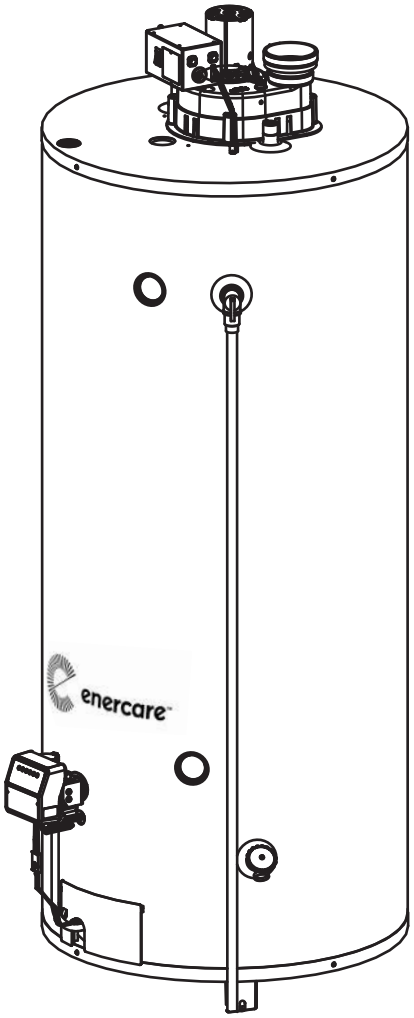
LIGHT DUTY COMMERCIAL POWER VENT GAS-FIRED WATER HEATERS
OWNER'S MANUAL
INSTALLATION AND OPERATING INSTRUCTIONS



⚠ 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 their instructions.
- If you cannot reach immediately the above supplier, call the fire department at 911.

Installation and service must be performed by Enercare Home Services at 1-800-266-3939.

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. SHOULD YOU HAVE ANY QUESTIONS, PLEASE CONTACT ENERCARE HOME SERVICES AT 1-800-266-3939. SAVE THIS MANUAL FOR FUTURE REFERENCES.

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LOW LEAD CONTENT

nqa canada
ISO 9001
REGISTRED
QUALITY SYSTEM

AHRI MEMBER

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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 abide by 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 these 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 Enercare Home Services at 1-800-266-3939 to inspect the water heater. Enercare will have the final decision as to how to handle the situation. 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 an Enercare Certified Licensed Professional and meet all local codes or, in the absence of local codes, CAN/CSA B149.1, Natural Gas and Propane Gas 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 Enercare Home Services at 1-800-266-3939.

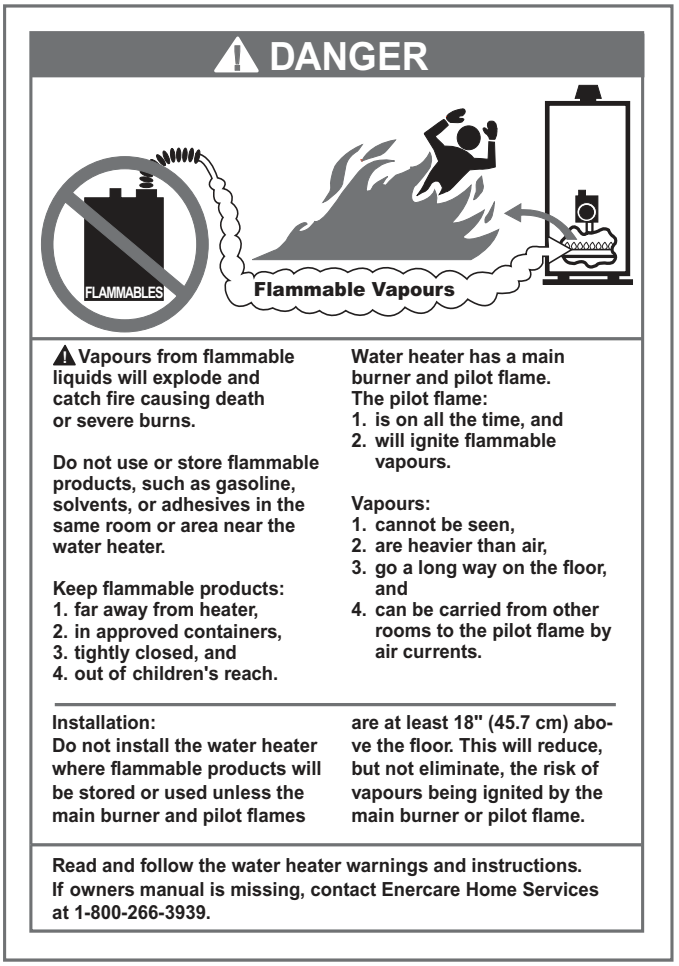
2) Verify that the type of gas being supplied corresponds to that which is marked on the rating plate and gas control valve of the water heater.

Location

This water heater should be located close enough to the outside wall so that it is within the venting requirements listed in these installation instructions and as close as possible to the main use of hot water. This location must not be subject to freezing temperatures. The water heater should be positioned, so that there is easy access to the burner, gas control valve, and drain valve. Where a floor drain is not adjacent to the water heater, it is recommended that a suitable drain pan be installed under the water heater (**see Figure 10**). 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 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.

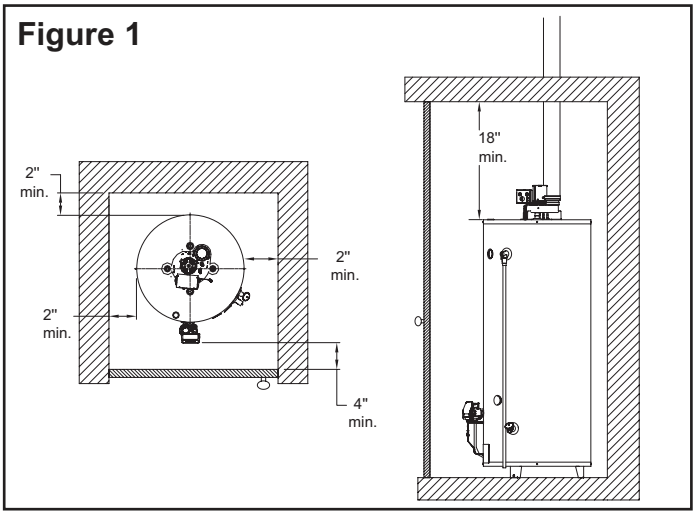
This water heater is approved for installation on either a combustible or non-combustible floor. However, should this water heater be installed directly on carpeting, the carpeting must be protected by a wood or metal panel beneath the water heater. This panel must extend at least three (3) inches (7.6 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.



Minimum Clearances

The minimum clearances from combustible material for this water heater are: Two (2) inches (5.1 cm) from the sides and rear, four (4) inches (10.2 cm) from the front, and eighteen (18) inches (45.7 cm) from the top (**see Figure 1**).

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 and the combustion air intake holes at the bottom of the water heater must never be 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 burner and in the flue tube. 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.

