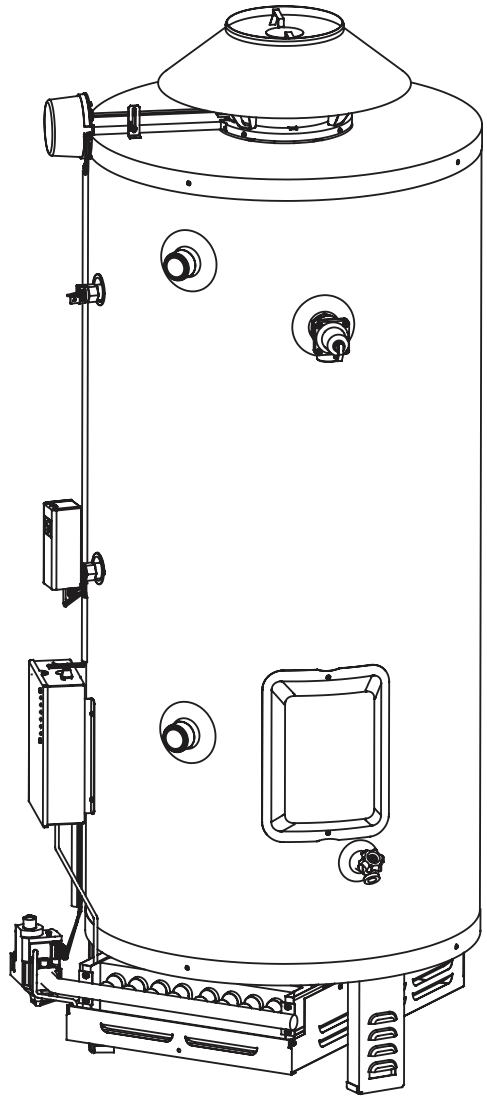
# COMMERCIAL GAS-FIRED WATER HEATERS
# OWNER'S MANUAL
# INSTALLATION AND OPERATING INSTRUCTIONS



## ⚠ WARNING

**This water heater IS NOT design certified for installation in a manufactured (mobile) home or for installation outdoors.**

## ⚠ WARNING

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

**DO NOT STORE or use gasoline or other flammable vapours and liquids in the vicinity of this or any other appliance.**

### 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.**
- **From a neighbour's phone, immediately call your gas supplier. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

**Installation and service must be performed by a qualified installer, service agency, or the gas supplier.**

## IMPORTANT

**READ THESE INSTRUCTIONS CAREFULLY BEFORE BEGINNING THE INSTALLATION. PROPER INSTALLATION WILL PROVIDE SAFE AND EFFICIENT SERVICE, AND AVOID NEEDLESS EXPENSE NOT COVERED BY THE WARRANTY. READ THE PRODUCT WARRANTY CONTAINED IN THIS MANUAL AND REMEMBER TO FILL OUT AND RETURN TO THE MANUFACTURER ALL RELEVANT WARRANTY CARDS AND CERTIFICATES. SHOULD YOU HAVE ANY QUESTIONS, PLEASE CONTACT YOUR LOCAL DEALER OR REFER TO THE *GETTING SERVICE FOR YOUR WATER HEATER* SECTION OF THIS MANUAL. SAVE THIS MANUAL FOR FUTURE REFERENCES.**

For your records, write the model and serial number here:

**Model #** _____

**Serial #** _____

AHRI MEMBER

nqa canada ISO 9001 REGISTRED QUALITY SYSTEM

54000008

# TABLE OF CONTENTS



# SAFETY INFORMATION

Your safety and the safety of others is extremely important during the installation, operation, and servicing of this water heater. Many safety-related messages have been provided in this manual and on your water heater. Always read and obey all safety messages. These messages will point out the potential hazard, tell you how to reduce the risk of injury, and tell you what will happen if the instructions are not followed.

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 | Serious injury or death can occur if you do not follow the instructions **immediately**. |
|---|---|

| ⚠ WARNING | Serious injury or death can occur if you do not follow the instructions. |
|---|---|

**⚠ WARNING**

**DO NOT** use this water heater if any part has been under water. Immediately call a qualified service technician to inspect the water heater and to replace any part of the control system and any main gas valve which has been under water. **Failure to follow this instruction can result in property damage, personal injury, or death**.

## IMPORTANT

These instructions have been written as a guide for the proper installation and operation of your water heater, and the manufacturer of this water heater will not accept any liability where these instructions have not been followed. However, for your safety and to avoid damage caused by improper installation, this water heater must be installed by a Certified Licensed Professional, and meet all local codes or, in the absence of local codes, CSA B149.1, Natural Gas and Propane Installation Code, in Canada, and/or the National Fuel Gas Code, ANSI Z223.1/NFPA 54, in the United States.

**Before proceeding with the installation instructions:**

**1)** Inspect the water heater and its component parts for possible damage. **DO NOT** install or attempt to repair any damaged component parts. If you detect any damage, contact the dealer where the water heater was purchased or the manufacturer listed on the warranty card.

**2)** Verify that the type of gas being supplied corresponds to that which is marked on the rating plate and main gas valve of the water heater.

**Altitude**

Input rating of this water heater is based on sea level operation. At higher elevations, the actual input rate will be lower than the value listed on the rating plate due to the natural derating of natural gas. Do not attempt to adjust the input rate by changing the manifold pressure. All models except model UG73-200NX, UG65-360N and UG360NH can be installed at elevation up to 7,700 feet (2,347 m) without any change or modification. Models UG73-200NX and UG65-360N can be installed at elevation up to 2,000 feet (610 m). Model UG65-360NH can be installed at elevation up to 4,500 feet (1,372 m). Refer to the rating plate on the front of the water heater for altitude specifications.

**Location**

This water heater should be located as close as possible to the chimney and to the main use of hot water. This location must not be subject to freezing temperatures. Make sure the cold water piping is not located directly above the main gas valve or any other electrical control. This will prevent water and condensation from dripping on the main gas valve during installation and operation. The water heater should be positioned, so that there is easy access to main gas valve, flue damper, junction box, temperature and pressure-relief valve, and drain valve. Space must be provided at the front of the water heater so that the burner tray assembly can slide out to be serviced. It must be located close to a suitable free-flowing floor drain. Where a floor drain is not adjacent to the water heater, a suitable drain pan must be installed under the water heater **(see Figure 13)**. This drain pan should be at least four (4) inches (10.2 cm) larger than the diameter of the water heater, and at least one (1) inch (2.5 cm) deep, providing access to the drain valve. This pan must not restrict the flow of ventilation and combustion air. This pan must be piped to a suitable drain to prevent damage to property in the event of a water leak from the piping, the temperature and pressure-relief valve, or the water heater.

**Sooner or later, all water heaters leak. The manufacturer, based on national building codes, has given the necessary instructions to prevent damage to the building. Under no circumstances is the manufacturer to be held liable for any water damage in connection with this water heater.**

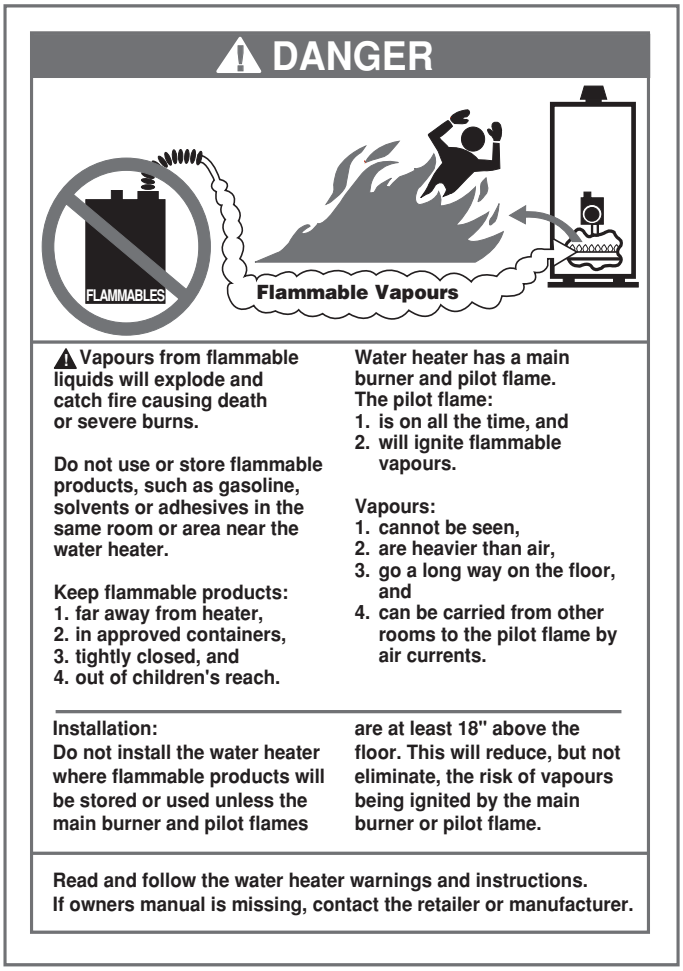
This water heater is approved for installation on either a combustible or non-combustible floor. However, should this water heater be installed directly on carpeting, the carpeting must be protected by a wood or metal panel beneath the water heater. This panel must extend at least three (3) inches (7.6 cm) beyond the width and depth of the water heater. Should the water heater be installed in an alcove or closet, the entire floor area must be covered by the panel. The panel must be strong enough to carry the weight of the water heater when it is full of water (UG73 = 471 Kg [1,040 Lbs], UG65 = 457 Kg [1,010 Lbs]).

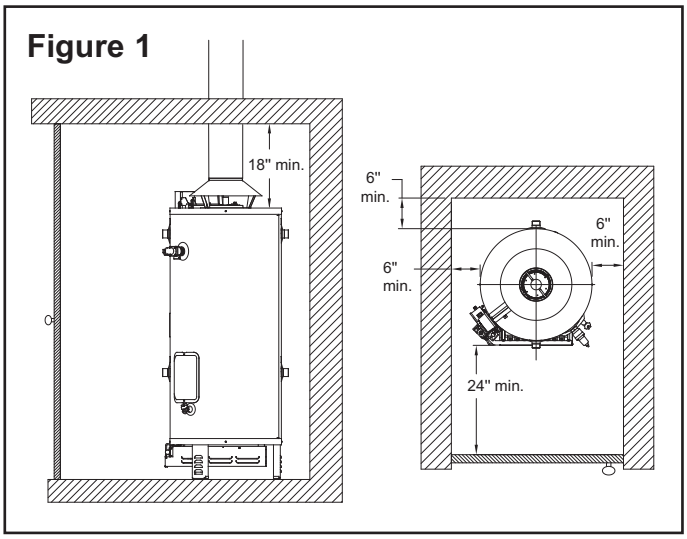
**Minimum Clearances**

The minimum clearances from combustible material for this water heater are: Six (6) inches (15.2 cm) from the sides and rear, twenty-four (24) inches (61 cm) from the front, and eighteen (18) inches (45.7 cm) from the top **(see Figure 1)**.

**Combustion and Ventilation Air Supply**

In order for the water heater to operate properly, it must be supplied with an uninterrupted flow of clean combustion and ventilation air. The area around the water heater must always be kept clear so that the flow of combustion and ventilation air is not blocked. An inadequate supply of air to the water heater will produce a bright yellow burner flame causing sooting in the combustion chamber, on the burners, and in the flue tubes. This can result in damage to the water heater and serious bodily injury, if not corrected.




Combustion and ventilation air requirements are determined by where the water heater will be located. Water heaters are installed in either open (unconfined) spaces or smaller (confined) spaces, such as closets or small rooms.

**Requirements for Unconfined Spaces**

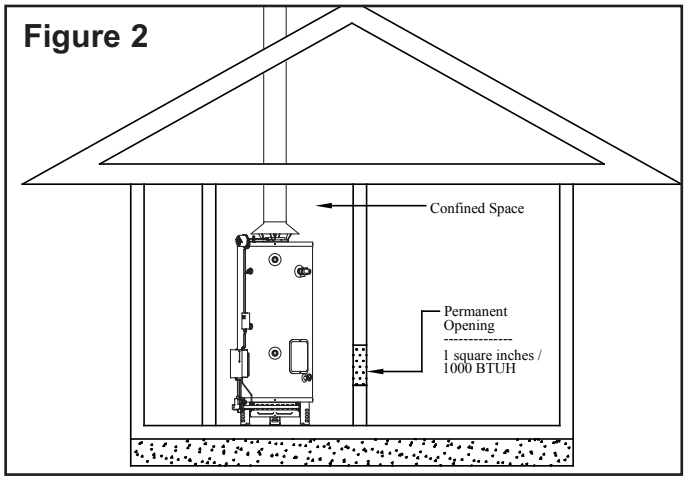
An unconfined space is an area with at least fifty (50) cubic feet for each 1,000 BTUH (4.8 $m^3$/kW) of the total input rating for all gas appliances installed in that space. Water heaters installed in unconfined spaces do not usually require outdoor air to function properly. However, in buildings with tight construction (heavy insulation, vapour barriers, weather stripping, etc.) and particularly in modern buildings, additional fresh air may need to be provided. For instructions on obtaining additional air supply, see the requirements below for confined spaces.

**Requirements for Confined Spaces**

A confined space is an area where the volume is less than fifty (50) cubic feet for each 1,000 BTUH (4.8 $m^3$/kW) of the total input rating for all gas appliances installed in that space. Water heaters installed in confined spaces require additional air. This can be provided in two ways:

**In Canada (refer to CSA B149.1)**

**1)** All Air From Inside the Building (**see Figure 2**):
The confined space shall be provided with one opening of one (1) square inch per 1,000 BTUH (22.0 $cm^2$/kW) communicating directly with one or more rooms of sufficient volume, so that the combined volume of all spaces meets the criteria for an unconfined space for all the appliances installed in that confined space.




**2)** All Air From Outdoors: (**see Figure 3**):
An air supply shall be provided with one opening that communicates directly with the outdoors by means of a duct. This duct shall be sized according to CSA B149.1 and terminate within one (1) foot (30.5 cm) above and within two (2) feet (61 cm) horizontally from the burner level of the appliance having the largest input.

**In U.S.A. (refer to ANSI Z223.1/NFPA 54)**

**1)** All Air From Inside the Building (**see Figure 4**):
The confined space shall be provided with two permanent openings communicating directly with one or more rooms of sufficient volume, so that the combined volume of all spaces meets the criteria for an unconfined space. The total input rating of all gas appliances installed in the combined space shall be considered in making this determination.

