

Residential Electric Water Heater Installation Instructions and Use & Care Guide

To obtain technical, warranty or service assistance during or after the installation of this water heater, call toll free **1-888-GSW-TECH (1-888-479-8324)**

When calling for assistance, please have the following information ready:

1. Model number
2. Catalogue number
3. Serial number
4. Date of installation
5. Place of Purchase



Table of Contents

Page

Water Heater Safety	2
Installing Your Water Heater	3-8
Unpacking Instructions	3
Location Requirements	4
Electrical Requirements	5
Water System Piping	6
Installation Checklist	8
Operating Your Water Heater	9-10
Water Temperature Regulation	9
Operational Conditions	10
Maintenance of Your Water Heater	11-13
Troubleshooting Chart	14
Repair Parts Illustration	15
Warranty	16

WATER HEATER SAFETY

Your safety and the safety of others are 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." These words mean:

⚠ 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.

Important Safety Instructions

CAUTION: Hydrogen gas is produced in a hot water system served by this heater that has not been used for a long period of time (2 weeks or more). Hydrogen gas is extremely flammable. 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. When 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.

INSTALLING YOUR WATER HEATER

Consumer Information

This water heater should be installed in accordance with the local code authority having jurisdiction, the power company or electric utility, and this installation manual. In the absence of local code requirements, follow the regulations set forth in the latest edition of

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

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

or

“National Electrical Code” (NFPA 70).
This is available from:

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

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

Consumer Responsibilities

This manual has been prepared to acquaint you with the installation, operation and maintenance of your electric water heater and to provide important safety information in these areas.

We urge you to read all of the instructions thoroughly before attempting the installation or operation of this water heater. This manual should be kept for future reference.

The manufacturer of this water heater will not be liable for any damages caused by failure to comply with the installation and operating instructions outlined in this manual.

If you lack the necessary skills required to properly install this water heater or you have difficulty following the directions, you should not proceed but have a qualified person perform the installation of this water heater.

Examples of a qualified person include: licensed plumbers, authorized gas company personnel, and authorized service personnel.

A rating plate identifying your water heater can be found on the side of the water heater. When referring to your water heater always have the information listed on the rating plate readily available.

Retain your original receipt as proof of purchase.

Unpacking the Water Heater

Removing Packaging Materials

IMPORTANT: Do not remove any permanent instructions, labels, or the data label from either the outside of the water heater or on the inside of water heater 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.
- After installation, dispose of/recycle all packaging materials.

Location Requirements

Site location

Select a location near the point of use. It must be installed indoors and in a vertical position with water inlet and outlet connections facing upwards and easily accessible.

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 the water piping and drain piping to be insulated to protect against freezing. The controls must be easily accessible for operation and service.

This water heater is designed to be used for potable water heating only.

This water heater does not have sufficient capacity for use with a spa or hot tub.

This water heater is not suitable for space heating.

Selected location must provide adequate clearances for removing the front cover in order to service parts such as the thermostat, element, temperature sensor, anode, high limit reset, operating the relief valve, etc.

The water heater should be located so it is not subject to physical damage by moving vehicles or area flooding.

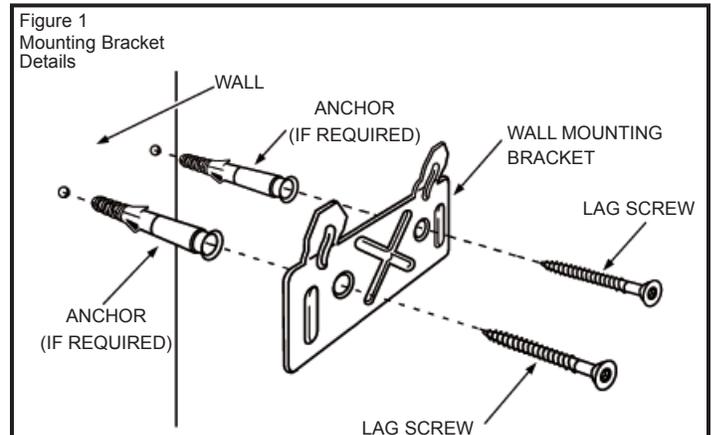
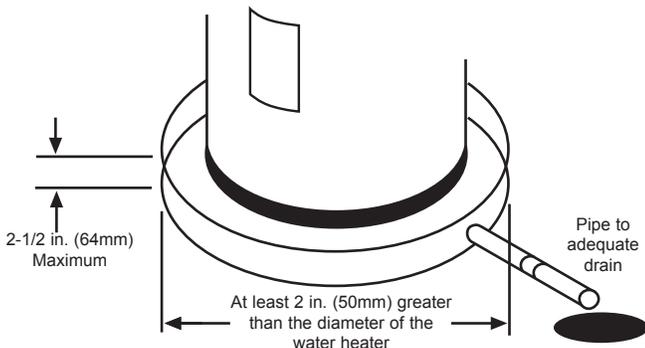
The selected wall or cabinet must be capable of supporting at least two times the weight of the water heater when filled with water.

Mounting

NOTE: The water heater must be mounted to avoid moving.

1. Place the mounting bracket (see Figure 1) against the mounting surface where you intend to install the unit. The holes must be horizontally level, and the hooks must be facing upward and angled away from the wall.
2. Verify that the mounting hardware and mounting surface used to attach the bracket are strong enough to support the weight of the filled water heater and piping.
3. Install the mounting hardware per instructions provided with the hardware.
4. Align the two mounting slots on the water heater with the hooks on the mounting bracket and seat the water heater onto the bracket.

IMPORTANT: The water heater should be located in an area where leakage of the tank or connections will not result in damage to the area adjacent to the water heater or to lower floors of the structure. Due to the normal corrosive action of the water, the tank will eventually leak after an extended period of time. Also any external plumbing leak, including those from improper installation, may cause early failure of the tank due to corrosion if not repaired. If the owner/operator is uncomfortable with making the repair a qualified person should be contacted. A suitable drain pan should be installed under the water heater as shown below, to help protect the property from damage which may occur from condensate formation or leaks in the piping connections or tank. The pan must limit the water level to a maximum depth of 64mm (2-1/2 in.) and be 50mm (2 in.) wider than the heater and piped to an adequate drain. Locate the water heater near a suitable indoor drain. Outside drains are subject to freezing temperatures which can obstruct the drain line. The piping should be at least 19mm (3/4 in.) ID and pitched for proper drainage. Under no circumstance will the manufacturer or seller of this water heater be held liable for any water damage which is caused by your failure to follow these instructions.



