

# Use & Care Manual

With Installation Instructions for the Contractor

## PowerVent<sup>®</sup> Gas Residential Water Heaters

### Residential 40 and 50 Gallon



The purpose of this manual is twofold: one, for the installing contractor, to provide requirements and recommendations for the proper installation and adjustment of the water heater; and two, for the owner-operator, to explain the features, operation, safety precautions, maintenance and troubleshooting of the water heater. This manual also includes a parts list.

It is imperative that all persons who are expected to install, operate or adjust this water heater read the instructions carefully so that they may understand how to do so.

Any questions regarding the operation, maintenance, service or warranty of this water heater should be directed to the entity from whom it was purchased. If additional information is required, refer to the section on How to Obtain Service Assistance.

Do not destroy this manual. Please read carefully and keep in a safe place for future reference.



Recognize this symbol as an indication of Important Safety Information!



**Proposition 65:** This appliance contains fiberglass insulation. Respirable particles of fiberglass are known to the State of California to cause cancer. Exhaust gas from this appliance contains chemicals, including carbon monoxide, known to the State of California to cause birth defects or other reproductive harm.



**WARNING:** If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

#### ▲ FOR YOUR SAFETY!

- Do not store or use gasoline or other flammable vapors or liquids or other combustible materials in the vicinity of this or any other appliance. To do so may result in an explosion or fire.

#### — WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

- If you cannot reach your gas supplier, call the fire department.
- Do not return to your home until authorized by the gas supplier or fire department.
- Improper installation, adjustment, alteration, service or maintenance can cause injury, property damage or death. Refer to this manual. Installation and service must be performed by a qualified installer, service agency or the gas supplier.



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**IMPORTANT!**

Fill out and return the Consumer Product Registration Card that is in the back of this manual.

**FOR YOUR RECORDS**

Write the model and serial numbers here:

# \_\_\_\_\_

# \_\_\_\_\_

You can find them on a label on the appliance.

**Staple sales slip or cancelled check here.**

Proof of the original purchase date is needed to obtain service under the warranty.

**READ THIS MANUAL**

Inside you will find many helpful hints on how to use and maintain your water heater properly. Just a little preventive care on your part can save you a great deal of time and money over the life of your water heater.

You'll find many answers to common problems in the Before You Call For Service section. If you review our chart of Troubleshooting Tips first, you may not need to call for service at all.

**IF YOU NEED SERVICE**

Should you have any questions about your new water heater, or if it requires adjustment, repair or routine maintenance, it is suggested that you first contact your installer, plumbing contractor or previously agreed upon service agency. In the event that the firm has moved, or is unavailable, refer to the telephone directory commercial listings or local utility for qualified service assistance.

Should your problem not be solved to your complete satisfaction, you should then contact the Manufacturer's National Service Department at the following address:

2600 Gunter Park Drive East  
Montgomery, Alabama 36109-1413  
Phone: 1.800.432.8373

When contacting the manufacturer, the following information should be made available:

1. Model and serial numbers of the water heater as shown on the rating plate attached to the jacket of the heater.
2. Address where water heater is located and can be seen.
3. Name and address of installer and any service agency that performed service on the water heater.
4. Date of original installation and dates any service work was performed.
5. Details of the problem as you can best describe them.
6. List of people, with dates, who have been contacted regarding your problem.

# IMPORTANT SAFETY INFORMATION. READ ALL INSTRUCTIONS BEFORE USING.

Be sure to read and understand the entire Use and Care Manual before attempting to install or operate this water heater. It may save you time and cost. Pay particular attention to the Safety Instructions. Failure to follow these warnings could result in a fire or explosion, causing property damage, bodily injury or death. Should you have any problems understanding the instructions in this manual, STOP, and get help from a qualified installer or service technician or the gas supplier.



## ⚠ DANGER! INSTALL THE BLOWER ASSEMBLY AND PROPERLY VENT THE WATER HEATER...

Failure to properly vent the water heater to the outdoors as outlined in the Venting Section of this manual can result in unsafe operation of the water heater. To avoid the risk of fire, explosion or asphyxiation from carbon monoxide, never operate this water heater unless it is properly vented and has an adequate air supply for proper operation. Be sure to inspect the vent system for proper installation at initial start-up, and at least annually thereafter. Refer to the Care and Cleaning section of this manual for more information regarding vent system inspection.



## ⚠ WARNING!

Gasoline, as well as other flammable materials and liquids (adhesives, solvents, etc.), and the vapors they produce are extremely dangerous. DO NOT handle, use or store gasoline or other flammable or combustible materials anywhere near or in the vicinity of a water heater. Be sure to read and follow the warning label pictured below and other labels on the water heater, as well as the warnings printed in this manual. Failure to do so can result in property damage, bodily injury or death.

⚠ **DANGER**




**⚠ Vapors from flammable liquids will explode and catch fire causing death or severe burns.**  
Do not use or store flammable products such as gasoline, solvents or adhesives in the same room or area near the water heater.

**Keep flammable products:**

1. far away from heater,
2. in approved containers,
3. tightly closed and
4. out of children's reach.

Water heater has a main burner and pilot flame. The pilot flame:

1. which can come on at any time and
2. will ignite flammable vapors.

Vapors:

1. cannot be seen,
2. are heavier than air,
3. go a long way on the floor and
4. can be carried from other rooms to the pilot flame by air currents.

**Installation:**  
Do not install water heater where flammable products will be stored or used unless the main burner and pilot flames are at least 18" above the floor. This will reduce, but not eliminate, the risk of vapors being ignited by the main burner or pilot flame.

Read and follow water heater warnings and instructions. If owners manual is missing, contact the retailer or manufacturer.

# IMPORTANT SAFETY INFORMATION. READ ALL INSTRUCTIONS BEFORE USING.



## **⚠ DANGER!** LIQUEFIED PETROLEUM MODELS

Both LP and natural gas have an odorant added to aid in detecting a gas leak. Some people may not physically be able to smell or recognize this odorant. If you are unsure or unfamiliar with the smell of LP or natural gas, ask the gas supplier. Other conditions, such as “odorant fade,” which causes the odorant to diminish in intensity, can also hide or camouflage a gas leak.

- Water heaters utilizing LP gas are different from natural gas models. A natural gas water heater will not function safely on LP gas and vice versa.
- No attempt should ever be made to convert the water heater from natural gas to LP gas. To avoid possible equipment damage, personal injury or fire, DO NOT connect the water heater to a fuel type not in accordance with the unit data plate. Propane for propane units. Natural gas for natural gas units. These units are not certified for any other fuel type.
- LP appliances should not be installed below grade (for example, in a basement) if such installation is prohibited by federal, state and/or local laws, rules, regulations or customs.
- Propane or LP gas must be used with great caution. It is heavier than air and will collect first in lower areas making it hard to detect at nose level.
- Make sure to look and smell for LP gas leaks before attempting to light the appliance. Use a soapy solution to check all gas fittings and connections. Bubbling at a connection indicates a leak that must be corrected. When smelling to detect an LP leak, be sure to sniff near the floor too.
- Gas detectors are recommended in LP applications and their installation should be in accordance with the manufacturer’s recommendations and/or local laws, rules, regulations or customs.
- It is recommended that more than one method be used to detect leaks in LP gas applications.

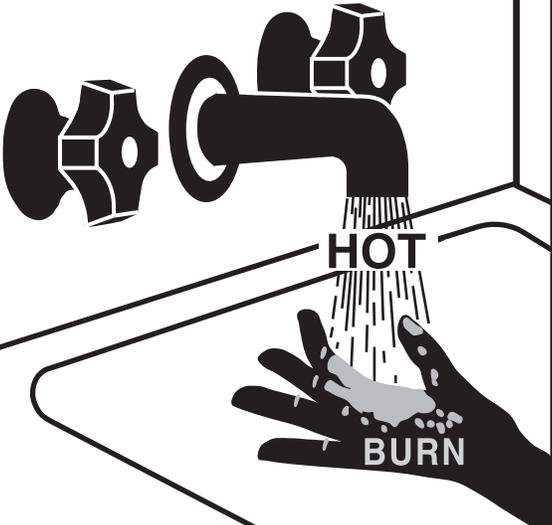
### If LP gas is present or suspected:

- **Do not** attempt to find the cause yourself.
- **Do not** try to light any appliance.
- **Do not** touch any electrical switch.
- **Do not** use any phone in your building.
- Leave the house immediately and make sure your family and pets leave also.
- Leave the doors open for ventilation and contact the gas supplier, a qualified service agency or the fire department.
- Keep the area clear until the service call has been made, the leak is corrected and a qualified agency has determined the area to be safe.

## **⚠ WARNING!** WATER TEMPERATURE ADJUSTMENT

Safety and energy conservation are factors to be considered when selecting the water temperature setting of the water heater's thermostat. Water temperatures above 125°F can cause severe burns or death from scalding. Be sure to read and follow the warnings outlined on the label pictured below. This label is also located on the water heater.

**⚠ DANGER**



Water temperature over 125°F can cause severe burns instantly or death from scalds.

Children, disabled and elderly are at highest risk of being scalded.

See instruction manual before setting temperature at water heater.

Feel water before bathing or showering.

Temperature limiting valves are available, see manual.

Mixing valves for reducing point of use water temperature by mixing hot and cold water in branch water lines are available. Contact a licensed plumber or the local plumbing authority for further information.