**Figure 3**

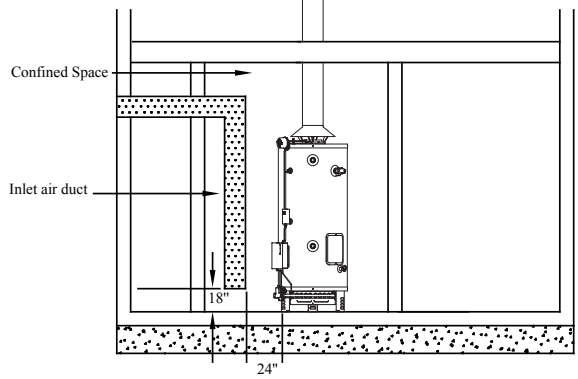
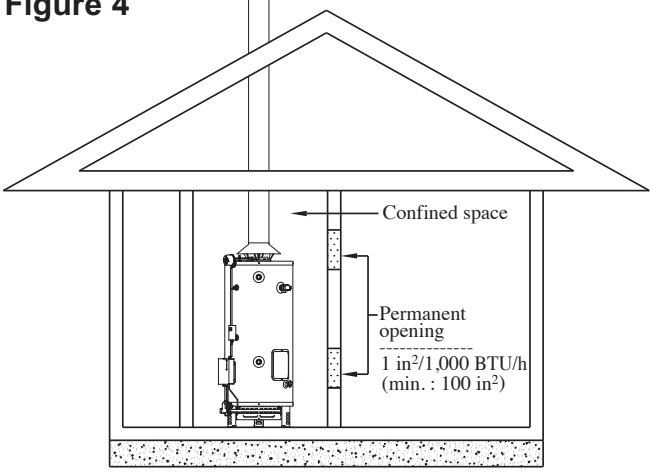



**Figure 4**



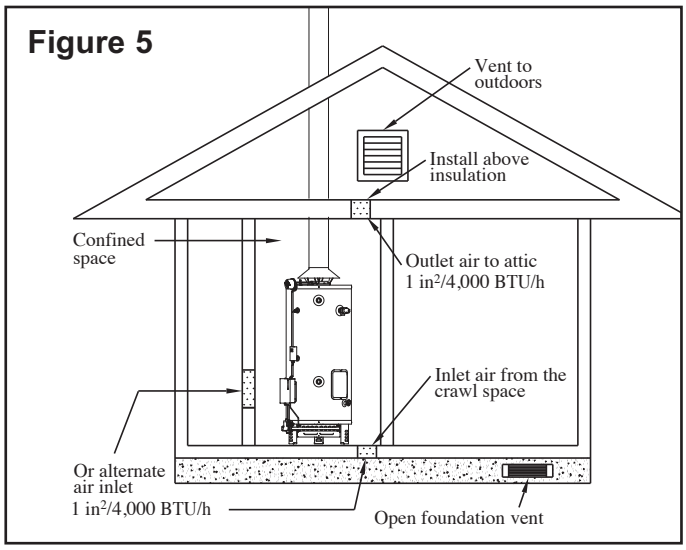

Each opening shall have a minimum free area of one (1) square inch per 1,000 BTUH (22.0 $cm^2$/kW) of the total input rating of all gas appliances in the confined space, **but not less than** one hundred (100) square inches (645.16 $cm^2$). One opening shall commence within six (6) inches (15.2 cm) of the top and one within six (6) inches (15.2 cm) of the bottom of the enclosure.

**2)** All Air From Outdoors:

The confined space shall be provided with two permanent openings, one commencing within six (6) inches (15.2 cm) of the top and one commencing within six (6) inches (15.2 cm) from the bottom of the enclosure. The openings shall communicate directly or by ducts, with the outdoors or spaces (crawl or attic) that freely communicate with the outdoors.

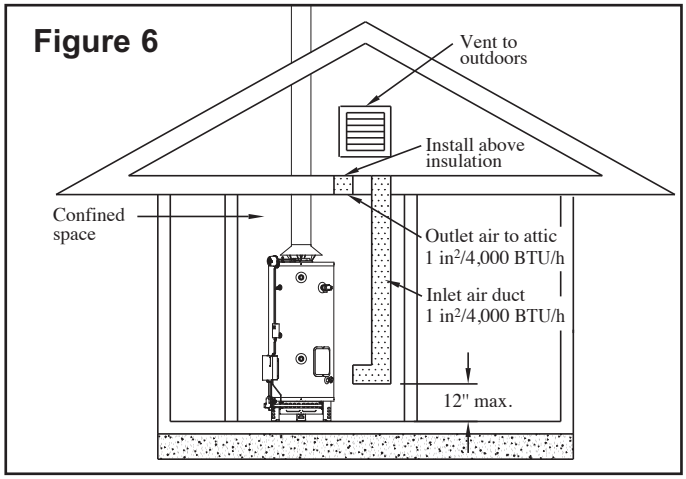
**A)** When communicating directly with the outdoors, each opening shall have a minimum free area of one (1) square inch per 4,000 BTUH (5.5 $cm^2$/kW) of the total input rating of all gas appliances in the enclosure (**see Figure 5**).

**Figure 5**



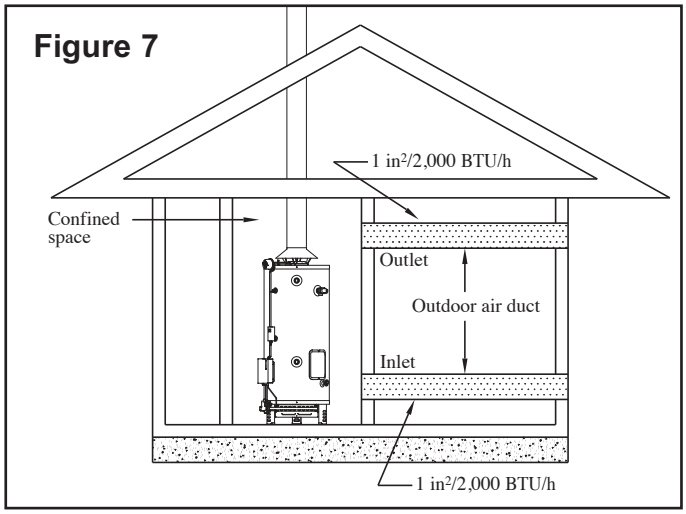

**B)** When communicating with the outdoors through vertical ducts, each opening shall have a minimum free area of one (1) square inch per 4,000 BTUH (5.5 $cm^2$/kW) of the total input rating of all gas appliances in the enclosure (**see Figure 6**).

**Figure 6**




**C)** When communicating with the outdoors through horizontal ducts, each opening shall have a minimum free area of one (1) square inch per 2,000 BTUH (11.0 $cm^2$/kW) of the total input rating of all gas appliances in the enclosure (**see Figure 7**).

**Figure 7**



When ducts are used, they shall be of the same cross-sectional area as the free area of the openings to which they connect. The minimum short side dimension of rectangular air ducts shall not be less than three (3) inches (7.6 cm).

**Louvers and Grilles**

In calculating free area for ventilation and combustion air supply openings, consideration must be given to the blocking effect of louvers, grilles, or screens protecting the openings. Screens must not be smaller than 1/4 inch (6.4 mm) mesh. If the free area through a particular design of louver or grille is known, it should be used in calculating the size of opening required to provide the free area specified. If the design and free area is not known, it may be assumed that wood louvers and grilles will allow 20-25% free area and metal louvers and grilles will allow 60-75% free area. Louvers and grilles must be installed in the open position or interconnected with the water heater so that they are opened automatically during water heater operation.

**Corrosive Atmospheres**

If this water heater will be installed in a beauty shop, barber shop, photo processing lab, dry cleaning establishment, a building with an indoor pool, or near a chemical storage area, it is imperative that the combustion and ventilation air be drawn from outside these areas. These particular environments contain products such as aerosol sprays, detergents, bleaches, cleaning solvents, refrigerants, and other volatile compounds that, in addition to being highly flammable, become highly corrosive acid compounds when burned. Exposure to such compounds can be hazardous and lead to premature product failure. **Should the water heater fail due to exposure to such a corrosive atmosphere, the warranty is void.**

**Venting**

**⚠ WARNING**

When installing the venting system, make sure to follow all local codes or, in the absence of local codes, CSA B149.1, Natural Gas and Propane Installation Code in Canada, and/or the National Fuel Gas Code, ANSI Z223.1/NFPA 54 in the United States. Never operate the water heater unless it is properly ventilated to the outdoors and has adequate air supply for proper operation. Failure to properly install the venting system could result in property damage, personal injury, or death.

**Automatic Flue Damper/Drafthood Assembly**

The flue damper/drafthood assembly has been shipped from the factory in a separate box attached to this water heater. Before installing the flue damper/drafthood assembly, verify that it is the correct model for this water heater (UG73-125N uses a five (5) inch (12.7 cm) flue damper, all other UG73's use a six (6) inch (15.2 cm) flue damper, UG65-250N uses a seven (7) inch (17.8 cm) flue damper, all other UG65's use an eight (8) inch (20.3 cm) flue damper). If the wrong assembly has been shipped or is missing completely, immediately contact the dealer where the water heater was purchased. Never operate this water heater without the manufacturer's flue damper/drafthood assembly installed.

**⚠ WARNING**

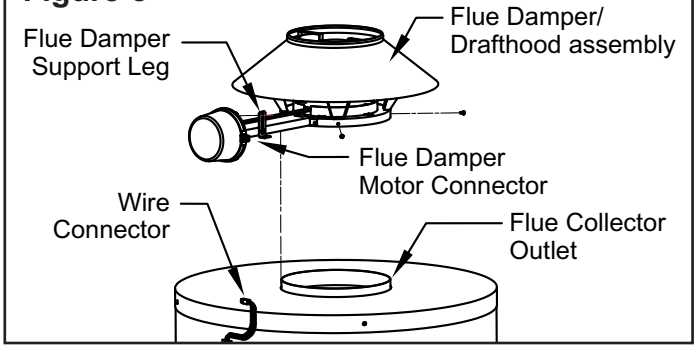
**DO NOT** modify the flue damper/drafthood assembly in any way. **DO NOT** turn on the electrical power to the water heater until the flue damper/drafthood assembly is installed. Failure to follow these instructions can result in property damage, personal injury, or death.

When installing the water heater, make sure that the location allows clear viewing of the flue damper. When the damper is in the open position, the paddle is perpendicular to the water heater. The flue damper must be in an open position when the water heater's burners are operating.

To install the flue damper/drafthood assembly, use the following instructions and secure all pieces with the sheet metal screws provided **(see Figure 8)**.

1) Remove the flue damper/drafthood assembly from its packaging.
2) Center the assembly over the flue collector outlet.
3) Rotate the assembly so that the wire connector on the water heater can plug into the flue damper motor connector.
4) Secure the assembly to the flue collector. (Except for model UG73-200N/UG73-200N-US)
5) Install the flue damper support leg on the assembly.
6) Secure the assembly to the top of the water heater.
7) Plug the wire connector on the water heater into the flue damper motor connector.

**Figure 8**



### Venting System

The water heaters covered in this manual are classified as Category I (natural draft) appliances. The venting system must be attached to the drafthood to connect the water heater to the gas vent or chimney. The vent pipe connecting to the water heater must be of the same size as the drafthood outlet. It is highly recommended to install this water heater on a separate venting system from other appliances. The water heater shall not be connected to a chimney flue serving a separate appliance designed to burn solid fuel. In some installations, proper venting may require the use of a larger diameter vent pipe and/or combined venting with other appliances. Consult the vent tables in the CSA B149.1 Natural gas and propane installation code, in Canada, and/or the National Fuel Gas Code, ANSI Z223.1/NFPA 54 in the United States to correctly size the vent pipe.

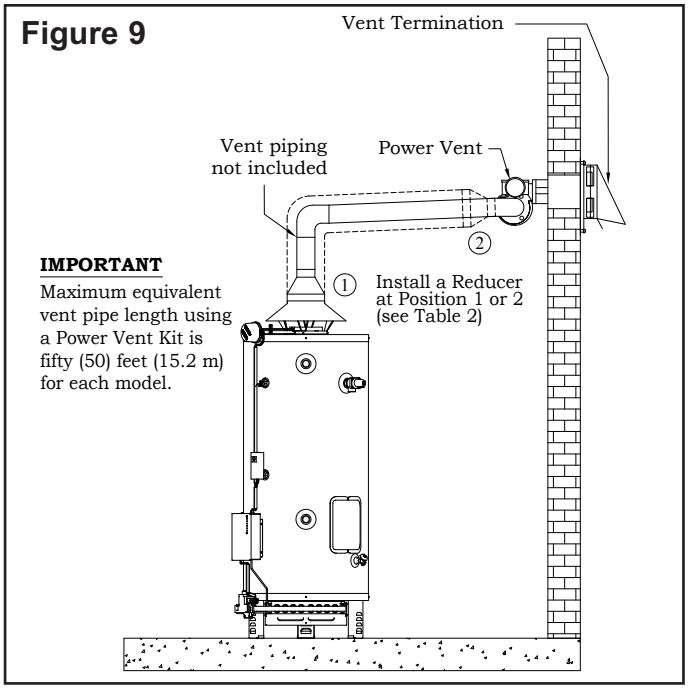
When connecting the vent pipe to the water heater, the following instructions must be followed:

- Install the vent pipe in such a way as to avoid any unnecessary bends that could create resistance to the flow of combustion gases.
- The length of the horizontal vent pipe must not exceed 75% of the vertical vent pipe height and never exceed twenty (20) feet (6.1 m).
- All horizontal runs must have a minimum rise of 1/4 inch per foot (21 mm/m) of run **(see Figure 13**).
- All joints must be securely fastened with sheet metal screws or other approved means.
- All single-wall vent piping must maintain a minimum of six (6) inches (15.2 cm) of clearance from combustible materials.
- Venting systems made with single wall piping cannot pass through any attic, inside wall, crawl space, confined space, or any floor.
- The vent piping must be accessible for inspection, cleaning, and replacement.

### Optional Side Wall Power Vent Kits

This water heater is approved for installation with a Tjernlund™ side wall power vent kit **(see Figure 9)**. This kit can be installed as part of a new installation or retrofitted onto an existing installation. The kit consists of a power venter and vent termination assembly **(see Table 1 and Figure 11)**. B-Vent piping is not included. Before beginning the installation of the power vent kit, make sure that it is the appropriate kit for your model of water heater **(see Table 2)**. Make sure that the water heater is located so that all vent terminal clearances will be respected **(see Figure 10)**. Maximum equivalent vent pipe length is fifty (50) feet (15.2 m) for each model. For complete instructions on the side wall vent kit installation, consult the manual that comes with the kit.

