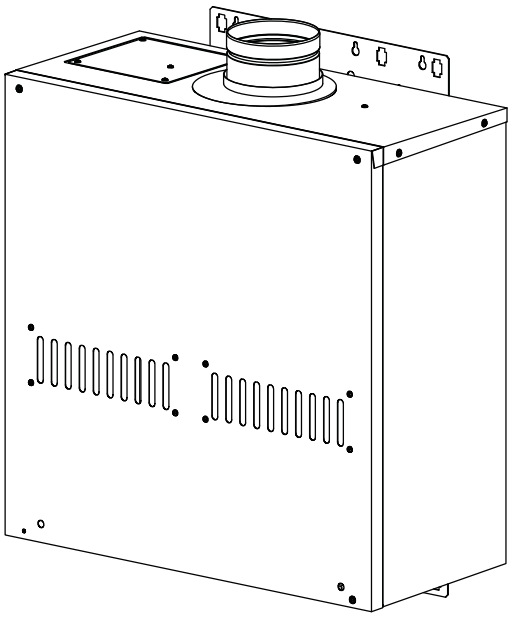
910 / 910 ASME
On-Demand Water Heater
Installation Manual and Owner's Guide



Gas Tankless Water Heater

910 / 910 ASME Models

*Suitable for potable water heating and space-heating**

** Please refer to local codes for space-heating compliance.*

FEATURING

- ENDLESS HOT WATER
- ON-DEMAND USAGE
- COMPACT, SPACE SAVING
- ENERGY CONSERVATION
- COMPUTERIZED SAFETY
- NO PILOT LIGHT
- EASY-LINK SYSTEM

WARNING

This product must be installed and serviced by a licensed plumber, a licensed gas fitter, or a professional service technician. Improper installation and/or operation, or installation by an unqualified person, will void the warranty

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- WHAT TO DO IF YOU SMELL GAS
  - Do not try to light any appliance.
  - Do not touch any 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.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

WARNING

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

If you have any questions, please call or write to:
GSW Water Heating
599 Hill Street West
Fergus, ON Canada N1M 2X1
Toll Free: 1-888-479-8324

320579-000
REV. 00 (11-04)

Table of Contents

SPECIFICATIONS

Model		910	
Natural Gas Input (Operating Range)		Min: 15,000 BTU/h Max: 380,000 BTU/h	
Propane Input (Operating Range)		Min: 15,000 BTU/h Max: 380,000 BTU/h	
Gas Connection		1” NPT	
Water Connections		1” NPT	
Water Pressure		15 - 150 psi*	
Natural Gas Inlet Pressure		Min.: 5” WC Max.: 10.5” WC	
Propane Inlet Pressure		Min.: 8” WC Max:. 14” WC	
Manifold Pressure		Natural: 2.8” WC Propane: 3.8” WC	
Weight		50.8Kg (112 lbs.)	
Dimensions		H 643mm (25.3 in.) × W 630mm (24.8 in.) × D 300mm (11.8 in.)	
Ignition		Electric Ignition	
Electric	Supply	120 VAC / 60 Hz	
	Consumption	Operation	178 W (1.48A)
		Standby	16 W (0.13A)
		Freeze-Protection	271 W (2.26A)

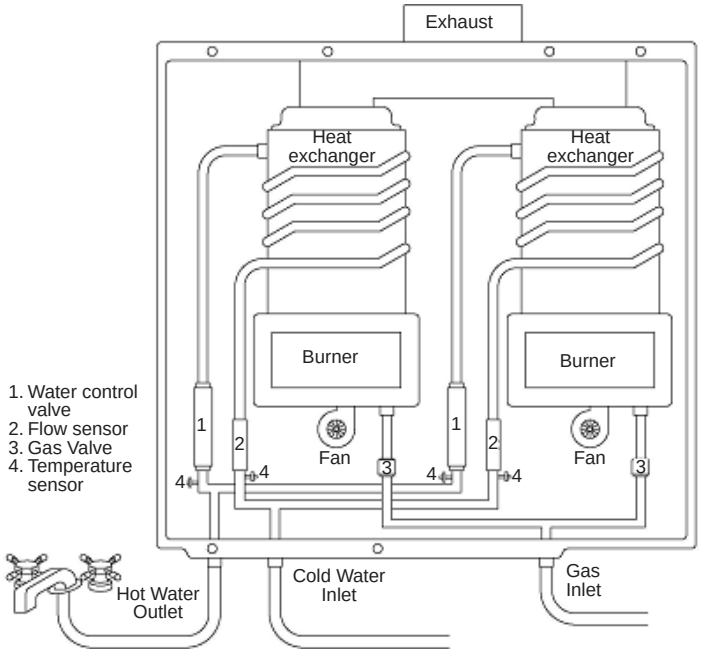
*40 psi or above is recommended for maximum flow

NOTE

* All references to the 910 also refer to the 910 ASME model
* Check the rating plate to ensure this product matches your specifications.
* **The manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.**

INTRODUCTION

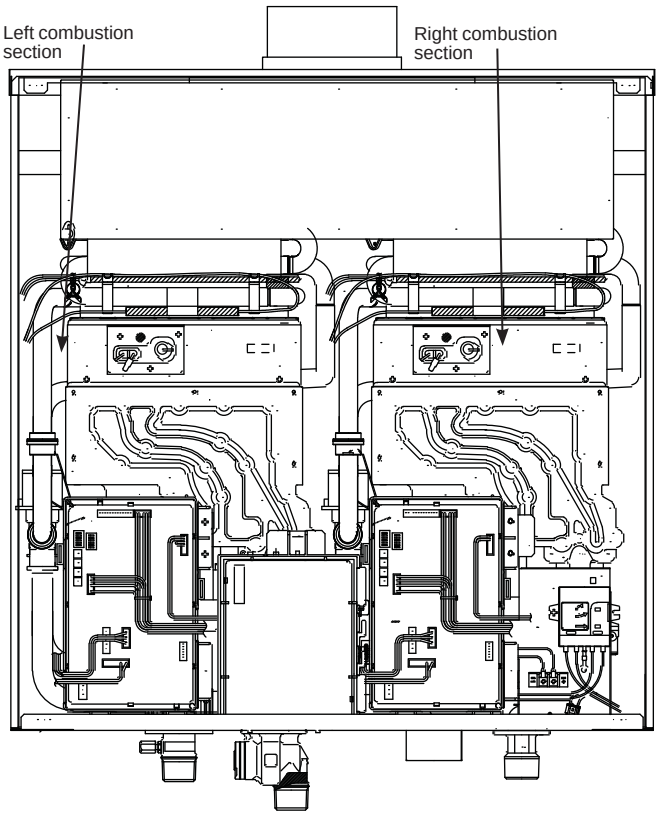
- This manual provides information necessary for the installation, operation, and maintenance of the 910 water heater.
- The model description is listed on the rating plate which is attached to the front cover of the water heater.
- Please read all installation instructions completely before installing this product.
- If you have any problems or questions regarding this equipment, consult with the manufacturer or its local representative.
- The 910 is an on-demand, tankless water heater designed to efficiently supply endless hot water for your needs.
- The 910 has two heat exchangers. The primary and secondary heat exchangers alternate roles, extending the life of the 910 (see pg. 4).
- The principle behind the 910 Water Heater is simple:



* This diagram illustrates tankless water heater design concepts only and is not accurate to the 910 physical description.

1. A hot water tap is turned on.
2. Water enters the heater.
3. The water flow sensor detects the water flow.
4. The computer automatically ignites the burner.
5. Water circulates through the heat exchanger and then gets hot.
6. The computer will modulate the gas supply valve and water flow to produce the right amount of hot water at the correct temperature.
7. When the tap is turned off, the unit shuts down.

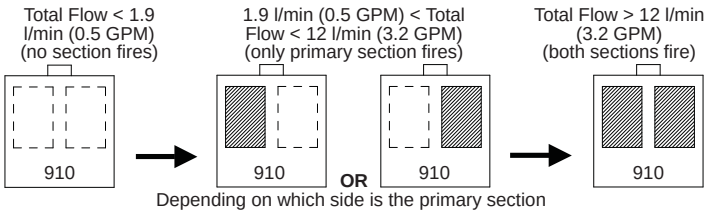
Combustion Sections Within The 910



The 910 contains two combustion sections. The section that turns on first is whichever section the 910 decides is the primary section. The moment at which the secondary section fires will depend on the total flow rate and set temperature of the water heater:

Flow rate at which the secondary section fires in l/min (GPM (US))	Set temperature of the 910 in °C (°F)
12 (3.2)	38-49 (100-120)
11 (2.9)	52, 54 (125,130)
9.8 (2.6)	60 (140)
9 (2.4)	63, 65.5 (145,150)
8 (2.1)	68-85 (155-185)

Example:
If the set temperature is 49°C (120ºF):
The section(s) in operation is indicated by the black square(s).*



* The primary and secondary section will reverse roles every 100 firing cycles or every 12 hours of unit operation.

SAFETY GUIDELINES

DANGER

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

WARNING

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

CAUTION

Indicates an imminently hazardous situation which, if not avoided, could result in minor or moderate injury.

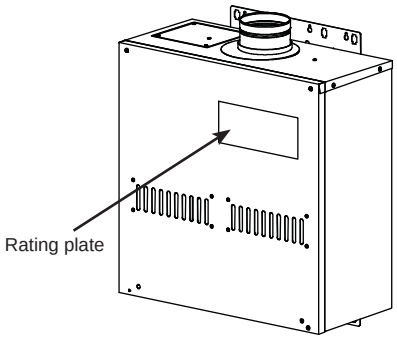
WARNING

- Installation and service must be performed by a qualified installer (for example, a licensed plumber or gas fitter), otherwise the warranty by the manufacturer will be void.
- The installer (licensed professional) is responsible for the correct installation of your water heater and for compliance with all national, state/provincial, and local codes.

PLEASE READ THIS MANUAL CAREFULLY AND FOLLOW ALL DIRECTIONS.

General

1. Follow all local codes, or in the absence of local codes, follow the most recent edition of **CSA B149.1 Natural Gas and Propane Installation Code**.
2. Properly ground the unit in accordance with all local codes or in the absence of local codes, with **CSA standard C22.1 Canada Electrical Code Part 1**.
3. Carefully plan where you intend to install your 910 Water Heater. Please ensure:
   - Your water heater will have enough combustible air and proper ventilation.
   - Locate your heater where water leakage will not damage surrounding areas (refer to pg. 5).
4. Check the rating plate for the correct **GAS TYPE, GAS PRESSURE, WATER PRESSURE and ELECTRIC RATING**.
   * If this unit does not match your requirements, do not install and consult with the manufacturer.
5. If any problem should occur, turn off all hot water taps and turn off the gas. Then call a trained technician or the Gas Company or the manufacturer.



WARNING

- Water temperatures over 52°C (125°F) can cause severe burns instantly or death from scalding. The water temperature is set at 49ºC (120ºF) from the factory to minimize any scalding risk. Before bathing or showering always check the water temperature.
- Do not store or use gasoline or other flammables, vapors, or liquids in the vicinity of this appliance.
- Do not reverse the water and/or gas connections as this will damage the gas valves and can cause severe injury or death. Follow the diagram on pg. 12 when installing your water heater:
- Do not use this appliance if any part has been in contact with or been immersed in water. Immediately call a licensed plumber, a licensed gas fitter, or a professional service technician to inspect and/or service the unit if necessary.
- Do not disconnect the electrical supply if the ambient temperature will drop below freezing. The Freeze Prevention System only works if the unit has electrical power. The warranty will not be covered if the heat exchanger is damaged due to freezing. Refer to the section on the Freeze Protection System on pg. 20 for more information.

INSTALLATION

All gas water heaters require careful and correct installation to ensure safe and efficient operation. This manual must be followed exactly. Read the “Safety Guidelines” section at the beginning of this manual.

CAUTION

- The warranty will not cover damage caused by water quality. Water hardness that leads to scale formation and/or corrosion may affect/damage the water heater. Hard water scaling and/or corrosion must be avoided or controlled by proper water treatment.
- The manufacturer recommends using the direct-vent kit, when the water heater is installed in a beauty salon. Some chemicals used in a beauty salon may affect the flame sensor. Water heater may not work properly.
- Although the 910 is designed to operate with minimal sound, the manufacturer does not recommend installing the unit on a wall adjacent to a bedroom, or a room that is intended for quiet study or meditation, etc.
- Locate your heater close to a drain where water leakage will not do damage to surrounding areas. As with any water heating appliance, the potential for leakage at some time in the life of the product does exist. The manufacturer will not be responsible for any water damage that may occur. If you install a drain pan under the unit, ensure that it will not restrict the combustion air flow.
- The 910 weighs 50.8Kg (112 lbs.). Ensure that any and all support structures (whether it is installed on a wall, on a support stand, etc.) have enough strength to support and hold the 910.
- When handling the 910, do not place your hands inside the flue collar. Injury may result.
- The manufacturer does not recommend installing unit in an attic due to safety issues. If you install your 910 in an attic:
- Make sure your unit will have enough combustion air and proper ventilation.
- Keep the area around your water heater clean. When dust collects on the flame sensor, the water heater will shut down on errors.
- If the above conditions cannot be met, use the direct-vent conversion kit TM-DV50.
- Locate unit for easy access for service and maintenance.
- A drain pan is required to be installed under the water heater in case of leaks.

WARNING

General

1. The manifold gas pressure is preset at the factory. It is computer controlled and should not need adjustment.
2. Maintain proper space for servicing. Install the unit so that it can be connected or removed easily. Refer to pg. 6 for proper clearances.
3. The electrical connection requires a means of disconnection, to terminate power to the water heater for servicing and safety purposes.
4. If you will be installing the unit in a contaminated area with a high level of dust, sand, flour, aerosols or other contaminants/chemicals, they can become airborne and enter and build up within the fan and burner causing damage to the unit. In those environments (e.g. residential or commercial laundry facilities, hair salons, pet salons, chemical plants etc.), please purchase the optional direct-vent conversion kit and convert the 910 to a sealed combustion unit. Direct venting allows the 910 to draw fresh intake air from the outside. The warranty will not cover damage caused to the unit due to installation in a contaminated environment that has not been converted using the direct-vent conversion kit.
5. Particles from flour, aerosols, and other contaminants may clog the air vent or reduce the functions of the rotating fan and cause improper burning of the gas. Regularly ensure that the area around the unit is dust- or debris-free; regular maintenance is recommended for these types of environment.
6. Do not install the unit where the exhaust vent is pointing into any opening in a building or where the noise may disturb your neighbors. Make sure the vent termination meets the required distance by local code from any doorway or opening to prevent exhaust from entering a building (refer to pg. 10).

Included Accessories

Check that the installation manual, the communication cable, and the product registration card are included with the unit.

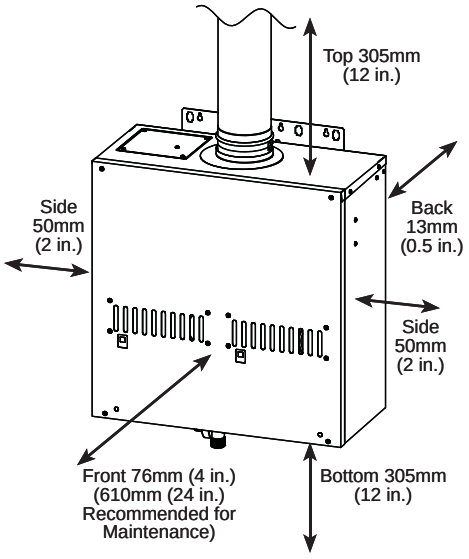
Items		
Manual		Qty: 1
Communication Cable (Gray)		Qty: 1
Product Registration Card		Qty: 1

Warning For Installations

FOR YOUR SAFETY, READ BEFORE INSTALLATION	
Do not install the heater where water, debris or flammable vapors may get into the flue terminal. This may cause damage to the heater and void the warranty.	Do not have the vent terminal pointing toward any opening into a building. Do not locate your heater in a pit or location where gas and water can accumulate.
Do not install next to a dryer or any source of airborne debris that can be trapped inside the combustion chamber, unless the system is direct vented.	

910 Model Installation

1. Follow all local codes, or in the absence of local codes, follow the most recent edition of **CSA B149.1 Natural Gas and Propane Installation Code**.
2. When installed indoors, the 910 water heater shall be located in an area to maintain the following minimum clearances around the unit:



Maintain Clearances.

Combustion Air Supply

The water heater location must provide enough air for proper combustion and ventilation of the surrounding area. See the latest edition of **ANSI Standard Z223.1** or any applicable local codes. In general, these requirements specify that if the unit is installed in a confined space, there must be a permanent air supply opening.

