

Use & Care Manual

With Installation Instructions for the Contractor

Gas Residential

Water Heaters

Residential 30, 40 and 50 Gallon

**Model: HG Series, GG Series, GP Series, PG Series, SG Series,
SG Series with SmartWater™ Ignition System**

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 trouble shooting of the water heater. This manual 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.

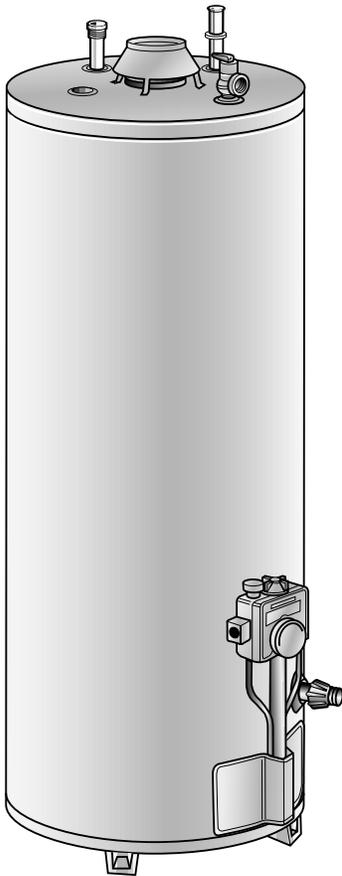
Do not destroy this manual. Please read carefully and keep in a safe place for future reference.



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.



Printed in USA

Manufactured under trademark license by:

Rheem Manufacturing Company

P.O. Box 244020, Montgomery, AL 36124-4020

Part No. AP12171-4 (3/01)

Pub. No. 49-50008-4 03-01 JR

Safety Information

Safety Precautions 3-6
 LP Gas Models 4

Installation Instructions

Location 7
 Water Connections 9
 Gas Supply 11
 Potable Space Heating 13

Operating Instructions

Lighting Instructions . . . 14, 15
 Water Temperature 16
 Adjustments 17

Care and Cleaning

Draining 18
 Burner Inspection 19
 Extended Shut-Down 19

Troubleshooting Tips

Before You Call
 For Service 20, 21

Customer Service

Parts List 22
 Product Registration . . . 23, 24

**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**

If you do need service, you can relax knowing help is only a phone call away. For service call 800-431-1549.

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 serious bodily injury or death. Should you have problems understanding the instructions in this manual, or have any questions, STOP, and get help from a qualified service technician, or the local electric utility.

⚠ DANGER! INSTALL THE DRAFT HOOD AND PROPERLY VENT THE WATER HEATER...



Failure to install the draft hood and properly vent the water heater to the outdoors as outlined in the Venting Section of the Installation Instructions in 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



<p>⚠ Vapors from flammable liquids will explode and catch fire causing death or severe burns</p> <p>Do not use or store flammable products such as gasoline, solvents or adhesives in the same room or area near the water heater.</p> <p>Keep flammable products:</p> <ol style="list-style-type: none">1. far away from heater,2. in approved containers,3. tightly closed and4. out of children's reach.	<p>Water heater has a main burner and pilot flame.</p> <p>The pilot flame:</p> <ol style="list-style-type: none">1. is on all the time and2. will ignite flammable vapors. <p>Vapors:</p> <ol style="list-style-type: none">1. cannot be seen,2. are heavier than air,3. go a long way on the floor and4. can be carried from other rooms to the pilot flame by air currents.
---	---

<p>Installation:</p> <p>Do not install water heater where flammable products will be stored or used unless the main burner and pilot flames</p>	<p>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.</p>
--	---

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.

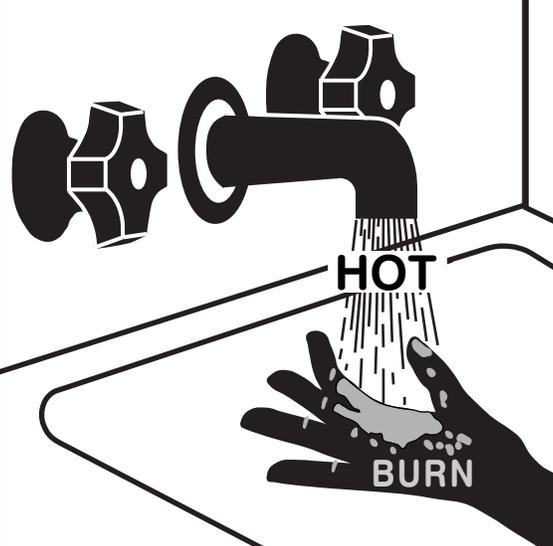
⚠️ WARNING!

