, zone valve or circulator.

If a zone valve is used to control the heating fluid flow, wire the thermostat from the indirect water heater through the zone valve. This will enable the indirect water heater thermostat to simulate a single throw wall thermostat. For example, a 24V zone valve should have the ungrounded leg wired through the thermostat of the indirect water heater. This will enable the indirect thermostat to control the zone valve. This should be used if the boiler is actuated by a zone valve.

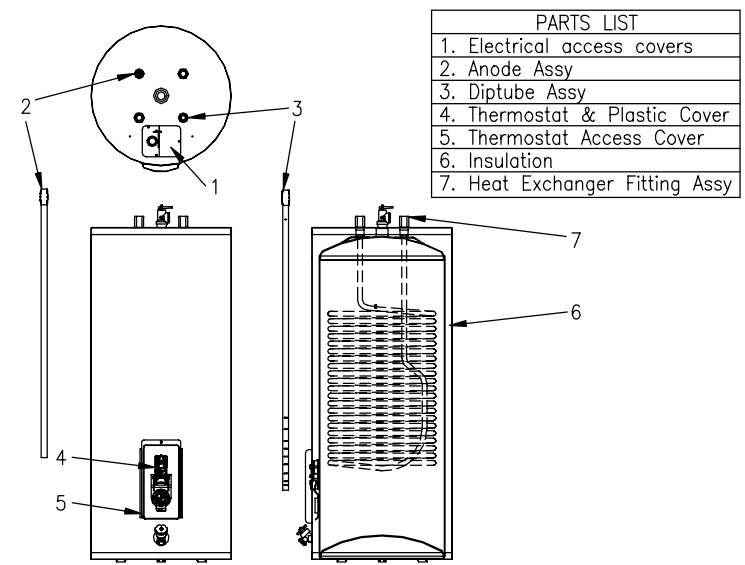
### ***Electrical connections continued-***

If a circulator is used to control the heating fluid flow, wire the thermostat from the indirect water heater to interrupt one leg of the circulator. For example, a 110 volt circulator should have the hot leg (usually the black wire) wired through the indirect thermostat. This will enable the indirect thermostat to control the circulator. This should be used if the boiler is actuated by flow.

Other installations may require slightly different wiring arrangements. Remember, the thermostat on the indirect water heater only controls one leg of the system.



**Figure 1**



**Figure 2**

## OPERATION

Before closing the switch to allow electric current to flow to the water heater, make certain that the water heater is full of water and that the cold water inlet valve is open. Complete failure of the heating elements will result if they are not totally immersed in water at all times. When the switch is closed, the operation of this electric water heater is automatic. The thermostats are preset to the "HOT" setting to provide a water temperature of approximately 120°F (49°C) to reduce the risk of scald injury.

### **⚠ CAUTION**

Scalding may occur within five (5) seconds at a temperature setting of 140°F (60°C).

### TO FILL THE WATER HEATER

1. Close the water heater drain valve by turning the knob clockwise.
2. Open the cold water supply shut-off valve.
3. Open several hot water faucets to allow air to escape from the system.
4. When a steady stream of water flows from the faucets, the water heater is filled. Close the faucets and check for water leaks at the water heater drain valve, combination temperature and pressure relief valve and the hot and cold water connections.

## TO DRAIN THE HEATER

Should it become necessary to completely drain the water heater, make sure you follow the steps below:

1. Disconnect the power supply to the heater. Consult the plumbing professional or electric company in your area for service.
2. Close the cold water supply shut-off valve.
3. Open the drain valve on the water heater by turning the knob counter-clockwise. The drain valve has threads on the end that will allow connection of a standard hose coupling.
4. Open a hot water faucet to allow air to enter the system.

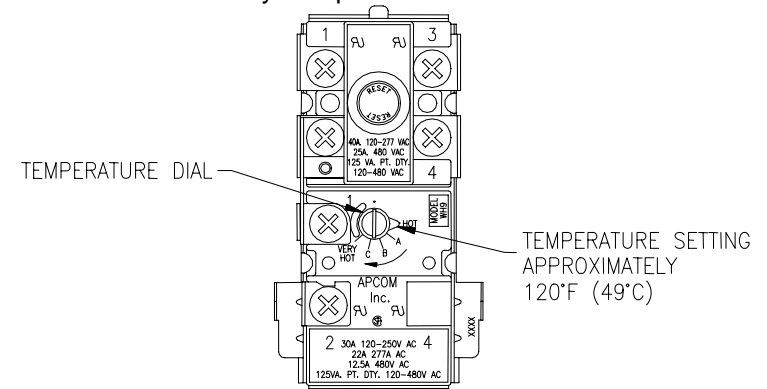
To refill the water heater, refer to “TO FILL THE WATER HEATER.”

## Thermostat Adjustment

### ⚠ CAUTION

Before adjusting thermostat(s), turn off power supply to the water heater.

The temperature of the water can be changed by adjusting the thermostat(s). Before any work is done on the water heater, disconnect all power to the water heater by opening the switch at the main electrical circuit breaker or fuse box. Remove the access panels or front panel on tabletop models, fold the insulation outward away from the controls. Adjust the thermostat dial using a screwdriver until the minimum acceptable temperature is achieved. The thermostat has been factory preset to approximately 120°F (49°C). **Remember that lower temperature settings are more energy efficient.** Rotate the temperature dial **clockwise** ↻ to increase water temperature. Rotate the thermostat dial **counter-clockwise** ↻ to decrease the temperature setting. Replace the insulation making sure that the controls are well covered and that the plastic terminal shield has not been displaced; replace the access panel. The water heater is now ready for operation and the main switch can be closed.