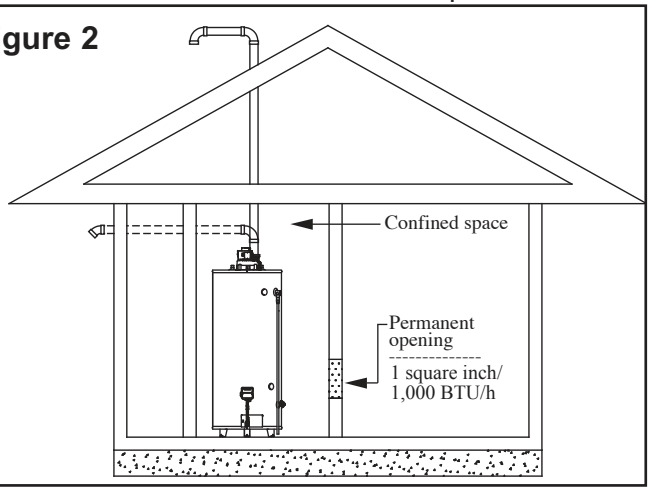
Requirements for Confined Spaces

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 CAN/CSA B149.1)

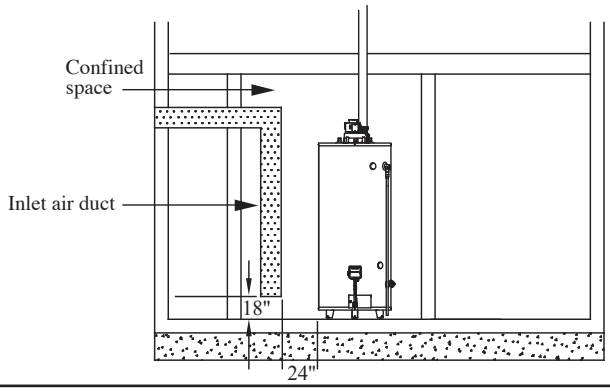
1) All Air From Inside the Building (**see Figure 2**)**:**
The confined space shall be provided with one opening of one (1) square inch per 1,000 BTUH (22.0 cm^2/kW) communicating directly with one or more rooms of sufficient volume, so that the combined volume of all spaces meets the criteria for an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

Figure 2



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 CAN/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.

Figure 3



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

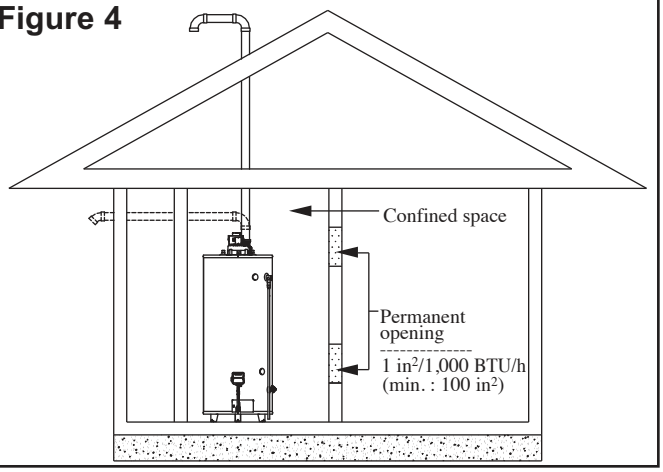
1) All Air From Inside the Building (**see Figure 4**)**:**
The confined space shall be provided with two permanent openings communicating directly with one or more rooms of sufficient volume, so that the combined volume of all spaces meets the criteria for an unconfined space. The total input rating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

Each opening shall have a minimum free area of one (1) square inch per 1,000 BTUH (22.0 cm²/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 cm²). 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:

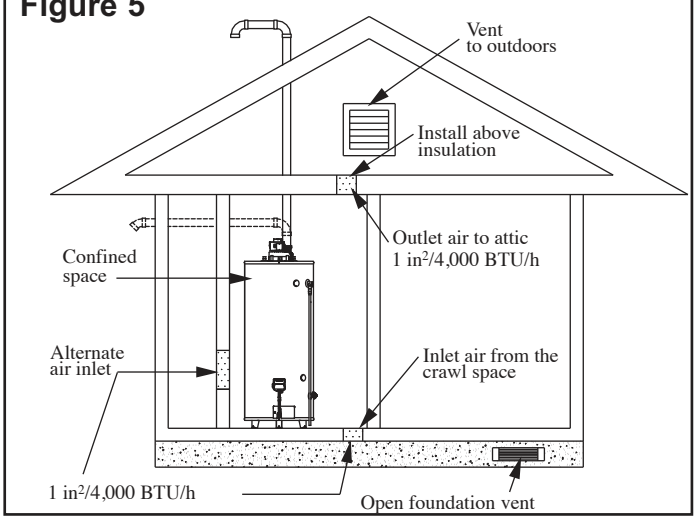
The confined space shall be provided with two permanent openings, one commencing within six (6) inches (15.2 cm) of the top and one commencing within six (6) inches (15.2 cm) from the bottom of the enclosure. The openings shall communicate directly or by ducts, with the outdoors or spaces (crawl or attic)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

Figure 4



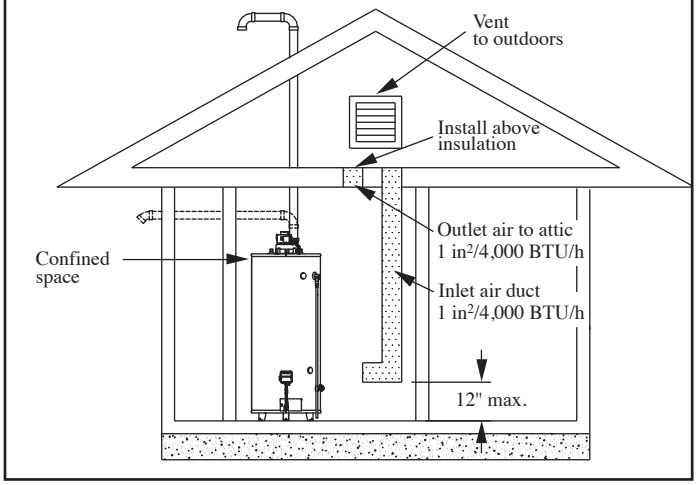
A) When communicating directly with the outdoors, each opening shall have a minimum free area of one (1) square inch per 4,000 BTUH (5.5 cm²/kW) of the total input rating of all gas appliances in the enclosure (**see Figure 5**).

Figure 5



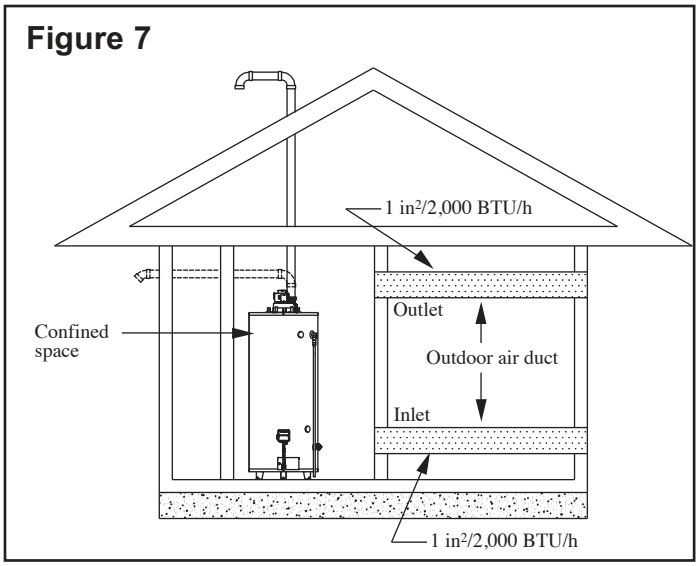
B) When communicating with the outdoors through vertical ducts, each opening shall have a minimum free area of one (1) square inch per 4,000 BTUH (5.5 cm²/kW) of the total input rating of all gas appliances in the enclosure (**see Figure 6**).

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 cm²/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 (automatic mechanical louvers).

Corrosive Atmospheres

If this water heater is to 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. Enercare may be entitled for compensation.**

Venting

⚠ DANGER

When installing the venting system, make sure to follow all local codes or, in the absence of local codes, CAN/CSA B149.1, Natural Gas and Propane Gas 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.

Before installing the vent piping, make sure that the vent system layout has been properly planned. Verify that the location of the water heater respects all clearances from combustible material, all venting requirements (**see Table 1**), and that the vent terminal will be installed as specified by all local codes or, in the absence of local codes, CAN/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 (**see Figure 9**).

This water heater must be vented directly to the outdoors, either horizontally through the wall or vertically through the roof. The venting must not be attached to an existing chimney, or in common with any other appliance, and must not be insulated.