WATER TEMPERATURE ADJUSTMENT



Safety and energy conservation are factors to be considered when selecting the water temperature setting of 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.

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

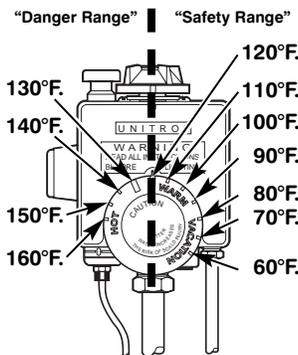
Table courtesy of Shriners Burn Institute

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. To comply with safety regulations the thermostat was set at its lowest setting before water heater was shipped from the factory.



Temperatures are approximate

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

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.

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.

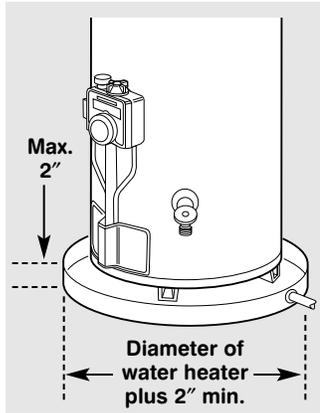


READ AND FOLLOW THIS SAFETY INFORMATION CAREFULLY.

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.



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 catch pan, adequately drained, must 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 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 open flame of the water heater's pilot light 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 desirable.

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.

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 as close as practical to the gas vent or chimney.
 - 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 1" sides and rear; 3" from front of control; 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 open flame of the pilot 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 grill, 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.

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 contain such 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

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!

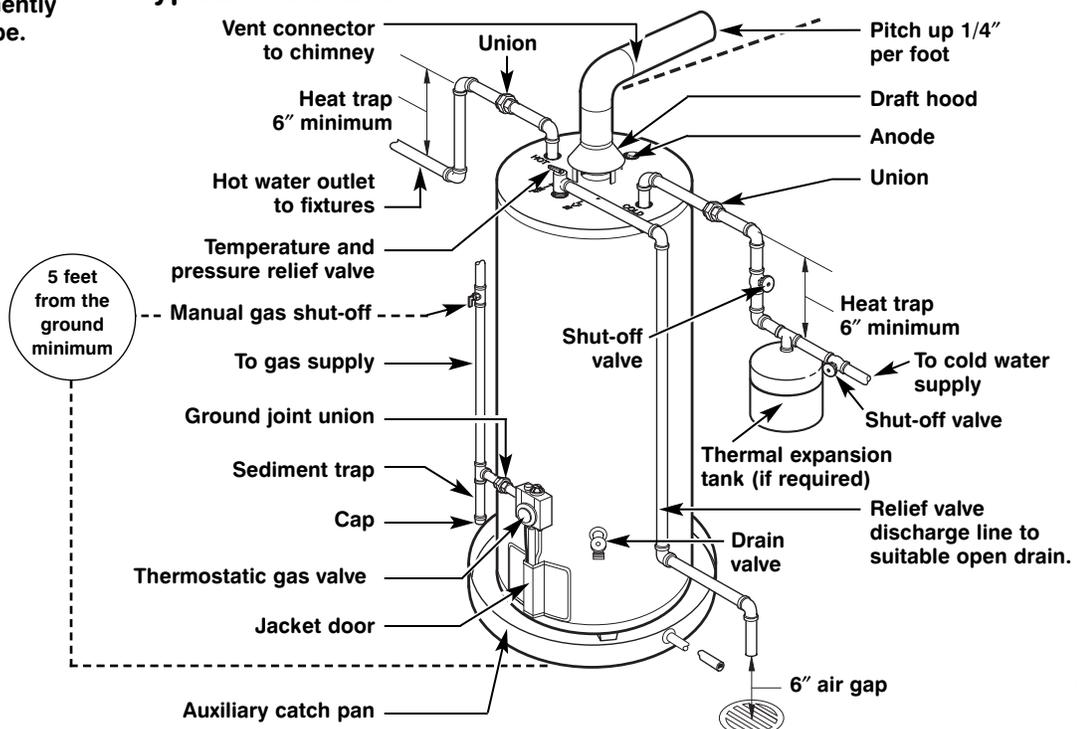
The suggested method of controlling thermal expansion is to install an expansion tank in the cold water line between the water heater and the check valve (see illustration below). The expansion tank is designed with an air cushion built in that compresses as the system pressure increases, thereby relieving 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.

IMPORTANT: 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.

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 and are 3/4" NPT on all models. Install a shut-off valve in the cold water line near the water heater.

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, is supplied and must remain 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 each hot water faucet 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.

⚠ 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. A manual gas shut-off valve should be at least 5 ft. above the floor and readily accessible.

