John Wood®

INSTALLATION AND OPERATING INSTRUCTIONS

Read these instructions thoroughly before starting

ATMOSPHERIC VENTED WATER HEATER

⚠ WARNING:

Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information, consult a qualified installer, service agency, or the gas utility.

⚠ FOR YOUR SAFETY

- **Do not store or use gasoline or other flammable vapours and liquids in the vicinity of this or any other appliance.**
- **Installation and service must be performed by a qualified installer, service agency or the gas utility.**

⚠ WARNING:

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

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.**

DESIGN CERTIFIED®

CERTIFIED®

PART NO. **324333-000 Rev. 01** (13-04)

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RETAIN THESE INSTRUCTIONS IN A SAFE LOCATION FOR FUTURE REFERENCE

Your safety and the safety of others is very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.

This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others. All safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING".

DANGER **You can be killed or seriously injured if you don't immediately follow instructions.**

WARNING **You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

I) INTRODUCTION

We thank you for choosing a Flammable Vapour Resistant Water Heater. Your satisfaction with this product is very important to us. This gas-fired water heater has been developed to produce domestic hot water and may also be used in combination with space heating applications but not space heating only. The Flame Guard™ safety system is designed to reduce the risk of flammable vapour related fires by trapping the burning vapours within the water heater combustion chamber using the special flame arrestor. The burning vapours literally "burn themselves out" without escaping back into the room.

User Responsibilities

These instructions have been written for the proper installation, safe operation and maintenance of this water heater. It is your responsibility to ensure that your water heater is properly installed and cared for.

FAILURE TO FOLLOW THE INSTRUCTIONS IN THIS MANUAL MAY RESULT IN SERIOUS BODILY INJURY AND/OR PROPERTY DAMAGE. THOROUGHLY READ ALL INSTRUCTIONS BEFORE YOU ATTEMPT TO INSTALL, OPERATE OR MAINTAIN THIS HEATER.

Installation and service requires trade knowledge in the area of plumbing, electricity, venting, air supply and gas supply. If you lack these skills or do not understand these instructions, enlist the help of a qualified professional.

The manufacturer of this water heater cannot be held liable for those damages caused by improper installation, sizing or failure to comply with these instructions.

Protect your warranty: Regularly maintain your water heater and venting system as detailed in the "Maintenance" section of this manual.

⚠WARNING

Service to the Flame Guard™ safety system should only be performed by a qualified service technician.

II) SAFETY

This water heater is design-certified by CSA International as a Category I, non-direct vented water heater which takes its combustion air either from the installation area or from air ducted to the unit from the outside.

In addition to the installation instructions found in this manual, the heater shall be installed according to all local and provincial or state codes and with the latest edition of the following specifications.

For Installations in Canada

"Natural Gas and Propane Installation Code" CSA-B149.1 and **"Canadian Electrical Code (CAN/CSA C22.1), Part I"** available from:

Canadian Standards Association,
5060 Spectrum Way,
Mississauga, Ontario, Canada
L4W 5N6

For Installations in the United States

"National Fuel Gas Code" ANSI Z223.1 (NFPA 54) and **"National Electrical Code" (NFPA 70)"** available from:

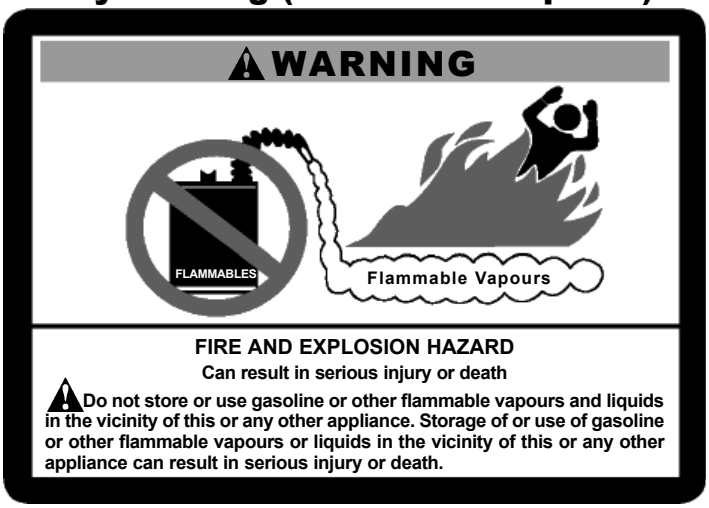
American National Standards Institute,
25 West 43rd Street,
New York, NY 10036

Massachusetts code requires this water heater to be installed in accordance with Massachusetts Plumbing and Fuel Gas Code 248 CMR Section 2.00 and 5.00.

Check your phone listings for the local authorities having jurisdiction over your installation.

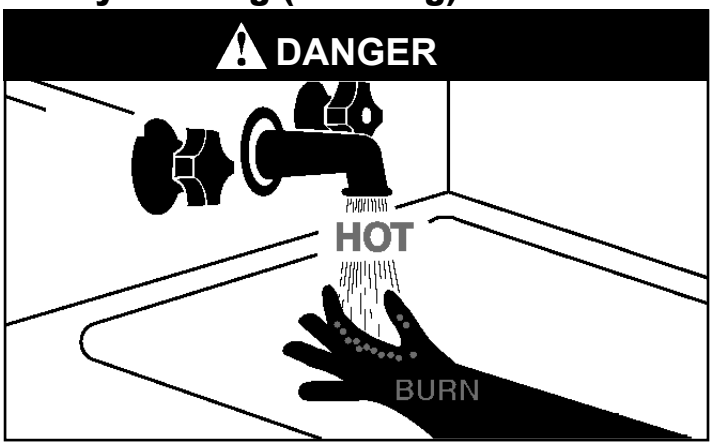
Important: All supply equipment, installation, approvals, permits, inspections, etc. are the responsibility of the owner of this water heater. Consult your local authorities for regulations specific to your area.

Safety Warning (Flammable Vapours)



There is a risk in using fuel-burning appliances such as water heaters. Areas that may not be suitable for water heater installation include those where flammable liquids, gasoline, solvents, adhesives, etc., or engine-driven equipment or vehicles are stored, operated or repaired. Due to the nature of air movement, flammable vapours can be carried some distance from the point of storage. The gas-fired water heater igniter or main burner flame can ignite these vapours causing a flashback, fire or explosion which may result in serious personal injury or death, as well as severe property damage.

Safety Warning (Scalding)



Hot water produced by this appliance can cause severe burns due to scalding. The hazard is increased for young children, the aged or the disabled where water temperatures exceed 52°C (125°F). Use tempering valves (see Figure 7), in the hot water system to reduce the risk of scalding at point-of-use such as lavatories, sinks and bathing facilities. Such precautions must be followed when this heater is operated in combination with dishwashing or space heating applications.

Safety Warning (Carbon Monoxide)

As with all fuel burning equipment, this heater requires an adequate supply of air for combustion and ventilation. An insufficient air supply can result in poor combustion or the re-circulation of the exhaust flue gases. Such a condition can cause soot build-up or present a fire hazard, and may result in serious bodily harm or death from asphyxiation.
MAKE SURE THE FLOW OF COMBUSTION AND VENTILATION AIR IS NOT RESTRICTED.

DANGER
Carbon Monoxide Warning

- **Follow all vent system requirements by the local authorities having jurisdiction over your installation.**
- **Failure to do so can result in death, explosion or carbon monoxide poisoning.**

Relief Valves (T&P)

All water heaters must be installed with a proper temperature and pressure relief valve. These valves must be certified as meeting the requirements of the **"Standard for Temperature, Pressure, Temperature and Pressure Relief and Vacuum Relief" CSA 4.4** in Canada. In the United States **"Relief Valves and Automatic Gas Shut-Off Devices for Hot Water Supply Systems", ANSI Z21.22** is applicable.

If this water heater has been exposed to flooding, freezing, fire or any unusual condition, do not put it into operation until it has been inspected and approved by a qualified professional. THESE CONDITIONS CAN RESULT IN UNSEEN INTERNAL DAMAGE which is not subject to warranty coverage.

Backflow Prevention

Certain jurisdictions may require the installation of a backflow device (e.g., check valve) in the water supply line. Such a device will require the use of a system expansion tank of adequate size to control the thermal expansion generated during the heating cycle. Consult your water supplier or local plumbing authority.
Important: The supply water meter may have a built-in check valve device. Contact your local water authority.

CAUTION

Hydrogen gas can be produced in a hot water system served by this heater that has not been used for a long period of time (generally two (2) weeks or more). **Hydrogen gas is extremely flammable and can ignite when exposed to a spark or flame.** To reduce the risk of injury under these conditions, it is recommended that the hot water faucet be opened for several minutes at the kitchen sink before using any electrical appliance connected to the hot water system. Use caution in opening faucets. If hydrogen is present, there will probably be an unusual sound such as air escaping through the pipe as the water begins to flow. There should be no smoking or open flame near the faucet at the time it is open.

III) INSTALLATION

Unpacking the Water Heater

⚠WARNING

Excessive Weight Hazard

Use two or more people to move and install water heater. Failure to do so can result in back or other injury.

Important: Do not remove any permanent instructions, labels or the rating plate from the outside of the water heater or on the inside of panels.

1. Move the water heater to the location of installation before removing the exterior packaging.
2. Remove exterior packaging and place installation components aside.
3. Inspect all parts for damage prior to installation and start-up.
4. Completely read and understand all instructions before attempting to assemble and install this product.

If you observe damage to the water heater or any of its components, DO NOT ASSEMBLE OR INSTALL IT OR MAKE ANY ATTEMPT TO FIX THE DAMAGED PART(S). Contact the place of purchase for further instructions.

5. After installation, dispose of packaging material in the proper manner.

Location Requirements

IMPORTANT:

This water heater must be installed strictly in accordance with the instructions enclosed, and local electrical, fuel and building codes. It is possible that connections to the water heater, or the water heater itself, may develop leaks. IT IS THEREFORE IMPERATIVE that the water heater be installed so that any leakage of the tank or related water piping is directed to an adequate drain in such a manner that it cannot damage the building, furniture, floor covering, adjacent areas, lower floors of the structure or other property subject to water damage. This is particularly important if the water heater is installed in a multi-story building, on finished flooring or carpeted surfaces. THE MANUFACTURER WILL NOT ASSUME ANY LIABILITY for damage caused by water leaking from the water heater, pressure relief valve, or related fittings. Select a location as centralized within the piping system as possible. In any location selected, it is recommended that a suitable drain pan be installed under the water heater. This pan must limit the water level to a MAXIMUM depth of 45mm (1 3/4 in.) and have a diameter that is a minimum of 50mm (2 in.) greater than the diameter of the water heater. Suitable piping shall connect the drain pan to a properly operating floor drain. When used with a fuel-fired heater, this drain pan must not restrict combustion air flow.

Note: Before installing this water heater, consideration and planning must be given to the following details:

- Location and Clearances.
- Access for gas supply; See “Gas Supply”.
- How and where to obtain combustion and ventilation air supply; See “Air Requirements”.
- Routing and support of the vent piping.
- Position of water supply and placement of water piping for hot and cold water; See “Water Supply”.
- Floor drain and service.

In Earthquake Zones

Note: The water heater must be braced, anchored, or strapped to avoid moving during an earthquake. Contact local utilities for code requirements in your area.

Note: REVIEW SAFETY WARNINGS FOUND IN THE FRONT OF THIS MANUAL BEFORE PROCEEDING

Clearances and Accessibility

Specific clearance locations are shown in Figure 3. A minimum of 600mm (24 in.) of front clearance shall be provided for inspection and service. We recommend that 0.9m (36 in.) above be maintained for serviceability.

Locate the water heater such that all controls are easily accessible, and the rating plate is visible.

Clearance to combustibles varies by model. Refer to rating plate to confirm clearances.
Heaters with a volume of 19 gallons through 50 gallons and 60 gallon (standard input) must have the following minimum clearances to combustibles:

Front	102mm (4 in.)
Sides and Rear	25mm (1 in.)
Top	203mm (8 in.)
Flue	152mm (6 in.)

JW6058 and G6058 (high input) series heaters must have the following minimum clearances to combustibles:

Front	127mm (5 in.)
Sides and Rear	25mm (1 in.)
Top	203mm (8 in.)
Flue	152mm (6 in.)

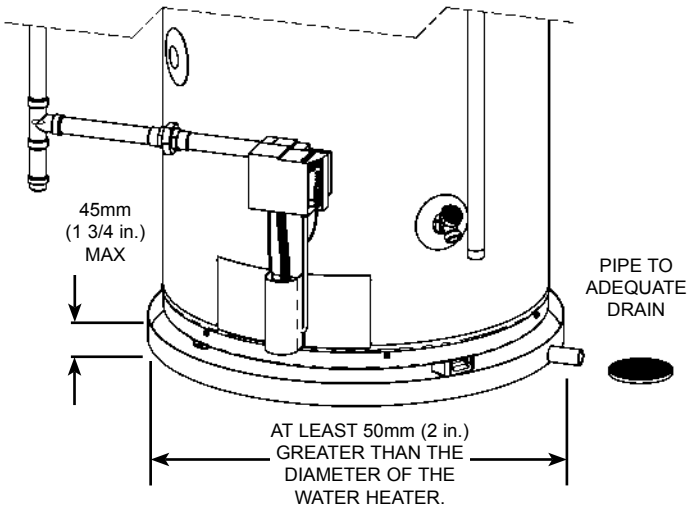


Figure 1 Typical Drain Pan Installation

The 60 gallon heater is equipped with a Heat Reflector Shield (see Figure 2). This Shield reflects heat from the High-input heaters to prevent damage to combustible floors. The Shield is held in place by three (3) tabs that rest on the inside of the legs of the water heater. Ensure the Shield is positioned horizontally (parallel to the bottom of the heater) and in the designated position of 38mm (1.5 in.) below the flame-arrestor.

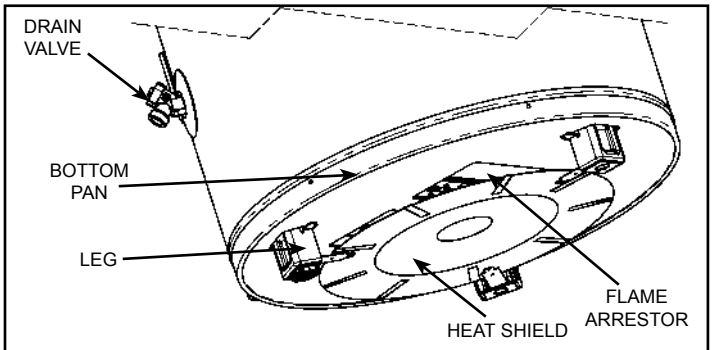


Figure 2 Heat Shield Installation (60 gallon only)

⚠ WARNING

Do not install directly on carpet. Instead, place the water heater on a metal or wood panel extending a minimum of 75mm (3 in.) from all sides. In alcoves or closets, cover the carpet completely. Ensure this panel is capable of supporting the weight of this heater when filled with water.
FAILURE TO PROPERLY INSTALL THIS HEATER MAY RESULT IN A FIRE HAZARD.