Minimum Recommended Air Supply Opening Size For Water Heater

Water heater size	When drawing make-up air from outside the building	When drawing make-up air from inside the building (from other rooms within)
MAX 380,000 BTU/h	164cm^2 (25.3 in^2)	2452cm^2 (380 in^2)
	When combustion air is supplied from outside the building, an opening communicating directly with the outside should have a minimum free area of 6.5cm^2 (1 in^2) per 15,000 BTUH input of the total input rating of water heater in the enclosed area	When combustion air is supplied from inside the building, an opening communicating with the rest of the dwelling should have a minimum free area of 6.5cm^2 (1 in^2) per 1,000 BTUH input of the total input rating of water heater in the enclosed area. This opening should never be less than 1284cm^2 (199 in^2)

Combustible Air Supplied By Mechanical Fan Or Make Up Air Device

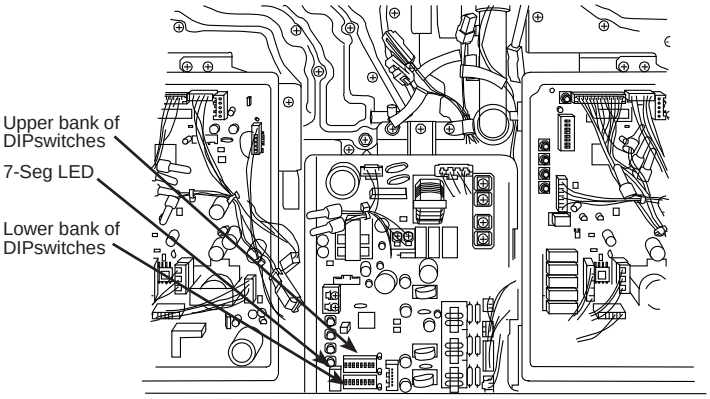
The 910 water heater is equipped with a combustible air sensor that will shut off the unit when inadequate combustible air supply to unit is detected.

- If a mechanical fan or make up air device is used to supply air to the water heater or utility room, the installer should make sure it does not create drafts which could cause nuisance shutdowns.
- If a blower is necessary to provide adequate combustion air to the water heater, the blower and water heater must be set up so that the water heater cannot fire unless the blower is operating. Possible methods include the use of the 910 internal fan control port or the use of external flow sensors/transmitters and relays.

Direct Intake Vent System

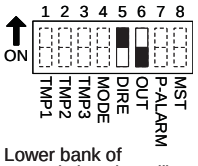
This 910 water heater may be converted to a direct-vent (sealed combustion) appliance by installing an adapter (Part No. TM-DV50) which will bring all required combustible air from outside the building. When installing the direct-vent conversion kit, please follow all instructions included with the kit.

- The 910 must be installed in a location where the proper amount of combustible air will be available to it at all times without obstructions.
- If used as a direct-vent appliance, the 910 requires a 127mm (5 in.) combustible air supply pipe. The intake pipe must be sealed airtight.
- Air supply pipe can be made of ABS, PVC, galvanized steel, corrugated aluminum, corrugated stainless steel or Category III stainless steel.
- Change the DIPswitch settings to the direct-vent system (see diagram below).
- Sidewall venting is recommended for the direct-vent system.
- The manufacturer recommends running the exhaust vent and the intake pipe parallel.



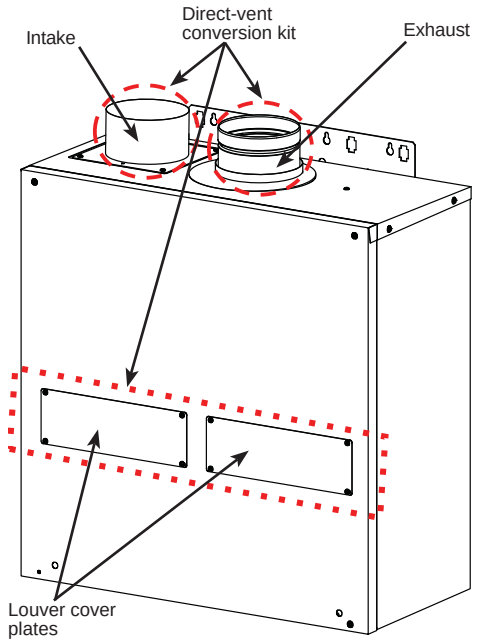
Make sure power to the unit is turned OFF before changing the DIPswitch settings.

The dark square is the direction the DIPswitch should be set to.



Lower bank of DIPswitches (Detail)

Direct-Vent Conversion Kit



Venting Instructions

WARNING

Improper venting of this appliance can result in excessive levels of carbon monoxide which can result in severe personal injury or death.

This water heater must be vented in accordance with the section “Venting of Equipment" of the latest edition of Section 7 of **CSA B149.1 Natural Gas and Propane Installation Code** and all applicable local building codes

.

Exhaust Vent

This is a Category III appliance and must be vented accordingly. The vent system must be sealed air tight. All seams and joints without gaskets must be sealed with high heat resistant silicone sealant or UL listed aluminum adhesive tape having a minimum temperature rating of 177°C (350°F). For best results, a vent system should be as short and straight as possible.

1. This water heater is a Category III appliance and must be vented accordingly with any 127mm (5 in.) vent approved for use with Category III or Special BH type gas vent.
2. The following are UL listed manufacturers: ProTech Systems Inc. (FasNSeal), Flex-L Inc., Z-Flex Inc. (Z-Vent III), Metal-Fab Inc., and Heat-Fab Inc. (Saf-T Vent).
3. Follow the vent pipe manufacturer’s instructions when installing the vent pipe.
4. Do not common vent this appliance with any other vented appliance (Do not terminate vent into a chimney. If the vent must go through the chimney, the vent must run all the way through the chimney with Category III approved or Special BH vent pipe).
5. The maximum length of exhaust vent piping must not exceed 15.24m (50 ft.) deducting 1.5m (5 ft.) for each elbow used in the venting system. Do not use more than 5 elbows.

Diameter	Max. No. of Elbow	Max. Vertical or Horizontal run in Length
127mm (5 in.)	5	15.24m (50 ft.)

*For each elbow added, deduct 5 ft. from max. Vent length.

No. of Elbows	Max. Vertical or Horizontal Length
0	15.24m (50 ft.)
1	13.7m (45 ft.)
2	12.2m (40 ft.)
5	7.6m (25 ft.)

6. When the horizontal vent run exceeds 1.5m (5 ft.), support the vent run at 915mm (3 ft.) intervals with overhead hangars.
7. The manufacturer will not be responsible for any damage to the water heater caused by condensation from the vent. For vent runs longer than 1.5m (5 ft.), installation of a condensate drain is recommended. Install the condensate drain as close to the water heater as possible. For horizontal runs, slope the vent run back toward the water heater where the condensate drain is installed at a rate of 6.4mm (1/4 in.) per 305mm (1 ft.). Refer to pg. 9 for the diagrams.

When installing the vent system, all applicable national and local codes must be followed. If you install thimbles, fire stops or other protective devices and they penetrate any combustible or noncombustible construction, be sure to follow all applicable national and local codes.

Vent Termination

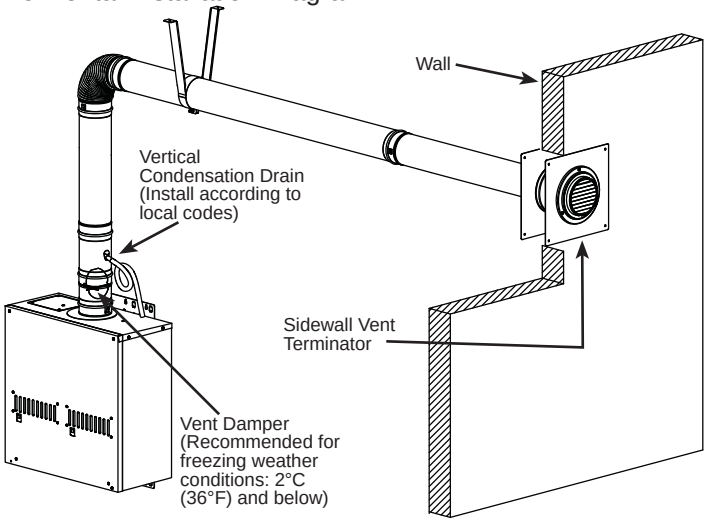
WARNING Improper installation can cause nausea or asphyxiation, severe injury or death from carbon monoxide and flue gases poisoning. Improper installation will void product warranty.

- The vent terminator provides a means of installing vent pipe through the building wall and must be located in accordance with **CSA-B149.1** and local applicable codes.
- A proper sidewall vent terminator is recommended when the water heater is vented through a sidewall. If the 910 is converted to a direct-vent unit, a proper sidewall direct-vent terminator, such as a concentric style terminator, is to be used.

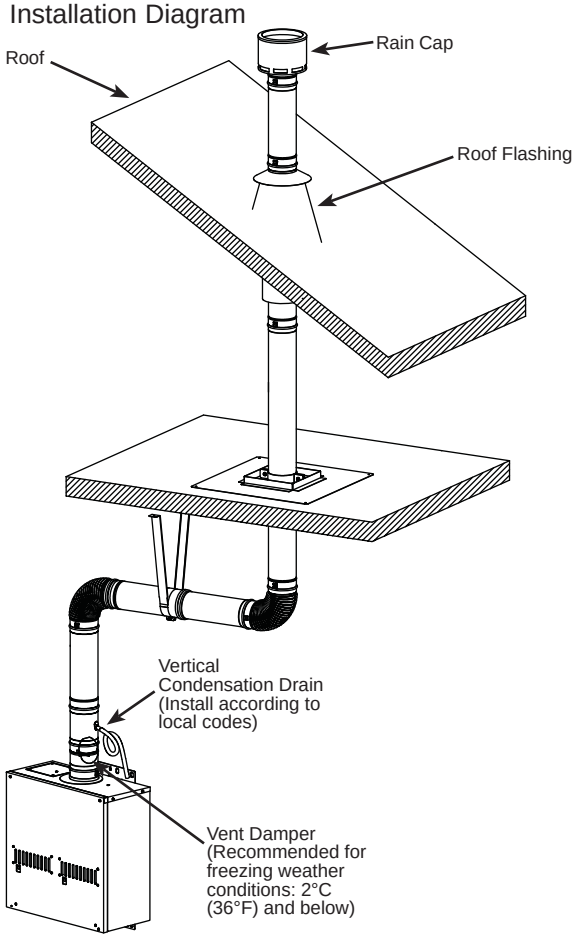
General rules for venting the 910 water heater are:

1. Place the water heater as close as possible to the vent terminator.
2. The vent collar of the water heater must be fastened directly to an unobstructed vent pipe.
3. Do not weld the vent pipe to the water heater collar.
4. Do not cut the vent collar of the unit.
5. The weight of the vent stack must not rest on the water heater.
6. The vent must be easily removable from the top of the water heater for normal service and inspection of the unit.
7. The water heater vent must not be connected to any other gas appliance or vent stack.
8. Avoid locating the water heater vent terminator near any air intake devices. These fans can pick up the exhaust flue products from the gas appliance and return them to the building. This can create a health hazard.
9. Avoid using an oversized vent pipe or using extremely long runs of the pipe.
10. Locate the vent terminator so that it cannot be blocked by any debris, at any time. Most codes require that the terminator be at least 305mm (12 in.) above grade, but the installer may determine if it should be higher depending on the job site condition and applicable codes.
11. For rooftop venting, a rain cap must be installed.

Horizontal Installation Diagram

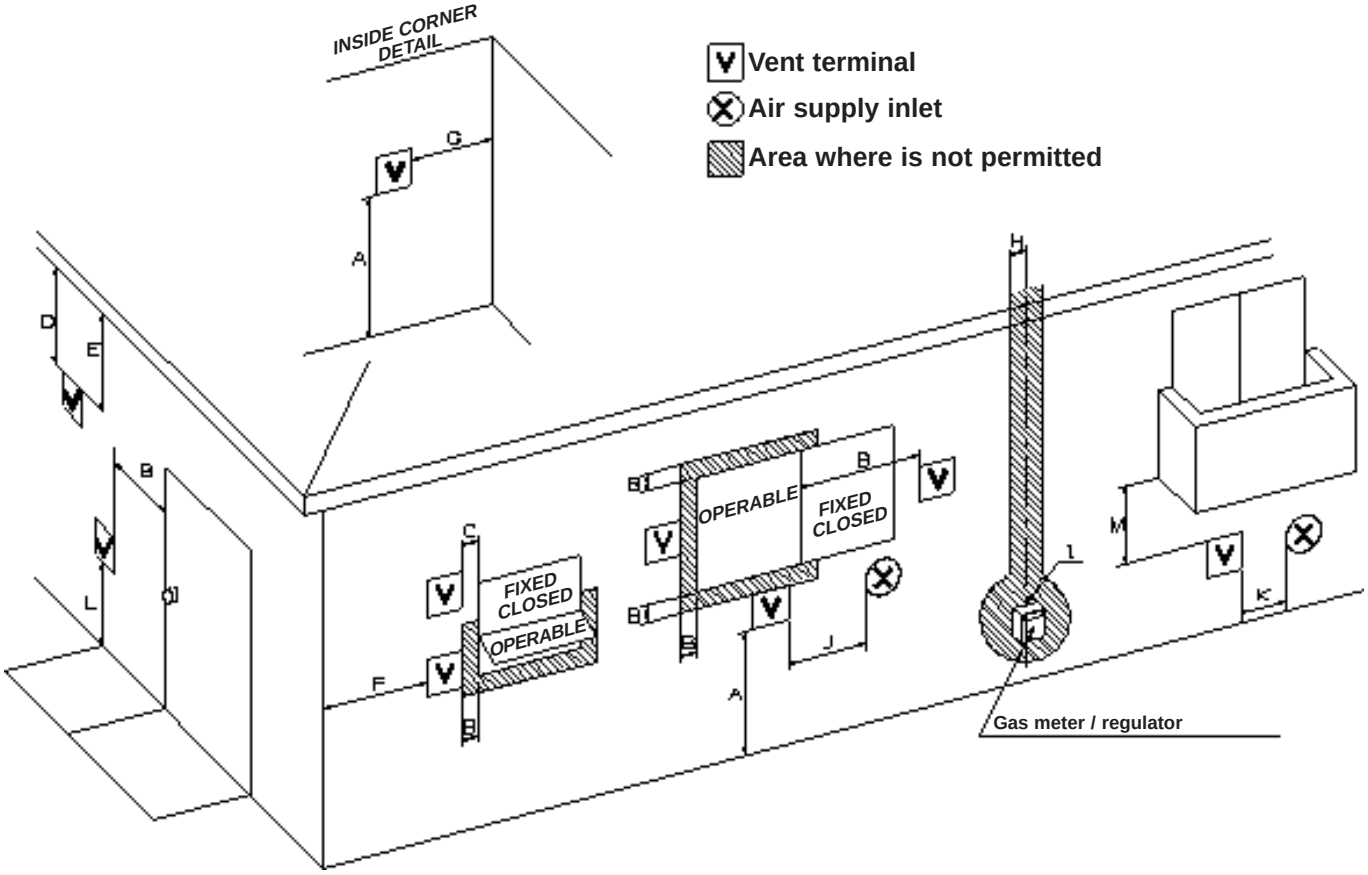


Vertical Installation Diagram



- Regarding the clearance from the terminator to the air inlet or opening, refer to the next page.
- Install a condensation drain in the venting.
- Follow the vent system to vent manufacturer's instruction and local code.
- Do not common vent or connect any vent from other appliances to the 910 vent.
- Use 127mm (5 in.) category III approved or Special BH, single or double wall stainless steel vent pipe.

Vent Clearances



		Canada	
		Direct vent and other than Direct Vent	
A	Clearance above grade, veranda, porch, deck, or balcony.	1 foot	30.5cm
B	Clearance to window or door that may be opened	3 feet	91.5cm
C	Clearance to permanently closed window	*	
D	Vertical clearance to ventilated soffit located above the vent terminator within a horizontal distance of 2 feet (61cm) from the center line of the terminator.	*	
E	Clearance to unventilated soffit	*	
F	Clearance to outside corner	*	
G	Clearance to inside corner	*	
H	Clearance to each side of center line extended above meter/regulator assembly	3 feet	91.5cm
I	Clearance to service regulator vent outlet.	3 feet	91.5cm
J	Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other application	3 feet	91.5cm
K	Clearance to mechanical air supply inlet.	6 feet	1.8m
L	Clearance above paved sidewalk or paved driveway located on public property.	7 feet	2.1m
M	Clearance under veranda, porch deck, or balcony.	1 foot	30.5cm

* For clearances not specified in **CSA-B149.1**, please use clearances in accordance with local installation codes and the requirement of the gas supplier.

Gas Supply And Gas Pipe Sizing

TO TURN OFF GAS TO APPLIANCE

1. Turn off all electric power to the water heater if service is to be performed.
2. Turn the manual gas valve located on the outside of the unit clockwise 3 to the off position.

WARNING

Conversion of this unit from natural gas to propane or vise versa will void all warranty. Contact your local distributor to get the correct unit for your gas type. The manufacturer is not liable for any property and/or personal damage resulting from gas conversions.

*Check that the type of gas matches the rating plate first.

