

**POWER DIRECT VENT WATER HEATER****⚠ WARNING:**

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

**⚠ FOR YOUR SAFETY**

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

**⚠ WARNING:**

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

**WHAT TO DO IF YOU SMELL GAS**

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.



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

TABLE OF CONTENTS

<b>I) INTRODUCTION</b> .....	<b>4</b>	<b>IV) LIGHTING &amp; OPERATING INSTRUCTIONS</b> .....	<b>19</b>
User Responsibilities	4	Lighting Instructions (Robertshaw)	19
<b>II) SAFETY</b> .....	<b>5</b>	First Lighting	20
For Installations in Canada:	5	Gas Control	
For Installations in the United States:	5	Robertshaw 2000N WDER Operation	
Safety Warning (Flammable Vapours)	5	Temperature Adjustment	
Safety Warning (Scalding)	5	Lighting Instructions (White-Rodgers)	22
Relief Valve Requirements (T&P)	6	Gas Control/Thermostat	
<b>III) INSTALLATION</b> .....	<b>6</b>	Putting the Heater into Service	
Unpacking the Water Heater	6	Temperature Adjustment	
Location Requirements	6	Heater Shutdown	
Site Location	6	System Error Codes	
Clearances and Accessibility	7	Intelli-Vent™ System Error Codes	
In Earthquake Zones			
Gas Supply	7	<b>V) OPERATION</b> .....	<b>26</b>
Gas Requirements		Water Heater Operation	26
Gas Piping		Burner Flames	26
Gas Pressure		Stacking	26
Gas Pressure Testing		Emergency Shut Down	26
Venting	8	Operational Conditions	26
Vent Pipe Material		Condensation	
Vent Pipe Connection to Blower		Water Heater Sounds	
Vent Pipe Installation		Smoke/Odour	
Vent Pipe Length		Anode Rod/Water Odour	
Vent Pipe Runs		<b>VI) MAINTENANCE</b> .....	<b>28</b>
Vent Pipe Termination		Draining and Flushing	28
Vent Terminal Installations		Routine Preventative Maintenance	28
Side Wall Vent Terminal Installation		Temperature and Pressure Relief Valve	28
Vertical Vent Terminal Installation		Replacement Parts	28
Concentric Vent Termination Kit Installation		<b>VII) COMBO HEATING</b> .....	<b>29</b>
Multiple Concentric Vent Installations		System Requirements	29
Water Supply	13	Installation	30
Piping Installation		<b>VIII) TROUBLESHOOTING GUIDE</b> .....	<b>31</b>
Closed System/Thermal Expansion		Robertshaw 2000N WDER and	
Temperature and Pressure (T&P) Relief Valve	14	White-Rodgers Intelli-Vent™	31
The Temperature and Pressure Relief Valve:		<b>IX) PARTS REFERENCE ILLUSTRATION</b> .....	<b>32</b>
The Discharge Line:		<b>LIMITED WARRANTY</b> .....	<b>33</b>
Electrical Supply	14		
Resettable Lockout	15		
Installation Checklist	18		

RETAIN THESE INSTRUCTIONS IN A SAFE LOCATION FOR FUTURE REFERENCE

## Your safety and the safety of others is very important.

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



This is the safety alert symbol.

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



**DANGER**

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



**WARNING**

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

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

### CAUTION

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

Do not use this appliance if any part has been under water. Immediately call a qualified service technician. Water heaters subjected to flood conditions or anytime the gas controls, main burner or pilot have been submerged in water require replacement of the entire water heater.

The California Safe Drinking Water and Toxic Enforcement Act requires the Governor of California to publish a list of substances known to the State of California to cause cancer, birth defects, or other reproductive harm, and requires businesses to warn of potential exposure to such substances.

**WARNING:** This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

This appliance can cause low-level exposure to some of the substances listed, including formaldehyde, carbon monoxide, and soot.

### I) INTRODUCTION

Thank you for purchasing a Power Direct Vented Water Heater. Properly installed and maintained, it will provide years of trouble free service.

This gas-fired water heater has been developed to produce potable hot water for normal residential demands and may also be used in combination with space heating applications. Any deviation from these applications could affect your warranty.

#### User Responsibilities

This manual has been prepared to acquaint you with the installation, operation and maintenance of your gas water heater and provide important safety information in these areas. It is your responsibility to ensure that your water heater is properly installed and cared for.

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

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

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

Service to the Power Direct Vent System should only be performed by a qualified service technician.

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

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

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

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

## II) SAFETY

This water heater is design-certified by CSA International as a Category I, direct vented water heater which takes its combustion air from the outside of the structure and exhausts all products of combustion to the outside of the structure.

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

### For Installations in Canada:

“Natural Gas and Propane Installation Code” CSA-B149.1 and

“Canadian Electrical Code (CAN/CSA C22.1), Part I” available from:

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

### For Installations in the United States:

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

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

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

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

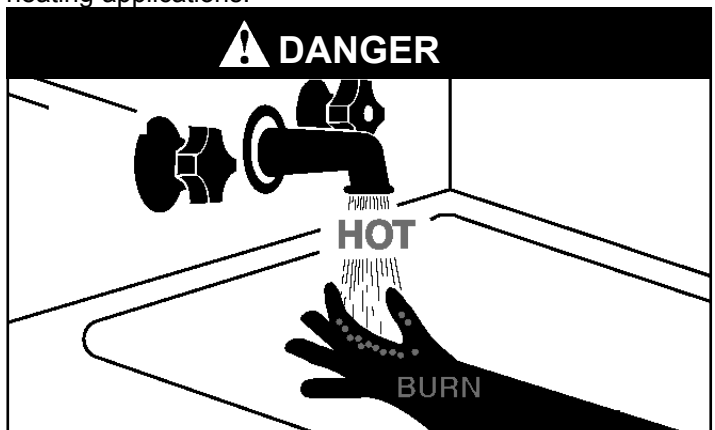
## Safety Warning (Flammable Vapours)



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

## Safety Warning (Scalding)

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



## Relief Valve Requirements (T&P)

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

### MAKE SURE THE FLOW OF COMBUSTION AND VENTILATION AIR IS NOT RESTRICTED.

If this water heater has been exposed to flooding, freezing, fire or any unusual condition, do not put it into operation until it has been inspected and approved by a qualified service technician.

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

## III) INSTALLATION

### Unpacking the Water Heater

#### **WARNING** **Excessive Weight Hazard**

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

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

- Remove exterior packaging and place installation components aside.
- Inspect all parts for damage prior to installation and start-up.
- Completely read all instructions before attempting to assemble and install this product.

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

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

### Location Requirements

Do not use or store flammable products such as gasoline, solvents or adhesives in the same room or area near the water heater. If such flammables must be used, all gas burning appliances in the vicinity must be shut off and their pilot lights extinguished. Open the doors and windows for ventilation while flammable substances are in use.

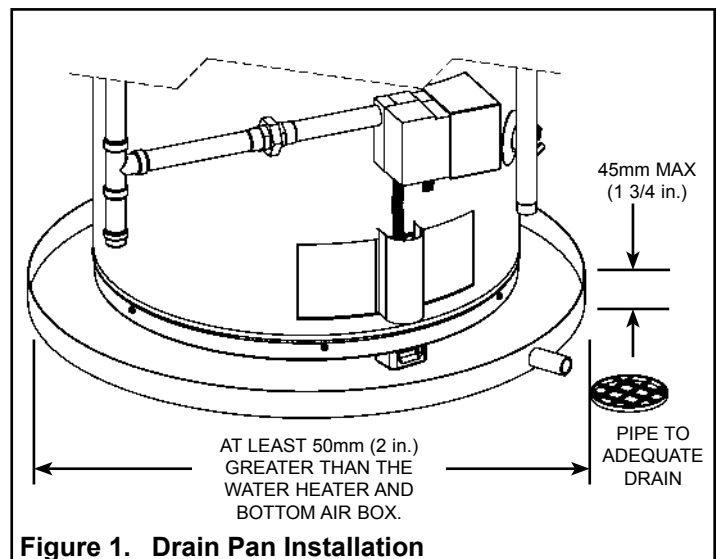
### Site Location

- The water heater must be installed indoors and in a vertical position on a level surface.
- Maximum ambient temperature 50°C (122°F).

**Note:** The water heater may be installed in a closet with a door off a bedroom or bathroom providing the units are installed and vented per the manufacturer’s instructions.

### IMPORTANT:

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



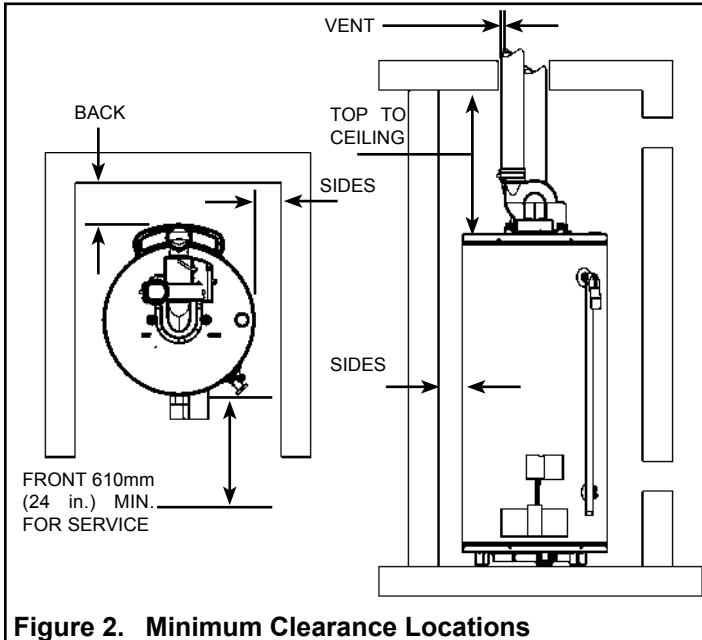
**Figure 1. Drain Pan Installation**

- Consider the air intake and exhaust vent system piping when selecting the water heater location. The venting system must be able to run from the water heater to the termination with a minimal length and number of elbows. The venting system must comply with the requirements set forth in the venting section of this manual.
- Locate the water heater near the existing gas piping. If installing a new gas line, locate the water heater to minimize the pipe length and elbows.

**Note:** This water heater must be installed in accordance with all local and provincial or state codes or, in the absence of such, the latest edition of “**Natural Gas and Propane Installation Code**” **CSA-B149.1** (Canada), or “**National Fuel Gas Code**” **ANSI Z223.1 (NFPA 54)** (U.S.A.).

- The water heater should be located in an area not subject to freezing temperatures. Water heaters located in unconditioned spaces (i.e., attics, basements, etc.) may require insulation of the water piping and drain piping to protect against freezing. The drain and controls must be easily accessible for operation and service. Maintain proper clearances as specified on the data plate.

## Clearances and Accessibility



- The minimum clearances between the heater and combustible materials are:
 

Top	406mm	(16 in.)
Front	100mm	(4 in.)
Rear and Sides	25mm	(1 in.)
Vent Pipe through Wall	0mm	(0 in.)

**Note:** These requirements are also listed on the data plate located on the front of the water heater.

- The water heater is certified for installation on a combustible floor.

**Important:** If installing over carpeting, the carpeting must be protected by a metal or wood panel beneath the water heater. The protective panel must extend beyond the full width and depth of the water heater by at least 76mm (3 in.) in any direction or if in an alcove or closet installation, the entire floor must be covered by the panel.

Figure 2 may be used as a reference guide to locate the specific clearance locations. A minimum of 610mm (24 in.) of front clearance and 100mm (4 in.) on each side should be provided for inspection and service.

## In Earthquake Zones

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

## Gas Supply

**! DANGER**



### Explosion Hazard

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

## Gas Requirements

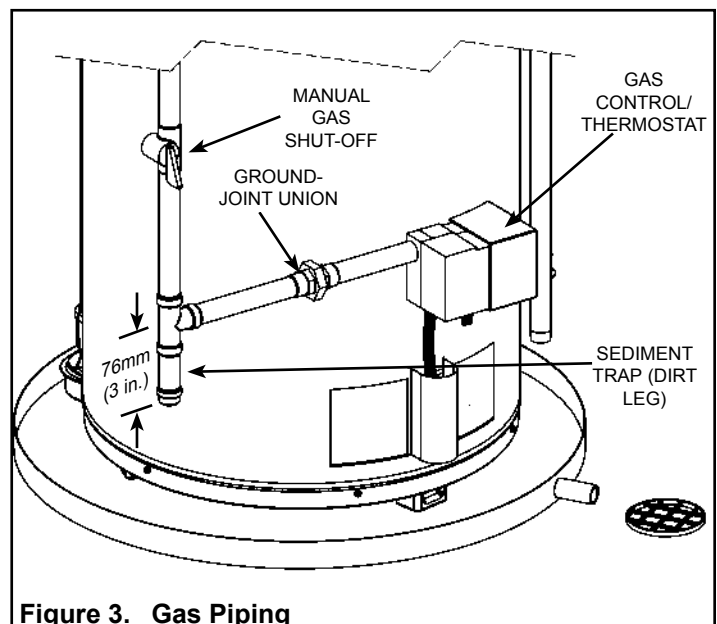
Read the data plate to be sure the water heater is made for the type of gas you will be using in your home. This information will be found on the data plate located near the gas control valve. If the information does not agree with the type of gas available, do not install or light. Call your dealer.

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

## Gas Piping

This gas piping must be installed in accordance with all local and provincial or state codes or, in the absence of such, the latest edition of “Natural Gas and Propane Installation Code” CSA-B149.1 (Canada), or “National Fuel Gas Code” ANSI Z223.1 (NFPA 54) (U.S.A.).

**Note:** When installing gas piping, apply sealing compounds approved for use with natural and propane gas.



1. Install a readily accessible manual shut-off valve in the gas supply line as recommended by the local utility. The owner/operator must be shown the location of this valve and be given instructions on how to use it to shut off the gas to the heater.
2. Install a sediment trap (dirt leg) (if not already incorporated as part of the water heater) as shown. The sediment trap (dirt leg) must be no less than 76mm (3 in.) long for the accumulation of dirt, foreign material, and water droplets.
3. Install a ground joint union between the gas control/thermostat and the manual shut-off valve. This is to allow easy removal of the gas control/thermostat.
4. Turn the gas supply on and check for leaks. Use a chloride-free soap and water solution (bubbles forming indicate a leak) or other approved method.

### Gas Pressure



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

**Important:** The gas supply pressure must not exceed the maximum supply pressure as stated on the water heater's data plate.

### Gas Pressure Testing

**Important:** This water heater and its gas connection must be leak tested before placing the appliance in operation.

- If the code requires the gas lines to be tested at a pressure exceeding 14 in. w.c. (3.5 kPa), the water heater and its manual shut-off valve must be disconnected from the gas supply piping system and the line capped.
- If the gas lines are to be tested at a pressure less than 14 in. w.c. (3.5 kPa), the water heater must be isolated from the gas supply piping system by closing its manual shut-off valve.

