

DIRECT VENT GAS FIRED 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.



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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 Indicates an imminently hazardous situation which, if not avoided, will result in death or injury.



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

Thank you for purchasing this water heater. Properly installed and maintained, it will provide years of trouble free service. This manual gives instructions 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.

The warranty on this water heater is applicable only when the water heater is installed and operated in accordance with these instructions. The manufacturer of this water heater will not be liable for any injury or property damage resulting from failure to comply with these instructions. Protect your warranty: Regularly maintain your water heater as detailed in the service and maintenance section of this manual.

This product is certified to comply with a maximum weighted average of 0.25% lead content as required in some areas.

Consumer Responsibilities

This manual has been prepared to acquaint you with the installation, operation and maintenance of your gas fired water heater and provide important safety information in these areas. 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 AND UNDERSTAND ALL INSTRUCTIONS BEFORE YOU ATTEMPT TO INSTALL, OPERATE OR MAINTAIN THIS HEATER.

Installation and service requires trade knowledge in the areas of plumbing, electricity, venting, air supply and gas supply. If you lack these skills or have difficulty understanding these instructions, you should not proceed. Enlist the help of a qualified service technician to install this water heater.

Examples of qualified service technicians include those trained in the plumbing and heating industry, local gas utility personnel or an authorized service person.

Service to the system should only be performed by a qualified service technician.

The manufacturer and seller of this water heater will not assume any liability for any property damage, personal injury or death resulting from improper sizing, installation or failure to comply with these instructions.

The warranty on this water heater is in effect only when the water heater is installed and operated in accordance with these instructions. A data plate identifying your water heater can be found above the gas control/thermostat. When referring to your water heater, always have the information listed on the data plate readily available.

Protect your warranty: Regularly service your water heater as directed in the "Maintenance" section of this manual. Retain your original receipt as proof of purchase.

Do not discard this manual. You or future users of this water heater will need it for reference.

II) SAFETY

This water heater is design-certified by CSA International as a direct vented water heater.

In addition to the installation instructions found in this manual, the water heater must be installed in accordance with all local and provincial or state codes or, in the absence of such, with the latest editions of the following specifications.

"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

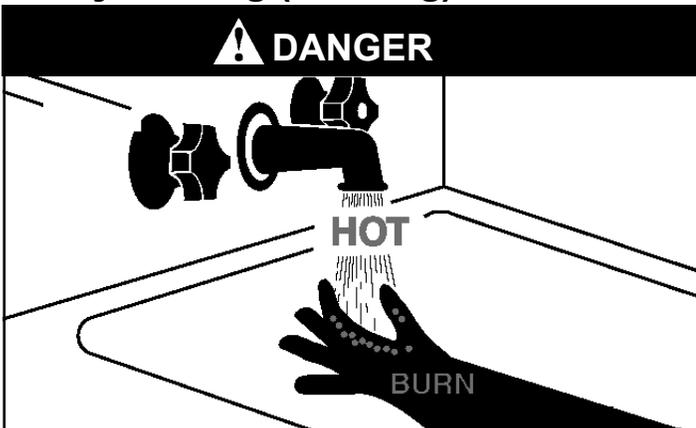
Check your phone listings for the local authorities having jurisdiction over your installation.

Safety Warning (Flammable Vapours)



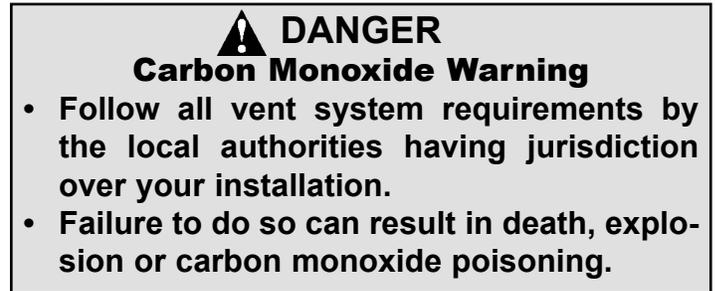
There is a risk of property damage, personal injury or death from the by-products of combustion (e.g., flue gases), in using fuel-burning appliances such as water heaters. Areas that may not be suitable for water heater installation include those where flammable liquids, gasoline, solvents, adhesives etc. are stored, or where engine-driven equipment or vehicles are stored, operated or repaired. These, and similar products, should not be stored or used near the water heater or air intake. 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 burner flame can ignite these vapours causing a flashback, fire or explosion, which may result in severe property damage, serious personal injury or death. If flammable liquids or vapours have spilled or leaked in the area of the water heater, leave the area immediately and call the fire department from a neighbor's home. Do not attempt to clean the spill until all ignition sources have been extinguished.

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 when water temperatures exceed 52°C (125°F). Use mixing valves, also known as mixing valves, 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)

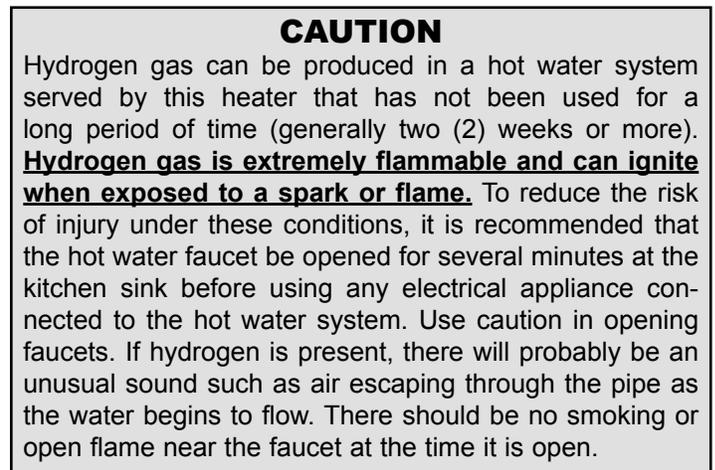


Relief Valve Requirements (T&P)

All water heaters must be fitted with a proper temperature and pressure relief valve. These valves must be certified as meeting the requirements of the "Standard For Relief Valves For Hot Water Supply Systems, ANSI Z21.22/CSA 4.4".

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 service technician.

THESE CONDITIONS CAN RESULT IN UNSEEN INTERNAL DAMAGE and are not subject to warranty coverage.



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 data label from outside of the water heater or on the inside of panels.

- Remove exterior packaging and place installation components aside.
- Inspect all parts for damage prior to installation and start-up.
- Completely read 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.

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

Location

Generally, the location selected should be as close to the wall as practical and as centralized with the piping system as possible. Heater should be located in an area not subject to freezing temperatures.

The water heater should be located so that the controls and drain are easily accessible.

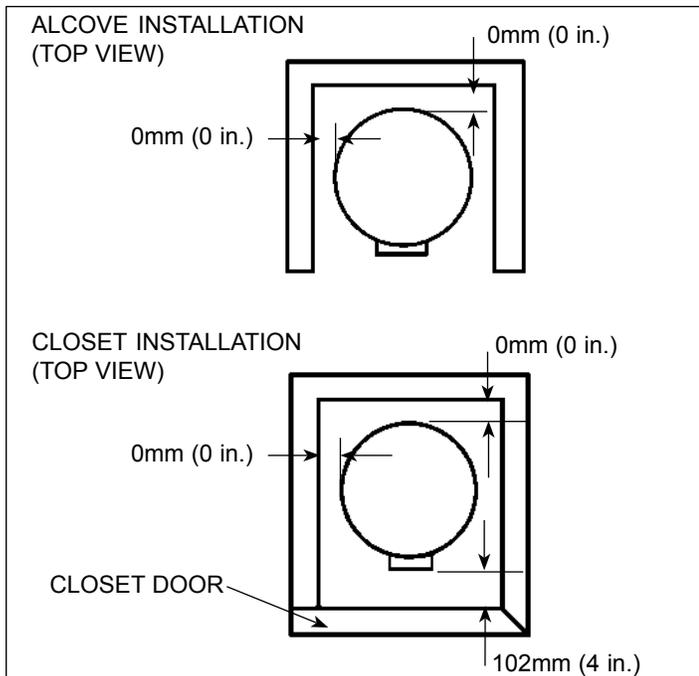


Figure 1 Minimum Installation Clearances

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 metal 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 metal drain pan to a properly operating floor drain.