**Figure 9**




## ⚠ DANGER

When the installation is complete, visually inspect the venting system to make sure that all joints are properly connected and all instructions have been followed. Failure to properly install the venting system could result in property damage, personal injury, or death.

**Table 2**

| MODEL | Kit # Outlet | Draft hood Size | Vent adapter | Vent Location | Vent reducer |
|---|---|---|---|---|---|
| UG73-125N | 1 | 5″ | 4″ | 5″-4″ | 1 |
| UG73-150N | 2 | 6″ | 6″ | Not Req. | – |
| UG73-200N<br>UG73-200NX | 2 | 6″ | 6″ | Not Req. | – |
| UG65-250N | 2 | 7″ | 6″ | 7″-6″ | 1 |
| UG65-300N | 2 | 8″ | 6″ | 8″-6″ | 1 |
| UG65-360NH | 2 | 8″ | 8″ | 8″-6″ | 2 |
| UG65-360N | 2 | 8″ | 8″ | 8″-6″ | 2 |

**Note : B-Vent pipe is not included**

**Table 1 — Power Venter Including Vent Terminal**

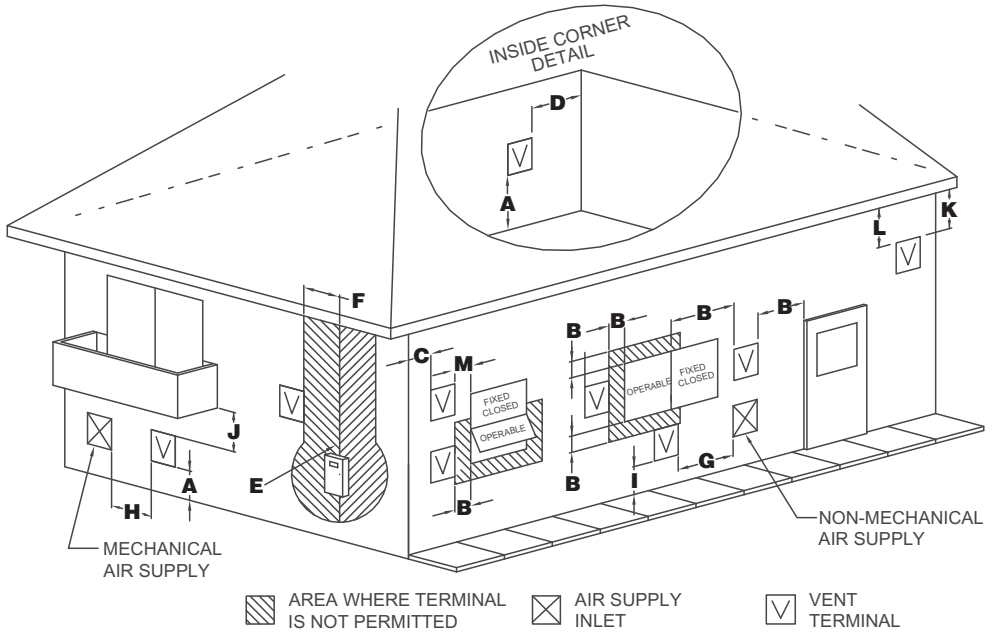
| Models | Kit# | Motor | | DIMENSIONS (inches) | | | | | | | | | | Vent hood | Inlet/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Watts | Amps | A | B | C | D | E | F | G | H | I | J | Rough-in | Outlet |
| UG73-125N | 1 | 95 | 1.26 | 7 7/8 | 7 | 11 | 4 | 7 1/2 (sq) | 7 1/8 | 13 (sq) | 8 5/8 | 7 3/8 | 11 | 8 (sq) | 4 |
| UG73-150N to UG65-360N | 2 | 224 | 1.51 | 9 1/4 | 8 1/2 | 11 1/2 | 6 | 8 1/2 (dia) | 7 7/8 | 12 (sq) | 9 1/2 | 10 1/2 | 10 | 9 (dia) | 6 |

| | Power Venter | Vent Termination |
|---|---|---|
| Kit #1 | HS1: Giant's part number 80000009-A. | VH1-4 : Giant's part number 80000109-A |
| Kit #2 | HS2: Giant's part number 80000010-A | VH1-6 : Giant's part number 80000110-A |

**Note :** Max vent length based on total of straight vent pipe plus 11 feet for a 6″ dia. 90˚ elbow, 7 feet for a 4″ dia. 90˚ elbow, 5 feet for a 6″ dia. 45˚ elbow, 4 feet for a 4″ dia. 45˚ elbow, 4 feet for a 8″ to 6″ reducer, 5 feet for a 6″ to 4″ reducer and 3 feet for a 5" to 4" reducer..

## Venting

**Figure 10**




| The Vent Termination must have a: | | Canadian Installations[1] | U.S. Installations[2] |
|---|---|---|---|
| **A)** | Clearance above grade, veranda, porch, deck, or balcony. | 12 inches (30.5 cm) | 12 inches (30.5 cm) |
| **B)** | Clearance to window or door that may be opened. | 12 inches (30.5 cm) | * * * |
| **C)** | Clearance to outside corner. | * | * |
| **D)** | Clearance to inside corner. | * | 3 feet (91 cm) |
| **E)** | Clearance to regulator vent outlet. | 3 feet (91 cm) from the regulator vent outlet and 3 feet (91 cm) horizontally from the vertical center line of the regulator vent outlet to a maximum vertical distance of 15 feet (4.5 m) | * |
| **F)** | Clearance to each side of center line extended above meter/regulator assembly. | * | * |
| **G)** | Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other appliance. | 12 inches (30.5 cm) | * * * |
| **H)** | Clearance to a mechanical air supply inlet. | 6 feet (1.83 m) | * * * * |
| **I)** | Clearance above paved sidewalk or paved driveway located on public property. | 7 feet (2.13 m)† | 7 feet (2.13 m)†,* |
| **J)** | Clearance under veranda, porch, deck, or balcony. | 12 inches (30.5 cm)** | * |
| **K)** | Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of two (2) feet (61 cm) from the center line of the terminal. | * | * |
| **L)** | Clearance to unventilated soffit. | * | * |
| **M)** | Clearance to permanently closed window. | * | * |

Notes:

1) In accordance with the current CSA B149.1, Natural Gas and Propane Installation Code.
2) In accordance with the current ANSI Z223.1 / NFPA 54, National Fuel Gas Code.

* Clearance in accordance with local installation codes and the requirements of the gas supplier.
For Canadian and U.S. installations, the vent shall not terminate above a paved driveway that is located between two (2) single family dwellings and serves both dwellings.

** Permitted only if the veranda, porch, deck, or balcony is fully open on a minimum of two (2) sides beneath the floor.

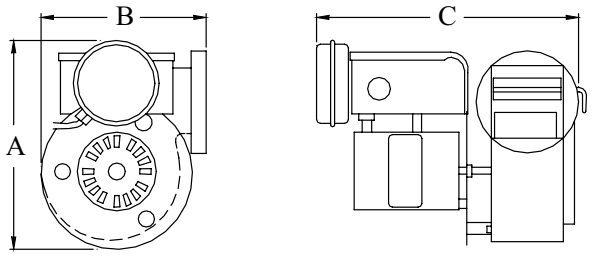
*** The vent terminal shall terminate at least four (4) feet (1.22 m) below, four (4) feet (1.22 m) horizontally from, or one (1) foot (30.5 cm) above any door, window, and gravity air inlet to the building.

**** The vent terminal shall terminate at least three (3) feet (91 cm) above any forced air inlet located within ten (10) feet (3.05 m) horizontally.

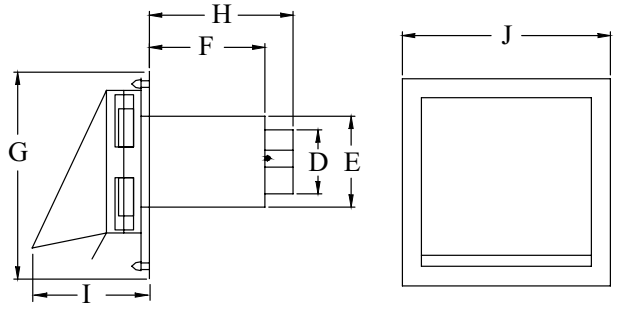
† A vent shall not terminate where it may cause hazardous frost or ice accumulations on adjacent property surfaces.

**Figure 11**

Blower




Vent Termination




**Water Piping**

Refer to **Figure 13** for a typical installation. Use of this layout should provide a trouble-free installation for the life of the water heater. Before making the plumbing connections, locate the **COLD** water inlet and the **HOT** water outlet. These fittings are 1 1/2 inch N.P.T. male thread. Install a shut-off valve close to the water heater in the cold water line. It is recommended that unions be installed in the cold and hot water lines so that the water heater can be easily disconnected, if servicing is required.

When assembling the hot and cold piping, use a good food grade of pipe joint compound, and ensure all fittings are tight. It is imperative that open flame is not applied to the inlet and outlet fittings, as heat will damage or destroy the plastic lined fittings. **This will result in premature failure of the fittings, which is not covered by the warranty.**

**Temperature and Pressure-Relief Valve**

**⚠ WARNING**

**DO NOT** plug the temperature and pressure-relief valve or its discharge line. **DO NOT** remove the relief valve. Make sure the relief valve is properly sized for the water heater. If the relief valve continuously discharges water, call a qualified service technician to correct the problem. Failure to follow these instructions can result in property damage, personal injury, or death.

To protect from excessive pressure and/or temperature, the manufacturer has installed a temperature and pressure-relief valve that meets the requirements of the Standard for Relief Valves and Automatic Gas Shut-Off Devices for Hot Water Supply Systems, CSA 4.4, in Canada and ANSI Z21.22, in the United States. This relief valve has a maximum set pressure that does not exceed the hydrostatic working pressure of the water heater (150 psi = 1,035 kPa) and a BTUH rating equal to or greater than the input rating, as shown on the water heater rating plate. It should never be plugged or removed from the opening marked for it on the water heater.

If this relief valve should need to be replaced, use only a new temperature and pressure-relief valve. Never install an old or existing relief valve as it may be damaged or inadequate for the working requirements of the new water heater. This new relief valve must meet all local codes or, at a minimum, the requirements listed above. Never install any other type of valve between the relief valve and the water heater.

A discharge line must be installed into the relief valve. The discharge line:

- Must not be smaller than the outlet pipe size of the relief valve.
- Must not terminate less than six (6) inches (15.2 cm) and not more than twelve (12) inches (30.5 cm) above a floor drain.
- Must not be restricted in any way. Do not thread, cap, or in any way restrict the end of this outlet.
- Must be of a material capable of withstanding 210˚F (99˚C) without distortion.
- Must be installed to allow complete drainage of the relief valve and discharge line.
- Must terminate at an adequate free-flowing drain.

**Pressure Build-up in a Water System**

When the water heater operates, the heated water expands creating a pressure build-up. This is a natural function and is one of the reasons for installing a temperature and pressure-relief valve. If the cold water supply line has a built-in water meter, check valve, or pressure-reducing valve, a suitable expansion tank must be installed to prevent pressure build-up or water hammer effect. Otherwise, the warranty is void **(see Figure 13)**. An indication of pressure build-up is frequent discharges of water from the relief valve. If the relief valve discharges water on a continuous basis, it may indicate a malfunction of the relief valve, and a qualified service technician must be called to have the system checked, and the problem corrected.

**Filling the Water Heater**

## ⚠ WARNING

**NEVER** operate the water heater unless it is completely filled with water. **Failure to follow this instruction can result in premature failure of the water heater that is not covered by the warranty.**

Check that all of the water piping connections have been made. To fill the water heater:

1) Make sure that the water heater drain valve is closed by turning the knob clockwise ↷ .
2) Open the cold water supply manual shut-off valve. This valve must remain open, as long as the water heater is in use. **NEVER** operate the water heater with the cold water supply manual shut-off valve closed.
3) To make sure the water heater is completely full of water, open hot water faucets to let the air out of the water heater and plumbing system. Leave the faucets open until a constant flow of water is obtained.
4) Check all of the plumbing connections to make sure there are no leaks.

**Gas Connections**

## ⚠ WARNING

**DO NOT** attempt to use this water heater with any gas other than the type of gas shown on the water heater rating plate. Failure to follow this instruction can result in property damage, personal injury, or death.

The gas piping must be installed as indicated in **Figure 13**. For the correct size of piping for this water heater, consult CSA B149.1, Natural Gas and Propane Installation Code, in Canada, and/or the National Fuel Gas Code, ANSI Z223.1/NFPA 54, in the United States. Only new piping with cleanly cut threads may be used, together with a suitable sealing compound that is approved for natural and propane gases. It is mandatory that a readily accessible manual shut-off valve be installed in the gas supply line. The gas supply manual shut-off valve must be close to the water heater. A drip leg (sediment trap) must be installed in the gas line ahead of the main gas valve to prevent dirt from entering it. A union must be installed between the main gas valve and the gas supply manual shut-off valve for easy maintenance of the water heater.

## ⚠ WARNING

**NEVER** use an open flame to test for gas leaks. A fire or explosion could occur resulting in property damage, personal injury, or death.

The water heater and its gas connection must be leak tested before placing the appliance into operation. To leak test the system:

1) Turn on the manual gas shut-off valve near the water heater.
2) Use a soapy water solution to test all connections and fittings for leaks. Bubbles indicate a gas leak.
3) Correct all leaks.

Make sure that the inlet pressure to the water heater does not exceed fourteen (14) inches in water column (3.5 kPa) for both natural and propane gases. Pressures in excess of 1/2 pound per square inch (3.5 kPa) can damage the main gas valve, resulting in a fire or explosion from leaking gas. For purposes of adjustment, the minimum inlet pressure is indicated on the water heater rating plate.

If any pressure testing of the gas line is undertaken at test pressures in excess of 1/2 psi (3.5 kPa), the water heater and its gas supply manual shut-off valve must be disconnected from the gas supply piping system, and the end of the pipe sealed with a female cap. If the testing is to be undertaken at a test pressure less than 1/2 psi (3.5 kPa), the gas supply manual shut-off valve must be closed.

## ⚠ WARNING

High altitude orifices **MUST BE** installed for water heaters operating above 7,700 feet (2,347 m). Failure to follow this instruction can result in property damage, personal injury, or death.