The water heater shall be located in an area not subject to freezing temperatures. Water heaters located in unconditioned spaces (e.g., attics, basements, etc.) may require insulation of the water and drain piping to protect against freezing. Proper ventilation needs to be provided for water heaters installed in unconditioned spaces (e.g., attics, basements, etc.) in order to avoid an event where air temperature exceeds 42°C (108°F). The drain and controls must be easily accessible for operation and service. Maintain proper clearances as specified on the data plate.
Ensure that the water heater is level. This heater may be installed in a closet or alcove and is certified for operation on a combustible floor.

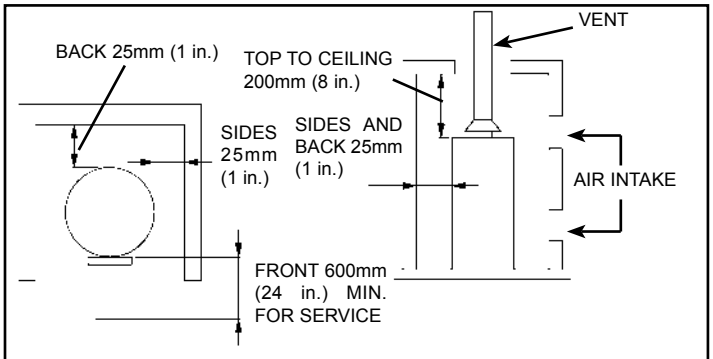


Figure 3 Minimum Clearance Locations

Do not locate the water heater near an air-moving device. The operation of air-moving devices such as exhaust fans, ventilation systems, clothes dryers, fireplaces, etc., can affect the proper operation of the water heater. Special attention must be given to conditions these devices may create. Flow reversal of flue gases may cause an increase of carbon monoxide inside of the dwelling.
If the water heater is located in an area that is subject to an excessive amount of lint, dirt or oil, it may be necessary to clean the flame arrestor periodically (see “Maintenance” section).

Important: It is always recommended that a suitable drain pan (field supplied) be installed under the water heater to protect the area from water damage resulting from normal condensation, a leaking tank or piping connections. Refer to Figure 1. Under no circumstances is the manufacturer to be held responsible for any water damage in connection with this water heater.

Gas Supply

Install the gas piping as shown in Figure 4. Use only new pipe and fittings with clean-cut threads. Sealing compounds used on the pipe threads shall be approved for use with natural and propane gas.
Use gas piping of adequate sizing to ensure gas input. Gas piping material must be approved for use with natural gas and propane fuels. All piping must comply with all local codes and with the latest edition of **“Natural Gas and Propane Installation Code” CSA-B149.**1 in Canada, **“National Fuel Gas Code” ANSI Z223.1 (NFPA 54)** in the U.S.A. The final connection to the water heater is made using 1/2” NPT.
Before connecting to the gas service, check that a properly sized gas meter and regulator are available to service the water heater. If other appliances are using the same meter and regulator, ensure that the capacity of the meter and regulator matches that of the combined input of all appliances connected to it.
DO NOT tamper with the gas control/thermostat, igniter, thermocouple, or temperature and pressure relief valve. Tampering voids all warranties. Only a qualified service technician should service these components.

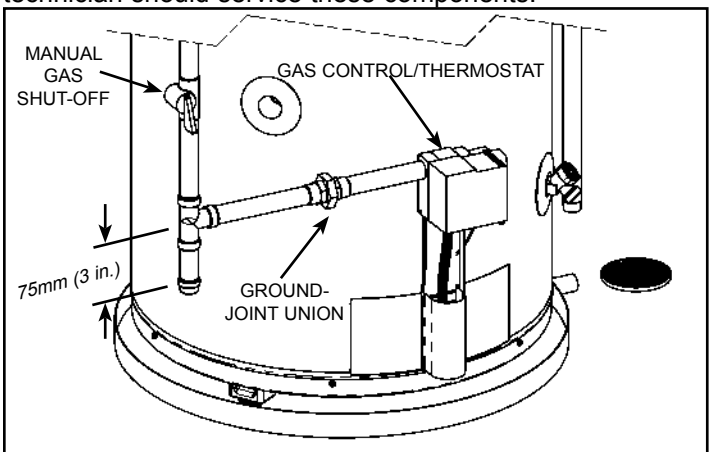


Figure 4 Recommended Gas Piping

Gas Pressure

⚠WARNING

Exposure to a higher gas supply pressure may cause damage to the control, resulting in explosion or fire. Consult your local gas supplier and gas authorities. DO NOT PUT INTO SERVICE IF OVER-PRESSURIZATION HAS OCCURRED.

The manufacturer recommends that the gas supply pressure, as measured on the inlet side of the water heater control, be set at 7.0 in. w.c.(1.7 kPa) for natural gas and 11.0 in. w.c. (2.7 kPa) for propane gas. The above pressures must be measured during water heater operation.

The gas control supplied with this water heater is designed for a maximum inlet pressure of 0.5 psi (14 in. w.c.). Do not exceed this limit. The Flame Guard™ safety system is designed to operate within the pressure ranges shown in Table 1. Rated manifold pressures are indicated on the rating plate of the water heater.

Rated Manifold Pressure. in. w.c. (kPa)	Min. Manifold Pressure. in. w.c. (kPa)	Max. Manifold Pressure. in. w.c. (kPa)
10 (2.48)	9.2 (2.28)	10.2 (2.53)
5 (1.24)	4.5 (1.11)	5.1 (1.26)
4 (0.99)	3.6 (0.89)	4.4 (1.09)

Table 1 Manifold Pressure

Gas line purging

Gas line purging is required to eliminate air from the piping system. Purging should be performed by persons experienced in this type of gas service in compliance with the code having jurisdiction. Do not purge in confined areas or space where ignition may occur. To avoid risk of fire or explosion ensure the area is well ventilated and all sources of ignition are de-activated. Contact your local gas authority for local requirements.

Gas Leak Testing

Important: This water heater and its gas connection must be tested for leaks before placing the appliance in operation. Perform a leak test at normal gas pressure. If the applicable code(s) require the gas lines to be tested at a pressure of 14 in. w.c. (3.5 kPa) or greater, the water heater and its manual shut-off valve must be disconnected from the gas supply piping system and the line capped. Test all connections of the gas system with a chloride-free soap and water solution or equivalent leak test liquid. Bubbles will indicate leaks. Never use a match or open flame to test for gas leaks. A fire or explosion could result. If leaks exist repair as required and retest.

DO NOT light the burner before the tank is filled with water and you have confirmed that there are no leaks in the piping and connections.

Air Requirements

Important: Air for combustion and ventilation must not come from a corrosive atmosphere. Any failure due to corrosive elements in the atmosphere is excluded from warranty coverage.

Installations in or for certain places including, but not limited to, those listed below may require outdoor air for combustion to reduce the risk of chemical exposure:

- Beauty shops, Photo processing labs
- Buildings with indoor pools
- Water heaters installed in laundry, hobby or craft rooms
- Water heaters installed near chemical storage areas

In such circumstances, outdoor combustion air may reduce, but will not eliminate the presence of corrosive chemicals in the air. Combustion air must be free of acid-forming chemicals such as sulfur, fluorine and chlorine. These elements are found in aerosol sprays, detergents, bleaches, cleaning solvents, air fresheners, paint and varnish removers, refrigerants and many other commercial and household products. When burned, vapours from these products form highly corrosive acid compounds. These products should not be stored or used near the water heater or air inlet.

Adequate combustion and ventilation air must be provided for operation of this water heater and all appliances located within the enclosure/structure. Follow the requirements of **"Natural Gas and Propane Installation Code" CSA B149.1** in Canada and **"National Fuel Gas Code" ANSI Z223.1 (NFPA 54)** in the USA. If you are unsure call your gas supplier. Failure to provide the proper amount of combustion and ventilation air can result in a fire or explosion and cause death, serious bodily injury or property damage. Ensure sufficient ventilation air to prevent elevated temperatures.

When an exhaust fan is installed in the same room as the water heater, the supply air openings must be of sufficient capacity to prevent a backflow of air through the water heater exhaust venting.

Exhaust Venting

Vent Pipe System

This water heater is a Category 1, non-direct vented appliance. The vent pipe must be sized and installed in accordance with all local and provincial or state codes and with the latest edition of **"Natural Gas and Propane Installation Code" CSA-B149.1** in Canada, **"National Fuel Gas Code" ANSI Z223.1 (NFPA 54)** in the U.S.A.

Check for proper vent size

It is possible that the existing venting system was sized, for a previous installation, through a common vent. Such an arrangement is appropriate for venting two appliances such as the original water heater and a standard vent furnace. If this is true and the second appliance has been removed from the existing venting system (such as when the furnace has been upgraded to a power vent type), the venting system is now supplying only one appliance. This condition is commonly referred to as "orphaning" the water heater and the venting system must be properly resized for a single appliance. Improper sizing can cause a number of undesirable and potentially unsafe results including spillage of the products of combustion into the room, poor combustion, excessive condensation, pilot outage or delayed ignition. The vent pipe must not be obstructed so as to prevent the removal of exhaust gases to the outside atmosphere. For proper sizing, refer to **"Natural Gas and Propane Installation Code" CSA-B149.1**.

Note: The horizontal section of the vent must slope up 21mm per metre (1/4 in. per foot), (see Figure 5).

CSA/U.L. recognized fuel gas and carbon monoxide (CO) detectors are recommended in all applications and should be installed using the manufacturer's instructions and local codes, rules or regulations.

Important: If you lack the necessary skills required to properly install this venting system, you should not proceed, but enlist the help of a qualified service technician.

Drafthood Installation

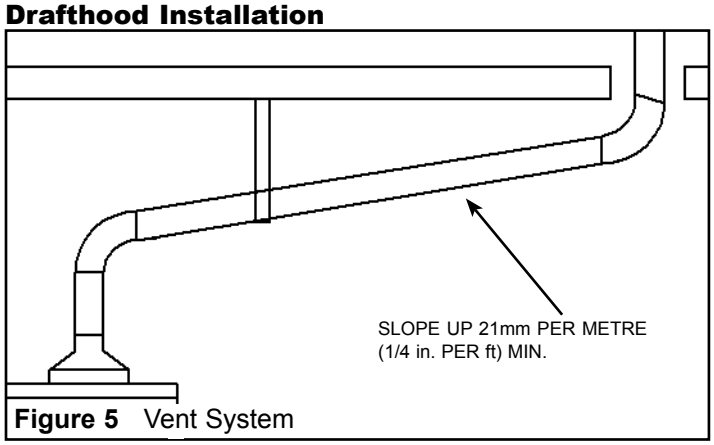


Figure 5 Vent System

Hook the tab leg of the drafthood into the slot in the heater's top. Align the remaining legs with the hole/dimples and secure the drafthood to the top with three screws. Do not alter the drafthood in any way. If you are replacing an existing water heater be sure to use the new drafthood supplied with the water heater.

Water Supply

Piping Installation

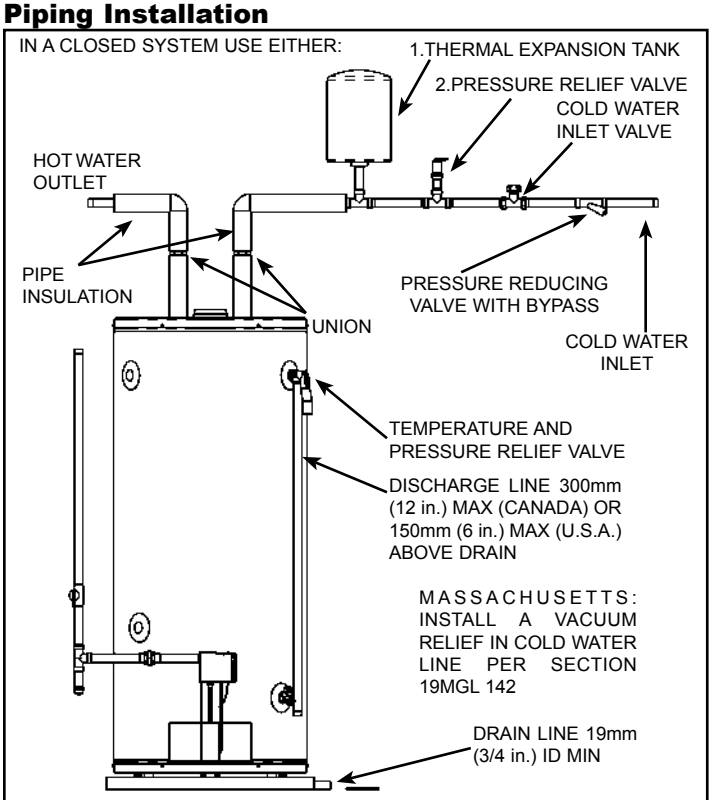


Figure 6 Example Of Water Piping Installation

Piping, fittings, and valves should be installed according to the installation drawing (see Figure 6). If the indoor installation area is subject to freezing temperatures, the water piping must be protected by insulation. Water supply pressure should not exceed 550 kPa (80psi). If this occurs a pressure reducing valve and/or an expansion tank may be required. The pressure reducing valve should be placed on the supply to the entire house in order to maintain equal hot and cold water pressures.

Important: Heat must not be applied to the water fittings on the heater as they may contain nonmetallic parts. If solder connections are used, solder the pipe to the adapter before attaching the adapter to the hot and cold water fittings.

Install the water piping and fittings as shown in Figure 6. Connect the cold water supply to the fitting (3/4" NPT)

marked “COLD” (or “C”). Connect the hot water supply to the fitting (3/4” NPT) marked “HOT” (or “H”).

Important: Always use a good grade of joint compound, approved for use with potable water systems, and be certain that all fittings are drawn up tight.

Union Connections

If a union connection is required we recommend raising the union above the draft-hood as illustrated in Figure 6. If galvanized piping is used, we recommend a galvanized nipple extension or a galvanized coupler with a pipe nipple to raise the union above the draft-hood. Same procedure applies if using copper.