CAUTION: When this water heater is installed directly on carpeting, carpeting must be protected by a metal or wood panel beneath the appliance extending beyond the full width and depth of the appliance by at least 76mm (3 in.) in any direction, or if the appliance is installed in an alcove or closet, the entire floor must be covered by the panel. The panel must be strong enough to carry the weight of the heater when full of water. Failure to heed this warning may result in a fire hazard.

Minimum clearances between the heater and combustible/non combustible materials are 0mm (0 in.) at the sides and rear; 508mm (20 in.) from the top of water heater and 25mm (1 in.) around the vent pipe. A minimum of 915mm (3 ft.) of clearance is required at the front (control) side of the heater for service.

For a closet installation, the door at burner side should be openable and a minimum of 102mm (4 in.) clearance is needed. Water heater is certified for installation on a combustible floor (see Figure 1).

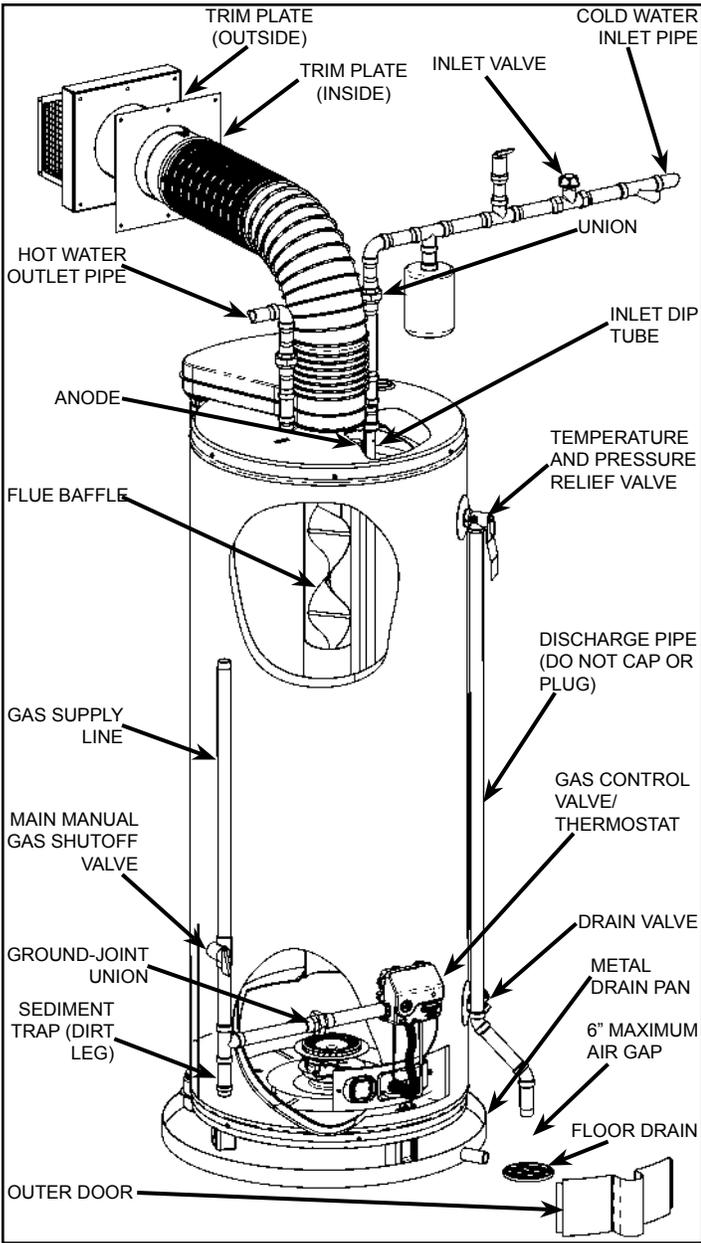


Figure 2A - Installation Components.

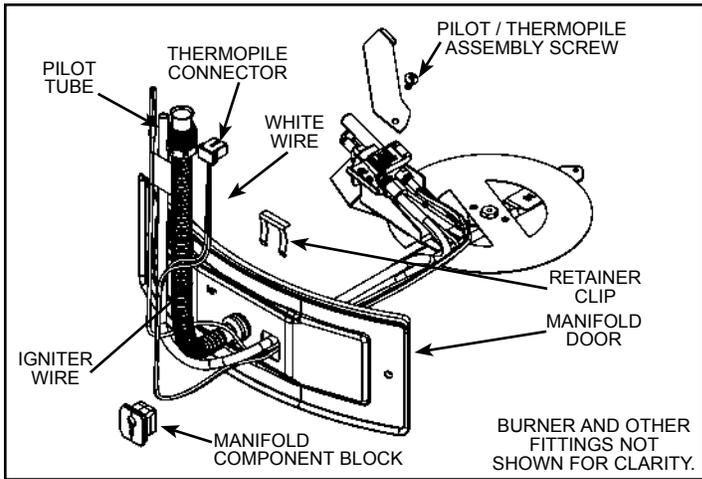


Figure 2C - Installation Components.

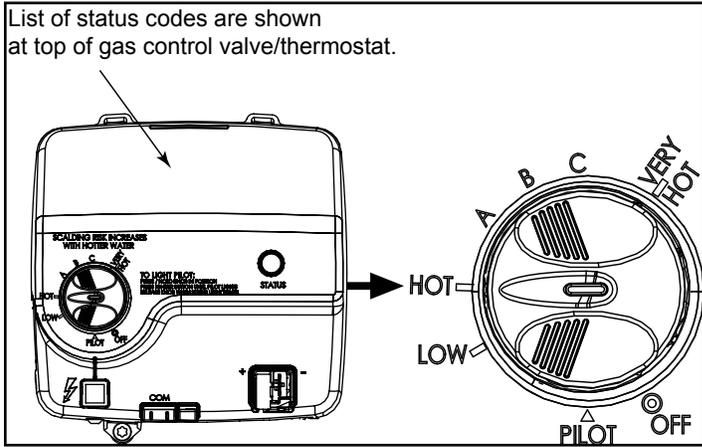


Figure 2D - Installation Components.

Figure 2B shows the location of a pressure relief and/or expansion tank if a check valve or pressure-reducing valve is in the cold water supply to the house. Use OPTION 1 or 2 whichever is more convenient. If pressure relief valve is used, select one with a setting 172 kPa (25 psi) below the T&P valve rating at tank.