**⚠ DANGER:** There is a Hot Water SCALD Potential if the thermostat is set too high.

### Time/Temperature Relationship in Scalds

Temperature	Time To Produce a Serious Burn
120°F	More than 5 minutes
125°F	1½ to 2 minutes
130°F	About 30 seconds
135°F	About 10 seconds
140°F	Less than 5 seconds
145°F	Less than 3 seconds
150°F	About 1½ seconds
155°F	About 1 second

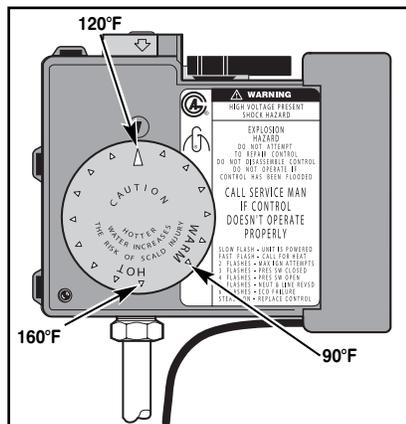
Table courtesy of Shriners Burn Institute

The chart shown above may be used as a guide in determining the proper water temperature for your home.

**NOTE:** Households with small children, disabled or elderly persons may require a 120°F or lower thermostat setting to prevent contact with "HOT" water.

Maximum water temperatures occur just after burner has shut off. To find hot water temperature being delivered, turn on a hot water faucet and place a thermometer in the hot water stream and read the thermometer.

The temperature of the water in the heater can be regulated by setting the temperature dial on the front of the thermostat.



The illustration at the left details the approximate water temperature for each mark on the Thermostat Temperature Dial.

regulations, the thermostat was set to a low setting before the water heater was shipped from the factory.

The illustration at the left details the approximate water temperature for

# IMPORTANT SAFETY INFORMATION. READ ALL INSTRUCTIONS BEFORE USING.

## WARNING!

For your safety, the information in this manual must be followed to minimize the risk of fire or explosion, electric shock, or to prevent property damage, personal injury, or loss of life.



## FOR INSTALLATIONS IN THE STATE OF CALIFORNIA

California Law requires that residential water heaters must be braced, anchored or strapped to resist falling or horizontal displacement due to earthquake motions. For residential water heaters up to 52 gallon capacity, a brochure with generic earthquake bracing instructions can be obtained from: Office of the State Architect, 400 P Street, Sacramento, CA 95814 or you may call 916.324.5315 or ask a water heater dealer.

However, applicable local codes shall govern installation. For residential water heaters of a capacity greater than 52 gallons, consult the local building jurisdiction for acceptable bracing procedures.



## SAFETY PRECAUTIONS

Have the installer show you the location of the gas shut-off valve and how to shut it off if necessary. Turn off the manual shut-off valve if the water heater has been subjected to overheating, fire, flood, physical damage or if the gas supply fails to shut off.

- Read this manual entirely before installing or operating the water heater.
- Use this appliance only for its intended purpose as described in this Use and Care Manual.
- Be sure your appliance is properly installed by a qualified technician in accordance with the provided installation instructions.
- Do not attempt to repair or replace any part of your water heater unless it is specifically recommended in this manual. All other servicing should be referred to a qualified technician.

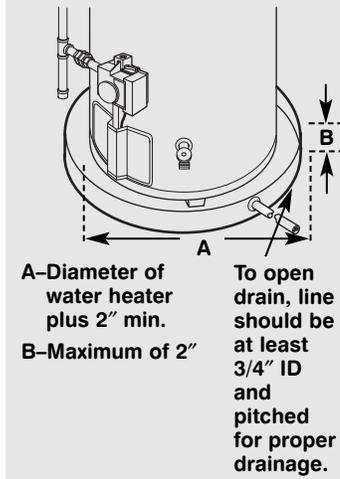


**READ AND FOLLOW THIS SAFETY INFORMATION CAREFULLY.**

**SAVE THESE INSTRUCTIONS**

# Installing the water heater.

This water heater must be installed in accordance with these instructions, local codes, utility company requirements, and/or in the absence of local codes, use the latest edition of the American National Standard/National Fuel Gas Code. A copy can be purchased from either the American Gas Association, 1515 Wilson Blvd., Arlington, VA 22209 as booklet Z223.1 or National Fire Prevention Association, Batterymarch Park, Quincy, MA 02269 as booklet NFPA No. 54.



**NOTE:** The auxiliary catch pan installation **MUST** conform to local codes.

## Location

The water heater should not be located in an area where leakage of the tank or connections will result in damage to the area adjacent to it or to lower floors of the structure.

When such areas cannot be avoided, it is recommended that a suitable nonflammable catch pan, adequately drained, be installed under the water heater.

The pan **MUST NOT** restrict combustion air flow to the bottom of the water heater.

Catch pan kits are available in 16", 19", 22", 24" and 26½" from the store where the water heater was purchased, or any water heater distributor.

A gas-fired water heater should not be installed in a space where liquids which give off flammable vapors are to be used or stored. Such liquids include gasoline, LP gas (butane and propane), paint or adhesives and their thinners, solvents or removers.

Because of natural air movement in a room or other enclosed space, flammable vapors can be carried some distance from where their liquids are being used or stored. The water heater's spark ignitor or main burner can ignite these vapors, causing an explosion or fire which may result in severe burns, death or property damage.

For these reasons, installation of a gas-fired water heater in a garage is not recommended.

Raising the gas-fired water heater will reduce, but not eliminate, the possibility of lighting the vapor of any flammable liquids which may be improperly stored or accidentally spilled.

Stand kits to raise the water heater 18" above the floor are available from the store where the water heater was purchased, or any water heater distributor. These kits must comply with local codes. Request "Stand Kit, Part Number AS-29061."

The water heater must be located so it is not subject to physical damage, for example, by moving vehicles, area flooding, etc.

- The water heater should be installed so as to minimize the length of plastic vent pipe and the number of vent elbows required. (See "Venting" later in this section for specific limitations.)
- Long hot water lines should be insulated to conserve water and energy.
- The water heater and water lines should be protected from exposure to freezing temperatures.
- **Do not** install the water heater in bathrooms, bedrooms, any occupied rooms normally kept closed, or in outdoor unprotected areas.
- Minimum clearance from combustible construction is 0" sides and rear; 3" from front of control enclosure; 12" from the top. If the clearances stated on the Instruction/Warning Label located on the front of the heater differ, install the water heater according to the clearances stated on the label.
- The water heater may be installed on combustible floors, but not directly on carpeting. If the water heater must be installed on carpeting, place a metal or wood panel beneath the water heater, extending beyond its full width and depth at least 3" in all directions.
- If the water heater is installed in an alcove or closet, the entire floor must be covered by a wood or metal panel. A minimum of 24" clearance from the front and top should be available for adequate inspection and servicing.

**▲ WARNING:** Combustible construction refers to adjacent walls and ceilings and should not be confused with combustible or flammable products and materials. Combustible and/or flammable products and materials should never be stored in the vicinity of this or any gas appliance.

**▲ WARNING:** If a location in a garage is the only alternative, the gas water heater should be installed so that the spark ignitor and main burner are no less than 18" above the garage floor, unless specifically exempted from this by local code, rule, regulation or custom.

# Installing the water heater.

Proper operation of the water heater requires air for combustion and ventilation. Provisions for combustion and ventilation air must comply with referenced codes and standards.

## Combustion and Ventilation Air

**NOTE:** If the water heater is installed in an unconfined space within a building of conventional frame, masonry or metal construction, infiltration air is normally adequate for proper combustion and ventilation. If the water heater is installed in a confined space, provisions for combustion and ventilation air must be made.

A confined space is one having a volume of less than 50 cubic feet per 1000 BTUH of the aggregate input of all appliances within that space.

The air must be supplied through two permanent openings of equal area. One is to be located within 12" above the floor and the other is to be located within 12" below the ceiling.

The minimum net free area of each opening must not be less than one square inch per 1000 BTUH of the total input rating of all the appliances in the enclosure (but not less than 100 square inches), if each opening communicates with other unconfined areas inside the building.

Buildings of unusually tight construction shall have the combustion and ventilation air supplied from outdoors, or a freely ventilated attic or crawl space.

If air is supplied from outdoors, directly or through vertical ducts, there must be

two openings located as specified above and each must have a minimum net free area of not less than one square inch per 4000 BTUH of the total input rating of all the appliances in the enclosure.

If horizontal ducts are used to communicate with the outdoors, each opening must have a minimum net free area of not less than one square inch per 2000 BTUH of the total input rating of all the appliances in the enclosure. If ducts are used, the minimum dimensions of rectangular air ducts shall not be less than 3".

**NOTE:** If the duct openings are to be covered with a protective screen or grille, the net free area of the covering material must be used in determining the size of the openings. Protective screening for the openings **MUST NOT** be smaller than 1/4" mesh to prevent clogging by lint or other debris.

**⚠ CAUTION:** Large exhaust fans can lower the air pressure inside a building or room and interfere with proper venting and operation. Commercial kitchens or other locations that must maintain a high flow of exhaust air should have the water heater installed in a separate room with combustion and ventilation air supplied directly from outside as described above.

**NOTE:** The water heater should not be installed near an air supply containing halogenated hydrocarbons.

## Corrosive Atmospheres

The air in beauty shops, dry cleaning establishments, photo processing labs and storage areas for liquid and powdered bleaches or swimming pool chemicals often contains halogenated hydrocarbons.