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

**Note:** Air may be present in the gas lines and could prevent the burner from lighting on initial start-up. The gas lines should be purged of air by a qualified service technician after installation of the gas piping system.

### Venting

This water heater has a direct vent system in which all air for combustion is taken from the outside atmosphere and all combustion products are discharged to the outdoors.

This water heater must be properly vented for removal of exhaust gases to the outside atmosphere. Correct installation of the vent pipe system is mandatory for the safe and efficient operation of this water heater and is an important factor in the life of the unit.

A Vent Kit included with this water heater consists of:

1. Two (2) 45° Vent Termination Elbows,
  2. Two (2) more restrictive Vent Termination Screens,
  3. Two (2) less restrictive Vent Termination Screens,
  4. Air intake adapter (3 in. to 2 in. ABS reducer),
  5. Blower outlet adapter (rubber coupling and gear clamps).
- Vent pipe must be installed in accordance with all local and provincial or state codes or, in the absence of such, the latest edition of "Natural Gas and Propane Installation Code" CSA-B149.1 (Canada), or "National Fuel Gas Code" ANSI Z223.1 (NFPA 54) (U.S.A.).

**Important:** Check to make sure the vent pipe is not blocked in any way.

**Note:** Do not common vent this water heater with any other appliance. Do not install in the same chase or chimney with a metal or high-temperature plastic from another gas or fuel burning appliance.



### **DANGER** Carbon Monoxide Warning

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

### Vent Pipe Material

The following plastic materials may be used for both the combustion air intake and exhaust vent system subject to local and provincial or state codes:

- This heater is certified to be installed using Schedule 40 PVC or CPVC or polypropylene plastic vent material for the exhaust. In Canada, the exhaust vent material must be approved to ULC S636. ULC S636 mandates that components from different systems must not be mixed in the same vent runs. The combustion air intake material may be PVC, ABS, CPVC or polypropylene. Check local codes to determine which materials are allowed in your area and only use approved material. All venting material and components must be joined with the approved primer/cleaner and solvent cement. Do not cement the venting system to the heater.

**Note:** Use only solid (not foam core) piping. Plastic pipe and fittings are available through most plumbing suppliers. Always check the marking on the pipe to make sure you are using the correct material.



### Vent Pipe Connection to Blower

A rubber coupling and gear clamps are supplied (Vent Kit) with the water heater to connect the exhaust vent system to the blower.

**Important:** These connections must be properly sealed to prevent the leakage of the products of combustion into the living area.

### Vent Pipe Installation

The following guidelines should be followed when installing the air intake and exhaust vent system:

- Venting should be as direct as possible with a minimum number of pipe fittings.
- Vent diameter must not be reduced unless specifically noted in the installation instructions.
- Support all horizontal pipe runs every 1.2m (4 ft.) and all vertical pipe runs every 1.5m (5 ft.) or according to local codes.
- Vents run through unconditioned spaces where below freezing temperatures are expected, are not recommended.
- Vents run through unconditioned spaces inside a building may result in the condensation of flue gases during the winter season. The rubber coupling joined to the blower includes a nipple with a yellow cap. In installations such as this connect a condensation trap to this nipple.

The combustion air intake and exhaust vent system and termination may be installed in one of the following type terminations:

1. Horizontal (2 Pipe) (air intake **and** exhaust vent)
2. Vertical (2 Pipe) (air intake **and** exhaust vent)
3. Concentric Vent Termination (using Concentric Vent Kit side wall termination only).

All pipe, fittings, pipe cement, primers and procedures must conform to American National Standard Institute and American Society for Testing and Materials (ANSI/ASTM) standards in the United States. This water heater has been design certified by CSA International for use with the specified (CSA) listed plastic vent pipe.

**⚠ CAUTION:**

**Use of Solvent Cement and Primer**

- Use only in well-ventilated areas.
- Do not use near flame or open fire.
- Use only the Solvent Cement and Primer appropriate for the venting material being used.
- Solvent cements for plastic pipe are flammable liquids and must be kept away from all sources of ignition.

Do not use solvent cement to connect the exhaust vent system to the blower. Use the rubber coupling and gear clamps instead. This connection must be removable to service the heater. All other joints in the air intake and exhaust vent systems must be properly cemented. Use an appropriate solvent cement to connect the 3 in. to 2 in adapter/reducer to air intake on the water heater.

1. Cut the pipe end square and remove all ragged edges and burrs. Make sure the inside of the pipe is clean and free of cuttings and loose dirt. Chamfer the end and apply primer to the fitting and pipe.

2. Using a suitable grade of pipe cement, apply a moderate, even coat inside the fitting. Apply a liberal amount of cement to the outside of the pipe to socket depth.

**Note:** It is important to select the proper pipe cement for the type plastic pipe being used.

3. Assemble the parts quickly while the cement is still wet. Twist the pipe 1/4 turn during insertion and hold for 30 seconds.

### Vent Pipe Length

The maximum allowable pipe lengths for air intake and exhaust are listed in Table 1. The specified maximum lengths are for **each** of the intake and exhaust systems and not for the combined lengths of both systems. In addition, each system requires a 45° long sweep elbow termination with a restrictive screen. Minimum pipe length is 900mm (3 ft.) with a minimum of one 90° elbow per side.

1. Determine termination type and pipe size.
2. Determine number of elbows in vent system. Do not include termination elbow. Calculate the maximum equivalent length of the exhaust and air intake system.

MODEL NUMBER	VENT PIPE DIAMETER	CONCENTRIC VENT LENGTH	2 PIPE VENT LENGTH
4040SN-PDV	50mm (2 in.)	15.2m (50 ft.)	15.2m (50 ft.)
	76mm (3 in.)	30.5m (100 ft.)	30.5m (100 ft.)
5040SN-PDV	50mm (2 in.)	15.2m (50 ft.)	15.2m (50 ft.)
	76mm (3 in.)	30.5m (100 ft.)	30.5m (100 ft.)
5065SN-PDV	76mm (3 in.)	9.2m (30 ft.)	15.3m (50 ft.)

- Notes:
3. Vent lengths shown **do not** include vent termination elbow.
  4. A horizontal vent **must** have a 45° vent termination elbow to direct the vent pipe downward.
  5. A vertical vent **must** have a 90° vent termination elbow to direct the vent pipe horizontally followed by a 45° elbow to direct the vent pipe downward.
  6. If additional elbows are used in the vent system the allowable vent lengths are reduced (see chart below).
  7. Two 45° elbows are considered the equivalent of one 90° elbow.

Equivalent lengths of straight pipe for various elbows using Schedule 40 PVC or CPVC or polypropylene.

SIZE	TYPE	SHORT SWEEP/ RADIUS	LONG SWEEP/ RADIUS
50mm (2 in.)	90°	2.44m (8 ft.)	1.52m (5 ft.)
76mm (3 in.)	90°	2.44m (8 ft.)	1.52m (5 ft.)
50mm (2 in.)	45°	1.22m (4 ft.)	0.76m (2.5 ft.)
76mm (3 in.)	45°	1.22m (4 ft.)	0.76m (2.5 ft.)

**Table 1. Maximum Allowable Vent Lengths**

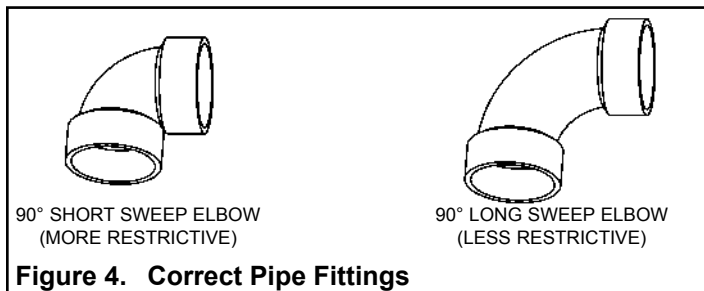
## Vent Pipe Runs



### WARNING

This unit includes an air intake terminal and an exhaust vent terminal.

1. The exhaust vent system must not, under any circumstances, be run downhill then run uphill thus forming a valley. It may leave a space to accumulate condensation and block vent pipe.
2. Horizontal runs require a minimum 3mm (1/8 in.) rise per 1.5m (5 ft) and a support every 1.2m (4 ft.). Ensure there is enough height between heater and termination to raise vent pipe runs the required distance.
3. Vertical runs require a support every 1.5m (5 ft.) that must provide proper support to prevent stress on the pipes.

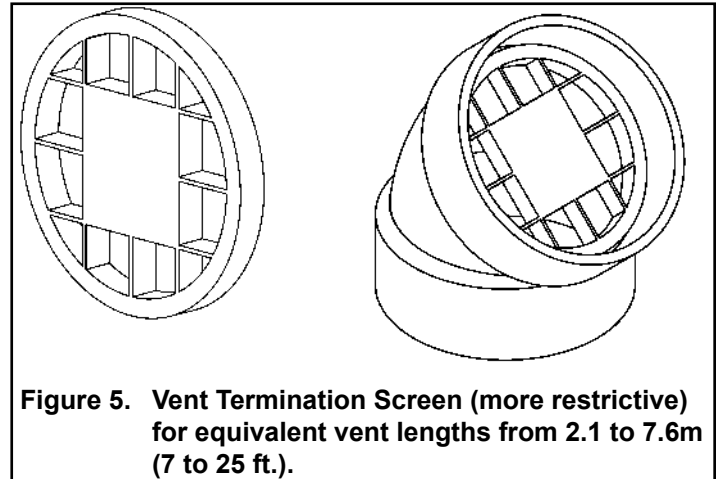


## Vent Pipe Termination

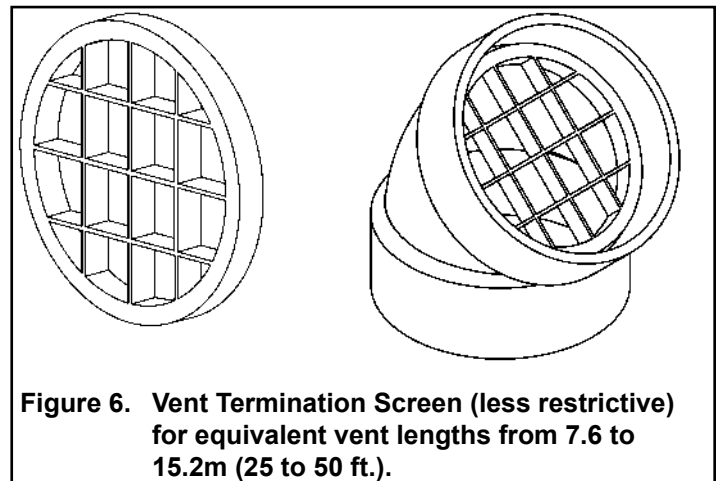
This water heater includes one (1) pair of more restrictive Vent Termination Screens and one (1) pair of less restrictive Vent Termination Screens. For safety and optimum efficiency performance, ensure the correct Vent Termination Screen is installed for the vent length in your installation.

**Note:** Before installing the Power Direct Vent Water Heater, it is recommended that the location of the pipe terminations (air intake and exhaust vent) be determined.

Use the more restrictive Vent Termination Screen shown in Figure 5 when the equivalent vent length (see Table 1) is between 2.1 and 7.6m (7 and 25 ft.). Install the Vent Termination Screen in the Termination Elbow as shown, on both the air intake pipe **and** the exhaust pipe.



Use the less restrictive Vent Termination Screen shown in Figure 6 when the equivalent vent length (see Table 1) is between 7.6 and 15.2m (25 and 50 ft.). Install the Vent Termination Screen in the Termination Elbow as shown, on both the air intake pipe **and** the exhaust pipe.



## Vent Terminal Installations

**Important:** The vent system must terminate so that proper clearances are maintained as cited in local codes or the latest edition of “**Natural Gas and Propane Installation Code**” **CSA-B149.1** (Canada), or “**National Fuel Gas Code**” **ANSI Z223.1 (NFPA 54)** (U.S.A.).

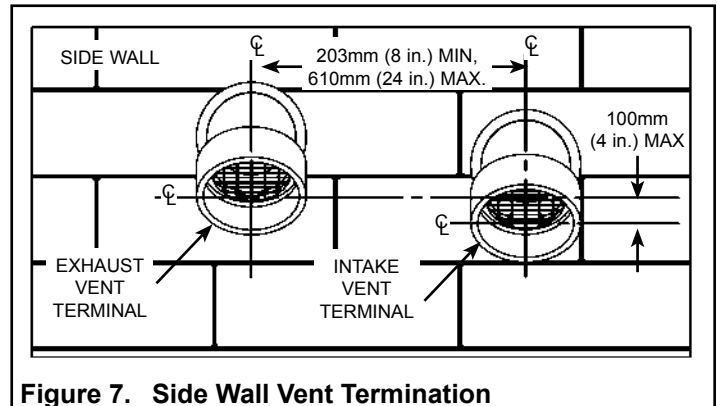
In addition, the manufacturer recommends the vent terminal not to be installed closer than 150mm (6 in.) from an inside or outside corner.

Plan the vent system layout so that proper clearances are maintained from plumbing and wiring. Vent pipes serving power vented appliances are classified by building codes as “vent connectors”. Required clearances from combustible materials must be provided in accordance with information in this manual under “Location Of Heater” and with the latest edition of “**Natural Gas and Propane Installation Code**” **CSA-B149.1** (Canada), or “**National Fuel Gas Code**” **ANSI Z223.1 (NFPA 54)** (U.S.A.) and local codes.

## Side Wall Vent Terminal Installation

**Important:** When terminating the vent on a side wall, the following specifications pertaining to terminal location must be followed (see Figure 7).

1. The air intake terminal and the exhaust vent terminal must terminate on the same exterior wall.
2. The vertical centerline of the air intake terminal must be located at a minimum of 203mm (8 in.) and not more than 610mm (24 in.) from the vertical centerline of the exhaust vent terminal.
3. The horizontal centerline of the air intake terminal may not be located more than 100mm (4 in.) below the horizontal centerline of the exhaust vent terminal.



**Figure 7. Side Wall Vent Termination**

## Vertical Vent Terminal Installation

**Important:** When terminating the vents through a roof, the following specifications pertaining to terminal location must be followed (see Figure 8).

1. The air intake termination and the exhaust vent termination shall extend above anticipated snow level or at least 457mm (18 in.) above the roof.
2. Must provide proper support for all pipes protruding through roof.
3. The vertical roof terminations should be sealed with a plumbing roof boot or equivalent flashing.
4. The air intake termination and the exhaust vent termination must penetrate the same side of roof.
5. The centerline of the air intake termination and the centerline of the exhaust vent termination must not be closer than 203mm (8 in.) and not farther away than 610mm (24 in.).
6. The air intake terminal and the exhaust vent terminal must be oriented facing downward and the same direction.