Electrical Requirements

⚠ WARNING



Electric Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

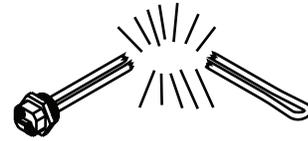
This water heater is equipped for one type voltage only. Check the rating plate on the side of the water heater for the correct voltage. DO NOT use this water heater with any voltage other than the one shown on the rating plate. Failure to use the correct voltage can cause problems which can result in DEATH, SERIOUS BODILY INJURY, OR PROPERTY DAMAGE. If you have any questions or doubts consult your electric company.

If you lack the necessary skills required to properly install the electrical wiring to this water heater, do not proceed but have a qualified electrician perform the installation.

When making the electrical connections, always make sure:

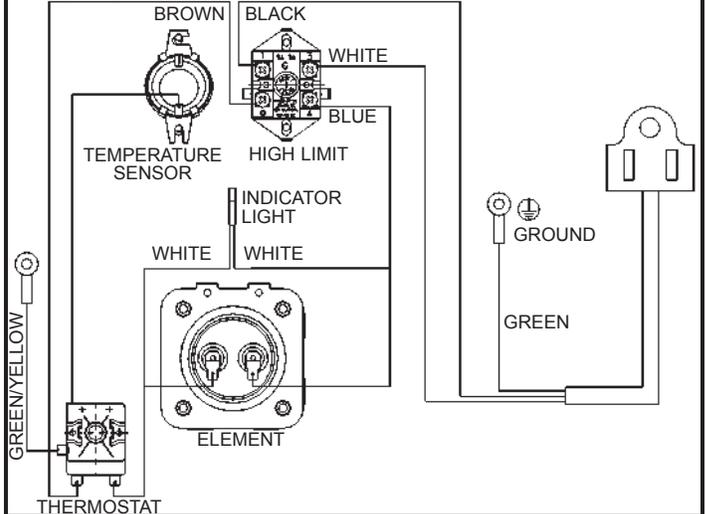
- The electrical supply has the proper overload fuse or breaker protection.
- Wire sizes and connections comply with all applicable codes.
- Wiring enclosed in approved conduit (if required by local codes).
- The water heater and electrical supply are properly grounded.
- The tank is completely filled with water before making any electrical connections (see Figure 2).
- A circuit connects directly from the main fuse or circuit breaker box, has its own fuse or circuit breaker and terminates in a receptacle adjacent to the water heater.
- Do not use an extension cord set with this water heater.
- Do not operate this water heater if it has a damaged plug.

Figure 2
Heating Element

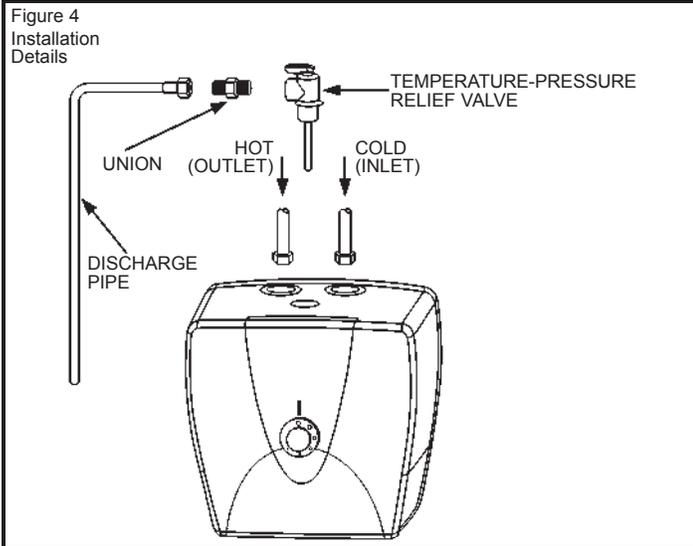


NOTE: Applying electrical power to elements that are not submerged in water will destroy them. The manufacturer will not warranty any elements damaged in this manner.

Figure 3
Wiring Diagram



Water System Piping

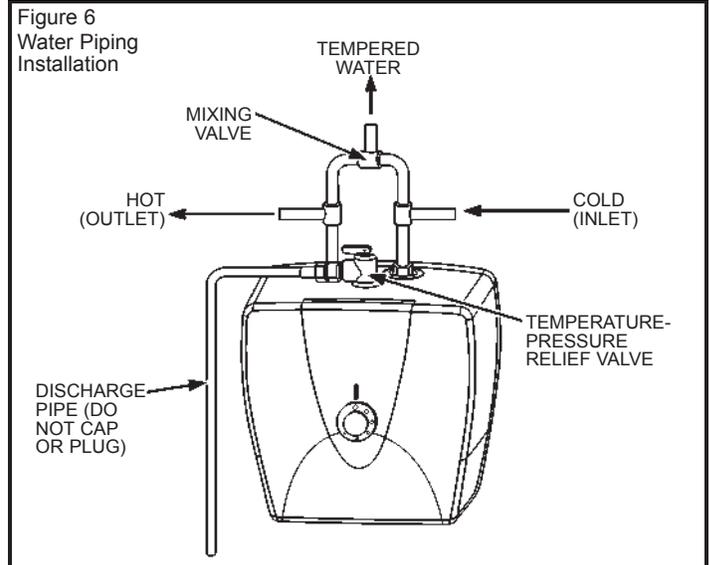
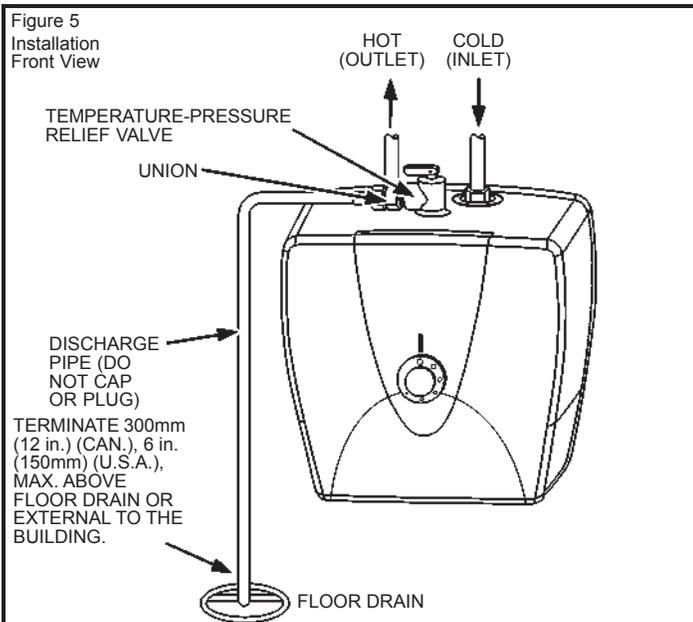