An air supply containing halogenated hydrocarbons may be safe to breathe, but when it passes through a gas flame, corrosive elements are released that will shorten the life of any gas burning appliance.

Propellants from common spray cans or gas leaks from refrigeration equipment are highly corrosive after passing through a flame.

The water heater warranty is voided when failure of the heater is due to operation in a corrosive atmosphere.

## Inspect Shipment

Inspect the water heater for possible damage. Check the markings on the rating plate of the water heater to be certain the type of gas supplied corresponds to the water heater requirements.

**⚠ WARNING:** The water heater should not be installed in a space where liquids which give off flammable vapors are to be used or stored.

## Thermal Expansion

**IMPORTANT:** This water heater is supplied with inlet and outlet heat traps to help conserve energy. Do not apply heat to the HOT or COLD water connections. If sweat connections are used, sweat tubing to adapter before fitting adapter to the cold water connections on heater. Any heat applied to the cold water supply fittings will permanently damage the dip tube or heat traps.

Determine if a check valve exists in the inlet water line. It may have been installed in the cold water line as a separate back flow preventer, or it may be part of a pressure reducing valve, water meter or water softener. A check valve located in the cold water inlet line can cause what is referred to as a "closed water system." A cold water inlet line with no check valve or back flow prevention device is referred to as an "open" water system.

As water is heated, it expands in volume and creates an increase in the pressure within the water system. This action is referred to as "thermal expansion." In an "open" water system, expanding water which exceeds the capacity of the water heater flows back into the city main where the pressure is easily dissipated.

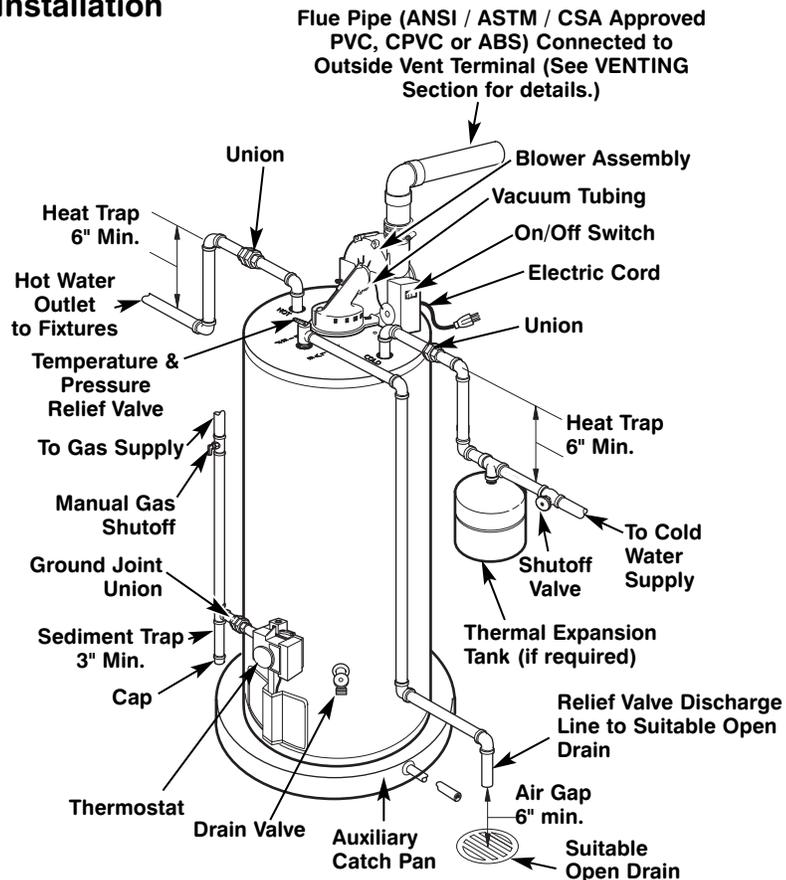
A "closed water system," however, prevents the expanding water from flowing back into the main supply line, and the result of "thermal expansion" can create a rapid and dangerous pressure increase in the water heater and system piping. This rapid pressure increase can quickly reach the safety setting of the relief valve, causing it to operate during each heating cycle. Thermal expansion, and the resulting rapid and repeated expansion and contraction of components in the water heater and piping system can cause premature failure of the relief valve, and possibly the heater itself. Replacing the relief valve **will not** correct the problem!

The suggested method of controlling thermal expansion is to install an expansion tank in the cold water line between the water heater and the check valve (see illustration below). The expansion tank is designed with an air cushion built in that compresses as the system pressure increases, thereby relieving the over-pressure condition and eliminating the repeated operation of the relief valve. Other methods of controlling thermal expansion are also available. Contact your installing contractor, water supplier or plumbing inspector for additional information regarding this subject.

## Water Supply Connections

Refer to the illustration below for suggested typical installation. The installation of unions or flexible copper connectors is recommended on the HOT and COLD water connections so that the water heater may be easily disconnected for servicing if necessary. The HOT and COLD water connections are clearly marked. Install a shut-off valve in the cold water line near the water heater. Dielectric unions are not required for protection of the water heater. At the installer's option, heat traps formed from piping as illustrated below can be used to reduce heat loss from piping.

## Typical Installation



# Installing the water heater.

A new combination temperature and pressure relief valve, complying with the Standard for Relief Valves and Automatic Gas Shut-Off Devices for Hot Water Supply Systems, ANSI Z21.22, must be installed in the opening provided and marked for the purpose on the water heater. No valve of any type should be installed between the relief valve and the tank. Local codes shall govern the installation of relief valves.

## Relief Valve

The pressure rating of the relief valve must not exceed 150 PSI, the maximum working pressure of the water heater as marked on the rating plate.

The BTUH rating of the relief valve must equal or exceed the BTUH input of the water heater as marked on its rating plate.

Position the outlet of the relief valve above a suitable open drain to eliminate potential water damage. Piping used should be of a type approved for hot water distribution.

The discharge line must be no smaller than the outlet of the valve and must pitch downward from the valve to allow complete drainage (by gravity) of the relief valve and discharge line.

The end of the discharge line should not be threaded or concealed and should be protected from freezing. **No valve of any type, restriction or reducer coupling should be installed in the discharge line.**

**⚠ WARNING:** The tank must be full of water before heater is turned on. The water heater warranty does not cover damage or failure resulting from operation with an empty or partially empty tank.

## To Fill the Water Heater

Make certain that drain valve is closed, then open the shut-off valve in the cold water supply line.

Open a nearby hot water faucet(s) slowly to allow the air to vent from the water heater and piping.

A steady flow of water from the hot water faucet(s) indicates a full water heater.

## Condensation

Condensation can form on the tank when it is first filled with water. Condensation might also occur with a heavy water draw and very cold inlet water temperatures.

Drops of water falling on the burner can produce a sizzling or pinging sound, and the water may also be seen beneath the water heater.

This condition is not unusual, and will disappear after the water becomes heated. If, however, the condensation continues, examine the piping and fittings for possible leaks.

## Draining the Condensate

In certain conditions, installations in unconditioned space or having long horizontal or vertical runs may accumulate condensate. In order to prevent condensate from draining back into the blower, we recommend a condensate tee and drain to be installed in a horizontal vent section as close as practical to the blower vent connection. Condensate is known to be acidic; refer to local, state or federal codes for proper handling methods.

**⚠ WARNING:** Do not attempt to convert this water heater for use with a different type of gas other than the type shown on the rating plate. Such conversion could result in hazardous operating conditions.

## Gas Supply

The branch gas supply line to the water heater should be clean 1/2" black steel pipe or other approved gas piping material.

A ground joint union or ANSI design certified semi-rigid or flexible gas appliance connector should be installed in the gas line close to the water heater, and a manual gas shut-off valve should be installed in the gas line prior to the union. A manual gas shut-off valve should be at least 5 ft. above the floor and readily accessible, for turning on or off.

Compound used on the threaded joints of the gas piping must be of the type resistant to the action of LP gas.

Use compound sparingly on male threads only.

A sediment trap should be installed at the bottom of the gas line.

Do not use excessive force (over 31.5 ft lbs.) in tightening the pipe joint at the gas valve inlet, particularly if Teflon pipe compound is used, as the valve body may be damaged.

The inlet gas pressure to the water heater must not exceed 14" W.C. for Natural or LP gas. For purposes of input adjustment, the minimum inlet gas pressure (with main burner on) is shown on the water heater rating plate. If high or low gas pressures are present, contact your gas supplier for correction.

**⚠ WARNING:** Never use an open flame to test for gas leaks, as bodily injury, property damage or death could result.

## Leak Testing

The water heater and its gas connections **must** be leak tested at normal operating pressures before it is placed in operation.

- 1 Turn **on** the manual gas shut-off valve near the water heater.
- 2 Use a soapy water solution to test for leaks at all connections and fittings. Bubbles indicate a gas leak that must be corrected.

The factory connections to the gas valve and fittings should also be leak tested after the water heater is placed in operation.

## Pressure Testing the Gas Supply System

The water heater and its manual gas shut-off valve **must** be disconnected from the gas supply piping system during any high pressure testing of that system at pressures in excess of 1/2 PSIG (14" W.C.).

The water heater must be isolated from the gas piping system by closing the manual gas shut-off valve. The valve only needs to be closed during testing at pressures equal to or less than 1/2 PSIG (14" W.C.).

