



# Direct Vent Tankless Water Heater Installation and Operation Manual

FOR INDOOR APPLICATIONS ONLY

UGT-199N

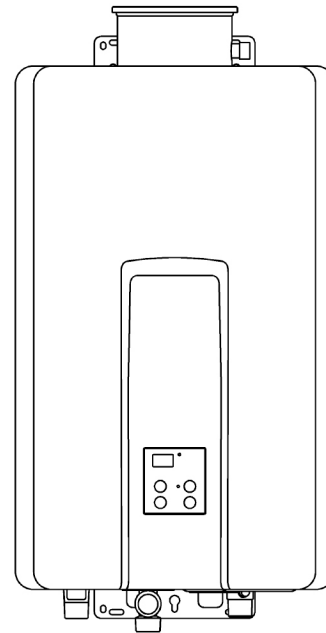
UGT-199P

UGT-180N

UGT-180P



ANS Z21.10.3 • CSA 4.3



READ ALL OF THE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR OPERATING THIS WATER HEATER.

This manual provides information on the installation, operation, and maintenance of the water heater. For proper operation and safety, it is important to follow the instructions and adhere to the safety precautions.

A licensed professional must install the water heater according to the exact instructions on pages 4-28.

The consumer must read the entire manual to properly operate the water heater and to have regular maintenance performed.



## WARNING

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

- Do not store or use gasoline or other flammable 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 electrical switch; do not use any phone in your building.
  - **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
  - If you cannot reach your gas supplier, call the fire department.
- **Installation and service must be performed by a licensed professional.**

**This entire manual must be left for the consumer. The consumer must read and refer to this manual for proper operation and to maintain the water heater.**

# Table of Contents

Table of Contents .....	2	Installation of Temperature Controller .....	20
Safety Definitions .....	2	Final Checklist.....	22
Safety Behaviors and Practices for the Consumer and Installer .....	3	Technical Data .....	23
<b>Installation Instructions</b> <b>(for the licensed professional) .....</b>	<b>4</b>	Specifications .....	23
Prepare for Installation .....	5	Dimensions.....	24
Determine Installation Location .....	6	Pressure Drop and Water Flow Curves .....	25
Checklist to Determine Installation Location... ..	11	Ladder Diagram.....	26
Mount to Wall.....	11	Recirculation Mode.....	27
Remove the Front Panel .....	11	<b>Operation Instructions .....</b>	<b>29</b>
Installation of Venting.....	12	Consumer Operation Guidelines for the Safe Operation of your Water Heater .....	30
Condensate .....	14	How to Use the Temperature Controller .....	31
Checklist for Venting and Condensate.....	14	How to Set the Temperature .....	32
Installation of Plumbing.....	15	Diagnostic Codes .....	34
Checklist for Plumbing .....	17	Required Maintenance.....	37
Installation of Gas Supply .....	17	Flushing the Heat Exchanger .....	39
Connect Electricity .....	19	Manual Draining of the Water Heater .....	40
Adjust for High Altitude (U.S.).....	19	State Regulations.....	41
Adjust for High Altitude (Canada) .....	19	Consumer Warranty .....	42
Adjust for Vent Length.....	20		
Checklist for Gas and Electricity.....	20		

NOTICE: Giant sometimes shares customer contact information with businesses that we believe provide products or services that may be useful to you. By providing this information, you agree that we can share your contact information for this purpose. If you prefer not to have your information shared with these businesses, please contact customer service and ask not to have your information shared. We will however, continue to contact you with information relevant to the product(s) you registered and/or you account with us.

If you have any questions or feel that the manual is incomplete contact Giant at 1-800-363-9354.

## Safety Definitions



This is the safety alert symbol. This symbol alerts you to potential hazards that can kill or hurt you and others.



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



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



Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

## Safety Behaviors and Practices for the Consumer and Installer

### **WARNING**

- Before operating, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
- Keep the area around the appliance clear and free from combustible materials, gasoline, and other flammable vapors and liquids.
- Combustible construction refers to adjacent walls and ceiling and should not be confused with combustible or flammable products and materials. Combustible and/or flammable products and materials should never be stored in the vicinity of this or any gas appliance.
- Always check the water temperature before entering a shower or bath.
- To protect yourself from harm, before performing maintenance:
  - ◇ Turn off the electrical power supply by unplugging the power cord or by turning off the electricity at the circuit breaker. (The temperature controller does not control the electrical power.)
  - ◇ Turn off the gas at the manual gas valve, usually located immediately below the water heater.
  - ◇ Turn off the incoming water supply. This can be done at the isolation valve immediately below the water heater or by turning off the water supply to the building.
- Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, do not try to repair it; call a licensed professional. Force or attempted repair may result in a fire or explosion.
- Do not use this appliance if any part has been under water. Immediately call a licensed professional to inspect the appliance and to replace any part of the control system and any gas control which has been under water.
- Do not use substitute materials. Use only parts certified with the appliance.
- Should overheating occur or the gas supply fail to shut off, turn off the manual gas control valve to the appliance.
- Do not adjust the DIP switch unless specifically instructed to do so.
- Do not use an extension cord or an adapter plug with this appliance.
- Any alteration to the appliance or its controls can be dangerous and will void the warranty.

### **CAUTION**

- **BURN HAZARD.** Hot exhaust and vent may cause serious burns. Keep away from water heater unit. Keep small children and animals away from unit.
- Hot water outlet pipes leaving the unit can be hot to touch. In residential applications, insulation must be used for hot water pipes below 36" due to burn risk to children.

California law requires this notice to be provided:

**California Proposition 65** lists chemical substances known to the state to cause cancer, birth defects, death, serious illness or other reproductive harm. This product may contain such substances, be their origin from fuel combustion (gas, oil) or components of the product itself.

# Installation Instructions

## Installer Qualifications

A licensed professional must install the appliance, inspect it, and leak test it before use. The warranty will be voided due to improper installation.

The installer should have skills such as:

- gas sizing
  - connecting gas lines, water lines, valves, electricity,
  - knowledge of applicable national, state, and local codes.
  - installing venting through a wall or roof
- If you lack these skills contact a licensed professional.

## Type of installation

- For installation in residential and commercial applications.
- Certified for installation in manufactured (mobile) homes.