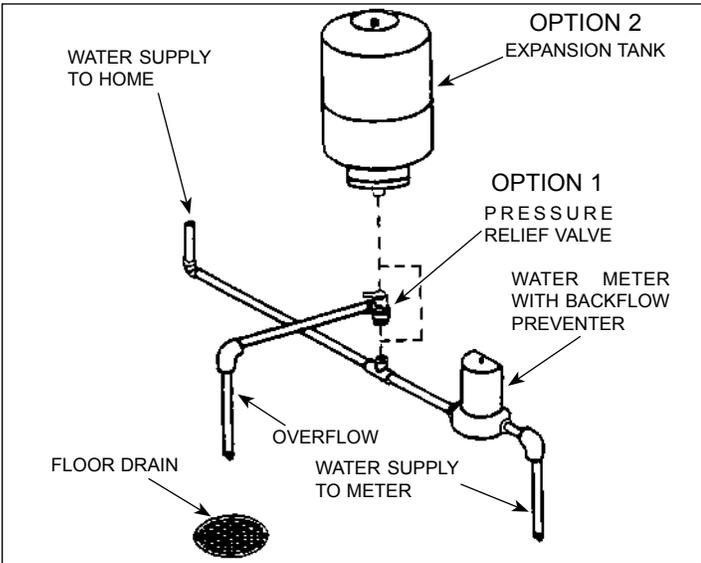


Figure 2B - Installation Options.

Venting

Make certain to observe the vent location limitations complying with the "Natural Gas and Propane Installation Code" CSA-B149.1 or "National Fuel Gas Code" ANSI Z223.1 (NFPA 54) and/or local codes. There is some important information shown in Figure 3.

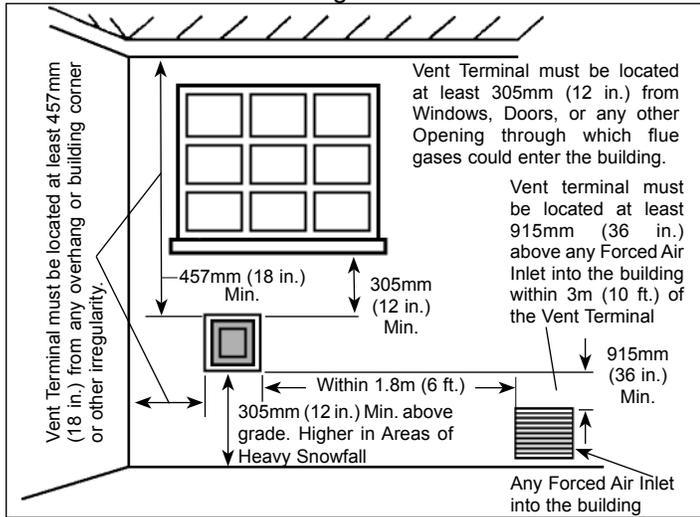


Figure 3 - Vent Location Limitations

For a second or more direct vent unit, the distance between vent terminals must have a minimum of 305mm (12 in.).
INSPECT SHIPMENT — There may be hidden damage caused by transit. Check to be certain all parts of the venting system, as shown in Figures 3A through 3M, are present. Inspect the upper and lower air inlet boxes, rear air tube and all parts of the venting system (see Figure 2A).

CAUTION

If there are any damaged parts, DO NOT install this water heater. Report any shortage to your distributor and damage to your carrier.

Note: The four fasteners that are required to secure the vent terminal to the exterior wall are not provided. These should be screw type (not nails) chosen for the type of construction and obtained locally.

CAUTION

Cut edges of corrugated (flex) pipe are extremely sharp. Wear gloves when handling.

Vent connections

After the location for the vent terminal has been selected as outlined in Figure 3, use the following illustrations for installation:

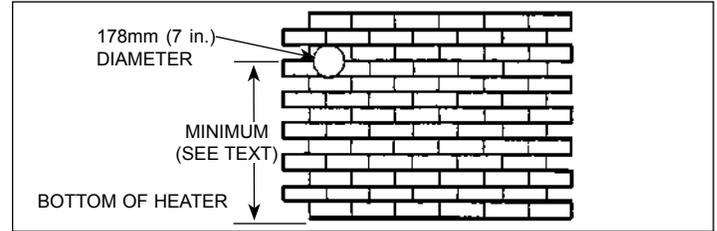


Figure 3A - Locating Clearance Hole For Vent.

Cut a clearance hole, approximately 178mm (7 in.) in diameter, through the exterior wall for the vent assembly. The minimum height should not be less than 1.72m (68 in.) for 40 gal. models and not less than 1.93m (76 in.) for 50 gal. models, as measured from the hole center to bottom of water heater. The maximum height recommended is 2.28m (90 in.) or in compliance with Figure 3M.

* If the exterior wall is less than 356mm (14 in.) thick, the clearance from the vent to combustible materials within the hole can be 0mm (0 in.). If the wall thickness exceeds 356mm (14 in.), maintain a clearance of 25mm (1 in.) to combustible materials within the hole.

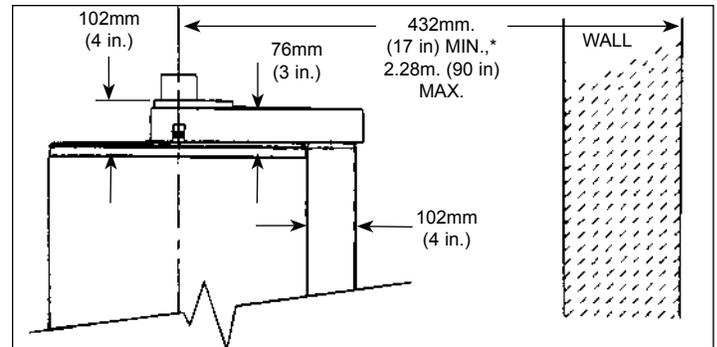


Figure 3B - Moving Water Heater To Its Final Installed Location.

Move the water heater to its final installed location. Make certain clearances from combustible material are observed. The maximum distance from center of water heater to outside wall must not be more than 2.28m (90 in.).

* If the horizontal distance is less than 760mm (30 in.), the restricter plate must be installed (see Figures 3N & 3O).

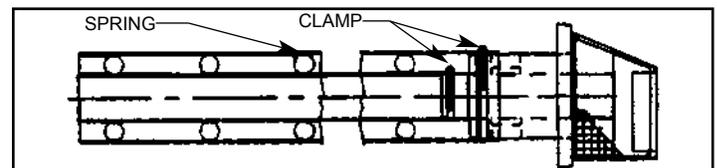


Figure 3C - Vent Assembly.

The vent pipe and terminal are assembled by the manufacturer as shown in Figure 3C. There are springs fastened inside the corrugated pipe. When the vent pipes are pulled to a required length, the distances between the springs will still be equally spaced.

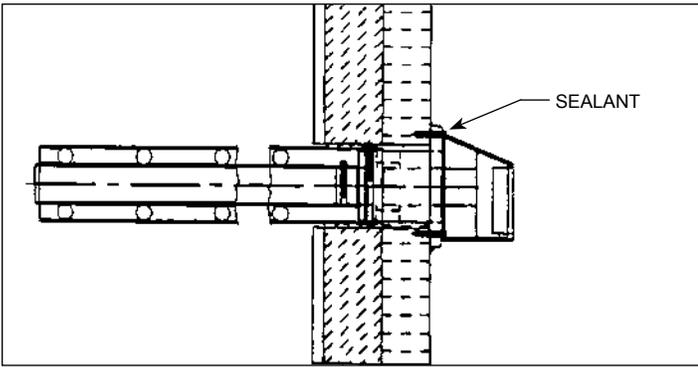


Figure 3D - Securing Vent Termination Assembly To The Exterior Wall.

Introduce the 152mm (6 in.) pipe through the clearance hole from exterior wall then secure the vent terminal to the exterior wall with 4 screw anchors appropriate for the type of wall construction. Caulk the junction of the vent terminal base plate and the exterior wall with exterior type silicone sealant.