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 thermostat 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 thermostat 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 psi (14" w.c.).

The water heater must be isolated from the gas piping system by closing the manual gas shut-off valve during any pressure testing of the gas supply piping.

High Altitude...

Ratings of gas appliances are based on sea level operation and need not be changed for installations at elevations up to 2,000 feet.

For installations above 2,000 feet, the input must be reduced per the National Fuel Gas Code for each 1,000 feet above sea level. Contact the local gas supplier for more information.

Installing the water heater.

The water heater must be installed with the factory supplied draft hood in place.

⚠ DANGER: Failure to install the draft hood and properly vent the water heater to the outdoors as outlined in the Venting section of this manual will 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 the water heater unless it is properly vented and has adequate air supply for proper operation as outlined in the Venting section of this manual.

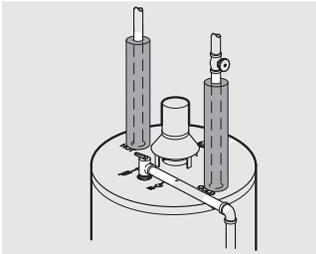
Venting

Vent connectors must be attached to the draft hood outlet to connect the water heater to the gas vent or chimney. The vent connectors must be the same size (diameter) as the draft hood or larger, never smaller.

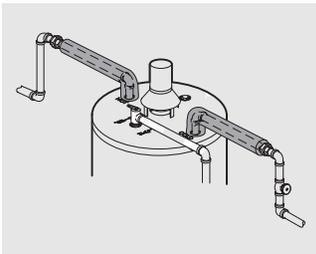
For proper venting in certain installations a larger vent connector size may be needed. Consult the Vent Tables in Appendix G of the latest version of the National Fuel Gas Code (ANSI booklet Z223.1 or NFPA booklet 54.)

Horizontal vent connectors must be pitched upward to the chimney at least 1/4" per foot of length. Single wall vent connectors must be at least 6" from adjacent unprotected combustible surface. Vent joints must be securely fastened by sheet metal screws or other approved method.

⚠ WARNING: If local codes require external application of insulation blanket kits the manufacturer's instructions included with the kit must be carefully followed.



Typical vertical piping arrangement



Typical horizontal piping arrangement

For increased energy efficiency, some water heaters have been supplied with two (2) twenty four inch sections of pipe insulation. Please install the insulation, according to the illustration on the left, that best meets your requirements.

The manufacturer's warranty does not cover any damage or defect caused by installation, attachment or use of any type of energy saving 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.

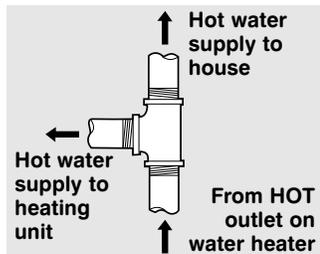
The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized devices.

⚠ CAUTION: Application of any external insulation to this water heater will require careful attention to the following:

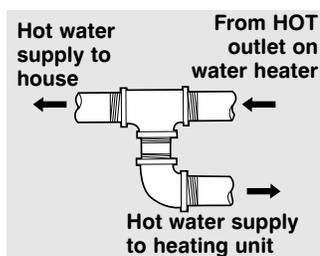
- Do not cover the operating or warning labels attached to the water heater or attempt to relocate them on the exterior of insulation blanket.
- Do not apply insulation to the top of the water heater. This will interfere with the safe operation of the draft hood.
- Do not cover the burner access panel, thermostat/gas valve or pressure and temperature relief valve.
- Do not apply insulation to the bottom of the water heater or the 2" space between the bottom pan of the water heater and the floor. This area must be unobstructed so as not to restrict combustion air flow to the burner.
- Inspect the insulation blanket frequently making certain it has not sagged and is restricting the combustion air to the bottom of the water heater. This could result in an unsafe operating condition.

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 precedent over these instructions.



Tee fitting for vertical hot water supply lines.



Tee fitting for horizontal hot water supply lines.