## Installation Steps

Prepare for Installation .....	5
Determine Installation Location.....	6
Checklist to Determine Installation Location ...	11
Mount to Wall .....	11
Remove the Front Panel .....	11
Installation of Venting.....	12
Condensate .....	14
Checklist for Venting and Condensate.....	14
Installation of Plumbing .....	15
Checklist for Plumbing .....	17
Installation of Gas Supply.....	17
Connect Electricity .....	19
Adjust for High Altitude (U.S.).....	19
Adjust for High Altitude (Canada) .....	19
Adjust for Vent Length .....	20
Checklist for Gas and Electricity.....	20
Installation of Temperature Controller.....	20
Final Checklist.....	22

## General Instructions

### DO NOT

- Do not install the appliance outdoors.
- Do not install the appliance in an area where water leakage of the unit or connections will result in damage to the area adjacent to the appliance or to lower floors of the structure. When such locations cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the appliance. The pan must not restrict combustion air flow.
- Do not obstruct the flow of combustion and ventilation air. Combustion air shall not be supplied from occupied spaces.
- Do not use this appliance in an application such as a pool or spa heater that uses chemically treated water . (This appliance is suitable for filling large or whirlpool spa tubs with potable water.)
- Do not use substitute parts that are not authorized for this appliance.

### MUST DO

- The installation must conform with local codes or, in the absence of local codes, with the *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or the *Natural Gas and Propane Installation Code, CSA B149.1*. If installed in a manufactured home, the installation must conform with the *Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280* and/or *CAN/SCA Z240 MH Series, Mobile Homes*.
- The appliance, when installed, must be electrically grounded in accordance with local codes or, in the absence of local codes, with the *National Electrical Code, ANSI/NFPA 70*, or the *Canadian Electrical Code, CSA C22.1*.
- The appliance and its appliance main gas valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.5 kPa) (13.84 in W.C.).

- The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.5 kPa) (13.84 in W.C.).
- You must follow the installation instructions and those in *Care and Maintenance* for adequate combustion air intake and exhaust.

### **INFORMATION**

- If a water heater is installed in a closed water supply system, such as one having a backflow preventer in the cold water supply line, means shall be provided to control thermal expansion. Contact the water supplier or local plumbing inspector on how to control thermal expansion.
- Should overheating occur or the gas supply fail to shut off, turn off the manual gas control valve to the appliance.
- Keep the air intake location free of chemicals such as chlorine or bleach that produce fumes. These fumes can damage components and reduce the life of your appliance.

## **Prepare for installation**

### **Parts included**

- Tankless water heater
- MC-91-2 temperature controller (integrated into the front panel)

### **Tools needed**

- |                     |                  |
|---------------------|------------------|
| • Pipe wrenches (2) | • Gloves         |
| • Adjustable pliers | • Safety glasses |
| • Screwdrivers (2)  | • Level          |
| • Wire cutters      | • Manometer      |

### **Tools that might be needed**

- |  |                                |
|--|--------------------------------|
| • Hammer drill with concrete bits        | • Core drill with diamond head |
| • Saw                                    | • Torch set                    |
| • Threading machine with heads and oiler | • Copper tubing cutter         |
|  | • Steel pipe cutter            |

### **Materials needed**

- |                    |  |
|--------------------|--|
| • Soap solution    | • Teflon tape (recommended) or pipe compound |
| • Approved venting |  |

### **Materials that may be needed**

- |  |  |
|--|--|
| • Heat tape                                  | • 5/8" ID PVC flexible tubing            |
| • Pipe insulation                            | • 2 conductor 22 AWG wire for controller |
| • Electrical wire and conduit per local code | • Single gang electrical box             |
| • Concrete wall anchors                      | • Wire nuts                              |
| • Optional pipe cover                        | • Unions and drain valves                |
| • Optional temperature controller            |  |

## Determine Installation Location

You must ensure that clearances will be met and that the vent length will be within required limits. Consider the installation environment, water quality, and need for freeze protection. Requirements for the gas line, water lines, electrical connection, and condensate disposal can be found in their respective installation sections of this manual.

### Water Quality

Consideration of care for your water heater should include evaluation of water quality.

**Water that contains chemicals exceeding the levels below affect and damage the heat exchanger. Replacement of the heat exchanger due to water quality damage is not covered by the warranty.**

	Maximum Level
Total Hardness	Up to 200 mg / L
Aluminum *	Up to 0.2 mg / L
Chlorides *	Up to 250 mg / L
Copper *	Up to 1.0 mg / L
Iron *	Up to 0.3 mg / L
Manganese *	Up to 0.05 mg / L
pH *	6.5 to 8.5
TDS (Total Dissolved Solids) *	Up to 500 mg / L
Zinc *	Up to 5 mg / L

\* Source: Part 143 National Secondary Drinking Water Regulations

If you install this water heater in an area that is known to have hard water or that causes scale build-up the water must be treated and/or the heat exchanger flushed regularly.

When scale build-up in the heat exchanger begins to affect the performance of the water heater, a diagnostic code "LC#" will display. Flush the heat exchanger to prevent damage to it. Scale build up is caused by hard water set at a high temperature.

## Environment

Air surrounding the water heater, venting, and vent termination(s) is used for combustion and must be free of any compounds that cause corrosion of internal components. These include corrosive compounds that are found in aerosol sprays, detergents, bleaches, cleaning solvents, oil based paints/ varnishes, and refrigerants. The air in beauty shops, dry cleaning stores, photo processing labs, and storage areas for pool supplies often contains these compounds.

The water heater, venting, and vent termination(s) should not be installed in any areas where the air may contain these corrosive compounds. If it is necessary for a water heater to be located in areas which may contain corrosive compounds, the following instructions are strongly recommended.