## High Altitude...

Installations above 5000 feet require replacement of the burner orifice in accordance with the National Fuel Gas Code (ANSI Z223.1/NFPA 54). Failure to replace the orifice will result in improper and inefficient operation of the appliance, producing carbon monoxide gas in excess of safe limits, which could result in serious personal injury or death.

# Installing the water heater.

**⚠ WARNING:** The water heater must be vented to the outdoors as described in these instructions. **DO NOT** connect this water heater to an existing Vent or Chimney—it must be vented separately from all other appliances.

**⚠ WARNING:** Failure to properly vent the water heater to the outdoors as outlined above and in the following section can result in unsafe operation of the water heater causing bodily injury, explosion, fire or death. To avoid the risk of fire, explosion or asphyxiation from carbon monoxide, **NEVER** operate this water heater unless it is properly vented and has an adequate air supply for proper operation. The vent pipe must overlap a minimum of 1/2" on each connection. It is important that the vent pipe engages fully into any pipe fitting and be kept in that position until the adhesive has fully cured. **DO NOT** drill or punch holes in the plastic pipe or fittings.

## Venting

**NOTE:** This unit can be vented using only the following recommended pipe material. Use only 2- or 3-inch diameter pipe.

PVC (Schedule 40, ASTM D-1785)  
Coex Cellular Core PVC (Schedule 40, ASTM F-891)  
CPVC (Schedule 40, ASTM F-441)  
ABS (Schedule 40, ASTM D-2661)

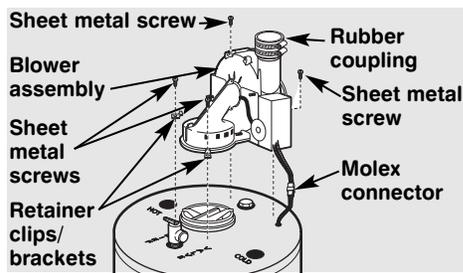
The fittings, other than the **TERMINATION**, should be equivalent to the following:

PVC (Schedule 40 DWV, ASTM D-2665)  
CPVC (Schedule 40 DWV, ASTM F-438)  
ABS (Schedule 40 DWV, ASTM D-2661)

The unit may be vented horizontally through a wall or vertically through the roof. Pipe runs must be adequately supported along both vertical and horizontal runs. Maximum unsupported span is recommended to be no more than 6 feet. It is imperative that the first hanger be located on the horizontal run immediately adjacent to the first 90-degree elbow from the vertical rise or at the blower outlet in the case of a horizontal blower position. Support method used should isolate the vent pipe from floor joists or other structural

members to help prevent the transmission of noise and vibration. Do not support, pin or otherwise secure the venting system in a way that restricts the normal thermal expansion and contraction of the chosen venting material.

If the water heater is being installed as a replacement for an existing power vented water heater, a thorough inspection of the existing venting system must be performed prior to any installation work. Verify that the correct materials, as detailed above have been used, and that the minimum or maximum vent length and terminal locations as detailed in this manual have been met. Carefully inspect the entire venting system for any signs of cracks or fractures, particularly at the joints between elbows or other fittings and the straight runs of vent pipe. Check the system for signs of sagging or other stresses in the joints as a result of misalignment of any components in the system. If any of these conditions are found, they must be corrected in accordance with the venting instructions in this manual before completing the installation and putting the water heater into service.



## Blower Assembly Installation

Connect blower assembly with Molex connector. Attach Blower Assembly to top pan using the four screws and retainer clips provided. Install rubber coupling (supplied in the box with water heater) on blower housing and secure it.

**NOTE:** The mixing of 2" and 3" vent pipe is not recommended.

If 3" pipe is used, a 2" to 3" bell coupling is recommended at the rubber coupling.

This heater is supplied with a two-inch Schedule 40 PVC 45° vent terminal. If you decide to vent with 3" pipe, a Schedule 40 DWV PVC 45° vent terminal must be used. For your convenience, we have included a screen for both 2" and 3" vent terminals.

## Maximum and Minimum Vent Lengths

### Venting Information for 2" Vents\*

Number of 90° Elbows with Vent Terminal	Number of 45° Elbows	Minimum Pipe Length Req. (ft)	Maximum Length (ft)
One (1)	None	3.00	32.00
One (1)	One (1)	3.00	29.00
Two (2)	None	3.00	26.00
Two (2)	One (1)	3.00	23.00
Three (3)	None	3.00	20.00

\*For the 2" vent, one 90-degree elbow is approximately equal to 6 feet of pipe. One 45-degree elbow is approximately equal to 3 feet of pipe.

### Venting Information for 3" Vents\*\*

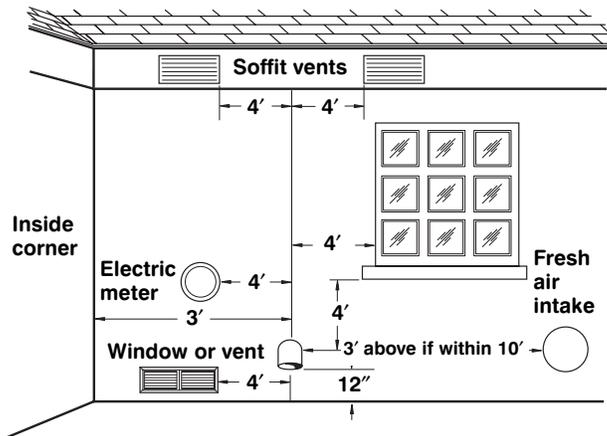
Number of 90° Elbows with Vent Terminal	Number of 45° Elbows	Minimum Pipe Length Req. (ft)	Maximum Length (ft)
One (1)	None	3.00	75.00
One (1)	One (1)	3.00	72.50
Two (2)	None	3.00	65.00
Two (2)	One (1)	3.00	62.50
Three (3)	None	3.00	60.00
Three (3)	One (1)	3.00	57.50
Four (4)	None	3.00	55.00
Four (4)	One (1)	3.00	52.50
Five (5)	None	3.00	50.00

\*\*For the 3" vent, one 90-degree elbow is approximately equal to 5 feet of pipe. One 45-degree elbow is approximately equal to 2.5 feet of pipe.

## Horizontal Vent Terminal Location

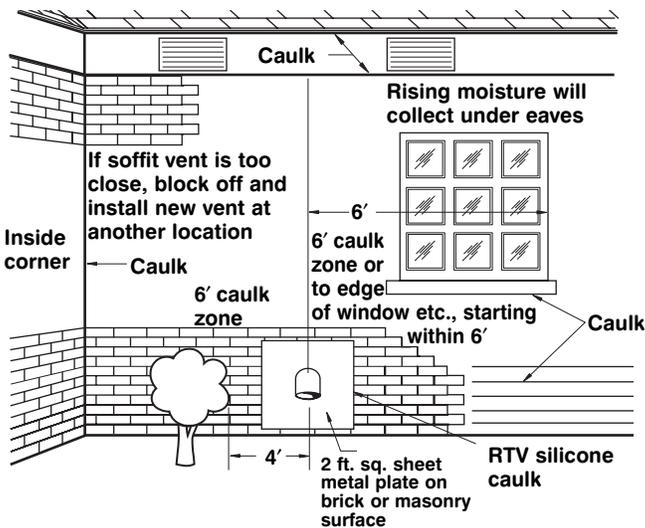
The location of the vent terminal depends on the following minimum clearances and considerations (see illustration):

- 1 Twelve (12) inches above grade level and above normal snow levels.
- 2 Four (4) feet below, or four (4) feet horizontally from any door, window or gravity air inlet to the building or other appliances, or from gas or electric meters. Do not locate vent above walkways, doors, windows, air inlets, gas or electric meters.
- 3 Three (3) feet from any forced air inlet to the building. Any fresh or make-up air inlet such as for a dryer or furnace area is considered to be a forced air inlet.
- 4 Three (3) feet from an inside corner formed by two exterior walls.
- 5 Four (4) feet horizontally from any soffit or under-eave vent.



## Additional Considerations

- 1 Do Not install vent terminal under any patio or deck.
- 2 To help prevent moisture from freezing on walls and under eaves, do not locate vent terminal on the side of a building with prevailing winter winds.
- 3 Do Not terminate vent pipe directly on brick or masonry surfaces. Use a rust-resistant sheet metal backing plate (2 x 2 feet) behind vent. (See illustration.)
- 4 Do Not locate vent terminal too close to shrubbery, as flue gases may damage them.
- 5 Caulk all cracks, seams and joints within six (6) feet of vent terminal.
- 6 All painted surfaces should be primed to lessen the chance of physical damage. Painted surfaces will require maintenance.
- 7 Insulate vent pipe exposed to cold conditions (attics, crawl spaces, etc.) to help prevent moisture from accumulating in vent pipe.

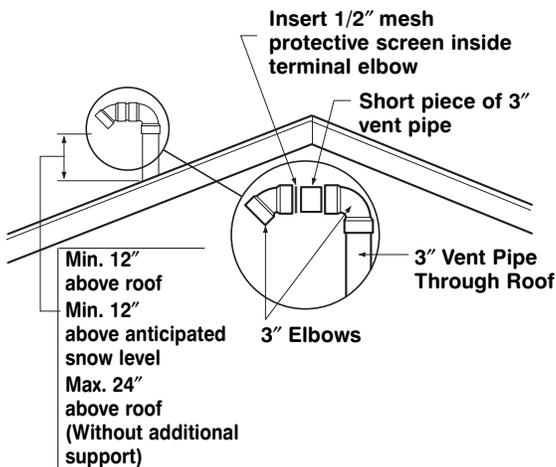


**⚠ WARNING:** Moisture in the flue gas will condense as it leaves the vent terminal. In cold weather this condensate can freeze on the exterior wall, under the eaves and on surrounding objects. Some discoloration to the exterior of the building is to be expected. However, improper location or installation can result in severe damage to the structure or exterior finish of the building.