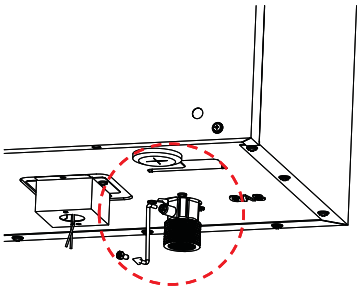
1. The minimum and maximum inlet gas pressures are:

Gas type	Inlet gas pressure
Natural Gas	Min.: 5.0" WC – Max.: 10.5" WC
Propane Gas	Min.: 8.0" WC – Max.: 14.0" WC

2. Gas pressure below this specified range for the 910 and/or insufficient gas volume will adversely affect performance. These pressures are measured when the 910 is in full operation.
3. Inlet gas pressure must not exceed the above maximum values; gas pressure above the specified range will cause dangerous operating conditions and damage to the unit. Ensure that any and all gas regulators used are operating properly and are providing gas pressures within the specified range shown above.
4. Until testing of the main gas line supply pressure is completed, ensure the gas line to the 910 is disconnected to avoid any damage to the water heater.

Measuring Inlet Gas Pressure

The 910 cannot perform properly without sufficient inlet gas pressure. Below are instructions on how to check the inlet gas pressure. THIS IS ONLY TO BE DONE BY A LICENSED PROFESSIONAL.



1. Shut off the manual gas valve on the supply gas line.
2. Open a faucet. The unit should turn on and the gas in the gas pipe line should purge. Leave the faucet on to keep the unit running until the unit shut down due to lack of gas supply. Then shut the faucet off.
3. Remove the screw for the pressure port located on the gas inlet of the 910 shown in the diagram to the right.
4. Connect the manometer to the pressure port.
5. Re-open the manual gas valve. Check to see that there are no gas leaks.
6. Open some of the fixtures that use the highest flow rate to turn on the 910.
7. Check the inlet gas pressure. When the 910 is on a maximum burn, the manometer should read from 5.0” to 10.5” WC for Natural gas, from 8.0” to 14.0” WC for Liquid Propane.

Size the gas pipe appropriately to supply the necessary volume of gas required for the 910 models (380,000 BTU/h for both Natural Gas and Liquid Propane) using CSA B149.1 or local codes. Otherwise, flow capabilities and output temperatures will be limited.

1. Install a manual gas shut-off valve between the 910 and the gas supply line.
2. When the gas connections are completed, it is necessary to perform a gas leak test either by applying soapy water to all gas fittings and observing for bubbles or by using a gas leak detection device.
3. Always purge the gas line of any debris and/or water before connecting to the gas inlet.

Water Connections

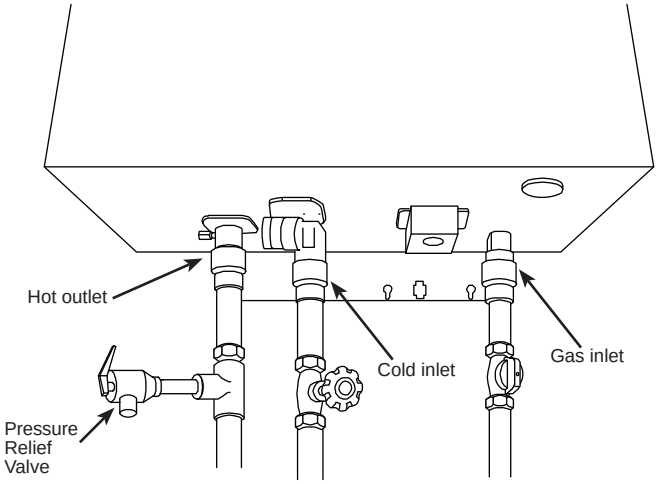
FOR YOUR SAFETY, READ BEFORE OPERATING

Do not use this water heater if any part has been submersed under water. Immediately call a licensed professional to inspect the water heater and to replace any damaged parts.

1. All pipes, pipe fittings, valves and other components, including soldering materials, must be suitable for potable water systems.
2. A manual shut off valve must be installed on the cold water inlet to the water heater between the main water supply line and the 910.
3. In addition, a manual shut off valve is also recommended on the hot water outlet of the unit. If the 910 is installed within, or subjected to, a closed loop water system, a thermal expansion tank must be installed.
4. Before installing the water heater, flush the water line to remove all debris, and after installation is complete, purge the air from the line. Failure to do so may cause damage to the heater.
5. There is a wire mesh filter within the cold inlet to trap debris from entering your heater. This will need to be cleaned periodically to maintain optimum flow.

CAUTION

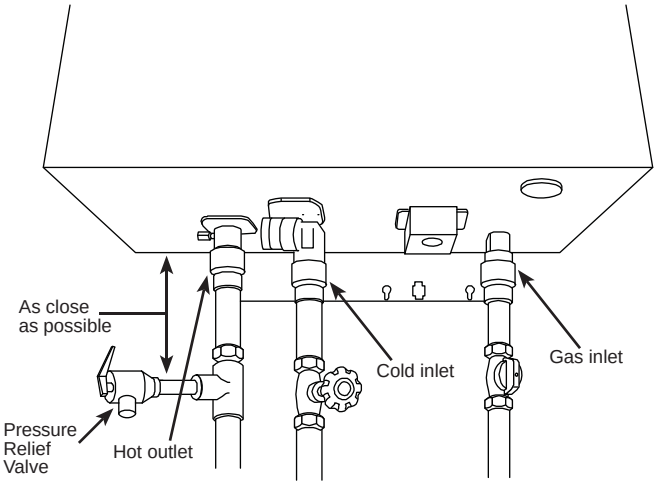
Do not reverse the hot outlet and cold inlet connections to the 910 Water Heater. This will not activate the water heater.



Pressure Relief Valve

The 910 has a high-temperature shut-off switch built in as a standard safety feature (called a Hi-Limit switch) therefore a "pressure only" relief valve is required.

1. This unit does not come with an approved pressure relief valve.
2. An approved pressure relief valve must be installed on the hot water outlet.
3. The pressure relief valve must conform to **ANSI Z21.22** or **CAN 1-4.4** and installation must follow local code.
4. The discharge capacity must be at least 380,000 BTU/h.
5. The pressure relief valve needs to be rated for a maximum of 150 psi.
6. The discharge piping for the pressure relief valve must be directed so that the hot water cannot splash on anyone or on nearby equipment.
7. Attach the discharge tube to the pressure relief valve and run the end of the tube to within 150mm (6 in.) from the floor. This discharge tube must allow free and complete drainage without any restrictions.
8. If the pressure relief valve installed on the 910 discharges periodically, this may be due to a defective thermal expansion tank or defective pressure relief valve.
9. The pressure relief valve must be manually operated periodically to check for correct operation.
10. When ASME model is installed, the pressure relief valve should be conformed and installed in accordance with ASME code.
11. For the ASME model, the pressure relief valve must conform to and be installed in accordance with ASME code.



Electrical Connections

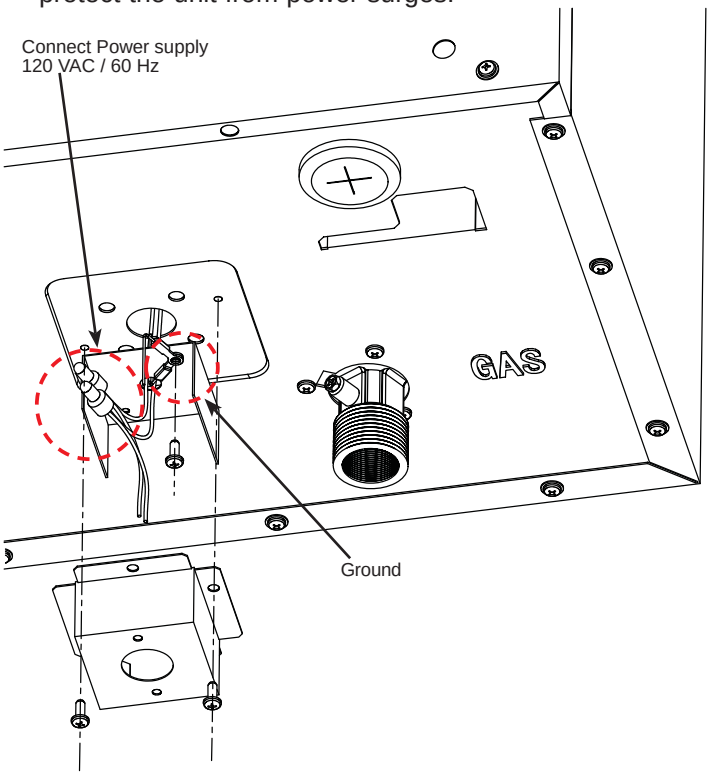
WARNING

Follow the electrical code requirements of the local authority having jurisdiction. In the absence of such requirements, follow the latest edition of **CSA C22.1 Canadian Electrical Code, Part 1**.

CAUTION

When servicing or replacing parts within the 910, label all wires prior to disconnection to facilitate an easy and error free reconnection. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

1. The heater must be electrically grounded. Do not attach the ground wire to either the gas or the water piping.
2. The 910 water heater requires 120 VAC / 60 Hz electrical power supply that is properly grounded.
   - A proper disconnect (i.e. on/off switch, power plug, etc.) controlling the main power to the 910 must be provided for service reasons. (Must comply with local codes).
   - Connect the power supply to the 910 exactly as shown in the wiring diagram;
3. A green screw is provided in the junction box to ground the connection.
4. Can be hardwired or wired to a plug-in.
5. The use of a surge protector is recommended in order to protect the unit from power surges.

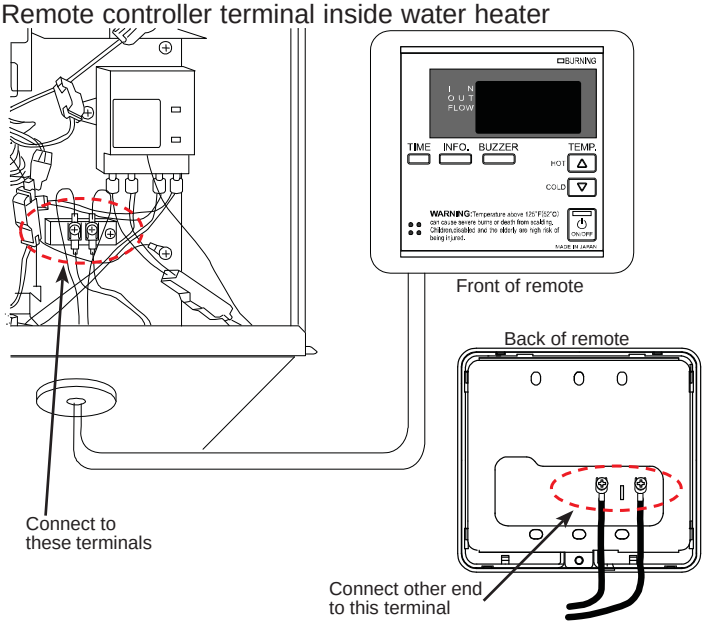


Remote Controller Connection

1. Disconnect power supply from the water heater.
2. Take off the water heater's front cover.
3. Find the remote control terminal using the picture below (located around the lower right-hand side of the water heater).
4. Open the plastic cover of the remote controller accessory, and then attach the fork terminal to the connector base of the backside the remote controller accessory with two screws. Make sure the terminals are firmly fixed.
5. Put the remote wires through the hole on the bottom of the unit casing.
6. Connect the remote wires to the remote controller terminal properly. (No polarity) * Do NOT jump or short-circuit wires. Computer will be damaged.
7. Replace Front Cover securely.
8. Wires used for the remote controller connection must be:
   - Minimum 18AWG wire (No polarity)
   - Maximum 400 feet long

*For details on the connection to the remote controller accessory, refer to the remote controller's Installation Manual.

Remote controller terminal inside water heater

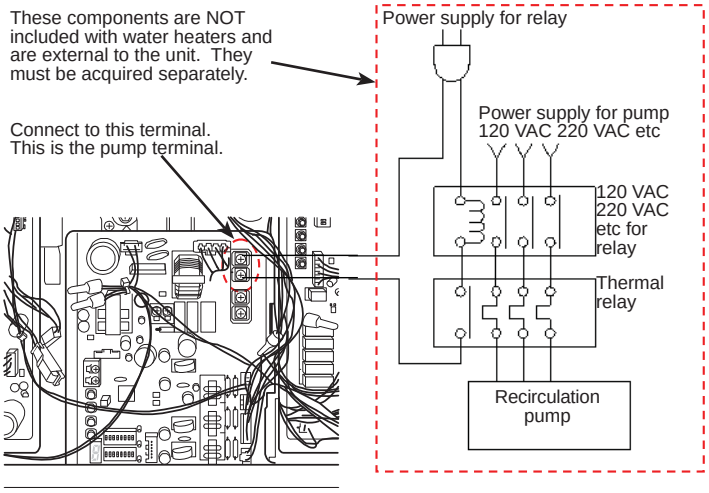


Pump Connnection

The 910 can be used to control a recirculation pump. Proper pump control helps to preserve the life of the system and saves energy as well. The water heater pump control port is a “normally-open” dry contact, and therefore needs additional components to properly control a recirculation pump. To control the recirculation pump, connect the pump to the pump terminal in the 910 as shown in the diagram below. (In a multi- unit system, connect the pump ONLY to the PARENT unit.) The pump is to be connected using suitable relays shown in the diagram below (the pump terminal is essentially only a dry contact. An external power supply and relays are required to operate the pump). Please make sure the relays are properly rated for the recirculation pump.
Using the 910 internal thermistors as a temperature control, the recirculation pump will only turn on when recirculation is needed.

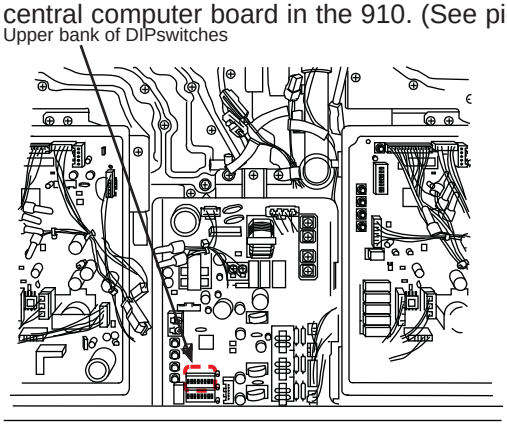
CAUTION

In a multi-unit system, the pump must be connected to the "Pump terminal" in the "PARENT" unit only. If the pump is connected to any of the "CHILD" units, the pump will not work. These components are NOT included with water heaters and are external to the unit. They must be acquired separately.



Pump Control Mode

The 910 provides the four types of the pump control modes. The pump control modes are selected by changing DIPswitch settings. The DIPswitches are located in the upper bank of DIPswitches in the lower-left quadrant of the central computer board in the 910. (See picture below)



A) No. 4 ON: Recirculation Control

This mode is for providing hot water as soon as possible like a recirculation usage. The pump is only made to run while the temperature of the water in the re-circulation loop is not close to the set temperature of the water heater. The pump will run for about 1 minute every 30 minutes to determine whether or not the water temperature in the whole recirculation loop is lower than 5C° (9F°) from the set temperature. If the water temperature is lower than 5C° (9F°) from the set temperature, the pump will remain running until the water in the loop gets up to the set temperature. If not, the pump will stop for another 30 minutes. If the inlet thermistor senses that the water temperature is lower than 5C° (9F°) from the set temperature before those 30 minutes have elapsed, the pump will activate immediately and remain running until the water in the loop gets up to the set temperature.

B) No. 5 ON: Storage Tank Circulation Control

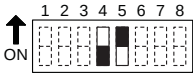
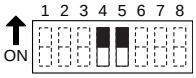
The 910 will heat the water 3C° (5.4F°) higher than its set temperature (unless the 910 is already set at its maximum temperature of 85°C (185°F)). This is to ensure a higher rate of recovery for storage tank applications. The circulation pump (from storage tank to 910) will always remain on.

C) No. 4 and No. 5 ON: Energy Conserving Recirculation

This pump control mode is similar to the “Recirculation Control mode”. However, once the heat requirement is less than 7,440 BTU/h, the pump will turn off. The pump will activate again when the temperature of the system is less than 35°C (95°F) or after 20 minutes have elapsed from its previous operation.
*If operating the pump in this mode, insulation is recommended on the water piping.

D) No. 4 and No. 5 OFF: Normal Control (Default setting)

This provides no ON/OFF control for the pump. If a pump is connected to the pump control terminal and both No. 4 and No. 5 are OFF, the pump will be made to run all the time as long as there is a power supply to the 910 (If the temperature remote controller is installed, the pump will stop when the remote is turned off). Water in the loop will be maintained at set temperature.

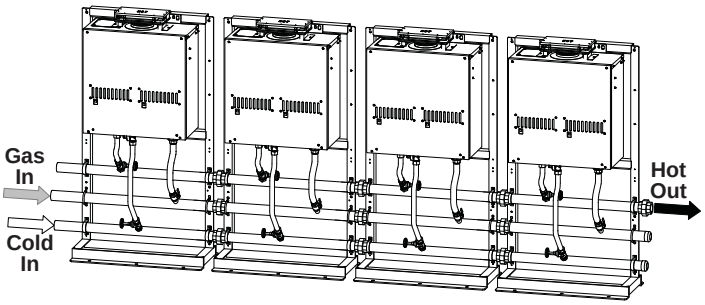
Pump Control Modes	
A) Recirculation Control	
B) Storage Tank Circulation Control	
C) Energy Conserving	
D) Normal Control Recirculation (Default)	
The dark squares indicate the direction the DIPswitches should be set to.	