### IMPORTANT CONSIDERATIONS FOR:

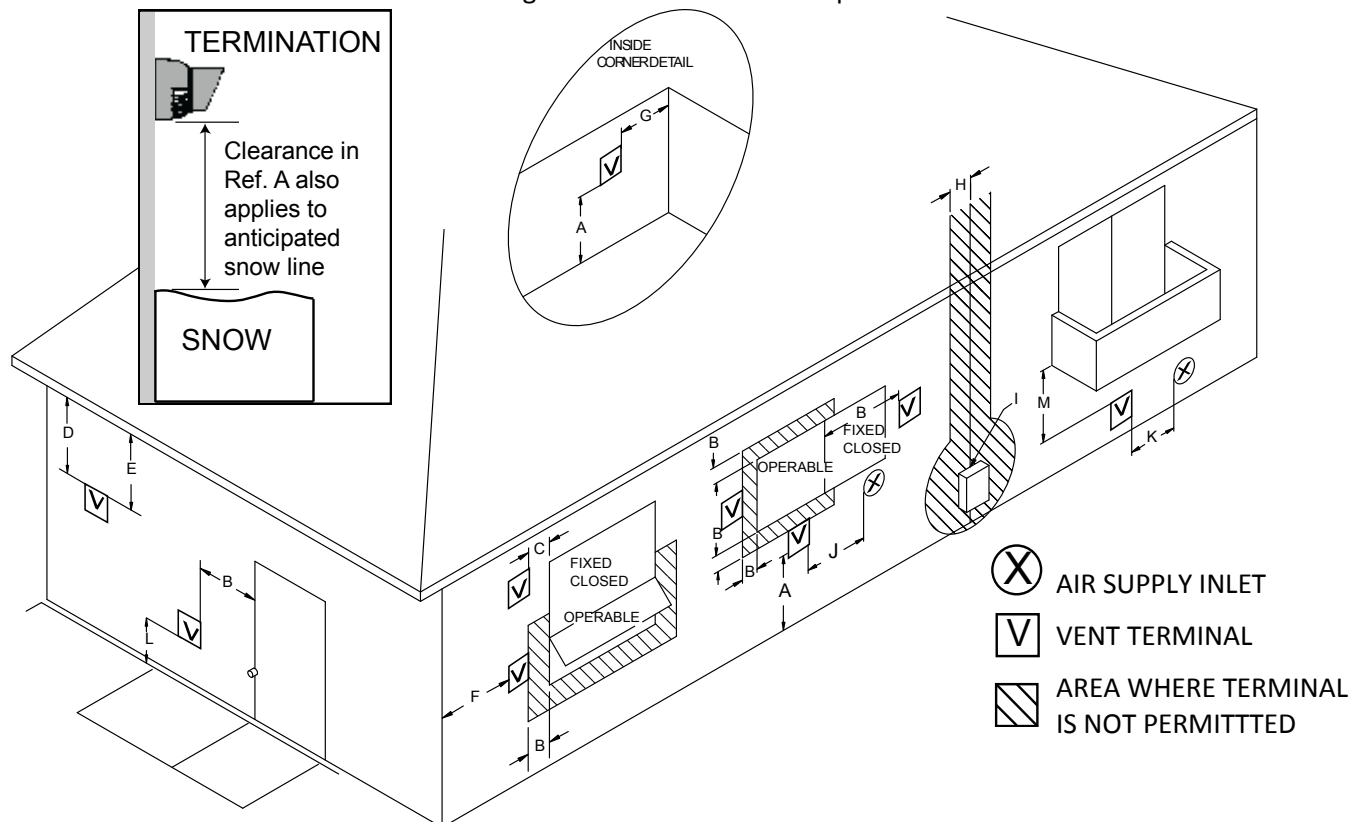
#### Indoor/Internal Water Heaters and Vent Terminations of Indoor/Internal Water Heaters

- DO NOT Install in areas where air for combustion can be contaminated with chemicals.
- Before installation, consider where air has the ability to travel within the building to the water heater.
- Where possible, install the water heater in a sealed closet so that it is protected from the potential of contaminated indoor air.
- Chemicals that are corrosive in nature should not be stored or used near the water heater.
- Install the water heater termination as far away as possible from exhaust vent hoods.
- Install the water heater termination as far away as possible from air inlet vents. Corrosive fumes may be released through these vents when air is not being brought in through them.
- Chemicals that are corrosive in nature should not be stored or used near the water heater or vent termination.

Damage and repair due to corrosive compounds in the air is not covered by warranty.

## Vent Termination Clearances

You must install a vent termination to bring in combustion air and expel exhaust.



Ref	Description	Canadian Installations	US Installations
A	Clearance above grade, veranda, porch, deck, or balcony	12 inches (30 cm)	12 inches (30 cm)
B	Clearance to window or door that may be opened	36 inches (91 cm)	12 inches (30 cm)
C	Clearance to permanently closed window	*	*
D	Vertical clearance to ventilated soffit, located above the terminal within a horizontal distance of 2 feet (61 cm) from the center line of the	*	*
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 cm) within a height 15 feet (4.5 m) above the meter/	*
I	Clearance to service regulator vent outlet	36 inches (91 cm)	*
J	Clearance to nonmechanical air supply inlet to building or the	36 inches (91 cm)	12 inches (30 cm)
K	Clearance to a mechanical air supply inlet	6 feet (1.83 m)	3 feet (91 cm) above if within 10
L	Clearance above paved sidewalk or paved driveway located on public	7 feet (2.13 m) ①	*
M	Clearance under veranda, porch, deck, or balcony	12 inches (30 cm) ②	*

[1] A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.

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

\* For clearances not specified in *ANSI Z223.1/NFPA 54*, clearances are in accordance with local installation codes and the requirements of the gas supplier.

Clearance to opposite wall is 24 inches (60 cm).