**Installation Instructions for Water Heaters Approved for Combination Space Heating and Potable Water Heating** (**See Figure 12**)

A water heater cannot be used for space heating application only. When using a water heater for combination space and potable water heating, the instructions provided in this manual and with the air-handling unit must be respected and, **in particular** the following:

1) All piping and components that are used in the system must be of a nonferrous type suitable for potable water. This also applies to any sealant used.
2) It must not be connected to any system that has been previously used for non-potable water heating. This includes any piping because, in all probability, existing piping would have been, in the past, treated with chemicals for cleaning or sealing the system.
3) If this water heater is to be used for space heating, make sure that all safety codes are respected. Pay special attention to safety valve pressure and expansion tanks.

**Figure 12**

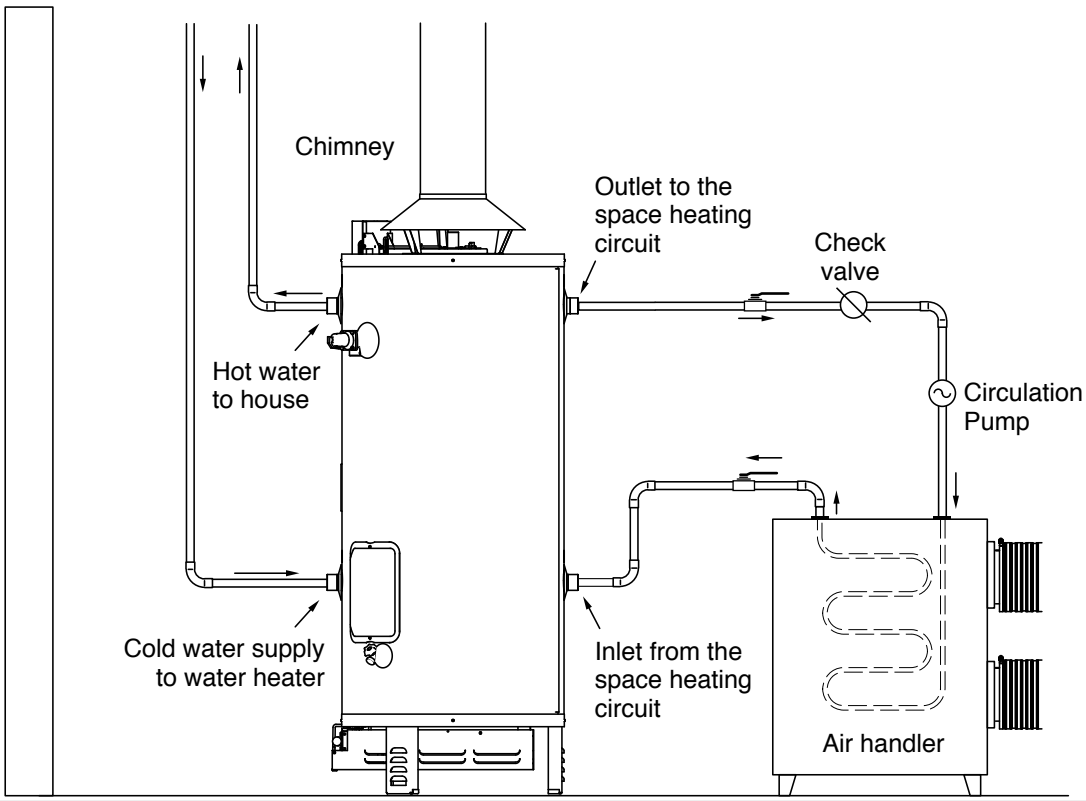
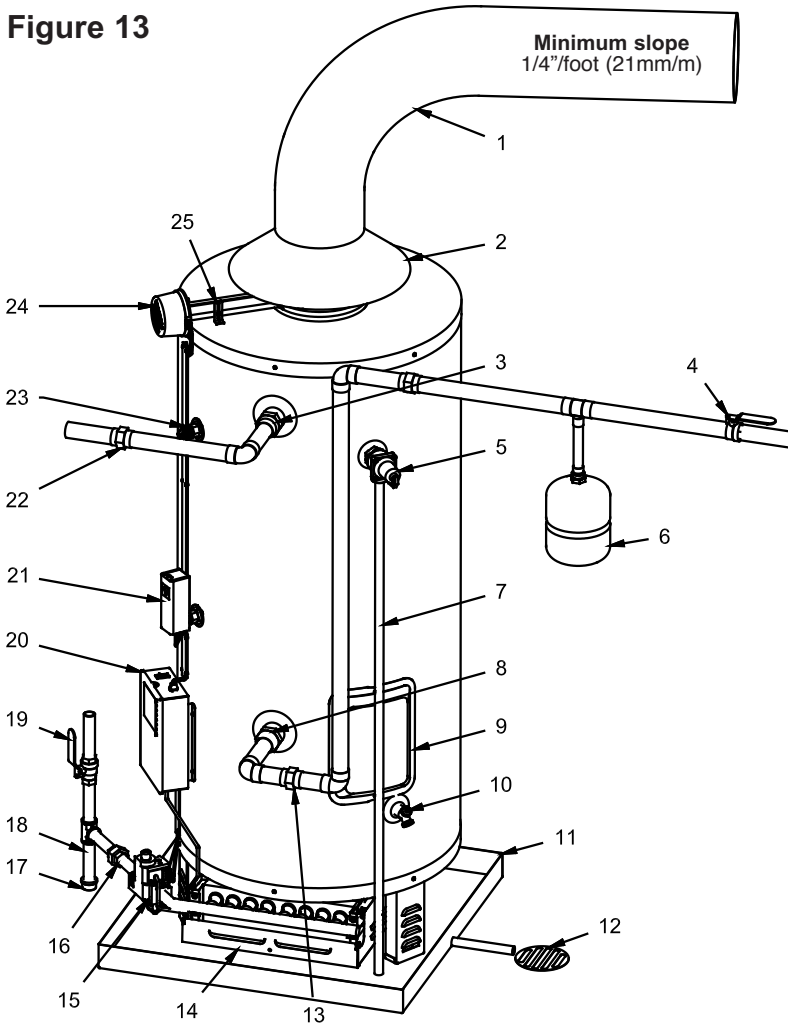



**Figure 13**




1) Vent Pipe
2) Flue Damper / Draft hood Assembly
3) Hot Water Outlet
4) Cold Water Manual shut-off Valve
5) Temperature & Pressure Relief Valve
6) Expansion Tank
7) Overflow Tube
8) Cold Water Inlet
9) Cleanout Cover Access Door
10) Drain Valve
11) Drain Pan
12) Free-Flowing Floor Drain
13) Union
14) Burner Assembly
15) Gas Valve
16) Union
17) Cap
18) Drip Leg (Sediment Trap)
19) Gas Supply Manual Shut-off Valve
20) Electric Box
21) Aquastat/Thermostat
22) Union
23) Temperature Sensor
24) Flue Damper Motor
25) Flue Damper Support Leg

4) Do not use toxic chemicals to clean the potable water heating system.

5) Where water temperature in excess of 140°F (60°C) is required for a space heating application, a mixing valve must be installed in the potable side of the system. This will temper the water and reduce the risk of scalding.

6) If the incoming water line to the heater is equipped with a check valve, water meter, or pressure-reducing valve, an expansion tank must be installed in the system. This will prevent weeping from the water heater relief valve and premature failure of the heater due to expansion of the water during the heating cycle.

7) Before acquisition of a water heater for space heating application, it is necessary to have the area of intended use sized by a qualified technician. This will ensure that an adequate water heating capacity will be available for both heating and potable water supply, and that the application will meet all local codes and public utility requirements.

**Note:** It is good practice to oversize the water heater, to ensure that all of the potential hot water requirements are available.

**Wiring**

**⚠ WARNING**

This water heater uses an external electrical source for power. It must be electrically grounded in accordance with all local codes or, in the absence of local codes, the latest edition of CSA C22.1 Canadian Electrical Code, in Canada, and/or the latest edition of the National Electrical Code, ANSI/NFPA 70, in the United States. Failure to properly ground this water heater can result in property damage, personal injury, or death.

Before lighting your water heater, check that all of the wires have been installed correctly **(see Figure 14 and 15)**. Make sure that none of the wires are grounded, have split, or are broken. Verify that all wiring connections are properly secured, as there is a possibility that they have become loose during transportation. If any of the original wiring needs replacing, use only 18AWG type or greater wire that is approved for 221˚F (105˚C).

If you are installing a side wall power vent kit, use the following instructions to connect the power venter to the water heater **(see Figures 14 & 15)**.

1) In the electrical box of the water heater, remove the jumper between positions 3 and 4 on the terminal block.

2) Install the wires from the power venter control board to the positions on the terminal block in the electrical box of the water heater.

If the power venter has been bought through a wholesaler, some settings need to be changed on the control board before putting the water heater into operation. The voltage needs to be set at 24 Volts. This can be done by moving the red voltage jumper on the 24V prongs. For detailed instructions on how to adjust the power vent settings, consult the Owner's Manual that comes with the Tjernlund Power Venter.

If the power venter has been bought directly from Giant Factories, the settings have been factory adjusted to match the specifications of the water heater. A label will be affixed on the box stating that it was factory adjusted to Giant Factories commercial gas water heater specifications.

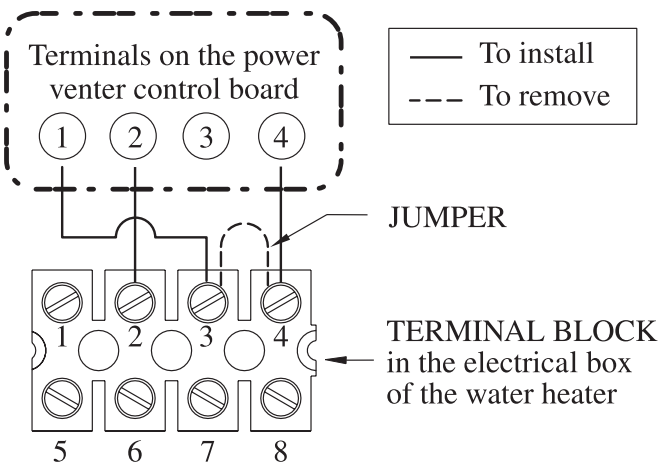
**Giant Settings on Power Venter**

| | |
|---|---|
| Voltage: | 24 Volts |
| Pre-purge: | 0 sec. |
| Post-purge: | 2 min. |

**⚠ WARNING**

If the water heater requires servicing, label all wires prior to disconnecting them. Verify all wiring connections before re-lighting the water heater. Wiring errors can result in property damage, personal injury, or death.

**Figure 14**



## Figure 15

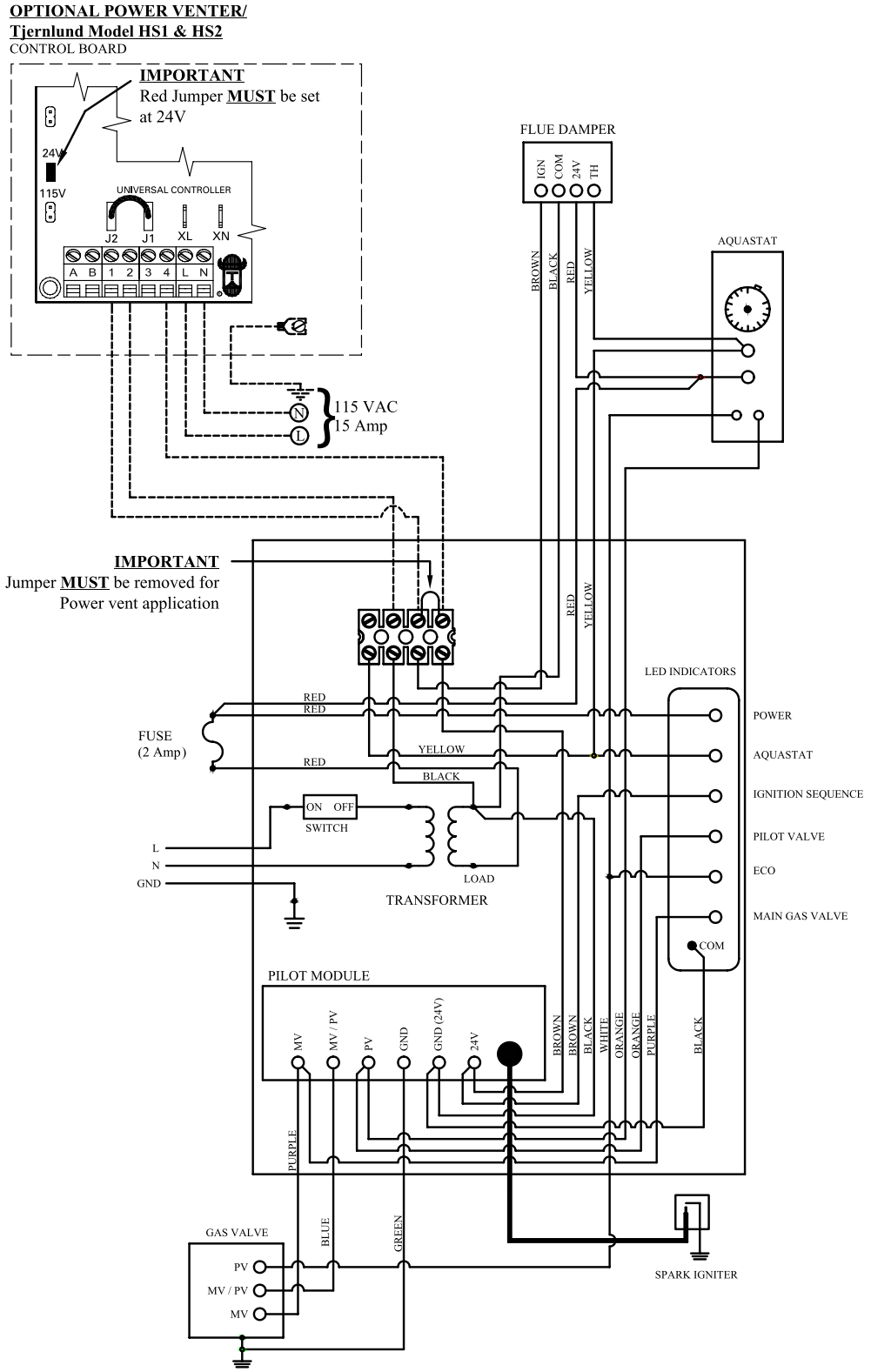
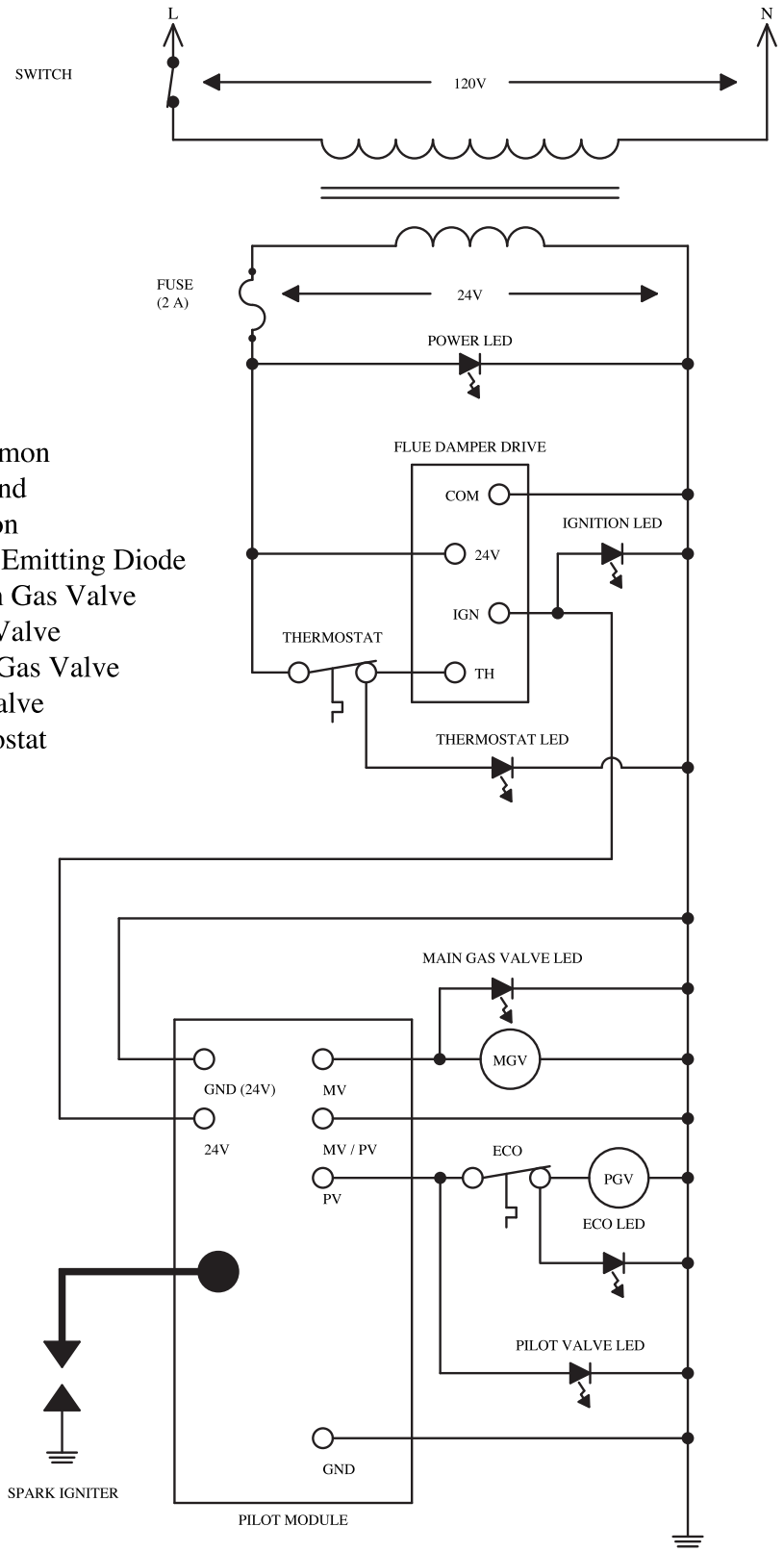