Easy-link System

The 910 can be connected with other heaters of the same model with communication cables to work as a multiple manifold system.

- The Easy-Link system can connect up to 4 units.
- A communication cable (gray color) comes with each unit. The cables use 18 gage wire and can be up to 76.2m (250 ft.) long all together.

You can manifold from 2 units to 4 units without a multi-system controller. A 4-unit system has full automatic modulation between 15,000 BTU/h and 1,520,000 BTU/h.

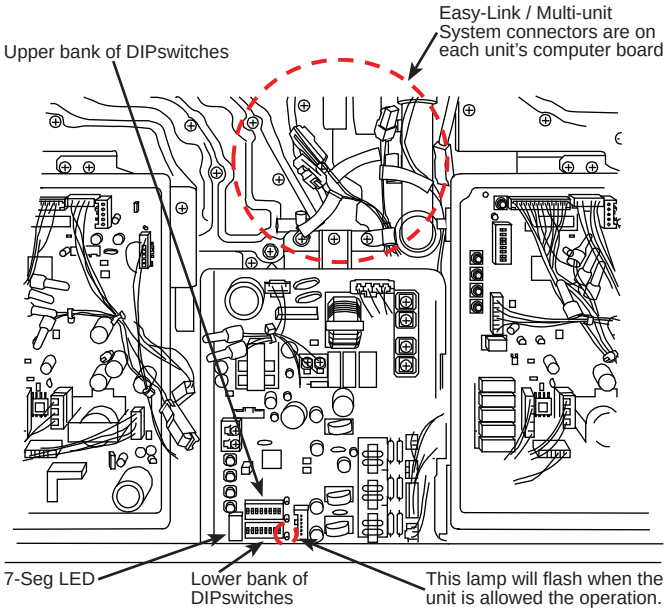


CAUTION

- The Easy-Link system is limited to 4 units. If you connect more than 4 units, the first 4 units will work as part of the Easy-Link system, but the other additional units will only work as individual units.
- The 910 cannot be linked with other different tankless models in the Easy-Link system and Multi-Unit system.

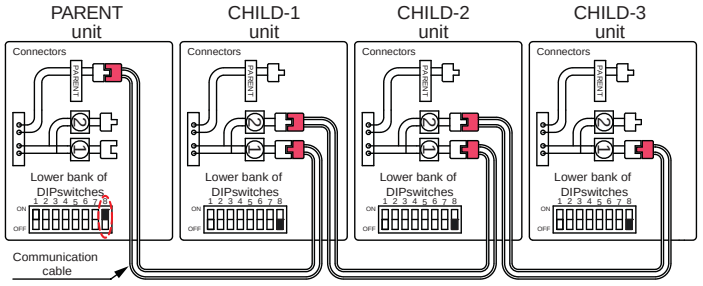
General

To change the DIPswitch settings for the Easy-Link system, locate the lower bank of DIPswitches to the right of the 7-seg LED. Do not adjust the upper bank of DIPswitches.



Easy-Link Connection Procedures

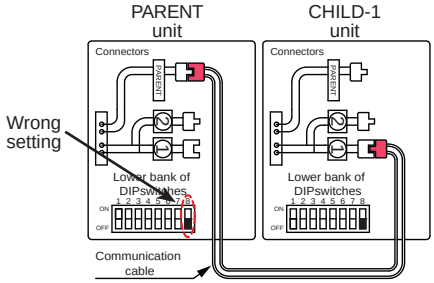
1. Choose one of your units as the "PARENT" unit.
2. "PARENT" unit. Locate the lower bank of DIPswitches to the right of the 7-seg. LED on the central computer board of the 910 that you select to be the "PARENT" unit. Change DIPswitch No. 8 to "ON". Do not change any of the DIPswitches on the "CHILD" units.
3. Between the "PARENT" and the "CHILD-1" units. Connect the "PARENT connector" of the "PARENT unit" to the "[1] connector" of the "CHILD-1" unit.
4. Between the "CHILD-1" and the "CHILD-2" units. Connect the "[2] connector" of the "CHILD-1" unit to the "[1] connector" of the "CHILD-2" unit.
5. Between the "CHILD-2" and the "CHILD-3" units. Connect the "[2] connector" of the "CHILD-2" unit to the "[1] connector" of the "CHILD-3" unit.
6. The numbering system of the 910 automatically allocates the unit # to each water heater that is part of the Easy-Link system.



PARENT unit	Unit # : 1
CHILD units	Unit# : 2, 3 and 4
The dark squares indicate the direction the dipswitches should be set to.	

CAUTION

Unless you change DIPswitch No. 8 of the **"PARENT"** unit to "ON", the system will not work as an Easy-Link system. The units will work as individual units.

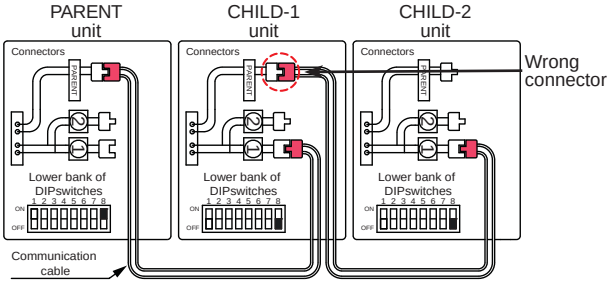


Prohibited

Wrong DIPswitch setting on the **"PARENT"** unit

CAUTION

If you connect the **"PARENT"** connector of the **"CHILD-1"** unit to the "[1] connector" of the **"CHILD-2"** unit, the **"CHILD-2"** unit will work as an individual unit, and will not be part of the Easy-Link system.

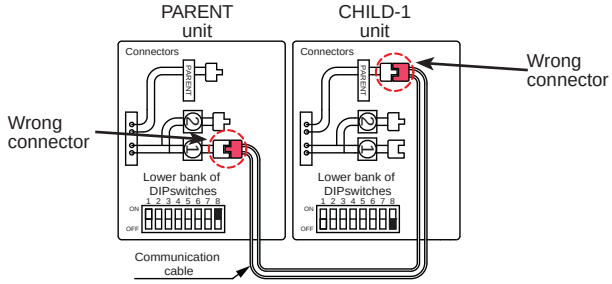


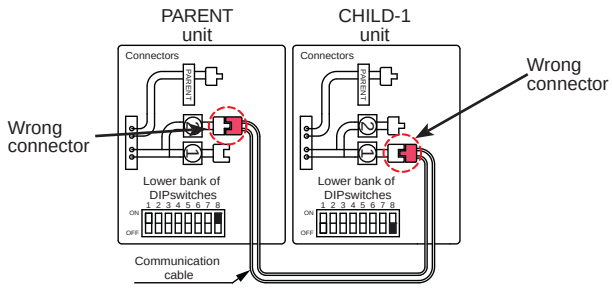
Prohibited

Wrong connection between the **"CHILD-1"** unit and the **"CHILD-2"** unit

CAUTION

If you connect the "[1] (or [2]) connector" of the **"PARENT"** unit to the **"PARENT"** (or [1]) connector of the **"CHILD-1"** unit, the system will not work as the Easy-Link system. The units will operate as individual units.





Prohibited

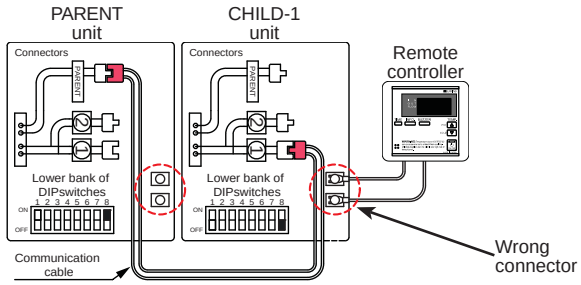
Wrong connection between the **"PARENT"** unit and the **"CHILD-1"** unit

WARNING

Connecting two **"PARENT"** connectors together from two separate units **may damage the computer board**. The communication cable has a female end and a male end so it's impossible to have a PARENT-to-PARENT connection with the communication cable. Do not splice or modify connectors.

CAUTION

If a remote controller (optional) is used, it has to be connected to the **"PARENT"** unit. If the remote controller is connected to a **"CHILD"** unit, it will only control that particular individual **"CHILD"** unit and will not control the Easy-Link system as a whole.



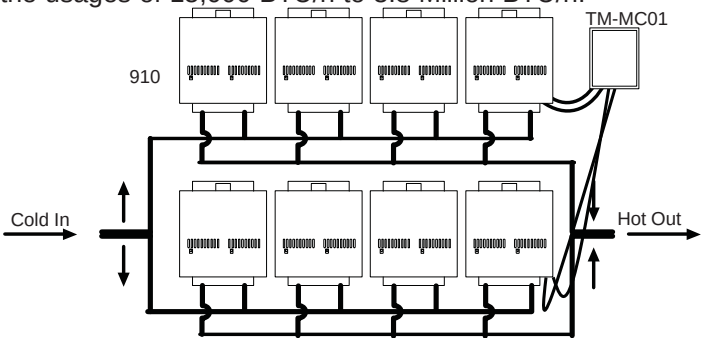
Prohibited

Wrong connection between the **"CHILD"** unit and the remote controller

- The remote controller is not required for the Easy-Link system.
- If running the Easy-Link system without the remote controller, please make sure the DIPswitch settings for the temperature, outdoor, and direct-vent settings on ALL the units are set to the same settings. Otherwise, the units may not operate properly.
- If the remote controller is used, the temperature on all the units in the system will automatically be set to the same temperature that is set on the remote. However, even with the remote, the outdoor and direct-vent DIPswitch settings still need to be set to the same settings on all the units.

Multi-unit System For Large Volumes

Multiple 910 models can be combined for a Multi-Unit system, along with the Multiple Unit Controller and Remote Controller (Parts TM-MC01 and TM-RE30) . Each set of controllers (Parts TM-MC01 and TM-RE30) can control from 2 units to 10 units for commercial or residential applications. For a 10-unit system, the computer can modulate between the usages of 15,000 BTU/h to 3.8 Million BTU/h.



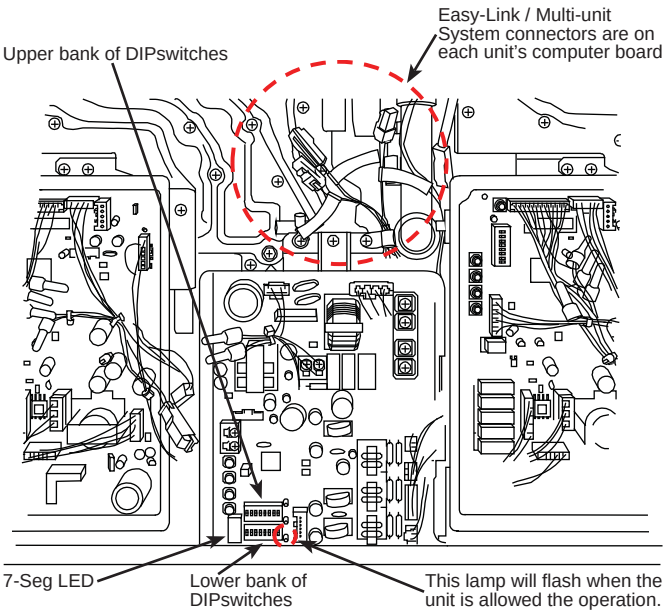
An individual cut-off switch is recommended for each unit in a multi-unit system for the purpose of maintenance.

Multi-Unit System Connection Diagram

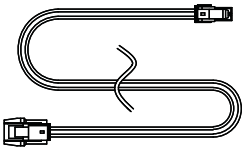
Multi-Unit Controller (TM-MC01) and Temperature Remote Controller (TM-RE30) wiring:

- The above connection diagram is an example of how to connect 4 water heaters together in a Multi-Unit System. Up to 10 water heaters can be connected in this fashion.
- Make sure the “7-seg LED” of all the units’ computer boards display the unit #. The Multi-Unit controller automatically allocates the unit # (1 to 10) to each water heater that is part of the Multi-unit system.
- The dark squares indicate the direction the DIPswitches should be set to.

Please refer to the Multi-Unit Controller manual for further instructions of the Multi-Unit system.



The Comunication Cables are included with the 910. The Cables use 18 gage wire and can be up to 76.2m (250 ft.) long all together.



FOR YOUR SAFETY, READ BEFORE OPERATING

- Check the GAS and WATER CONNECTIONS for leaks before firing unit for the first time.
- Open the main gas supply valve to the unit using only your hand to avoid any spark. Never use tools. If the knob will not turn by hand, do not try to force it; call a qualified service technician. Forced repair may result in a fire or explosion due to gas leaks.
- Be sure to check next to the bottom of the unit because some gases are heavier than air and may settle towards the floor.
- Check the GAS PRESSURE (refer to pg. 11).
- Do not try to light the burner manually. It is equipped with an electronic ignition device which automatically lights the burner.
- Check for PROPER VENTING and COMBUSTIBLE AIR to the water heater.
- Purge the GAS and WATER LINES to remove any air pockets.
- Do not use this water heater if any part has been submersed under water. Immediately call a qualified service technician to inspect the water heater and to replace any damaged parts.

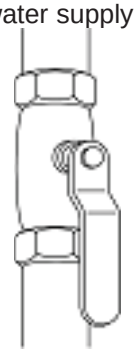
CAUTION

IF YOU SMELL GAS:

- Do not try to start the water heater.
- Do not touch any electric switches; 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.

1. Once the above checks have been completed, clean filter of any debris. Refer to pg. 22 for instructions.

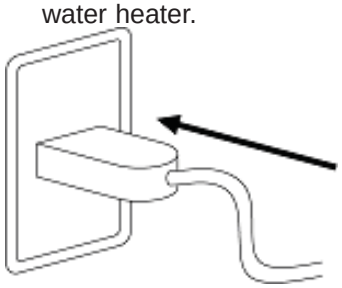
2. Fully open the manual water control valve on the water supply line.



3. Open a hot water tap to verify that water is flowing to that tap. Then close the hot water tap.

4. Fully open the manual gas control valve installed.

5. Turn on the 120 VAC, 60 Hz power supply to the water heater.



6. Now you are ready to enjoy hours of endless hot water.

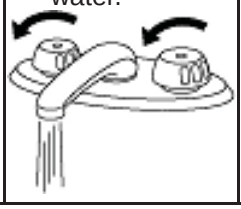
NORMAL OPERATION

- Flow rate to activate the 910: 1.9 l/min (0.5 GPM (US))
- Flow rate to keep the 520H running: 1.5 l/min (0.4 GPM (US))

Without Remote Controller

1. Open a hot water tap.

2. Mix cold water with the hot to get the correct temperature water.



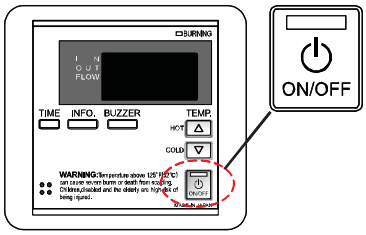
3. Close the hot water tap.

Hot Water temperatures over 52°C (125°F) can cause severe burns instantly or death from scalding.

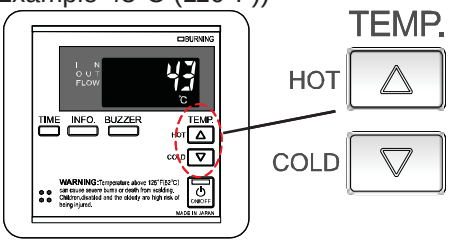
- The outlet hot water temperature of the water heater is factory set at 49°C (120°F).
- Feel the water temperature before bathing or showering.

With Remote Controller Installed: TM-RE30 (Optional)

1. Press the power ON/OFF button.
When ON, green LED is lit.
The temperature and the time will be displayed on the remote controller.



2. Set temperature. (Example 43°C (110°F))

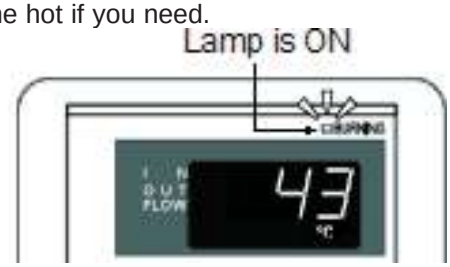


Temperatures available in default mode															
°C															
38	40.5	43	46	49	52	55	57	60	63	65.5	68	71	74	77	79
°F															
100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175

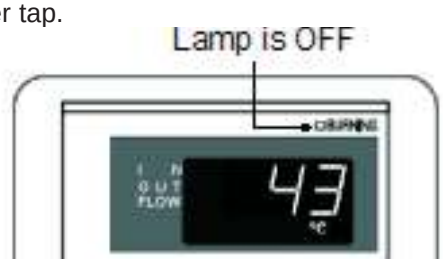
Temperatures available in High Temperature mode															
°C															
38	46	49	52	55	57	60	63	65.5	68	71	74	77	79	82	85
°F															
100	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185

DO NOT set to 85°C (185°F) if you use your water heater in recirculation system (refer to pg. 32).