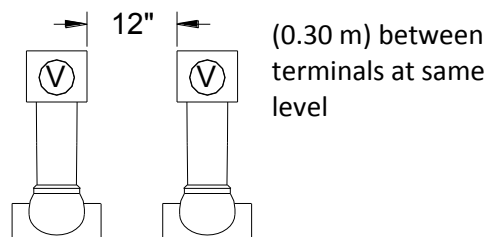
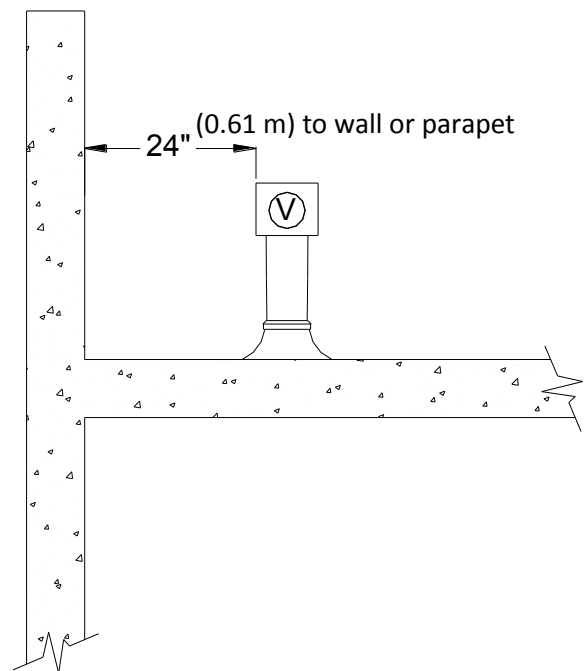
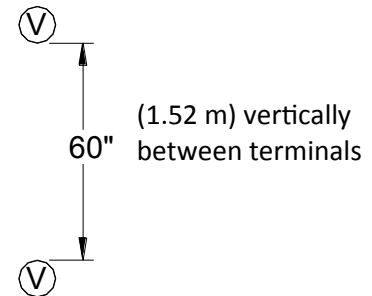
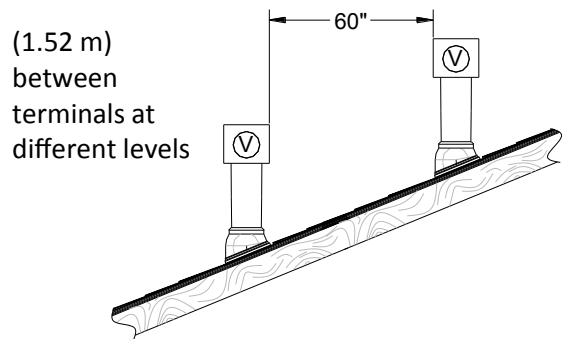
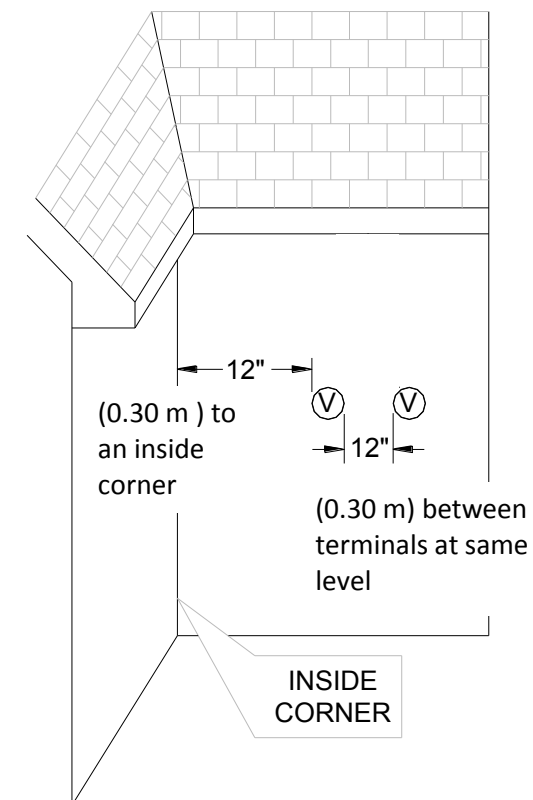
## Additional clearances

Check on whether local codes supersede these clearances.

- Avoid termination locations near a dryer vent.
- Avoid termination locations near commercial cooking exhaust.
- You must install a vent termination at least 12 inches from the ground.

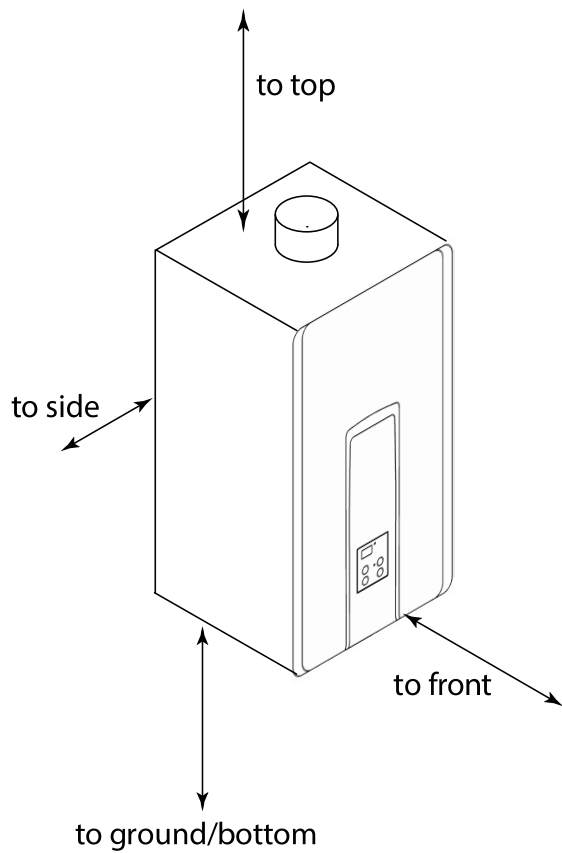
**Important considerations** for locating vent termination under a soffit (ventilated or unventilated or eave vent; or to a deck or porch)

- Do not install vent termination under a soffit vent such that exhaust can enter the soffit vent
- Install vent termination such that exhaust and rising moisture will not collect under eaves. Discoloration to the exterior of the building could occur if installed too close.
- Do not install the vent termination too close under the soffit where it could present recirculation of exhaust gases back into the combustion air intake part of the termination.





## Unit clearances



	to Combustibles inches (mm)	to Non-Combustibles inches (mm)
<b>Top of Heater</b>	6 * (152)	2 *(51)
<b>Back of Heater</b>	0 (zero)	0 (zero)
<b>Front of Heater</b>	6 (152)	6 (152)
<b>Sides of Heater</b>	2 (51)	1/2 (13)
<b>Ground/Bottom</b>	12 (305)	12 (305)
<b>Vent</b>	0 (zero)	0 (zero)

\* 0 inches from vent components and condensate drain line.

The clearance for servicing is 24 inches in front of the water heater.

For closet installation, clearance is 6 inches (152 mm) from the front.

## Maximum vent length

1. Determine the number of 90 degree elbows in the vent system. (Two 45 degree elbows count as one 90 degree elbow.)
2. Refer to the table to find the maximum vent length based on the number of elbows.

Number of 90° Elbows	Maximum vent length
0	41 ft (12.5 m) ①
1	35 ft (10.7 m) ②
2	29 ft (8.8 m) ③
3	23 ft (7.0 m) ④
4	17 ft (5.2 m) ④
5	11 ft (3.4 m) ④
6	5 ft (1.5 m) ④

3. Adjust switch No. 1 in the SW1 DIP switch (tan switches) if required by the applicable note.
    - ① If the length is greater than 21 ft (6.4 m) then move switch No. 1 (SW1) to OFF.
    - ② If the length is greater than 15 ft (4.6 m) then move switch No. 1 (SW1) to OFF.
    - ③ If the length is greater than 9 ft (2.7 m) then move switch No. 1 (SW1) to OFF.
    - ④ Move switch No. 1 (SW1) to OFF.
- Example: If you have one elbow then your maximum vent length is 35 feet (10.7 m). If your actual length is greater than 15 ft (4.6 m) then move switch no. 1 (SW1) to OFF.