## Vertical Vent Terminal Location

The location of the vertical vent terminal depends on the following considerations (see illustration):

- 1 Minimum twelve (12) inches above roof.
- 2 Minimum twelve (12) inches above anticipated snow level.
- 3 Maximum twenty-four (24) inches above roof level without additional support for vent pipe.
- 4 Four (4) feet from any gable, dormer or other roof structure with building interior access (i.e., vent, window, etc.).
- 5 Ten (10) feet from any forced air inlet to the building. Any fresh or make-up air inlet such as a dryer or furnace area is considered to be a forced air inlet.

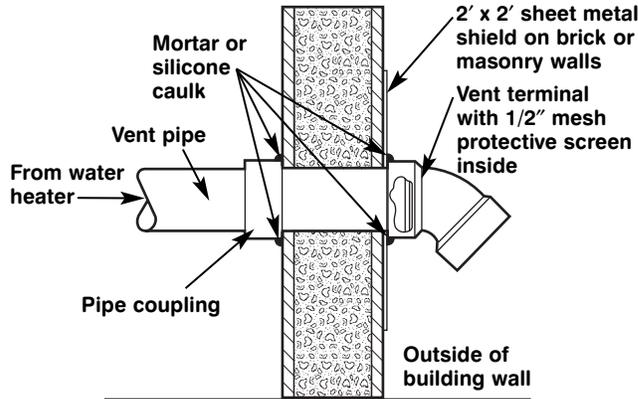


# Installing the water heater.

## Vent Installation

Before proceeding, make certain you understand the procedures and cautions covered in the *Joining Pipes and Fittings Section*.

### Typical Horizontal Vent Installation



**HORIZONTAL VENT INSTALLATION**—Once the vent terminal location has been determined, make a hole through the exterior wall to accommodate the vent pipe. Vent pipe must exit exterior wall horizontally only. (See illustration.)

Insert a small length of vent pipe through the wall and connect the coupling as shown in illustration. Place the 1/2" mesh metal screen inside the vent terminal and connect it as shown to the vent pipe on the exterior of the building. Seal any opening around the vent pipe or fittings with mortar or silicone caulk as shown in illustration.

Complete the rest of the vent pipe installation to the water heater's vent connector fitting on the blower outlet. If necessary, support horizontal run as previously mentioned. Use silicone sealant at the point the vent connector joins the blower assembly.

**VERTICAL VENT INSTALLATION**—Once the vent terminal location has been determined, make a hole through the roof and interior ceiling to accommodate the vent pipe. Complete the vent pipe installation to the water heater's vent connector fitting on the blower outlet. Support vertical or horizontal runs as previously mentioned. Use silicone sealant at the point the vent connector joins the blower assembly. Install adequate

flashing where the vent pipe passes through the roof. Determine the vent terminal height and cut vent pipe accordingly. Refer to illustration in "Vertical Vent Terminal Location" section for proper vent terminal height. Connect vent elbow onto vertical pipe through roof. Connect short piece of vent pipe (approximately 3" long) to elbow, then insert 1/2" mesh metal screen into terminal elbow and join it to the short piece of vent pipe.

**JOINING PIPES AND FITTINGS**—All pipe, fittings, solvent cement, primers and procedures must conform to

American National Standards Institute and American Society for Testing and Materials (ANSI/ASTM) standards.

**CEMENTING JOINTS**—All joints in the vent piping must be properly sealed and we recommend using the following material: PVC materials should use ASTM D-2564 grade cement; CPVC materials should use ASTM F-493 grade cement; ABS materials should use ASTM D-2235 grade cement.

All joints in the vent piping must be properly sealed using the following material and procedure:

### Cleaner-Primer and Medium Body Solvent Cement

- 1 Cut pipe end square, remove jagged edges and burrs. Chamfer end of pipe, then clean fitting socket and pipe joint area of all dirt, grease or moisture.
- 2 After checking pipe and socket for proper fit, wipe socket and pipe with cleaner-primer. Apply a liberal coat of primer to inside surface of socket and outside of pipe. Do not allow primer to dry before applying cement.
- 3 Apply a thin coat of cement evenly in the socket. Quickly apply a heavy coat of cement to the pipe end and insert pipe into fitting with a slight twisting motion until it bottoms out.

14 **NOTE:** Cement must be fluid; if not, recoat.

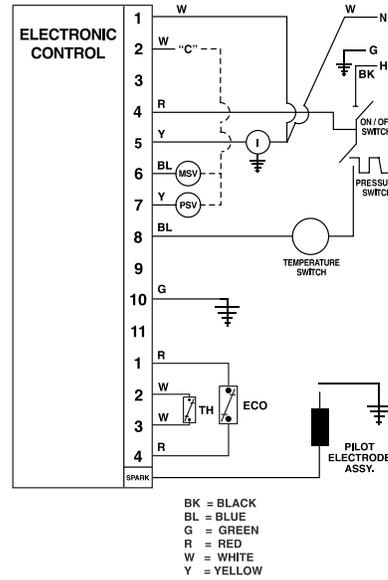
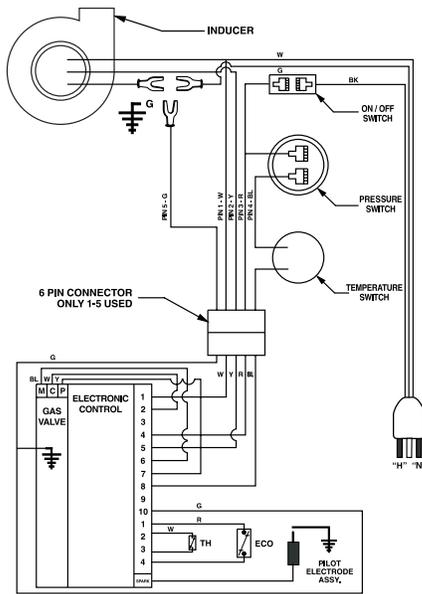
- 4 Hold the pipe fitting for 30 seconds to prevent the tapered socket from pushing the pipe out of the fitting.
- 5 Wipe all excess cement from the joint with a rag. Allow 15 minutes before handling. Cure time will vary according to fit, temperature and humidity.

**NOTE:** Stir the solvent cement frequently while using. Use a natural bristle brush or the dauber supplied with the can. The proper brush size is 1".

### ⚠ CAUTION: FOR PROPER INSTALLATION:

- DO NOT use solvent cement that has become curdled, lumpy or thickened.
- DO NOT thin solvent cement. Observe shelf precautions printed on the containers.
- For applications below 32°F use only low temperature-type solvent cement.
- Appropriate solvent and cleaner must be used for the type of vent pipe used (PVC, CPVC or ABS).

**⚠ WARNING: DANGER OF FIRE OR BODILY INJURY** – Solvent cements and primers are highly flammable. Provide adequate ventilation and do not assemble near heat source or open flame. Do not smoke. Avoid skin or eye contact. Observe all cautions and warnings on material containers.



**CAUTION!** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

**VERIFY PROPER OPERATION AFTER SERVICING!**

Connection Diagram

**CAUTION!** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

**VERIFY PROPER OPERATION AFTER SERVICING!**

Schematic Diagram

**NOTE:** If any of the wire as supplied with the appliance must be replaced, use only UL recognized, 18 gage 600V., 105° C. wire or its equivalent.

**WIRING**—If local codes permit, the water heater may be connected to electric service with the five (5) foot power cord provided (DO NOT use an extension cord). A grounding receptacle is required. If local codes do not permit the use of cord connections, a 120 V, 50/60 Hz power supply, with suitable disconnecting means, must be connected to the black and white leads in the heater control enclosure.

The hole where the supply cord enters the control enclosure is sized to permit use of conduit or metal-clad cable connectors after the supply cord and bushing are removed. The maximum current draw is approximately 5.0 amps. The water heater must be electrically grounded in accordance with local codes, or, in the absence of local codes, in accordance with latest edition of the National Electrical Code ANSI/NFPA No. 70. Refer to illustration at above right for water heater internal wiring.

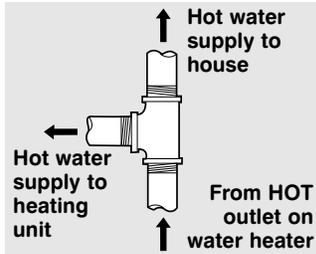
**NOTE:** It is not recommended that this unit be installed on a GFCI circuit.

## WARNING!

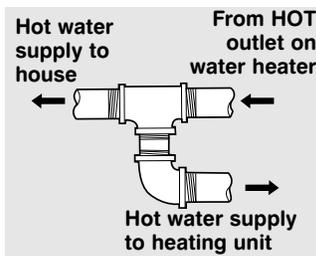
The manufacturer's warranty does not cover any damage or defect caused by installation, attachment or use of any type of energy-saving device or other unapproved devices (other than those authorized by the manufacturer) into, onto or in conjunction with the water heater. The use of unauthorized energy-saving devices may shorten the life of the water heater and may endanger life and property. The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized devices.