3. Open a hot water tap.
Mix cold water with the hot if you need.



4. Close the hot water tap.



*To change the remote controller's mode from Default Mode to High Temperature Mode, follow the procedures below (the remote controller must be installed prior to operating these procedures):

DO NOT set to 185ºF if you use your 910 water heater in a recirculation system. This will cause damage to the heater and void the warranty.

1. Turn off power to the remote controller by pressing the “ON/OFF" button.

Lamp is OFF to indicate that power is off

2. Simultaneously press and hold both the “HOT” and “COLD” buttons for at least five seconds. And then make sure “1” (or “0”) is displayed on remote controller.
   “1” is displayed for single units,
   “0” is displayed for Easy-Link/Multi-unit Systems.

3. Press the “TIME” button. Make sure OFF and F1 are displayed on remote controller.

4. Press the “INFO” button. After, make sure “OFF” blinks.

5. Press the “HOT” button or the “COLD” button to set display to “on”.

6. Simultaneously press both the “BUZZER” button and the “INFO” button to fix the setting.
7. Make sure display is no longer blinking.

8. Press the “ON/OFF” button to finish the setting.
9. Turn on power to the remote controller by pressing the “ON/OFF” button again.

Lamp is ON to indicate that power is on

Flow

- The flow rate through the 910 is limited to a maximum of 54.9 l/min (14.5 GPM (US)).
- The temperature setting, along with the supply temperature of the water will determine the flow rate output of the unit.
- Refer to the temperature vs. gallons per minute chart on pg. 42 to determine the likely flow rates based on your local ground water temperature and your desired outlet water temperature combination.
- Based on the **CAN/CSA P.7** test method for measuring energy loss of gas-fired instantaneous water heater, the 910 is rated for 1794 l/hr (474 GPH (US)) or 29.9 l/min (7.9 GPM (US)) for Natural Gas, and 1908 l/hr (504 GPH (US)) or 31.8 l/min (8.4 GPM (US)) for Liquid Propane, when raising the water temperature by 43C° (77F°) (from 14°C to 57°C (58°F to 135°F)).
- Refer to the chart below for typical household plumbing fixture flow rates to determine what the 910 can do in a household application.

Household Flow Rates		
Appliance/Use	Flow Rate	
	l/min	GPM (US)
Lavatory Faucet	3.8	1.0
Bath Tub	15 - 38	4.0 – 10.0
Shower	7.5	2.0
Kitchen Sink	5.5	1.5
Dishwasher	5.5	1.5
Washing machine	15	4.0
Taken from UPC 2006		

Freeze Protection System

- This unit comes equipped with heating blocks to protect it against damages associated with freezing.
- For this freeze protection system to operate there has to be electrical power to the unit. Damage to the heat exchanger caused by freezing temperatures due to power loss is not covered under the warranty. In cases where power losses can occur, consider the use of a backup power supply.
- The freeze protection system will activate when the surrounding and/or outside temperatures drop below 2.5°C (36.5°F).
- Freezing issues can occur if cold air enters through the venting into the heat exchanger, whether by negative pressures within the installation location or by strong outside winds. It is the installer’s responsibility to be aware of these issues and take all preventative measures. The manufacturer will not be responsible for any damage to the heat exchanger as a result of freezing.

- The manufacturer also highly recommends the use of a back flow vent damper and/or converting the 910 to a direct-vent unit to minimize the amount of cold air entering through the exhaust venting when the water heater is off.
- If you will not be using your heater for a long period of time:
  1. Completely drain the unit of water (refer to pg. 22).
  2. Disconnect power to your heater.
- This will keep your unit from freezing and being damaged.

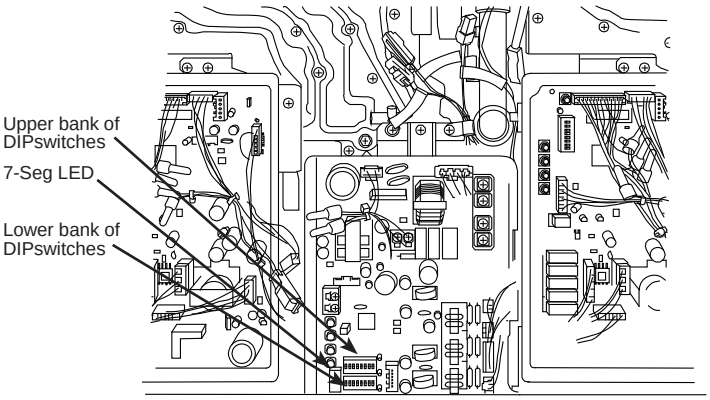
CAUTION

Only pipes within the water heater are protected by the freeze protection system. Any water pipes (hot or cold) located outside the unit will not be protected. Properly protect and insulate these pipes from freezing.

Temperature Settings

- There are 8 preset temperatures that you can select from by changing the DIPswitch settings on the computer board.
- The temperature has been preset at the factory to 120ºF (49ºC).
- If you desire to change the set temperature with DIPswitches, refer to the diagram on below. These temperatures are available: 38°C, 46°C, 49°C, 57°C, 63°C, 68°C, 74°C, 85°C, (100ºF, 115ºF, 120ºF, 135ºF, 145ºF, 155ºF, 165ºF, and 185°F).
- If you desire a hot water temperature other than the 8 preset settings, purchase the optional temperature remote controller (Part No. TM-RE30).
- With this optional remote controller you can set the temperature from 38°C to 85°C (100ºF to 185ºF) with various increments.
- Please read the instructions carefully prior to installing the remote controller, as failure to do so could damage the temperature controller and/or the water heater, which will void the warranty.

- Turn off the power supply to the heater before changing the DIPswitch settings.
- Only change the switches with the dark squares. The dark squares indicate which direction the DIPswitch should be set to.
- DO NOT set to 85°C (185°)F if you use your water heater in a recirculation system. This will cause damage to the heater and void the warranty.



To change DIPswitch settings for temperatures, locate the lower bank of DIPswitches to the right of 7-Seg LED.
DO NOT adjust the upper bank of DIPswitches.
The dark squares indicate the direction the DIPswitches should be set to.

Temperature Settings (Lower bank)				
	38°C (100°F)	46°C (115°F)	49°C (120°F) DEFAULT	57°C (135°F)
Switch No. 1	ON	OFF	OFF	OFF
Switch No. 2	OFF	ON	OFF	OFF
Switch No. 3	OFF	OFF	OFF	ON
				
	63°C (145°F)	68°C (155°F)	74°C (165°F)	85°C (185°F)
Switch No. 1	ON	ON	OFF	ON
Switch No. 2	ON	OFF	ON	ON
Switch No. 3	OFF	ON	ON	ON
				

MAINTENANCE AND SERVICE

WARNING

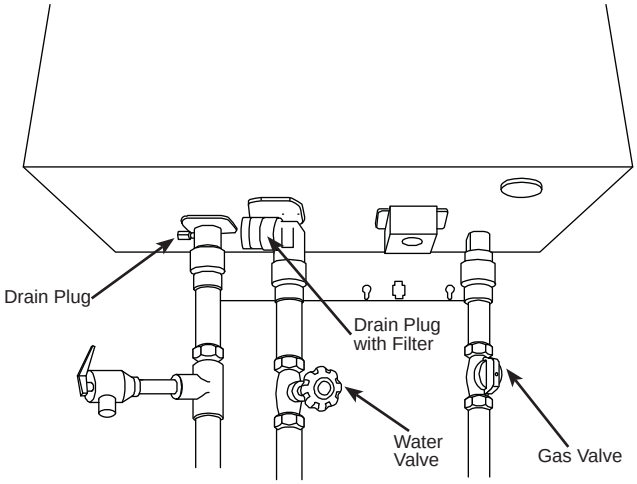
Turn off the electrical power supply and close the manual gas control valve and the manual water control valve before servicing.

- Clean the cold-water inlet filter (refer to diagram below).
- Be sure that all openings for combustion and ventilation air are not blocked.
- Check that the exhaust vent pipe is not blocked.
- Check the gas pressure.
- Keep the area around the water heater clear. Remove any combustible materials, gasoline or any flammable vapors and liquids.

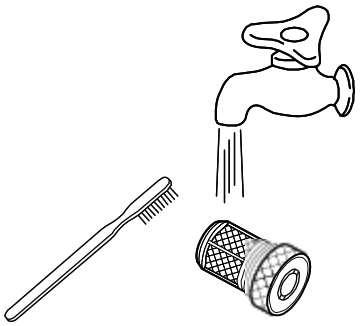
The manufacturer recommends having the unit checked once a year or as necessary by a licensed technician. If repairs are needed, any repairs should be done by a licensed technician.

Unit Draining and Filter Cleaning

1. Close the manual gas shut off valve.
2. Turn off power to the unit, and then turn on again.
3. Wait 30 seconds, and then turn off power to the unit, yet again.
4. Close the water shut off valve.
5. Open all hot water taps in the house. When the residual water flow has ceased, close all hot water taps.
6. Have a bucket or pan to catch the water from the unit's drain plugs. Unscrew the drain plugs to drain all the water out of the unit.



7. Wait a few minutes to ensure all water has completely drained from unit.
8. Clean the filter: Check the water filter located within the cold inlet. With a tiny brush, clean the water filter of any debris which may have accumulated and reinsert the filter back into the cold water inlet.
9. Securely screw the drain plugs back into place. Hand- tighten only.

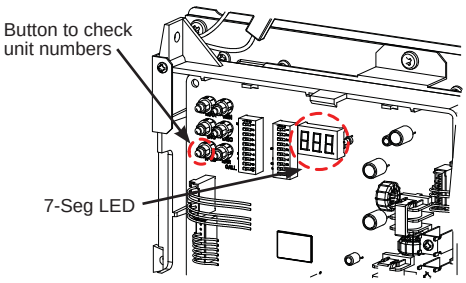


GENERAL TROUBLESHOOTING

	PROBLEM	SOLUTIONS
TEMPERATURE and AMOUNT OF HOT WATERIt	It takes long time to get hot water at the fixtures.	• The time it takes to deliver hot water from the water heater to your fixtures depends on the length of piping between the two. The longer the distance or the bigger the pipes, the longer it will take to get hot water. • If you would like to receive hot water to your fixtures quicker, you may want to consider a hot water recirculation system. (pg. 32)
	The water is not hot enough.	• Compare the flow and temperature. See the chart on pg. 42. • Check cross plumbing between cold water lines and hot water • lines. • Is the gas supply valve fully open? (pg. 18) • Is the gas line sized properly? (pg. 11) • Is the gas supply pressure enough? (pg. 11) • Is the set temperature set too low? (pg. 19 - 21)
	The water is too hot.	• Is the set temperature set too high? (pg. 19 - 21)
	The hot water is not available when a fixture is opened.	• Make sure the unit gets 120 VAC / 60 Hz power supply. • If you are using the remote controller, is the power button turned • on? • Is the gas supply valve fully open? (pg. 18) • Is the water supply valve fully open? (pg 18) • Is the filter on cold water inlet clean? (pg. 22) • Is the hot water fixture sufficiently open to draw at least 1.9 l/min (0.5 GPM (US)) through the water heater? (pg. 19, 20) • Is the unit frozen? • Is there enough gas in the tank / cylinder? (For Propane models)
	The hot water turns cold and stays cold.	• Is the flow rate enough to keep the water heater running? (pg. 19, 20) • If there is a recirculation system installed, does the recirculation line have enough check valves? • Is the gas supply valve fully open? (pg. 18) • Is the filter on cold water inlet clean? (pg. 22) • Are the fixtures clean of debris and obstructions?
	Fluctuation in hot water temperature.	• Is the filter on cold water inlet clean? (pg. 22) • Is the gas line sized properly? (pg. 11) • Is the supply gas pressure enough? (pg. 11) • Check for cross connection between cold water lines and hot water lines.
WATER HEATER	Unit does not ignite when water goes through the unit.	• Is the flow rate over 1.9 l/min (0.5 GPM (US))? (pg. 19, 20) • Check for the filter on cold water inlet. (pg. 22) • Check for reverse connection and cross connection. • If you use the remote controller, is the power button turned on?
	The fan motor is still spinning after operation has stopped.	• This is normal. After operation has stopped, the fan motor keeps running for 35 seconds in order to re-ignite quickly, as well as purge all the exhaust gas out of the flue.
	Unit sounds abnormal while in operation	• Contact the manufacturer at 1-888-479-8324.

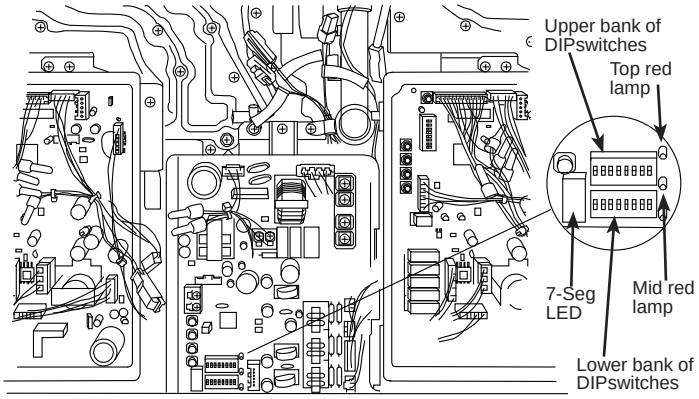
Remote controller: TM-RE30 (OPTIONAL)	Remote controller does not display anything when the power button is turned on.	• Press the ON/OFF button on the remote.
		• If the LED lights up:
		  • This is normal. When the unit has not operated for five minutes or more, the display turns off to converse energy.
		• If the LED does not light:
		  • Make sure the unit has power supply.
		• Make sure the connection to the unit is correct.(pg. 13)

	An ERROR code is displayed.	• Please see pg. 26.

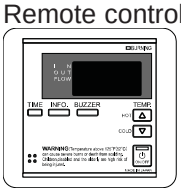
	PROBLEM	SOLUTIONS	
EASY-LINK SYSTEM	How are the unit numbers assigned?	• For an Easy-Link system, the Parent unit is always labeled #1 and all other subsequence Child units are numbered randomly. • To check which numbers are assigned to which Child units, push the button on the computer board of any Child unit as shown below. The unit number will be displayed on the 7-Seg LED.	

Troubleshooting – Error Codes

- The 910 units are self diagnostic for safety and convenience when troubleshooting.
- If there is a problem with the installation or the unit, it will display a numerical error code on the remote controller (if installed) or on the 7-Seg LED of the central computer board and section computer board to communicate the source of the problem.
- Consult the following chart for the cause of each error code.
- The top red lamp will flash when the right combustion section has an error code.
- The mid red lamp will flash when the left combustion section has an error code.



Remote controller (Optional)



Error Code	Malfunction description
031	Dipswitch Setting fault
101	Warning for 991 Error Code
111	Ignition Failure
121	Flame blows out
311	Output Thermistor Failure
321	Inlet Thermistor Failure
331	Mixing Thermistor Failure
391	Air-fuel Ratio Rod Failure
441	Flow Sensor Failure
510	Abnormal Main Gas Valve
551	Abnormal Gas Solenoid Valve
611	Fan Motor Fault
631	Abnormal External Pump
651	Water Control Valve Fault (Flow Adjustment function)
661	Water Control Valve Fault (Bypass function)
681	Abnormal External Fan motor
701	Computer board Fault
721	False Flame Detection
741	Miscommunication between water heater and remote controller
761	Miscommunication in Easy-Link OR Multi-unit system
991	Abnormal burning

Single Unit

The 7-Seg LED displays the 3-digit error codes one digit at a time. The remote controller (if installed) displays the whole 3-digit error code at once. When the right and/or left combustion section has an error code, the red lamp next to the 7-Seg LED on the central computer board will flash to indicate which combustion section has the error code. Refer to the above picture.

Example:

If your unit has the “321” error code (inlet thermistor),

- - The 7-Seg LED, will flash the 3-digit error code one digit at a time. The 7-Seg LED will display “3”...“2”... “1”, and then repeat the 3 digits.
- The remote controller, however, will display “321” on its screen, in its entirety.