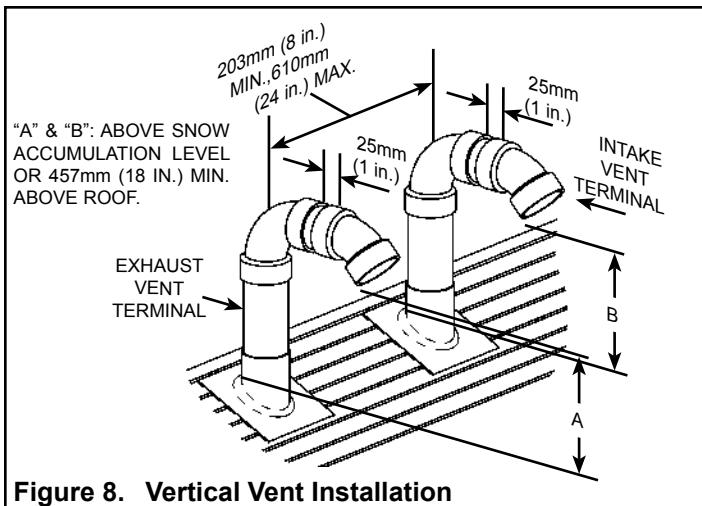


Figure 8. Vertical Vent Installation

### Concentric Vent Termination Kit Installation

A concentric Vent termination kit (see Table 2) may be used for side wall termination installations.

VENT DIA.	KIT	P/N
50mm (2 in.)	KGAVT0701 ULC	6911088
76mm (3 in.)	KGAVT0801 ULC	6911089

Table 2. Concentric Vent Kits

Figure 9 illustrates the Concentric Vent termination kit for side wall installation. To prevent rain water from entering the exhaust outlet, slope the vent kit at a downward pitch of 6.5mm per 1.5m (1/4 in. per 5 ft.) away from the inside wall. Ensure the combustion air intake location is above the anticipated snow level.

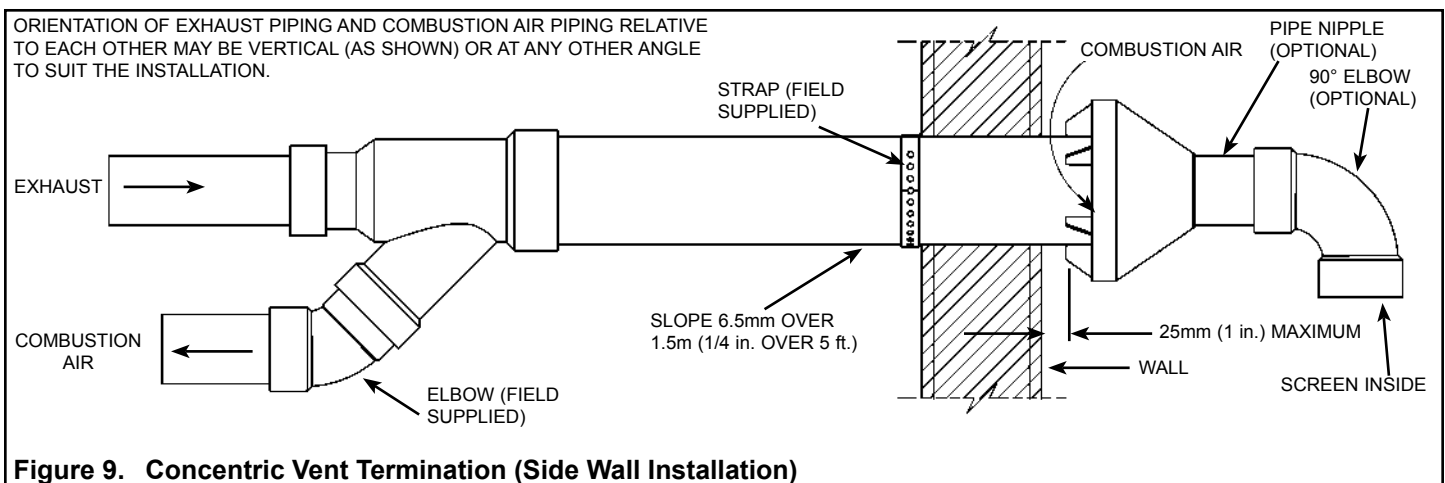


Figure 9. Concentric Vent Termination (Side Wall Installation)

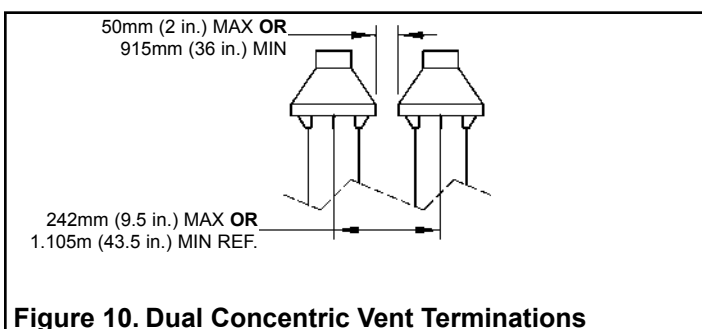


Figure 10. Dual Concentric Vent Terminations

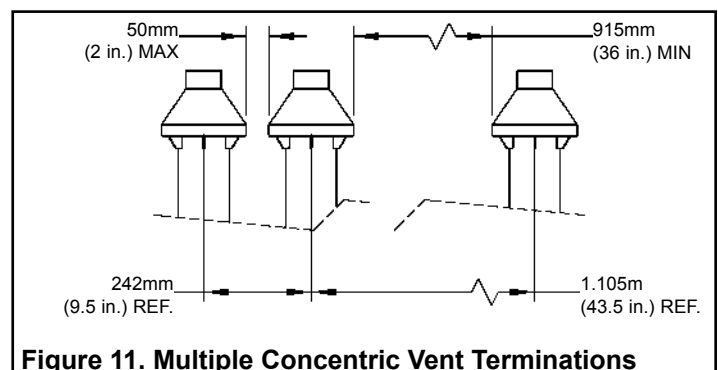


Figure 11. Multiple Concentric Vent Terminations

### Multiple Concentric Vent Installations

When two concentric vent kits are being installed, the vent hood edges shall be **either** less than 50mm (2 in.) apart **or** more than 915mm (36 in.) apart. Spacings between 50mm (2 in.) and 915mm (36 in.) are not allowed due to the possibility of exhaust cross circulation (see Figure 10).

When more than 2 kits are installed only 2 of them shall be less than 50mm (2 in.) apart. Never install 3 termination kits together less than 50mm (2 in.) apart (see Figure 11).

## Water Supply

### Piping Installation

Piping, fittings, and valves should be installed according to the installation drawing (Figure 12). A pressure-reducing valve and/or an expansion tank may be required for installations where the water pressure is high. The pressure-reducing valve should be located on the supply to the entire house in order to maintain equal hot and cold water pressure.

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

**Important:** Always use a proper grade of joint compound and be certain that all fittings are drawn up tight.

1. Install the water piping and fittings as shown in Figure 12. Connect the cold water supply to the fitting (3/4" NPT) marked "COLD" (or "C"). Connect the hot water supply to the fitting (3/4" NPT) marked "HOT" (or "H").

**Important:** Some models may contain energy saving heat traps to prevent the circulation of hot water within the pipes. Do not remove the inserts within the heat traps.

2. The installation of unions in both the hot and cold water supply lines is recommended.
3. The manufacturer of this water heater recommends installing a tempering valve in the domestic hot water line as shown in Figure 13. These valves reduce the point-of-use water temperature by mixing cold and hot water. Contact a licensed plumber or the local plumbing authority.
4. If installing the water heater in a closed water system, install an expansion tank in the cold water line as specified under "Closed System/Thermal Expansion".
5. Install a shut-off valve in the cold water inlet line. It should be located close to the water heater and be easily accessible. The owner/operator must be shown the location of this valve and be given instructions on how to use it to shut off the water to the heater.

Please note the following:

**DO NOT** install this water heater with iron piping. The system should be installed only with piping that is suitable for potable (drinkable) water such as copper, CPVC or polybutylene. **DO NOT** use PVC water piping.

**DO NOT** use any pumps, valves, or fittings that are not compatible with potable water.

**DO NOT** use valves that may cause excessive restriction to water flow. Use full flow ball or gate valves only.

**DO NOT** use any lead based solder in potable water lines. Use appropriate tin-antimony or other equivalent material.

**DO NOT** tamper with the gas control/thermostat, igniter, thermocouple, or temperature and pressure relief valve. Tampering voids all warranties. Only qualified service technicians should service these components.

**DO NOT** use with piping that has been treated with chromates, boiler seal, or other chemicals.

**DO NOT** add any chemicals to the system piping which will contaminate the potable water supply.

### Closed System/Thermal Expansion

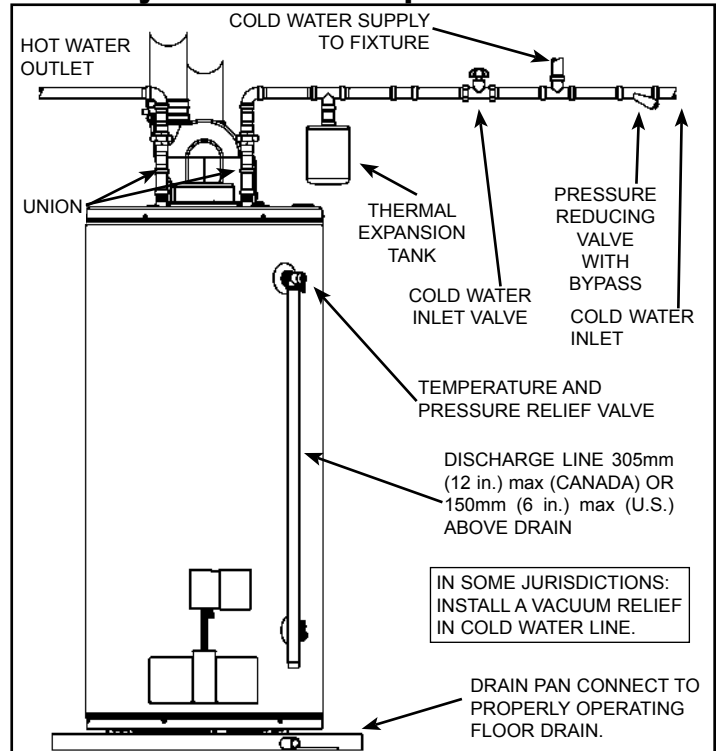


Figure 12. Water Piping Installation

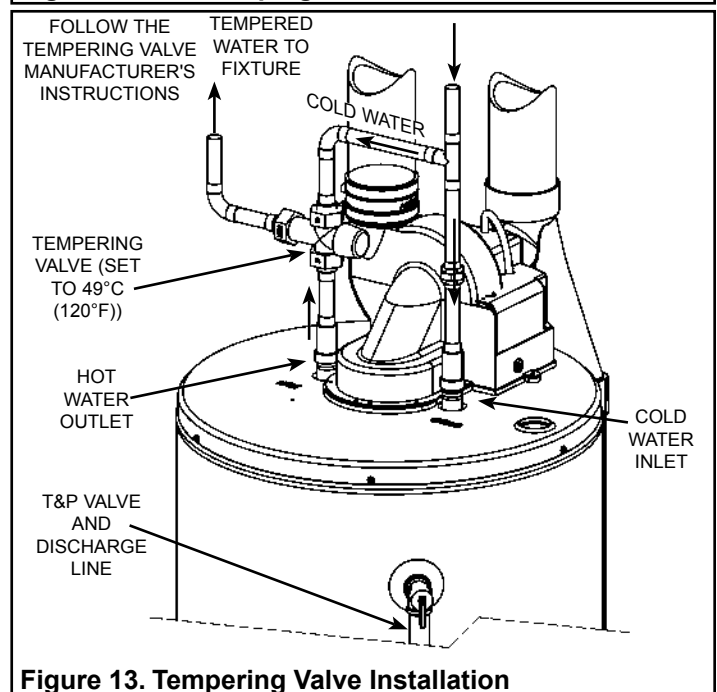


Figure 13. Tempering Valve Installation

Periodic discharge of the temperature and pressure relief valve may be due to thermal expansion in a closed water supply system. The water utility supply meter may contain a check valve, backflow preventer or water pressure-reducing valve. This will create a closed water system. During the heating cycle of the water heater, the water expands causing pressure inside the water heater to increase. This may cause the temperature and pressure relief valve to discharge small quantities of hot water. To prevent this, it is recommended that a diaphragm-type expansion tank (suitable for potable water) be installed on the cold water supply line. The expansion tank must have a minimum capacity of

5.6 litres (1.5 US gallons) for every 190 litres (50 US gallons) of stored water and be rated at the working pressure of the water heater. Contact the local water supplier or plumbing inspector for information on other methods to control this situation.

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

## Temperature and Pressure (T&P) Relief Valve

For protection against excessive pressures and temperatures, a temperature and pressure relief valve must be installed in the opening marked "T&P RELIEF VALVE" (see Figure 14). This valve must be design certified by a nationally recognized testing laboratory that maintains periodic inspection of the production of listed equipment or materials as meeting the requirements of the "**Standard For Relief Valves For Hot Water Supply Systems**", **ANSI Z21.22/CSA 4.4**. The function of the temperature and pressure relief valve is to discharge water in large quantities in the event of excessive temperature or pressure developing in the water heater. The valve's relief pressure must not exceed the working pressure of the water heater as stated on the data plate.


**Important:** Only a new temperature and pressure relief valve should be used with your water heater. Do not use an old or existing valve as it may be damaged or not adequate for the working pressure of the new water heater. Do not place any valve between the relief valve and the tank.


### The Temperature and Pressure Relief Valve:

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

### The Discharge Line:

- Must not be smaller than the pipe size of the relief valve or have any reducing coupling installed in the discharge line.
- Must not be capped, blocked, plugged or contain any valve between the relief valve and the end of the discharge line.

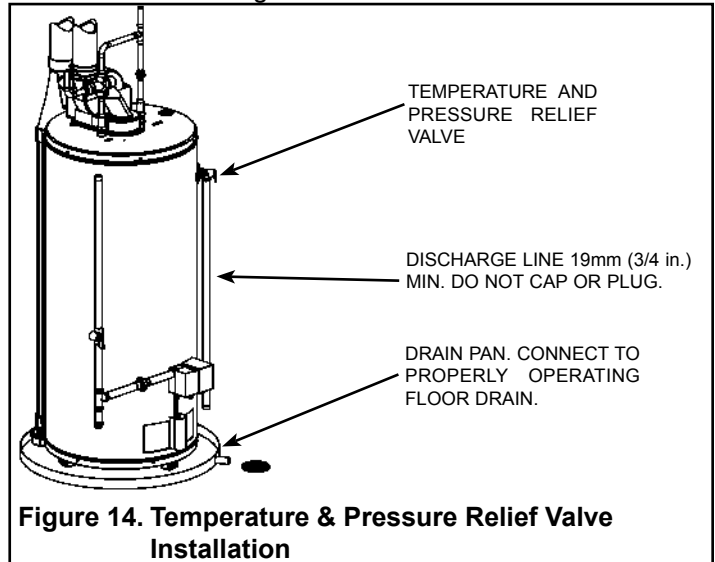
 **WARNING**




**Explosion Hazard**


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

- Must terminate a maximum of 300mm (12 in.) (Canada) or 150mm (6 in.) (U.S.A.) above the floor.
- Must be capable of withstanding 121°C (250°F) without distortion.
- Must be installed to allow complete drainage of both the valve and discharge line.