Please note the following:
DO NOT install this water heater with iron piping. The system should be installed only with new piping that is suitable for potable (drinkable) water such as copper, CPVC or polybutylene. DO NOT use PVC water piping.
DO NOT use any pumps, valves or fittings that are not compatible with potable water.
DO NOT use valves that may cause excessive restriction to water flow. Use full flow ball or gate valves only.
DO NOT use any lead based solder in potable water lines. Use appropriate tin-antimony or other equivalent material.
DO NOT use with piping that has been treated with chromates, boiler seal or other chemicals.
DO NOT add any chemicals to the system piping that will contaminate the potable water supply.

Mixing Valves

⚠WARNING

Never allow small children to use a hot-water faucet, or to draw their own bath water. Never leave a child or impaired person unattended in a bathtub or shower. Scald burns can result.

Hot water can scald: Water heaters are intended to produce hot water. Water heated to a temperature that will satisfy space heating, clothes washing, dish washing, and other sanitizing needs can scald and permanently injure you upon contact. Some people are more likely to be permanently injured by hot water than others. These include the elderly, children, the infirm, and physically/mentally handicapped.
If any one using the hot water fits into one of these groups or if there is a provincial, state or local code requiring a certain temperature water at the hot water faucet, then you must take special precautions. In addition to using the lowest possible temperature setting that will satisfy your hot-water needs, a means such as a mixing valve, should be used at the hot-water faucets or at the water heater. Mixing valves are available at plumbing supply or hardware stores. Follow manufacturer’s instructions for installation of these valves. Before changing the factory settings on the thermostat, read the “Temperature Regulation” section in this manual.

Closed System/Thermal Expansion

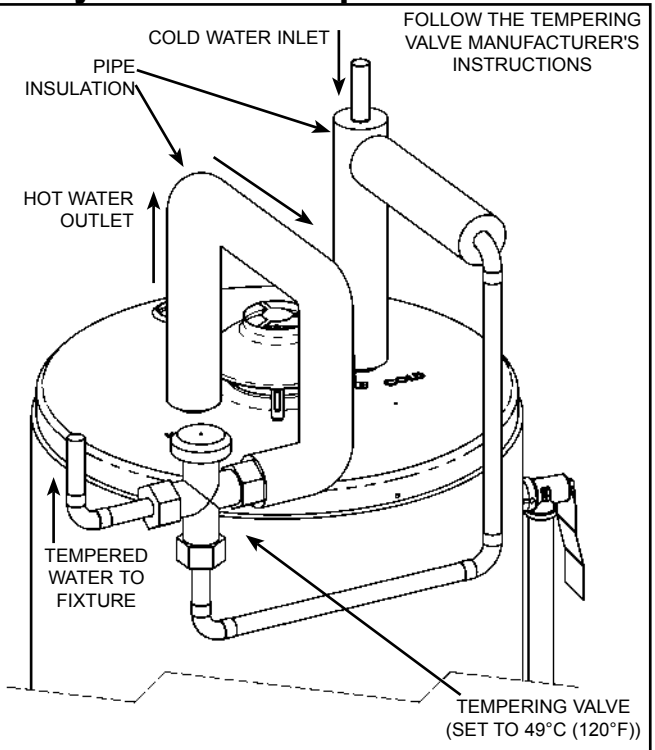


Figure 7 Typical Tempering Valve Installation

Periodic discharge from the temperature and pressure relief valve may be due to thermal expansion in a closed water supply system. The water utility supply meter may contain a check valve. This will create a closed water system. During the heating cycle of the water heater, the water expands causing pressure inside the water heater to increase. This may cause the temperature and pressure relief valve to discharge small quantities of hot water. To prevent this from happening, there are two recommendations:

1. Install a diaphragm-type expansion tank that is suitable for potable water on the cold water supply line. The expansion tank must have a minimum capacity of 5.7 litres (1.5 US gallons) for every 190 litres (50 US gallons) of stored water and be rated for 150 psi or the working pressure of the water heater.
2. Install a pressure relief valve rated at max 125 psi in the cold water supply line. Make sure the discharge of this valve is directed to an open drain and protected from freezing. Contact the local water supplier or plumbing inspector for information on how to control this situation.

Important: Do not plug the temperature and pressure relief valve.

Temperature and Pressure (T&P) Relief Valve

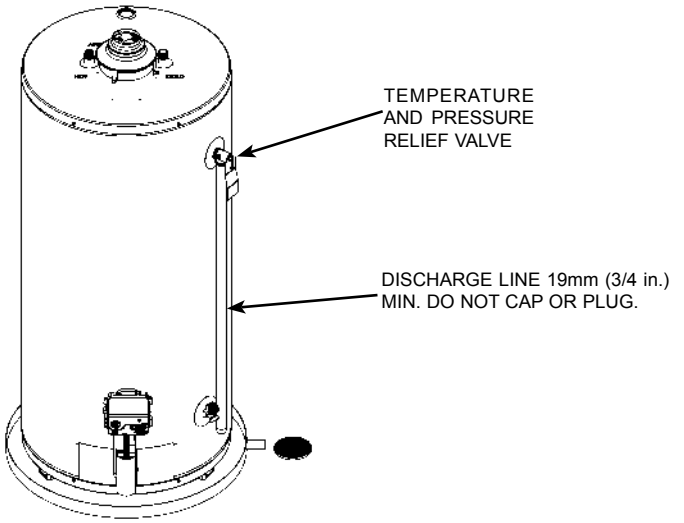


Figure 8 Typical Temperature & Pressure Relief Valve Installation

Refer to Figure 8 for a typical T&P valve installation.
Important: Only a new temperature and pressure relief valve should be used with your water heater. Do not use an old or existing valve as it may be damaged or not adequate for the working pressure of the new water heater. Do not place any valve between the relief valve and the tank.

The Temperature And Pressure Relief Valve:

- Must be connected to an adequate discharge line.
- Must not be rated higher than the working pressure shown on the data plate of the water heater.

The Discharge Line:

- Must not be smaller than the pipe size of the relief valve or have any reducing coupling installed in the discharge line.
- Must not be capped, blocked, plugged or contain any valve between the relief valve and the end of the discharge line.
- Must terminate a maximum of 300mm (12 in.) max (Canada) or 150mm (6 in.) max (U.S.A.) above a floor drain or external to the building.
- Must be capable of withstanding 121°C (250°F) without distortion.
- Must be installed to allow complete drainage of both the valve and discharge line.
- Must not discharge so as to come in contact with any electrical part or wiring.

⚠WARNING

Explosion Hazard

- **If the temperature and pressure relief valve is dripping or leaking, have a licensed plumber repair it.**
- **Do not plug valve.**
- **Do not remove valve.**
- **Failure to follow these instructions can result in death or an explosion.**

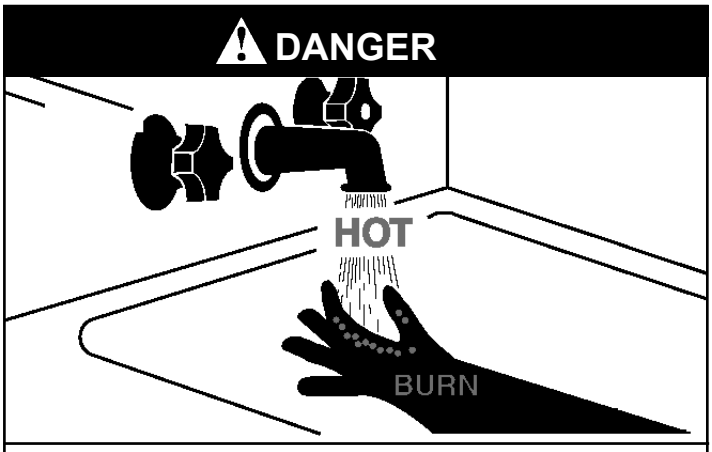
Installations Check

		Check Here
1.	Have the safety precautions described in the manual been implemented?	❑
2.	Does the gas piping conform to the recommendations of your Gas Utility Company?	❑
3.	Has the gas piping been tested?	❑
4.	Is the supply pressure correct?	❑
5.	Is the water heater connected to the correct gas supply as shown on the rating plate (Natural Gas/Propane)?	❑
6.	Is the clearance between the water heater and combustible construction as per specifications?	❑
7.	Is the water piping correctly connected? Are you certain that there are no leaks?	❑
8.	Is the water heater filled with water?	❑
9.	Is the cold water supply valve open?	❑
10.	Is the vent pipe installed properly and are the vertical and horizontal runs properly supported?	❑
11.	Is the vent hood air intake opening unobstructed?	❑
12.	Is the T&P valve installed? Are the drain pipe and T&P valve unobstructed?	❑
13.	Is a drain pan installed with a proper overflow pipe, directed to a drain?	❑
14.	Have you taken steps to prevent water damage in case of leaks?	❑
15.	Does the area around the water heater have adequate ventilation?	❑
16.	Air moving device does not create negative pressure?	❑
17.	Flammable vapours are not placed in the proximity of the water heater?	❑
18.	Manifold gasket properly sealed?	❑
19.	Viewport not damaged or cracked?	❑
20.	Flame-arrestor free of debris and undamaged?	❑
21.	Two piece grommet on manifold door properly installed?	❑
22.	No leaks at pilot and manifold connection?	❑
23.	Manifold door screws securely tightened?	❑
24.	Extra care for proper ventilation for attic or unconditioned space installation (max. air temperature 42°C (108°F))?	❑

IV) OPERATING INSTRUCTIONS

Water Temperature Regulation

HOT WATER CAN SCALD: Water heaters are intended to produce hot water. Water heated to a temperature that will satisfy space heating, clothes washing, dish washing, and other sanitizing needs can scald and permanently injure you upon contact. Some people are more likely to be permanently injured by hot water than others. These include the elderly, children, the infirm, or physically/mentally handicapped. If anyone using hot water in your home fits into one of these groups or if there is a provincial, state law or local code requiring a specific hot water temperature at the tap, then you must take special precautions. Never allow small children to use a hot water tap, or to draw their own bath water. Never leave a child or handicapped person unattended in a bathtub or shower.



Water temperature over 52°C (125°F) can cause severe burns instantly or death from scalds.

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

Feel water before bathing or showering.

Temperature limiting valves are available.

It is recommended that lower water temperatures be used to avoid the risk of scalding. It is further recommended, in all cases, that the water temperature be set for the lowest temperature that satisfies your hot water needs. This will also provide the most energy efficient operation of the water heater.

⚠WARNING
Risk of scalding

There is a hot water scald potential if the thermostat is set too high.
Adjusting the thermostat past the 49°C (120°F) bar on the temperature dial will increase the risk of scald injury
Hot water can produce third degree burns
in 6 seconds at . . . . . 60°C (140°F)
in 30 seconds at . . . . . 54°C (130°F)
in 5 minutes at. . . . . 49°C (120°F)

Temperature Adjustment

Valves for reducing the point-of-use temperature by mixing cold and hot water are available (see Figure 7). Also available are inexpensive devices that attach to faucets to limit hot water temperatures. Contact a licensed plumber or the local plumbing authority.

Note: During low demand periods, a lower thermostat setting will reduce energy losses and may satisfy your normal hot water needs. If hot water use is expected to be more than normal, a higher thermostat setting may be required to meet the increased demand. When leaving your home for extended periods (e.g., vacations etc.) turn the temperature dial to its lowest setting. This will maintain the water at low temperatures with minimum energy losses and prevent the tank from freezing during cold weather.

The thermostat is adjusted to the pilot position when it is shipped from the factory. Once the pilot is lit, water temperature can be regulated by moving the temperature dial to the preferred setting. The preferred starting point is 49°C (120°F) at the "HOT" setting. Align the knob with the desired water temperature as shown in Figure 9. There is a hot water scald potential if the thermostat is set too high.

Note: Temperatures shown on the gas control valve/thermostat are approximates. The actual temperature of the heated water may vary.

Important: Adjusting the thermostat past the 49°C (120°F) mark on the temperature dial will increase the risk of scald injury. Hot water can produce first degree burns within:

Water Temperature °C (°F)	Time for 1st Degree Burn (Less Severe Burns)	Time for Permanent Burns 2nd & 3rd Degree (Most Severe Burns)
43 (110)	(normal shower temp.)	
47 (116)	(pain threshold)	
47 (116)	35 minutes	45 minutes
50 (122)	1 minute	5 minutes
55 (131)	5 seconds	25 seconds
60 (140)	2 seconds	5 seconds
65 (149)	1 second	2 seconds
68 (154)	instantaneous	1 seconds
U.S. Government Memorandum, C.P.S.C., Peter L. Armstrong, Sept. 15,1978		

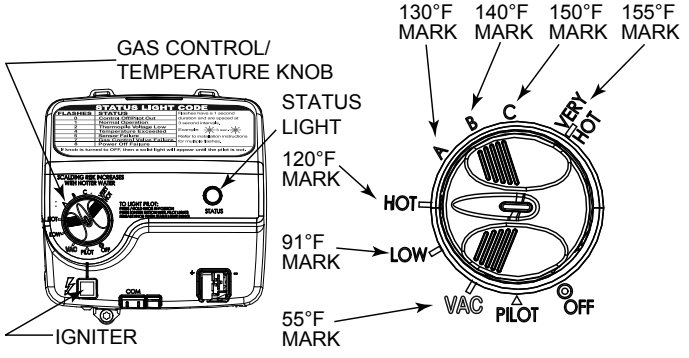


Figure 9 Gas Control Valve/Thermostat Settings

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

Operating the Temperature Control System

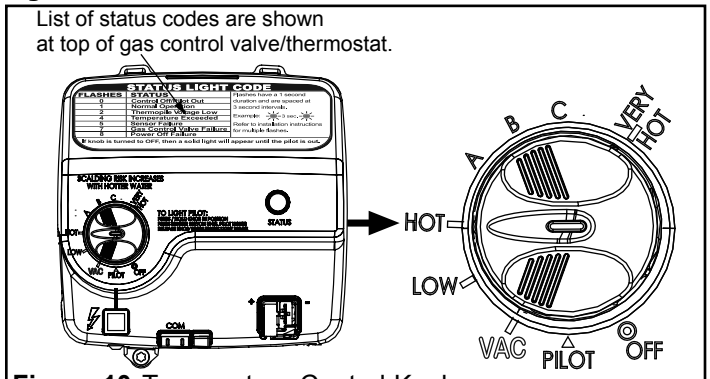


Figure 10 Temperature Control Knob

Water Temperature Adjustment

The water temperature setting can be adjusted from 13°C (55°F) to 68°C (155°F). Turn the Gas Control/Temperature Knob to the desired setting/temperature.