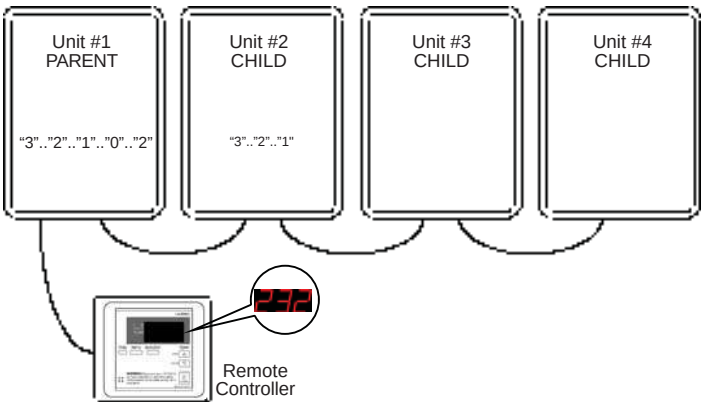
Easy-Link

The 7-Seg LED on the PARENT unit displays a 5-digit number to signify which unit in the Easy-Link system has the error, and what the error code is. The 7-Seg LED displays the number one digit at a time. The remote controller (TM-RE30) (if installed) displays a 3-digit number which also signifies which unit has the error, and what the error code is. The unit that has the error in an Easy-Link system will display the error code on its 7-Seg LED in exactly the same way as if it were only a Single Unit. When the right and/or left combustion section has an error code, the red lamp next to the 7-Seg LED on the central computer board will flash to indicate which combustion section has the error code. Refer to the picture below.

Example:

If Unit #2 has the “321” error code (inlet thermistor),

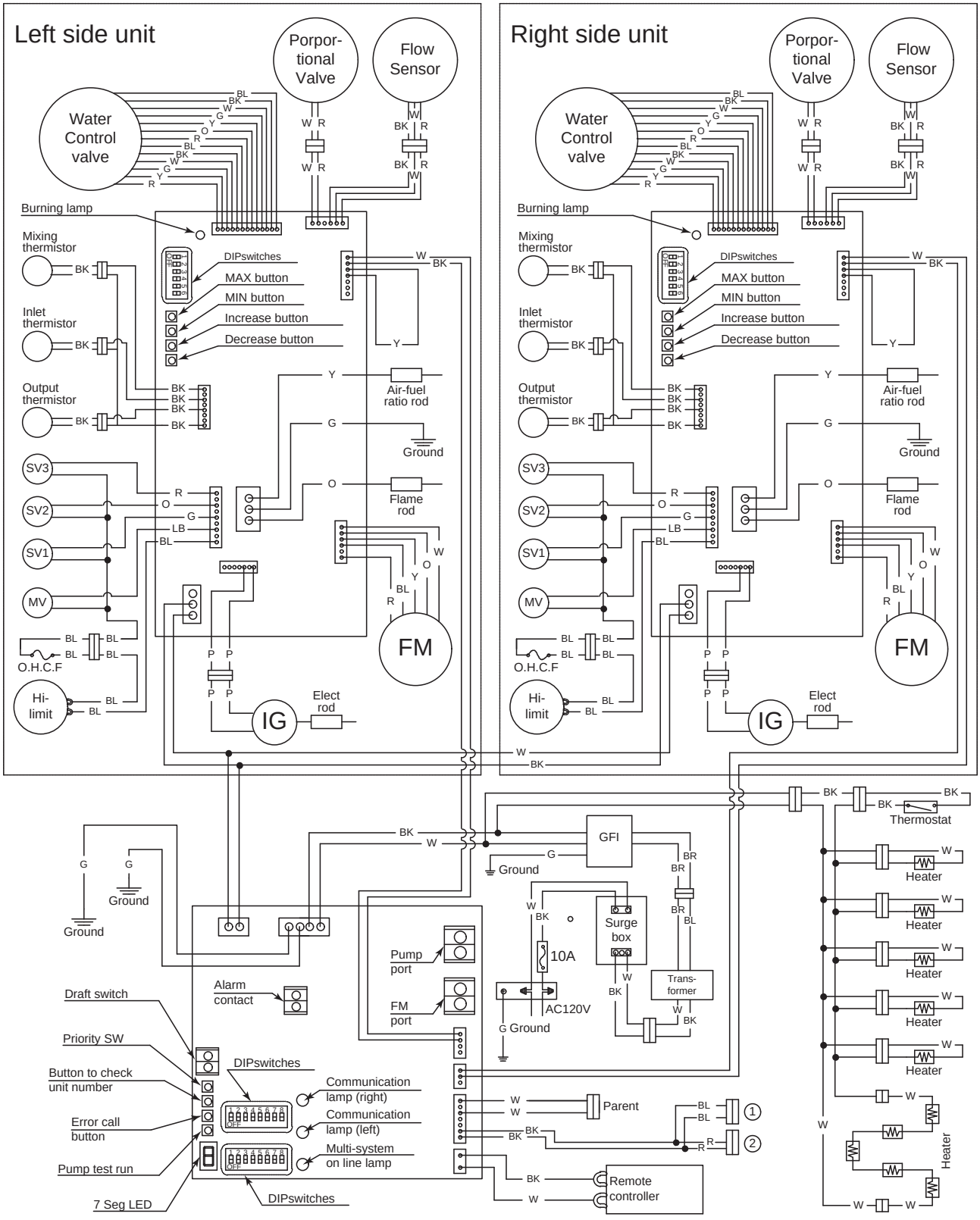
- The 7-Seg LED on the PARENT unit will display “3”...“2” “1” “0” “2”, displaying only one digit at a time. The first 3 numbers indicate the error code. The last two numbers indicate that Unit #2 has the error.
- The remote controller, however, will display “232” on its screen in its entirety. The first “2” indicates that Unit #2 has the error. The “32” indicates the first two digits of the “321” error code.
- The 7-Seg LED on Unit #2 will display “3”. “2”. “1”, just like in the Single Unit example.



Wiring Diagram

A wiring diagram is located on the inside front panel of the appliance. Electrical Rating: 120 VAC, 60 Hz.
Note: If any of the original wiring supplied with this appliance must be replaced, it must be replaced with appliance wiring material (180c) or its equivalent. Wires are available through the manufacturer.

BK: BLACK	LB: LIGHT BLUE	G: GREEN	O: ORANGE
P: PURPLE	BL:BLUE	Y: YELLOW	BR: BROWN



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 water heater does not have a pilot. It is equipped with an ignition device that automatically lights the burner. Do not try to light the burner by hand.

B. BEFORE OPERATING smell all around the water heater area for evidence of leaking 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 turn the gas valve knob. Never use tools. If the knob will not turn by hand, don't try to repair it. Call a qualified service technician. Forced or attempted repair may result in a fire of explosion.

D. Do not use this water heater if any part has been under water. Immediately call a qualified service technician to inspect the water heater and to replace any damaged parts.

OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above or in the Owners Manual.
2. Turn off all electric power to the water heater.
3. Do not attempt to light the burner by hand.
4. Turn the manual gas valve located on the outside of the unit clockwise to the off position.
5. Wait five (5) minutes to clear out any gas. If you then smell gas. STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to next step.
6. Turn the manual gas valve located on the outside of the unit counter clockwise to the ON position.
7. Turn on all electrical power to the water heater.
8. If the water heater will not operate, follow the instructions “to Turn Off Gas to water heater" and Call your service technician or gas supplier.

TO TURN OFF GAS TO APPLIANCE

1. Turn off all electric power to the water heater if service is to be performed.
2. Turn the manual gas valve located on the outside of the unit clockwise to the off position.

DANGER

Vapors from flammable liquids will explode and catch fire causing death or severe burns.

Do not use or store flammable products such as gasoline, solvents or adhesives in the same room or area near the water heater.

Keep flammable products:	Vapors:
1. Far away from heater	1. Cannot be seen
2. In approved containers	2. Vapors are heavier than air
3. Tightly closed	3. Go a long way on the floor
4. Out of children's reach	4. Can be carried from other rooms to the main burner by air currents

WARNING: Do not install water heater where flammable products will be stored.
Read and follow water heater warnings and instructions. If owner's manual is missing, contact the manufacturer.

WARNING

The outlet hot water temperature of the water heater is factory set at 49°C (120°F).
Use this heater at your own risk. The set outlet water temperature can cause severe burns instantly or death from scalds.
Test the water before bathing or showering.
Do not leave children or an infirm person in the bath unsupervised.

DANGER

Hot Water Heater temperature over 52°C (125°F) can cause severe burns instantly or death from scalding. Children, disabled and elderly are at the highest risk of being scalded. Feel water temperature before bathing or showering. Temperature limiting valves are available. Ask a professional person.

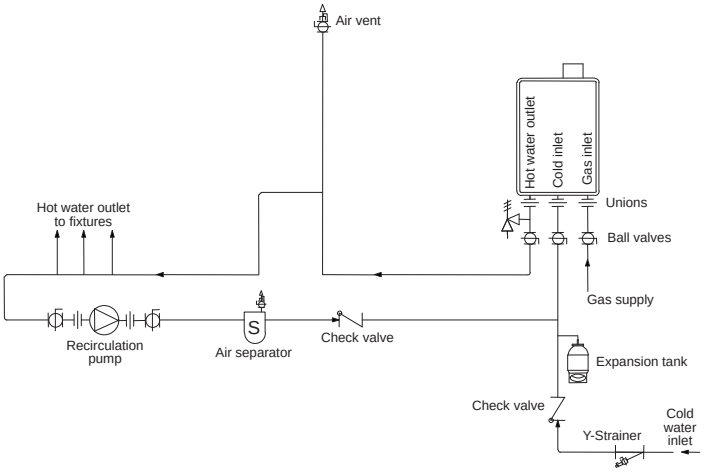
Space Heating Applications

WARNING

- **Toxic chemicals used in boiler treatments such as alcohol, glycerol and glycol group must not be introduced into the system when used for open loop potable water and space heating.**
- **The 910 can be used to supply potable water and space heating and shall not be connected to any heating system or component(s) previously used with non-potable water where any chemicals were added to the water heating appliances.**
- **When the system requires water for space heating at temperatures higher than required for other uses, a means such as a mixing valve shall be installed to temper the water for those other uses in order to reduce scald hazard potential.**
- **Water temperature over 52°C (125 °F) can cause severe burns instantly or death from scalds.**
- **Chemicals such as diluted Glycol can be used for radiant floor, Hydro/fan coil air or Baseboard heating only. The diluted solution of glycol must contain between 25% and 55% of Glycol. Be aware that in closed-loop glycol systems, low pressure in the heat exchanger can cause low-temperature boiling, resulting in excessive noise and damage to the water heater. Consult with the glycol maker for specifications prior to use.**

Re-circulation:

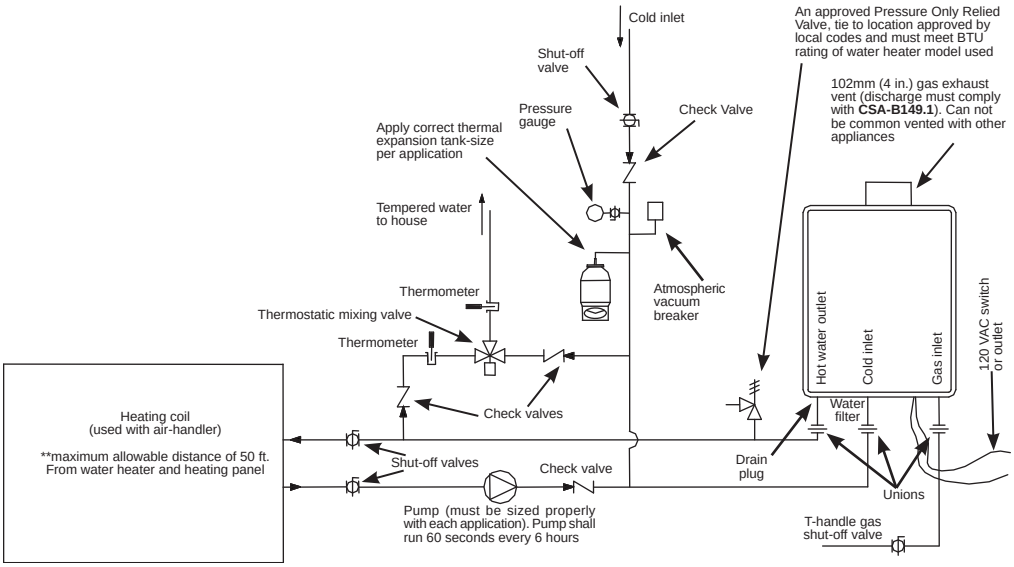
- The recirculation pump is to be controlled by:
  - Dual-set aquastat (recommended w/timer)
    OR
  - 910 Pump Control set to “Recirculation Mode”
- The recirculation pump is to provide no less than 7.8 l/min (2 GPM (US))
  and no more than 15 l/min (4 GPM (US)) through each activated unit in the system.



This is a concept drawing only.

Dual-purpose Hot Water Heating

(Domestic and Space Heating):
Diagramatic Layout of Radiant Heating and Domestic Water Heater.



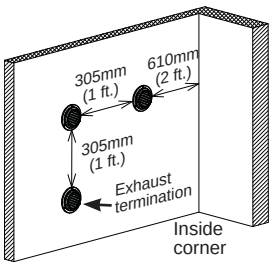
Note:

- Priority Control Devices such as a flow switch, an Aquastat or other electronic controller can be used to prioritize the domestic water system over the heating system.
- Follow all local codes, or in the absence of local codes, the most recent edition of the National plumbing code.
- This illustration is a concept design only. There are a wide variety of variations to the application of controls and equipment presented. Designers must add all necessary safety and auxiliary equipment to conform to code requirements and design practice. For more details, contact the manufacturer.

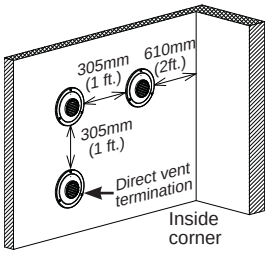
Additional clearances

Follow all local and national codes in regards to proper termination clearances. In the absence of such codes, the following clearances can be used as guidelines. Local codes supersede these guidelines.

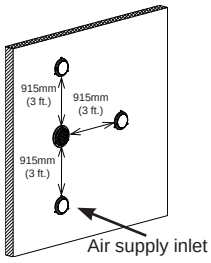
For sidewall terminations



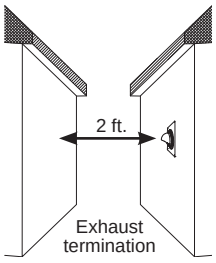
For multiple sidewall exhaust terminations (e.g. multi-unit systems), an exhaust termination must be at least 305mm (1 ft.) away from another exhaust termination. An exhaust termination must also be at least 610mm (2 ft.) away from an inside corner (if the adjacent wall is less than 610mm (2 ft.) of length, the minimum required distance away from the inside corner will be equal to the length of that adjacent wall).



For multiple-unit, direct-vent sidewall terminations that combine the intake and exhaust into a single penetration, space each direct-vent termination at least 305mm (1 ft.) away from each other, no matter the orientation. A direct-vent termination must also be at least 610mm (2 ft.) away from an inside corner (if the adjacent wall is less than 610mm (2 ft.) of length, the minimum required distance away from the inside corner will be equal to the length of that adjacent wall).

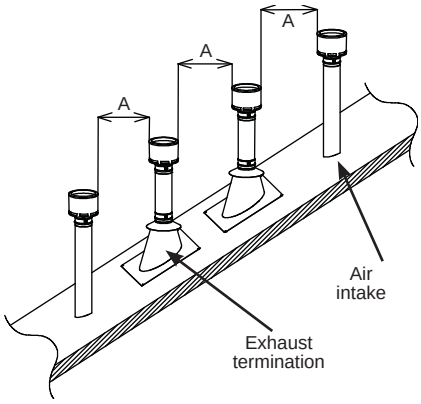


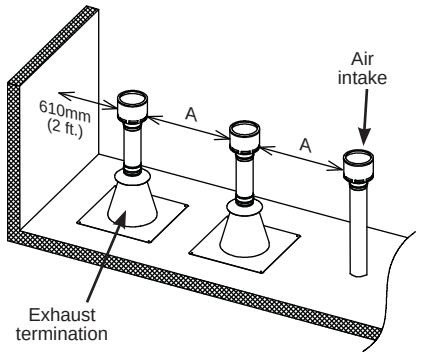
For direct-vent sidewall terminations that use two separate penetrations for the intake and exhaust, distance the intake and exhaust terminations at least 915mm (3 ft.) away from each other, no matter the orientation.



Exhaust and/or direct-vent sidewall terminations should be at least 610mm (2 ft.) away from an opposite surface/wall. Do not place the termination directly in front of an opening into a building.

For rooftop terminations





A: In accordance with local codes

For multiple-unit rooftop terminations (whether for standard or direct-vent installations) space all exhaust and intake terminations in accordance with local codes. An exhaust termination must be spaced from a wall or surface in accordance with local codes as well. In the absence of such a code, an exhaust termination must be a horizontal distance of at least 610mm (2 ft.) away from a wall or surface.