OPTIONAL POWER VENTER/
Tjernlund Model HS1 & HS2
CONTROL BOARD
IMPORTANT
Red Jumper MUST be set at 24V
24V
115V
UNIVERSAL CONTROLLER
J2 J1 XL XN
A B 1 2 3 4 L N
115 VAC
15 Amp
FLUE DAMPER
IGN COM 24V TH
BROWN BLACK RED YELLOW
AQUASTAT
IMPORTANT
Jumper MUST be removed for Power vent application
RED YELLOW
LED INDICATORS
POWER
AQUASTAT
IGNITION SEQUENCE
PILOT VALVE
ECO
MAIN GAS VALVE
COM
FUSE
(2 Amp)
RED
RED
YELLOW
RED
BLACK
ON OFF
SWITCH
L
N
GND
LOAD
TRANSFORMER
PILOT MODULE
MV
MV / PV
PV
GND
GND (24V)
24V
BROWN
BROWN
BLACK
WHITE
ORANGE
ORANGE
PURPLE
BLACK
PURPLE
GAS VALVE
PV
MV / PV
MV
BLUE
GREEN
SPARK IGNITER

**Figure 16**




LEGEND

COM: Common
GND: Ground
IGN: Ignition
LED: Light Emitting Diode
MGV: Main Gas Valve
MV: Main Valve
PGV: Pilot Gas Valve
PV: Pilot Valve
TH: Thermostat

## Installation Checklist

### Location

- Is the water heater located close to the chimney or the gas vent and the main use of hot water? ☐
- Is the water heater protected from freezing temperatures? ☐
- Is the main gas valve accessible for servicing? ☐
- Have clearances from combustible materials been observed? ☐

### Combustion and Ventilation Air Supply

- Is the area around the water heater clean and properly ventilated? ☐
- Is the fresh air supply free of corrosive elements and flammable vapours? ☐
- Does the water heater have access to enough fresh combustion air? ☐
- Have the fresh air openings been sized correctly and has consideration been given to the blocking effect of louvers and grilles? ☐

### Venting

- Has the manufacturer's supplied flue damper/drafthood assembly been installed correctly? ☐
- Is the vent piping made of an approved material and sized correctly? ☐
- Have all horizontal runs of vent pipe been installed with a minimum rise of 1/4 inch per foot (21 mm/m) of run? ☐
- Has all the vent piping been secured with sheet metal screws? ☐

### Water Piping

- Has a temperature and pressure-relief valve been installed? ☐
- Does this valve have a discharge line installed, and is it piped to a free-flowing drain? ☐
- Have all the plumbing connections been properly installed, and are they leak-free? ☐
- Is the water heater full of water? ☐

### Gas Connections

- Has the gas line been installed with a manual shut-off valve, union, and drip leg? ☐
- Is the gas piping large enough and made of an approved material? ☐
- Have all connections been made with an approved joint compound? ☐
- Has the gas piping been tested for leaks with a soap and water solution? ☐

### Wiring

- Has the wiring been properly installed? ☐
- Have the electrical connections been checked, and are they secure? ☐
- Is the water heater electricaly grounded? ☐

### Lighting the Water Heater


ɛfore lighting or re-lighting your water ɛater, make sure that you have read ıd understood all of the instructions ıd warnings in this manual and on your ater heater. If you have any questions about lighting your water heater, immediately contact a qualified installer, service agency, or the gas supplier.

## ⚠ WARNING

**DO NOT LIGHT** this water heater if:

- It is not full of water.
- The gas supplied does not match the type listed on the rating plate.
- The flue damper/drafthood assembly has not been installed.
- Gasoline or any other flammable vapours liquids have been stored in the vicinity of the water heater.

**Failure to follow these instructions can result in property damage, personal injury, or death.**

## 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 death.**

**A. This appliance is equipped with an ignition device which automatically lights the pilot. DO NOT try to light the pilot by hand.**

**B. BEFORE OPERATING, 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.**

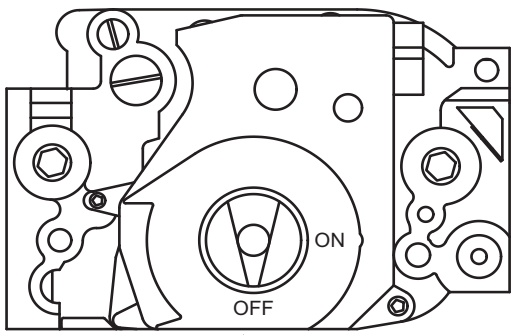
**- From a neighbour's phone, immediately call your gas supplier. Follow the gas supplier's instructions.**

**- If you cannot reach your gas supplier, call the fire department.**

**C. DO NOT use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.**

## LIGHTING INSTRUCTIONS

1. **STOP! Read the safety information above on this label.**
2. **Set the thermostat to its lowest setting.**
3. **Turn off all electric power to the appliance.**
4. **Turn the gas control knob clockwise ↷ to "OFF".**




**Main Gas Valve Knob Shown in "OFF" Position**

5. **This appliance is equipped with an ignition device which automatically lights the pilot. DO NOT try to light the pilot by hand.**
6. **Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow Step B in the safety information above on this label. If you don't smell gas, go to the next step.**
7. **Turn on all electric power to the appliance.**
8. **Turn the gas control knob counterclockwise ↶ to "ON".**
9. **Set the thermostat to the desired setting.**
10. **If the appliance will not operate, follow the instructions *To Turn Off Gas To Appliance* and call a qualified service technician or the gas supplier.**

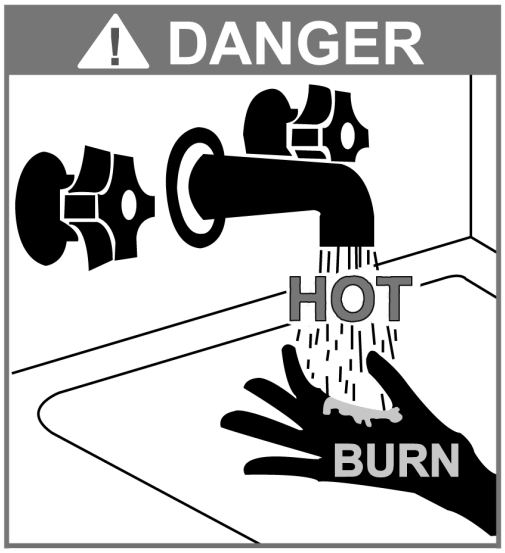
## TO TURN OFF GAS TO APPLIANCE

1. **Set the thermostat to the lowest setting.**
2. **Turn the gas control knob clockwise ↷ to "OFF".**
3. **Turn off all electric power to the appliance.**

**Drafthood Operation**

It is important to check that the ventilation system is working properly once the water heater main burner has been lit. Wait ten (10) minutes after lighting the burner. Then introduce a match or candle around the opening of the drafthood. If the flame is drawn towards the opening, this indicates proper ventilation. If the flame flutters or is blown out, combustion gases are escaping from the drafthood opening. If this occurs, shut the water heater off immediately and locate the problem. **Do not try and operate the water heater again until you are satisfied that the problem has been corrected.**

**Water Temperature Regulation**

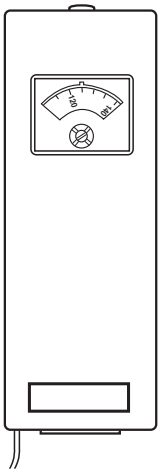



**⚠ WARNING**

The higher the setting, the greater the risk of scalding. Hot water can cause third degree burns in under one (1) second at 160˚F (71˚C), in five (5) seconds at 140˚F (60˚C), and in thirty (30) seconds at 130˚F (54˚C). In households where there are children, physically challenged individuals, or elderly persons, mixing valves for point of use are necessary as means of reducing the scalding potential of hot water.

The water temperature for all UG65 and UG73 models is controlled by a thermostat with two sensing elements. One sensor is located near the top of the tank and the other is near the center. The thermostat is factory adjusted to its lowest temperature setting. To adjust the water temperature, insert a small flat head screwdriver into the slotted screw located in the hole on the front of the thermostat **(see Figure 17)**, and turn the temperature dial to the desired setting. To maximize the efficiency of the water heater, and reduce the risk of scalding, it is recommended that the dial be adjusted to the lowest setting that produces an acceptable hot water supply. The dial may be set from 100˚F to 180˚F (38˚C to 82˚C).

**Figure 17**



When hot water is drawn from the tank in frequent short bursts, a condition known as “stacking” is created. “Stacking” is the result of increased cycling of the burner and can produce very hot water temperatures at the hot water outlet. Always remember to check the hot water coming out of any faucet with your hand before use. This will reduce the risk of scalding-related injuries.

**⚠ WARNING**

Should overheating occur or the gas supply fail to shut off, close the gas supply manual shut-off valve. Failure to follow this instruction can result in property damage, personal injury, or death.

**Out of Fuel**

If your water heater should run out of gas, proceed as follows:

1) Set the thermostat to the lowest setting.
2) Turn the gas control knob clockwise ↷ to “**OFF**”.
3) Turn off all electric power to the appliance.
4) Once the gas supply has been re-established, proceed to the ***Lighting Instructions***.

**Housekeeping**

**⚠ WARNING**

**DO NOT STORE** or use gasoline or other flammable vapours and liquids around the water heater.
**DO NOT BLOCK** or, in any way, restrict the flow of fresh air to water heater.
**DO NOT PUT** or store any objects on the top of the water heater.
Failure to follow these instructions can result in property damage, personal injury, or death.

Keep the area around the water heater clean and free of dust, lint, and dirt. Vacuum up any dirt, as required. Make sure that all of the minimum clearances to combustible materials are being maintained.

**Condensation**

As moisture from the products of combustion comes into contact with the cold surface of the inner tank, it may condense. This situation will usually occur:

1) When the water heater is filled with cold water for the first time.
2) If the water heater is too small for the needs of the consumer..
3) When large amounts of hot water are drawn from the water heater in a short period of time, and the refill water is very cold.

Due to the high-efficiency rating of this gas-fired water heater, it may produce more condensation than older models. Condensation forming on the flue tubes will drop on the burner making a “sizzling” sound. In extreme cases, the condensate may even extinguish the pilot flame. This condition is not uncommon and must never be misinterpreted as a leaking tank. It will disappear once the water becomes heated.

Because of the large amounts of water that can condense, it is very important that a drain pan be installed under the water heater **(refer to Figure 13)**. **Under no circumstances is the manufacturer to be held liable for any water damage, in connection with this water heater.** If the problem does not go away and water continues to drip after the water heater has heated up, check all of the plumbing connections to make sure they are not leaking.

**Main Burner and Pilot**

Every three (3) months, pull out the burner’s rack and inspect the burner ports, pilot, and burner orifices. Using a wire bush and a vacuum cleaner, remove any dirt or debris that is present. In order for the water heater to operate properly after cleaning, make sure that the burner’s rack is returned to its original position.