Combination Potable and Space Heating Application

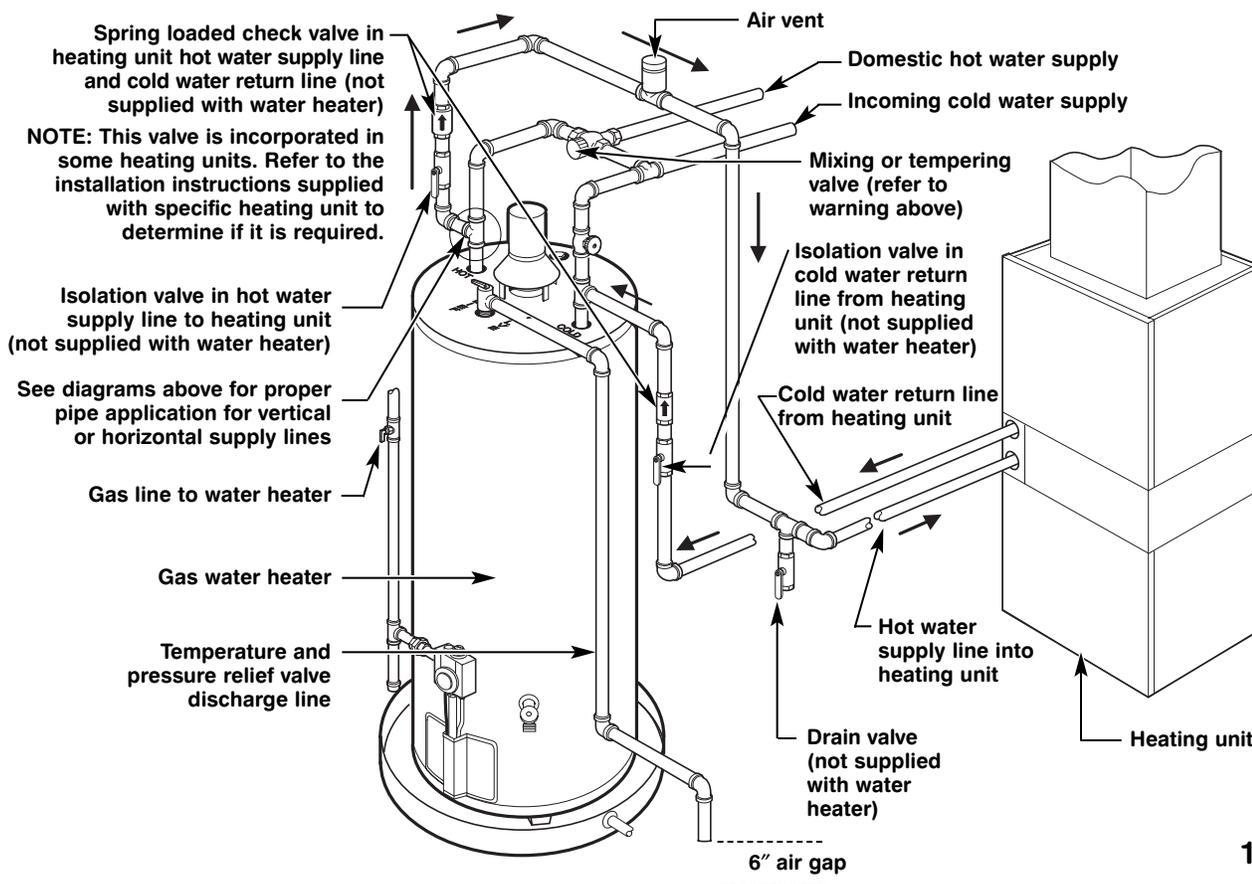
Tee fitting must be installed as shown. This insures that any air in the water lines will be purged through the domestic water faucets and showers.

⚠ 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 non drinking 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.

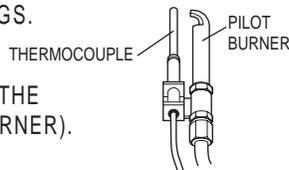
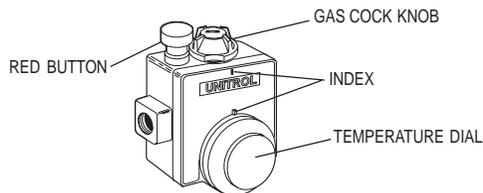
FOR YOUR SAFETY READ BEFORE OPERATING

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

- A. This appliance has a pilot which must be lighted by hand. When lighting the pilot, follow these instructions exactly.
- If you cannot reach your gas supplier, call the fire department.
- B. BEFORE PUTTING THIS APPLIANCE INTO SERVICE—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.
- C. 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 fire or explosion.
- D. 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 valve that has been under water.
- WHAT TO DO IF YOU SMELL GAS:
- Do not try to light the 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.