### NOTICE

If you have a longer vent length (see above), switch No. 1 is required to be in the OFF position. This ensures the water heater will run properly. Blocked flue diagnostic codes and shutdowns may result if switch No. 1 is not in the correct position.

## Freeze Protection

Make sure that in case of freezing weather that the water heater and its water lines are protected to prevent freezing. Damage due to freezing is not covered by the warranty.

Loss of freeze protection may result in water damage from a burst heat exchanger or water lines.

With electrical power supplied, the water heater will not freeze when the outside air temperature is as cold as -22°F (-30°C) for indoor models when protected from direct wind exposure. Because of the “wind-chill” effect, any wind or circulation of the air on the unit will reduce its ability to freeze protect.

The unit may be drained manually. However, it is highly recommended that drain down solenoid valves are installed that will automatically drain the unit if power is lost. These are available in a kit, P/N 15000029-A.

In addition, the solenoid valves should be connected electrically to a surge protector with terminals. This allows the solenoid valves to operate if the water heater is disabled due to a diagnostic code.

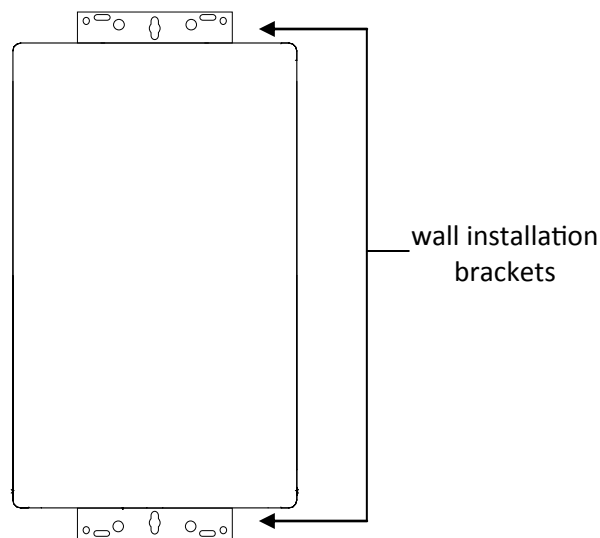
The freeze protection features will not prevent the external piping from freezing. It is recommended that hot and cold water pipes are insulated. Pipe cover enclosures may be packed with insulation for added freeze protection.

In the event of a power failure at temperatures below freezing the water heater should be drained of all water to prevent freezing damage. In addition, drain the condensate trap and drain line.

## Checklist to Determine Installation Location

- ☐ The water heater is not exposed to corrosive compounds in the air.
- ☐ The water heater location complies with the clearances.
- ☐ The planned venting will not exceed the maximum length for the number of elbows used.
- ☐ The planned venting termination/air intake location meets the clearances.
- ☐ The water supply does not contain chemicals or exceed total hardness that will damage the heat exchanger.
- ☐ A standard 3 prong 120 VAC, 60 Hz properly grounded wall outlet or other 120 VAC, 60 Hz source is available.
- ☐ The installation must conform with local codes or, in the absence of local codes, with the *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or the *Natural Gas and Propane Installation Code, CSA B149.1*. If installed in a manufactured home, the installation must conform with the *Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280* and/or *CAN/SCA Z240 MH Series, Mobile Homes*.
- ☐ **Leave the entire manual taped to the water heater or give the entire manual directly to the consumer.**

## Mount to Wall



1. Identify the installation location and confirm that the installation will meet all required clearances.
2. Securely attach the water heater to the wall using any of the holes in the wall installation brackets which are at the top and bottom of the water heater. Ensure that the attachment strength is sufficient to support the weight. Refer to the weight of the water heater in the Specifications section. Use a leveling tool to ensure that the water heater is level. Proper operation requires that the water heater be level.

NOTE: The water heater should be installed in an upright position. Do not install upside down or on its side.

## Remove the Front Panel

Slide the plastic trim pieces on each side of the water heater to expose the screws.

Remove the 4 screws and pull off the front panel.

## Installation of venting

Install the correct venting for your model according to the venting manufacturer's instructions and the guidelines below.

Refer to the manufacturer's technical literature for specific part numbers and instructions.

Manufacturer	Listed and Tested Vent Products for UGT-180 AND UGT-199	Telephone	Fax	Contact
Ubbink	Rolux Vent System	800-363-9354	514-640-0969	www.giantinc.com
Heat-Fab	Saf-T Vent SC system	800-772-0739	413-863-4803	custsvc@heat-fab.com, www.heatfab.com
Metal-Fab	Corr/Guard Vent/Air Intake System	800-835-2830	316-943-2717	info@mtlfab.com, www.metal-fabinc.com

### Venting Guidelines

#### **DO NOT**

- Do not use PVC, CPVC, ABS or galvanized material to vent this appliance.
- Do not combine vent components from different manufacturers.
- Vent diameter must not be reduced.
- Do not connect the venting system with an existing vent or chimney.
- Do not common vent with the vent pipe of any other water heater or appliance.

#### **MUST DO**

- This water heater is a direct vent water heater and therefore is certified and listed with the vent system. You must use vent components that are certified and listed with the water heater model.
- The vent system must vent directly to the outside of the building and use outside air for combustion.
- Avoid dips or sags in horizontal vent runs by installing supports per the vent manufacturer's instructions.
- Support horizontal vent runs every four feet and all vertical vent runs every six feet or in accordance with local codes.
- Venting should be as direct as possible with a minimum number of pipe fittings.

- Vent connections must be firmly pressed together so that the gaskets form an air tight seal.
- The vent piece connected to the water heater must be secured with one self-tapping screw.

#### **INFORMATION**

- Refer to the instructions of the vent system manufacturer for component assembly instructions.
- If the vent system is to be enclosed, it is suggested that the design of the enclosure shall permit inspection of the vent system. The design of such enclosure shall be deemed acceptable by the installer or the local inspector.

#### **NOTICE**

If it becomes necessary to access an enclosed vent system for service or repairs, Giant is not responsible for any costs or difficulties in accessing the vent system. The warranty does not cover obtaining access to a vent system in an enclosed environment.