**Cleaning out the Water Heater**

Lime, scale, or sediment may accumulate at the bottom of this water heater. The amount deposited will depend on the hardness of the water supply where this water heater is installed. The harder the water, the more sediment will accumulate. If this sediment is left unchecked, it will reduce the efficiency and life of the water heater.

**To control sediment build-up:**

1) Drain 2 to 3 gallons (10 to 15 litres) of water through the drain valve once a month.
2) Every three (3) months use the following procedure to clean out the bottom of the water heater through the clean-out hole opening:
   a) Drain out the water **(refer to *Draining the Water Heater* page 19)**.
   b) Remove the clean-out door on the lower right side of the water heater jacket.
   c) Undo the six (6) hex head bolts securing the clean-out cover and remove the cover.
   d) Remove any excess sediment accumulation from the bottom of the water heater taking care not to damage the water heaters glass lining.
   e) Inspect the clean-out cover’s gasket for wear and replace it with a new gasket, if necessary.
   f) Replace the clean-out cover and clean-out cover door.
   g) Refill the water heater **(refer to *Filling the Water Heater* page 10)** and turn on the gas **(refer to the *Lighting Instructions* page 16)**.

**Temperature and Pressure-Relief Valve**

Manually operate the temperature and pressure-relief valve at least once a year, standing clear of the outlet to avoid being burned. Lift and release the operating lever on the valve to make it operate freely. If, after manually operating the valve, it fails to completely reset itself and continues to discharge water, replace it with a new one.

**Venting System Inspection**

The venting system must be thoroughly inspected once a year. Check the area where the water heater is located to make sure that there is enough clean combustion and ventilation air. Remove any possible obstructions that would prevent proper air circulation and venting. Check the venting system to make sure that all of the connections are securely fastened, and that all of the joints are properly sealed. If any part of the venting system is damaged, it must be replaced by a qualified service technician. Test the ventilation system to make sure that it is venting properly **(refer to *Drafthood Operation* page 17)**.

**Anode**

This water heater is equipped with multiple anodes that are designed to prolong the life of the glass-lined tank. By the electrolytic action, these anodes are slowly consumed, protecting the glass-lined tank from corrosion. Each anode should be checked every two (2) years. If more than half of the anode has been consumed, it should be replaced. Instructions on how to change an anode can be obtained from the manufacturer.

The life expectancy of the water heater is reduced where a water softener is introduced to fight hard water, because the sodium salts added by a softener make this water extremely conductive. In these conditions, the anodes are consumed more rapidly and should be verified every year.

In certain water conditions, the anodes will react with the water, producing discoloured or smelly water. The most common complaint is hot water that smells like rotten

eggs. This phenomenon is the result of the reaction between the anodes and hydrogen sulfide gas dissolved in the water which occurs frequently in well systems. This problem can usually be eliminated or reduced by changing the anodes to a type more suitable for these conditions (aluminum anodes) and by chlorinating the water heater and plumbing system. If the problem persists, special filtration equipment may be required. Under no circumstances are the anodes to be removed from the water heater on a permanent basis. **Removal of the anodes will lead to premature failure of the water heater and void the warranty**.

## ⚠ WARNING

Hydrogen gas can be produced in a hot water system that has not been used for a long period of time (generally two [2] weeks or more). **HYDROGEN GAS IS EXTREMELY FLAMMABLE**. It is highly recommended to open the hot water faucet in the kitchen for several minutes before you use any electrical appliances connected to the hot water system, such as a dishwasher or washing machine. If hydrogen gas is present, there will be an unusual sound, such as air escaping through the pipe, as the hot water faucet is opened. **DO NOT** smoke or introduce an open flame near the faucet when it is opened.

**Draining the Water Heater**

To completely drain the water heater:

1) Cut the water heater gas supply **(refer to *Turn off gas to appliance* page 16)**.
2) Close the gas supply manual shut-off valve.
3) Close the cold water supply manual shut-off valve.
4) Connect one end of a garden hose to the water heater drain valve and put the other next to a free-flowing drain.
5) Open the drain valve by turning the knob counter-clockwise ↶ .
6) Open a hot water faucet to allow air into the system.

**Vacation**

If you are planning a vacation or other prolonged absence, it is highly recommended to shut off the gas supply and the cold water supply to the water heater. This will save energy, protect against property damage in the event the water heater leaks, and prevent the build-up of hydrogen gas. If the water heater and piping are exposed to freezing temperatures, they should both be drained.

Remember to check the water heater thoroughly after it has been shut off for an extended period of time before putting it back in operation. Make sure that the water heater is completely full of water and that the cold water supply manual shut-off valve is open, before lighting the burner.

**Getting Service for your Water Heater**

If you are having problems with your water heater, follow these three easy steps:

1) Consult the ***Troubleshooting Guide*** contained in this manual **(see page 22)**. It will guide you to the most common problems experienced with a gas-fired water heater. The solutions you find listed may provide a quick and simple solution to your problem and save you time and money.

2) If the solution listed in the ***Troubleshooting Guide*** does not solve the problem or if your particular problem does not appear in the guide, contact the installer of the water heater or the local gas utility.

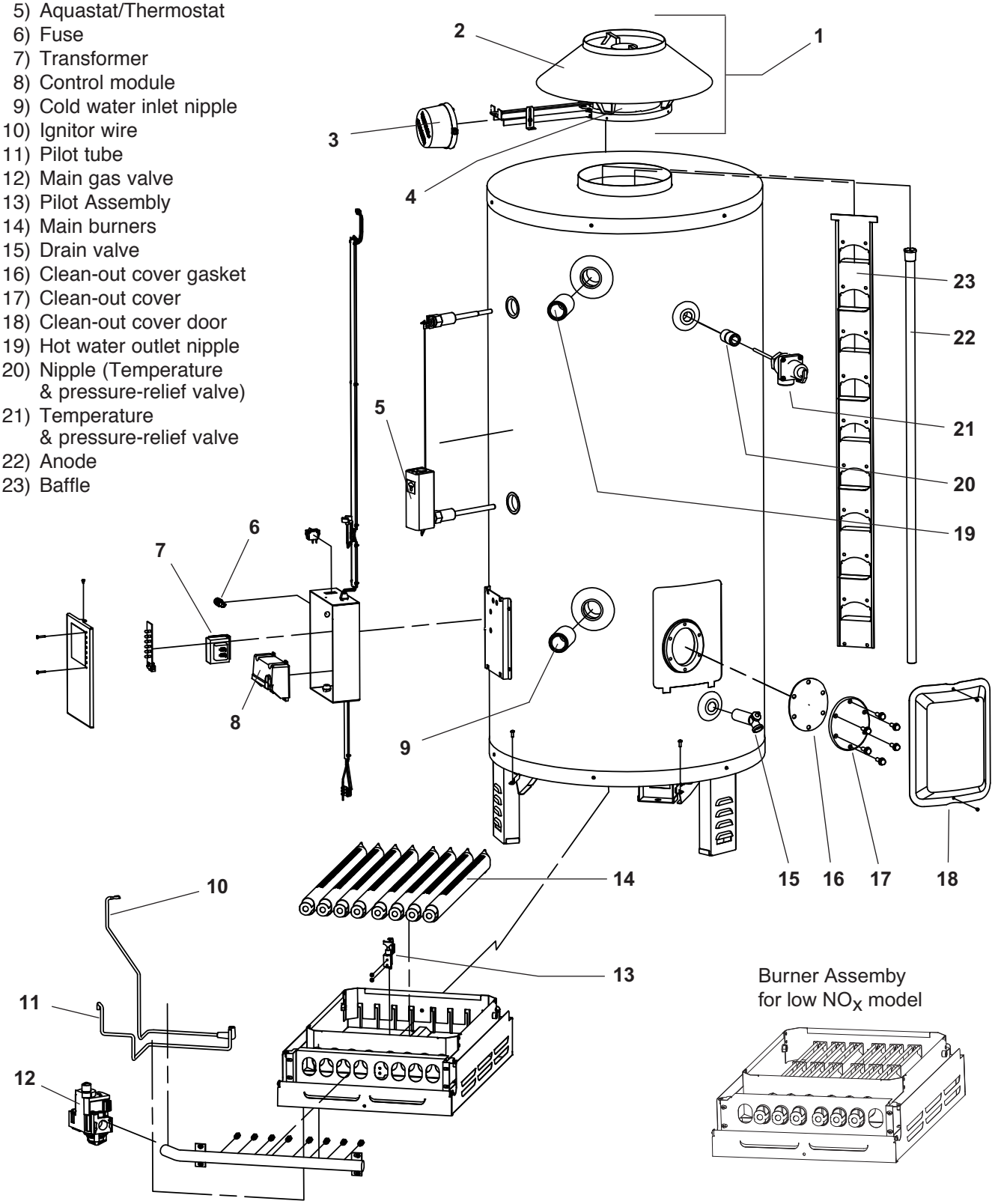
3) If you still cannot solve the problem, contact the manufacturer's Customer Service Department by e-mail at **service@giantinc.com** or by telephone at **1-800-363-9354**. To help serve you in a quick and efficient manner, **always have the following information ready**:

   **a) Model number.**
   **b) Serial number.**
   **c) Date of installation.**
   **d) Where the water heater was purchased.**
   **e) Complete address where the water heater is installed.**
   **f) A description of the problem.**

## Water Heater Assembly

1) Flue damper/Drafthood assembly
2) Drafthood
3) Flue damper motor
4) Flue damper paddle
5) Aquastat/Thermostat
6) Fuse
7) Transformer
8) Control module
9) Cold water inlet nipple
10) Ignitor wire
11) Pilot tube
12) Main gas valve
13) Pilot Assembly
14) Main burners
15) Drain valve
16) Clean-out cover gasket
17) Clean-out cover
18) Clean-out cover door
19) Hot water outlet nipple
20) Nipple (Temperature & pressure-relief valve)
21) Temperature & pressure-relief valve
22) Anode
23) Baffle

**For all models except UG65-360N and UG65-360NH**

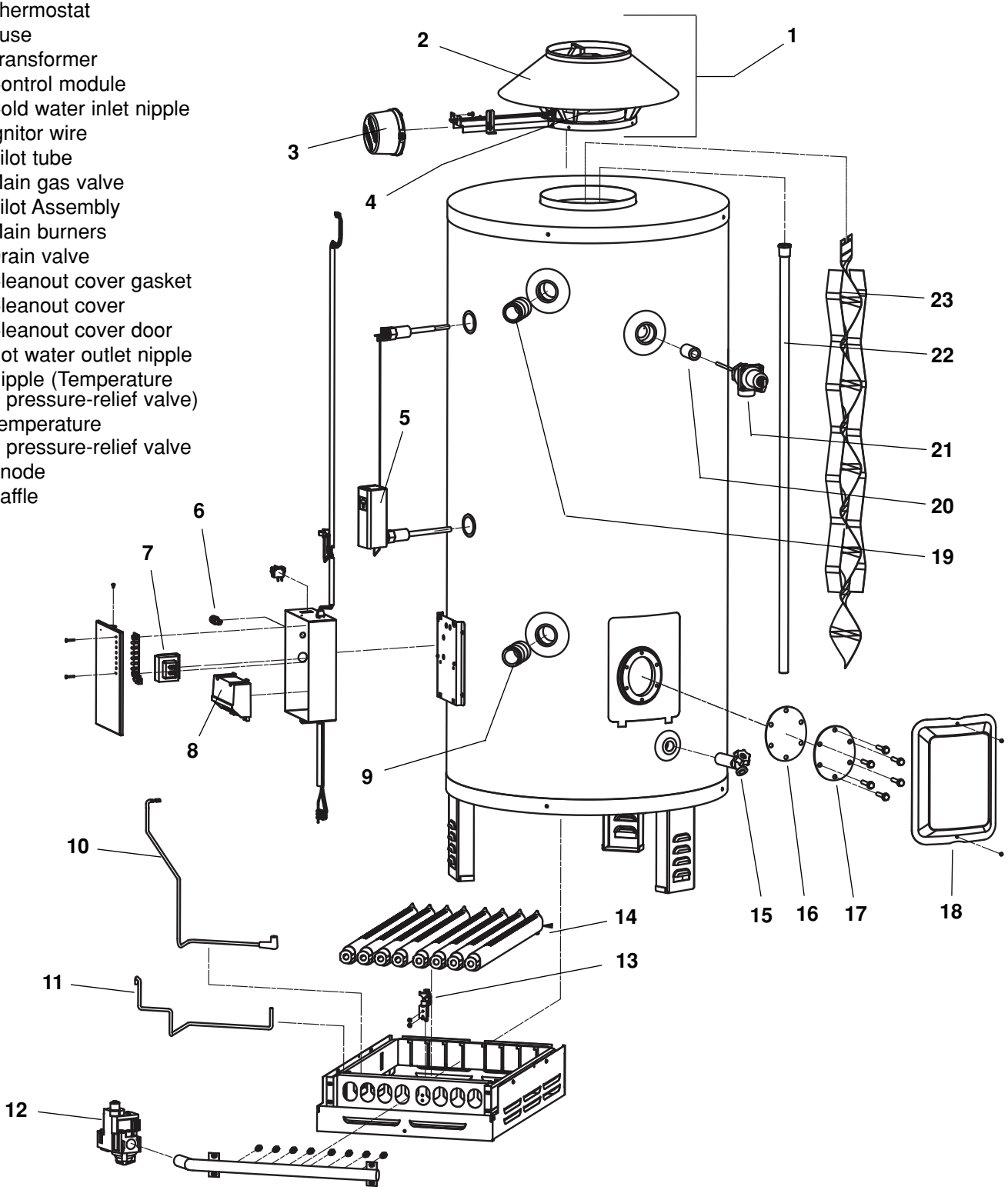



Burner Assemby for low $NO_X$ model

## Water Heater Assembly

**For models UG65-360N and UG65-360NH**

1) Flue damper/Drafthood assembly
2) Drafthood
3) Flue damper motor
4) Flue damper paddle
5) Thermostat
6) Fuse
7) Transformer
8) Control module
9) Cold water inlet nipple
10) Ignitor wire
11) Pilot tube
12) Main gas valve
13) Pilot Assembly
14) Main burners
15) Drain valve
16) Cleanout cover gasket
17) Cleanout cover
18) Cleanout cover door
19) Hot water outlet nipple
20) Nipple (Temperature & pressure-relief valve)
21) Temperature & pressure-relief valve
22) Anode
23) Baffle