# Supplemental instructions for gas water heaters installed in potable/space heating applications.

Local codes or plumbing authority requirements may vary from the instructions or diagrams provided in this manual and take precedence over these instructions. Refer to Local Codes, Plumbing Authority and Use and Care Manual supplied with water heater before starting any installation work.



Tee fitting for vertical hot water supply lines.



Tee fitting for horizontal hot water supply lines.

## Combination Potable and Space Heating Application

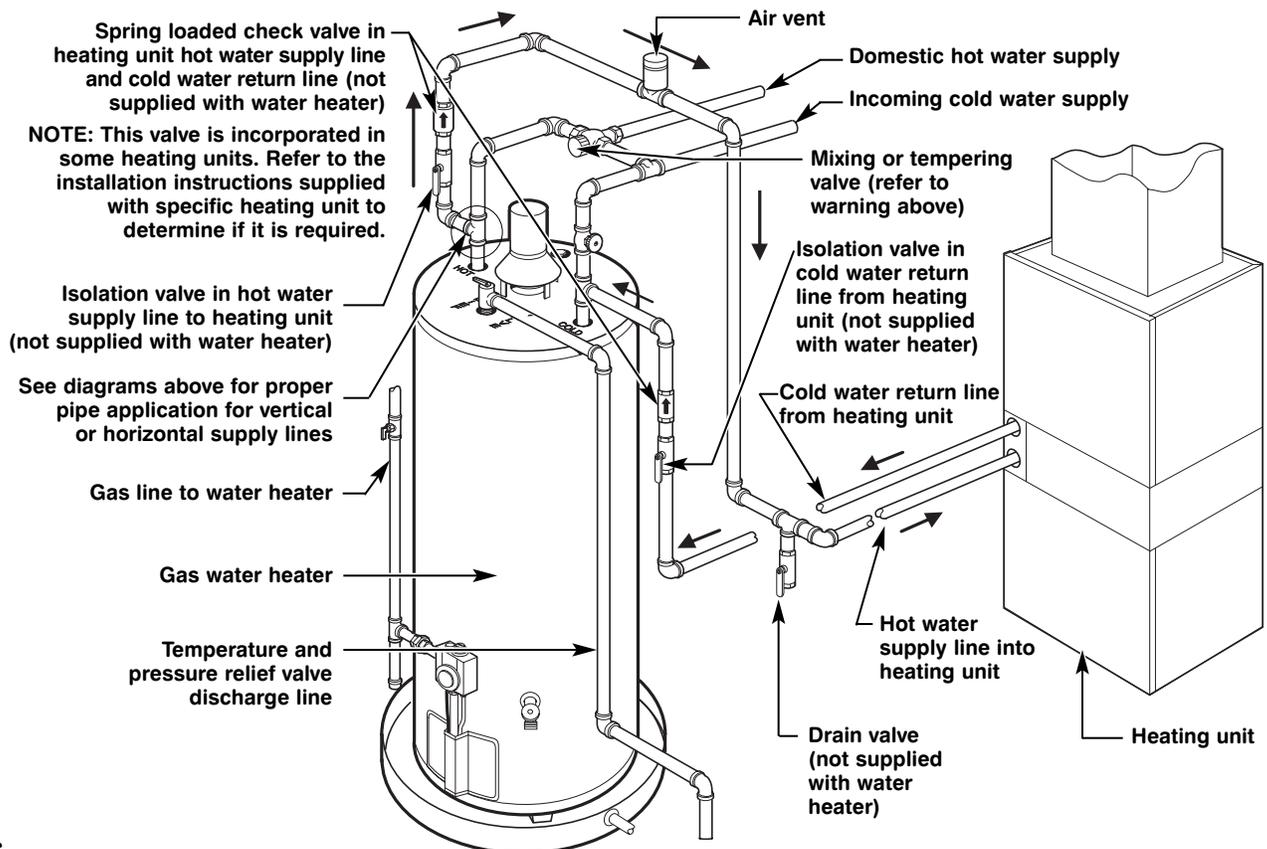
Tee fitting must be installed as shown. This ensures that any air in the water lines will be purged through the domestic water faucets and showers.

**⚠ WARNING:** When this system requires water for space heating at elevated temperatures (above 125°F), a mixing or tempering valve must be installed in the hot water supply line to the house in order to reduce the SCALD HAZARD potential.

**⚠ WARNING:** Any piping or components used in the installation of this water heater in a combination potable and space heating application must be suitable for use with drinking water.

**⚠ WARNING:** If this water heater is installed in an application intended to supply domestic hot water needs and hot water for space heating purposes, DO NOT connect the heater to an existing heating unit or components of a heating system that have previously been used with a nondrinking water system. Toxic chemicals such as those used for boiler treatment may be present and will contaminate the drinking water supply causing possible health risks. Never introduce toxic chemicals, such as those used for boiler treatment, into this system.

## Typical Piping Diagram for Combination Potable/Space Heating Installation



# Lighting the water heater.

Before operating this water heater, be sure to read and follow the instructions on the label pictured below and all other labels on the water heater, as well as the warnings printed in this manual. Failure to do so can result in unsafe operation of the water heater resulting in property damage, bodily injury or death. Should you have any problems reading or following the instructions in this manual, STOP, and get help from a qualified person.

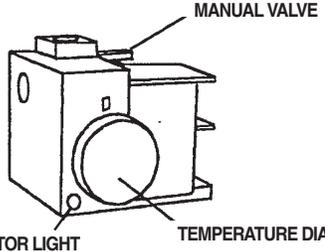
**FOR YOUR SAFETY READ BEFORE OPERATING**

**WARNING:** If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

<p><b>A.</b> This appliance is equipped with an ignition device which will automatically light the burner. Do not try to light the burner by hand.</p> <p><b>B. BEFORE PUTTING THIS APPLIANCE INTO SERVICE -</b> Smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.</p> <p><b>WHAT TO DO IF YOU SMELL GAS -</b></p> <ul style="list-style-type: none"> <li>• Do not try to light any appliance.</li> <li>• Do not touch any electrical switch; do not use any phone in your building.</li> <li>• Immediately call your gas supplier from a</li> </ul>	<p>neighbor's phone. Follow the gas supplier's instructions.</p> <ul style="list-style-type: none"> <li>• If you cannot reach your gas supplier, call the fire department.</li> </ul> <p><b>C.</b> Use only your hand to turn the gas control knob. Never use tools. If the knob will not turn by hand, don't try to repair it; call a qualified service technician. Force or attempted repair may result in a fire or explosion.</p> <p><b>D.</b> Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.</p>
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**OPERATING INSTRUCTIONS**

<ol style="list-style-type: none"> <li>1. STOP!! READ THE SAFETY INFORMATION ABOVE ON THIS LABEL.</li> <li>2. MAKE SURE THE VOLTAGE AND THE POLARITY ARE CORRECT AT THE POWER SUPPLY.</li> <li>3. TURN OFF ALL ELECTRICAL POWER TO THE APPLIANCE AT THE SOURCE. (DO NOT USE ON/OFF SWITCH ON UNIT.)</li> <li>4. SET THE THERMOSTAT TO LOWEST SETTING.</li> <li>5. THIS APPLIANCE HAS A SPARK IGNITION SYSTEM. TO PUT THE HEATER INTO SERVICE DO <u>NOT</u> ATTEMPT TO LIGHT THE BURNER BY HAND.</li> <li>6. THE MANUAL VALVE IS SPRING LOADED. PRESS DOWN AND THE VALVE WILL AUTOMATICALLY TURN CLOCKWISE  TO THE "OFF" POSITION. DO NOT FORCE.</li> <li>7. TIGHTEN ALL GAS LINE CONNECTIONS TO THE CONTROL.</li> <li>8. WAIT FIVE (5) MINUTES TO CLEAR OUT ANY GAS. IF YOU SMELL GAS, STOP! FOLLOW "B" IN THE SAFETY INFORMATION ABOVE ON THIS LABEL. IF YOU DON'T SMELL GAS, GO TO THE NEXT STEP.</li> </ol>	<ol style="list-style-type: none"> <li>9. TURN THE MANUAL VALVE COUNTERCLOCKWISE  TO THE FULL "ON" POSITION.</li> <li>10. SET THE THERMOSTAT TO THE DESIRED SETTING.</li> <li>11. TURN ON ALL ELECTRICAL POWER TO THE APPLIANCE. PLUG IN THE CORD. MAKE SURE THE ON/OFF SWITCH IS IN THE "ON" POSITION.</li> <li>12. IF THE APPLIANCE WILL NOT OPERATE, FOLLOW THE INSTRUCTIONS TO "TURN OFF GAS TO APPLIANCE" AND CALL YOUR SERVICE TECHNICIAN OR GAS SUPPLIER.</li> </ol>
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MANUAL VALVE

LED INDICATOR LIGHT      TEMPERATURE DIAL

**TO TURN OFF GAS TO APPLIANCE**

<ol style="list-style-type: none"> <li>1. TURN OFF ALL ELECTRICAL POWER TO THE APPLIANCE IF SERVICE IS TO BE PERFORMED.</li> <li>2. SET THE THERMOSTAT TO THE LOWEST SETTING.</li> </ol>	<ol style="list-style-type: none"> <li>3. THE MANUAL VALVE IS SPRING LOADED. PRESS DOWN AND THE VALVE WILL AUTOMATICALLY TURN CLOCKWISE  TO THE "OFF" POSITION. DO NOT FORCE.</li> </ol>
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# Operating the water heater.