Piping, fittings, and valves should be installed according to the installation drawing (Figure 4). If the indoor installation area is subject to freezing temperatures, the water piping must be properly insulated.

Water supply pressure should not exceed 550kPa (80psi). If this occurs a pressure limiting valve with a bypass may need to be installed in the cold water supply line. This should be placed on the supply to the entire house in order to maintain equal hot and cold water pressures.

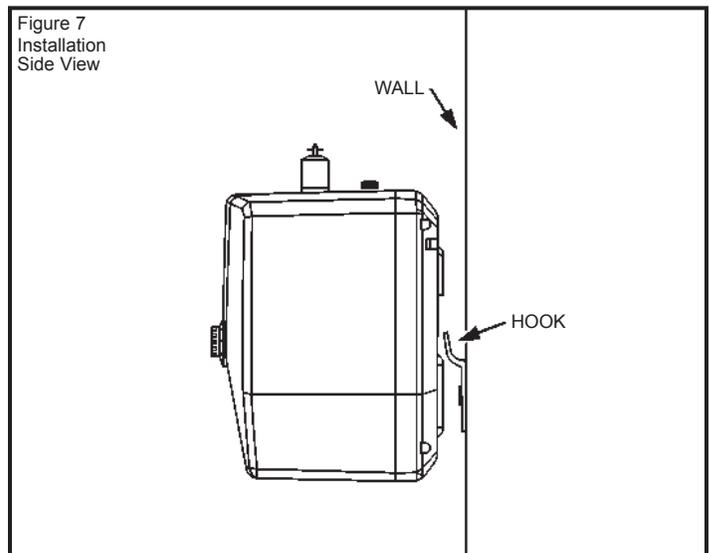
IMPORTANT:

- Heat must not be applied to the water fittings on the heater as they may contain nonmetallic parts. If solder connections are used, solder the pipe to the adapter before attaching the adapter to the hot and cold water fittings.
- Always use a good grade of joint compound and be certain that all fittings are tight.



Piping Installation

1. Install the water piping and fittings as shown in Figure 6. Connect the cold water supply (1/2" NPT) to the fitting circled with a BLUE collar. Connect the hot water supply (1/2" NPT) to the fitting circled with a RED collar.
2. The installation of unions in both the hot and cold water supply lines are recommended for ease of removing the water heater for service or replacement. To protect against untimely corrosion of hot and cold water fittings, when connected to copper pipe, it is strongly recommended that dielectric unions or couplings be used.
3. Some local codes may require, and the manufacturer of this water heater recommends, installing a tempering valve or an anti-scald device in the domestic hot water line as shown in Figures 4 and 6. These valves reduce the point-of-use temperature of the hot water by mixing cold and hot water and are readily available. Contact a licensed plumber or the local plumbing authority for more information.
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.
6. Install a temperature and pressure relief valve and discharge line in the opening marked "T & P RELIEF VALVE". Install as specified under "Temperature and Pressure Relief Valve."
7. After piping has been properly connected to the water heater, follow the instructions in the "Filling the Water Heater" section of this manual.

Temperature and Pressure 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 5).

⚠ WARNING



Explosion Hazard

If the temperature and pressure relief valve is dripping or leaking, have a qualified person replace it.

Examples of a qualified person include: licensed plumbers, authorized gas company personnel, and authorized service personnel.

Do not plug valve.

Do not remove valve.

Failure to follow these instructions can result in death or explosion.

CAUTION: To reduce the risk of excessive pressures and temperatures in this water heater, install temperature and pressure relief protective equipment required by local codes, but no less than a combination temperature and pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of the production of listed equipment or materials, as meeting the requirements for "Relief Valves and Automatic Gas Shut-Off Devices for Hot Water Supply Systems", ANSI Z21.22 - latest edition. This valve must be marked with the maximum set pressure not to exceed the marked maximum working pressure of the water heater. Install the valve into an opening provided and marked for this purpose in the water heater, and orient it or provide tubing so that any

discharge from the valve exits only within 300mm (12 in.) (Can.), 6 in. (150mm) (U.S.A.), above, or at any distance below, the structural floor, and does not contact any live electrical part. The discharge opening must not be blocked or reduced in size under any circumstance.

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 & Pressure Relief Valve:

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

The Discharge Line:

- Shall not be smaller than the pipe size of the relief valve or have any reducing coupling installed in the discharge line.
- Shall not be capped, blocked, plugged or contain any valve between the relief valve and the end of the discharge line.
- Shall terminate a maximum of 300mm (12 in.) (Can.), 6 in. (150mm) (U.S.A.), above a floor drain or external to the building.
- Shall be of material listed for hot water distribution.
- Shall be installed to allow complete drainage of both the valve and discharge line.

Closed System/Thermal Expansion

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 U.S. gallons) for every 190 litres (50 U.S. gallons) of stored water. 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.

Filling the Water Heater

Do not insert the power cord into the electrical receptacle until all the following steps have been completed.

1. Open all hot water faucets served by the system to allow air to escape from the tank.
2. Open the cold water inlet valve.

NOTE: When filling, avoid water leakage. Do not allow the insulation of the water heater to get wet as water can reduce the effectiveness of the insulation.