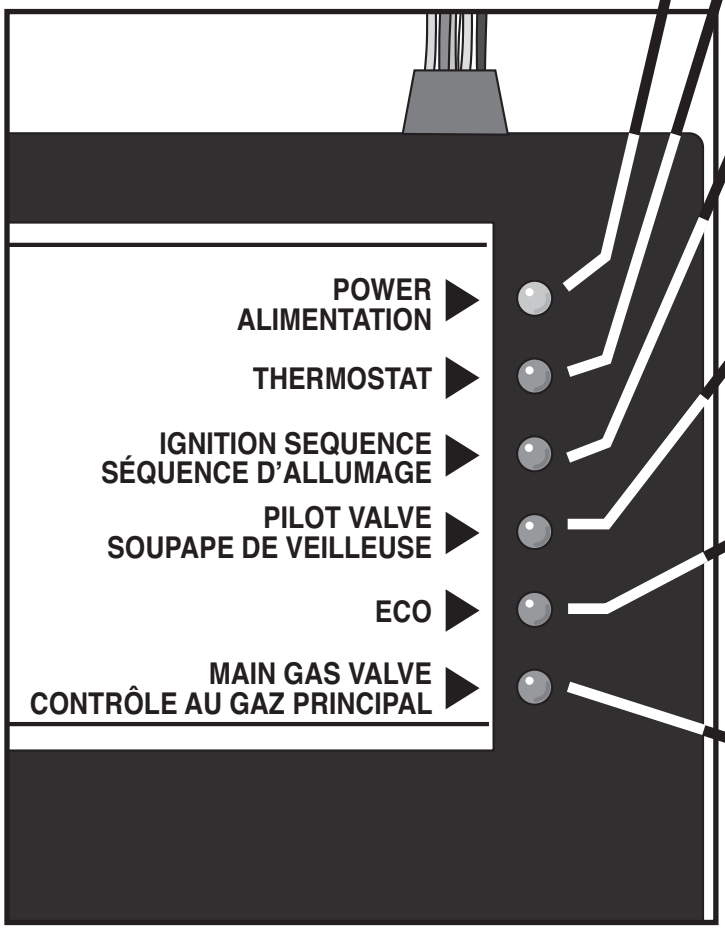
## LED Diagnostic System

This water heater is equipped with an LED (light emitting diode) diagnostic system, which is located in the black electrical box on the front left hand side of the water heater. The diagnostic system is designed to give the user or qualified service technician, a visual indication of the operational status of the different parts of the water heater's control system. A fast look at the LED panel will identify where to begin troubleshooting a non functioning water heater. A green light means that the sequence is operating properly and a red light means an on-going action or a problem with the sequence.

### Before you start!

Before you start troubleshooting your water heater, it is important to verify that all of the electrical connections are tight as wire connections can become loose during handling and transportation.

*The LED's are arranged on the panel based on their order in the normal sequence of operation. Each LED represents the following:*




**POWER**
**(refer to Part 1 of the *Troubleshooting Guide*)**
When this green LED is illuminated:
- 120 VAC power is being supplied to the water heater.
- the "ON/OFF" switch is working properly.
- the 24 VAC transformer is working properly.
- the 2 A fuse is in good condition.

**THERMOSTAT**
**(refer to Part 2 of the *Troubleshooting Guide*)**
When this green LED is illuminated:
- the thermostat is calling for heat.
- 24 VAC power is being supplied to the flue damper assembly.

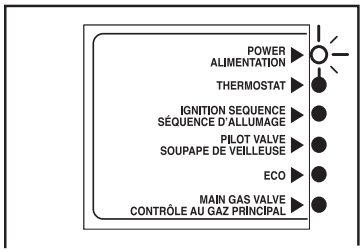
**IGNITION SEQUENCE**
**(refer to Part 3 of the *Troubleshooting Guide*)**
When this green LED is illuminated:
- the thermostat has called for heat.
- the flue damper has fully opened.
- 24 VAC is being supplied to the pilot module.
- ignition sequence will begin.

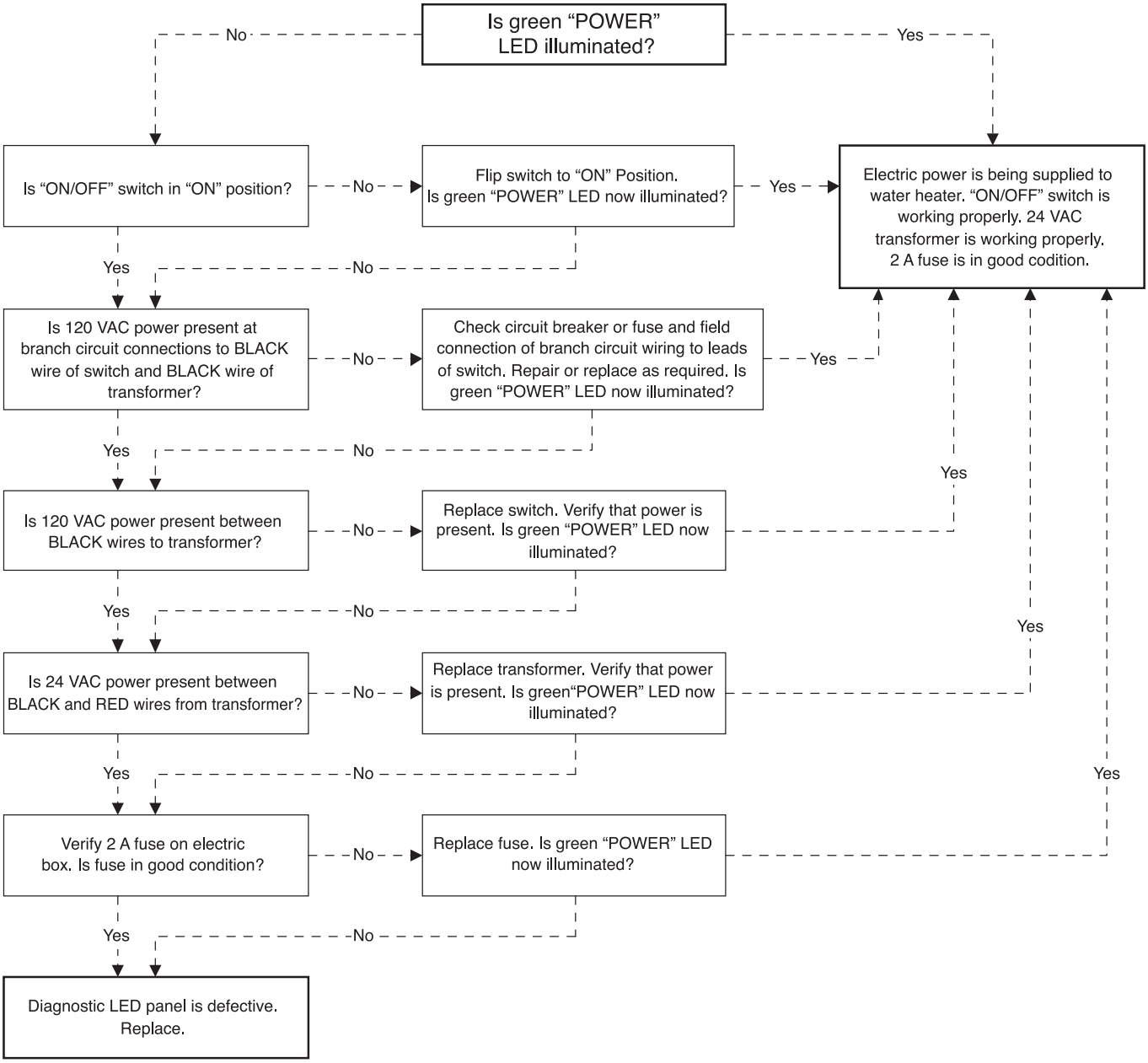
**PILOT VALVE**
**(refer to Part 4 of the *Troubleshooting Guide*)**
When this green LED is illuminated:
- the pilot module is in the ignition sequence and is providing 24 VAC power to the ECO inside the thermostat.

**ECO**
**(refer to Part 5 of the *Troubleshooting Guide*)**
When this green LED is illuminated:
- the ECO (energy cut off or high limit) is closed and the power is being supplied to the "PV" terminal on the main gas valve.

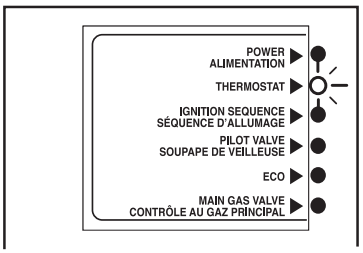
**MAIN GAS VALVE**
**(refer to Part 6 of the Troubleshooting Guide)**
When this green LED is illuminated:
- the pilot module is providing 24 VAC between the "MV" and the "MV/PV" terminals on the main gas valve.
- the main burner should be operating.

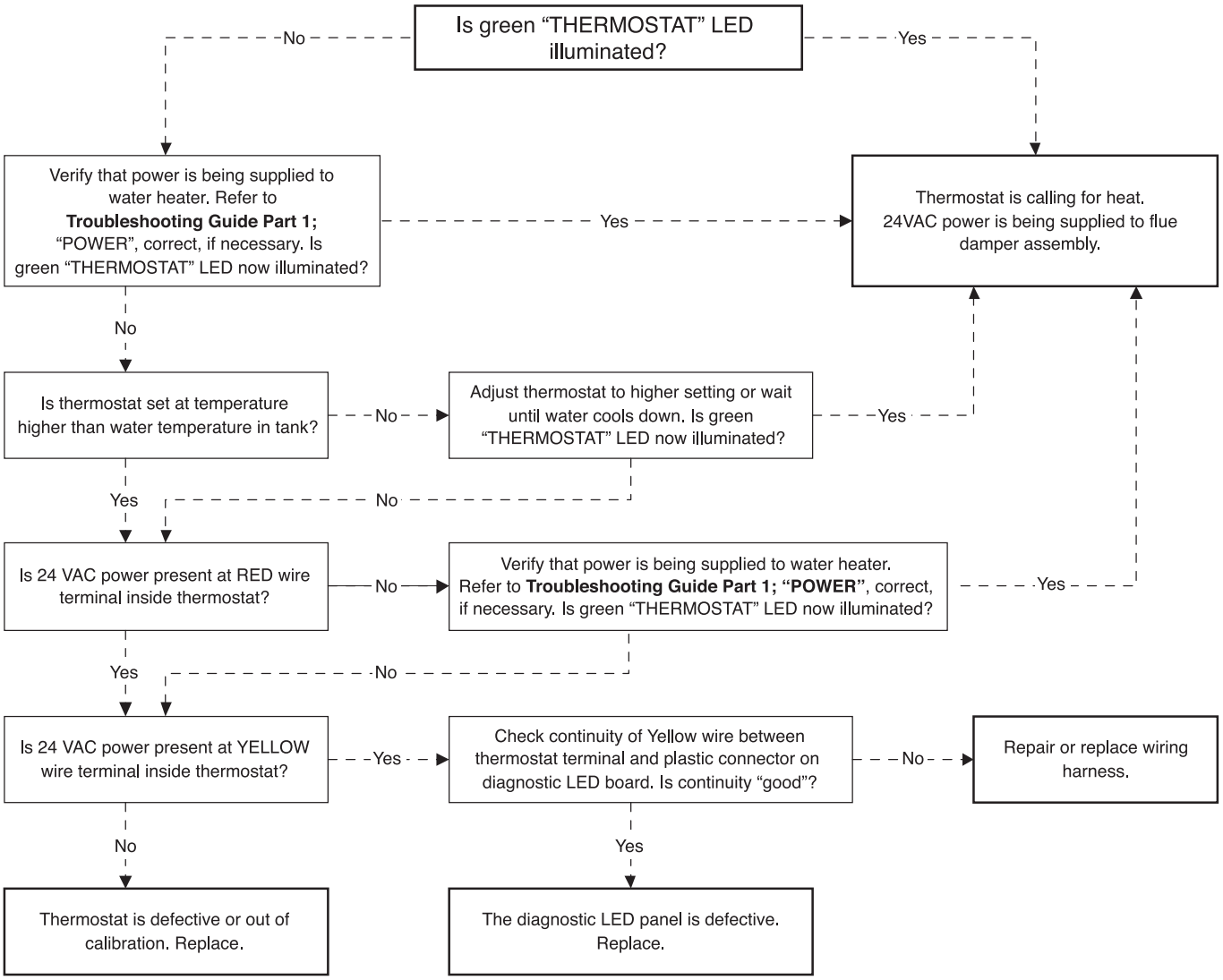
## Part 1
## “POWER” LED



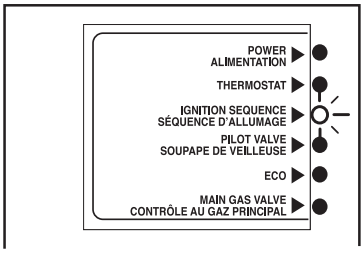



## Part 2
## “THERMOSTAT” LED



## Part 3
## "IGNITION SEQUENCE" LED




Is "IGNITION SEQUENCE" LED illuminated green?

No → Is flue damper assembly fully open?

Is flue damper assembly fully open? — Yes → Is spark ignitor operating? (Can you see sparks at the pilot?)

Is flue damper assembly fully open? — No → Check flue damper for obstruction. Remove, if necessary. Is flue damper fully open now?

Check flue damper for obstruction. Remove, if necessary. Is flue damper fully open now? — No → Is 24 VAC present between BROWN 24V wire and BLACK GND (24V) wire connected to pilot module?

Is spark ignitor operating? (Can you see sparks at the pilot?) — Yes → Is 24 VAC present between BROWN 24V wire and BLACK GND (24V) wire connected to pilot module?

Is spark ignitor operating? (Can you see sparks at the pilot?) — No → Is 24 VAC present between BROWN 24V wire and BLACK GND (24V) wire connected to pilot module?

Yes → Thermostat has called for heat. Flue damper assembly has fully opened. 24 VAC is being supplied to pilot module. Ignition sequence will begin.

Is 24 VAC present between BROWN 24V wire and BLACK GND (24V) wire connected to pilot module? — Yes → Diagnostic LED panel is defective. Replace.

Is 24 VAC present between BROWN 24V wire and BLACK GND (24V) wire connected to pilot module? — No → Check continuity of BROWN and BLACK wires between flue damper assembly and pilot module. Is continuity "good"?

Check continuity of BROWN and BLACK wires between flue damper assembly and pilot module. Is continuity "good"? — No → Repair or replace wiring harness. Is "IGNITION SEQUENCE" LED now illuminated green?

Repair or replace wiring harness. Is "IGNITION SEQUENCE" LED now illuminated green? — No → Pilot module is defective. Replace.