Note: The temperatures indicated are approximates. The actual temperature of the heated water may vary.

Operating Modes and Settings

- Standard Mode - The controller adjusts the water heater to maintain the temperature set by the user.
- Vacation Setting - The Vacation setting (VAC) sets the controller at approximately 13°C (55°F). This setting is recommended when the water heater is not in use for a long period of time. This effectively turns the controller temperature setting down to a temperature that prevents the water in the water heater from freezing while still conserving energy.

Status Light Code

Normal Flashes:	
0 Flashes	Indicates Control Off/Pilot Out.
1 Flash	Indicates Normal Operation.
A solid red light indicates that the gas control valve/thermostat is shutting down.	
Diagnostic Flashes:	
If the water heater is not working, look for the following diagnostic flashes after lighting the pilot. For more details, see "Status Light and Diagnostic Code Troubleshooting Chart."	
2 Flashes	Indicates Thermopile Voltage Low
4 Flashes	Indicates Overheat Failure
5 Flashes	Indicates Sensor Failure
7 Flashes	Indicates Electronic Control Failure
8 Flashes	See "Status Light and Diagnostic Code Troubleshooting Chart."

Lighting Instructions

Read and understand these directions thoroughly before attempting to light or re-light the pilot. Make sure the view port is not missing or damaged (see Figure 20). Make sure the tank is completely filled with water before lighting the pilot. Check the rating plate near the gas control valve/ thermostat for the correct type of gas. Do not use this water heater with any gas other than the one listed on the rating plate. If you have any questions or doubts, consult your gas supplier or gas utility company.

Note: This water heater is powered by a thermopile system.

Lighting the Pilot:

1. Read and follow the lighting instructions on the water heater's label.
2. Turn the Control Knob to Pilot. Press the Knob in fully and hold it in. (The knob will travel in about 1/4-inch if it is set to Pilot correctly.)
3. Click the Igniter button continuously for up to 90 seconds or until the Status Light begins to blink. If the Status Light does not begin to blink after 90 seconds, STOP. Wait 10 minutes before attempting to relight the Pilot. Repeat these steps 2-3 times, if necessary. The circuitry in this gas valve requires that your wait 10 minutes between lighting attempts. If the Status Light blinks, release the Control Knob and turn it to the desired setting. ("Hot" is approximately 49°C (120°F).)

If the Status Light Does Not Blink:

1. Wait 10 minutes before another lighting attempt.
2. If the Status Light did not blink, repeat the lighting procedure by following the lighting instructions on the water heater's label. Remove the outer door. The Control Knob must be set to Pilot and held in continuously while clicking the igniter button (about once per second for up to 90 seconds). To observe the Pilot, remove the outer door and look through the view port (sight glass) (see Figure 20).
3. Continue clicking the Igniter button (for up to 90 seconds) until Pilot lights.
4. Once the Pilot is lit, continue to hold the Control Knob in until the Status Light begins to blink.
5. Release Control Knob and set Knob to desired temperature setting. ("Hot" is approximately 49°C (120°F).)
6. Replace the outer door.

If the Pilot Does Not Light:

1. Wait 10 minutes before another lighting attempt. If the pilot does not light, the Igniter may not be sparking or the unit may not be getting gas (or for a new installation, there may still be air in the gas line). Each time you click the igniter button, you should be able to see the spark by looking through the view port (see Figure 20). (You may have to darken the room lights to see the spark.) You do not have to push the Control Knob in to check the Igniter button. Simply look through the sight glass while clicking the Igniter button and look for a spark. If you can't see a spark when the Igniter button is clicked, check the wiring connections from the Igniter button and make sure that they are tight.
2. If you see the Igniter spark, try relighting the pilot by following the instructions on the water heater's label. Ensure that the gas supply is tuned on. There may be air in the gas line, and several lighting attempts may be needed to completely fill the line with gas and successfully light the pilot.

⚠WARNING

Explosion Hazard

Replace view port if glass is missing or damaged.

Failure to do so can result in death, explosion or fire.

If the Pilot Lights but the Status Light Does Not Blink:

1. If the pilot lights, continue to hold the Control Knob in until the Status Light blinks. If the pilot is lit and remains lit for 90 seconds and the Status Light still does not blink, the thermopile connections may be loose, the thermal switch may need to be reset, or the thermopile may be defective.
2. Remove the outer door.
3. Press the reset button on the thermal switch (see Figure 20).
4. If switch clicks, it may have tripped. Do not light the Pilot if flammable vapors are present. Check flame arrestor for signs of discoloration (which could be caused by flammable vapors). If the flame arrestor is discolored, do not attempt to relight the Pilot. Have the water heater inspected by a qualified service technician.
5. Check the wiring connections from the thermopile and the thermal switch to the gas control valve/thermostat. Ensure that all wiring connections are tight (see Figure 20).
6. Replace the outer door.
7. Wait 10 minutes and try to light the Pilot according to the instructions on the water heater's label.
8. While clicking the Igniter button continuously, the Control Knob must be set to Pilot and held in until the Status Light blinks. Once the Status Light blinks, release the Control Knob and set the Knob to the desired temperature setting. ("Hot" is approximately 40°C (120°F).)

Lighting Instructions

FOR YOUR SAFETY READ BEFORE LIGHTING

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

BEFORE LIGHTING: ENTIRE SYSTEM MUST BE FILLED WITH WATER AND AIR PURGED FROM ALL LINES

A. This appliance has a pilot which is lit by a piezoelectric spark gas ignition system. Do not open the inner door of the appliance and try to light the pilot by hand.

B. BEFORE LIGHTING 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 any appliance.**
- **Do not touch any electric 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.**

C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or 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.

D. Do not use this appliance if any part has been under water. Immediately contact a qualified installer or service agency to replace a flooded water heater. Do not attempt to repair the unit! It must be replaced!

POUR VOTRE SÉCURITÉ, LISEZ ATTENTIVEMENT AVANT L'ALLUMAGE

AVERTISSEMENT: Tout manquement aux présentes directives peut causer un incendie ou une explosion entraînant des dommages matériels, des blessures ou la mort.

AVANT L'ALLUMAGE: LE RÉSEAU D'ALIMENTATION EN EAU DOIT ÊTRE ENTIÈREMENT REMPLI D'EAU ET L'AIR ENTIÈREMENT PURGÉ

A. L'allumage de la veilleuse de cet appareil au gaz est assuré par un système d'allumage piézoélectrique à étincelles. Ne tentez pas d'ouvrir la porte d'accès interne et d'allumer la veilleuse manuellement.

B. AVANT L'ALLUMAGE, humez l'air tout autour de l'appareil afin d'y déceler une éventuelle odeur de gaz. Humez aussi l'air près du sol, car certains gaz sont plus lourds que l'air et s'y accumulent.

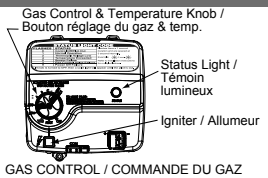
SI VOUS DÉTECTEZ UNE ODEUR DE GAZ

- **Ne mettez aucun appareil en marche.**
- **Ne touchez à aucun interrupteur; ne vous servez pas des téléphones se trouvant dans le bâtiment.**
- **Appelez immédiatement votre fournisseur de service de gaz à partir du téléphone d'un voisin et suivez ses directives.**
- **Si vous ne pouvez communiquer avec votre fournisseur de service de gaz, appelez le service des incendies.**

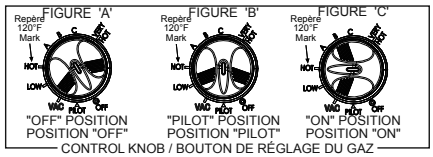
C. Le bouton de réglage du gaz ne doit être enfoncé ou tourné qu'à la main; n'utilisez jamais d'outil. Si le bouton reste coincé, ne tentez pas une réparation; appelez plutôt un technicien d'entretien qualifié. Si vous forcez ou tentez de réparer le bouton, il a risque d'explosion ou d'incendie.

D. N'utilisez pas cet appareil même s'il n'a été que partiellement submergé par de l'eau. Communiquez immédiatement avec un installateur qualifié ou un centre de service afin de faire remplacer tout chauffe-eau ayant été submergé lors d'une inondation. Ne tentez jamais de réparer l'appareil! Il doit être remplacé!

OPERATING INSTRUCTIONS



GAS CONTROL / COMMANDE DU GAZ



CONTROL KNOB / BOUTON DE RÉGLAGE DU GAZ

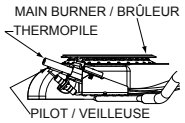


FIGURE 'D'

1. **STOP! It is imperative that you read all safety warnings before lighting the pilot.**
2. **Turn the gas control/temperature knob counterclockwise ↶ to the "OFF" setting.**
3. **Wait ten (10) minutes to clear out any gas. If you then smell gas, STOP! Follow " B" in the safety information above on this label. If you do not smell gas, go to the next step.**
4. **Turn the gas control/temperature knob clockwise ↷ to "PILOT". See Figure 'B'.**
5. **Press the gas control/temperature knob all the way in and hold it in. The knob should travel in about 6mm (1/4 inch) if it is set to "PILOT" correctly. While holding the gas control/temperature knob in, click the igniter button continuously (about once a second) for up to 90 seconds or until Status Light begins to blink.**
6. **When the status light starts blinking, release the gas control/temperature knob. Set the gas control/temperature knob to the desired setting. See Figure 'C'.**

If the status light does not start blinking within 90 seconds, repeat steps 2 through 5 up to THREE (3) times, waiting 10 minutes between lighting attempts.

The circuitry in this advanced gas valve requires that you wait 10 minutes between lighting attempts.

If the status light turns solid red, release the gas control/temperature knob and repeat steps 2 through 5 (waiting 10 minutes before attempting to relight the pilot). If the status light does not start blinking after three lighting attempts, turn the gas control/temperature knob to "OFF" and call a qualified service technician or your gas supplier.

DANGER: Hotter water increases the risk of scald injury. Consult the instruction manual before changing temperature.

Refer to the Lighting Instructions in the Installation Manual for more detailed troubleshooting information.

DIRECTIVES D'UTILISATION

1. **ARRÊTEZ! Il est essentiel de lire attentivement tous les messages d'avertissement avant d'allumer la veilleuse.**
2. **Tournez le bouton de réglage du gaz/température dans le sens antihoraire ↶ jusqu'à la position "OFF".**
3. **Afin de laisser se dissiper tout gaz ayant pu s'accumuler, attendez dix (10) minutes. Si vous détectez une odeur de gaz, ARRÊTEZ! Suivez la directive de sécurité "B" au haut de cette étiquette. Si vous ne détectez pas d'odeur de gaz, procédez à la prochaine étape.**
4. **Tournez le bouton de réglage du gaz/température dans le sens horaire ↷ jusqu'à la position "PILOT" (Figure B).**
5. **Appuyez complètement sur le bouton de réglage du gaz/température et maintenez-le enfoncé. Le bouton peut s'enfoncer d'environ 6 mm (1/4 po), lorsqu'il est bien positionné à "PILOT". Tout en maintenant le bouton de réglage du gaz/température enfoncé, appuyez de façon répétitive (une fois par seconde) sur le bouton de l'allumeur (jusqu'à 90 secondes), ou jusqu'à ce que le témoin lumineux s'allume.**
6. **Lorsque le témoin lumineux se met à clignoter, relâchez le bouton de réglage du gaz/température. Réglez le bouton à la position désirée (Figure C).**

Si le témoin lumineux ne se met pas à clignoter en moins de 90 secondes, reprenez les étapes 2 à 5 jusqu'à TROIS (3) reprises, en prenant une pause de 10 minutes entre chaque essai d'allumage.

Le processeur sophistiqué de cette commande du gaz force une période d'attente de 10 minutes entre chaque essai d'allumage.

Si le témoin lumineux passe au rouge de façon continue, relâchez le bouton de réglage du gaz/température et reprenez les étapes 2 à 5, en prenant une pause de 10 minutes entre chaque essai d'allumage. Si le témoin lumineux ne se met pas à clignoter en trois essais d'allumage, ramenez le bouton de réglage du gaz/température à la position "OFF" et faites appel à un technicien d'entretien qualifié ou à votre fournisseur du gaz.

DANGER: Plus l'eau est chaude, plus le risque d'ébouillantage est élevé. Consultez les directives du manuel à ce sujet avant de régler la température.

Reportez-vous aux Directives d'allumage du manuel d'installation pour des instructions de dépannage plus détaillées.

TO TURN OFF GAS TO APPLIANCE

1. **Turn the gas control/temperature knob counterclockwise ↶ to the "OFF" setting. The status light will stop blinking and stay on for a short time after the water heater is turned off. See Figure 'A'.**

COUPER L'ALIMENTATION EN GAZ DE L'APPAREIL

1. **Tournez le bouton de réglage du gaz/température dans le sens antihoraire ↶ jusqu'à la position "OFF". Le témoin lumineux cesse de clignoter et reste allumé un court moment après l'arrêt du chauffe-eau (Figure A).**

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V) OPERATION

Burner Flames

Inspect the burner flames through the viewport and compare them to the drawings in Figure 11. A properly operating burner should produce a soft blue flame. Blue tips with yellow inner cones are satisfactory. The tips of the flame may have a slight yellow tint. The flame should not be all yellow or have a sharp blue-orange color. Contaminated air may cause an orange colored flame. Contact a qualified service technician if the flame is not satisfactory.

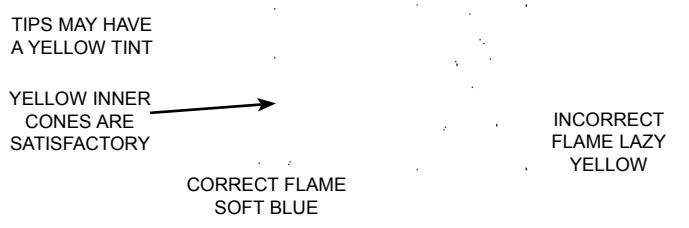

Figure 11 Flame Characteristics

Emergency Shut Down

Important: Should overheating occur or the gas supply fail to shut off, turn off the water heater's manual gas shut-off valve and call a qualified service technician (see Figure 4).