Only three (3) inch (7.6 cm) or four (4) inch (10.2 cm) schedule 40 PVC or CPVC, pipe and fittings may be used to vent this water heater. For installations using four (4) inch (10.2 cm) vent piping, a four (4) inch (10.2 cm) to three (3) inch (7.6 cm) adaptor must be installed as close as possible to the power venter. A 45-degree elbow must also be installed at the end of the vent piping to serve as the vent termination. The grill supplied by the manufacturer must be installed in this 45-degree elbow. The pipe and all the fittings

Figure 8

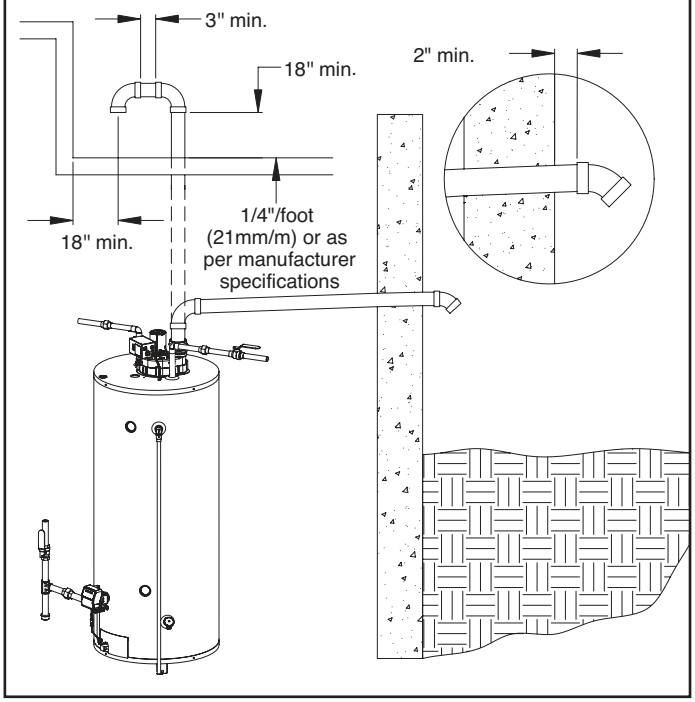
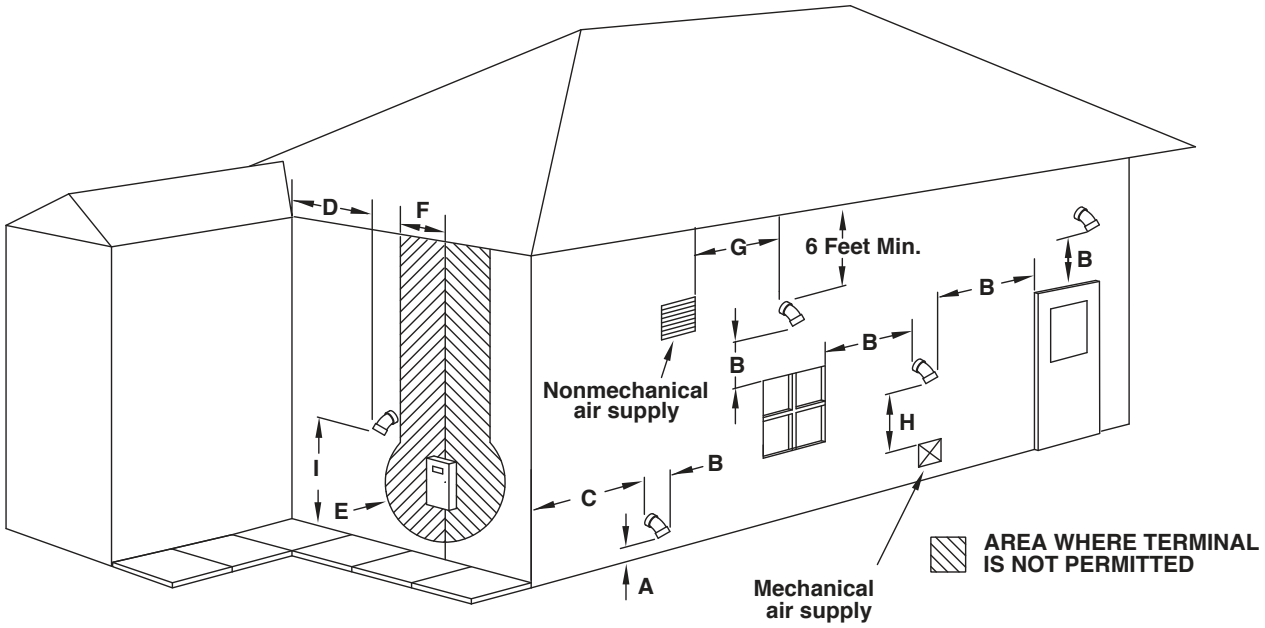


Table 1

MAXIMUM EQUIVALENT LENGTH OF PIPE *DO NOT EXCEED MAXIMUM LENGTH*		
PIPE VENT DIAMETER	**3 inches (7.6 cm)**	**4 inches (10.2 cm)**
Maximum length plus one 45-degree or 90-degree termination elbow	**50.0 feet (15.2 m)**	**100.0 feet (30.5 m)**
Minimum length plus one 90-degree elbow and plus one 45-degree termination elbow	**2.5 feet (0.8 m)**	**2.5 feet (0.8 m)**
One 45-degree radius elbow is equivalent, in straight pipe, to	**4.0 feet (1.2 m)**	**4.0 feet (1.2 m)**
One 90-degree radius elbow is equivalent, in straight pipe, to	**7.0 feet (2.1 m)**	**8.0 feet (2.4 m)**

Figure 9



The Vent Termination must have a:	Canadian Installations	U.S. Installations
A) Clearance above grade, veranda, porch, deck, or balcony.	12 inches (30 cm)	12 inches (30 cm)
B) Clearance to window or door that may be opened.	12 inches (30 cm)	* * *
C) Clearance to outside corner	*	*
D) Clearance to inside corner.	*	3 feet (91 cm)
E) Clearance to service regulator vent outlet.	3 feet (91 cm)	6 feet (1.82 m)
F) Clearance to each side of center line extended above meter/regulator assembly.	3 feet (91 cm) within a height of 15 feet (4.57 m) above the meter/regulator assembly	3 feet (91 cm) within a height of 15 feet (4.57 m) above the 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 cm)	* * *
H) Clearance to a mechanical air supply inlet.	6 feet (1.82 m)	* * * *
I) Clearance above paved sidewalk or paved driveway located on public property.	7 feet (2.13 m)	7 feet (2.13 m)
• Clearance under veranda, porch, deck, or balcony.**	12 inches (30 cm)	Shall not
• Clearance to permanently closed window.* • 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.* • Clearance to unventilated soffit.*		

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 single family dwellings and serves both dwellings.

** The veranda, porch, or deck is fully open on a minimum of two sides beneath the floor.

***The vent terminal must terminate at least four (4) feet (1.22 m) below, four (4) feet (1.22 m) horizontally from, or one (1) foot (30 cm) above any door, window, and gravity air inlet to the building.

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

must be permanently joined using the appropriate primer and solvent-based cement. Horizontal runs of vent pipe must be supported every three (3) feet (91 cm) and vertical runs of vent pipe must be supported every five (5) feet (1.5 m).

According to the CAN/CSA-B149.1, Natural Gas and Propane Installation Code, plastic vent systems installed in Canada must be certified to the STANDARD FOR TYPE BH GAS VENTING SYSTEMS, ULC S636. Components of the certified vent system must not be interchanged with other vent systems or unlisted pipe/fittings. Plastic components and specified primers and glues of the certified vent system must be from a single vent system manufacturer and not intermixed with other vent system manufacturer's vent system parts unless those are certified to be used with this system. Plastic vent systems shall also be installed such that the first three (3) feet (91 cm) of pipe from the water heater outlet is readily accessible for visual inspection.