OPERATING INSTRUCTIONS

- STOP! READ THE SAFETY INFORMATION ABOVE ON THIS LABEL.**
 - TURN GAS COCK KNOB CLOCKWISE TO "OFF" POSITION.
 - TURN TEMPERATURE DIAL COUNTERCLOCKWISE TO LOWEST SETTING.
 - 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.
 - REMOVE BOTH THE INNER DOOR AND OUTER DOOR FROM THE WATER HEATER.
 - FOLLOW THE METAL TUBES FROM GAS CONTROL THRU DOOR OPENINGS. THE PILOT IS LOCATED ON THE HORIZONTAL LEG OF THE LARGER TUBE (OR BURNER).
 - TURN THE GAS COCK KNOB COUNTERCLOCKWISE TO "PILOT" POSITION.
 - PUSH DOWN ON THE "RED BUTTON" UNTIL IT COMES TO REST ON THE TOP OF CONTROL. IT MUST CLEAR THE NOTCH PROVIDED IN THE "GAS COCK KNOB". HOLD "RED BUTTON" DOWN AND LIGHT THE PILOT WITH A MATCH. CONTINUE TO HOLD THE "RED BUTTON" IN FOR ABOUT ONE (1) MINUTE AFTER THE PILOT IS LIT. RELEASE BUTTON AND IT WILL POP BACK UP. PILOT SHOULD REMAIN LIT. IF IT GOES OUT, REPEAT STEPS 2 THROUGH 8.
 - REPLACE INNER AND OUTER DOORS.
 - TURN "GAS COCK KNOB" COUNTERCLOCKWISE TO "ON".
 - TURN THE TEMPERATURE DIAL TO THE DESIRED SETTING.
- IF THE BUTTON DOES NOT POP BACK UP WHEN RELEASED, STOP AND IMMEDIATELY CALL YOUR SERVICE TECHNICIAN OR GAS SUPPLIER.
 - IF THE PILOT WILL NOT STAY LIT AFTER SEVERAL TRIES, TURN THE "GAS COCK KNOB" TO "OFF" AND CALL YOUR SERVICE TECHNICIAN OR GAS SUPPLIER.



TO TURN OFF GAS TO APPLIANCE

- TURN TEMPERATURE DIAL COUNTERCLOCKWISE TO LOWEST SETTING.
- TURN GAS COCK KNOB CLOCKWISE TO "OFF" POSITION.

Lighting the water heater. (With SmartWater™ Ignition System)

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

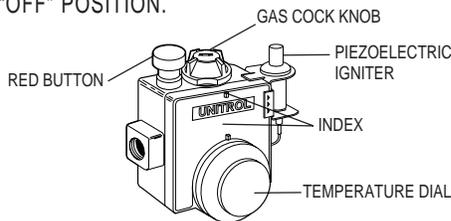
WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- A. This appliance is equipped with a piezoelectric igniter which lights the pilot. When lighting the pilot, follow these instructions exactly.
- B. BEFORE PUTTING THIS APPLIANCE INTO SERVICE—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.
WHAT TO DO IF YOU SMELL GAS:
 - Do not try to light the appliance.
 - Do not touch any electrical switch; do not use any phone in your building.
- C. 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 attempt to repair may result in a fire or explosion.
- D. 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.

OPERATING INSTRUCTIONS

1. STOP! READ THE SAFETY INFORMATION ABOVE ON THIS LABEL.

2. TURN THE GAS COCK KNOB CLOCKWISE TO "OFF" POSITION.

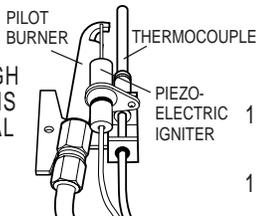


3. TURN THE TEMPERATURE DIAL COUNTERCLOCKWISE TO LOWEST SETTING.

4. 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.

5. REMOVE BOTH THE INNER DOOR AND OUTER DOOR FROM THE WATER HEATER.

6. FOLLOW THE METAL TUBES FROM GAS CONTROL THROUGH DOOR OPENINGS. THE PILOT IS LOCATED ON THE HORIZONTAL LEG OF THE LARGER TUBE (OR BURNER).



7. TURN THE GAS COCK KNOB COUNTERCLOCKWISE TO "PILOT" POSITION.

8. PUSH DOWN THE "RED BUTTON" UNTIL IT COMES TO REST ON THE TOP OF CONTROL. IT MUST CLEAR THE NOTCH PROVIDED IN THE "GAS COCK KNOB". HOLD "RED BUTTON" DOWN AND IMMEDIATELY DEPRESS THE IGNITER UNTIL YOU HEAR A LOUD CLICK. REPEAT IMMEDIATELY IF PILOT DOES NOT LIGHT ON THE FIRST TRY. IF PILOT DOES NOT LIGHT BY THE FOURTH ATTEMPT, REPEAT STEPS 2 THROUGH 8. AFTER THE PILOT IS LIT, CONTINUE TO HOLD THE "RED BUTTON" IN FOR ABOUT ONE (1) MINUTE. RELEASE BUTTON AND IT WILL POP BACK UP. PILOT SHOULD REMAIN LIT. IF IT GOES OUT, REPEAT STEPS 2 THROUGH 8.