3. When an uninterrupted stream of water, without apparent air bubbles, flows from the open hot water faucets, the tank is full.
4. To purge the lines of any excess air and sediment, keep the hot water faucet open for 3 minutes after a constant flow of water is obtained.
5. Close the hot water faucets and check the system for leaks. Repair as required and retest.

Please note the following:

- The system should be installed only with piping that is suitable for potable (drinkable) water such as copper, CPVC, or polybutylene. This water heater must not be installed using iron piping or PVC water piping.
- Use only pumps, valves, or fittings that are compatible with potable water.
- Use only full flow ball or gate valves. The use of valves that may cause excessive restriction to water flow is not recommended.
- Use only tin-antimony or other equivalent solder. Any lead based solder must not be used.
- Piping that has been treated with chromates, boiler seal, or other chemicals must not be used.
- Chemicals that may contaminate the potable water supply must not be added to the piping system.
- This water heater shall not be connected to any heating systems or component(s) used with a non-potable water heating appliance.

INSTALLATION CHECKLIST

Water Heater Location

- Located indoors and in a vertical position. Protected from freezing temperatures.
- Provisions made to protect the area from water damage. Drain pan installed and piped to an adequate drain.
- Sufficient room to service the water heater.

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 (see Figure 2).
- Closed system pressure buildup precautions installed.
- Tempering valve (when applicable) installed per manufacturer's instructions (see "Water Temperature Regulation" section).

Electrical Connections

- Wiring and connections comply with all applicable codes.
- Water heater and electrical supply are properly grounded.
- Proper overload fuse or circuit breaker protection installed.

OPERATING YOUR WATER HEATER

Before Using

1. Make sure the water heater has been properly installed. See "Installing Your Water Heater" section.
2. Completely fill the tank with water by following the instructions in the "Filling the Water Heater" section of this manual (see Figure 2).
3. After the water heater tank is completely filled with water, connect electrical power to the water heater.
4. Read the "Water Temperature Regulation" section of this manual. If the instructions are not clear, contact a qualified person.
5. Adjust the thermostat to the desired temperature setting as described in the "Water Temperature Regulation" section.

IMPORTANT: Do not attempt to operate this water heater if the thermostat(s), or surrounding insulation has been exposed to water in any way. Immediately call a qualified person to inspect the water heater and replace any thermostat or insulation that has been exposed to water. Do not attempt to repair these parts. Water heaters subjected to flood conditions or any time the thermostat(s) have been submerged in water require replacement of the entire water heater.

Safety Shut-off

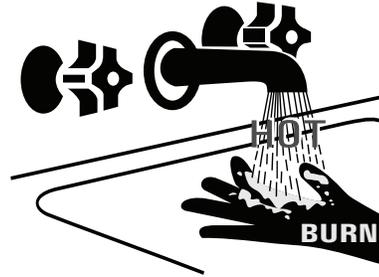
This water heater is designed to automatically shut-off in the event that the water temperature exceeds 77°C (170°F). A high limit control switch is used to shut off the power to the elements if the water temperature exceeds 77°C (170°F). The high limit control switch can be reset by firmly pushing in the red reset button located on the switch. Follow the instructions under "Resetting the High Limit Control", section to properly reset the high limit control. If the high limit control switch continues to shut-off the water heater contact a qualified person for service.

Water Temperature Regulation

The thermostat is adjusted to a temperature setting of "OFF" when it is shipped from the factory. Water temperature can be regulated by adjusting the thermostat to the preferred setting. There is a hot water scald potential if the thermostat is set too high. **IMPORTANT:** Adjusting the thermostat past 49°C (120°F) on the thermostat will increase the risk of scald injury in the times shown below. To change the temperature setting:

The white knob on the front of the water heater is the temperature control. When the "OFF" mark is aligned with the indicator light, the water heater is off. Turn the knob clockwise to increase the temperature, and counterclockwise to decrease the temperature. The knob is marked with circular indentations of increasing size. The larger the indentation, the higher the temperature setting (see Figure 8). The temperature settings of this water heater range from 20°C (68°F) at the lowest setting to 66°C (150°F) at the maximum setting. There is a mark on the knob indicating 49°C (120°F) and this is a good initial temperature setting.

⚠ WARNING



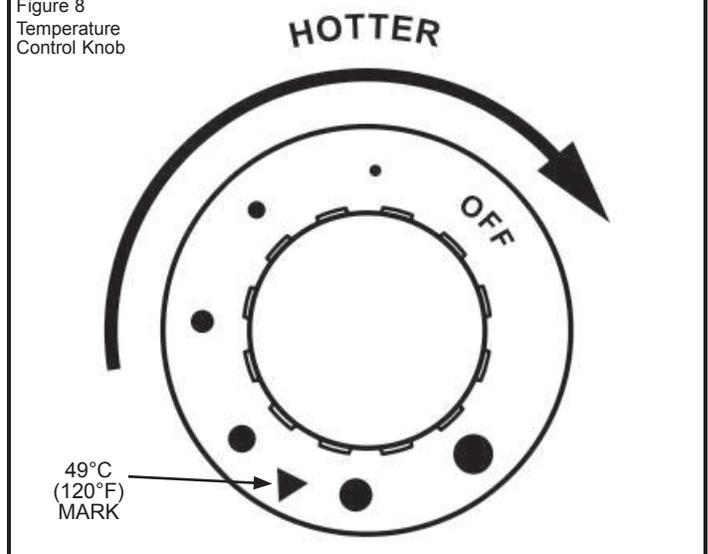
Water temperature over 52°C (125°F) can cause severe burns instantly or death from scalds.

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

Feel water before bathing or showering.

Temperature limiting valves are available.

Figure 8
Temperature Control Knob



Water Temperature °C (°F)	Time for 1st Degree Burn (Less Severe Burns)	Time for Permanent Burns 2nd & 3rd Degree (Most Severe Burns)
44 (110)	(normal shower temp.)	
47 (116)	(pain threshold)	
47 (116)	35 minutes	45 minutes
50 (122)	1 minute	5 minutes
55 (131)	5 seconds	25 seconds
60 (140)	2 seconds	5 seconds
65 (149)	1 second	2 seconds
68 (154)	instantaneous	1 seconds

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

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 thermostat 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

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.

IMPORTANT: Do not remove this rod permanently as it will void any warranties. The parts list includes a special anode that can be ordered if water odour or discoloration occurs.