Through-the-Wall Venting Installation

Cut or drill a hole through the exterior wall, slightly larger than the diameter of the vent pipe selected. The larger hole will allow for final alignment with the water heater. Extend a section of pipe through the hole to the outside and attach the terminating elbow to the exterior end of the pipe. Connect and secure all piping and elbows from the power venter to the wall. Make sure that all horizontal runs have a minimum rise of 1/4 inch per foot (21 mm/m) of run (**see Figure 10**). When the installation is completed, the vent terminal must be a minimum of two (2) inches (5.1 cm) from the exterior surface of the wall (**see Figure 8**). Make sure that all piping is properly braced. If the venting will pass through an enclosed area, make sure to leave at least one (1) inch (2.5 cm) clearance around the piping for air circulation.

Through-the-Roof Venting Installation

Cut or drill a hole through the roof and ceiling, slightly larger than the diameter of the vent pipe selected. The larger hole will allow for final alignment with the water heater. Construct the vent terminal assembly. Extend a section of pipe through the hole in the roof to the outside and attach the terminal assembly to the exterior end of the pipe. Connect and secure all piping and elbows from the power venter to the roof. Make sure that all horizontal runs have a minimum rise of 1/4 inch per foot (21 mm/m) of run (**see Figure 10**). When the installation is completed, the vent terminal must be a minimum of eighteen (18) inches (45.7 cm) from the exterior surface of the roof (**see Figure 8**). Make sure that all piping is properly braced. If the venting will pass through an enclosed area, make sure to leave at least one (1) inch (2.5 cm) clearance around the piping for air circulation.

Condensation in the Venting System

In some installations, condensation will form in the horizontal runs of vent piping. To prevent condensation from flowing back into the power venter, install a condensate trap just past the first elbow of the vent piping system. Make sure that the condensate removal tube flows to a suitable free-flowing drain.

⚠ WARNING

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.

Water Piping

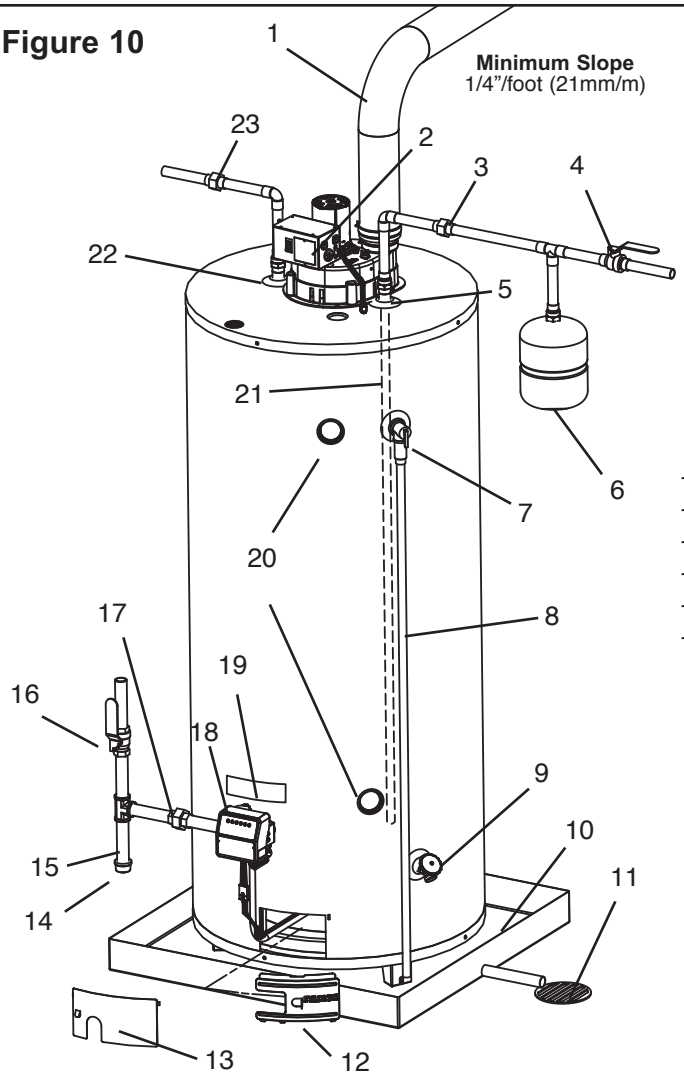
Refer to **Figure 10** for a typical installation. Use of this layout should provide a trouble-free installation for the life of the water heater. Before making the plumbing connections, locate the **COLD** water inlet and the **HOT** water outlet. These fittings are both 3/4" N.P.T. male thread. Make sure that the dip tube is installed in the cold water inlet. 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

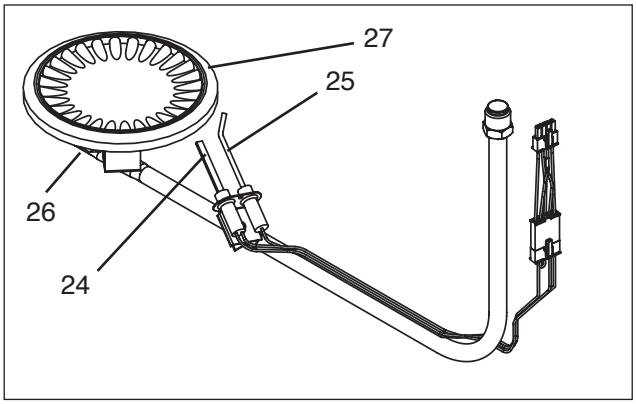
To protect from excessive pressure and/or temperature, the manufacturer has installed a temperature and pressure-relief valve that meets the requirements of the Standard for Relief Valves and Automatic Gas Shut-Off Devices for Hot Water Supply Systems, CSA 4.4, in Canada, and ANSI Z21.22, in the United 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 BTU/hr rating equal to or greater than the input rating,

Figure 10



1) Vent pipe
2) Power vent assembly
3) Union
4) Cold water manual shut-off valve
5) Cold water inlet
6) Expansion tank
7) Temperature & pressure-relief valve
8) Overflow tube
9) Drain valve
10) Drain pan
11) Free-flowing floor drain
12) Inner access door
13) Outer access door
14) Cap
15) Drip leg (Sediment trap)
16) Gas supply manual shut-off valve
17) Union
18) Gas control valve
19) Rating plate
20) Side tappings
21) Dip Tube
22) Hot water outlet
23) Union

24) Ignitor
25) Flame sensor
26) Burner orifice
27) Burner



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.

⚠ 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, contact Enercare Home Services at 1-800-266-3939. Failure to follow these instructions can result in property damage, personal injury, or death.

Should this relief valve 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 the floor.
- 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 discharge to a suitable place for disposal when relief occurs (not subject to freezing).

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 10**). 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. Call Enercare Home Services at 1-800-266-3939. If the relief valve is not defective, the service call may be at the cost of the consumer.

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 inserting a flat-head screwdriver into the slot on the head of the drain valve and 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 10**. For the correct size of piping for this water heater, consult CAN/CSA B149.1, National Gas and Propane Installation Codes (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 gas control valve to prevent dirt from entering it. A union must be installed between the gas control 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 1/2 psi (3.5 kPa) for both natural and propane gases. Pressures in excess of 1/2 psi (3.5 kPa) can damage the gas control 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. All testing must be done according to CAN/CGA B149 in Canada and/or the National Fuel Gas Code, ANSI Z223.1 in the United States and local codes.