## Electrical Supply

 **WARNING**  
**Electrical Shock Hazard**



- **Disconnect power before servicing.**
- **Replace all parts and panels before operating.**
- **Failure to do so can result in death or electrical shock.**

**Important:** The electrical controls used inside the gas control/thermostat mounted on this water heater are **polarity sensitive**. Ensure the electrical supply is connected correctly in the receptacle box. Failure to connect correctly will prevent the unit from functioning properly (see Figure 15 & Figure 17). Before performing any electrical service work, label all wires to avoid connection errors. If wiring has to be replaced, use only **TYPE TEW 105C** wire, except igniter wires. If there is a problem with igniter wires, replace igniter assembly in its entirety. In locations where a sump pump failure, flooding or exposure to water may be present, a ground fault receptacle is recommended.

**Important:** Do not use an extension cord to connect the water heater to an electrical outlet.

- Ensure that the water heater and the outlet are properly grounded.
- Ensure that the water heater is installed in accordance with prevailing provisions of local codes, or, in the absence of such, the latest edition of "**Canadian Electrical Code (CAN/CSA C22.1), Part I**" (Canada) or "**National Electrical Code**" (NFPA 70) (U.S.A.).

Before plugging in the water heater, always make sure:

- The voltage and frequency correspond to that specified on the water heater wiring diagram.
- The electrical outlet has the proper overload fuse or breaker protection.
- Fill the tank with water and check all connections for leaks. Open the nearest hot water faucet and let it run for 3 minutes to purge the water lines of air and sediment and to ensure complete filling of the tank. The electrical power may then be turned on. Verify proper operation after servicing.

**Note:** Always reference the wiring diagram for the correct electrical connections.

## Resettable Lockout

The gas control/thermostat can be reset by unplugging the power cord to remove power and then reinserting the plug to restore the power. Robertshaw controls will automatically attempt to reset after a 20 minute wait period. White-Rodgers Intelli-Vent™ controls will automatically reset after a 60 minute wait period. Also see "Troubleshooting Guide".

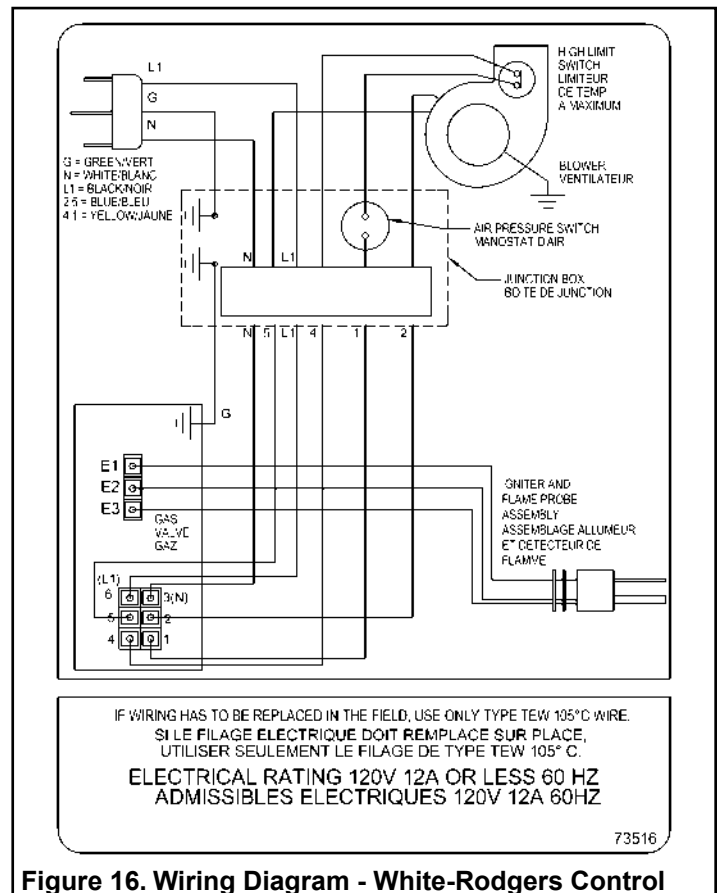
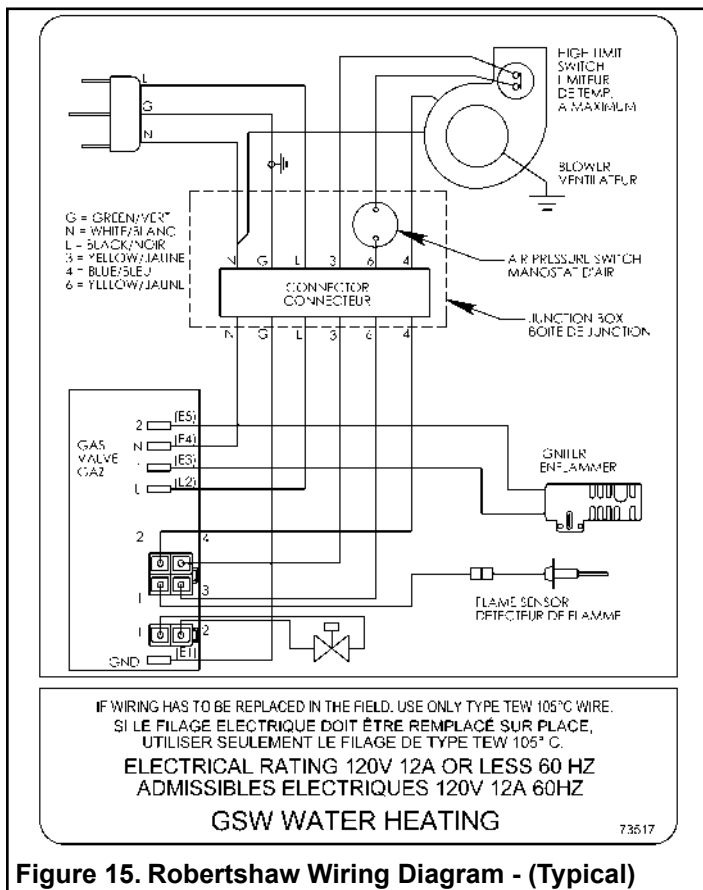


Figure 16. Wiring Diagram - White-Rodgers Control

**WARNING**

When the unit is plugged in, 120VAC is present at the electric connections of the gas control/thermostat.

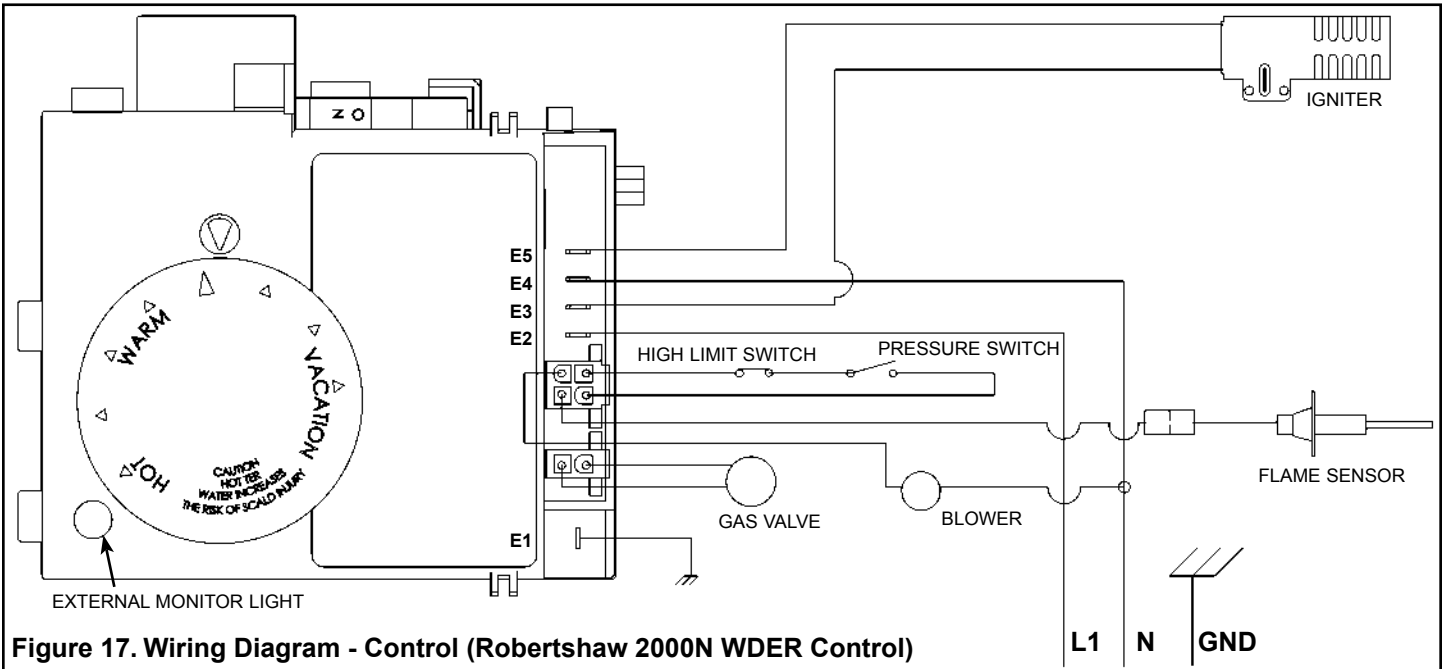


Figure 17. Wiring Diagram - Control (Robertshaw 2000N WDER Control)

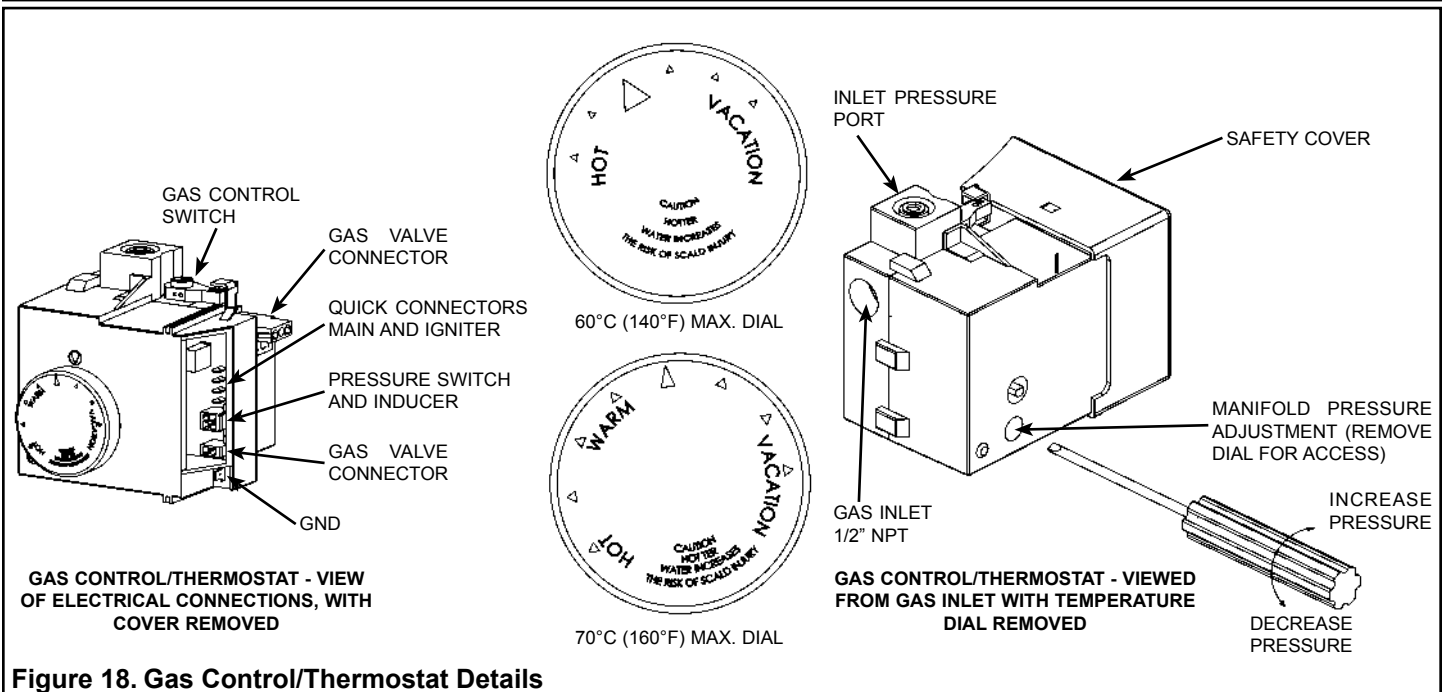


Figure 18. Gas Control/Thermostat Details



**⚠ WARNING**  
 When the unit is plugged in, 120VAC is present at the electric connections of the gas control/thermostat.