• IF THE BUTTON DOES NOT POP BACK UP WHEN RELEASED, STOP AND IMMEDIATELY CALL YOUR SERVICE TECHNICIAN OR GAS SUPPLIER.

• IF THE PILOT WILL NOT STAY LIT AFTER SEVERAL TRIES, TURN THE "GAS COCK KNOB" TO "OFF" AND CALL YOUR SERVICE TECHNICIAN OR GAS SUPPLIER.

9. REPLACE INNER AND OUTER DOORS.

10. TURN "GAS COCK KNOB" COUNTERCLOCKWISE TO "ON".

11. TURN THE TEMPERATURE DIAL TO THE DESIRED SETTING.

TO TURN OFF GAS TO APPLIANCE

1. TURN TEMPERATURE DIAL COUNTERCLOCKWISE TO LOWEST SETTING.
2. TURN GAS COCK KNOB CLOCKWISE TO "OFF" POSITION.

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 is present, there will 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** Do turn off manual gas shut-off valve if water heater has been subjected to over heating, 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 allow combustible materials such as newspaper, rags or mops to accumulate near water heater.
 - E** 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 should be shut off including their pilot lights, to avoid vapors lighting.
- NOTE: Flammable vapors may be drawn by air currents from surrounding areas to the water heater.**
- F** 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 serviceman perform the work.

Water Temperature Setting

⚠ 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.

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

Safety and energy conservation are factors to be considered when selecting the water temperature setting of the water heater's thermostat(s). The lower the temperature setting, the greater the savings in energy and operating costs.

To comply with safety regulations the thermostat was factory set at 120°F. or less where local codes require. This is the recommended starting point.

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.	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

Operating the water heater.

If adjustment is necessary...

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

The wide reference mark near WARM on the rim of the temperature dial, represents an approximate water temperature of 120°F.

The long wide reference mark, to the left, represents an approximate water temperature of 130°F.

Each reference mark above or below these points indicates an approximate change of 10°F.

To adjust the temperature, turn the temperature dial to the desired setting.

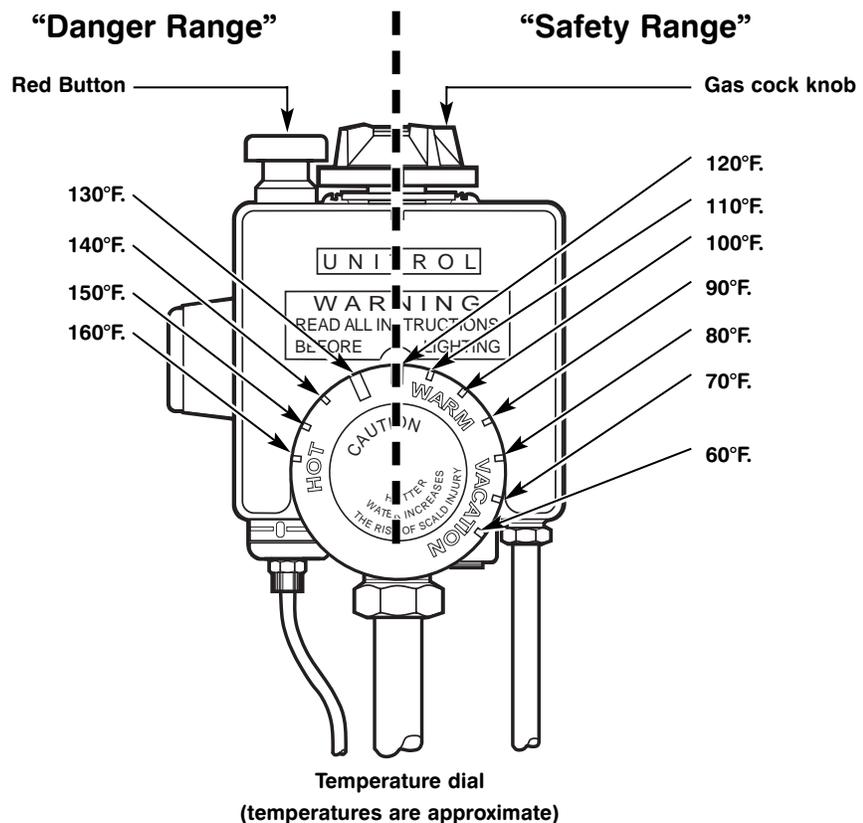
The thermostat is constructed with a built in safety shut-off device designed to shut off the gas supply to the burner if the pilot flame is extinguished for any reason.