⚠ WARNING

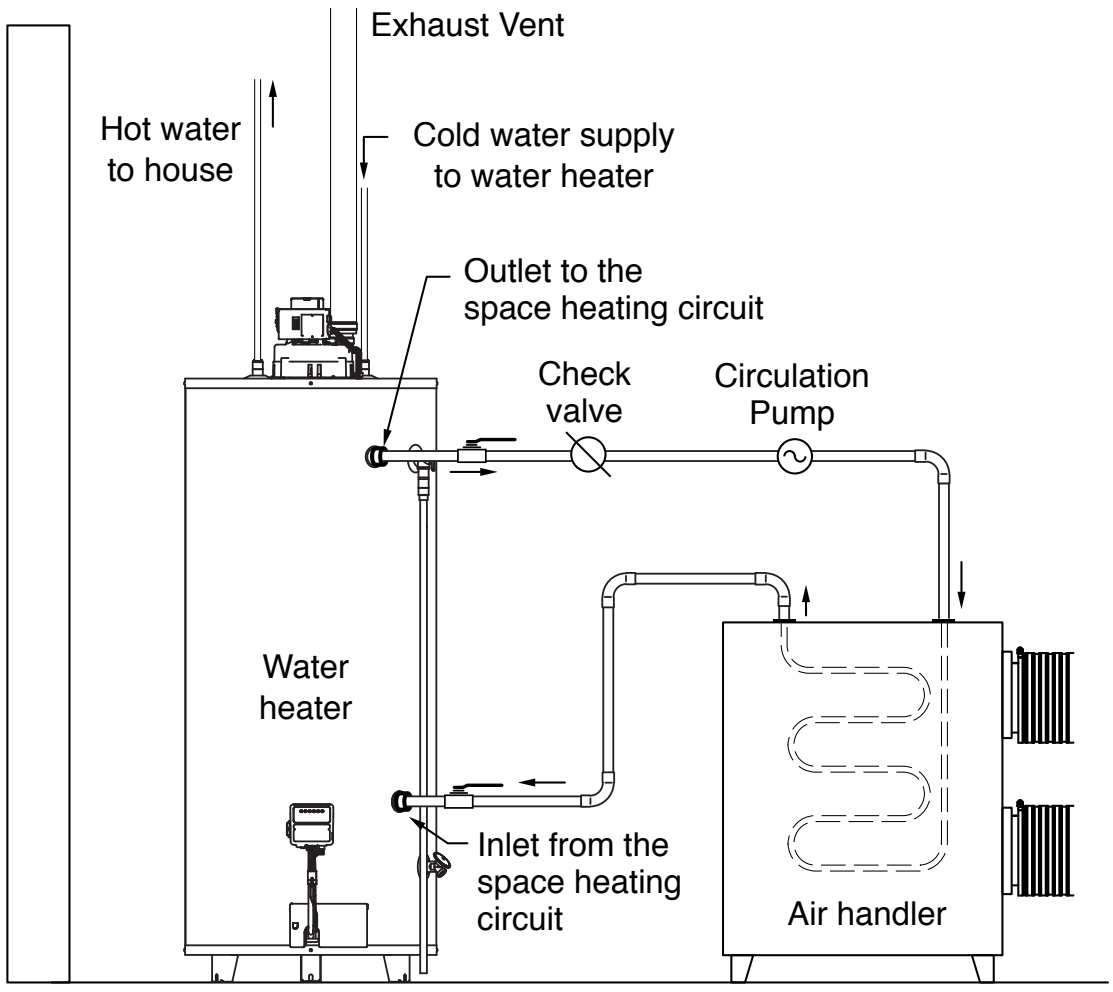
A high altitude orifice **MUST BE** installed for water heaters operating above 2,000 feet (610 m). Failure to follow this instruction can result in property damage, personal injury, or death.

Installation Instructions for Water Heaters Approved for Combination Space Heating and Potable Water Heating (See Figure 11)

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) When used as a dual purpose water heater, 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 will be used for space heating, make sure that all safety codes are respected. Pay special attention to safety valve pressure and expansion tanks.
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 Enercare. 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.

Figure 11



Note: It is good practice to oversize the water heater, to ensure that all of the potential hot water requirements are available. Always refer to local plumbing codes for proper installation.

Wiring

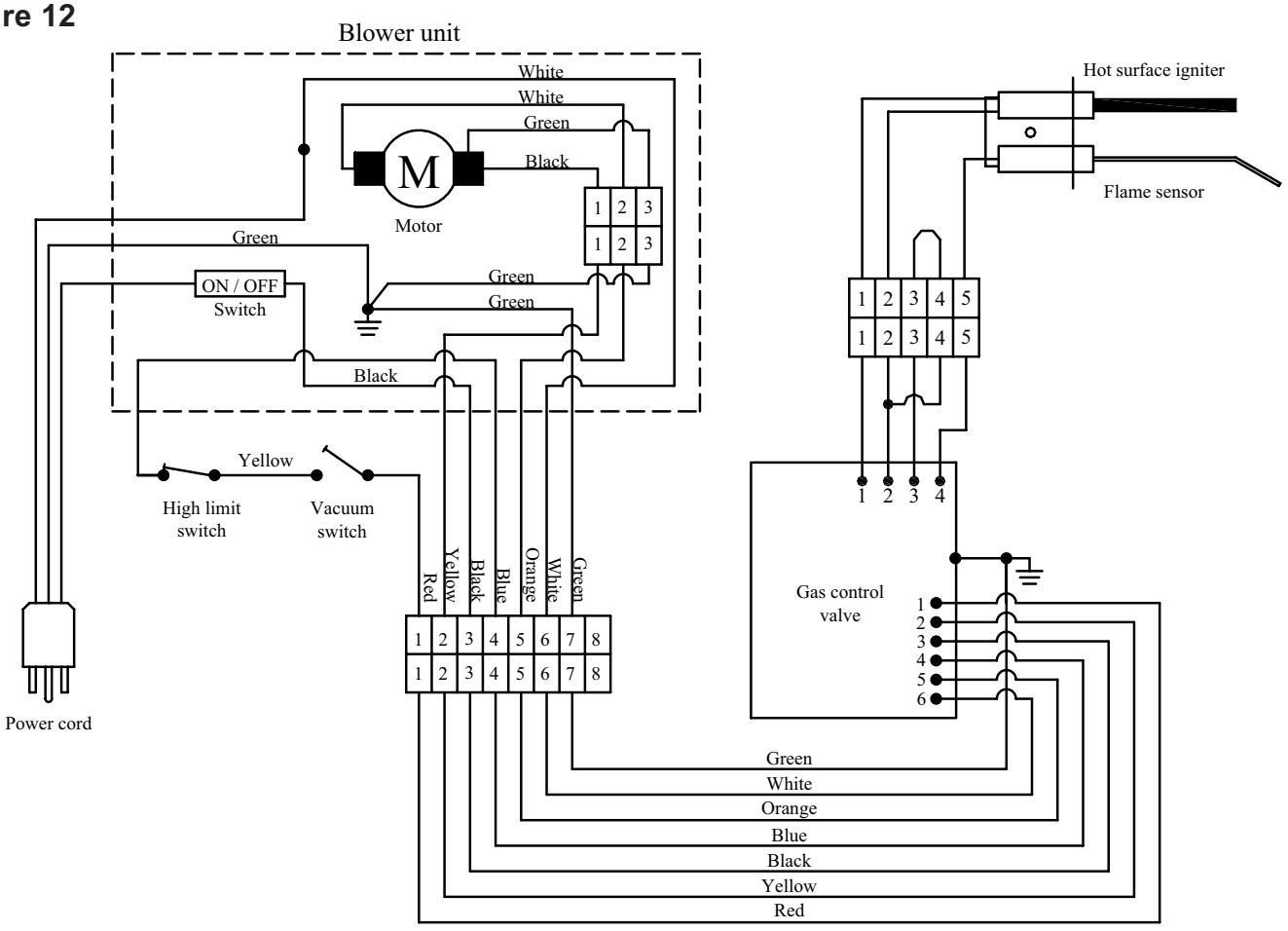
⚠ WARNING

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, CSA C22.1 Canadian Electrical Code, in Canada, and/or 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 12**). 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 transport. If any of the original wiring needs replacing, use only 18AWG-type, or greater wire that is approved for 221°F (105°C).