Checking the Draft

After successfully lighting the water heater, allow the unit to operate for 15 minutes and check the drafthood relief opening for proper draft. Pass a match flame around the relief opening of the drafthood as shown in Figure 12. A steady flame drawn into the opening indicates proper draft. If the flame flutters or is blown out, combustion products are escaping from the relief opening. If this occurs, do not operate the water heater until proper adjustments or repairs are made to the vent pipe system.

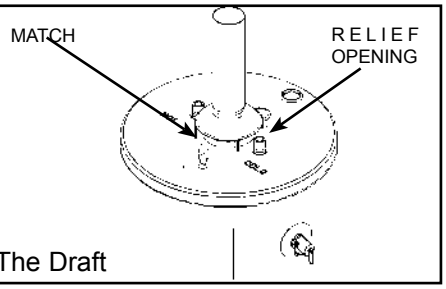

Figure 12 Checking The Draft

Operating Conditions

Condensation

Moisture from the products of combustion condenses on the tank surface and forms drops of water which may fall onto the burner or other hot surfaces. This will produce a "sizzling" or "frying" noise. This condensation is normal and should not be confused with a leaking tank. Condensation may increase or decrease at different times of the year. Highly efficient energy saver water heaters will produce larger amounts of condensation on initial start up or when a large amount of hot water is being used. Once the water reaches a temperature of 49°C (120°F) and the tank warms up (usually about 1 hour), the condensation will stop.

Note: At initial start-up, in certain extremely cold conditions and if the water heater is not allowed enough time to reach the room temperature, the pilot burner might be extinguished in the first 20 minutes from start-up due to heavy condensation. In this situation if the unit is relit, it will follow its normal heating cycle without further incidents. After installation always allow the water heater to reach the room temperature before the initial start-up is initiated. Supervise the flame inside the water heater at least 20 minutes at initial start-up to ensure that heavy condensation is not turning off the water heater.

Water Heater Sounds

During the normal operation of the water heater, sounds or noises may be heard. These noises are common and may result from the following:

- Normal expansion and contraction of metal parts during the periods of heat-up and cool-down.
- Condensation causing sizzling and popping within the burner area.
- Sediment build up in the tank bottom creating varying amounts of noise. Build up may cause premature tank failure. Drain and flush the tank as directed under "Draining and Flushing".

Safety Shut-off

This water heater is designed to automatically shut-off in the event of the following:

- The pilot flame is extinguished for any reason.
- The water temperature exceeds 93°C (200°F).
- Excessive combustion chamber temperatures.
- The ignition of flammable vapours.
- Excessive lint and or dust build-up

A dual safety switch is part of the water heater safety system. The gas control is connected to a door-mount, manual ly resettable safety switch which is designed to disable the gas control/thermostat in the event of excessive combustion chamber temperatures or a flammable vapour incident. If the thermal switch opens, the water heater cannot be used unless this thermal switch is reset by a qualified service technician.

The gas control has a high temperature limit switch or ECO (Energy Cut Off) which is used to shut off the unit if the water temperature exceeds 93°C (200°F). The ECO is resettable. If the ECO has shutdown the water heater, the water heater cannot be used until the gas control has been inspected by a qualified service technician. Contact your local dealer or a qualified service technician for service information.

Anode/Water Odour

Each water heater contains at least one anode, which will slowly deplete while protecting the glass-lined tank prolonging the life of the water heater. Certain water conditions may cause a reaction between the anode and the water. The most common complaint associated with the anode is a "rotten egg smell" produced by the presence of sulfur.

Do not remove this anode permanently as it will void any warranties, stated or implied. An aluminum anode may reduce if not eliminate water odour problems. The water supply system may require special filtration equipment from a water conditioning company to successfully eliminate all water odour problems.
Artificially softened water is exceedingly corrosive because the process substitutes sodium ions for magnesium and calcium ions. The use of a water softener may decrease the life of the water heater tank. The anode should be inspected periodically. If the anode is more than 50% depleted, the anode should be replaced.

VI) MAINTENANCE

The installation and maintenance of the water heater must comply with all of the instructions described in sections I to IX of this manual. Water heater failure that is a result of the heating system is not covered by warranty.

Periodic Cleaning of the Wrap-around Filter

1. If inspection of the filter shows a build-up on the filter, it should be cleaned.
2. The filter can be vacuumed to remove the build-up.
3. A visual inspection of the flame-arrestor is also recommended. Refer to “External Cleaning of the Flame-arrestor”.

Note: Visually inspect the flame arrestor by placing a mirror underneath the water heater. A flashlight can be used to illuminate the slots in the flame arrestor if necessary. Routine cleaning of the flame arrestor is recommended if inspection shows accumulation of debris on the flame arrestor. See section titled “External Cleaning of the Flame-arrestor” for cleaning instructions.

Draining and Flushing

It is recommended that the tank be drained and flushed every 6 months to remove sediment which may buildup during operation. The water heater should be drained if being shut down for extended periods of time. To drain the tank, perform the following steps:

1. Turn off the gas to the water heater with the manual gas shut-off valve.
2. Close the cold water inlet valve.
3. Open a nearby hot water faucet.
4. Connect a hose to the drain valve and terminate it to an adequate drain.

Note: The drain hose should be rated for at least 94°C (200°F). If the drain hose does not have this rating, open the cold water inlet valve and nearby hot faucet until the water is no longer hot.

5. Open the water heater drain valve and allow all the water to drain from the tank. Flush the tank with water as needed to remove sediment.
6. Close the drain valve, refill the tank, and restart the heater as directed under “Operating Instructions”. If the water heater is going to be shut down for an extended period, the drain valve should be left open.

Important: Condensation may occur when refilling tank and should not be confused with a tank leak.
The following maintenance procedures are for the Flame Guard™ safety system components and should be performed by a qualified service technician.
Replacement parts (see Figures 26 & 27) may be ordered through your local distributor. When ordering replacement parts, always have the following information ready:

1. Model, serial and product number.
2. Type of gas.
3. Item number.
4. Parts description.

Periodic Inspection

Periodically a visual inspection should be made of the venting and air supply system, piping systems, main burner, pilot burner and flame arrestor.
Check the water heater for the following:

1. Obstructions, damage or deterioration in the venting system. Make sure the ventilation and combustion air supplies are not obstructed.
2. Build-up of soot and carbon on the main burner and pilot burner. Check for a soft blue flame.
3. Leaking or damaged water and gas piping.
4. Presence of flammable or corrosive materials in the installation area.
5. Presence of combustible materials near the water heater.
6. Presence of debris on the outside of the flame arrestor. See note below.

Important: Verify proper operation after servicing this water heater. If you are unsure of this inspection procedure or the proper operation of the water heater and its special safety features, enlist the services of a qualified service technician.

External Cleaning of the Flame-arrestor

Important: It is recommended that the flame arrestor be visually inspected periodically for accumulation of dust, lint and other debris, especially if the heater is installed in areas having a high dust and/or lint content. Any such accumulation should be cleaned as outlined below.

1. Use a vacuum cleaner to remove all loose debris in the flame arrestor.
2. If necessary, a soft bristle brush can be used to dislodge any remaining debris.
3. Repeat step 1 as necessary to completion.

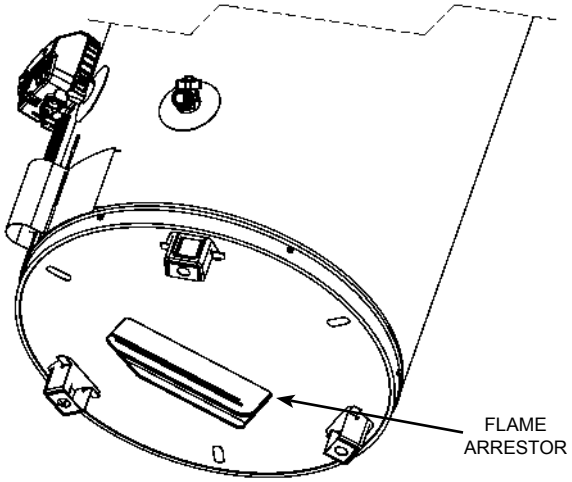

Figure 13 Flame Arrestor (External View)

Cleaning the Combustion Chamber and Flame-arrestor

1. Follow procedure outlined in “Removing the Manifold/ Burner Assembly”.
2. Use a vacuum cleaner/shop vac to remove all loose debris in the combustion chamber (see Figure 14). Use compressed air to clear any dust or debris that may have accumulated in the flame-arrestor.
3. Reassemble following the procedure under “Replacing the Manifold/Burner Assembly”.

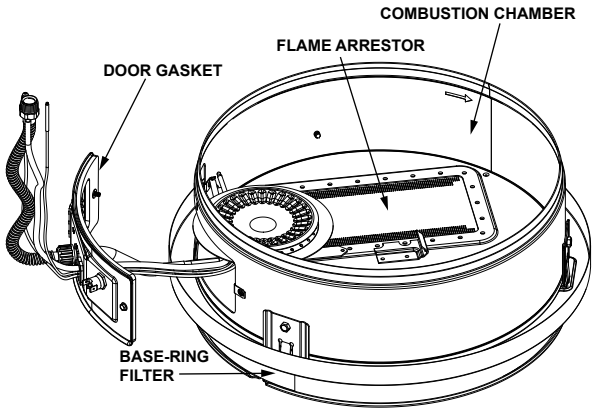

Figure 14 Combustion Chamber

Temperature and Pressure Relief Valve

Manually operate the temperature and pressure relief valve at least once a year to make sure it is working properly. To prevent water damage, the valve must be properly connected to a discharge line which terminates at an adequate drain. Standing clear of the outlet (discharged water may be hot), slowly lift and release the lever handle on the temperature and pressure relief valve (see Figure 15) to allow the valve to operate freely and return to its closed position. If the valve fails to completely reset and continues to release water, immediately shut off the manual gas shut-off valve and the cold water inlet and call a qualified service technician.

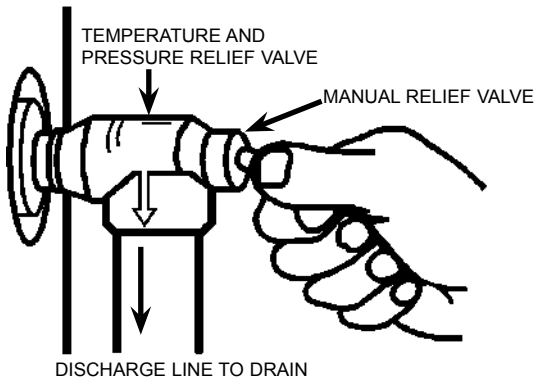

Figure 15 T&P Relief Valve Test

Resetting and Replacing the Safety (TCO) Switch (NG models)

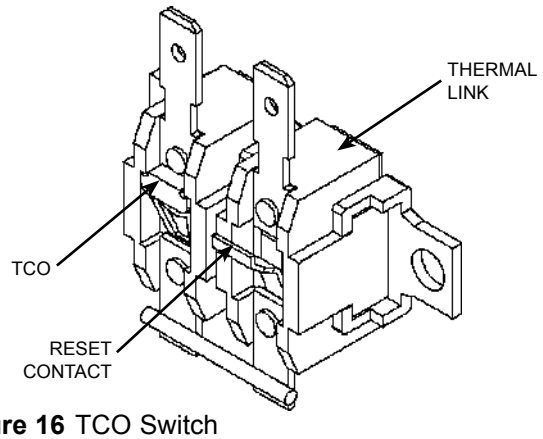

Figure 16 TCO Switch

The (NG) water heater safety system includes a door-mount, manual resettable, safety switch which is designed to disable the gas control/thermostat in the event of excessive combustion chamber temperatures. The excessive combustion chamber temperatures may be generated by accumulation of lint and dust on the flame-arrestor (located underneath the combustion chamber).

1. Follow first the procedure outlined in "External Cleaning of the Flame-arrestor".
2. Remove the outer door and locate the TCO switch on the right side of the combustion chamber door.
3. Manually press the contact located on the front-right side of the TCO switch (see Figure 16) until a click sound is generated. Do not use a metal tool or a screwdriver to press the TCO switch contact.
4. Verify if the quick connects are firmly inserted in the TCO switch contacts.
5. Replace the outer door.
6. Restart the water heater following the “Operating Instructions”.
7. If the pilot burner does not stay lit after several attempts it is possible that the TCO embedded in the safety switch opened due to a flammable vapour incident or the TCO switch was severely damaged. Do not attempt to further operate the water heater. Call a qualified service technician.

Piezoelectric Igniter System

The piezoelectric igniter system consists of the igniter button, electrode, and wire. The pilot is ignited by an electric spark generated when the igniter button is pressed (see Figure 17).

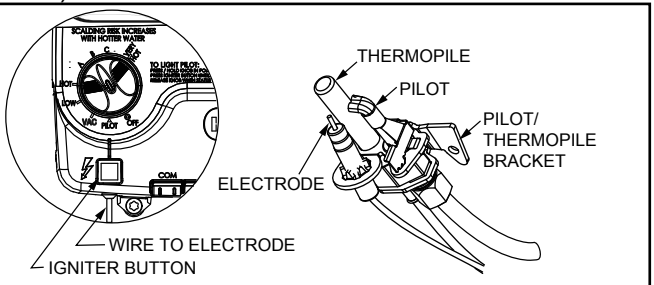

Figure 17 Igniter System

Testing the Igniter System

Turn off the gas to the water heater at the manual gas shut-off valve. Watch the electrode tip while activating the igniter. A visible spark should jump from the electrode. To avoid shock, do not touch the burner or any metal part on the pilot or pilot assembly. If no spark is visible, check the wire connections and make sure the electrode is not broken. Replace the igniter if defective. Dirt and rust on the pilot or electrode tip can prevent the igniter spark. Wipe clean with a damp cloth and dry completely. Rust can be removed from the electrode tip and metal surfaces by lightly sanding with an emery cloth or fine grit sandpaper.

Removing and Replacing the Gas Control Valve/Thermostat

Important: This water heater has a resettable thermal switch installed. Do not attempt to disable or modify this feature in any way. Use only factory authorized replacement parts.

Removing the Gas Control Valve/Thermostat:

1. Turn the gas control/temperature knob to the "OFF" position (see Figure 9).
2. Turn off the gas at the manual shut-off valve on the gas supply pipe (see Figure 4).
3. Drain the water heater. Refer to the section of "Draining and Flushing" and follow the procedure.
4. Disconnect the igniter wire from the igniter lead wire. Use needle nose pliers to disconnect the red (+) and white (-) thermopile wires. Disconnect the pilot tube (7/16" wrench) and manifold tube (3/4" wrench) at the gas control valve/thermostat (see Figure 19).
   Note: L.P. Gas systems use reverse (left-hand) threads on the manifold tube.
5. Refer to "Gas Piping" (see Figure 4) and disconnect the ground joint union in the gas piping. Disconnect the remaining pipe from the gas control valve/thermostat.
6. To remove the gas control valve/thermostat, thread a 100mm (4 in.) section of gas pipe into the inlet and use it to turn the gas control valve/thermostat (counterclockwise.) Do not use a pipe wrench or equivalent to grip body. Damage may result, causing leaks. Do not insert any sharp objects into the inlet or outlet connections. Damage to the gas control valve/thermostat may result.