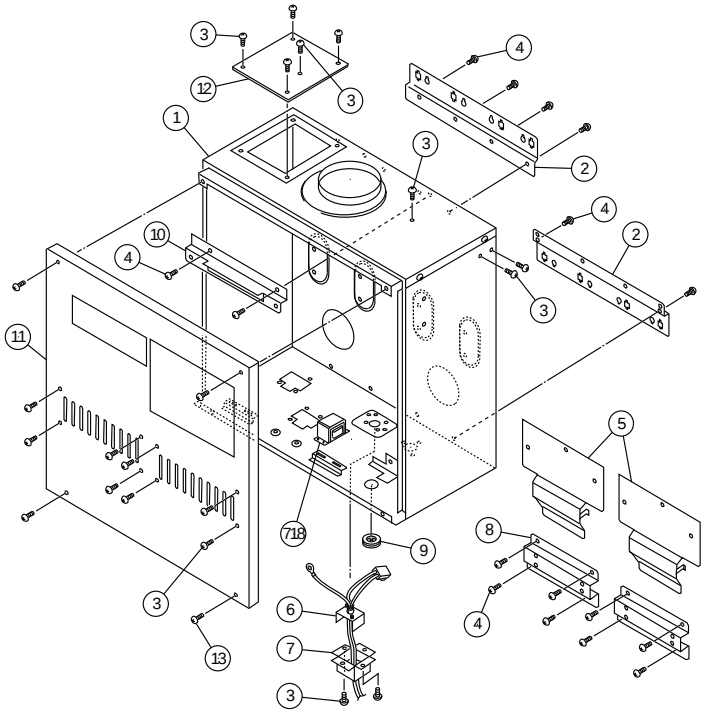
Optional Items

1. Temperature Remote Controller: TM-RE30	
	The Temperature Remote Controller has two functions. It allows the output temperature from the water heater to be adjusted within the range of 38°C to 85°C (100°F to 185°F), and it also works as a diagnostic tool that will give a concise error code whenever there is a problem with the unit. The temperature options are 38°C, 40.5°C, 43°C, 46°C, 49°C, 52°C, 55°C, 57°C, 60°C, 63°C, 65.5°C, 68°C, 71°C, 74°C, 77°C, 79°C, 82°C and 85°C (100°F, 105°F, 110°F, 115°F, 120°F, 125°F, 130°F, 135°F, 140°F, 145°F, 150°F, 155°F, 160°F, 165°F, 170°F, 175°F, 180°F and 185°F.) See the troubleshooting section for information on possible error codes.
2. Multi system controller: TM-MC01	
	The Multi- system controller can control a maximum of 10 water heaters, from 15,000 BTU to 3,800,000 BTU. It also works as a diagnostic tool that will give a concise error code whenever there is a problem with the unit. Usage of the TM-MC01 requires having the TMRE30 remote controller.
3. Vent Damper: TM-BF50	
	The Vent Damper prevents the backflow of air through the exhaust vent. This helps prevent harmful exhaust gases from entering the home, as well as helping to prevent the unit from freezing in areas where cold air can be blown or drawn into the exhaust system. Install this vent damper in accordance with the manufacturer's installation instructions, and any applicable codes.
4. Direct-Vent Kit: TM-DV50	
	This kit can be used convert the 910 from a conventional vent system to a direct-vent (or sealed combustion) system. This is a CSA tested conversion kit. Install this conversion kit in accordance with the manufacturer's installation instructions and any applicable codes.

5. Pipe cover: TM-PC50	
	The Pipe cover protects the plumbing pipes to the 910 from unexpected adjustments. This pipe cover is fixed to the bottom of the water heater, which hides the plumbing and improves the visual aspects of the whole installation for the water heater.

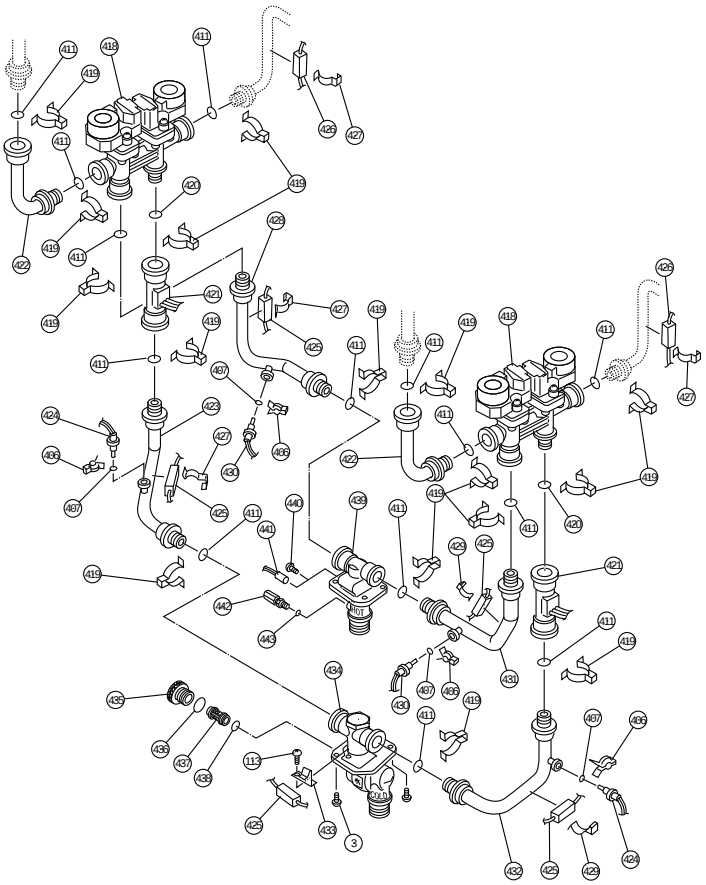
COMPONENTS DIAGRAM

Case Assembly

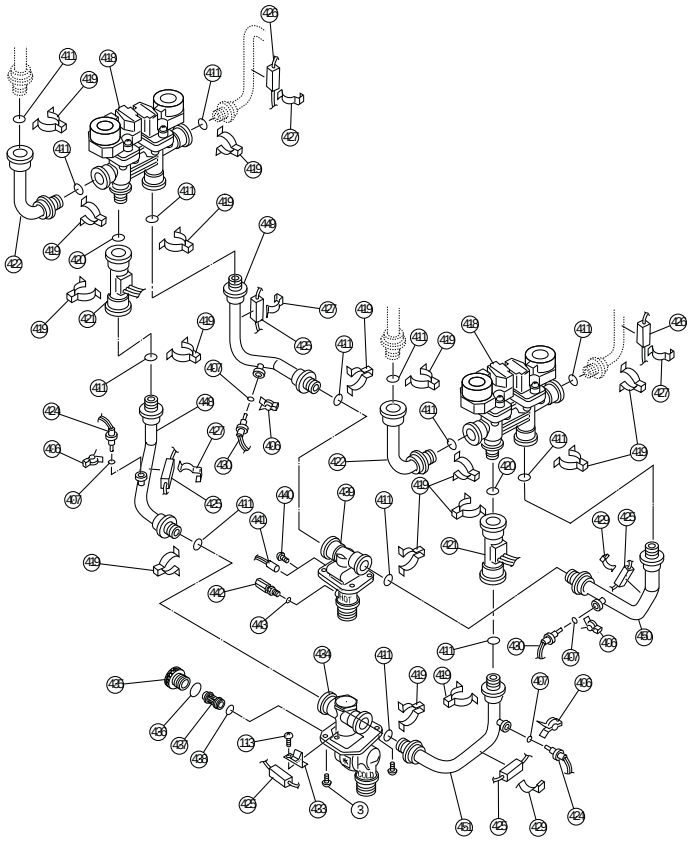


Water Way Assembly

910

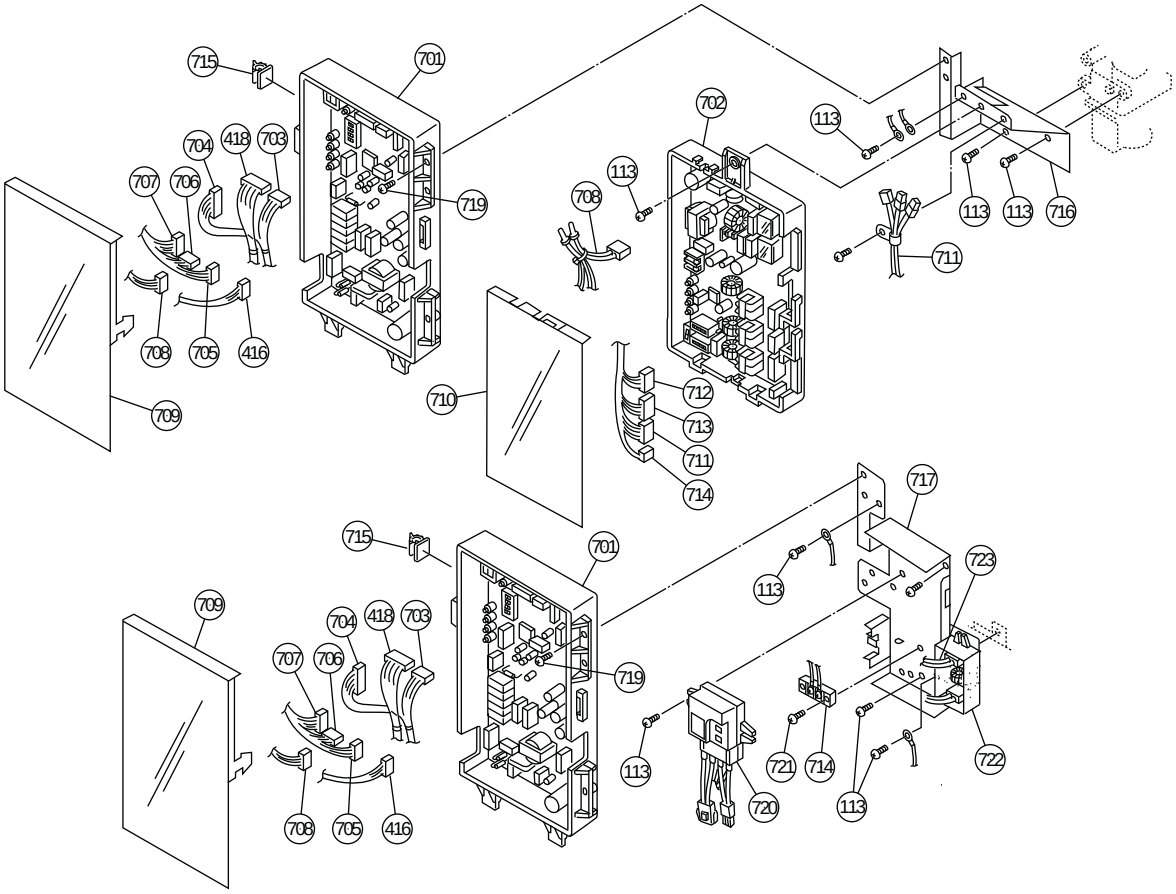


910ASME



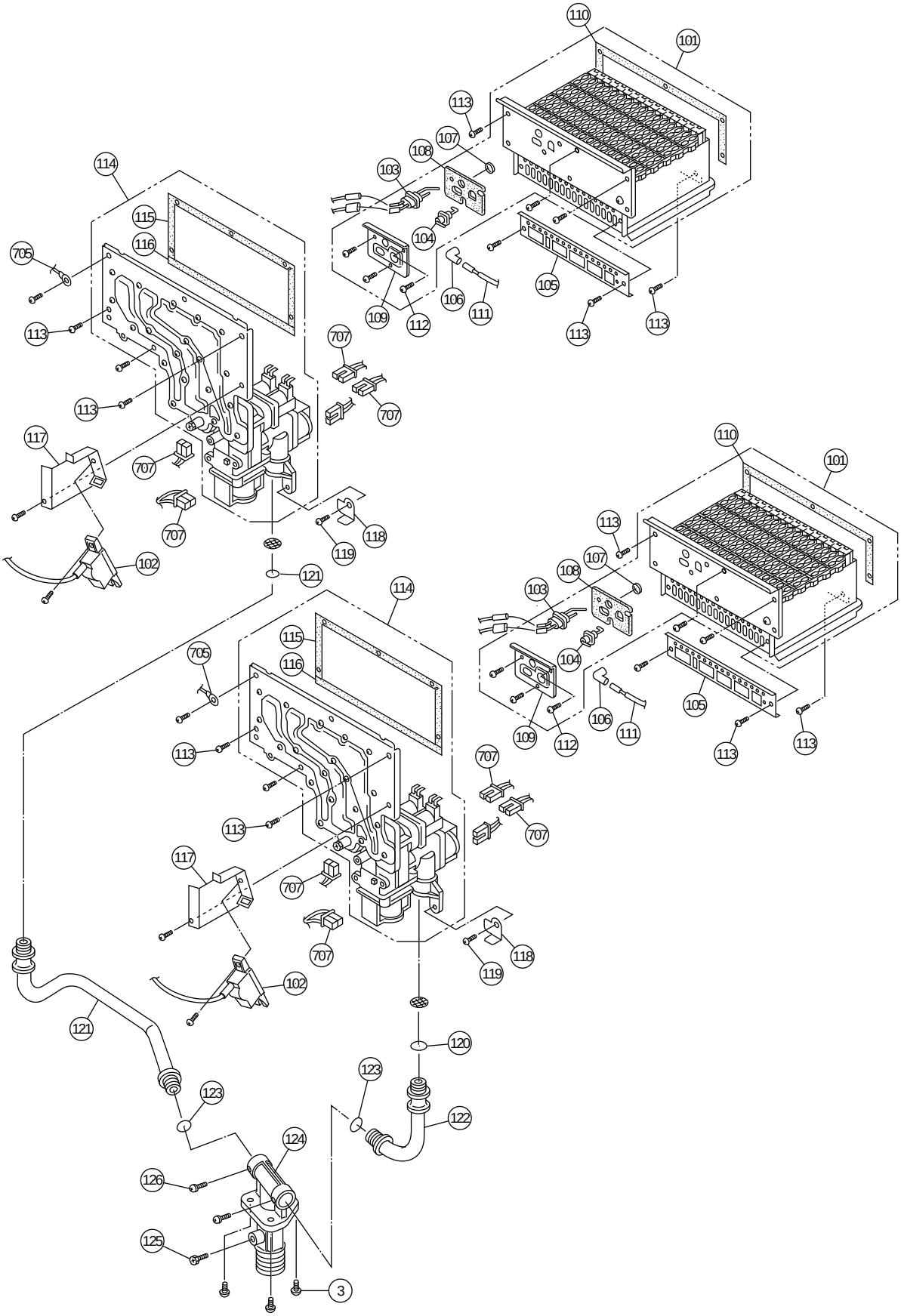
Computer Board Assembly

The 910 and the 910 ASME models share the same components



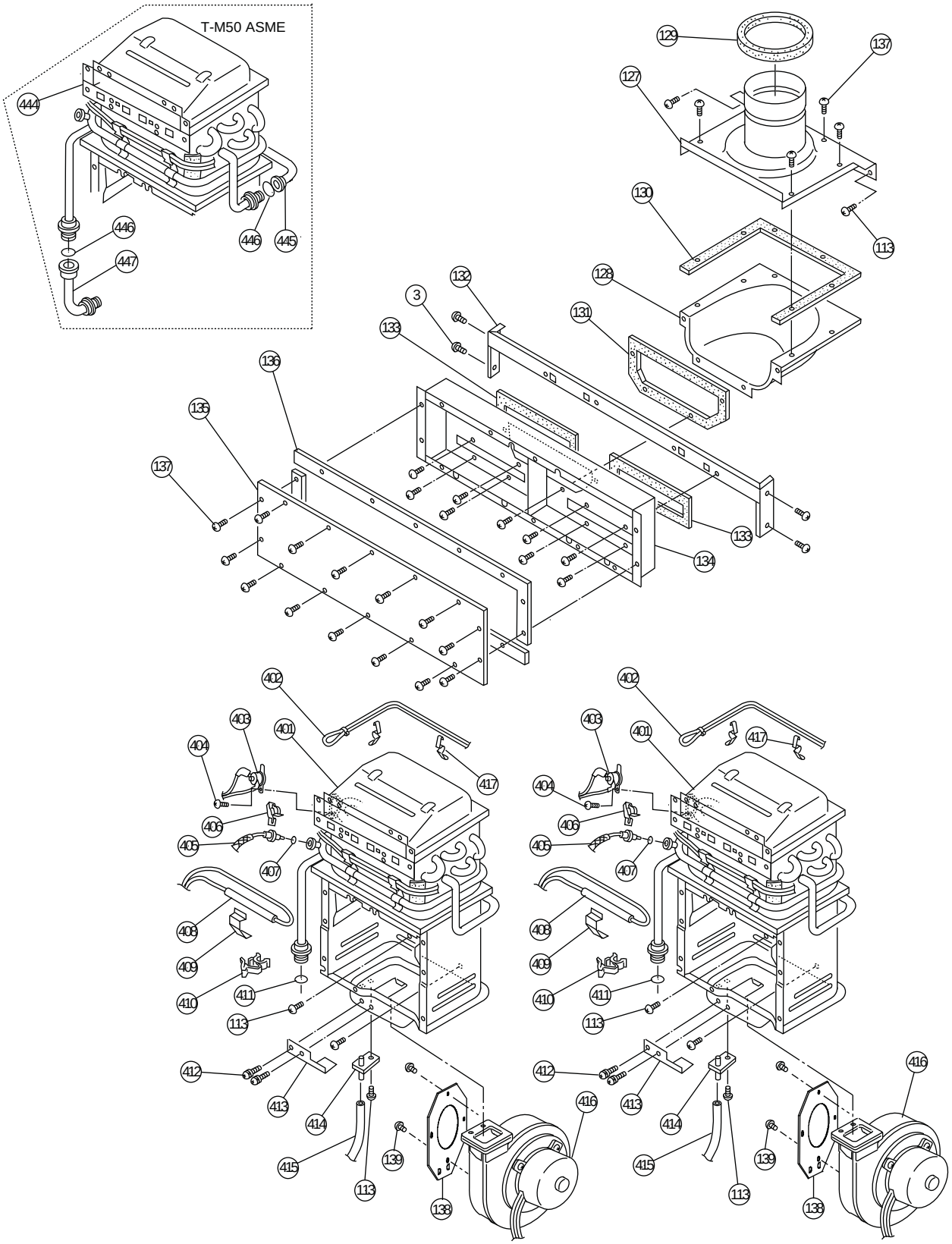
Burner Assembly

The 910 and the 910 ASME models share the same components.