Wiring Diagram

Figure 12



Installation Checklist

Refer to the Enercare Home Services checklist

Lighting the Water Heater

Lighting or re-lighting your water heater will be done by Enercare Home Services. For any problems occuring after installation please contact Enercare Home Services at 1-800-266-3939.

⚠ 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.
- Gasoline or other flammable vapours and 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.

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 death.

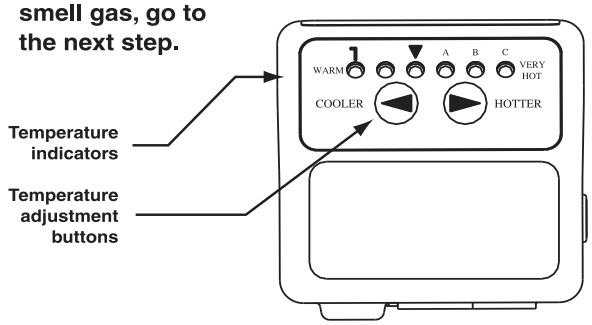
A. **This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. DO NOT try to light the burner by hand.**

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 and Enercare Home Services. Follow their instructions.
- If you cannot reach these suppliers, call the fire department at 911.

C. **DO NOT use this water heater if any part has been under water. Immediately call Enercare Home Services at 1-800-266-3939 to inspect the water heater and to determine the action plan.**

LIGHTING INSTRUCTIONS

1. **STOP! Read the safety information above on this label.**
2. **Turn OFF all electric power to the appliance.**
3. **This appliance is equipped with an ignition device which automatically lights the burner. DO NOT try to light the burner by hand.**
4. **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.**
5. **Turn ON all electric power to the appliance.**
6. **Set the thermostat to the desired setting. This is done by holding down both the COOLER and HOTTER temperature adjustment buttons at the same time for one (1) second. To decrease the temperature, press and release the COOLER button once. Repeat until the desired setting is reached. To increase the temperature, press and release the HOTTER button once. Repeat until the desired setting is reached. The mark " ▼ " is approximately 120°F (49°C).**
7. **If the appliance will not operate, follow the instructions *To Turn Off Gas To Appliance* and call immediately Enercare Home Services at 1-800-266-3939.**



TO TURN OFF GAS TO APPLIANCE

1. **Turn OFF all electric power to the appliance.**
2. **Turn OFF the gas supply to the appliance.**

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 seniors, mixing valves for point of use are necessary as means of reducing the scalding potential of hot water.

The gas control valve is factory-adjusted to its lowest temperature, approximately 70°F (21°C). When the water heater is plugged in for the first time, the gas control valve will start to heat the water to this temperature. To avoid any unintentional changes in the water temperature settings, the gas control valve has a tamper-resistant feature included for changing the temperature setting. If you want to change this setting for either cooler or warmer water, the following steps are necessary:

1) "Wake up" the temperature indicators by holding down both the **COOLER** and **HOTTER** temperature adjustment buttons at the same time for one (1) second (**see Lighting Instructions**). One or two of the temperature indicators will light up. These indicators will only remain on for thirty (30) seconds, if no further buttons are pressed. After thirty (30) seconds, the control will go back to "Sleep" mode, and both buttons will again have to be pressed to see the water temperature setting. Release both of the temperature adjustment buttons.

Figure 13

DISPLAY ▼ A B C	APPROXIMATE TEMPERATURE °F (°C)	APPROXIMATE TIME TO CAUSE INJURY
● ○ ○ ○ ○ ○	70 (21) (Vacation)	N/A
○ ● ○ ○ ○ ○	110 (43)	5 Minutes
○ ● ● ○ ○ ○	115 (46)	
○ ○ ● ○ ○ ○	120 (49)	
○ ○ ● ● ○ ○	125 (52)	30 Seconds
○ ○ ○ ● ○ ○	130 (54)	
○ ○ ○ ● ● ○	135 (57)	5 Seconds
○ ○ ○ ○ ● ○	140 (60)	
○ ○ ○ ○ ● ●	145 (63)	1.5 Seconds
○ ○ ○ ○ ○ ●	150 (66)	
○ ○ ○ ○ ○ ● FLASHING	160 (71)	Under 1 Second

2) If this is the first time that the control has been used, the left-most green indicator will be illuminated, indicating the water temperature setting of approximately 70°F (21°C). If the control has been in operation for some time, the water temperature setting may indicate a different temperature. **See Figure 13** for an explanation of what each of the temperature indicators mean.

To decrease the temperature, press and release the **COOLER** button once. The temperature indicators will now display the new temperature setting. Press and release the **COOLER** button until you have reached the desired setting. **HOLDING DOWN THE BUTTON WILL NOT CONTINUE TO LOWER THE SETTING**. The button must be pressed and released for each temperature change desired.

To increase the temperature, press and release the **HOTTER** button once. The temperature indicators will now display the new temperature setting. Press and release the **HOTTER** button until you have reached the desired setting. **HOLDING DOWN THE BUTTON WILL NOT CONTINUE TO RAISE THE SETTING**. The button must be pressed and released for each temperature change desired.

To maximize the efficiency of this water heater and reduce the risk of scalding, it is recommended that the gas control valve be set at the setting below the large triangle («▼»), which represents approximately 120°F (49°C).

3) When you have completed setting the control, wait thirty (30) seconds to see that the temperature indicators go off and the control enters "Sleep" mode. **ALL OF THE TEMPERATURE INDICATORS WILL BE OFF DURING NORMAL OPERATION**. If any time you see the indicators on, there may be a system error and you should consult the ***Troubleshooting Guide*** of this document, or call Enercare Home Services at 1-800-266-3939.

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 injury. Always be careful before introducing your hand in the hot water.

The gas control valve pictured in this manual is equipped with a single-use type automatic high temperature cutoff. Should the temperature of the water exceed 195°F (91°C), the high temperature cutoff will automatically shut off the gas supply to the water heater. If this situation occurs, the gas control valve must be replaced immediately replaced by Enercare.

⚠ 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) Unplug the power cord from the wall socket.
2) Close the gas supply manual shut-off valve.
3) 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 combustion air to the 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. It is the responsibility of the homeowner to do so in order to prevent any malfunction that is not Enercare’s responsibility. 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 has been undersized.
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 tube will drop on the burner making a “sizzling” sound. This condition is not uncommon and must never be misinterpreted as a leaking tank. It will disappear once the water becomes heated.

Burner Ignitor Assembly

Periodically, check the burner and flame ignitor assembly. You can access the combustion chamber by removing the inner and outer doors on the water heater. A soft blue flame indicates proper gas combustion. A yellow tipped flame indicates poor combustion. If so, with a vacuum cleaner, remove any dust, lint, and dirt accumulation in and around the combustion chamber. If the poor combustion persists and there is no lint around the water heater call Enercare Home Services at 1-800-266-3939. This service call may be at the expenses of the consumer if lint is blocking the flame arrestor plate.

Water Heater Tank

You may choose to drain the tank at your convenience in very hard water conditions.

Temperature and Pressure-Relief Valve

On a regular basis, visually inspect the valve for any leakage, if so call Enercare Home Services at 1-800-266-3939.

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 Enercare Home Services at 1-800-266-3939.

Anodes
This water heater is equipped with dual anodes that are designed to prolong the life of the glass-lined tank. The anodes are slowly consumed, protecting the glass-lined tank from corrosion. If you get rotten egg smell, call Enercare Home Services at 1-800-266-3939, that may have a solution to your water condition problem (See the explanation of rotten eggs below).

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 the water extremely conductive. In these conditions, the anodes are consumed more rapidly. Please advise Enercare that you operate a water softener so they can take the proper precaution.