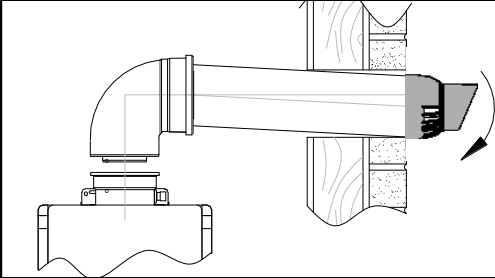
## Flue Installation

Install the venting termination according to the diagrams and instructions below.

### Horizontal Termination without using the Condensate Collector

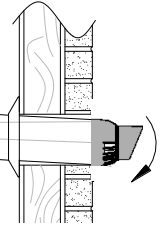
#### **! WARNING**

If the condensate collector is not used, the drain pipe must be capped to prevent exhaust gases and condensate from entering the building. The cap is supplied on the appliance.



Maximum Height \*  
5 feet (1.52 m)

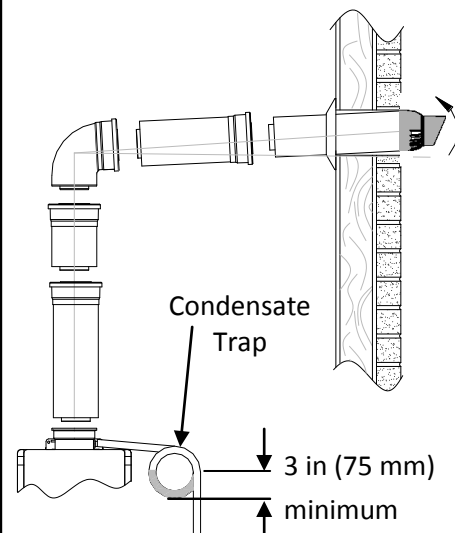
\* The condensate collector must be used in horizontal terminations if a vertical rise in the vent system exceeds 5ft.



Regions of cold climate will create more condensate in the vent system. The condensate collector should be used in cold climates.

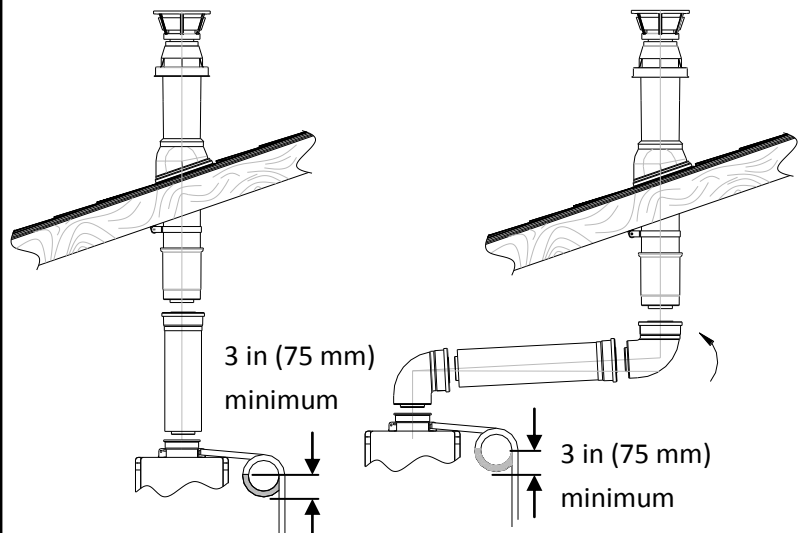
If more than one elbow is used in the vertical section the condensate collector must be used.

### Horizontal Termination using the Condensate Collector

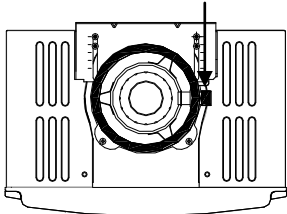


### Vertical Termination

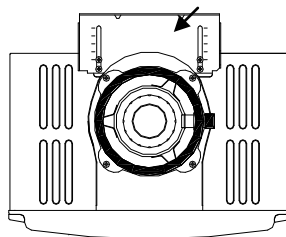
(condensate collector must be used in all installations)



### Condensate Collector



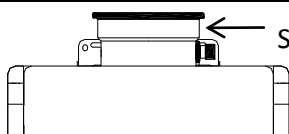
### Bracket



To adjust the condensate collector position or to replace the female vent top with a male vent top:

1. Loosen the 4 screws at the rear bracket
2. Slide the bracket away from the female vent top.
3. Remove the 4 screws attaching the female vent top to the water heater.
4. Lift up the female vent top and reposition as desired (or replace with a male vent top).
5. Install the 4 screws at the vent top and tighten the 4 screws at the bracket.

### Securing Screw



Secure the first vent component to the water heater with one self-tapping screw at the hole located above the condensate collector.

## Condensate

Condensate formation can occur in high efficiency direct vent appliances. Without proper drainage condensate will damage the heat exchanger.

To prevent condensate damage follow these instructions.

### **DO NOT**

- Do not allow condensate to enter the water heater.
- Do not connect the condensate drain pipe directly to the rain sewer.
- Do not connect the condensate drain line with an air conditioning evaporator coil drain.

### **MUST DO**

- Use only vent that is approved and identified as acceptable for your particular model.
- For vertical terminations, install a condensate drain and trap as close as possible to the appliance.
- Slope the venting toward the appliance according to the vent manufacturers installation instructions.
- All condensate must drain and be disposed of according to local codes.
- Use only corrosion resistant materials for the condensate drain lines such as PVC pipe or plastic hose.
- The condensate drain pipe (along its entire length) must be at least the same diameter as the drain line (5/8 inch, 1.59 mm).
- The end of the condensate drain pipe should be open to the atmosphere. The end should not be under water or other substances.
- To minimize freezing of the condensate, run the condensate drain line through an interior wall or between insulation and an interior wall.
- The condensate collector should be used for all hydronic heating applications.

### **INFORMATION**

- A condensate trap is available, P/N **50000101-A**.
- Regions of cold climate will create more condensate in the vent system. The condensate collector should be used in cold climates.
- The condensate drain pipe should be as short as possible and have a downward pitch.