Replacing the Gas Control Valve/Thermostat:

To replace the gas control valve/thermostat, reassemble in reverse order. When replacing the gas control valve/thermostat, thread a 4" section of gas pipe into the inlet and use it to turn the gas control valve/thermostat (clockwise). DO NOT OVER TIGHTEN; damage may result.

- Be sure to use approved Teflon® tape or pipe joint
- compound on the gas piping connections and fitting on the back of the gas control valve that screws into the tank.
- Be sure to remove the pilot ferrule nut from the new gas control valve/thermostat.
- Turn the main gas supply on and check the gas supply connections for leaks. Correct any leak found.
- Next, light the pilot and main burner, then check the manifold tube and pilot tube connections for leaks. Correct any leak found.
- Use an approved noncorrosive leak detection solution. If such a solution is not available, use a mixture of hand dish washing soap and water (one part soap to 15 parts water) or childrens' soap bubble solution. Bubbles forming indicate a leak.
- Be sure tank is completely filled with water before lighting and activating the water heater. Follow the "Lighting Instructions" on page 21.
- If additional information is required, reference the number on the cover of this manual for service information.

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Replacing the Manifold/Burner Assembly

⚠WARNING

Explosion Hazard

- **Tighten both manifold door screws securely.**
- **Remove any fiberglass between gasket and combustion chamber.**
- **Replace viewport if glass is missing or damaged.**
- **□ep□a□emani□o□□omponent□□o□i□mi□□ingor removed.**
- **Replace door gasket if damaged.**
- **Failure to follow these instructions can result in death, explosion, or fire.**

1. Check the door gasket for damage or imbedded debris

prior to installation (see Figure 14).

2. Inspect the viewport for damage and replace as required (see Figure 20).
3. Insert the new manifold/burner assembly into the burner compartment, making sure that the tab of the manifold tube engages the slot of the bracket inside the combustion chamber (see Figure 18).
4. Inspect the door gasket and make sure there is no fiberglass insulation between the gasket and the combustion chamber (see Figure 14).
5. Tighten the two screws that secure the manifold/burner assembly to the combustion chamber. (Use a 1/4" nut driver.) There should be no space between the gasket part of the manifold door and combustion chamber.

   Important: Do not operate the water heater if the door gasket does not create a seal between the manifold door and the combustion chamber.
6. Reconnect the manifold tube (3/4" wrench) and pilot tube (7/16" wrench) to the gas control valve/thermostat (see Figure 19). Do not cross-thread or apply any thread sealant to the fittings.

   Important: If you were supplied with a new ferrule nut in a parts kit, follow these steps to connect the pilot tube:

   1.) Install the ferrule nut into the gas valve at the pilot tube location, hand tight only,
   2.) Insert the pilot tube into the f.errule nut until the tube bottoms out, then tighten the nut with a 7/16" wrench until the crimp connection seals to the pilot tube,
   3.) Continue to tighten until the nut is tight in the gas valve.

   Note: L.P. Gas systems use reverse (left-hand) threads on the manifold tube.
7. Connect the white (-) thermopile wire to the gas control valve/thermostat, then connect the red thermal switch wires to the thermal switch on the manifold door. (see Figure 19).
8. Reconnect the igniter wire (see Figure 19).
9. Turn on the gas supply to the water heater at the manual gas shut-off valve (see Figure 4).
10. Follow the lighting instructions on the front of the water heater. With the main burner lit, check for leaks at the manifold and pilot connections by brushing on an approved noncorrosive leak detection solution. If such a solution is not available, use a mixture of hand dish washing soap and water (one part soap to 15 parts water) or childrens' soap bubble solution. Bubbles forming indicate a leak. Correct any leak found.
11. Verify proper operation, then replace the outer door.

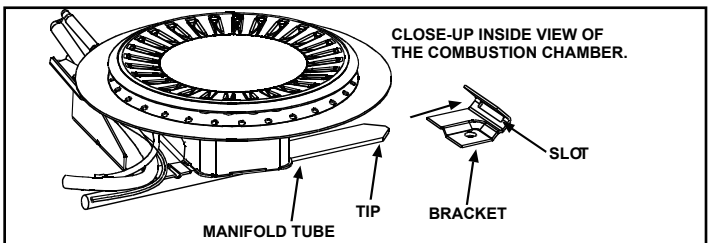


Figure 18 Manifold Mounting Detail

Removing the Manifold/Burner Assembly

1. Turn the gas control/temperature knob to the "OFF" position (see Figures 10 & 19).
2. Before performing any maintenance, it is important to turn off the gas supply to the water heater at the manual gas shut-off valve. This valve is typically located beside the water heater. Note the position of the shut-off valve in the open/on position, then proceed to turn it off (see Figure 4).
3. With the unit shut-off, allow sufficient time for the water heater to cool before performing any maintenance.

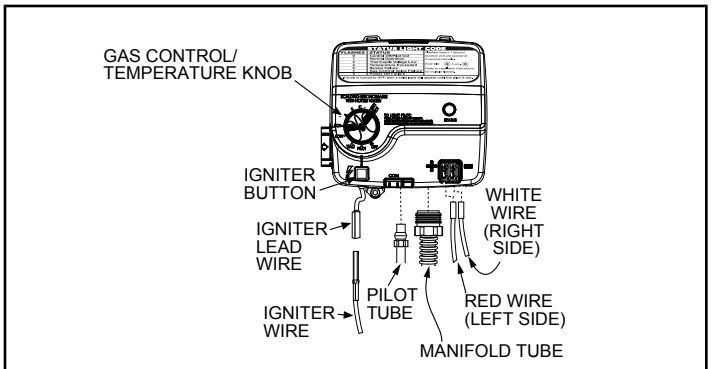


Figure 19 View On Gas Control/Thermostat

4. Remove the outer door.
5. Disconnect the following from the gas control valve/thermostat: pilot tube (7/16" wrench), igniter wire (from the igniter lead wire), and manifold tube (3/4" wrench) (see Figure 19).

   Note: L.P. Gas systems use reverse (left-hand) threads on the manifold tube.
6. Use needle nose pliers to disconnect the white (-) thermopile wire from the gas control valve/thermostat (see Figure 19). Next, disconnect both red thermal switch wires from the thermal switch on the manifold door (see Figure 20).
7. Grasp the manifold tube and push down slightly to free the manifold tube and pilot tube.
8. Remove the screws (1/4" nut driver) securing the manifold/burner assembly to the combustion chamber (see Figure 20).
9. Carefully remove the manifold/burner assembly from the combustion chamber. BE SURE NOT TO DAMAGE ANY INTERNAL PARTS.

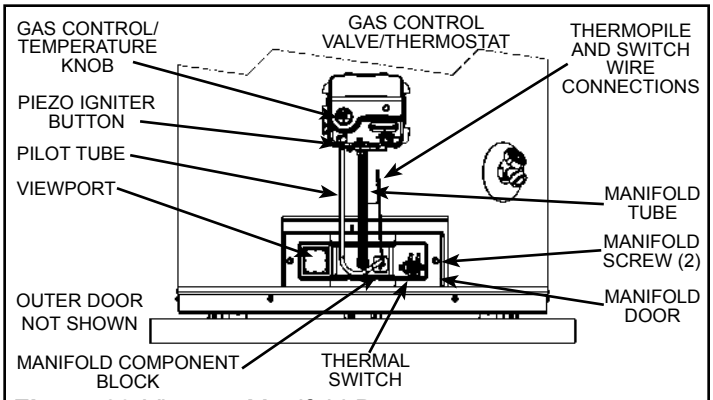


Figure 20 View on Manifold Door

Removing the Burner from the Manifold/ Burner Assembly

Natural Gas (Low Nox) & L.P. Gas Burner

1. Take off the burner by removing the two (2) screws located underneath the burner.
2. Check the burner to see if it is dirty or clogged. The burner may be cleaned with soap and hot water (see Figure 21). **Important:** DO NOT remove the orifice.

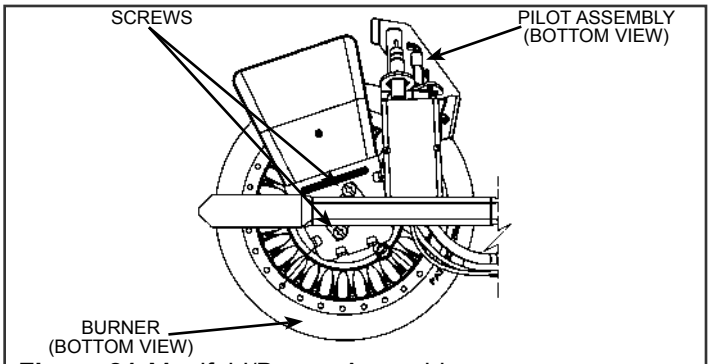


Figure 21 Manifold/Burner Assembly

Replacing the Pilot/Thermopile Assembly

1. Remove the manifold door assembly as described in "Removing the Manifold/Burner Assembly" section.
2. Remove the burner to access the pilot/thermopile assembly. Remove and keep the screws securing the burner to the manifold (see Figure 21).
   Important: DO NOT remove the orifice.
3. Remove the screw securing the pilot/thermopile assembly to the pilot bracket and keep for reuse later (see Figure 22).
4. Lift the retainer clip straight up from the back of the manifold component block (using a flat-blade screwdriver), then remove the manifold component block from the manifold door (see Figure 22). **Important:** Be careful not to bend or alter the position of the pilot tube. It will be used as a bending template for the new pilot assembly. Note the placement/order of the wires in the manifold component block.
5. Lift the pilot/thermopile assembly (including the igniter wire) from the manifold assembly.

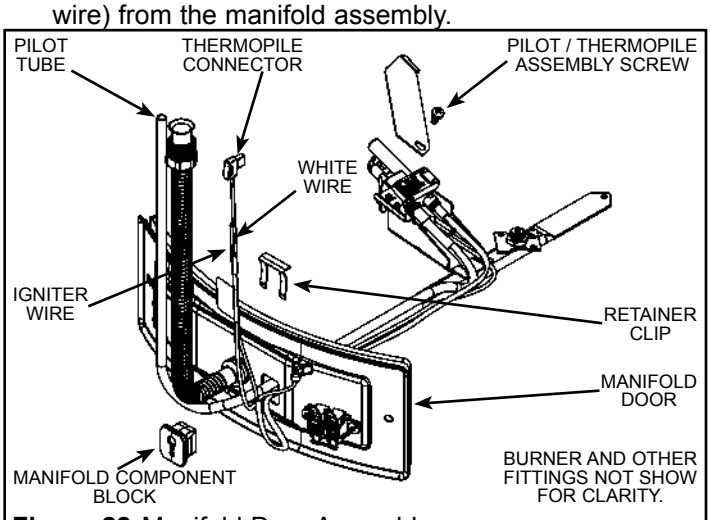


Figure 22 Manifold Door Assembly

6. Read this step carefully before proceeding. Using the old pilot/pilot tube assembly as a guide, bend the new pilot tube to match the old one. Make only the bends closest to the pilot before going to the next step.

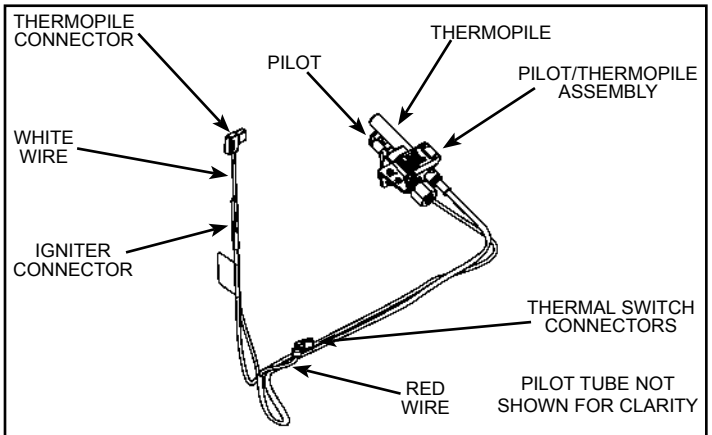


Figure 23 Pilot/Thermopile Assembly

7. Route the new pilot tube, igniter wire and thermopile wire through the opening in the manifold door (see Figure 22).
8. Using the pilot screw removed earlier, attach the new pilot/thermopile assembly. Reattach the burner to the manifold using the screws removed earlier.
   Note: Make sure the burner scoop is oriented to the pilot side of the manifold tube (see Figure 21).
9. Reinstall the manifold component block in the manifold door. Ensure that the pilot tube and wires are positioned as shown in Figure 24.

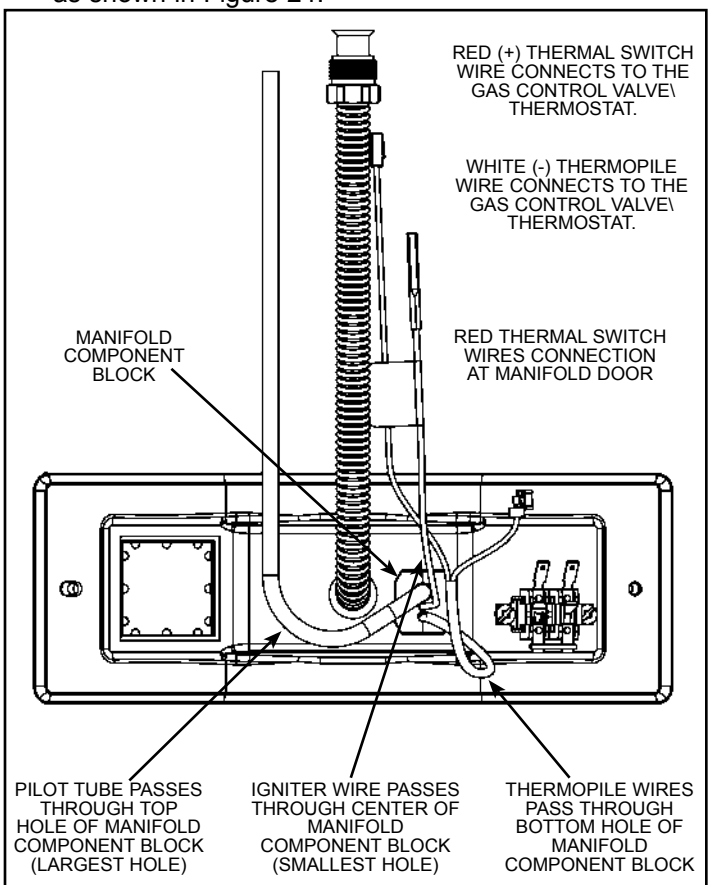


Figure 24 Manifold Door External Components

10. Carefully bend the new pilot tube to match the bend of the manifold tube.
    Note: When bending, DO NOT crimp or crease the pilot tube.
11. Before you proceed to the next step, install the new brass ferrule nut in the gas control valve/thermostat's pilot tube opening, HAND TIGHT ONLY.
12. Install the manifold/burner assembly. Refer to the "Replacing the Manifold/Burner Assembly" section for instructions.