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**. This is not an Enercare Home Services issue but a consumer issue in his water supply and the consumer is responsible for any equipment needed to remove the rotten egg smell.

⚠ 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) Unplug the power cord from the wall socket.
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 inserting a flat-head screwdriver into the slot on the head of the drain valve and turning the knob counterclockwise ↶.
6) Open a hot water faucet to allow air into the system.

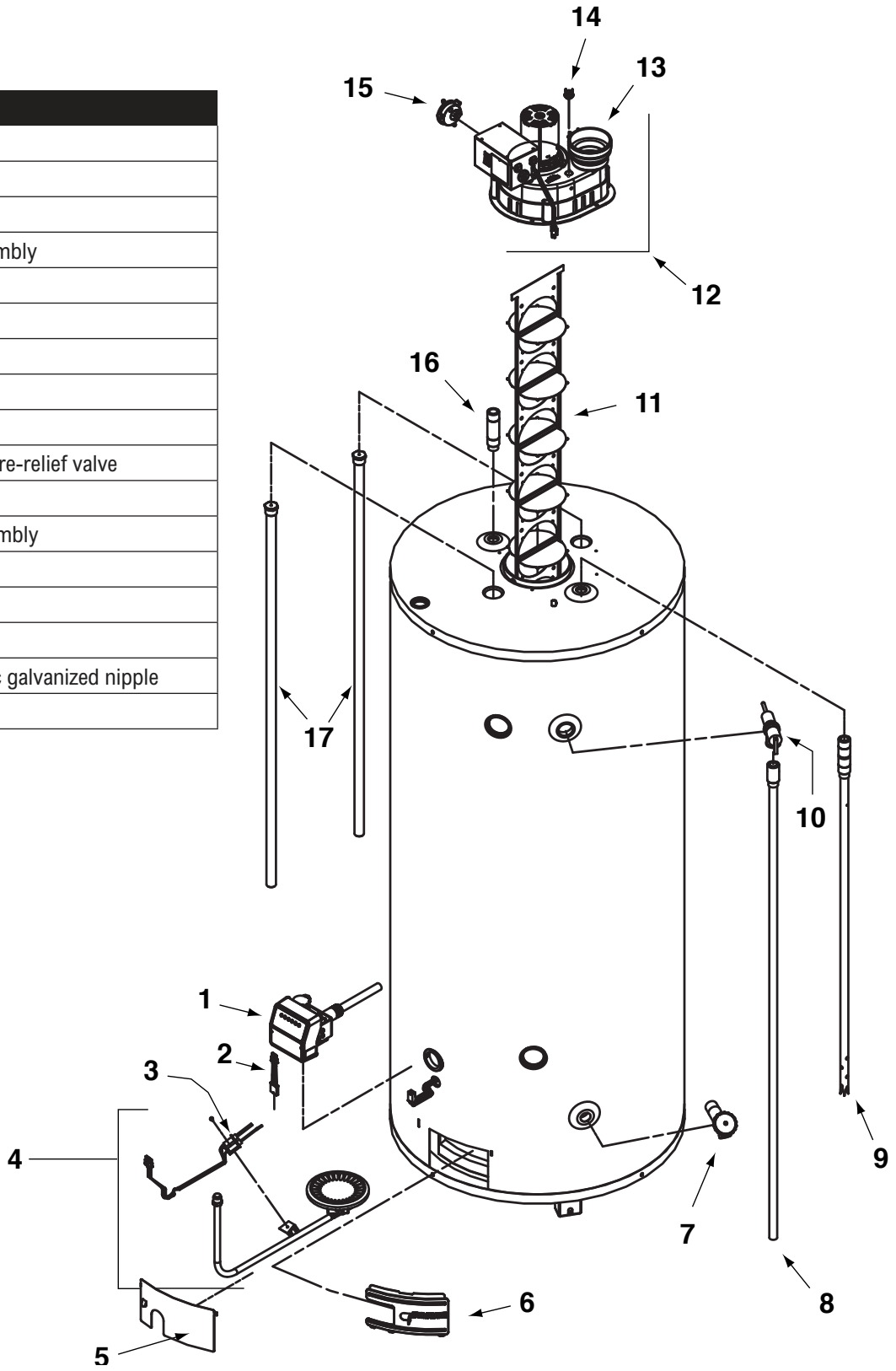
Vacation
If you are planning a vacation or other prolonged absence, it is highly recommended to shut off the gas supply and the cold water supply to the water heater. This will save energy, protect against property damage in the event the water heater leaks, and prevent the build-up of hydrogen gas. 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, please call Enercare Home Services at 1-800-266-3939. Have handy the following:

a) Name.
b) Address.
c) Contract number.
d) Telephone number.
e) Other people to reach in case of emergency.
f) A description of the problem.

ID No	Description
1	Gas control valve
2	Electric connector
3	Igniter assembly
4	Complete burner assembly
5	Outer access door
6	Inner access door
7	Drain valve
8	Overflow tube
9	Dip tube
10	Temperature & pressure-relief valve
11	Flue baffle
12	Complete blower assembly
13	Vent adaptor
14	High limit control
15	Vacuum switch
16	Plastic-lined di-electric galvanized nipple
17	Magnesium anodes

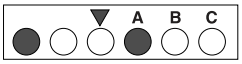
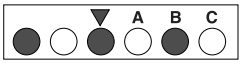
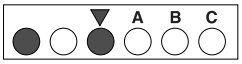
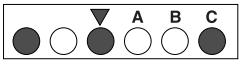
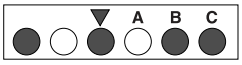
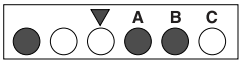
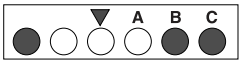
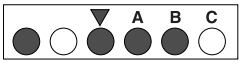
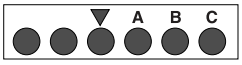
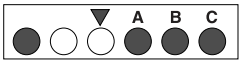
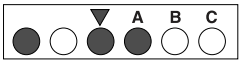
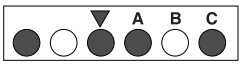
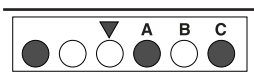
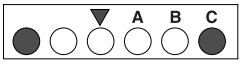


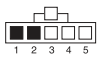
TROUBLESHOOTING GUIDE

⚠ WARNING

Disconnect the electrical power before servicing the water heater. Service should only be performed by an Enercare service technician. Failure to follow these instructions can result in personal injury and/or death.

Only Enercare Home Services personnel can service your rental water heater, call 1-800-266-3939 for service.