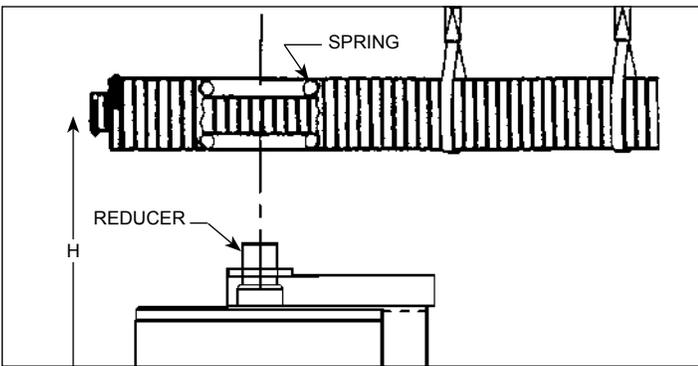


Figure 3E - Uncompressing Corrugated Tubing.

1. Pull the 80mm (3-1/8 in.) corrugated pipe towards the water heater and leave some length over the water heater's center for bending.
2. Pull the 152mm (6 in.) corrugated pipe toward the water heater and leave it 25mm (1 in.) shorter than 80mm (3-1/8 in.) pipe.
3. Make sure there are two springs evenly spaced at the bend in the pipe.
4. Use metal hangers to keep vent pipe level or with a slope upward from the heater to terminal.

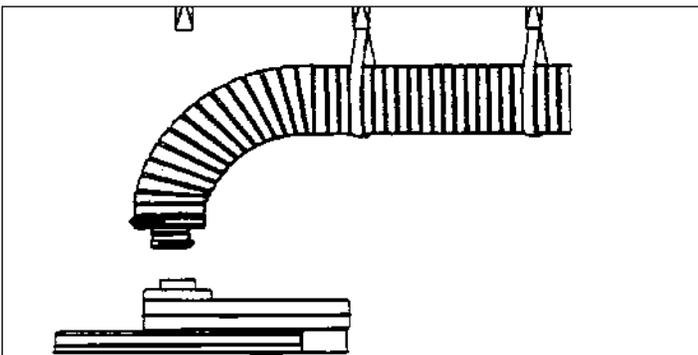


Figure 3F

Bend the 80mm (3-1/8 in.) and 152mm (6 in.) corrugated pipe all together toward the water heater's flue connection.

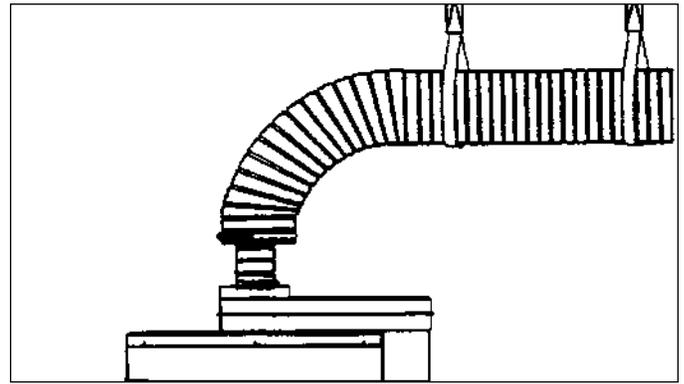


Figure 3G

Pull and connect the 80mm (3-1/8 in.) corrugated pipe to the water heater's flue tube reducer with hi-temp red silicone and gear clamp. Make sure this connection is tight and leak proof.

*The sealant between 80mm (3-1/8 in.) corrugated pipe and water heater's flue tube reducer must be hi-temp red silicone or other material suitable for 315°C (600°F) continuous service.

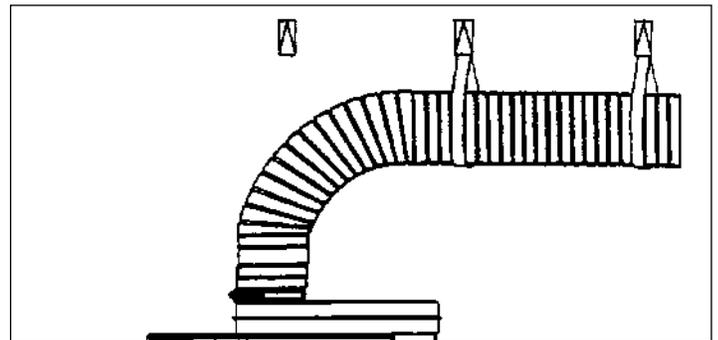


Figure 3H

Apply silicone around 152mm (6 in.) collar on air manifold box. Pull corrugated vent tube all the way on to collar and secure with one sheet metal screw (approx. 19mm (3/4 in.) up from edge of vent tube. Pull gear clamp past screw and tighten.

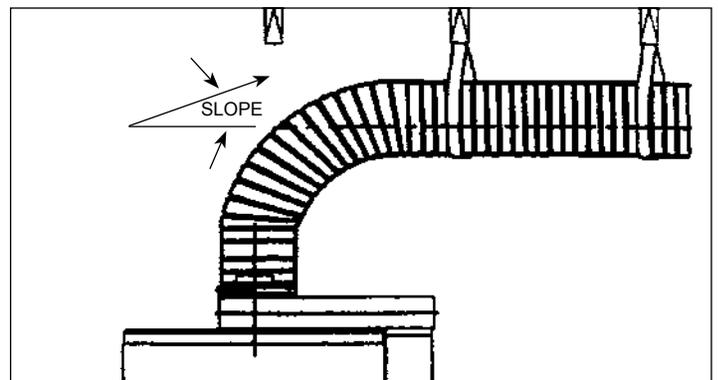


Figure 3J

Check the vent pipe's level or slope again, and adjust if required.

Offset vent pipe arrangement

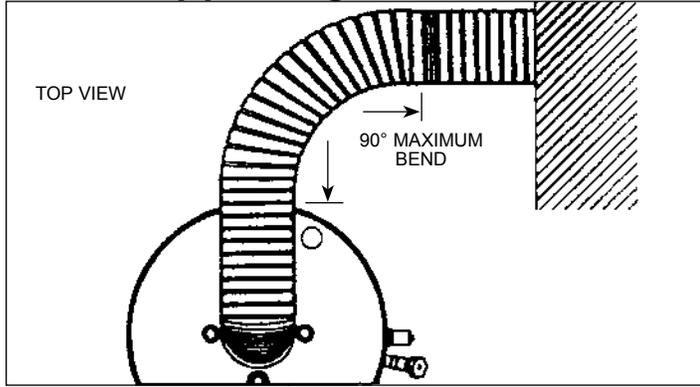


Figure 3K - CONDITION 1

Where a straight vent pipe arrangement is impossible, a horizontal 90 degree maximum bend can be made. Use the water heater casing outer diameter as a template to form the corrugated pipe.

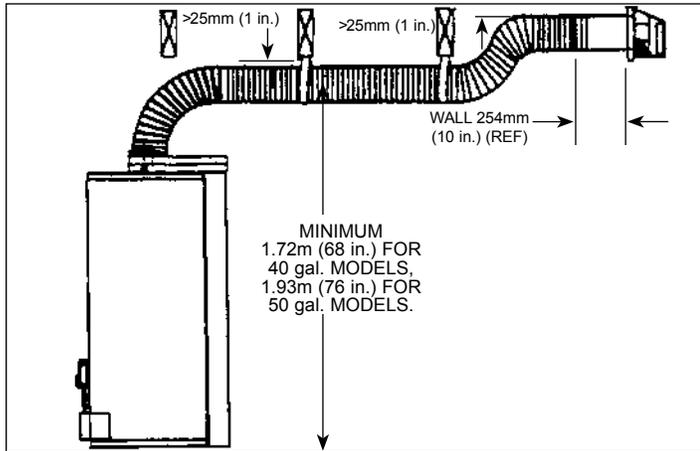


Figure 3L - CONDITION 2

Where floor joists impede venting, a rise to complete the vent termination is possible. All installations require 25mm (1 in.) clearance to combustibles.