NOTE: This rod may reduce but not eliminate water odour problems. The water supply system may require special filtration equipment from a water conditioning company to successfully eliminate all water odour problems.

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

The anode rod should be removed from the water heater tank every year for inspection. The following are typical (but not all) signs of a depleted anode rod:

- The majority of the rods diameter is less than 10mm (3/8 in.).
- Significant sections of the support wire (approx. 1/3 or more of the anode rod's length) are visible.

If the anode rod show signs of either or both it should be replaced.

NOTE: Whether reinstalling or replacing the anode rod, check for any leaks and immediately correct if found.

The anode rod in this unit is attached to the element flange. For removal instructions, see "Heating Element Cleaning/Replacement".

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:

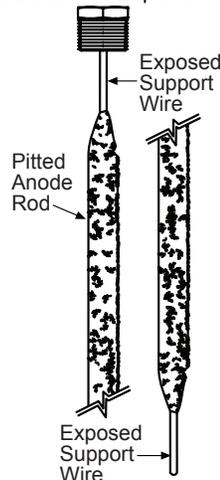
1. Normal expansion and contraction of metal parts during periods of heat-up and cool-down.
2. Sediment buildup in the tank bottom will create varying amounts of noise and may cause premature tank failure. Drain and flush the tank as directed under the "Draining and Flushing" section.

Resetting the High Limit Control

This water heater is equipped with one or more adjustable temperature regulating thermostats and a manual reset high limit control. The following procedures must be performed when resetting the high limit control.

1. Disconnect the electrical power. Do not attempt to reset thermostat with power on.
2. Remove the front panel as described in the "Removing the Front Panel" section.
3. Remove the insulation to expose the reset button.
4. Reset the high limit by pushing in the red button.
5. Replace the insulation so that it completely covers the thermostat and element.
6. Replace the front panel.
7. Reconnect the electrical power and turn on the water heater.

Figure 9:
Anode Rod Depletion



MAINTENANCE OF YOUR WATER HEATER

Temperature and Pressure Relief Valve

⚠ WARNING



Explosion Hazard

If the temperature and pressure relief valve is dripping or leaking, have a qualified person replace it.

Examples of a qualified person include: licensed plumbers, authorized gas company personnel, and authorized service personnel.

Do not plug valve.

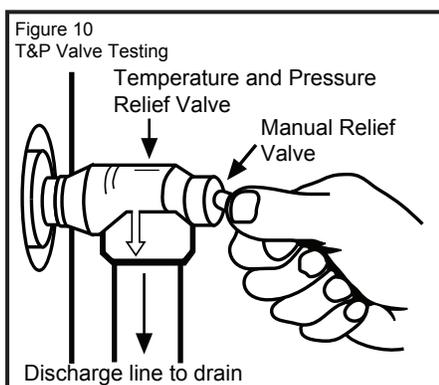
Do not remove valve.

Failure to follow these instructions can result in death or explosion.

Manually operate the temperature and pressure relief valve at least once a year to make sure it is working properly. To prevent water damage, the valve must be properly connected to a discharge line which terminates at an adequate drain.

Standing clear of the outlet (discharged water may be hot), slowly lift and release the lever handle on the temperature and pressure relief valve 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 disconnect the electrical power, close the cold water inlet valve and call a qualified person.



Draining and Flushing

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

1. Disconnect the electrical power.
2. Close the cold water inlet valve and open a hot water faucet.
3. Disconnect water connections. Remove unit from wall. **UNIT WILL BE HEAVY.** Turn unit upside down and drain unit into a suitable drain or receptacle.
4. Follow the instructions in the "Filling the Water Heater" section of this manual.
5. Reconnect the electrical power and turn on the water heater.

Leakage Checkpoints

Read this manual first. Then before checking the water heater make sure the electrical power supply has been turned "OFF" before checking the tank for leakage.

- *1. Condensation and dripping may be seen on pipes if the water temperature is low in humid weather or pipe connections may be leaking.
 2. Small amounts of water from temperature-pressure relief valve may be due to thermal expansion or high water pressure in your area. If the valve is not piped to an open drain the released water could be mistaken for a leaking heater, see "Closed System/Thermal Expansion" section.
 - *3. The temperature-pressure relief valve may be leaking at the tank fitting.
 4. Water on the side of the tank may be condensation due to the panel or insulation not being in place.
 - *5. Water in the water heater bottom or on the floor may be from condensation, loose connections, or the relief valve. **DO NOT** replace the water heater until a full inspection of all possible water sources is made and necessary corrective steps taken. Leakage from other appliances, water lines, or ground seepage should also be checked.
- * To check where threaded portion enters tank, insert cotton swab between jacket opening and fitting. If cotton is wet, follow "Draining and Flushing" instructions and then remove fitting. Use Teflon[®] tape or approved pipe sealant on threads and replace. Then follow "Filling the Water Heater" instructions in the "Installing Your Water Heater" section.

[®]TEFLON is a registered trademark of E.I. Du Pont De Nemours and Company.

Removing the Front Panel

⚠ WARNING



Electric Shock Hazard

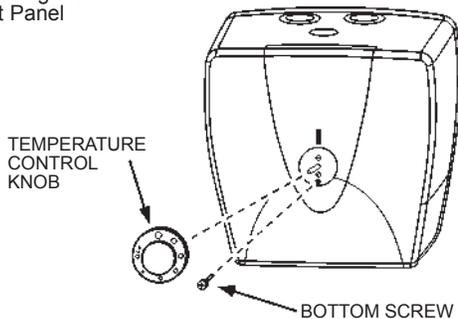
Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Disconnect the electrical power and follow "Draining and Flushing Instructions".
2. Remove the temperature knob by pulling it straight out.
3. Using a Philips screwdriver, unscrew the bottom screw securing the front panel (see Figure 11).
4. Lift up and remove front panel.