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 heater exceeds normal operating temperatures. Refer to the BEFORE YOU CALL FOR SERVICE section of this manual, or contact your dealer.

▲ WARNING: Should overheating occur or the gas supply fail to shut off, turn off the manual gas control valve to the appliance.

If the water heater has been subjected to fire, flood or physical damage, turn off the manual gas control (shut-off) valve, and do not operate the water heater again until it has been checked by qualified personnel.

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



Care and cleaning of the water heater.



Draining the Water Heater

⚠ CAUTION: Shut off gas to the water heater at the thermostat gas cock or manual shut-off valve before draining water.

⚠ DANGER: Before manually operating the relief valve, make certain no one will be exposed to the hot water released by the valve. 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, turn off the cold water supply. Open a hot water faucet or lift the handle on the relief valve to admit air to the tank.

Attach a garden hose to the drain valve on the water heater and direct the stream of water to a drain. Open the valve.

⚠ 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 Preventative Maintenance

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

It is suggested 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, internal flue-way and venting system should be made by service personnel qualified in gas appliance repair.

At least once a year, lift and release the lever handle on the temperature 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.

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 setting basin for solids suspended in the water. It is therefore not uncommon for hard water deposits to accumulate in the bottom of the tank. 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.

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.

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.

Housekeeping

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

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

⚠ DANGER: Combustible materials, such as clothing, cleaning materials, or flammable liquids, etc., 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 by removing the draft hood and flue baffle.

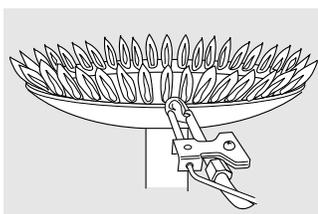
When reinstalling the flue baffle make certain it is hung securely by its hanger at the top of the flue way.

Remove any scale that may have fallen on the burner or floor shield and reinstall the draft hood.

Inspect the gas venting system and the chimney.

Make certain the vent connector from the draft hood to the chimney is properly positioned and securely attached.

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.

Inspect the main burner while firing and pilot burner flame with the main burner off.

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.

Vacation and Extended Shut-Down

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

If the water heater is to remain idle for an extended period of time, the power and water to the appliance should be turned off to conserve energy and prevent a build-up of dangerous hydrogen gas.

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.

Anode Rod

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.

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.

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
Condensation	This usually happens when a new water heater is filled for the first time.	● This is normal. After the water in the tank warms up the condensation will disappear. If, however, the condition persists, examine the piping and fittings for possible leaks.
	Moisture from the products of combustion condensing on the tank surface.	● This is normal and will disappear in time. Excessive condensation can cause pilot outage.
	An undersized water heater will cause condensation.	● Use a water heater size that meets the requirements of your needs.
Yellow flame or sooting	Scale on top of the burner.	● Shut off the water heater and remove scale.
	Combustion air inlets or flue-way restricted.	● Remove lint or debris and inspect air inlet opening for restriction.
	Not enough combustion or ventilation air supplied to the water heater location.	● Proper operation of the water heater requires air for combustion and ventilation. See the Combustion and Ventilation Air information in the Locating the water heater section of this manual.
Unable to light the pilot	Temperature dial not correctly positioned.	● See the Lighting the water heater section of this manual.
	Pilot orifice clogged.	● The pilot should be cleaned or replaced by a qualified service technician.
	Pilot tube pinched or clogged.	● The pilot should be cleaned, repaired or replaced by a qualified service technician.
	Air in gas line.	● Contact a qualified service technician to purge the air from the gas line.
Pilot does not stay lit when the RED button is released	Loose thermocouple.	● The connection at the thermostat should be tightened by a qualified service technician.
	Thermocouple breakdown.	● The thermocouple should be replaced by a qualified service technician.
	Safety magnet breakdown.	● The thermostat should be replaced by a qualified service technician.
	Thermostat's single use gas shut-off device has opened.	● The thermostat should be replaced by a qualified service technician.

⚠ 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.

Problem	Possible Causes	What To Do
Rumbling noise	Scale and sediment in tank.	● Clean tank.
Relief valve producing popping noise or draining	Pressure build up caused by thermal expansion to a closed system.	● This is an unacceptable condition and must be corrected. Contact the water supplier or plumbing contractor on how to correct this. Do not plug the relief valve outlet.
Rattling noise during periods of water usage	Internal heat trap fittings in operation.	● This is normal for heat trap fittings when in operation and does not indicate a need for service.
Not enough or no hot water	Water usage may have exceeded the capacity of the water heater.	● Wait for the water heater to recover after an abnormal demand.
	Low gas pressure.	● Check gas supply pressure and manifold pressure.
	The pilot may be out.	● Check the pilot. If necessary, relight using the instructions in the Lighting the water heater section of this manual.
	The thermostat may be set too low.	● See the Temperature regulation of the water heater section of this manual.
	Leaking or open hot water faucets.	● Make sure all faucets are closed.
	Cold water inlet temperature may be colder during the winter months.	● This is normal. The colder inlet water takes longer to heat.
Water is too hot	The thermostat is set too high.	● See the Temperature regulation of the water heater section of this manual.