Note:

- A. The maximum horizontal vent pipe length of 2.28m (90 in.) minus wall thickness should be considered when installing an offset vent arrangement.
- B. Do not combine condition 1 (3K) with condition 2 (3L) in the same installation.

High rise vent pipe arrangement

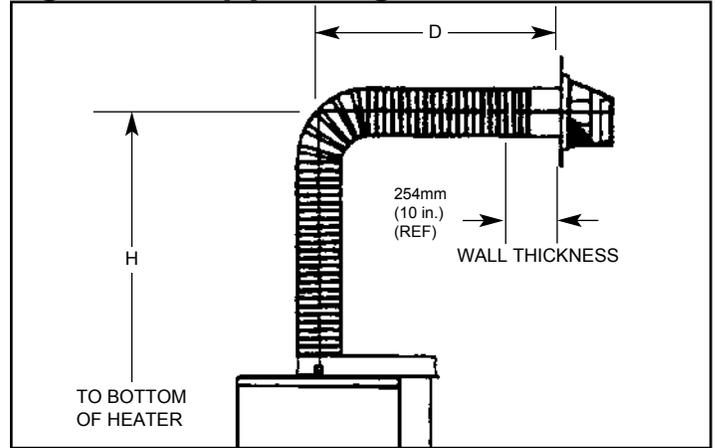


Figure 3M

When the height H (From vent terminal center line to bottom of heater) is over 2.28m (90 in.), it is a high rise vent pipe arrangement. In this case, the minimum distance "D" from the center of the water heater to the outside wall surface is 560mm (22 in.), and the maximum height of "H" is 3.66m (12 ft.).

Vent Restrictor Plate

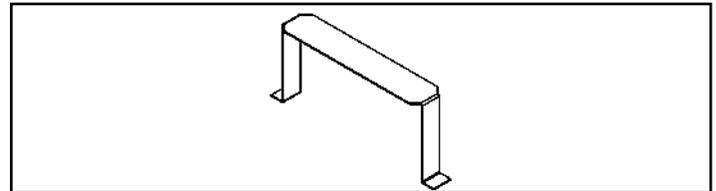


Figure 3N - Restrictor Plate.

For short horizontal vent runs (see Figure 3B) place the restrictor plate over the flue tube reducer before connecting the 80mm (3-1/8 in.) corrugated tube to the flue tube reducer. DO NOT use the restrictor plate if the horizontal run is greater than 760mm (30 in.).

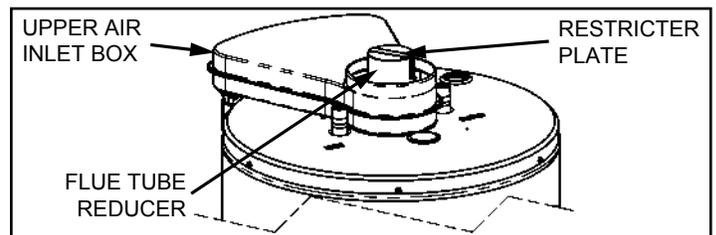


Figure 3O - Restrictor Plate Installation.

Gas Connections

Install the gas piping as indicated in Figure 2A. Use only new pipe and fittings with sound, clean-cut pipe threads. Sealing compound must conform to the applicable code for pipe sealing compound approved for use with natural gas and propane. Use gas piping of adequate sizing to ensure full gas input. All piping must comply with all local codes. In the absence of local codes, piping must comply with the rules stated by the applicable "Natural Gas and Propane Installation Code" CSA-B149.1 or "National Fuel Gas Code" ANSI Z223.1 (NFPA 54). The final connection to the gas control valve is made using 1/2" NPT pipe.

Inlet gas pressure to the appliance must not exceed the gas pressures marked on the rating plate; 7.0 in. w.c. (1.7 kPa) for natural gas, 14 in. w.c. (3.5 kPa) for L.P. gas. The minimum supply pressure for the purpose of input adjustment is 1 in. w.c. (0.25 kPa) above manifold pressure.

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

The appliance and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressure in excess of 14 in. w.c. (3.5 kPa).

The appliance must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to, or less than 14 in. w.c. (3.5 kPa).

The appliance and its gas connection must be leak tested before placing the appliance in operation. It is important to have a readily accessible manual shut-off valve in the gas line supplying the water heater. This shut-off valve must be close to the heater. In addition, a drip leg must be installed ahead of the gas control valve to help trap sediment and foreign material.

A ground-joint union must be installed ahead of the gas valve to permit easy removal of the unit. All leak testing must be done with a soapy water solution.

NEVER USE A MATCH OR OPEN FLAME TO TEST FOR GAS LEAKS. A FIRE OR EXPLOSION COULD RESULT.

Gas Supply

Read the data plate to be sure the water heater is made for the type of gas you will be using in your home. This information will be found on the data plate located above the gas control valve. If the information does not agree with the type of gas available, do not install or attempt to start. Call your dealer.

 **DANGER**



Explosion Hazard

- **Use a new CSA approved gas supply line.**
- **Install a gas supply shut-off valve.**
- **Do not connect a natural gas water heater to a L.P. gas supply.**
- **Do not connect a L.P. gas water heater to a natural gas supply**
- **Failure to follow these instructions can result in death, an explosion or carbon monoxide poisoning.**

Note: An odourant is added by the gas supplier to the gas used by this water heater. This odourant may fade over an extended period of time. Do not depend upon this odourant as an indication of leaking gas.

Water Piping

Pipes and fittings should be installed in compliance with the installation drawing. Check for dip tube in cold water fitting before connection of hot and cold water lines. It is recommended that a shut-off valve be located in the cold-water supply line in close proximity to the cold water inlet of the water heater. Show the user where this water shut-off valve is installed and how to use it to shut the water supply to the heater off.

Connect the cold water supply (3/4" NPT) to the fitting marked "COLD", the hot water outlet (3/4" NPT) to the fitting marked "HOT". Do not apply heat to either of these fittings as they contain a nonmetallic tube. Solder the pipe to an adapter before attaching the adapter to the hot and cold water fittings. When making these connections, always use a good grade of pipe joint compound and be certain that all fittings are tight. See installation drawing (Figure 2A).

After piping has been installed, allow tank to fill with water and check connections for leaks. To ensure complete filling of the tank, allow air to exit by opening the nearest hot water faucet until a constant flow of water is obtained.

Temperature & Pressure Relief Valve

For protection against excessive pressure and/or temperatures, a temperature and pressure relief valve has been installed in the water heater.

ANY REPLACEMENT VALVE MUST NOT EXCEED THE TEMPERATURE AND PRESSURE RATING. FAILURE TO INSTALL AND MAINTAIN A NEW, PROPERLY LISTED TEMPERATURE AND PRESSURE RELIEF VALVE WILL RELEASE THE MANUFACTURER FROM ANY CLAIMS WHICH MIGHT RESULT FROM EXCESSIVE TEMPERATURE OR WATER PRESSURE.