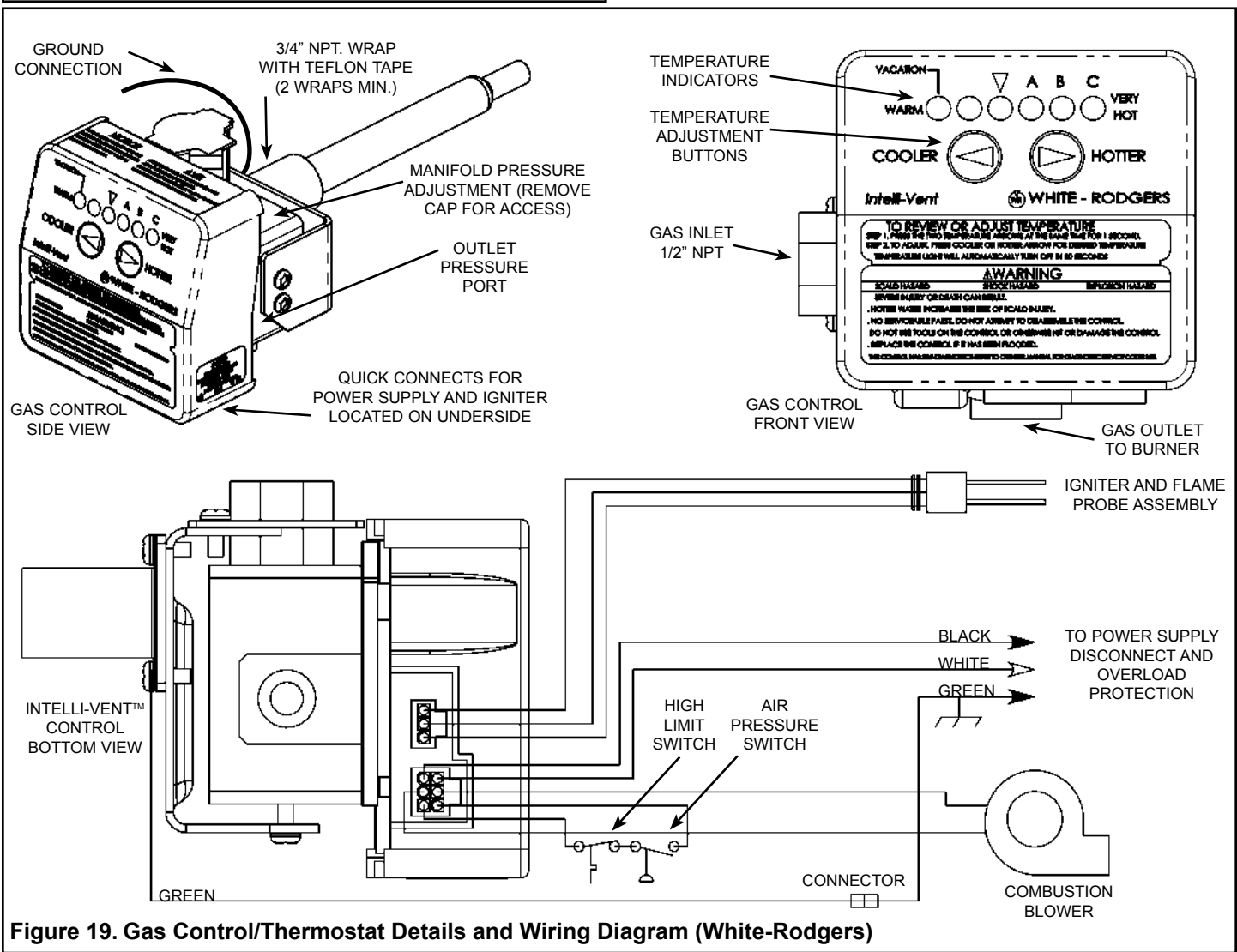


Figure 19. Gas Control/Thermostat Details and Wiring Diagram (White-Rodgers)

## Installation Checklist

### Water Heater Location

- Centrally located with the water piping system. Located as close to gas piping and vent pipe system as possible.
- Located indoors and in a vertical position. Protected from freezing temperatures.
- Proper clearances from combustible surfaces maintained and not installed directly on a carpeted floor.
- Provisions made to protect the area from water damage. Drain pan installed and piped to an adequate drain.
- Installation area free of corrosive elements and flammable material.
- Sufficient room to service the water heater.

### Gas Supply and Piping

- Gas supply is the same type as listed on the water heater data plate.
- Gas line equipped with shut-off valve, union and sediment trap (dirt leg)
- Approved pipe joint compound used.
- Adequate pipe size and of approved material.
- Chloride-free soap and water solution or other approved means used to check all connections and fittings for possible gas leaks.

### Vent Pipe System

- Vent pipe and fittings of approved material.
- Acceptable size, length and number of elbows on air intake system.
- Acceptable size, length and number of elbows on exhaust vent system.
- Installed in accordance with prevailing provisions of local codes, or in the absence of such, the latest edition of “**Natural Gas and Propane Installation Code**” **CSA-B149.1** (Canada), or “**National Fuel Gas Code**” **ANSI Z223.1 (NFPA 54)** (U.S.A.).
- Horizontal piping slopes at an upward pitch of 3mm (1/8 in.) rise per 1.5m (5 ft). away from the water heater.
- Not obstructed in any way.

### Vent Termination

#### Horizontal

- Correct relationship - air intake to exhaust vent.
- 305mm (12 in.) min. above grade/snow level.
- Away from corners, other vents, windows etc.

#### Vertical

- Air intake and exhaust vent terminations 457mm (18 in.) min. above roof/snow level.
- Correct relationship - air intake to exhaust vent.
- Air intake and exhaust vent terminations on the same side of roof and facing same direction.

### Water System Piping

- Temperature and Pressure relief valve properly installed with a discharge line run to an open drain and protected from freezing.
- All piping properly installed and free of leaks.
- Heater completely filled with water.
- Closed system pressure build-up precautions installed.

### Electrical Connections

- Unit connected to a dedicated power supply.
- Unit connected to a 120V electrical supply.
- Proper polarity.
- Water heater properly grounded.
- Installed in accordance with prevailing provisions of local codes, or in the absence of such, the latest edition of “**Canadian Electrical Code (CAN/CSA C22.1), Part I**” (Canada) or “**National Electrical Code**” (**NFPA 70**)” (**U.S.A.**).

**If the answer to all of the questions above is “Yes”, proceed with lighting the heater.**

## IV) LIGHTING & OPERATING INSTRUCTIONS

### Lighting Instructions (Robertshaw)

#### FOR YOUR SAFETY READ BEFORE OPERATING

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

- A. This appliance 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.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- C. Use only your hand to push in or turn the gas control switch. Never use tools. If the switch will not push in or turn by hand, do not try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately 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.

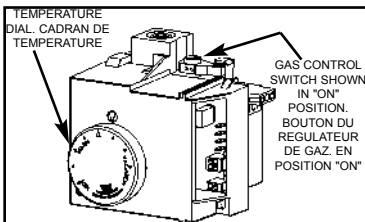
#### POUR VOTRE SÉCURITÉ, LISEZ AVANT DE METTRE EN MARCHÉ

**ATTENTION:** Quiconque ne respecte pas à la lettre les instructions dans la présente notice risque de déclencher un incendie ou une explosion entraînant des dommages, des blessures ou la mort.

- A. Cet appareil ne comporte pas de veilleuse. Il est muni d'un dispositif d'allumage qui allume automatiquement la brûleur. Ne tentez pas d'allumer le brûleur manuellement.
- B. **AVANT DE FAIRE FONCTIONNER**, reniflez tout autour de l'appareil pour détecter une odeur de gaz. Reniflez près du plancher, car certains gaz sont plus lourds que l'air et peuvent s'accumuler au niveau du sol.
- QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:**
- Ne pas tenter d'allumer d'appareil.
  - Ne touchez à aucun interrupteur; ne pas vous servir des téléphones se trouvant dans le bâtiment.
  - Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
  - Si vous ne pouvez rejoindre le fournisseur, appelez le service des incendies.
- C. Ne poussez ou tournez le manette d'admission du gaz qu'à la main; ne jamais utiliser d'outil. Si la manette reste coincée, ne pas tenter de le réparer; appelez un technicien qualifié. Le fait de forcer la manette ou de la réparer peut déclencher une explosion ou un incendie.
- D. N'utilisez pas cet appareil s'il a été plongé dans l'eau, même partiellement. Faites inspecter l'appareil par un technicien qualifié et remplacez toute partie du système de contrôle et toute commande qui ont été de plongés dans l'eau.

#### OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above (to the left) on this label.
2. Set the thermostat to the lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
5. Press gas control switch. It will automatically turn to "OFF."
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, **STOP!** Follow "B" in the safety information above (to the left) on this label. If you do not smell gas, proceed to the next step.
7. Turn gas control switch counterclockwise to "ON".
8. Turn on all electric power to the appliance.
9. Set thermostat dial to desired setting.
10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.



#### INSTRUCTIONS DE MISE EN MARCHÉ

1. **ARRÊTEZ!** Lisez les instructions de sécurité sur la portion supérieure (à gauche) de cette étiquette.
2. Réglez le thermostat à la température la plus basse.
3. Coupez l'alimentation électrique de l'appareil.
4. Le présent appareil est muni dispositif d'allumage qui allume automatiquement la brûleur. **NE PAS TENTEZ D'ALLUMER LA BRÛLEUR MANUELLEMENT.**
5. Tourner le bouton du regulateur de gaz vers la droite jusqu'à la position "OFF".
6. Attendre cinq (5) minutes pour laisser échapper tout le gaz. Reniflez tout autour de l'appareil, y compris près du plancher, pour détecter une odeur de gaz. Si vous sentez une odeur du gaz, **ARRÊTEZ!** Passez à l'étape "B" des instructions de sécurité sur la portion supérieure (à gauche) de cette étiquette. S'il n'y a pas d'odeur de gaz, passez à l'étape suivante.
7. Tourner le bouton du regulateur de gaz vers la gauche jusqu'à la position "ON".
8. Mettez l'appareil sous tension.
9. Réglez le thermostat à la température désirée.
10. Si l'appareil ne se met pas en marche, suivez les instructions intitulées "Comment Couper L'admission De Gaz De L'appareil" et appelez un technicien qualifié ou le fournisseur de gaz.

#### TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat dial to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Press gas control switch. It will automatically turn to "OFF."

#### COMMENT COUPER L'ADMISSION DE GAZ DE L'APPAREIL

1. Réglez le thermostat à la température la plus bas.
2. Coupez l'alimentation électrique de l'appareil s'il faut procéder à l'entretien.
3. Tourner le bouton du regulateur de gaz vers la droite a la position "OFF".

## First Lighting

### CAUTION:

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

This appliance is equipped with an ignition device, which automatically lights the pilot. Do not try to light manually with a match.

The temperature dial is adjusted to its lowest temperature position when shipped from factory.

### Gas Control

This heater is equipped with a combination gas control/igniter. It will perform these functions:

1. Upon call for hot water, the gas control will energize the igniter, which lights the main burner.
2. When the main burner is lit, the gas control will monitor electronically the presence of a flame.
3. When the water temperature has been reached, the gas control will turn off gas supply to the burner.

### Robertshaw 2000N WDER Operation

A green LED on the front of the control is used to flash a system status code indicating the operational state of the control (see Table 3). When initially energized, with the temperature dial set at vacation, the control will:

1. Perform a self-diagnostic check. The LED will flash a system status code to indicate that it is in vacation mode.
2. On a call for heat, check to ensure the air pressure switch on the blower is in the open position. If closed the sequence pauses and the blower is not energized.
3. With the air pressure switch proven open, the control energizes the blower.
4. With the blower energized the control checks to ensure the air pressure switch closes. At this point the air pressure switch must close or the blower will run continuously.
5. The high limit switch on the blower is wired in series with the air pressure switch, so both switches must be closed or the blower will run continuously. With proven airflow and the high limit switch closed, a flame safety check is undertaken to ensure a flame is not present prior to ignition.
6. Providing a flame present signal is not detected, the hot surface ignitor is energized and a warm up period of approximately 17 seconds is initiated.
7. Following the ignitor warm up period, the control allows gas to flow to the burner initiating a 4 second trial for ignition period.
8. If a flame cannot be established within the trial for ignition period, is extinguished or the flame signal drops below 0.7 microamps, the control will stop the flow of gas to the burner.
9. The blower continues to be energized and a 30 second inter-purge is undertaken.
10. The control will attempt for ignition again. If a flame cannot be established after three attempts, it will go into a soft lockout state.

FLASH SEQUENCE		SYSTEM STATUS	
Slow Flash		Water Heater is in Stand-by Mode.	
Fast Flash		Water Heater is in Heat Mode.	
Steady ON		System Error; Cycle Power	
1 flash	Pause for 1 second	1 flash	Pause for 3 seconds
3 flashes		1 flash	
3 flashes		3 flashes	
4 flashes		1 flash	
4 flashes		2 flashes	
4 flashes		3 flashes	
5 flashes		N/A	
		Ignition Failure.	
		Pressure Switch Fails to Open.	
		Pressure Switch Fails to Close.	
		Line/Neutral Polarity Failure.	
		ECO Failure.	
		False Flame.	
		Vacation Mode Active.	

**Table 3. System Status Codes**

11. The LED on the control will flash a system status code indicating the lockout state due to ignition failure (see Table 3).
12. Unplugging the power cord then reinserting it into the electrical receptacle will reset the control. Alternatively, the control will automatically reset itself approximately 20 minutes after entering the soft lockout state.
13. The control will normally establish a flame and maintain the flame until the call for heat is satisfied.
14. After the burner is lit, the gas control/thermostat will electronically monitor the presence of a flame.
15. When the desired water temperature has been reached, the gas control/thermostat will stop the flow of gas to the burner.

### Temperature Adjustment

**The temperature dial is adjusted to its lowest temperature position when shipped from factory.**

The temperature of the water can be selected by setting of the temperature dial on the front of the gas control (see Figure 18). The large arrow position on the thermostat is the preferred starting point for setting the temperature control. Each division on the thermostat dial represents a 5.5°C (10°F) water temperature change. Energy conservation is a consideration when selecting the water temperature setting. For most economical operation, select a water temperature that is adequate for your needs. There is a hot water scald potential if the thermostat is set too high.

### WARNING

#### Risk of scalding

**Hot water can produce third degree burns**

**in 6 seconds at 60°C (140°F)**

**in 30 seconds at 54°C (130°F)**

**in 5 minutes at 49°C (120°F)**

In households with children, disabled or the elderly, select a lower temperature setting. Valves for reducing point-of-use temperature by mixing hot and cold water are available. Consult a licensed plumber or the local plumbing authority.

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

## Lighting Instructions (White-Rodgers)

### FOR YOUR SAFETY READ BEFORE OPERATING

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

- A. This appliance 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 gases are heavier than air and will settle on the floor.
- WHAT TO DO IF YOU SMELL GAS**
- Do not try to light any appliance.
  - Do not touch any electric switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbour's phone. Follow the gas supplier's instructions.
  - If you can't reach your gas supplier, call fire department.
- C. Use only your hand to push in the gas control buttons. Never use tools. If the control buttons will not push in by hand, do not try to repair them, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately 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.

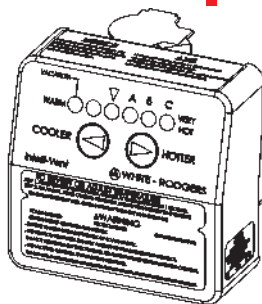
### POUR VOTRE SÉCURITÉ LISEZ AVANT DE METTRE EN MARCHÉ

**AVERTISSEMENT:** Tout manquement aux présentes directives peut causer un incendie ou une explosion pouvant se traduire par des dommages matériels, des blessures ou la mort.