Figure 11
Removing the Front Panel

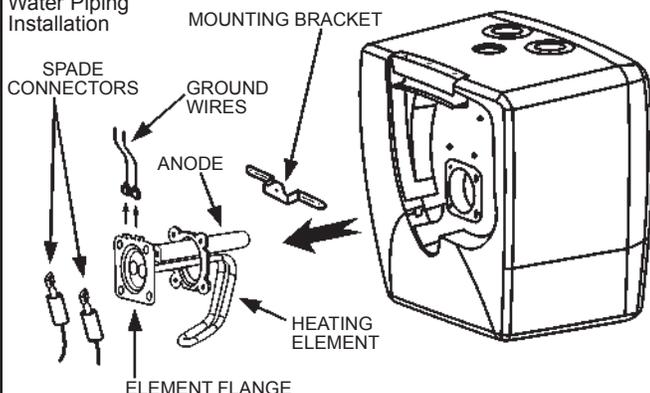


Heating Element Cleaning/ Replacement

To remove the element from the tank in order to clean or replace it:

1. Disconnect the electrical power and follow "Draining and Flushing Instructions".
2. Remove the front panel, see the "Removing the Front Panel" section in this manual. Remove the insulation pad.

Figure 12
Water Piping Installation



3. Remove the two screws securing the ground wires (green wire and green/yellow wire) from the element, taking careful note of the original location of the wires.
4. Remove the two screws from the mounting bracket, (see Figure 12) being careful not to drop the screws into the unit, as they will be difficult to retrieve. Remove bracket and set screws aside.
5. Remove the two spade connectors from the element.
6. Using a 10mm wrench, remove the four nuts around the element flange. Set nuts and lockwashers aside.
7. Lift element up to clear the four mounting bolts, rotate 180° clockwise, and lift out.
8. Discard the old gasket and clean the area around the element opening. Remove any sediment from or around the element opening and inside the tank.
9. If you are cleaning the element you have removed, do so by scraping or soaking in vinegar or a deliming solution.

NOTE: Replacement elements must (1) be the same voltage and (2) no greater wattage than listed on the rating plate on the side of the water heater.

10. A new gasket must be used in all cases to prevent a possible water leak. Place the new element gasket on the mating surface of the element flange.
11. Install the element by reversing the removal procedure being sure that the four bolts fit into the element flange.

NOTE: The element flange must be positioned such that the ground wire connections are located towards the top of the water heater.

12. Replace the four lockwashers and 10mm nuts. Tighten until snug. **DO NOT OVERTIGHTEN.**
13. Place unit back on wall mounting bracket hooks. Reconnect the water inlet and outlet, open the nearest hot water tap and follow "Draining and Flushing Instructions". Never use this water heater unless it is completely full of water. To prevent damage to the tank and heating element, the tank must be filled with water. Water must flow from the hot water faucet before turning "ON" power. The manufacturer will not warrant any elements damaged by failure to follow instructions.
14. Check element for water leaks. If leakage occurs, tighten element or repeat Steps 7 and 8, remove element and reposition gasket. Then repeat Steps 10 through 15.
15. Replace the two spade connectors on element into their original positions.
16. Replace the two ground wires to the element flange (green wire and green/yellow wire)
17. Replace the mounting bracket with the center rise facing outward (see Figure 12).
18. Replace the front panel, lining up the three tabs at the top with the slots in the casing.
19. Replace the retaining screw and the temperature knob.
20. Reconnect the electrical power.

Anode Removal and Replacement

1. Using a 7mm wrench, remove the nut securing the anode.
2. Unscrew and remove anode.
3. Screw in the new anode and secure with the retaining nut.
4. Follow instructions for replacing the element in "Heating Element Cleaning/Replacement."

Thermostat Removal and Replacement

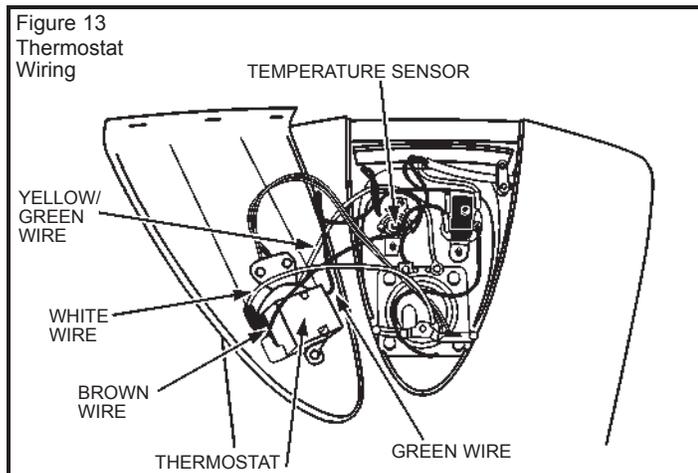
⚠ WARNING	
	Electric Shock Hazard
	Disconnect power before servicing.
	Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.	

Removal

1. Disconnect the electrical power.
2. Remove the front panel, see the "Removing the Front Panel" section in this manual. Remove the insulation pad.
3. Using a 7mm wrench, remove the two nuts securing the temperature sensor.
4. Remove the 3 wires (white, brown, and green/yellow) from the thermostat at the spade connections, carefully taking note of the original location of each wire.
5. Unscrew the 2 screws securing the thermostat to the front panel and remove thermostat.

Replacement

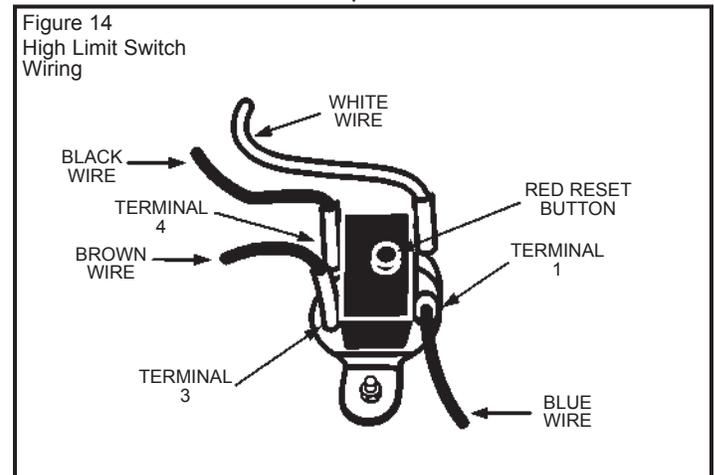
1. Place the new thermostat against the front panel and secure it with the two screws.