Pressure rating of the valve must not exceed the working pressure shown on the rating plate of the water heater. The discharge capacity must be equal to or greater than the input to the water heater. Temperature and Pressure Relief valve piping must terminate 152mm (6 in.), no more than 305mm (12 in.) (reference the applicable code) above a floor drain or external to the building. Do not thread, cap, or plug the end of this discharge line. Be certain that no contact is made with any live electrical part. Do not connect discharge line directly to drain (see Figure 2A). To prevent bodily injury, hazard to life or damage to property, the relief valve must be allowed to discharge water in the event of excessive temperature or pressure developing in the water heater. The function of the temperature and pressure relief valve is to discharge water in quantities should circumstances demand. If the discharge pipe is not directed to drain as shown in Figure 2A, or other suitable means, the water flow may cause property damage.

The discharge line:

1. must not be smaller than the outlet pipe size of the relief valve,
2. must not be plugged or blocked,
3. must be material capable of withstanding 99°C (210°F) without distortion,
4. must be installed so as to allow complete drainage of both temperature and pressure relief valve,
5. must terminate at an adequate drain, and
6. must not have any valve between the relief valve and the water heater.

⚠ WARNING

Do not attempt to operate this water heater with the cold water inlet valve closed. Manually operate the Temperature and Pressure Relief valve at least once a year. Standing clear of the outlet (discharge water may be hot), lift and release the lever handle on the Temperature and Pressure Relief valve to make the valve operate freely.

NEVER OPERATE THE HEATER IF IT IS NOT COMPLETELY FILLED WITH WATER. TO MAKE SURE THE HEATER IS FILLED, OPEN A HOT WATER TAP UNTIL A FULL FLOW OF WATER IS VISIBLE WITH NO AIR ESCAPING.

Closed system/Thermal expansion

As water is heated, it expands (thermal expansion). In a closed system, the volume of water will increase. As the volume of water increases, there will be a corresponding increase in water pressure due to thermal expansion. Thermal expansion can cause premature tank failure (leakage). This type of failure is not covered under the limited warranty. Thermal expansion can also cause intermittent temperature-pressure relief valve operation: water discharged from the valve due to excessive pressure build up. The temperature-pressure relief valve is not intended for the

constant relief of thermal expansion. This condition is not covered under the limited warranty.

A properly-sized thermal expansion tank should be installed on all closed systems to control the harmful effects of thermal expansion. Contact a plumbing service agency or your retail supplier regarding the installation of a thermal expansion tank.

Installation Checklist

Check Here

1. Have the vent location limitations and minimum height for vent termination and maximum vent length been checked?
2. Are the terminal and vent pipes installed and sealed properly?
3. Has the gas piping been leak tested?
4. Is there 508mm (20 in.) at the top and 25mm (1 in.) around the vent pipe?
5. Have you taken steps to prevent water damage in case of leaks?
6. Is the diptube installed in the cold water inlet connection?
7. Is the water heater completely filled with water?
8. Does the gas piping conform with the recommendations of your Local Gas Utility Company?
9. Is the vent terminal opening unobstructed?
10. Is a temperature and pressure relief valve installed?
11. Is the drain pipe from the T&P valve unobstructed?
12. Has all plastic and cardboard packaging material been removed from the heater and venting?

If the answer to all of the questions above is "Yes", read the Operating Instructions and proceed with lighting the heater.

IV) OPERATING INSTRUCTIONS

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.

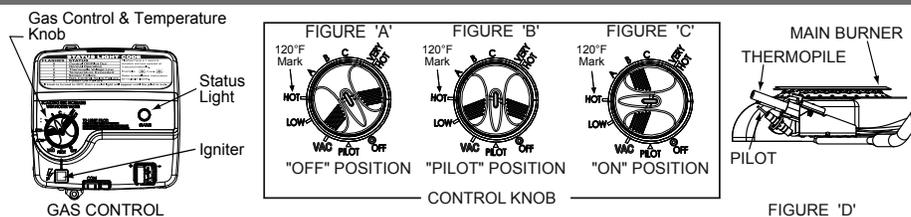
**BEFORE LIGHTING: ENTIRE SYSTEM MUST BE FILLED
WITH WATER AND AIR PURGED FROM ALL LINES**

- 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!

OPERATING INSTRUCTIONS



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 stays lit continuously, 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.

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'.

Special note on propane fuel:

⚠ DANGER



Explosion Hazard

To clear accumulated LP gas before attempting to light or re-light pilot:

- Open burner door by loosening the two mounting screws and pulling door back approximately 1/2" away from combustion chamber.
- Allow ventilation of combustion chamber for ten minutes.
- Close burner door. Refer to warning below.

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

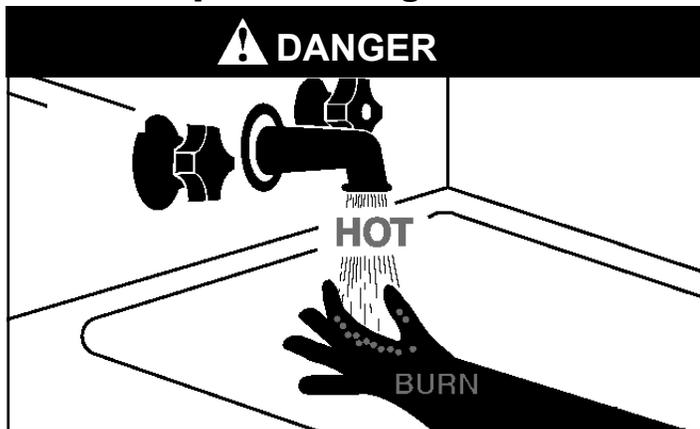
L.P. GAS IS HEAVIER THAN AIR

Should there be a leak in the system, the gas will settle at FLOOR LEVEL. Basements, crawl spaces, closets and areas below ground level will serve as pockets for the accumulation of the gas.

Out of fuel

When your L.P. tank runs out of fuel, turn off gas at all gas appliances. After L.P. tank is refilled, all appliances must be re-lit according to the manufacturers instructions.

Water Temperature Regulation



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

The thermostat is adjusted to the pilot position when it is shipped from the factory. 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 26. 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
154	instantaneous	1 seconds

U.S. Government Memorandum, C.P.S.C., Peter L. Armstrong, Sept. 15, 1978

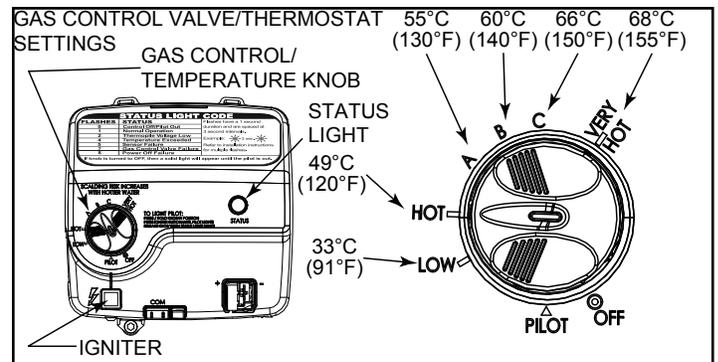


Figure 26 - Gas Control Valve/Thermostat Settings

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

Note: During low demand periods when hot water is not being used, 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 (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.

Operating The Temperature Control System

Water temperature adjustment

The water temperature setting can be adjusted from 32°C (91°F) to 68°C (155°F). Turn the Gas Control Valve/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.

Low Setting - The Low setting (LOW) sets the controller at approximately 32°C (91°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.

Exposure to water

IMPORTANT:

Should the water heater be subjected to flooding, fire, or other unusual condition, turn off gas at the manual gas shut-off valve and water at the inlet valve to the heater. Do not put the heater in operation until it has been thoroughly checked by a qualified gas technician.