- A. Cet appareil ne comporte pas de veilleuse. Il est muni d'un dispositif d'allumage automatique du brûleur. Ne tentez pas d'allumer le brûleur manuellement.
- B. AVANT D'UTILISER L'APPAREIL: humez l'air tout autour de l'appareil afin d'y déceler une éventuelle odeur de gaz. Assurez-vous de sentir au niveau du sol, car certains gaz sont plus lourds que l'air et s'accumulent au niveau du sol.
- QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:**
- Ne pas tenter d'allumer d'appareil.
  - Ne touchez à aucun interrupteur; ne pas vous servir des téléphones se trouvant dans le bâtiment.
  - Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
  - Si vous ne pouvez joindre le fournisseur, appelez le service des incendies.
- C. Ne vous servez que de vos mains pour appuyer sur les boutons de réglage du gaz. N'utilisez jamais d'outil. Si vous n'arrivez pas à actionner les boutons avec vos doigts, ne tentez pas de les réparer. Faites plutôt appel à un technicien d'entretien qualifié. Le recours à la force ou une tentative de réparation infructueuse pourrait causer un incendie ou une explosion.
- D. N'utilisez pas cet appareil s'il a été plongé dans l'eau, même partiellement. Faites inspecter l'appareil par un technicien qualifié et remplacez toute partie du système de contrôle et toute commande qui ont été plongés dans l'eau.

### LIGHTING INSTRUCTIONS

1. STOP! Read the safety information above (to the left) on this label.
2. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
3. Turn off all electrical power to the appliance.
4. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, STOP! Follow "B" in the safety information above (to the left) on this label. If you do not smell gas, proceed to the next step.
5. Make sure that both the inner and outer doors are in place. These doors are located where the burner tube enters the water heater at the bottom. Both doors must be in place for safe operation. Fill water heater with water.
6. Plug in water heater to power source.
7. Set gas control to the desired temperature by:
  - holding down both the "COOLER" and "HOTTER" temperature adjustment buttons at the same time for one second and release,
  - press the "COOLER" or "HOTTER" button repeatedly until the desired temperature is indicated by the LEDs (see instruction manual for temperature setting indicators).
8. If the appliance will not operate, follow the instructions "TO TURN OFF GAS TO APPLIANCE" and call your service technician or gas supplier.



### INSTRUCTIONS DE MISE EN MARCHÉ

1. ARRÊTEZ! Lisez les directives de sécurité sur la portion supérieure droite de cette étiquette.
2. Le brûleur de cet appareil est muni d'un dispositif d'allumage automatique. Ne tentez pas d'allumer le brûleur manuellement.
3. Coupez l'alimentation électrique de l'appareil.
4. Afin de laisser se dissiper tout gaz ayant pu s'accumuler, attendez cinq (5) minutes. Humez l'air tout autour de l'appareil, y compris près du plancher, afin d'y déceler une éventuelle odeur de gaz. Si vous sentez une odeur de gaz, ARRÊTEZ! Passez au point "B" des directives de sécurité présentées ci-dessus. Si vous ne détectez pas d'odeur de gaz, passez à la prochaine étape.
5. Assurez-vous que le couvercle d'accès externe soit en place et que la glissière interne soit refermée. Le couvercle et la glissière se trouvent là où le tube du brûleur se dirige sous le chauffe-eau. On doit laisser le couvercle et la glissière en place pour que l'appareil fonctionne de façon sécuritaire. Procédez au remplissage du chauffe-eau.
6. Alimentez le chauffe-eau en électricité.
7. Pour régler la commande du gaz à la température désirée:
  - Appuyez simultanément sur les boutons d'ajustement "COOLER" et "HOTTER" pendant une seconde, et relâcher,
  - Appuyez de façon répétitive sur les boutons "COOLER" et "HOTTER", jusqu'à ce que la température désirée s'affiche (le manuel contient des directives sur le choix de la température de consigne).
8. Si l'appareil ne se met pas en marche, suivez la directive "COMMENT COUPER L'ADMISSION DE GAZ DE L'APPAREIL" ci-dessous et appelez un technicien qualifié ou le fournisseur du gaz.

### TO TURN OFF GAS TO APPLIANCE

Set thermostat to vacation or un-plug water heater for servicing. The Intelli-Vent™ control will remember the temperature setting. Turn off gas and water.

### COMMENT COUPER L'ADMISSION DE GAZ DE L'APPAREIL

Ajustez le thermostat à "Vacation" ou débranchez le chauffe-eau. La commande du gaz Intelli-Vent™ retournera à la même température de consigne lors du rebranchement de l'appareil. Fermez les robinets des canalisations du gaz et d'eau.

73514

**⚠ CAUTION:**  
**Read before proceeding. If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.**

**Gas Control/Thermostat**

Alternatively, this heater may be equipped with the White-Rodgers Intelli-Vent™ gas control/thermostat and a hot-surface igniter. This control is a combination gas valve, thermostat and ignition controller for use on this power vented water heater. The valve contains a microcomputer that supervises the ignition sequence and monitors the temperature settings and operation of the heater. The computer also monitors the flammable vapour safety features of this heater.

**This heater is equipped with a White-Rodgers Silicon Nitride Igniter system that automatically ignites the burner. Do not attempt to light this heater manually with a match or flame-producing device.**

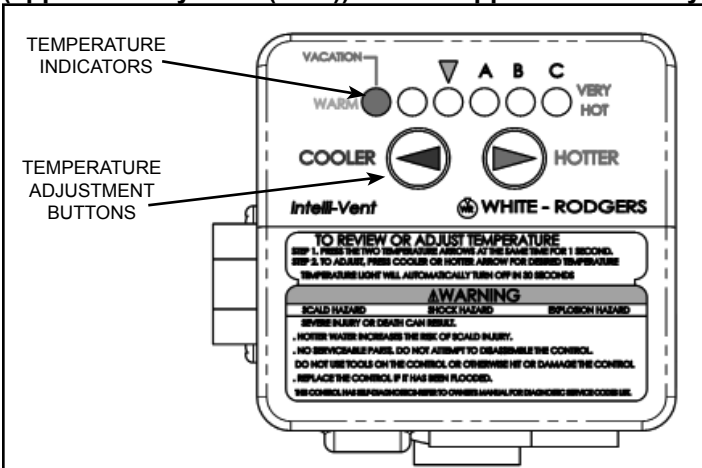
**Putting the Heater into Service**

1. Turn the manual gas shut-off valve for the heater to the "ON" position.
2. Follow the Lighting Instructions (White-Rodgers) given on the side of the water heater and also depicted in this manual. See also "Gas Supply", "Water Heater Operation" and "Sequence of Operation".
3. Upon start up all the indicator lights on the front of the control will come on and then turn off. This indicates that the control has completed a self-diagnostic test and is ready for operation.

**Note:** If any of the indicator lights remain on, this indicates a system fault that needs correcting. See the "System Error Codes" and "Troubleshooting Guide (White-Rodgers)" for corrective action.

**Temperature Adjustment**

**The control is adjusted to its lowest temperature setting (approximately 21°C (70°F)) when shipped from factory.**



**Figure 20. Temperature Indicators and Adjustment**

The temperature of the water can be selected by using the temperature adjustment buttons on the front of the gas control (see Figure 20) as follows:

1. "Wake up" the temperature indicators by holding down both the "COOLER" and "HOTTER" temperature adjustment buttons at the same time for one second. One or two of the temperature indicators will light up. After 30 seconds, if no other buttons are pushed, the control will go back to "Sleep" mode and both buttons will again have to be pressed to see the water temperature setting.
2. Release both of the temperature adjustment buttons.
3. The current water temperature setting will be indicated. See Table 4 for an explanation of the temperature indicators.
  - a. 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.
  - b. 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.

**Note:** Holding down the button will not continue to lower the setting. The button must be pressed and released for each temperature change desired.

**Note:** To avoid scald injury, set the control to the lowest setting that will supply the hot water for your needs. Refer to Table 4 to determine the approximate temperature setting, and the approximate time for scald injury at that temperature.

4. When you have completed setting the control wait 30 seconds for the temperature indicators go off and the control to enter "Sleep" mode.

DISPLAY	APPROXIMATE TEMPERATURE °C (°F)
	21°C (70°F) (VACATION)
	43°C (110°F)
	46°C (115°F)
	49°C (120°F)
	52°C (125°F)
	54°C (130°F)
	57°C (135°F)
	60°C (140°F)
	63°C (145°F)*
	65°C (150°F)*
	71°C (160°F)*
FLASHING	

\* These settings are not available on Hi-input models.

**Table 4. Temperature Settings**

**WARNING**

Scald burns occur in under one second with 71°C (160°F) water, which this thermostat will deliver if the temperature is set at “VERY HOT”. Lower settings of the temperature will reduce the risk of scald and will reduce your fuel bill.

**Note:** All 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” section of this document, or contact a trained service professional.

There is a hot-water scald potential if the thermostat is set too high. In households with children, disabled or the elderly, select a lower temperature setting. Valves for reducing point-of-use temperature by mixing hot and cold water are available. Consult a licensed plumber or the local plumbing authority.

**Heater Shutdown**

1. Turn off all electrical power to the heater or unplug the power cord from the receptacle.
2. Turn the manual gas supply valve to the water heater to the “OFF” position.

**System Error Codes**

The computer inside the gas control monitors the ignition sequence, temperature settings and overall operation of the heater. If any of these parameters does not operate properly the computer will shut down the water heater and flash an error code. See the “Intelli-Vent™ System Error Codes” and “Troubleshooting Guide” to diagnose the problem before attempting corrective action. See also “Resettable Lockout”.

**Intelli-Vent™ System Error Codes**

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
<p>Error 1</p>	An open earth ground circuit to the ignition system.	<ol style="list-style-type: none"> <li>1. Check that the earth ground conductor is properly connected at the fuse box or breaker panel and the water heater.</li> <li>2. Check that the grounding conductors on the water heater are properly connected and secure.</li> </ol>
<p>Error 2</p>	The self diagnostic test detected a wiring error, reversed polarity or a high resistance to earth ground.	<ol style="list-style-type: none"> <li>1. Check for proper connection of the line neutral and line hot wires.</li> <li>2. Check that the appliance is securely connected to earth ground.</li> </ol>
<p>Error 3</p>	The pressure switch remained closed longer than 5 seconds after the call for heat began. Blower does not start.	<ol style="list-style-type: none"> <li>1. The pressure switch wiring is incorrect.</li> <li>2. The pressure switch is defective and must be replaced.</li> </ol>
<p>Error 4</p>	The pressure switch remained open longer than 5 seconds after the combustion blower was energized.	<ol style="list-style-type: none"> <li>1. The pressure switch wiring is incorrect.</li> <li>2. The pressure switch tubing is not connected correctly.</li> <li>3. Obstructions or restrictions in the water heater air intake or exhaust flue.</li> <li>4. Check the high temperature limit switch.</li> </ol>
<p>Error 5</p>	The self diagnostic test has detected an error in the hotsurface igniter circuit.	<ol style="list-style-type: none"> <li>1. Check that all wiring is correct and secure.</li> <li>2. Disconnect the igniter connector and measure the igniter 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 igniter.</li> <li>3. If the above checks are good, replace the control.</li> </ol>
<p>Error 6</p>	The maximum number of ignition retries or recycles has been reached and the system is in lockout for an hour. Cycle the power to the water heater off and on to reset.	<ol style="list-style-type: none"> <li>1. Ensure the igniter is positioned correctly.</li> <li>2. Ensure the voltage to the water heater is 115-125 VAC.</li> <li>3. Clear any obstructions or restrictions in the water heater air intake or exhaust flue.</li> </ol>

**Table 5. Intelli-Vent™ System Error Codes.**



SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Error 7 	The self-diagnostic test found a problem with the gas valve driver circuit.	<ol style="list-style-type: none"> <li>1. Cycle power to the water heater "OFF" for 10 seconds and then back "ON".</li> <li>2. If the above step did not clear the error, the control must be replaced.</li> </ol>
Error 8 	The self-diagnostic test has detected a problem with the internal microcomputer.	<ol style="list-style-type: none"> <li>1. Cycle the external power "OFF" for 10 seconds and then back "ON".</li> <li>2. If the above step does not clear the error, the control must be replaced.</li> </ol>
Error 9 	The self-diagnostic test has detected a problem with the internal circuit.	<ol style="list-style-type: none"> <li>1. Cycle the external power "OFF" for 10 seconds and then back "ON".</li> <li>2. If the above step does not clear the error, the control must be replaced.</li> </ol>
Error 10 	Flame signal sensed out of proper sequence.	<ol style="list-style-type: none"> <li>1. Ensure flame sensor ceramic insulator is not cracked.</li> <li>2. Turn power off for 10-20 seconds, and then on again to clear the error code.</li> <li>3. Replace the control.</li> </ol>
Error 11 	The high temperature thermal cutoff is open.	<ol style="list-style-type: none"> <li>1. Turn the power off for 10-20 seconds then on again to clear the error code.</li> <li>2. Replace the control.</li> </ol>
Error 12 	The self-diagnostic test has detected one of the temperature adjust buttons stuck closed.	<ol style="list-style-type: none"> <li>1. Make sure that there are no objects leaning against the front of the control.</li> <li>2. Lightly press and release each of the buttons once.</li> <li>3. If the above actions do not clear the error, the control will continue to regulate water temperature at the last setting, but you will not be able to change settings unless you replace the control.</li> </ol>
Error 13 	The self-diagnostic test has detected that the water temperature sensor is either open or short circuited.	<ol style="list-style-type: none"> <li>1. Turn the power off for 10-20 seconds then on again to clear this error code.</li> <li>2. If no wiring problems are found the control must be replaced.</li> </ol>

**Table 5. Intelli-Vent™ System Error Codes.**

## V) OPERATION

### WARNING

Keep the area around the heater clear and unobstructed.

## Water Heater Operation

Figure 21 shows the water heater's sequence of operation when a call for heat is initiated. The ignition control module will attempt to light the burner three times. If the ignition control does not detect ignition it will enter lockout mode. The Robertshaw control will display a System Status Code (see Table 3), the White-Rodgers control will flash the corresponding error code.