**⚠ CAUTION:** 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 dissipate such gas and to reduce risk of injury, 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 gas is present, there will probably be an unusual sound such as air escaping through the pipe as the water begins to flow. Do not smoke or use an open flame near the faucet at the time it is open.

## Safety Precautions

- A** Turn off manual gas shut-off valve if water heater has been subjected to overheating, fire, flood, physical damage or if the gas supply fails to shut off.
- B** Do Not turn on water heater unless it is filled with water.
- C** Do Not turn on water heater if cold water supply shut-off valve is closed.
- D** Do Not attempt to turn on water heater until all operating instructions are understood and followed. See page 17 or label on water heater near thermostat.
- E** Do Not allow combustible materials such as newspaper, rags or mops to accumulate near water heater.
- F** Do Not store or use gasoline or other flammable vapors and liquids, such as adhesives or paint thinner, in vicinity of this or any other appliance. If such flammables must be used, open doors and windows for ventilation, and all gas burning appliances in the vicinity must be shut off, including their pilot lights, to avoid igniting vapors.

**NOTE:** Flammable vapors may be drawn by air currents from surrounding areas to the water heater.

- G** If there is any difficulty in understanding or following the Operating Instructions or the Care and Cleaning section, it is recommended that a qualified person or service technician perform the work.

**⚠ DANGER:** There is a hot water SCALD potential if the thermostat is set too high. Households with small children, disabled or elderly persons may require a 120°F or lower thermostat setting to prevent contact with HOT water.

## Water Temperature Setting

The temperature of the water in the water heater is regulated by the adjustable thermostatic gas valve located on the front of the heater, near the bottom.

Safety and energy conservation are factors to be considered when selecting the water temperature setting of the water heater's thermostat. The lower the temperature setting, the greater the savings in energy and operating costs. A temperature setting of 120°F or less is recommended as a useable water temperature.

To comply with safety regulations, the thermostat is factory set to a low setting. "Low" equals approximately 100°F, "Medium" equals approximately 130°F and "High" equals approximately 160°F.

Water temperatures above 125°F can cause severe burns or death from scalding. Be sure to read and follow the warnings outlined in this manual and on the label on the water heater. This label is located on the water heater near the thermostat access panel.

Mixing valves for reducing point of use water temperature by mixing hot and cold water in branch water lines are available. Contact a licensed plumber or the local plumbing authority for further information.

The chart below may be used as a guide in determining the proper water temperature for your home.

## Time/Temperature Relationship in Scalds

Temperature	Time To Produce a Serious Burn
120°F	More than 5 minutes
125°F	1 ½ to 2 minutes
130°F	About 30 seconds
135°F	About 10 seconds
140°F	Less than 5 seconds
145°F	Less than 3 seconds
150°F	About 1 ½ seconds
155°F	About 1 second

**OPERATING PROCEDURE**—This heater is equipped with a spark ignitor to light the main burner. There is no pilot light to be lit, but on initial start-up, it is recommended that the outer door be removed (leave inner door in place for safety) to determine if the spark ignitor and main burner is operating properly.

To put the heater into operation it is only necessary to turn the main manual gas valve to the “ON” position, plug the power cord in and make sure the “ON/OFF” switch located on the blower assembly is in the “ON” position. Within 90 seconds the spark ignitor should spark, then the gas valve should open and the main

burner ignite. After the main burner ignites, replace the outer door. If no main burner flame is established, the gas control will go through three trials for ignition before going into a lock-out. A warning light will alert the user of this lock-out condition. If this happens, refer to “Troubleshooting Guide.”

**TO SHUT OFF WATER HEATER**—Turn switch on the blower assembly to the “OFF” position and turn the main manual gas shut-off valve to the “OFF” position.

### If adjustment is necessary...

Maximum water temperatures occur just after burner has shut off. To determine exact temperature of water being delivered, turn on a hot water faucet and place a thermometer in the hot water stream and read thermometer.

**⚠ DANGER:** Make certain power to the water heater is OFF before removing jacket access panel FOR ANY REASON.

**⚠ WARNING:** Should overheating occur or the gas supply fail to shut off, **turn off electrical power to heater at the on/off switch (disconnect power cord or turn off at fuse or breaker box, as appropriate).** If water heater has been subjected to fire, flood or physical damage, turn off gas and electricity as explained above and **do not** operate the water heater again until it has been checked out by a qualified service technician.

**NOTE:** Replace any part of the gas control system which has been under water.

The gas valve employed on the heater is equipped for total regulation of the main burner and does not require adjustment.

The thermostat is constructed with a built-in safety shut-off device designed to shut off the gas supply to the burner in the event the pilot flame is extinguished for any reason. The thermostat is also equipped with a single-use gas shut-off device that will shut off the gas supply to the burner if the water in the water heater exceeds normal operating temperatures. Refer to the Troubleshooting Tips section of this manual or contact your dealer for service.

# Care and cleaning of the water heater.

## Draining the Water Heater

**⚠ CAUTION:** Turn off power to water heater and shut off gas supply line at manual shut-off valve before draining water.

**⚠ DANGER:** The water drained from the tank may be hot enough to present a scald hazard and should be directed to a suitable drain to prevent injury or damage.

In order to drain the water heater, open a hot water faucet or lift the handle on the relief valve to admit air to the tank. Turn off incoming water supply.

Attach a garden hose to the drain valve on the water heater and direct the stream of water to a drain where it will cause no damage.

**⚠ DANGER:** Before manually operating the relief valve, make certain no one will be exposed to the danger of coming in contact with the hot water released by the valve. The water may be hot enough to create a SCALD hazard. The water should be released into a suitable drain to prevent injury or property damage.

## Routine Preventive Maintenance

Properly maintained, your water heater will provide years of dependable, trouble-free service.

It is recommended that a routine preventive maintenance program be established and followed by the user.

It is further recommended that a periodic inspection of the thermostat, burner, relief valve, venting system and internal flueway should be made by a service technician qualified in gas appliance repair. To make certain the internal flueway is clean, remove blower (refer to illustration on page 12) and remove flue baffle (refer to illustration on page 9). When reinstalling flue baffle, make certain it is hung securely by its hanger at the top of the flueway. Remove any scale that may have fallen on the burner or floor shield. Reinstall the blower (refer to illustration on page 12).

Inspect plastic vent pipe. Make certain that all joints are secure and that vent pipe supports are all in place. Check outdoor vent terminal to see that it is free of obstructions, and that there is no damage nearby caused by condensate.

Inspect dilution air inlet (refer to second illustration on page 21). Make certain no blockage exists. Clean any lint, dirt or oil accumulation that may exist.

At least once a year, lift and release the lever on the temperature and pressure relief valve, located near the top of the water heater, to make certain the valve operates freely. Allow several gallons to flush through the

discharge line to an open drain. Make certain the discharged water is directed to a suitable drain.

**NOTE:** If the temperature and pressure relief valve on the hot water heater discharges periodically, this may be due to thermal expansion in a closed water system. Contact the water supplier or your plumbing contractor on how to correct this. Do not plug the relief valve outlet.

A water heater's tank can act as a settling basin for solids suspended in the water. It is therefore not uncommon for hard water deposits to accumulate in the bottom of the tank. Deposits should not be allowed to accumulate, as this can affect the service life of the water heater. It is suggested that a few quarts of water be drained from the water heater's tank every month to clean the tank of these deposits. If sufficient hard water deposits accumulate, a rumbling or pounding sound can occur. There is no danger involved and the efficiency of the water heater is not seriously affected, but the noise can be annoying. Your plumbing contractor should be contacted to clean the tank of these deposits.

Rapid closing of faucets or solenoid valves in automatic water-using appliances can cause a banging noise heard in a water pipe. Strategically located risers in the water pipe system or water hammer arresting devices can be used to minimize the problem.

## Housekeeping

Vacuum around the base of the water heater for dust, dirt and lint on a regular basis.

Inspect the blower for excessive lint buildup and clean as necessary.

To ensure sufficient ventilation and combustion air supply, proper clearances must be maintained.

**⚠ DANGER:** Combustible materials, such as clothing, cleaning materials or flammable liquids, must not be placed against or next to the water heater.

## Venting System Inspection

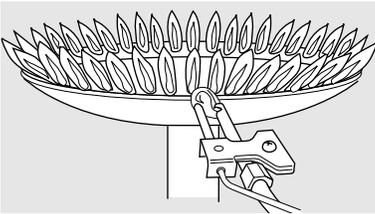
The water heater's internal flue must be inspected annually to be certain it is clean. Remove four (4) screws from the draft hood at blower support bracket and top pan, lift off draft hood and remove flue baffle.

When reinstalling the flue baffle make certain it is hung securely by its hanger at the top of the flueway.

Remove any scale that may have fallen on the burner or floor shield and reinstall the draft hood (with four screws) to the blower support bracket and water heater's top pan.

Inspect the plastic vent pipe. Make certain that all joints are secure and that vent pipe supports are in place. Check outdoor vent terminal to see that it is free of obstructions, and that there is no damage nearby caused by condensate.

If, after inspection of the vent system, you found sooting or deterioration, call the local gas utility to correct the problem and clean or replace the flue and venting before resuming operation of the water heater.



Proper burner and pilot flame pattern.

## Burner Inspection

Visually inspect the burners annually while firing.