Tampering

Tampering with the thermostat, gas valve or temperature pressure relief valve is DANGEROUS and voids all warranties. Only qualified personnel should service these components.

Status Light Code

Normal Flashes:	
0 Flashes	Indicates Control Off/Pilot Out.
1 Flash	Indicates Normal Operation.
A continuous 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."

V) MAINTENANCE INSTRUCTIONS

General Housekeeping

As a precaution against fire, and to maintain an adequate flow of combustion air to the heater:

- keep the appliance area clear and free from combustible material, gasoline, and other flammable vapours and liquids.
- keep the terminal openings unobstructed.
- do not pile cartons, paper or combustible material on top of the heater.

Tank

Drain at least a pail of water from the drain valve once a month. Some deposit will be washed out of the tank. If larger particles, resembling coarse sand are washed out, or if the drain becomes clogged while draining, an excess of lime deposit has settled on the tank bottom and it is time to do a major tank cleaning. Consult your local Gas Utility or a qualified serviceman.

Venting System Inspection

Every 3 months, when inspecting the burner flame, an inspection of the venting system should be made.

Check:

1. That the vent terminal is securely attached and free of obstruction.
2. The air pipe to make certain its components are securely fastened, sealed and are in good condition.
3. That the inner door on water heater is securely fastened.

CORRECT ANY DEFECTS IMMEDIATELY.

Gas Control

The heater operates under a fully automatic control. Once the desired water temperature has been selected, the gas control will maintain that temperature within close limits. DO NOT TAMPER WITH THE GAS CONTROL!

If the heater or the controls have been subjected to flooding, shut off the gas at the manual shut-off valve to the heater and call your gas company.

For gas control replacement, contact your local gas utility, or a qualified serviceman. The replacement control must be a manufacturer's approved replacement for the control which has been removed.

Temperature & Pressure Relief Valve

CAUTION

The water flowing from the valve will be HOT.

Keep hands and feet away from the stream of water. Take care that the discharging water does not damage any flooring, carpeting or other parts of the building which may be damaged by water.

See also section on T&P valve in the installation section.

The Temperature and Pressure Relief Valve (T&P valve) is a part of the safety equipment on the water heater. In order to keep the T&P valve functioning properly, operate the valve at least once a year by lifting the manual lever until water discharges from the overflow pipe.

Cathodic Protection

Depending on the model, one or two magnesium anodes are factory installed inside the tank to provide corrosion protection and to extend tank life. Permanent removal of the anode(s) for any purpose will void the warranty. Read the warranty attached to this water heater for a full explanation of the time period that parts and the heater are warranted.

It is advisable to inspect the condition of the anode(s) at certain intervals. A two (2) year period may be a guide to begin with. The life of the anode depends on many factors and can differ greatly from one location to another.

To remove an anode, proceed as follows:

1. Turn the gas off at the inlet to the heater.
2. Turn water off at the cold-water inlet valve.
3. Open a nearby hot water tap.
4. Drain approximately one pail full of water from the heater.
5. With a 1-1/16 in. hexagon socket wrench, loosen the anode from the fitting in the tank top.
Note: The anode has been factory installed using a power tool. It will be necessary for a second person to restrain the heater. A few sharp blows on the handle of the socket wrench will loosen the anode nut. If an impact wrench (power drive) is available, this is an easy way to remove an anode.
6. Lift the anode up and inspect. There should be at least 10mm (3/8 in.) to 12mm (1/2 in.) of anode diameter left. The surface may be rough, full of pits and crevices, but this is normal. If there is less than approximately 10mm (3/8 in.) diameter left, the anode needs to be replaced.
7. Apply a good grade of pipe dope to the threads of the anode adapter and screw securely into the tank top.
8. Open a hot water faucet and the cold water inlet valve and fill tank.
9. Check for leaks.
10. Relight burner by following lighting instructions on the side of the water heater (and also included in this manual).

Water supply conditions may vary depending on the region where this water heater is installed, and in some cases the water may have an adverse effect on the operation of the anode. If a sulphurous, or "rotten egg" smell is noticeable in the hot water supplied by this heater, it is an indication that the water source is not compatible with the magnesium anode which is factory installed. Replace the anode with an aluminum anode or add a water treatment system to remove sulphur from the water supply.

Burner Maintenance

At least every three (3) months, check the burner and pilot flames. The burner flames must be a soft blue flame with no yellow tips. Yellow tips indicate a carbonizing flame which can, depending on severity, deposit carbon (soot) on the combustion chamber and flue passages. A sheet metal burner is used on natural gas models (see Figure 4).

The sheet metal burner for Natural Gas has no external air adjustment. It is fully self-compensating and no outside adjustment is required. Observe the flame pattern. Ensure that no debris has fallen on top of the burner and no foreign objects have been introduced into the combustion chamber. Ensure that the vent terminal openings are not obstructed and the inner door to the combustion chamber is closed.

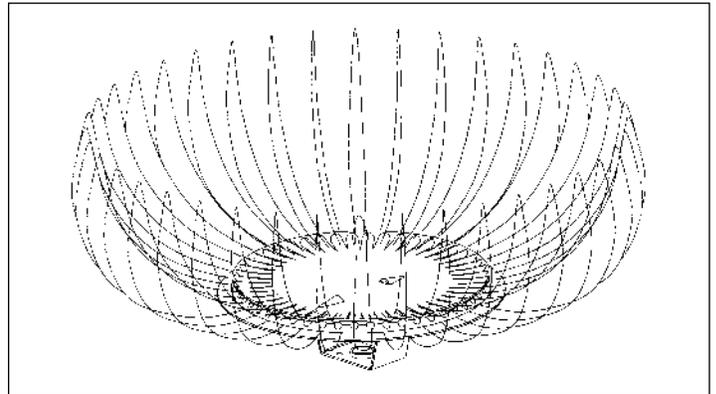


Figure 4 - Sheet Metal Burner

⚠ DANGER



Explosion Hazard

Tighten both manifold door screws securely. Remove any fiberglass between gasket and combustion chamber.

Replace view port if glass is missing or damaged.

Replace door gasket if damaged.

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

VI) COMBO HEATING

When using this water heater in the application of a combination space and potable water heating system, be sure to follow instructions provided with the water heater and the manual shipped with the air handler. This water heater is suitable for combination water (potable) heating and space heating and not suitable for space heating applications only.

NOTE the following warnings:

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 piping, pumps, valves, fittings, solder, gluing and pipe sealant that are not completely compatible with potable water.
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; broiler seal chromates; or other chemicals.
3. Do not use this heater as a replacement for an existing boiler installation.
4. Do not introduce toxic chemicals such as those used for boiler treatment, into the potable water used for space heating.
5. If the space heating water system requires water with temperatures in excess of 60°C (140°F), a mixing valve or other means must be installed in the potable hot water supply to temper the water and reduce scald hazard potential.
6. 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 be installed in the system to prevent weeping due to expansion (see Figure 2B).
7. 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.