CONDITION (code#)		CAUSE	REMEDY
	1	An open earth ground circuit to the ignition.	1) Check that the earth ground conductor is properly connected at the fuse box or breaker panel and the water heater. 2) Check that the grounding conductors on the water heater are properly connected and secure.
	2	A wiring error or a high resistance to earth ground.	1) Check for proper connection of the line neutral and line hot wires. 2) Check that the water heater is securely connected to earth ground.
	3	The pressure switch remained closed longer than 5 seconds after the call for heat began.	1) The pressure switch wiring is incorrect. 2) The pressure switch is defective and must be replaced.
	4	The pressure switch remained open longer than 5 seconds after the power venter was energized. ***(see note at the bottom of the page)***	1) The pressure switch wiring is incorrect. 2) The pressure switch tubing is not connected correctly. 3) There are obstructions or restrictions in the water heater air intake or exhaust flue.
	5	The self diagnosing test has detected an error in the hot surface ignitor circuit.	1) Check the wiring is correct and secure. 2) Disconnect the ignitor connector and measure the ignitor resistance with an accurate ohmmeter between pins 1 and 2. Resistance should be between 11.5 and 18.8 ohms. If the reading is incorrect, replace the hot surface ignitor. 3) If the above checks are good, replace the gas control valve.
	6	The maximum number of ignition retries or recycles has been reached and the system is in lock-out mode.	1) Check if the gas supply is off or too low to operate. 2) Check the flame sensor rod to see that it is located properly and free from contamination. Reposition the flame sensor rod or lightly clean it with an abrasive cloth. 3) The hot surface ignitor may not be positioned correctly. Reposition as necessary. 4) Check that the hot surface ignitor and flame sensor rod are wired correctly and in good working condition. 5) Low voltage to the water heater. Check and repair.
	7	The gas valve driver circuit.	1) Turn off the power to the water heater for 10 seconds and then back on. 2) If the above step did not clear the error, replace the gas control valve.
	8	The internal microcomputer.	1) Turn off the power to the water heater for 10 seconds and then back on. 2) If the above step did not clear the error, replace the gas control valve.
	9	The internal circuit.	1) Turn off the power to the water heater for 10 seconds and then back on 2) If the above step did not clear the error, replace the gas control valve.
	10	Flame signal sensed out of proper sequence.	Replace the gas control valve.
	11	The high temperature thermal cutoff is open.	Replace the gas control valve.
	12	One of the temperature adjust buttons is stuck closed.	1) Make sure that there are no objects leaning against the front of the control. 2) Lightly press and release each of the buttons once. 3) If the above actions do not clear the error, the control will continue to regulate the water temperature at the last setting, but you will not be able to change settings unless you replace the gas control valve.
	13	The water temperature sensor is either open or short-circuited.	1) Check that all of the wiring is correct and that there are no open or short circuits. 2) If no wiring problems are found, the gas control valve must be replaced.
	14	The self-diagnosing test found a problem with the flame vapour sensor.	1) Check that all wiring is correct and that there are no open or short circuits. 2) If no wiring problems are found, the flammable vapour sensor must be replaced.
	15	The control detected the presence of flammable vapours near the appliance and entered lock-out mode.	1) Identify the source of the flammable vapours and remove it from the area surrounding the water heater 2) Contact Enercare Home Services at 1-800-266-3939 to have the water heater inspected immediately.



Note for models with a manual reset only: Since the high limit switch on the blower is in series with the pressure switch, the problem could be that the high limit switch tripped. Reset the high limit Switch by pressing on the red button in the middle of the switch.

TROUBLESHOOTING GUIDE

Only Enercare Home Services personnel can service your rental water heater, call 1-800-266-3939 for service.

CONDITION	CAUSE	REMEDY
The burner will not ignite.	No gas.	Check with gas utility company.
	Dirt in gas line.	Notify utility. Install drip leg in gas line.
	Main burner line clogged.	Clean. Check for source of trouble and correct.
	Defective gas control valve.	Replace with new gas control valve.
	Gas control valve set too low.	Turn temperature dial to desired temperature.
	Heater installed in a confined area.	Provide fresh air ventilation.
The burner flame floats and lifts off ports.	High gas pressure.	Check with gas utility company.
	Orifice too large.	Replace with correct orifice.
	Flue clogged.	Clean. Check for source of trouble and correct.
	Heater installed in a confined area.	Provide fresh air ventilation.
	Cold drafts (downdraft).	Locate source and correct.
The burner flame is yellow and lazy.	Insufficient secondary air.	Provide fresh air ventilation.
	Flue clogged.	Clean. Check for source of trouble and correct.
	Main burner line clogged.	Clean. Check for source of trouble and correct.
	Heater installed in a confined area.	Provide fresh air ventilation.
The burner flame is too high.	Insufficient secondary air.	Provide fresh air ventilation.
	Orifice too large.	Replace with correct orifice.
	Defective gas control valve.	Replace with new gas control valve.
The flame burns at the orifice.	Low gas pressure.	Check with gas utility company.
	Defective gas control valve.	Replace with new gas control valve.
High operating costs.	Gas control valve set too high.	Turn temperature dial to desired temperature.
	Sediment or lime in tank.	Drain. Check to see if water treatment is necessary.
	Water heater is undersized.	Install size of water heater that meets demand.
	Wrong piping connections.	Correct piping, dip tube must be in cold inlet.
	Leaking faucets.	Repair faucets.
	Gas leaks.	Check with gas utility company. Repair at once.
	Wasted hot water.	Advise consumer.
	Long runs or exposed piping.	Insulate piping.
	Hot water piping on outside wall.	Insulate piping.
Insufficient hot water.	Low gas pressure.	Check with gas utility company.
	Wrong piping connections.	Correct piping, dip tube must be in cold inlet.
	Sediment or lime in tank.	Drain. Check to see if water treatment is necessary.
	Water heater is undersized.	Install the size of water heater that meets the demand.
	Gas control valve set too low.	Turn temperature knob to desired temperature.
	Leaking faucets.	Repair faucets.
	Wasted hot water.	Advise consumer.
	Long runs or exposed piping.	Insulate piping.
	Hot water piping on outside wall.	Insulate piping.
Slow hot water recovery.	Insufficient secondary air.	Provide fresh air ventilation.
	Low gas pressure.	Check with gas utility company.
	Gas control valve set too low.	Turn temperature dial to desired temperature.
	Improper calibration.	Replace gas control valve.
	Flue clogged.	Clean. Check for source of trouble and correct.
	Water heater is undersized.	Install size of water heater that meets demand.
	Wrong piping connection.	Correct piping, dip tube must be in cold inlet.
	Wasted hot water.	Advise consumer.

TROUBLESHOOTING GUIDE

Only Enercare Home Services personnel can service your rental water heater, call 1-800-266-3939 for service.

CONDITION	CAUSE	REMEDY
Leaking water.	Poorly sealed, hot or cold water connections, gas control valve threads, relief valve,or drain valve.	Tighten threaded connections.
	Leakage from plumbing system or other appliances.	Inspect plumbing system and other appliances.
	Condensation.	Refer to ***Condensation***.
Water drips from the relief valve.	Heater stacking.	Lower gas control valve setting.
	Excessive water pressure.	Install a pressure-reducing valve.
	Thermal expansion in a closed water system.	Install an expansion tank.
	Improperly seated valve.	Check relief valve works properly and replace, if necessary.
The gas control valve fails to shut-off.	Defective gas control valve.	Replace with new gas control valve.
	Improper calibration.	Replace gas control valve.
Condensation.	Water heater filled for the first time.	Let water heater warm up. Problem should go away. If it persists, check all plumbing connections for leaks.
	Heavy draws of hot water with very cold refill water.	Let water heater warm up. Problem should go away. If it persists, check all plumbing connections for leaks.
	Water heater is undersized.	Install size of water heater that meets demand.
Combustion odours.	Insufficient secondary air.	Provide fresh air ventilation.
	Heater installed in a confined area.	Provide fresh air ventilation.
	Flue clogged.	Clean. Check for source of trouble and correct.
Smoking and carbon formation (sooting).	Insufficient secondary air.	Provide fresh air ventilation.
	Low gas pressure.	Check with gas utility company.
	Burner flame yellow, lazy.	Refer to ***The burner flame is yellow and lazy***.
	Flue clogged.	Clean. Check for source of trouble and correct.
	Defective gas control valve.	Replace with new gas control valve.
	Heater installed in a confined area.	Provide fresh air ventilation.
Smelly water.	High sulfate or mineral content in water.	Change magnesium anode to an aluminum anode and bleach tank.

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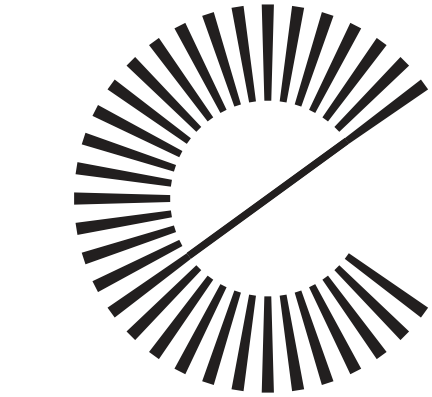

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