Repair or replace wiring harness. Is "IGNITION SEQUENCE" LED now illuminated green? — Yes → Flue damper assembly is defective. Replace.

Check continuity of BROWN and BLACK wires between flue damper assembly and pilot module. Is continuity "good"? — Yes → Flue damper assembly is defective. Replace.

Is 24 VAC present between BROWN 24V wire and BLACK GND (24V) wire connected to pilot module? — Yes →

1. Remove ignition cable and check for good continuity. Replace, if necessary.
2. Check ignitor electrode gap for proper spacing (1/8" to 5/32"). Correct, if necessary.
3. Examine ceramic insulator on pilot assembly for cracks. Replace if cracks are evident.

If all of above are satisfactory, replace pilot module.

Remove flue damper drive motor cover. Is green "CALL FOR HEAT" LED is illuminated? — No → Is 24 VAC power present between YELLOW and BLACK wires in polarized plug at flue damper assembly?

Is 24 VAC power present between YELLOW and BLACK wires in polarized plug at flue damper assembly? — No → Refer to **Troubleshooting Guide Part 2; "THERMOSTAT"** to determine if thermostat is operable. Repair or replace, if required.

Is 24 VAC power present between YELLOW and BLACK wires in polarized plug at flue damper assembly? — Yes → Is green "IGN GAS PWR" LED illuminated?

Remove flue damper drive motor cover. Is green "CALL FOR HEAT" LED is illuminated? — Yes → Is green "IGN GAS PWR" LED illuminated?

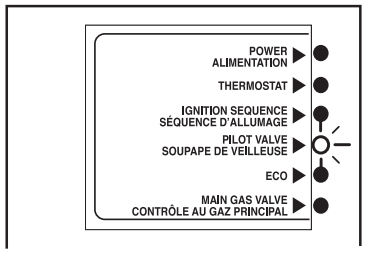
Is green "IGN GAS PWR" LED illuminated? — No → Flue damper assembly is defective. Replace.

Is green "IGN GAS PWR" LED illuminated? — Yes →

1. Remove ignition cable and check for good continuity. Replace, if necessary.
2. Check ignitor electrode gap for proper spacing (1/8" to 5/32"). Correct, if necessary.
3. Examine ceramic insulator on pilot assembly for cracks. Replace if cracks are evident.

If all of above are satisfactory, replace pilot module.

## Part 4
## “PILOT VALVE” LED




Is “PILOT VALVE” LED illuminated green?

No

Is spark ignitor operating?
(Can you see sparks at the pilot?)

Yes

Is pilot flame burning?

Yes

Pilot module is in ignition sequence and is providing 24 VAC power to ECO inside thermostat.

No

1. Remove ignition cable and check for good continuity. Replace, if necessary.
2. Check ignitor electrode gap for proper spacing (1/8" to 5/32"). Correct, if necessary.
3. Examine ceramic insulator on pilot assembly for cracks. Replace if cracks are evident.

Is 24 VAC present between ORANGE wire on “PV” terminal and BLACK wire on GND(24V) on pilot module

Yes

No

Diagnostic LED panel is defective. Replace.

Is 24 VAC present between WHITE wire on”PV” terminal and BLUE wire on “MV/PV” terminal on main gas valve?

Yes

Is natural gas supplied to main gas valve at a pressure between 5.0" wc and 14" wc?

No

Verify gas supply to water heater. Ensure that all valves are open.

No

Is “IGNITION SEQUENCE” LED illuminated green?

Yes

Pilot module is defective. Replace.

No

Refer to **Troubleshooting Guide Part 3; “IGNITION SEQUENCE”.**

No

Is “ECO” LED illuminated green?

Yes

Check continuity of WHITE wire between ECO (inside the thermostat) and “PV” terminal on main gas valve. Repair or replace wire, if needed.

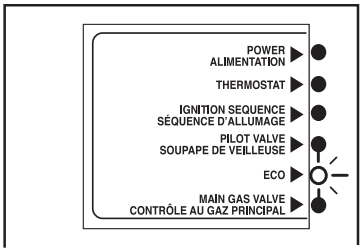
No

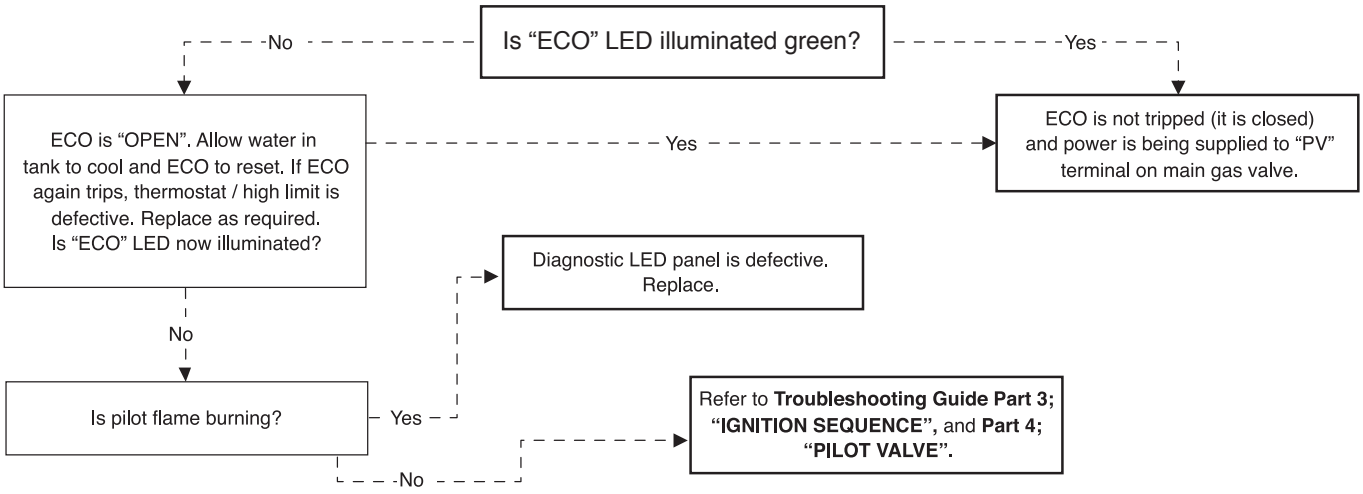
Refer to **Troubleshooting Guide Part 5; “ECO”.**

Yes

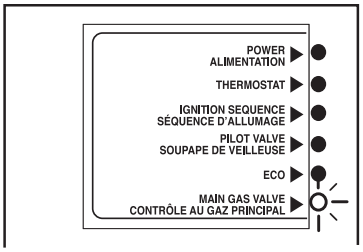
Main gas valve is defective. Replace.

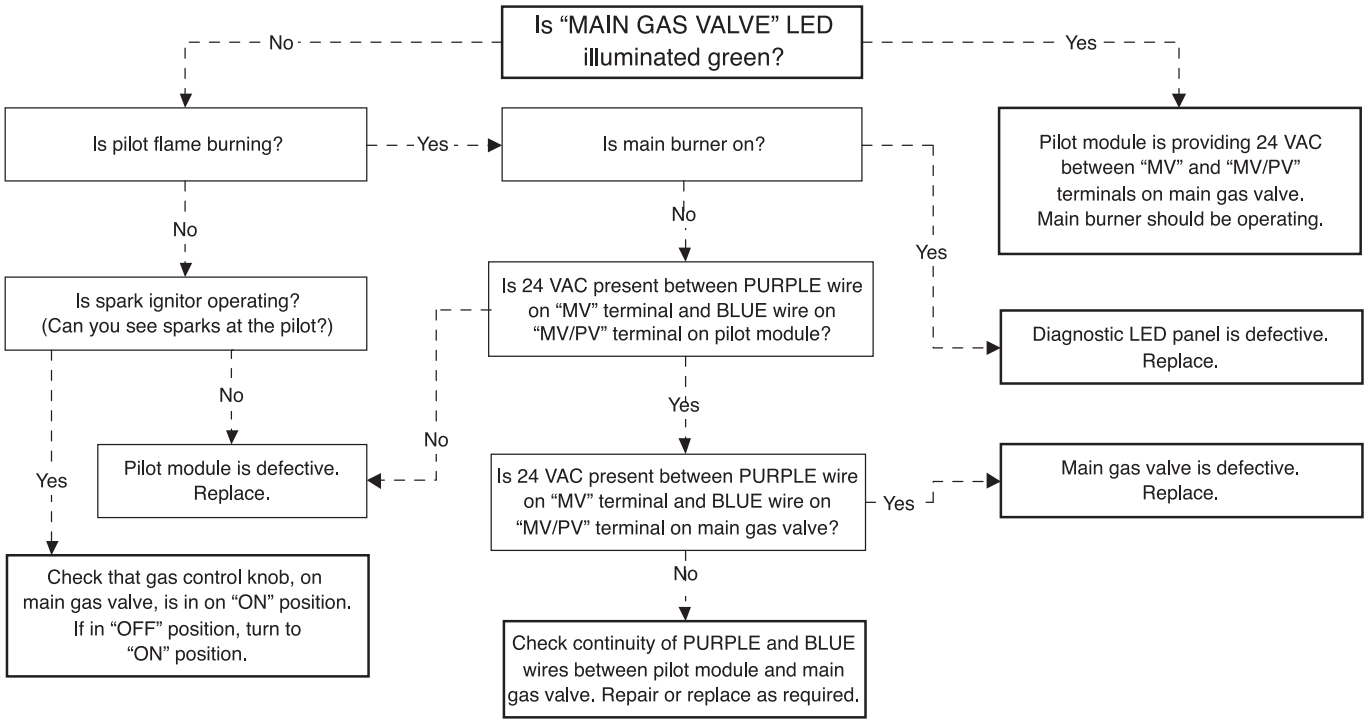
## Part 5
## “ECO” LED



## Part 6
## “MAIN GAS VALVE” LED



# STANDARD BASIC LIMITED WARRANTY

ON COMMERCIAL WATER HEATERS

## GENERAL

The manufacturer warrants that, subject to verification of a warranty claim within the warranty period as described below, it will take the necessary corrective action to either repair or replace a water heater or part which is determined to be defective in material or workmanship subject to the terms and conditions outlined in this document. Further, any replacement water heater or component part supplied under warranty will carry only the unexpired portion of the original water heater's warranty. The number of replacement water heaters is limited to one (1) per original unit purchased. If due to some extremely unusual circumstance, a replacement water heater or component part is found by our inspection & testing department to be defective, another heater or component part will be supplied to fulfill the obligation of the warranty of the original heater.

## THE INNER TANK

If the inner tank fails within THREE (3) years* after the date of the original installation, a replacement water heater will be provided to the party from whom the unit was originally purchased. If an exact replacement is not available, the manufacturer reserves the right to furnish a comparable model water heater; however, a surcharge will be applied for any additional component(s) incorporated in the replacement water heater. The warranty reply card must be completed and sent back to the manufacturer within forty-five (45) days of the installation date. If said warranty card is not returned, the date indicated on the model serial plate will prevail.

## COMPONENT PARTS

If any component part is found to be defective within ONE (1) year from the date of original installation, provided said defective part is an in-house factory made piece or an original factory approved OEM piece, the manufacturer will furnish a replacement part after the receipt and testing of the part claimed to be defective.

## THIS WARRANTY WILL NOT APPLY

1) To defects or malfunctions resulting from failure to properly install, operate, or maintain the unit in accordance with the printed instructions.
2) If the installation does not conform to CSA &/or ETL Standards as well as any applicable national or local building codes.
3) To any damage or failure caused by abuse, accident, fire, floods, freezing, or other acts of God.
4) To any damage or failure caused by operating the heater without an approved temperature & pressure-relief valve having been installed.
5) To any damage or failure caused by operating the heater with an empty or partially empty inner tank or sediment build-up.
6) To any damage or failure caused by utilizing the heater in conjunction with any other energy-saving device or other source(s) of energy not approved by the manufacturer; or for other than use with potable water without any additives, such as salt, chlorine, or chemicals other than those added for the purpose of rendering the water fit to drink.
7) To any damage or failure caused by the removal of the anodes &/or by not assuring that there are working anodes in the tank at all times. All anodes must be checked at least once every two years & replaced, if necessary
8) To any damages or failure caused by having affixed to the heater any non-factory made or factory approved replacement part(s), such as elements, controls, relief valves, etc.
9) To any damage caused by not having the water heater installed adjacent to a free-flowing drain in the event of water leakage.
10) If the heater is operated at water temperatures exceeding the maximum setting of the operating &/or high limit control or the heater is not supplied with potable water, free to circulate at all times.
11) If the heater has experienced the effect of thermal expansion due to excessive pressure (exceeding 300PSI). The result of excessive pressure usually reverses the bottom of the inner tank and can occur with the addition of a pressure reducing valve &/or a check valve in the municipal water supply system in a single family dwelling.
12) If the heater is installed outside of Canada or the United States.

## SERVICE LABOUR RESPONSIBILITY

This warranty does not cover any labour expense for service, removal, or re-installation of a replacement heater. All such expenses are your responsibility.

## SHIPPING COSTS

If a water heater or component part is deemed to be replaced, the manufacturer will pay the transportation costs of the replacement unit to a convenient authorized distributor or retailer as selected by us. You must pay any local cartage including the cost of returning the replaced item to the authorized distributor or retailer from whom the replacement is coming from.

## HOW TO MAKE A CLAIM

Any claim for warranty service should be made to your contractor, wholesaler, or retailer from whom the water heater was purchased. In turn, said contractor, wholesaler, or retailer will contact the manufacturer from whom they purchased the heater. If this procedure cannot be followed, contact any other local contractor, wholesaler, or retailer handling our water heaters. Also, for warranty information you may call the manufacturer's customer service department at (514) 645-8893 or 1-800-363-9354, option 1. We suggest that prior to calling the factory, you make sure to have the model & serial numbers that are found on the outside casing of the heater. Proof of purchase showing the date, name, and place of business from whom the water heater was purchased is essential to settle any warranty claim dispute over the length of the period of installation.

## MISCELLANEOUS

No one is authorized to make any other warranties on the manufacturer's behalf. Any implied warranties of any nature offered by a third party other than what is stated in this Standard Basic Limited Warranty will not be honoured. No claims for incidental or consequential damages (including damages from leakage) will be accepted. If you do not return the warranty card, a proof of purchase showing the name, date, and location of the original source of purchase is a necessity to process a warranty claim. Failure to produce this documentation will result in the lesser or the warranty periods being offered. In order to avoid any confusion &/or disputes, we suggest that the warranty card be completed and mailed back no later than forty-five (45) days after installation.

Notes :