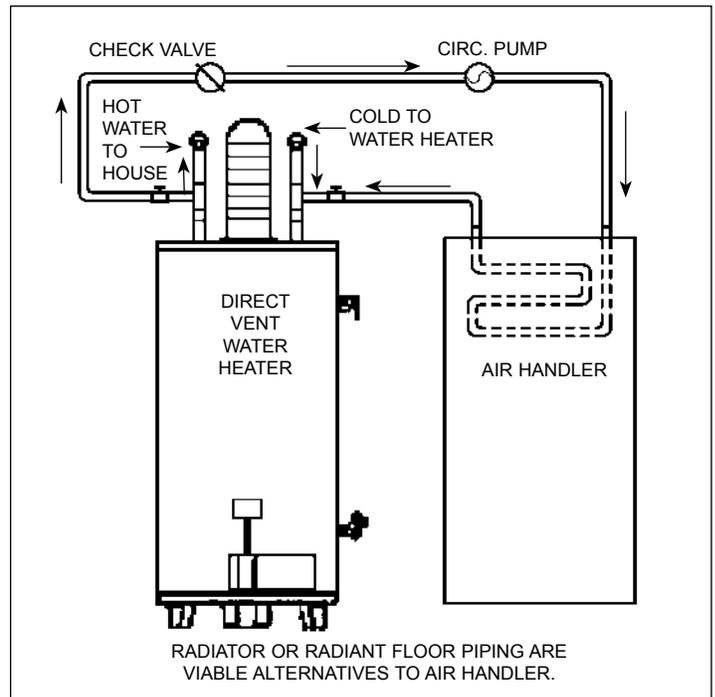


Figure 5 - Combo Heating Installation

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 OVERSIZED TO ALLOW ADEQUATE HEATING AND POTABLE WATER HEATING CAPACITY.

This page intentionally left blank. May be used for notes or to record other installation information.

VII) TROUBLESHOOTING GUIDELINES

PROBLEM	POSSIBLE CAUSE(S)	CORRECTION
BURNER WILL NOT IGNITE	<ol style="list-style-type: none"> 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. Defective thermopile 8. Defective gas control/thermostat 	<ol style="list-style-type: none"> 1. Light pilot 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. Replace thermopile 8. Replace gas control/thermostat
SMELLY WATER	<ol style="list-style-type: none"> 1. Sulfur in the water 	<ol style="list-style-type: none"> 1. Replace the anode with a special anode
BURNER FLAME YELLOW-LAZY	<ol style="list-style-type: none"> 1. Low gas pressure 2. Flue clogged 3. Main burner line clogged 4. Obstruction in main burner orifice 	<ol style="list-style-type: none"> 1. Check with gas utility company 2. Clean, locate source and correct 3. Clean, locate source and correct 4. Clean or replace orifice
PILOT WILL NOT LIGHT OR REMAIN LIT	<ol style="list-style-type: none"> 1. Air in gas line 2. No gas 3. Dirt in gas lines 4. Pilot line or orifice clogged 5. Defective thermopile 6. Cold drafts 7. Gas control/thermostat ECO switch open 8. Defective igniter or electrode 9. Low gas pressure 	<ol style="list-style-type: none"> 1. Bleed the air from the gas line 2. Check with gas utility company 3. Notify utility-install sediment trap (dirt leg) in gas line 4. Clean, locate source and correct 5. Replace thermopile 6. Locate source and correct 7. Replace gas control/thermostat 8. Replace igniter or pilot assembly 9. Check with gas utility company
HIGH OPERATION COSTS	<ol style="list-style-type: none"> 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 10. Leaks or cracks in dip tube 	<ol style="list-style-type: none"> 1. Set temperature dial to lower setting 2. Drain/Flush-Provide water treatment if needed 3. Install adequate size 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 10. Check dip tube. Replace if faulty
PILOT FLAME TOO SMALL	<ol style="list-style-type: none"> 1. Pilot line or orifice clogged 2. Low gas pressure 3. Defective pilot 	<ol style="list-style-type: none"> 1. Clean, locate source and correct 2. Check with gas utility company 3. Replace pilot
INSUFFICIENT HOT WATER	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Turn temperature dial to desired setting 2. Drain/flush-provide water treatment if needed 3. Install adequate size 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

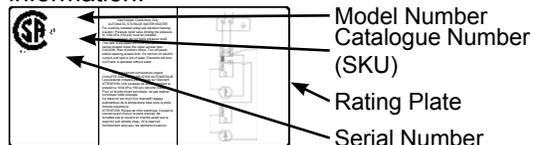
PROBLEM	POSSIBLE CAUSE(S)	CORRECTION
SLOW HOT WATER RECOVERY	<ol style="list-style-type: none"> 1. Insufficient secondary air 2. Flue clogged 3. Low gas pressure 4. Improper calibration 5. Gas control/thermostat set too low 6. Water heater too small 7. Wrong piping connections 8. Wasted hot water 	<ol style="list-style-type: none"> 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 gas control/thermostat 5. Turn temperature dial to desired setting 6. Install adequate size heater 7. Correct piping-dip tube must be in cold inlet 8. Advise customer
DRIP FROM RELIEF VALVE	<ol style="list-style-type: none"> 1. Excessive water pressure 2. Heater stacking 3. Closed water system 4. Temperature setting too high 	<ol style="list-style-type: none"> 1. Use a pressure reducing valve and relief valve 2. Lower the thermostat setting 3. See "Closed System/Thermal Expansion" 4. Decrease the temperature setting
THERMOSTAT FAILS TO SHUT OFF	<ol style="list-style-type: none"> 1. Defective gas control/thermostat 2. Improper calibration 	<ol style="list-style-type: none"> 1. Replace gas control/thermostat 2. Replace gas control/thermostat
COMBUSTION ODORS	<ol style="list-style-type: none"> 1. Insufficient secondary air 2. Flue clogged 3. Heater installed in a confined area 	<ol style="list-style-type: none"> 1. Provide ventilation to water heater. Check flue way, flue baffle, burner 2. Clean, locate source and correct 3. Provide fresh air ventilation
SMOKING AND CARBON FORMATION (SOOTING)	<ol style="list-style-type: none"> 1. Insufficient secondary air 2. Low gas pressure 3. Flue clogged 4. Defective gas control/thermostat 5. Heater installed in a confined area 6. Burner flame yellow-lazy 	<ol style="list-style-type: none"> 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 gas control/thermostat 5. Provide fresh air ventilation 6. See "Burner Flame Yellow-Lazy"
CONDENSATION	<ol style="list-style-type: none"> 1. Temperature setting too low 2. Water heater too small 	<ol style="list-style-type: none"> 1. Increase the temperature setting 2. Install adequate size heater
BURNER FLAME FLOATS AND LIFTS OFF PORTS	<ol style="list-style-type: none"> 1. Orifice too large 2. High gas pressure 3. Flue clogged 4. Cold drafts 	<ol style="list-style-type: none"> 1. Replace with correct orifice 2. Check with gas utility company 3. Clean flue and burner-locate source & correct 4. Locate source and correct
BURNER FLAME TOO HIGH	<ol style="list-style-type: none"> 1. Orifice too large 	<ol style="list-style-type: none"> 1. Replace with correct orifice
FLAME BURNS AT ORIFICE	<ol style="list-style-type: none"> 1. Defective gas control/thermostat 2. Low gas pressure 3. Orifice not properly installed 	<ol style="list-style-type: none"> 1. Replace gas control/thermostat 2. Check with gas utility company 3. Reinstall the orifice

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.	<ol style="list-style-type: none"> 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.
LIGHT ON (SOLID)	Pilot light was recently extinguished and the Thermopile is cooling down.	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 1. No corrective action necessary.
2 FLASHES	Pilot is lit but the Thermopile is not producing the required output voltage.	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 1. Turn Gas Control Valve/Thermostat knob to OFF. Replace the temperature sensor (thermistor).
7 FLASHES	Gas Control Valve failure.	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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.

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

Example: U1005 F001234

Warranty code _____
 Year of manufacture _____
 Week of manufacture _____

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.

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 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)