**⚠ DANGER**

Hotter water increases the risk of scald injury. Scalding may occur within five (5) seconds at a temperature setting of 140°F (60°C). To protect against hot water injury, install an ASSE approved mixing valve in the water system. This valve will reduce point of discharge water temperatures by mixing cold and hot water in branch water lines. A licensed plumbing professional or local plumbing authority should be consulted.

Note: This water heater is equipped with an energy cut out device to prevent overheating. Should overheating occur, turn off the electrical supply to the water heater and contact a qualified service technician.

**MAINTENANCE**

**IMPORTANT**

The water heater should be inspected at a minimum of annually by a qualified service technician for damaged components. **DO NOT** operate this water heater if any part is found damaged.

Shut off the electric power whenever the water supply to the water heater is off. Shut off the electric power and water supply, drain the heater completely to prevent freezing whenever the building is left unoccupied during the cold weather months. In order to insure efficient operation and long tank life, drain the water heater at least once a month through the drain valve until the water runs clear. Failure to do this may result in noisy operation and lime and sediment buildup in the bottom of the tank. Check the temperature-pressure relief valve to insure that the valve has not become encrusted with lime. Lift the lever at the top of the valve several times until the valve seats properly without leaking and operates freely.

**⚠ WARNING**

When lifting lever of temperature-pressure relief valve, hot water will be released under pressure. Be certain that any released water does not result in bodily injury or property damage. The magnesium anode rod should be inspected periodically and replaced when necessary to prolong tank life.

### ***Maintenance continued-***

The following maintenance should be performed by a qualified service technician at the minimum periodic intervals suggested below. In some installations, the maintenance interval may be more frequent depending on the amount of use and the operating conditions of the water heater.

Regular inspection and maintenance of the water heater will help to insure safe and reliable operation.

1. Annually, check the operation of the thermostat(s).
2. Bi-annually, check the seal around the heating elements for leaks. If there is any sign of leaking, disconnect the power supply to the water heater and contact the plumbing professional that installed this water heater or a qualified service technician.
3. At least once a year, check the combination temperature and pressure relief valve to insure that the valve has not become encrusted with lime. Lift the lever at the top of the temperature-pressure relief valve several times until the valve seats properly without leaking and operates freely.

#### **WARNING**

When lifting lever of temperature-pressure relief valve, hot water will be released under pressure. Be certain that any released water does not result in bodily injury or property damage.

4. If the combination temperature and pressure relief valve on the appliance discharges periodically, this may be due to thermal expansion in a closed water supply system. Contact the water supplier or local plumbing inspector on how to correct this situation. Do not plug the combination temperature and pressure relief valve outlet for any reason.
5. Monthly, drain off a gallon of water from the water heater to remove silt and sediment.

#### **WARNING!: THIS WATER MAY BE HOT.**

6. A combination sacrificial anode rod/hot water outlet nipple has been installed to extend tank life. The anode rod should be inspected periodically (every 2 years) and replaced when necessary to prolong tank life. Water conditions in your area will influence the time interval for inspection and replacement of the anode rod. Contact the plumbing professional who installed the water heater or the manufacturer listed on the rating plate for anode replacement information. The use of a water softener may increase the speed of anode

**Maintenance continued-**

consumption. More frequent inspection of the anode is needed when using softened (or phosphate treated) water.

**⚠ CAUTION**

FOR YOUR SAFETY, **DO NOT** ATTEMPT TO REPAIR THERMOSTAT(S), HEATING ELEMENTS, OR ELECTRICAL WIRING. REFER SUCH REPAIRS TO A QUALIFIED SERVICE TECHNICIAN.

Contact your local plumbing supplier or plumbing professional for replacement parts or contact the company at the address displayed on the rating plate of the water heater.

For faster and better service, please provide the part name, model, and serial number(s) of the water heater(s) when ordering parts.

**READ THE WARRANTY FOR A FULL EXPLANATION OF THE LENGTH OF TIME THAT PARTS AND THE WATER HEATER ARE WARRANTED.**

Manufactured under one or more of the following U.S. Patents: Re. 34,534; 4,416,222; 4,628,184; 4,669,448; 4,672,919; 4,808,356; 4,829,983; 4,861,968; 4,904,428; 5,000,893; 5,023,031; 5,052,346; 5,081,696; 5,092,519; 5,115,767; 5,199,385; 5,277,171; B1 5,341,770; 5,372,185; 5,485,879; 5,574,822; 5,596,952; 5,660,165; 5,682,666; 5,761,379; 5,943,984; 5,954,492; 5,988,117; 6,684,821. Other U.S. and Foreign patents applications pending. Current Canadian Patents: 1,272,914; 1,280,043; 1,289,832; 2,045,862; 2,092,105; 2,107,012; 2,108,186; 2,112,525.

Complete the following information and retain for future reference:

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

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

Service Phone

Days: \_\_\_\_\_ Nights: \_\_\_\_\_

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

Supplier: \_\_\_\_\_

Supplier Phone No: \_\_\_\_\_