2. Reattach the wires at the spade connections, taking care to place them in their original locations. Be sure to push the connector completely onto the spade terminals.
3. Secure the temperature sensor to the tank by tightening the nuts. Be sure the sensor is firmly in contact with the tank surface.
4. Replace the insulation block and the front panel.
5. Reconnect the electrical power.

High Limit Switch Removal and Replacement

1. Disconnect the electrical power.
2. Remove the front panel, see the "Removing the Front Panel" section in this manual. Remove the insulation pad.
3. Remove the four wires connected to the switch, taking care to note the original placement of each wire.
4. Using a 7mm wrench, loosen and remove the nuts securing the high limit switch to the tank.
5. Remove the old switch and position the new switch in place on the tank.
6. Replace and tighten the nuts so the high limit switch is firmly in contact with the tank surface.
7. Replace the four wires, taking care that they are replaced into their original positions.
8. Replace the insulation block and the front panel.
9. Reconnect the electrical power.



Service

If a condition persists or you are uncertain about the operation of the water heater contact a service agency.

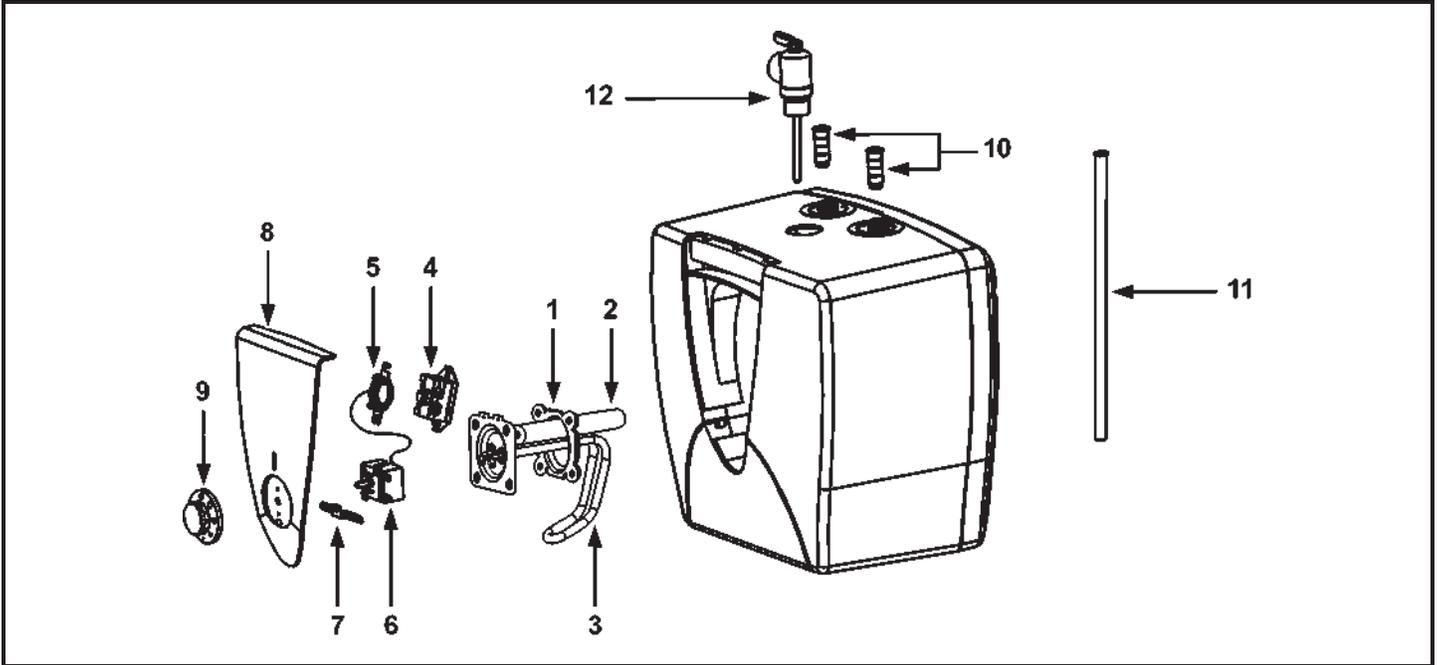
Use this guide to check a "Leaking" water heater. Many suspected "Leakers" are not leaking tanks. Often the source of the water can be found and corrected.

If you are not thoroughly familiar with your water heater and safety practices, contact a qualified installer to check the water heater.

TROUBLESHOOTING CHART

Problem	Possible Cause(s)	Corrective Action
WATER LEAKS (See Leakage Checkpoints)	Improperly sealed, hot or cold supply connection, relief valve or drain valve.	Tighten threaded connections.
	Leakage from other appliances or water lines.	Inspect other appliances near water heater.
NO HOT WATER	No power to heater.	Turn on electrical switch. Check for blown fuses or tripped breaker.
	High Temperature Limit Switch open.	Reset. Check for source of trouble and correct.
	Non-functioning thermostat.	Replace thermostat.
INSUFFICIENT HOT WATER	Non-functioning thermostat.	Replace thermostat.
	Non-functioning element.	Replace element.
	Improper calibration.	Replace thermostat.
	Thermostat set too low.	Set thermostat to desired temperature.
	Sediment or lime in tank.	Drain. Determine if water treatment is needed.
	Heater too small for job.	Install adequate water heater.
	Wrong piping connections.	Correct piping.
	Leaking faucets.	Repair faucets.
	Wasted hot water.	Review and reduce hot water consumption.
	Long runs of exposed pipe.	Insulate piping.
Hot water piping on outside wall.	Insulate piping.	
HIGH OPERATION COSTS	Improper Calibration.	Replace thermostat.
	Thermostat set too high.	Set thermostat to desired setting.
	Sediment or lime in tank.	Drain. Flush-Provide water treatment if needed.
	Heater too small for job.	Install adequate heater.
	Wrong piping connections.	Correct piping.
	Leaking faucets.	Repair faucets.
	Wasted hot water.	Review and reduce hot water consumption.
	Long runs of exposed piping.	Insulate piping.
Hot water piping in exposed wall.	Insulate piping.	
SLOW HOT WATER RECOVERY	Non-functioning element.	Replace element.
DRIP FROM RELIEF VALVE	Excessive water pressure.	Use Pressure Reducing Valve and Pressure Relief Valve.
	Closed system.	See "Closed System/Thermal Expansion" section.
THERMOSTAT DOES NOT SHUT OFF	Non-functioning thermostats.	Replace thermostats.
	Improper calibration.	Replace thermostats.
WATER ODOUR	Sulfides in the water.	See "Operational Conditions" section.
WATER HEATER SOUNDS	Scale accumulation on element.	Contact dealer to clean or replace element.