VII) COMBO HEATING

This section serves as a guide for the installation and use of "Combo" heating systems utilizing a domestic water heater which has been specifically approved for such use (see Figure 25). It is written for those knowledgeable in the required trades and professionals involved in the design and installation of Combo Heating Systems.
It is the responsibility of the installer/designer to follow all applicable codes to ensure the effectiveness and safety of the installation.

System Requirements

The following requirements must be met for the installation of Combo Heating Systems:

1. The piping and components connected to the water heater for the space heating applications shall be suitable for use with potable water. The system should be installed with new, non-ferrous piping. Do not use pumps, valves, fittings, solder, gluing and pipe sealant that are not completely compatible with potable water piping.
2. A water heater which will be used to supply potable water must not be connected to any heating system or components previously used with a non-potable water heating appliance. Do not use piping that has been treated with chromates, broiler seal or other chemicals and do not add chemicals to the water heating piping. Do not introduce toxic chemicals, such as those used for boiler treatment, into the potable water used for space heating.
3. Do not use this heater as a replacement for an existing boiler installation.

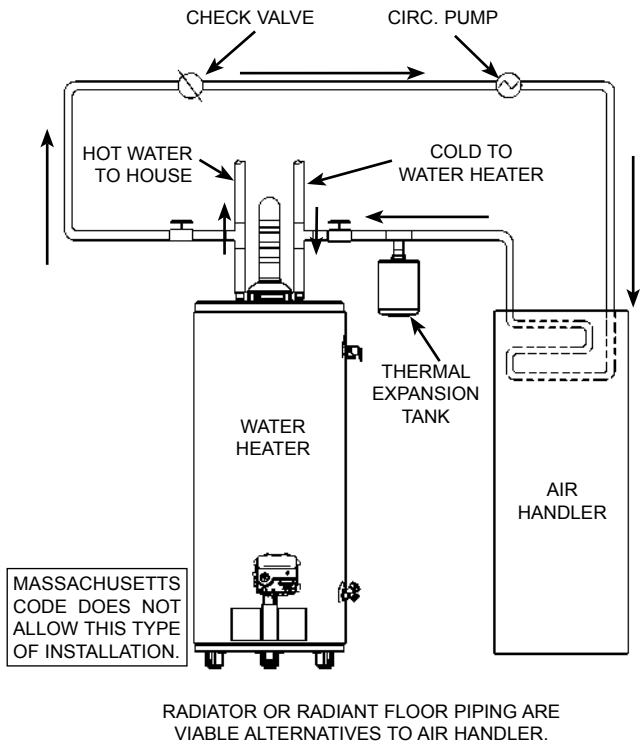


Figure 25 Example Of Combo Heating Piping Schematic

4. If the space heating water system requires water with temperatures in excess of 60°C (140°F), a mixing valve, or other means to temper the water and reduce scald hazard potential, must be installed in the potable hot water supply.
5. If the heater is installed with a back-flow preventer on the incoming water line or in a closed system, a diaphragm-type expansion tank must always be installed in the system to prevent the T&P from relieving due to thermal expansion.
6. Proper sizing of the water heater for the given space and potable heating application is essential to ensure adequate heating capacity. The sizing and installation of such combination system must be performed by qualified personnel and be in accordance with public utility requirements and/or codes having jurisdiction.

The sizing of the water heater should be based on the design heat loss of the structure to be heated plus the potable water requirements.

IT IS IMPORTANT THAT THE WATER HEATER USED BE SIZED PROPERLY TO ALLOW ADEQUATE HEATING AND POTABLE WATER HEATING CAPACITY.

IX) TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
BURNER WILL NOT IGNITE	1. Pilot not lit. 2. Thermostat set too low. 3. No gas. 4. Dirt in the gas lines. 5. Pilot line clogged. 6. Main burner line clogged. 7. Tripped TCO/Blocked flame arrestor. 8. Non-functioning thermopile. 9. Non-functioning thermostat. 10. Heater installed in a confined area.	1. Light pilot. See “Lighting Instructions.”. 2. Turn temp. dial to desired temperature. 3. Check with gas utility company. 4. Notify utility-install trap in gas line. 5. Clean, locate source and correct. 6. Clean, locate source and correct. 7. Clean flame arrestor. 8. Replace thermopile. 9. Replace thermostat. 10. Provide fresh air ventilation.
SMELLY WATER	1. Sulfides in the water	1. Replace the anode with a special anode. Contact Residential Technical Assistance
BURNER FLAME YELLOW-LAZY	1. Insufficient secondary air. 2. Low gas pressure. 3. Water heater flue or vent system blocked. 4. Blocked flame arrestor. 5. Main burner line clogged. 6. Heater installed in a confined area. 7. Obstruction in main burner orifice.	1. Provide ventilation to water heater. 2. Check with gas utility company. 3. Clean, locate source and correct. 4. Clean flame arrestor. 5. Clean, locate source and correct. 6. Proper fresh air ventilation. 7. Clean or replace orifice.
PILOT WILL NOT LIGHT OR REMAIN LIT	1. Non-functioning igniter. 2. The thermal switch tripped. 3. Thermopile connection loose. 4. Air in gas line. 5. Proper lighting sequence not followed. Gas Control Temperature Knob was not held in for sufficient time. 6. Low gas pressure. 7. No gas. 8. Dirt in gas lines. 9. Cold drafts. 10. Thermostat ECO switch open.	1. Replace igniter pilot assembly. 2. See Lighting Instructions. 3. Seat connector firmly in socket. 4. Bleed the air from the gas line. 5. Do not attempt to relight if the status light has turned red. See “Status Light and Diagnostic Code Troubleshooting Chart” for instructions. 6. Check with gas utility company. 7. Check with gas utility company. 8. Notify utility. Install dirt trap in gas line. 9. Locate source and correct. 10. Replace gas control valve/thermostat.
HIGH OPERATION COSTS	1. Thermostat set too high. 2. Sediment or lime in tank. 3. Water heater too small for job. 4. Wrong piping connections. 5. Leaking faucets. 6. Gas leaks. 7. Wasted hot water. 8. Long runs of exposed piping. 9. Hot water piping in exposed wall.	1. Set temperature dial to lower setting. 2. Drain/flush-provide water treatment if needed. 3. Install adequate heater. 4. Correct piping-dip tube must be in cold inlet. 5. Repair faucets. 6. Check with utility-repair at once. 7. Advise customer. 8. Insulate piping. 9. Insulate piping.
INSUFFICIENT HOT WATER	1. Thermostat set too low. 2. Sediment or lime in tank. 3. Water heater too small. 4. Wrong piping connections. 5. Leaking faucets. 6. Wasted hot water. 7. Long runs of exposed piping. 8. Hot water piping in outside wall. 9. Low gas pressure.	1. Turn temperature dial to desired setting. 2. Drain/flush-provide water treatment if needed. 3. Install adequate heater. 4. Correct piping-dip tube must be in cold inlet. 5. Repair faucets. 6. Advise customer. 7. Insulate piping. 8. Insulate piping. 9. Check with gas utility company.

PROBLEM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
SLOW HOT WATER RECOVERY	1. Insufficient secondary air. 2. Water heater flue or vent system blocked. 3. Low gas pressure. 4. Improper calibration. 5. Thermostat set too low. 6. Water heater too small. 7. Wrong piping connections. 8. Wasted hot water.	1. Provide ventilation to water heater. Check flue way, flue baffle, and burner. 2. Clean flue, locate source and correct. 3. Check with gas utility company. 4. Replace thermostat. 5. Turn temperature dial to desired setting. 6. Install adequate heater. 7. Correct piping-dip tube must be in cold inlet. 8. Advise customer.
DRIP FROM RELIEF VALVE	1. Excessive water pressure. 2. Heater stacking. 3. Closed water system.	1. Use a pressure reducing valve and relief valve. 2. Lower the thermostat setting. 3. See “Closed System/Thermal Expansion”.
THERMOSTAT FAILS TO SHUT-OFF	1. Thermostat not functioning properly. 2. Improper calibration.	1. Replace thermostat. 2. Replace thermostat.
COMBUSTION ODORS	1. Insufficient secondary air. 2. Water heater flue or vent system blocked. 3. Heater installed in a confined area.	1. Provide ventilation to water heater. Check flue way, flue baffle, and burner. 2. Clean, locate source and correct. 3. Provide fresh air ventilation.
SMOKING AND CARBON FORMATION (SOOTING)	1. Insufficient secondary air. 2. Low gas pressure. 3. Water heater flue or vent system blocked. 4. Thermostat not functioning properly. 5. Heater installed in a confined area. 6. Burner flame yellow-lazy.	1. Provide ventilation to water heater. Check flue way, flue baffle, burner. 2. Check with gas utility company. 3. Clean, locate source and correct. 4. Replace thermostat. 4. Provide fresh air ventilation. 6. See “Burner Flame Yellow-Lazy”.
CONDENSATION	1. Temperature setting too low.	1. Increase the temperature setting
BURNER FLAME FLOATS AND LIFTS OFF PORTS	1. Orifice too large. 2. High gas pressure. 3. Water heater flue or vent system blocked. 4. Cold drafts.	1. Replace with correct orifice. 2. Check with gas utility company. 3. Clean flue and burner-locate source and correct. 4. Locate source and correct.
BURNER FLAME TOO HIGH	1. Orifice too large.	1. Replace with correct orifice.
FLAME BURNS AT ORIFICE	1. Thermostat not functioning properly. 2. Low gas pressure.	1. Replace thermostat. 2. Check with gas utility company.
PILOT FLAME TOO SMALL	1. Pilot line or orifice clogged. 2. Low gas pressure.	1. Clean, locate source and correct. 2. Check with gas utility company.

Status Light And Diagnostic Code Troubleshooting Chart

LED STATUS	PROBLEM	CORRECTIVE ACTION
0 FLASHES (LED NOT LIT)	Pilot light is not lit or Thermopile has not yet reached normal operating temperature.	1. Turn Gas Control Valve/Thermostat knob to OFF. Wait 10 minutes, then attempt to relight Pilot by following the lighting instructions on the water heater's label. Until the Thermopile reaches its normal operating temperature, the Status Light will not blink, even if the Pilot is lit. It may take up to 90 seconds of continuous Pilot operation before the Thermopile reaches normal operating temperature and the Status Light starts to blink. 2. If the Status Light does not blink after three lighting attempts, check to make sure unit is getting gas. Remove the outer door. Press reset button. Replace outer door. Turn Gas Control Valve/Thermostat knob to OFF. Wait 10 minutes, then attempt to light Pilot by following the lighting instructions on the water heater's label. Look through the view port for the Pilot flame. If Pilot is not visible, the spark igniter or gas supply to the Pilot should be checked. 3. If the Pilot is visible and the Status Light does not blink after 90 seconds of continuous Pilot operation, the Pilot flame may not be heating the Thermopile sufficiently (weak Pilot) or the Thermopile may be defective.
RED LIGHT ON (SOLID)	Pilot light was recently extinguished and the Thermopile is cooling down.	1. Turn Gas Control Valve/Thermostat knob to OFF. Wait 10 minutes for the Thermopile to cool, then attempt to relight Pilot by following the lighting instructions on the water heater's label. Until the Thermopile reaches its normal operating temperature, the Status Light will not blink, even if the Pilot is lit. It may take up to 90 seconds of continuous Pilot operation before the Thermopile reaches normal operating temperature and the Status Light starts to blink.
1 FLASH (EVERY 3 SECONDS)	Normal operation.	1. No corrective action necessary.
2 FLASHES	Pilot is lit but the Thermopile is not producing the required output voltage.	1. Turn Gas Control Valve/Thermostat knob to OFF. The Thermopile is probably defective, but loose wiring connections or a weak Pilot flame can also cause this symptom.
4 FLASHES	The Gas Control Valve's temperature sensor has detected that the water temperature was too high. Once this condition occurs, the Main Burner and the Pilot Light will be shut off. Since the Pilot light will be off, should this condition occur, this Flash Code will only be displayed immediately after the Pilot has been relit. Turn Gas Control Valve/ Thermostat knob to OFF.	1. Turn Gas Control Valve/Thermostat knob to OFF. Turn Main Gas Supply OFF. Replace the Gas Control Valve/ Thermostat. See "Removing and Replacing the Gas Control Valve/Thermostat."
5 FLASHES	The temperature sensor (thermistor) is defective.	1. Turn Gas Control Valve/Thermostat knob to OFF. Replace the temperature sensor (thermistor).
7 FLASHES	Gas Control Valve failure.	1. Turn Gas Control Valve/Thermostat knob to OFF. Turn Main Gas Supply OFF. Replace the Gas Control Valve/ Thermostat. See "Removing and Replacing the Gas Control Valve/Thermostat."

LED STATUS	PROBLEM	CORRECTIVE ACTION
8 FLASHES	This condition only appears if the gas control/temperature knob has been turned off and the thermopile continued to produce electric power. This condition can occur if the thermopile does not cool down as quickly as expected when the unit is shut off. This condition can also occur if the gas control/temperature knob has been turned off and the pilot continues to operate because the pilot valve is stuck in the open position.	1. Make sure that the gas control valve/thermostat knob is set to OFF. Wait one minute. Remove the outer door. Look through the sight glass for a pilot flame. If a pilot flame is observed with the gas control valve/thermostat knob set to the OFF position, the pilot valve is stuck open. Turn the main gas supply OFF. Replace the gas control valve/thermostat. For instructions, see “Removing and Replacing the Gas Control Valve/Thermostat.” 2. If the pilot flame is not observed when the gas control valve/thermostat knob is set to the OFF position, wait 10 minutes for the thermopile to cool, then attempt to relight the pilot by following the lighting instructions on the water heater’s label. If this condition returns, replace the gas control valve/thermostat. See “Removing and Replacing the Gas Control Valve/Thermostat” for instructions.