## Checklist for Venting and Condensate

- ☐ Verify proper clearances around the vents and air intakes.
- ☐ Ensure you have used the correct venting products for the model installed and that you have completely followed the venting manufacturer's installation instructions and these installation instructions.
- ☐ Verify that the vent pipe has a downward slope or grade to the outside of 1/4 inch per foot (1.2° ) OR if the vent pipe is sloped toward the water heater (as some local codes require), that a condensate collector is installed to allow condensation to drain away from the water heater to a proper drain source.
- ☐ Verify that condensate will not be allowed to drain back into the water heater.
- ☐ Verify that the vent system does not exceed the maximum length for the number of elbows used.

# Installation of Plumbing

## Pressure Relief Valve Requirements

Install the pressure relief valve according to these instructions.

An approved pressure relief valve is required by the *American National Standard (ANSI Z21.10.3)* for all water heating systems, and shall be accessible for servicing.

### **DO NOT**

- Do not plug the relief valve and do not install any reducing fittings or other restrictions in the relief line. The relief line should allow for complete drainage of the valve and the line.
- Do not place any other type valve or shut off device between the relief valve and the water heater.

### **MUST DO**

- The relief valve must comply with the standard for *Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems ANSI Z21.22* and /or the standard *Temperature, Pressure, Temperature and Pressure Relief Valves and Vacuum Relief Valves, CAN1-4.4*.
- The relief valve must be rated up to 150 psi and to at least the maximum BTU/hr of the appliance.
- The discharge from the pressure relief valve should be piped to the ground or into a drain system to prevent exposure or possible burn hazards to humans or other plant or animal life. Follow local codes. Water discharged from the relief valve could cause severe burns instantly, scalds, or death.
- The pressure relief valve must be manually operated once a year to check for correct operation.
- The relief valve should be added to the hot water outlet line and near the hot water outlet according to the manufacturer's instructions. **DO NOT** place any other type valve or shut off device between the relief valve and the water heater.

## **INFORMATION**

- If a relief valve discharges periodically, this may be due to thermal expansion in a closed water supply system. Contact the water supplier or local plumbing inspector on how to correct this situation. Do not plug the relief valve.
- The *American National Standard (ANSI Z21.10.3)* does not require a combination temperature and pressure relief valve for this appliance. However, local codes may require a combination temperature and pressure relief valve.

## Isolation Valves

Giant strongly recommends the installation of isolation valves on the cold and hot water lines because they provide the ability to isolate the water heater from the structure's plumbing and allow quick access to flush the heat exchanger. Flushing the heat exchanger regularly is required as part of the proper maintenance for this water heater.

## Piping Requirements

A manual water control valve must be placed in the water inlet connection to the water heater before it is connected to the water line. Unions may be used on both the hot and cold water lines for future servicing and disconnection of the unit.

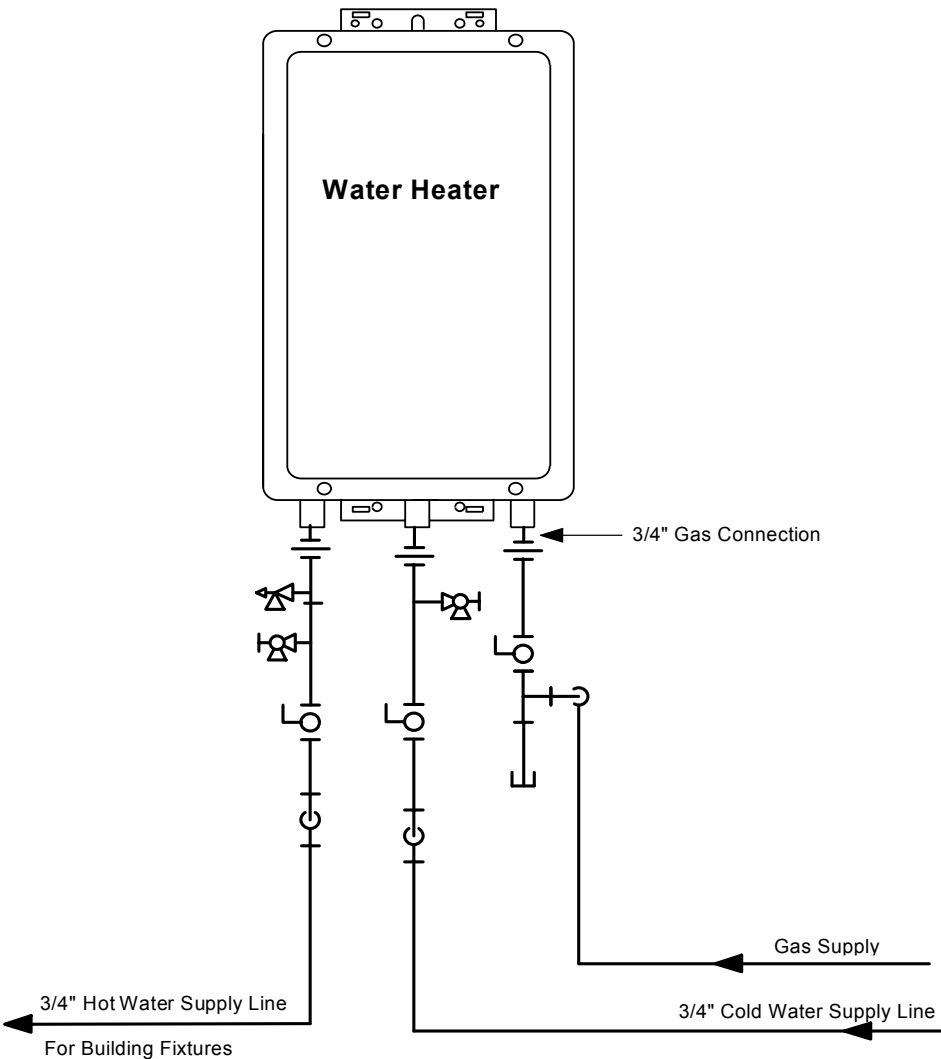
### **DO NOT**

- Do not introduce toxic chemicals such as those used for boiler water treatment to the potable water used for space heating.

### **MUST DO**

- The piping (including soldering materials) and components connected to this appliance must be approved for use in potable water systems.
- Purge the water line to remove all debris and air. Debris will damage the water heater.
- If the appliance will be used as a potable water source, it must not be connected to a system that was previously used with a nonpotable water heating appliance.
- Ensure that the water filter on the water heater is clean and installed.