PARTS ILLUSTRATION



REPAIR PARTS

Repair parts may be ordered through your plumber, local distributor or home improvement center. When ordering repair parts always give the following information:

1. Model, serial and catalogue number
2. Item number
3. Parts description

PARTS LIST

ITEM NO.	PARTS DESCRIPTION
1	ELEMENT GASKET
2	ANODE ROD
3	ELEMENT
4	HIGH LIMIT
5	TEMPERATURE SENSOR
6	THERMOSTAT
7	FRONT PANEL MOUNTING BRACKET
8	FRONT PANEL
9	TEMPERATURE SETTING KNOB
10	NIPPLE W/ HEAT TRAP
11	DIP TUBE
12	TEMPERATURE & PRESSURE RELIEF VALVE

~ Certificate of Warranty ~

See Rating Label Serial Number prefix for Warranty Code. Reduced warranty period applies to Newfoundland.

Warranty Code:	P	R	S	T	U	V	W	Y
Standard Warranty Years:	3	5	6	7	8	9	10	12
Reduced Warranty Years:	2	3	3	5	5	5	5	7

For its GSW and John Wood water heaters and storage boosters (“Unit”), GSW Water Heating (“GSW”) warrants that, upon receipt of a properly verified Warranty claim within the Warranty Period, it will, at its election, repair or replace: units which leak or parts which are defective in material or workmanship, subject to the terms and conditions set forth in this certificate. GSW will not assume any expense or liability for unauthorized returns, nor repairs made by a person who has not been authorized by GSW or one of its authorized dealers. GSW Units/parts must be replaced with GSW or John Wood products to be eligible for Warranty. This Warranty is available to the original owner of a Unit installed within the boundaries of continental United States, of Canada, or their territories. **Consumers must retain point-of-sale proof of purchase to validate warranty entitlement.** This Warranty does not cover components not manufactured by GSW, such as oil burners, which carry the warranty given by the manufacturer thereof, copy of which warranty GSW will make available, to the extent supplied by the manufacturer, without recourse to GSW.

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 GSW 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 FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, INSTALLATION, OPERATION, REPAIR OR REPLACEMENT. GSW EXPRESSLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES. IN NO EVENT WILL GSW’S LIABILITIES EXCEED THE COST OF THE DEFECTIVE PART(S) OR UNIT. GSW WILL NOT PAY FOR ANY TRANSPORTATION, LABOUR, INSTALLATION, OR OTHER INCIDENTAL COSTS ASSOCIATED WITH THE REPAIR OR REPLACEMENT OF A DEFECTIVE PART OR UNIT.

This warranty and GSW’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 GSW.

LIABILITY OF GSW COVERED BY THIS WARRANTY IS CONDITIONAL UPON THE FOLLOWING:

1. The Unit shall be installed in accordance with all manufacturers’ instructions, all applicable equipment and building codes, ordinances and regulations (hereinafter referred to as the “standards”).
2. 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. GSW 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.
3. The Unit shall not be installed where it will be exposed to adverse or unusual environmental or corrosive conditions. No warranty extends, for example, and without limitation of the foregoing, to Units exposed to: salts; chemicals; exhausts; pollutants or contaminants. Further, no warranty extends to Units affected by fire, freezing or flood, “Acts of God”, or any other contingency beyond the control of GSW.
4. The Unit shall be equipped with a properly operating temperature and pressure relief valve as specified by GSW and applicable standards. The Unit shall be operated at temperatures not exceeding the maximum setting of the thermostat and/or high limit control provided by GSW, and at water pressures not exceeding the pressure reading stated on the Unit.
5. The Unit must be carefully inspected, maintained, and operated in accordance with the manufacturer’s instructions. No warranty extends, for example, and without limitation of the foregoing, to any Unit operated: without the tank being completely filled with water; without an operating anode; with levels of sediment or lime precipitate which cause failure; in connection to any attachment(s), energy saving device(s), or other means of heating, except as approved by GSW for the Unit; other than with potable water without any additives such as salts, chlorine or chemicals, except those added for the sole purpose of rendering the water fit for domestic use.
6. All repairs must be made by a competent and qualified person who is certified, by GSW or one of its authorized dealers, to work on the Unit, using factory approved replacement parts, and the Unit shall not be otherwise modified, altered or improperly repaired.
7. A properly documented claim shall be received by GSW or one of its authorized dealers, or point of purchase, within the following Warranty Period, except as provided otherwise below*:
 - a) for any defective part, within one (1) year; or
 - b) for any Unit that develops leaks in the inner tank due to rust, corrosion or other chemical reactions caused by the potable domestic water supplied to your home, within the period of time shown in table at the top of this page.

* Residential units installed and used in a commercial application carry a warranty period of one (1) year from date of installation; and, Any repair or replacement of any part, tank, or Unit under this Warranty will not extend the Warranty Period beyond that calculated from the date of first installation of the original Unit. The date of first installation will be deemed to be the later of the date indicated by the Unit’s serial number, or if supplied with the Warranty claim, the sales receipt, or installer’s receipt.
8. A claim under this Warranty must include the model and serial number of the Unit, proof of date on which the Unit was first installed, and the identity of the defective part(s) for which a claim is being made and be submitted within 15 days following discovery of the defect(s), by personal delivery to a GSW authorized dealer, point of purchase, or GSW itself at:

GSW Water Heating
599 Hill Street West
Fergus, ON Canada N1M 2X1

Should you have questions, please call our Technical Support Line at **1-888-479-8324**.
9. If requested by GSW, information relating to the purchase, transportation, operation and installation of the Unit must be supplied. The defective part(s) or Unit, with all components properly and securely packed, shall be returned transportation pre-paid, to the address designated by GSW in the written request. All claims are subject to validation by GSW.