IX) REPAIR PARTS ILLUSTRATION

1. NIPPLE-HOT OUTLET
2. NIPPLE-COLD INLET
3. DRAFTHOOD
4. TEMPERATURE & PRESSURE RELIEF VALVE
6. ANODE
7. DIP TUBE
9. DRAIN VALVE
10. BURNER/MANIFOLD ASSEMBLY
11. GAS CONTROL/THERMOSTAT
12. OUTER DOOR
14. TCO SWITCH
15. FLEXIBLE MANIFOLD TUBE

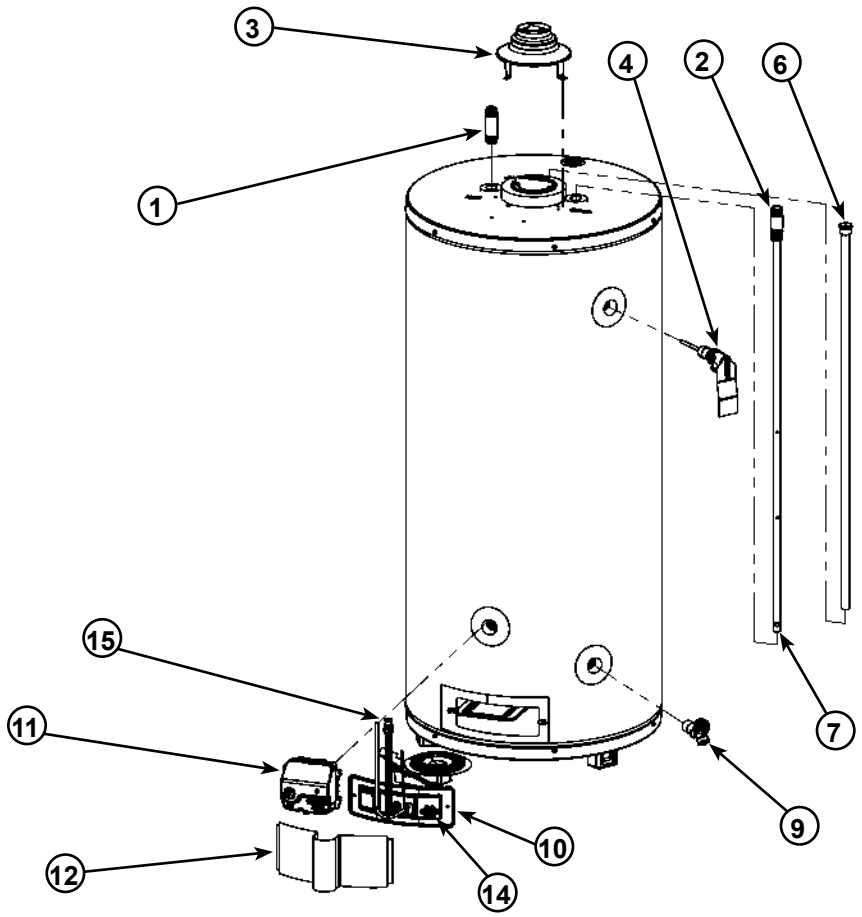


Figure 26 Repair Parts (Heaters Vesta control)

14. TCO SWITCH
15. FLEXIBLE MANIFOLD TUBE
17. PILOT ASSEMBLY
18. VIEWPORT
19. TWO PIECE GROMMET WITH CLIP
20. MANIFOLD DOOR
21. GAS MANIFOLD
22. PILOT TUBE
23. GAS ORIFICE
24. MANIFOLD DOOR GASKET
25. BURNER

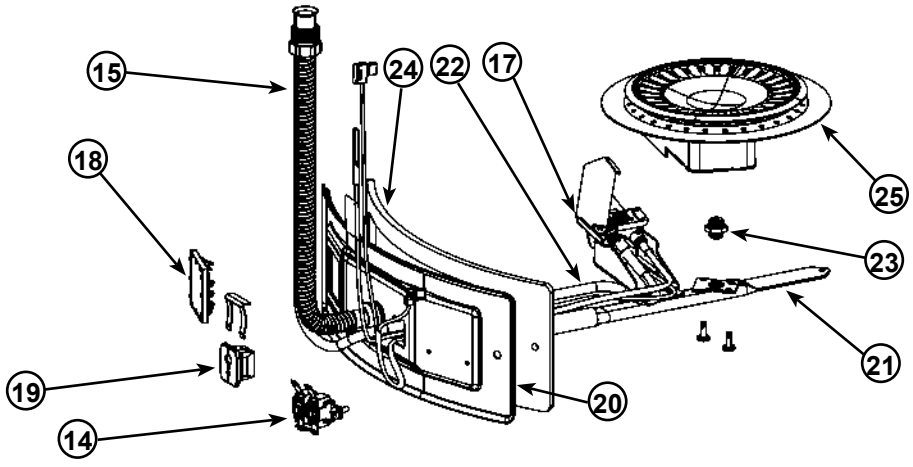
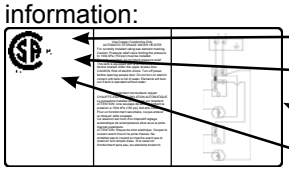


Figure 27 Manifold/Door Assembly (Vesta)

When referencing the water heater for service or warranty, please refer to the rating plate affixed to the unit for the following information:



Warranty Code:	P	R	S	U	V	W	Y
Inner Tank Warranty Years:	3	5	6	8	9	10	12
Component Part Warranty Years:	1	1	1	6	1	1	1

The Serial Number contains the warranty and manufacture date information for the unit as follows:

U9999 F999999

Warranty code
Year of manufacture
Week of manufacture

Example: U1005 F001234

Manufactured in week 5
Manufactured in 2010
8 year tank, 6 year parts warranty

The Warranty Code indicates the inner tank and component part warranties as shown in the table above.

LIMITED WARRANTY

RESIDENTIAL STORAGE TANK TYPE WATER HEATER FOR INSTALLATION IN A SINGLE FAMILY DWELLING

A. WHO IS COVERED.
GSW WATER HEATING AND ITS SUPPLIERS, (herein collectively referred to as “Manufacturer”) warrants only to the original consumer purchaser (hereinafter “Owner”) of the water heater, within the boundaries of the continental United States or Canada, or their territories, so long as he or she continuously occupies the single family dwelling in which this water heater is initially installed for the period specified below. This Warranty is not transferable. This Warranty is reduced to one year if the water heater is used in a commercial or industrial application, or if the water heater is used to supply more than one dwelling unit. Consumers must retain point-of-sale proof of purchase to validate warranty entitlement.

B. WHEN IT IS COVERED.
The water heater is warranted only when it is installed, operated, and maintained in accordance with the printed instructions accompanying the water heater. The water heater shall/must be installed in such a manner that, if the tank or any connection thereto should leak, the resulting flow of water will not cause damage to the area in which it is installed. The water heater’s temperature and pressure relief valve must be piped to the nearest drain to avoid damage in the event the valve is actuated. For detailed instructions, read the manual accompanying the water heater and review drawings in the manual.

C. WHAT THE MANUFACTURER WILL DO AND THE PERIOD OF COVERAGE.

1. **The Inner Tank**. If the inner tank leaks within the warranty period shown in the table above after the original installation, the Manufacturer will furnish a new water heater of the Manufacturer’s then prevailing comparable model. If industry standards, regulatory changes, product improvements, or product obsolescence prohibits the Manufacturer from furnishing an identical model replacement water heater under this Warranty, the Owner will be furnished with a new water heater of comparable capacity; however, the Owner will be charged for the additional value of the item(s) which the Manufacturer has incorporated in the replacement water heater. A prior authorization number must be obtained from the Manufacturer before replacing the water heater. This Warranty is limited to one replacement water heater at the original installation site.
2. **Component Part**. If any component, part other than the inner tank, proves to the Manufacturer’s satisfaction to be defective in material or workmanship within the warranty period shown in the table above after the original installation, the Manufacturer will furnish the Owner with a replacement for the defective part(s). This Warranty is limited to one replacement component part for each original part.
3. **Return of Defective Water Heater and Component Parts**. The Manufacturer reserves the right to examine the alleged defect in the water heater or component part(s). As such, it will be the Owner’s obligation (see paragraph D. 3) to return the water heater and/or component part(s) to the Manufacturer.
   a. When returning a water heater, it must include all component parts and the rating plate label.
   b. When returning component part(s), they must be individually tagged and identified with the water heater’s Model Number, SKU, Serial Number, date of purchase, and date of installation.
   c. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THIS EXPRESS WARRANTY IS, WHERE PERMITTED BY LAW, IN LIEU OF AND EXCLUDES AND REPLACES ALL OTHER CONDITIONS, WARRANTIES, GUARANTEES, REPRESENTATIONS, OBLIGATIONS OR LIABILITIES OF THE MANUFACTURER OF ANY NATURE OR KIND, EXPRESS OR IMPLIED, HOWEVER ARISING (WHETHER BY CONTRACT, CONDUCT, STATEMENT, STATUTE, NEGLIGENCE, PRINCIPLES OF MANUFACTURER’S LIABILITY, OPERATION OF LAW, OR OTHERWISE) WITH RESPECT TO THE UNIT OR ITS FIRNESS FOR A PARTICULAR PURPOSE, METCHANTABILITY, INSTALLATION, OPERATION, REPAIR, OR REPLACEMENT. THE MANUFACTURER EXPRESSLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES. IN NO EVENT WILL THE MANUFACTURER’S LIABILITIES EXCEED THE COST OF THE DEFECTIVE PART(S) OR UNIT.

D. WHAT THIS WARRANTY DOES NOT COVER.

1. The Unit must not be installed where water damage can result from a leak, while provision(s) shall be made for directing any water escaping from the Unit to a properly operating drainpipe. As all units of this type may eventually leak, you must protect against any potential water damage. The Manufacturer accepts no responsibility for such damage, nor any incidental or consequential loss, nor damage(s) related thereto, suffered by the Owner of the Unit nor by any third party.
2. The Manufacturer shall not be liable under this Warranty and this Warranty shall be void and have no effect if the following events occur:
   a. The water heater or any of its component parts have been subject to misuse, alteration, neglect, or accident; or

b. The water heater has not been installed in accordance with the applicable local plumbing and/or building code(s) and/or regulations or, in their absence, with the latest edition of the Natural Gas and Propane Installation Code, and/or the Canadian Electrical Code; or
c. The water heater is not installed, operated, and maintained in accordance with the Manufacturer's instructions, including if the water heater has any additional aftermarket equipment introduced into the sealed system not approved by the Manufacturer; or
d. The water heater or any of its component parts are damaged or fails from operation with an empty or partially empty tank (such as, but not limited to elements burned out in a dry tank); or
e. The water heater or any part has been under water; or
f. The water heater is exposed to highly corrosive atmospheric conditions. No warranty extends, for example, and without limitation of the foregoing, to Units exposed to: salts, chemicals, exhausts, pollutants, or contaminants; or
g. The water heater is not continuously supplied with potable water; or
h. The water heater replacement is requested for reasons of noise, taste, odour, discolouration, and/or rust; or
i. The water heater is operated at temperatures exceeding the maximum setting of the thermostat and/or high limit control provided by the Manufacturer, or at water pressures exceeding the pressure reading stated on the Unit; or
j. The water heater is operated without an operating anode; or
k. The water heater is supplied or operated with deionized water; or
l. The water heater is removed from its original installation location; or
m. The water heater is installed outdoors (this water heater is intended only for indoor installation); or
n. The water heater is converted, or is attempted to be converted, from one voltage or wattage to another, if an electric water heater, or from one gas type to another, if a gas water heater; or
o. The water heater has not been fired at the factory rated input and fuel for which it was factory built; or
p. The water heater or any of its component parts fail due to sediment build-up; or
q. The water heater does not have installed a properly operating temperature and pressure relief valve, certified to ANSI Z21.22/CSA "Requirements for Relief Valves for Hot Water Supply Systems"; or
r. The water heater or any of its component parts fail because of fire, floods, lightning, or any other act of God, or any other contingency beyond the control of the Manufacturer; or
s. The water heater is installed in a closed system without adequate provision for thermal expansion.

3. Except when specifically prohibited by the applicable law, the Owner, and not the Manufacturer, shall be liable for and shall pay for all charges for labour or other expenses incurred in the removal, repair, or replacement of the water heater or any component part(s) claimed to be defective or any expense incurred to remedy any defect in the product. Such charges may include, but are not necessarily limited to:
   a. All freight, shipping, handling, and delivery costs of forwarding a new water heater or replacement part(s) to the Owner.
   b. All costs necessary or incidental in removing the defective water heater or component part(s) and installing a new water heater or component part(s).
   c. Any material required to complete and/or permits required for the installation of a new water heater or replacement part(s), and
   d. All costs necessary or incidental in returning the defective water heater or component part(s) to a location designated by the Manufacturer.
4. The terms of this Limited Warranty cannot be modified by any person, whether or not he/she claims to represent or act on behalf of the Manufacturer.

E. HOW THE ORIGINAL OWNER CAN MAKE A WARRANTY CLAIM.

1. The Owner should submit the warranty claim direct to the Manufacturer's Service Department, at the address or phone number listed below, and the Manufacturer will arrange for the handling of the claim.
2. Whenever any inquiry or request is made, be sure to include the water heater's Catalogue Number, Model Number, Serial Number, date of purchase, date of installation, and location of installation.

This Warranty and the Manufacturer's obligations shall be construed and determined in accordance with the laws of both the Province of Ontario, and of Canada in force therein. This Warranty does not affect specific legal rights of a consumer under applicable law, except to the extent that such rights may be waived or replaced, and the provisions hereof are deemed to be amended to the extent necessary. The unenforceability of any provision, in whole or in part, of this Certificate shall not affect the remaining provisions. Any and all repair and/or replacement of part(s) or Unit are the sole and exclusive remedy available against the Manufacturer.

John Wood Water Heaters
599 Hill Street West
Fergus, ON Canada N1M 2X1
Should you have any questions, please
Visit us online at **www.johnwoodwaterheaters.com**, or
E-mail us at techsupport@gsw-wh.com, or
Call our Technical Support line at 1 888 GSW TECH (479 8324)