If any unusual burner operation is noted, the water heater should be shut off until qualified service assistance can be obtained.

For cleaning, remove the burner from the water heater. A vacuum cleaner can be used on the burner and floor

shield inside the water heater. The burner can also be cleaned by scrubbing with mild detergent.

**⚠ CAUTION:** For your safety, cleaning of the main burner should be performed only by qualified service personnel as it involves disconnection of gas piping and leak testing.

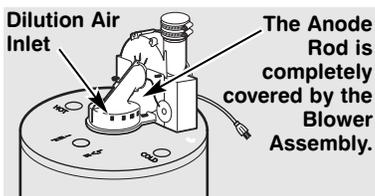
**NOTE:** Refer to the Hydrogen Gas Caution in the Operating Instructions.

## Vacation and Extended Shut-Down

If the water heater is to remain idle for an extended period of time, the gas and power 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 shut-down period, the water heater's operation and controls should be checked by qualified service personnel. Make certain the water heater is completely filled again before placing it in operation.



**NOTE:** Do not remove the anode rod from the water heater's tank, except for inspection and/or replacement, as permanent removal will shorten the life of the glass-lined tank and affect the water heater warranty.

## Anode Rod

This water heater is equipped with an anode rod designed to prolong the life of the glass-lined tank. The anode rod is slowly consumed cathodically, thereby eliminating or minimizing corrosion of the glass-lined tank.

Water sometimes contains a high sulfate and/or mineral content and together with cathodic protection process can produce a hydrogen sulfide, or rotten egg odor in the

heated water. Chlorination of the water supply should minimize the problem.

The anode rod should be removed from the water heater's tank annually for inspection and replaced when more than 6" of core wire is exposed at either end of the rod.

Make sure the cold water supply is turned off before removing anode rod.

# Before You Call For Service...



## Troubleshooting Tips

Save time and money! Review the charts on the following pages first and you may not need to call for service.

Problem	Possible Causes	What To Do
Not enough hot water	Check valve error codes.	● Refer to gas valve error code table on next page.
	“ON/OFF” switch turned off.	● Turn on.
	Blower unplugged.	● Plug in. Verify power supply (120 VAC).
	Temperature setting too low.	● Turn to a higher temperature setting.
	Heater undersized.	● Reduce hot water consumption or replace heater.
Yellow flame or sooting	Scale on top of the burner.	● Shut off the water heater and remove scale.
	Combustion air inlets or flueways restricted.	● Remove lint or debris and inspect air inlet.
	Not enough combustion or ventilation air supplied to the room.	● Refer to “Combustion and Ventilation Air” in “Installing the water heater” section.
Rumbling noise	Scale or sediment in tank.	● Clean tank—See “Care and cleaning” section.

## Error Code Table

Problem	LED Status	Cause	Solution
Gas valve	Slow flash	Normal operation.	● No problem.
	Fast flash	Normal operation. Call for heat.	● Wait until gas control generates a self-reset.
	Solid red LED	Lockout condition. Internal failure detected.	● Replace gas valve.
	2 flashes	Lockout condition. Ignition failure.	<ul style="list-style-type: none"> <li>● Third failed ignition attempt. Unplug to reset control.</li> <li>● Contact local qualified service agent. Make sure manual gas shutoff valve is open. If pressure is too high the valve will not operate. Refer to "Gas Supply" in the "Installing" section.</li> <li>● Clean any scale buildup from burner and pilot assembly.</li> <li>● The spark ignitor assembly could be damaged or broken. If so, replace assembly.</li> <li>● Bleed air from gas line.</li> </ul>
	3 flashes	Lockout condition. Switch fails to open.	<ul style="list-style-type: none"> <li>● Contact local qualified service agent.</li> <li>● Replace pressure switch.</li> </ul>
	4 flashes	Lockout condition. Switch fails to close.	<ul style="list-style-type: none"> <li>● Contact local qualified service agent. Inspect vent pipe and dilution air inlet for blockage. (Refer to "Routine Preventive Maintenance" section.)</li> <li>● Make certain proper ventilation air is supplied. (Refer to "Combustion and Ventilation Air" in the "Installing" section.)</li> </ul>
	5 flashes	Lockout condition. Neutral polarity failure.	● Check electrical supply outlet.
	6 flashes	Lockout condition. ECO failure.	● Replace valve.

**⚠ CAUTION:** Make certain power to water heater is "OFF" before removing protective cover FOR ANY REASON.

**⚠ CAUTION:** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. VERIFY PROPER OPERATION AFTER SERVICING!

**⚠ CAUTION:** For your safety, DO NOT attempt repair of electrical wiring, thermostat or other operating controls. Refer repairs to qualified service personnel.

# Replacement Parts.

For PowerVented 40 and 50 gallon models using natural or LP gas.

## Instructions For Placing a Parts Order

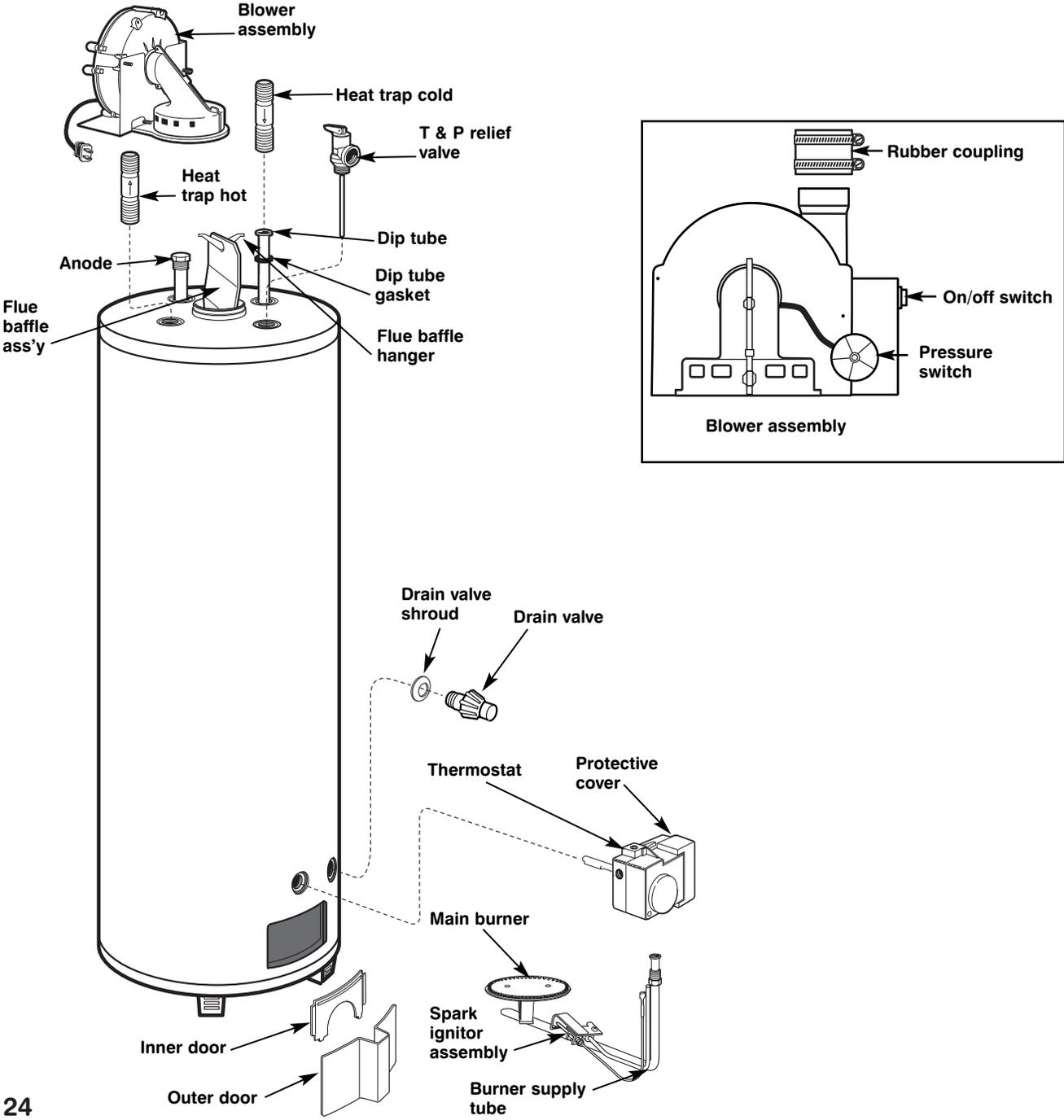
To place orders using a Visa/MasterCard, call 800.431.1549.

All parts orders should include:

- 1 The model and serial number of the water heater from the rating plate.
- 2 Specify type of gas (natural or LP) as marked on the rating plate.

- 3 Part description (as noted below) and number of parts desired.

**CAUTION:** For your safety **DO NOT** attempt repair of gas piping, thermostat, burners, vent connectors or other safety devices. Refer repairs to qualified service personnel.



# Notes.

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Safety Instructions

Installation Instructions

Operating Instructions

Care and Cleaning

Troubleshooting Tips

Customer Service

Customer Service	Troubleshooting Tips	Care and Cleaning	Operating Instructions	Installation Instructions	Safety Instructions
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# Notes.

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Please place in envelope and mail to:

**Rheem Manufacturing Company**  
Warranty Registration Department  
P.O. Box 34070  
Louisville, KY 40232-4070