Combustion And Exhaust Assembly

Other than Part# 444, Part# 445, Part# 446 and Part# 447, the 910 and the 910 ASME models share the same components.



PARTS LIST

Other than the burner assembly (No. 444), supply pipe (No. 445), O-ring P18 FKM (No. 446), connection pipe (No. 447), left cold pipe (No. 448), left hot pipe (No. 449), right hot pipe (No. 450) and right cold pipe (No. 451), all of the 910 ASME's components are the same as the 910.

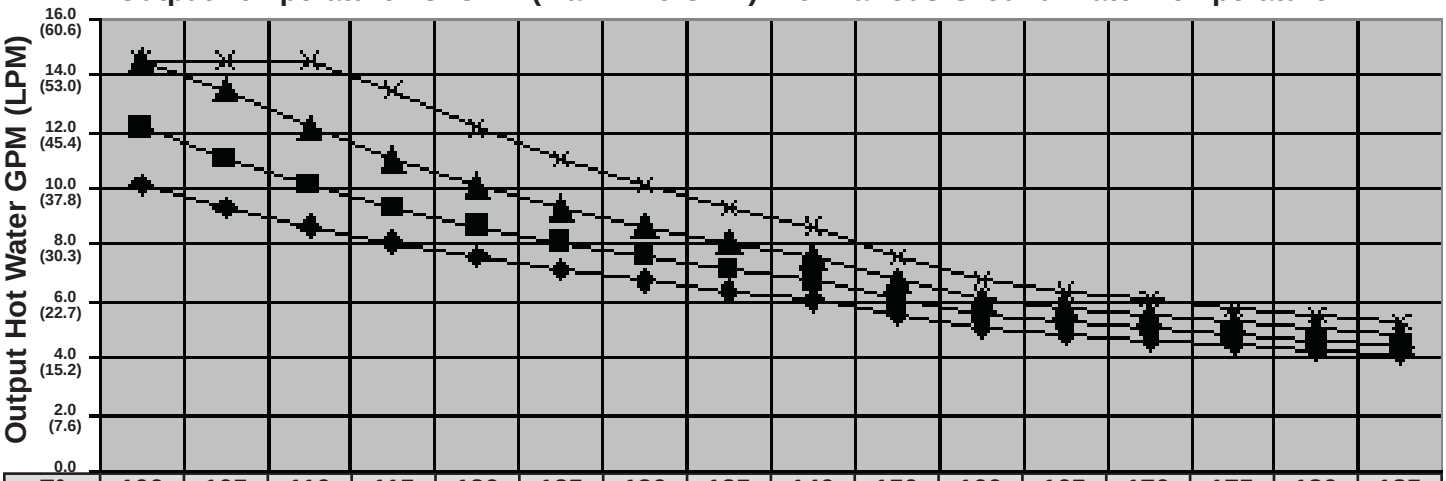
Item #	Parts #	Description
001	EM305	Case assembly
002	EM335	Brackets
003	EW001	Screw M4X10 (w/Washer)
004	EW002	Screw M4X10 (Coated)
005	EM264	Back guard panel
006	EM333	Power supply code assembly
007	EKJ64	Junction box
008	EM255	Chamber fixing plate
009	EX00B	Rubber bush
010	EM263	Exhaust fixing plate
011	EM301	Front cover
012	EM278	Air blockage plate
013	EW000	Screw M4X12 (w/Washer)
101	EM445	Burner assembly
102	EKN74	Igniter
103	EKK0E	Flame rod
104	EKK0F	Igniter rod
105	EKK1P	Damper
106	EKN61	Rod cap
107	EKK2V	Burner window
108	EKK2W	Rod holder gasket
109	EKK32	Rod holder
110	EKK0G	Burner holder gasket
111	EKK2M	High voltage igniter cable
112	EW00D	Pan screw M4X8
113	EW003	Screw M4X10
114	EM302	Manifold assembly with gas valve assembly LP
	EM303	Manifold assembly with gas valve assembly NA
115	EKK2Y	Manifold gasket A
116	EKK2K	Manifold gasket B
117	EKK1B	Igniter plate
118	EX00J	Gas connection plate
119	EW006	Pan screw M4X10
120	EK042	O-ring P20 NBR (Black)
121	EM293	Gas pipe left
122	EM289	Gas pipe right
123	EZP18	O-ring P18 NBR (Black)
124	EM284	Gas inlet
125	EW005	Hex head screw M4x8

Item #	Parts #	Description
126	EW00L	Pan screw M4X6 (w/Washer)
127	EM300	Exhaust connecter
128	EM331	Exhaust combining box
129	EKK3G	Silicon ring
130	EM266	Exhaust gasket A
131	EM267	Exhaust gasket B
132	EM282	Case beam
133	EM330	Exhaust auxiliary plate
134	EM299	Duct
135	EM294	Duct cover
136	EM268	Duct gasket
137	EW003	Screw M4X10
138	EK270	Fan damper
139	EW00B	Screw M3X6
140	EM286	Freeze protection thermostat
401	EM308	Heat exchanger assembly for 910
402	EK333	Overheat-cut-off-fuse
403	EKN34	Hi-limit switch
404	EW00A	Screw M3X6
405	EKK2T	Output thermistor
406	EKH30	Fastener "4-11"
407	EZM04	O-ring P4 FKM
408	EKN86	Pipe heater 122
409	EKK27	Heater fixing plate
	EX008	
411	EZM16	O-ring P16 FKM
412	EW00H	Pan Screw M4X12 (w/Washer)
413	EM252	Fan motor fixing plate
414	EKK2D	Pressure port
415	EX019	Urethane tube
416	EKK25	Fan motor
417	EKK26	Fuse fixing plate 18
418	EKH32	Water control valve
419	EX01H	Fastener "16AG"
420	EZM15	O-ring P15 FKM
421	EKH33	Flow sensor
422	EM285	Connecting pipe
423	EM290	Left cold pipe for 910
424	EKK38	Inlet thermistor
425	EX001	Heater 502
426	EX002	Heater 101
427	EK031	Heater fixing plate 16
428	EM328	Left hot pipe for 910
429	EKH38	Heater fixing plate 20
430	EKK1A	Mixing thermistor
431	EM292	Right hot pipe for 910

Item #	Parts #	Description
432	EM291	Right cold pipe for 910
433	EX021	Heater plate
434	EM295	Water inlet
435	EM222	Filter plug
436	EZM25	O-ring P25 FKM
437	EX006	Water inlet filter
438	EZN21	O-ring JASO#1021 FKM
439	EM309	Water outlet
440	EW009	Screw M4X6
441	EKN67	Heater 117
442	EKK2E	Outlet drain plug
443	EZM06	O-ring P6 FKM
444	EM323	Heat exchanger assembly for 910 ASME
445	EM326	Connection pipe for 910 ASME
446	EZM18	O-ring P18 FKM
447	EM370	Connecting pipe for 910 ASME
448	EM456	Left cold pipe for 910 ASME
449	EM459	Left hot pipe for 910 ASME
450	EM458	Right hot pipe for 910 ASME
451	EM457	Right cold pipe for 910 ASME
701	EM306	910 PCB
702	EM307	MC50 PCB
703	EM258	PV-FS wire
704	EM260	Thermistor connecting wire
705	EM271	Flame rod wire
706	EM257	Igniter wire
707	EM280	Gas valve wire
708	EM277	AC100V wire
709	EKH43	910 PCB cover
710	EM329	MC50 PCB cover
711	EM279	Multi communication wire
712	EM261	Left communication wire
713	EM262	Right communication wire
714	EM273	Remote controller terminal
715	EM167	Wire Cramp
716	EM269	Left PCB fixing plate
717	EM270	Right PCB fixing plate
718	EM296	Transformer
719	EX013	Screw M4X12
720	EM207	Ground fault circuit interrupter
721	EW01A	Screw M3X12
722	EM385	Surge box
723	EKK4U	Surge connecting wire

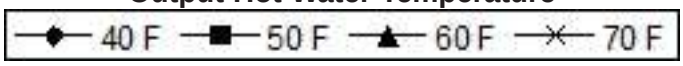
OUTPUT TEMPERATURE CHART

Output Temperature vs. GPM (Max. 14.5 GPM) with Various Ground Water Temperature



F°	100	105	110	115	120	125	130	135	140	150	160	165	170	175	180	185
GPM (40°F)	10.1	9.3	8.7	8.1	7.6	7.1	6.7	6.4	6.1	5.5	5.1	4.9	4.7	4.5	4.3	4.2
GPM (50°F)	12.1	11.0	10.1	9.3	8.7	8.1	7.6	7.1	6.7	6.1	5.5	5.3	5.1	4.9	4.7	4.5
GPM (60°F)	14.5	13.5	12.1	11.0	10.1	9.3	8.7	8.1	7.6	6.7	6.1	5.8	5.5	5.3	5.1	4.9
GPM (70°F)	14.5	14.5	14.5	13.5	12.1	11.0	10.1	9.3	8.7	7.6	6.7	6.4	6.1	5.8	5.5	5.3
C°	38	41	43	46	49	52	54	57	60	66	71	74	77	79	82	85
LPM (4°C)	38.3	35.4	32.8	30.6	28.7	27.0	25.5	24.2	23.0	20.9	19.2	18.4	17.7	17.0	16.4	15.9
LPM (10°C)	46.0	41.8	38.3	35.4	32.8	30.6	28.7	27.0	25.5	23.0	20.9	20.0	19.2	18.4	17.7	17.0
LPM (16°C)	54.9	51.1	46.0	41.8	38.3	35.4	32.8	30.6	28.7	25.5	23.0	21.9	20.9	20.0	19.2	18.4
LPM (21°C)	54.9	54.9	54.9	51.1	46.0	41.8	38.3	35.4	32.8	28.7	25.5	24.2	23.0	21.9	20.9	20.0

Output Hot Water Temperature



*When the set temperature is 65.5°C (150ºF) or higher, maximum flow rate is limited to 40 l/min (10.6 GPM (US)).

LIMITED WARRANTY

1. General terms of limited warranty:
   This limited warranty gives you specific legal rights, and you may also have other rights which vary from State to State. The manufacturer will honor the warranty to the original retail buyer at the original location only, and it is not transferable. THIS WARRANTY COVERS ONLY FAILED MECHANICAL AND ELECTRICAL PARTS DUE TO FACTORY DEFECTS UNDER NORMAL USAGE FOR THE PRODUCT'S INTENDED PURPOSES AND WITHIN THE APPLICABLE PERIOD SPECIFIED IN THE FOLLOWING TABLES. ONLY DIRECT DAMAGES SHALL BE RECOVERABLE BY A CLAIMANT UNDER THIS LIMITED WARRANTY AND, IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT, BREACH OF WARRANTY, TORT LIABILITY (INCLUDING NEGLIGENCE), STRICT LIABILITY, INDEMNITY OR OTHERWISE, WILL THE MANUFACTURER BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR INDIRECT CONSEQUENTIAL DAMAGES INCLUDING PROPERTY DAMAGE, PERSONAL DAMAGES, LOSS OF USE, OR INCONVENIENCE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.
2. Warranty for models: 910, 910 ASME

<table>
<tr><th colspan="3">Application</th><th>HX(1)</th><th>Parts</th><th>Labor (Years)</th></tr>
<tr><td rowspan="6">Single Family Domestic Hot Water</td><td colspan="2">No Recirculation</td><td rowspan="2">12</td><td rowspan="3">5</td><td rowspan="5">1(3)</td></tr>
<tr><td colspan="2">On-Demand Recirculation(2)</td></tr>
<tr><td rowspan="4">w/ Standard Recirculation</td><td>Aquastat Control</td><td rowspan="2">5</td></tr>
<tr><td>Pump Control</td></tr>
<tr><td>Timer Only</td><td rowspan="2">3</td><td rowspan="2">3</td></tr>
<tr><td>No Pump Control (24 hr.)</td></tr>
<tr><td rowspan="6">Commercial or Multi-Family Domestic Hot Water</td><td colspan="2">No Recirculation</td><td rowspan="4">5</td><td rowspan="4">5</td></tr>
<tr><td colspan="2">On-Demand Recirculation(2)</td></tr>
<tr><td rowspan="4">w/ Standard Recirculation</td><td>Aquastat Control</td></tr>
<tr><td>Pump Control</td></tr>
<tr><td>Timer Only</td><td rowspan="2">3</td><td rowspan="2">3</td></tr>
<tr><td>No Pump Control (24 hr.)</td></tr>
<tr><td>Heating(4)</td><td colspan="2">All Types</td><td>5</td><td>5</td><td>1(3)</td></tr>
</table>

(1) Heat exchanger.
(2) An on-demand recirculation system is a system that utilizes either a push-button or other type of manual activation (as opposed to automatic activation with a temperature sensor or timer) to activate the circulation pump. An on-demand recirculation system can use either the existing cold water line as the return line or have its own dedicated return line.
(3) Limited Labor Coverage.
- The manufacturer will provide for reasonable labor charges associated with warranty repairs or replacements within one (1) year from the date of purchase. The manufacturer will only pay directly to the service provider.
- Warranty service must be performed by an authorized Service Representative. A list of authorized Service Representatives is available upon request.
- All warranty claims and warranty service must be authorized and approved by the manufacturer.

(4) Includes dual-purpose applications (combination heating and domestic).

3. Repair, Replacement or Refund:
   The manufacturer or its authorized Service Representative will, at its sole discretion, repair or replace any failed or defective mechanical or electrical parts, or components thereof, or, if the manufacturer or its authorized Service Representative cannot replace said parts, and repair is not commercially practicable, the manufacturer or its authorized Service Representative will refund the purchase price. The manufacturer or its authorized Service Representative may, at its sole discretion, use new, refurbished or reconditioned parts.

4. Limitation on Duration of Implied Warranties:
   ANY IMPLIED WARRANTIES ARISING UNDER STATE LAW, INCLUDING THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, SHALL IN NO EVENT EXTEND PAST THE EXPIRATION OF ANY WARRANTY PERIOD HEREUNDER. SOME STATES DO NO ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

5. THIS WARRANTY WILL NOT COVER THE FOLLOWING:

- Any product that is not installed by a licensed plumber, gas installer, or contractor. Damages due to accidents, abuse, misuse, improper installation, misapplication, or incorrect sizing. Damages due to fires, flooding, freezing, electrical surges, or any Acts of God.
- Damages due to unauthorized alterations, attachments, and/or repairs.
- Damages due to a lack of maintenance (e.g. water filter, water treatment system, vent blockage, etc.) .
- Any product installed in an improper environment (e.g. corrosive, dusty, chemically contaminated, excessive lint, etc.). Freeze damage that occurs without taking proper preventive measures as described in the installation manual.
- Condensate damage due to improperly installed or lack of a condensate trap (drain).
- Any product not installed in compliance with all applicable local & state codes, ordinances, and good trade practices.
- Any product sold to or installed in areas outside of the fifty states (and the District of Columbia) of the United States of America and Canada.
- Any product installed in applications that cause the water heater to activate more than 300 times per day (this averages to an activation every 5 minutes in a 24-hour period).
- Any failures that are not due to defects in materials or workmanship (mechanical and/or electrical parts). Damages due to improper installation:
  - Gas: incorrect gas pipe sizing, incorrect gas meter sizing, incorrect gas type, and/or gas pressures that fall outside the product's specified range.
  - Water: incorrect water pipe sizing, water pressures that fall outside the product's specified range, recirculation flow rates that fall outside the product's specified range (air removal), and/or lack of proper methods of air removal in a closed-loop, circulation system (see installation manual for details).
  - Electric: supply power voltages that fall outside the product's specified range.
- Damages due to water quality:
  - Introduction of liquids other than potable water or potable water / glycol mixtures into the product.
  - Introduction of pool water, spa water, or any chemically treated water into the product.
  - Introduction of hard water measuring more than 7 grains per gallon (120 ppm) for single family domestic applications or more than 4 grains per gallon (70 ppm) for all other types of applications into the product.
  - Introduction of untreated or poorly treated well water into the product.
  - Introduction of water with pH levels less than 6.5 and greater than 8.5 into the product.

If you have any questions,
please call or write to:
GSW Water Heating
599 Hill Street West
Fergus, ON Canada N1M 2X1
Toll Free: 1-888-479-8324