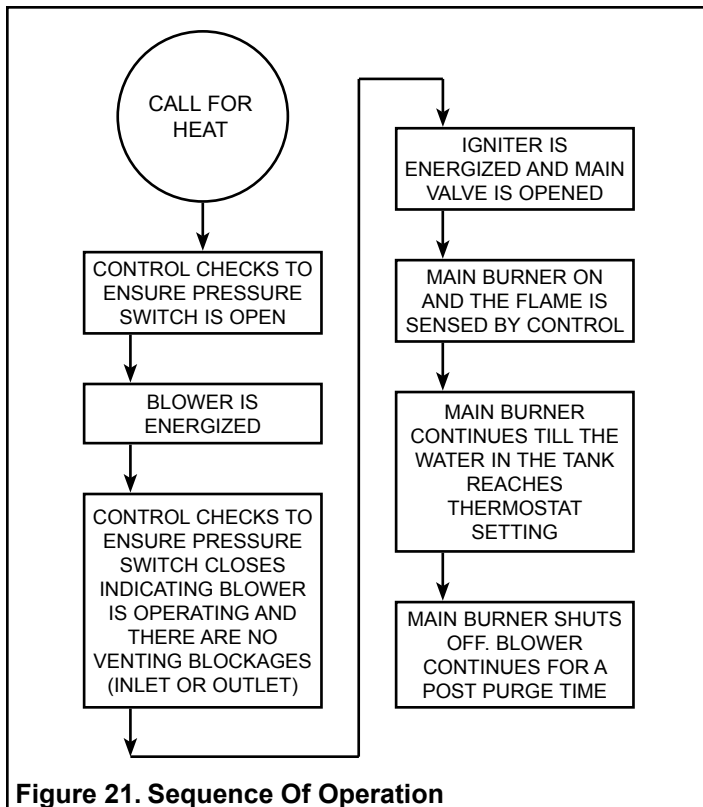


Figure 21. Sequence Of Operation

## Burner Flames

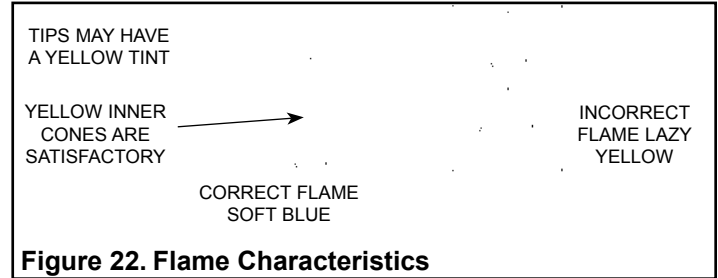


Figure 22. Flame Characteristics

Inspect the burner flames through the viewport and compare them to the drawings in Figure 22. A properly operating burner should produce a soft blue flame. Blue tips with yellow inner cones are satisfactory. The tips of the flame may have a slight yellow tint. The flame should not be all yellow or have a sharp blue-orange colour. Contaminated air may cause an orange coloured flame. Contact a qualified service technician if the flame is not satisfactory.

## Stacking

Stacking occurs when a series of short draws of hot water (11 litres (3 US gallons) or less) are taken from the water heater tank. This causes increased cycling of the burner and can result in increased water temperatures at the hot water outlet. A tempering device is recommended in the hot water supply line to reduce the risk of scald injury.

## Emergency Shut Down

**Important:** Should overheating occur or the gas supply fails to shut off, turn off the water heater's manual gas control valve and call a qualified service technician.

The thermostat is adjusted to its lowest temperature when it is shipped from the factory. Water temperature can be regulated by moving the temperature dial to the preferred setting. The preferred starting point is 49°C (120°F). Align the index bar on the thermostat with the desired water temperature as shown in Figure 18. There is a hot water scald potential if the thermostat is set too high.

**Note:** During low demand periods when hot water is not being used, a lower thermostat setting will reduce energy losses and may satisfy your normal hot water needs. If hot water use is expected to be more than normal, a higher thermostat setting may be required to meet the increased demand. When leaving your home for extended periods (vacations, etc.) turn the temperature dial to its lowest setting. This will maintain the water at low temperatures with minimum energy losses and prevent the tank from freezing during cold weather.

## Operational Conditions

### Condensation

Moisture from the products of combustion condenses on the tank surface and the outside jacket of the water heater and forms drops of water, which may fall onto the burner or other hot surfaces. This will produce a "sizzling" or "frying" noise. This condensation is normal and should not be confused with a leaking tank. Condensation may increase or decrease at different times of the year.

High efficient energy saver water heaters will produce larger amounts of condensation on initial start-up or when a large amount of hot water is being used. Do not confuse this with a “tank leak”. Once the water reaches a temperature of 49°C (120°F) and the tank warms up (usually 1-2 hours), the condensation will stop.

**Important:** It is always recommended that a suitable drain pan be installed under the water heater to protect the area from water damage resulting from normal condensation production, a leaking tank or piping connections. Refer to “Location Requirements”. Under no circumstances is the manufacturer to be held responsible for any water damage in connection with this water heater.

### **Water Heater Sounds**

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

1. Normal expansion and contraction of metal parts during periods of heat-up and cool-down.
2. Condensation causes sizzling and popping within the burner area and should be considered normal.
3. Sediment buildup in the tank bottom will create varying amounts of noise and may cause premature tank failure. Drain and flush the tank as directed under “Draining and Flushing”.

### **Smoke/Odour**

The water heater may give off a small amount of smoke and odour during the initial start-up of the unit. This is due to the burning off of oil from metal parts of a new unit and will disappear after a few minutes of operation.

### **Anode Rod/Water Odour**

Each water heater contains at least one anode rod, which will slowly deplete while protecting the glass-lined tank from corrosion and prolonging the life of the water heater. Once the anode is depleted, the tank will start to corrode, eventually developing a leak. Certain water conditions will cause a reaction between this rod and the water. The most common complaint associated with the anode rod is a “rotten egg smell” produced from the presence of hydrogen sulfide gas dissolved in the water. **Do not remove this rod permanently as it will void any warranties, stated or implied.** A special anode can be ordered if water odour or discoloration occurs. **This rod may reduce but not eliminate water odour problems.** The water supply system may require special filtration equipment from water conditioning company to successfully eliminate all water odour problems.

Artificially softened water is exceedingly corrosive because the process substitutes sodium ions for magnesium and calcium ions. The use of a water softener may decrease the life of the water heater tank.

The anode rod should be removed from the water heater tank every year for inspection. If the rod is more than 50% depleted, the anode rod should be replaced. To replace the anode:

1. Turn off gas supply to the water heater.

2. Shut off the water supply and open a nearby hot water faucet to depressurize the water tank.
3. Drain approximately 20 litres (5 US gallons) of water from tank (Refer to “Draining and Flushing” for proper procedures.) Close drain valve.
4. Remove old anode rod.
5. Use Teflon® tape or approved pipe sealant on threads and install new anode rod.
6. Turn on water supply and open nearby hot water faucet to purge air from water system.
7. Restart the water heater as directed under “Operating Your Water Heater.” See the “Repair Parts Illustration” for anode rod location.

## VI) MAINTENANCE

### Draining and Flushing

It is recommended that the tank be drained and flushed every 6 months to remove sediment that may build up during operation. The water heater should be drained if being shut down during freezing temperatures. To drain the tank, perform the following steps:

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

**Note:** The drain hose should be rated for at least 93°C (200°F). If the drain hose does not have this rating, open the cold water inlet valve and a nearby hot faucet until the water is no longer hot.

6. Open the water heater drain valve and allow all the water to drain from the tank. Flush the tank with water as needed to remove sediment.
7. Close the drain valve, refill the tank, and restart the heater as directed under “Water Heater Operation”.

If the water heater is going to be shut down for an extended period, the drain valve should be left open.

Important: Condensation may occur when refilling the tank and should not be confused with a tank leak.

### Routine Preventative Maintenance

At least annually, a visual inspection should be made of the venting and air supply system, piping systems and main burner. Check the water heater for the following:

- Obstructions, damage or deterioration in the venting system. Make sure the ventilation and combustion air supplies are not obstructed.
- Build up of soot and carbon on the main burner. Check for a soft blue flame.
- Leaking or damaged water and gas piping.
- Presence of flammable or corrosive materials in the installation area.
- Presence of combustible materials near the water heater.
- Verify proper operation after servicing this water heater.

**Important:** If you lack the necessary skills required to properly perform this visual inspection, you should not proceed, but get help from a qualified service technician.

## Temperature and Pressure Relief Valve

**WARNING**



### Explosion Hazard

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

Manually operate the temperature and pressure relief valve at least once a year to make sure it is working properly (see Figure 23). To prevent water damage, the valve must be properly connected to a discharge line that terminates at an adequate drain. Standing clear of the outlet (discharged water may be hot), slowly lift and release the lever handle on the temperature and pressure relief valve to allow the valve to operate freely and return to its closed position. If the valve fails to completely reset and continues to release water, immediately shut off the manual gas valve and the cold water inlet valve and call a qualified service technician.

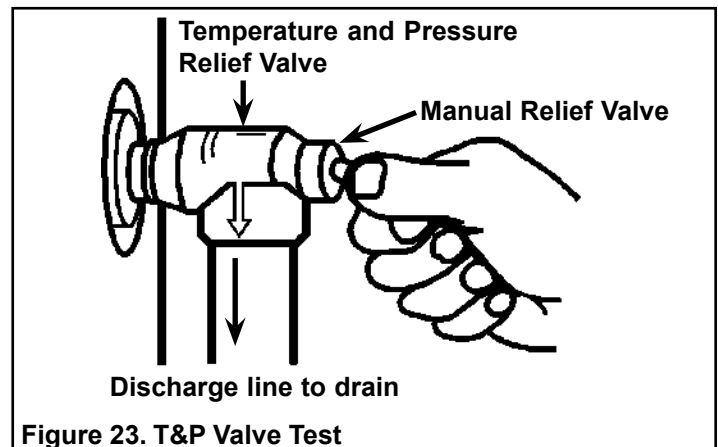


Figure 23. T&P Valve Test

### Replacement Parts

Replacement parts may be ordered through your plumber or the local distributor. When ordering replacement parts, always have the following information ready:

1. model, serial and product number
2. type of gas
3. item number
4. parts description

See “Replacement Parts Illustration” for a list of available repair parts.

## VII) COMBO HEATING

### **WARNING**

**Keep the area around the heater clear and unobstructed.**

This section serves as a guide for the installation and use of “Combo” heating systems utilizing a domestic water heater that has been specifically approved for such use. It is written for those knowledgeable in the required trades and professionals involved in the design and installation of Combo Heating Systems.

**It is the responsibility of the installer/designer to follow all applicable codes to ensure the effectiveness and safety of the installation.**

### **System Requirements**

#### **CAUTION:**

**Keep safety your first priority. Take all precautions to avoid creating a fire, health or safety hazard.**

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

1. All components used for the distribution of water in the heating loop must be suitable for potable water. These include all piping, fittings, solder and fluxes, pumps for circulation of water, valves, etc.
2. The water heater **must not** be connected to a hydronic heating system that has been used previously.
3. No boiler treatment chemicals of any kind shall be introduced into the system.
4. The Combo System components must be selected and sized to meet and maintain the total calculated demands for both domestic service hot water and space heating requirement. The sizing and installation must be performed in accordance with good engineering practice such as “**ASHRAE Handbooks**”, **HRAI**, “**Hydronics Institute Manuals**”, **CSA-B149.1**, **NFPA 54**, **ANSI Z223.1**, **CSA F280**, **National/Provincial Building Codes**, **CSA C22.1**, **ANSI/NFPA 70**, **CSA B51** and/or codes having jurisdiction.
5. The air handler (fan coil) and/or the circulating pump in a baseboard hydronic loop will require a dedicated 120V circuit. This must be provided and identified for this purpose.
6. All piping between the water heater and the air handler or hydronic baseboard loop must be adequately insulated to reduce heat loss.
7. If the local jurisdiction requires a back-flow preventer in the cold water line, an expansion tank of adequate size must be installed.
8. “Combo” Heating Systems require higher water temperatures than other applications. When the system is used to supply water for Combo Heating applications, a means, such as mixing valve, must be installed to temper the water in order to reduce scald hazard potential (see Figure 24 & Figure 25).

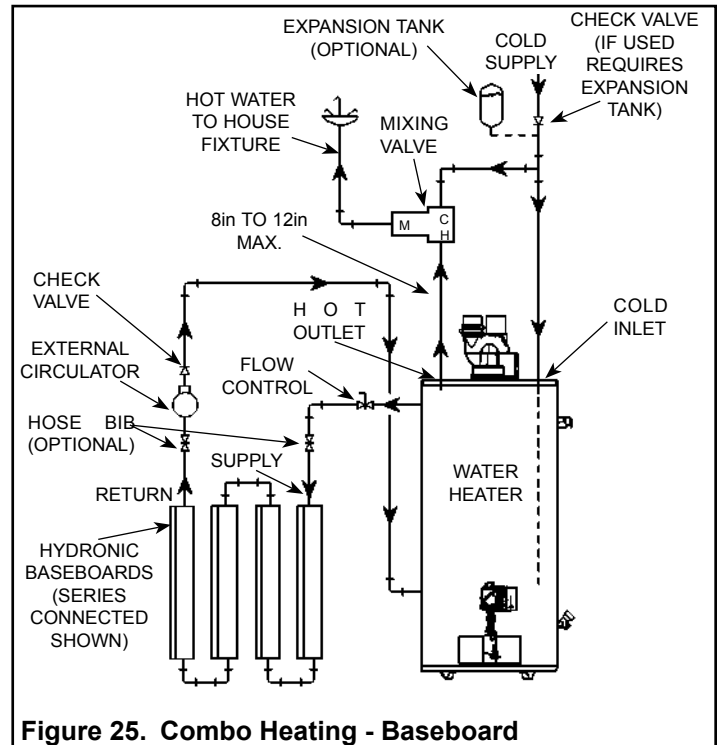
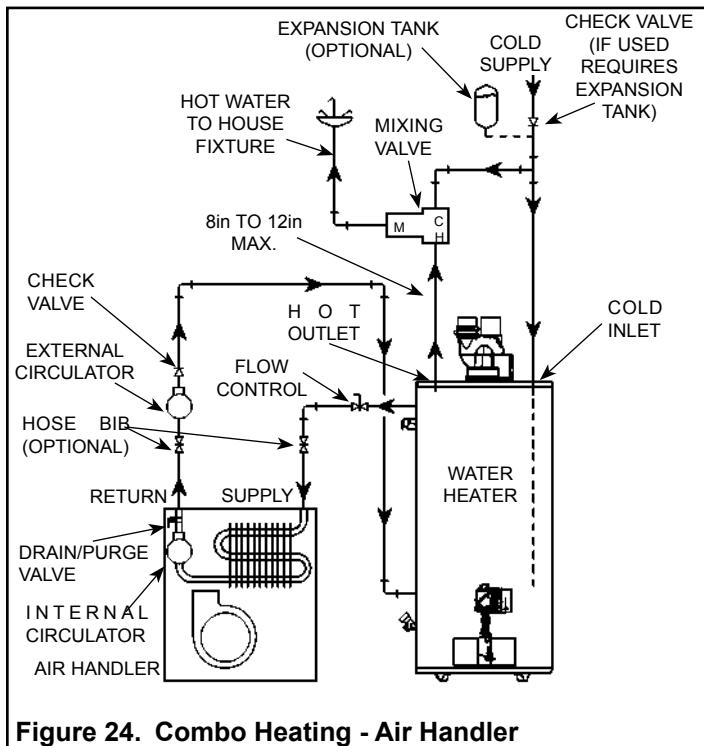
## Installation

The heating mode may be one of the following options:

- A. A fan coil/air handler (Figure 24).
- B. A hydronic baseboard (finned tube) loop/In floor heating (Figure 25).

The following is a list of requirements for the installation of the heating loop to the water heater.