▲ 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.

Replacement Parts.

For 30, 40 and 50 gallon models using natural or LP gas.

Instructions For Placing a Parts Order

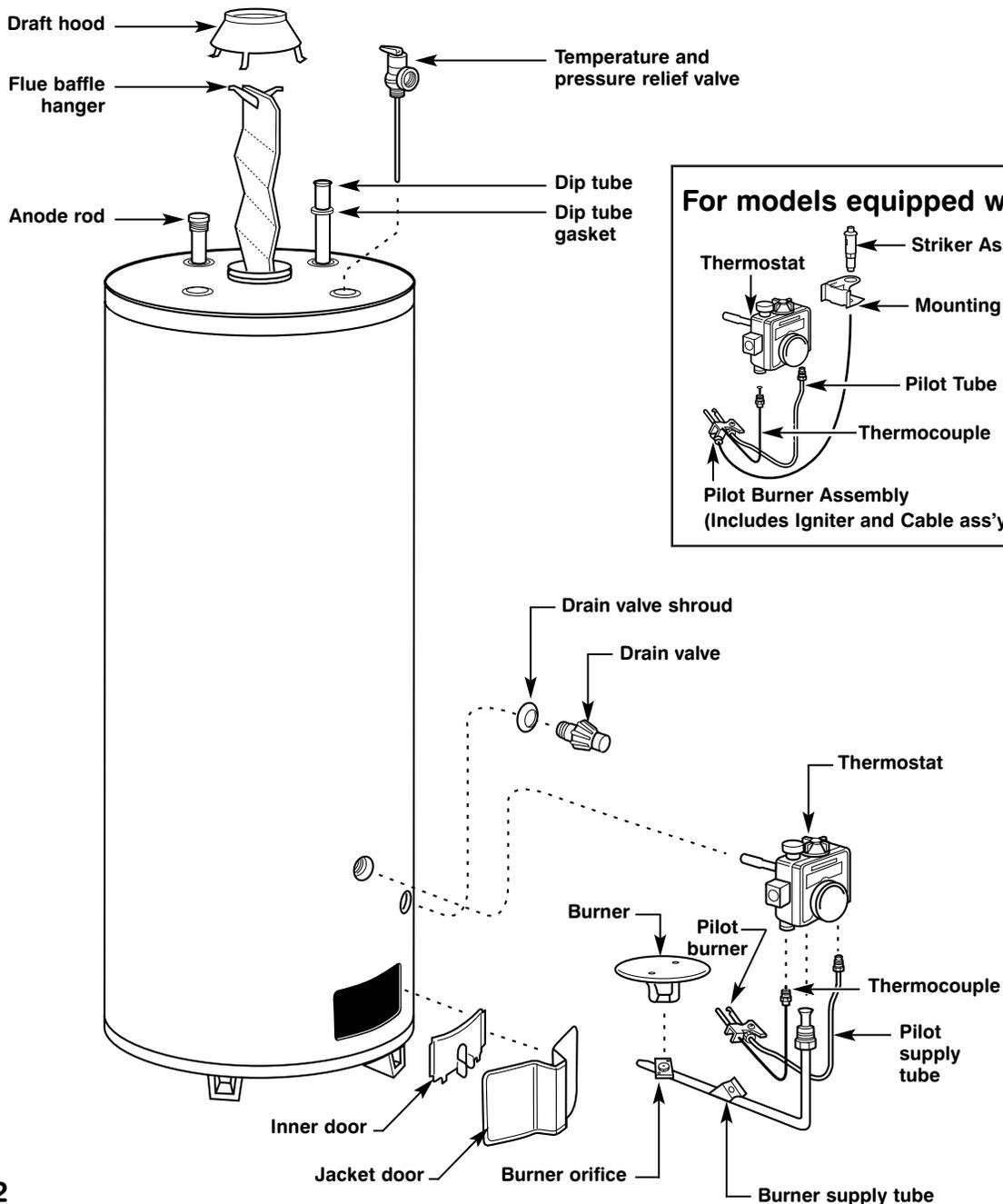
To place orders using a Visa/MasterCard call 800-431-1549.

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.



 Cut here

 Cut here

Please place in envelope and mail to:

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