1. Install shut-off valves and unions so that the water heater can be isolated from the heating module should servicing of the water heater become necessary.
2. Install a drain valve at the lowest point of the heating loop so that water can be drained from the heating module without affecting the water heater.
3. If the air handler does not have a venting means at the highest point of the piping arrangement, install an air bleed at the highest point of the plumbing arrangement.

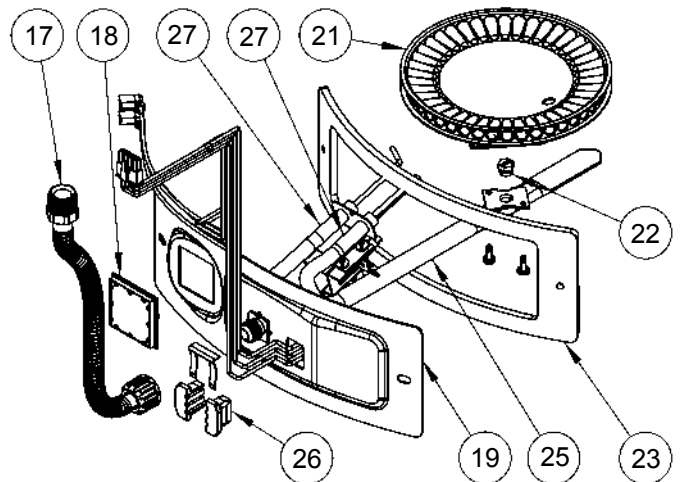
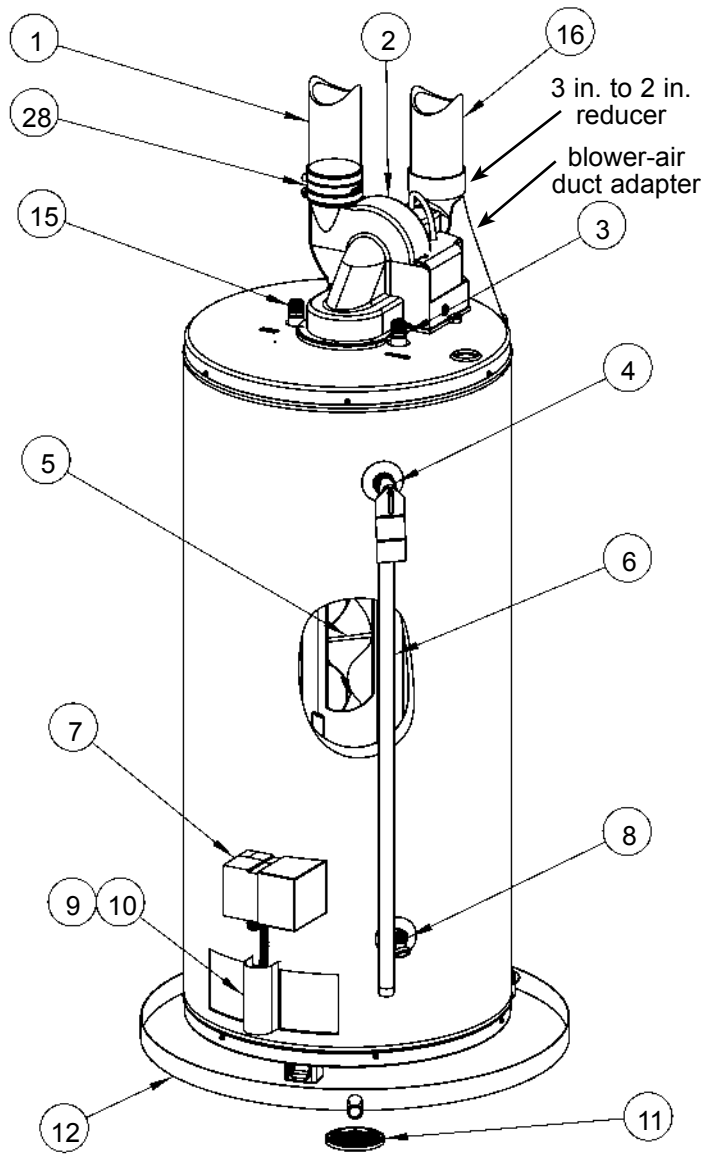


## VIII) TROUBLESHOOTING GUIDE

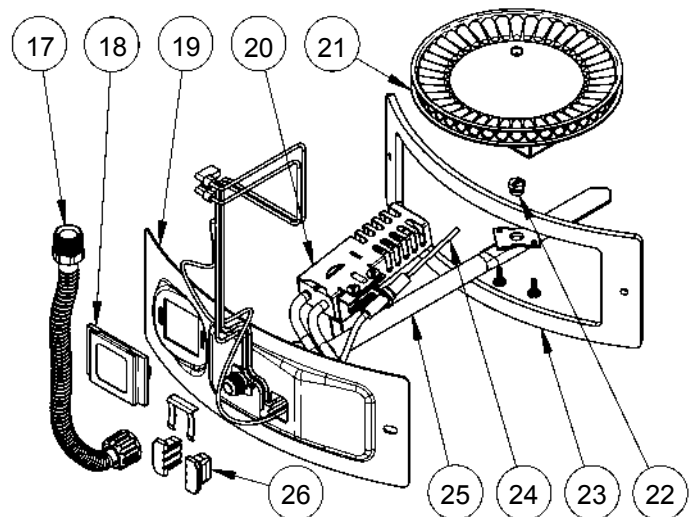
### Robertshaw 2000N WDER and White-Rodgers Intelli-Vent™

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
BLOWER WILL NOT START.	<ol style="list-style-type: none"> <li>1. No Power to unit.</li> <li>2. Thermostat setting too low.</li> <li>3. Defective air pressure switch (must be open at start-up before blower is energized).</li> <li>4. Defective blower.</li> <li>5. Disconnected or loose wire.</li> <li>6. Control locked-out.</li> </ol>	<ol style="list-style-type: none"> <li>1. Plug in power cord, check fuses/supply voltage.</li> <li>2. Increase thermostat temperature setting.</li> <li>3. Replace air pressure switch.</li> <li>4. Replace blower.</li> <li>5. Repair/reconnect wires.</li> <li>6. Reset – determine cause of lockout.</li> </ol>
BLOWER RUNS CONTINUOUSLY.	<ol style="list-style-type: none"> <li>1. Air pressure switch not closing due to insufficient draft - check for:               <ol style="list-style-type: none"> <li>a. vent piping blocked,</li> <li>b. piping length too long,</li> <li>c. frozen vent termination,</li> <li>d. clogged/dirty blower.</li> </ol> </li> <li>2. Disconnected, torn or blocked pressure sensing tubing from air pressure switch to blower housing.</li> <li>3. Air pressure switch not closing due to defective switch.</li> <li>4. High limit switch open due to excessive vent temperature or defective switch.</li> </ol>	<ol style="list-style-type: none"> <li>1. Determine cause of insufficient draft. Check draft with manometer at pressure switch (refer to Table 3 for minimum acceptable draft settings).               <ol style="list-style-type: none"> <li>a. remove blockage,</li> <li>b. reduce vent length/increase vent size,</li> <li>c. clear termination of snow/ice,</li> <li>d. clean blower wheel.</li> </ol> </li> <li>2. Reconnect or replace pressure sensing tubing.</li> <li>3. Replace defective pressure switch.</li> <li>4. Determine cause of overheating check for: overfiring, insufficient air supply, high ambient air temperature (once activated high limit must be replaced).</li> </ol>
HOT SURFACE IGNITER NOT GLOWING FOLLOWING WARM-UP PERIOD	<ol style="list-style-type: none"> <li>1. 120VAC polarity reversed at 120VAC outlet receptacle.</li> <li>2. Defective hot surface igniter.</li> <li>3. Defective Control.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reverse polarity at 120VAC outlet receptacle.</li> <li>2. Replace igniter (Check for 120VAC across I1 &amp; I2, Robertshaw only).</li> <li>3. Replace control.</li> </ol>
CONTROL LOCKED-OUT.	<ol style="list-style-type: none"> <li>1. No gas supply.</li> <li>2. Gas control switch in "OFF" position.</li> <li>3. Insufficient gas supply.</li> <li>4. Incorrect manifold gas pressure.</li> <li>5. Incorrect gas type.</li> <li>6. Defective igniter/loose or disconnected wire.</li> <li>7. Improperly positioned, dirty, or defective flame rod/loose or disconnected wire.</li> <li>8. Burner orifice clogged.</li> <li>9. Blocked water heater flue.</li> <li>10. Defective control.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check/turn on gas supply.</li> <li>2. Turn control switch to "ON" position (Robertshaw only).</li> <li>3. Ensure correct supply pressure for gas type (Nat Gas 7.0 in. w.c. (1.74 kPa)) (Propane 11.0 in. w.c. (2.74 kPa)).</li> <li>4. Check/adjust for correct manifold gas pressure (NG 3.5 in. w.c.(0.87 kPa)), (Propane 10.0 in. w.c. (2.49 kPa)).</li> <li>5. Ensure correct gas type for water heater model.</li> <li>6. *Replace defective igniter/reconnect wiring.</li> <li>7. *Reposition, clean, or replace defective flame rod/reconnect wiring.</li> <li>8. Remove obstruction.</li> <li>9. Remove blockage/clean flue.</li> <li>10. Replace Control.</li> </ol> <p>* See Figure 26.</p>
CONTROL LOCKED-OUT. *SOLID GREEN LED.	<ol style="list-style-type: none"> <li>1. Internal control fault.</li> <li>2. ECO failure – excessive water temperature.</li> <li>3. Excessive humidity/damp environment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace control.</li> <li>2. Replace control.</li> <li>3. Allow control to dry.</li> </ol>

## IX) PARTS REFERENCE ILLUSTRATION



Used with White-Rodgers control



Used with Robertshaw control

1. Exhaust Vent
2. Blower
3. Cold Water Inlet Nipple
4. T&P Valve
5. Baffle Assembly
6. Driptube
7. Gas Control/Thermostat
8. Drain Valve
9. Outer Gas Door
10. Inner Gas Door (behind outer door)
11. Floor Drain
12. Drain Pan (not supplied)
13. Combo Heating System Return (optional)
14. Combo Heating System Supply (optional)
15. Hot Water Outlet Nipple

16. Air Intake
17. Flexible Manifold Tube
18. Viewport
19. Manifold Door
20. Hot Surface Igniter
21. Sheet Metal Burner
22. Gas Orifice
23. Manifold Door Gasket
24. Flame Sensor
25. Gas Manifold
26. Two Piece Grommet With Clip
27. Igniter/Flame Sensor\*
28. Rubber Coupling

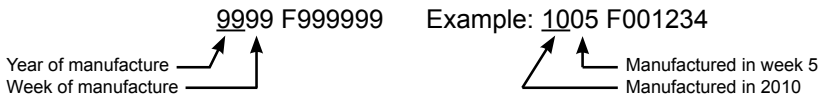
\* W-R control combines Igniter & Flame Sensor into one assembly.

**Figure 26. Parts Reference**



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

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



The warranty period for the unit is as follows:

Model	JW4040SN-PDV-ES2	JW4040SP-PDV-ES2	JW5040SN-PDV-ES2	JW5040SP-PDV-ES2	JW85065SN-PDV-ES2
Inner Tank Warranty Years	8				
Component Part Warranty Years	6				

**LIMITED WARRANTY**

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

**A. WHO IS COVERED.**

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

**B. WHEN IT IS COVERED.**

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

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

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

**D. WHAT THIS WARRANTY DOES NOT COVER.**

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

- b. The water heater has not been installed in accordance with the applicable local plumbing and/or building code(s) and/or regulations or, in their absence, with the latest edition of the Natural Gas and Propane Installation Code, and/or the Canadian Electrical Code; or
  - c. The water heater is not installed, operated, and maintained in accordance with the Manufacturer's instructions, including if the water heater has any additional aftermarket equipment introduced into the sealed system not approved by the Manufacturer; or
  - d. The water heater or any of its component parts are damaged or fails from operation with an empty or partially empty tank (such as, but not limited to elements burned out in a dry tank); or
  - e. The water heater or any part has been under water; or
  - f. The water heater is exposed to highly corrosive atmospheric conditions. No warranty extends, for example, and without limitation of the foregoing, to Units exposed to: salts, chemicals, exhausts, pollutants, or contaminants; or
  - g. The water heater is not continuously supplied with potable water; or
  - h. The water heater replacement is requested for reasons of noise, taste, odour, discolouration, and/or rust; or
  - i. The water heater is operated at temperatures exceeding the maximum setting of the thermostat and/or high limit control provided by the Manufacturer, or at water pressures exceeding the pressure reading stated on the Unit; or
  - j. The water heater is operated without an operating anode; or
  - k. The water heater is supplied or operated with deionized water; or
  - l. The water heater is removed from its original installation location; or
  - m. The water heater is installed outdoors (this water heater is intended only for indoor installation); or
  - n. The water heater is converted, or is attempted to be converted, from one voltage or wattage to another, if an electric water heater, or from one gas type to another, if a gas water heater; or
  - o. The water heater has not been fired at the factory rated input and fuel for which it was factory built; or
  - p. The water heater or any of its component parts fail due to sediment build-up; or
  - q. The water heater does not have installed a properly operating temperature and pressure relief valve, certified to ANSI Z21.22/CSA "Requirements for Relief Valves for Hot Water Supply Systems"; or
  - r. The water heater or any of its component parts fail because of fire, floods, lightning, or any other act of God, or any other contingency beyond the control of the Manufacturer; or
  - s. The water heater is installed in a closed system without adequate provision for thermal expansion.
3. Except when specifically prohibited by the applicable law, the Owner, and not the Manufacturer, shall be liable for and shall pay for all charges for labour or other expenses incurred in the removal, repair, or replacement of the water heater or any component part(s) claimed to be defective or any expense incurred to remedy any defect in the product. Such charges may include, but are not necessarily limited to:
- a. All freight, shipping, handling, and delivery costs of forwarding a new water heater or replacement part(s) to the Owner.
  - b. All costs necessary or incidental in removing the defective water heater or component part(s) and installing a new water heater or component part(s).
  - c. Any material required to complete and/or permits required for the installation of a new water heater or replacement part(s), and
  - d. All costs necessary or incidental in returning the defective water heater or component part(s) to a location designated by the Manufacturer.
4. The terms of this Limited Warranty cannot be modified by any person, whether or not he/she claims to represent or act on behalf of the Manufacturer.
- E. HOW THE ORIGINAL OWNER CAN MAKE A WARRANTY CLAIM.
- 1. The Owner should submit the warranty claim direct to the Manufacturer's Service Department, at the address or phone number listed below, and the Manufacturer will arrange for the handling of the claim.
  - 2. Whenever any inquiry or request is made, be sure to include the water heater's Catalogue Number, Model Number, Serial Number, date of purchase, date of installation, and location of installation.

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

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