# Piping Diagram for Basic Installation



KEY			
	3/4\" Ball Valve		Pressure Regulator
	3/4\" Union		Circulating Pump
	Check Valve		Boiler Drain Valve
	Pressure Relief Valve		Solenoid Valve

This is not an engineered drawing. It is intended only as a guide and not as a replacement for professionally engineered project drawings. This drawing is not intended to describe a complete system. It is up to the contractor/engineer to determine the necessary components and configuration of the particular system being installed. This drawing does not imply compliance with local building code requirements. It is the responsibility of the contractor/engineer to ensure installation is in accordance with all local building codes. Confer with local building officials before installation.



## Connect Water Heater to Water Supply

Water connections to the tankless water heater should follow all state and local plumbing codes.

If this is a standard installation, refer to the Piping Diagram for Basic Installation.

1. Plumb water supply to the tankless water heater on the 3/4" MNPT connection at the bottom of the unit marked "Water Inlet", which is the cold water supply.
2. Plumb the building hot water supply to the 3/4" MSPT connection marked "Water Outlet", which is the hot water supply.

If a pipe cover will be installed, make sure water lines to the water heater fit.

## Checklist for Plumbing

- ☐ Purge the water line of all debris and air by closing the hot isolation valve and opening the cold isolation valve and its drain. **Debris will damage the water heater.** Use a bucket or hose if necessary.
- ☐ Ensure that hot and cold water lines are not crossed to the unit and are leak free.
- ☐ Ensure that a pressure relief valve is installed with a rating that exceeds the BTU input of the water heater model. Refer to the rating plate on the side of the water heater for BTU input.
- ☐ Clean the inlet water filter by closing the cold and hot water inlet isolation (shut-off) valves. Put a bucket under the filter at the bottom of the water heater to catch any water that is contained inside the unit. Unscrew the water filter. Rinse the filter to remove any debris. Install the filter and open the isolation valves.
- ☐ Check for proper water pressure to the water heater. Minimum water pressure is 20 psi. Giant recommends 30-80 psi for maximum performance.

## Installation of Gas Supply

### **WARNING**

1. If you are not knowledgeable or qualified to install gas lines or connections, then contact a licensed professional to install the gas supply.
2. Turn off 120v power supply.
3. Turn off the gas.
4. Gas is flammable. Do not smoke or provide other ignition sources while working with gas.
5. Do not turn on the water heater or gas until all fumes are gone.

## General Instructions

### **MUST DO**

- A manual gas control valve must be placed in the gas supply line to the water heater. A union can be used on the connection above the shut off valve for the future servicing or disconnection of the unit.
- Check the type of gas and the gas inlet pressure before connecting the water heater. If the water heater is not of the gas type that the building is supplied with, DO NOT connect the water heater. Contact the dealer for the proper unit to match the gas type.
- Check the gas supply pressure immediately upstream at a location provided by the gas company. Supplied gas pressure must be within the limits shown in the Specifications section with all gas appliances operating.
- Before placing the appliance in operation all joints including the heater must be checked for gas tightness by means of leak detector solution, soap and water, or an equivalent nonflammable solution, as applicable. (Since some leak test solutions, including soap and water, may cause corrosion or stress cracking, the piping shall be rinsed with water after testing, unless it has been determined that the leak test solution is non-corrosive.)
- Use approved connectors to connect the unit to the gas line. Purge the gas line of any debris before connection to the water heater.

- Any compound used on the threaded joint of the gas piping shall be a type which resists the action of liquefied petroleum gas (propane / LPG).
- The gas supply line shall be gas tight, sized, and so installed as to provide a supply of gas sufficient to meet the maximum demand of the heater and all other gas consuming appliances at the location without loss of pressure.

### INFORMATION

- Refer to an approved pipe sizing chart if in doubt about the size of the gas line.

### Size the gas pipe

The gas supply must be capable of handling the entire gas load at the location. Gas line sizing is based on gas type, the pressure drop in the system, the gas pressure supplied, and gas line type. For gas pipe sizing in the United States, refer to the *National Fuel Gas Code, NFPA 54*. The below information is provided as an example. The appropriate table from the applicable code must be used.

- For some tables, you will need to determine the cubic feet per hour of gas required by dividing the gas input by the heating value of the gas (available from the local gas company). The gas input needs to include all gas products at the location and the maximum BTU usage at full load when all gas products are in use.

$$\text{Cubic Feet per Hour} = \frac{\text{Gas Input of all gas products (BTU / HR)}}{\text{Heating Value of Gas (BTU / FT}^3\text{)}} \text{ (CFH)}$$

- Use the table for your gas type and pipe type to find the pipe size required. The pipe size must be able to provide the required cubic feet per hour of gas or the required BTU/hour.

Example:

The heating value of natural gas for your location is 1000 BTU/FT<sup>3</sup>. The gas input of the UGT-199N is 199,000 BTU/HR. Additional appliances at the location require 65,000 BTU/hr. Therefore the cubic feet per hour = (199,000 + 65,000) / 1000 = 264 FT<sup>3</sup>/HR. If the pipe length is 10 feet then the 3/4 inch pipe size is capable of supplying 264 FT<sup>3</sup>/HR of natural gas.

### Pipe Sizing Table - Natural Gas

Schedule 40 Metallic Pipe

Inlet Pressure: less than 2 psi (55 inches W.C.)

Pressure Drop: 0.3 inches W.C.

Specific Gravity: 0.60

cubic feet per hour

Length	Pipe Size (inches)			
	3/4	1	1 1/4	1 1/2
10	273	514	1060	1580
20	188	353	726	1090
30	151	284	583	873
40	129	243	499	747
50	114	215	442	662
60	104	195	400	600
70	95	179	368	552
80	89	167	343	514
90	83	157	322	482
100	79	148	304	455

### Pipe Sizing Table - Propane Gas

Schedule 40 Metallic Pipe

Inlet Pressure: 11.0 inches W.C.

Pressure Drop: 0.5 inches W.C.

Specific Gravity: 1.50

Capacity in Thousands of BTU per Hour

Length	Pipe Size (inches)			
	1/2	3/4	1	1 1/4
10	291	608	1150	2350
20	200	418	787	1620
30	160	336	632	1300
40	137	287	541	1110
50	122	255	480	985
60	110	231	434	892
80	101	212	400	821
100	94	197	372	763

## Connect Electricity

### **! WARNING**

Do not use an extension cord or an adapter plug with this appliance.

The water heater must be electrically grounded in accordance with local codes and ordinances or, in the absence of local codes, in accordance with the National Electrical Code, ANSI/NFPA No. 70.

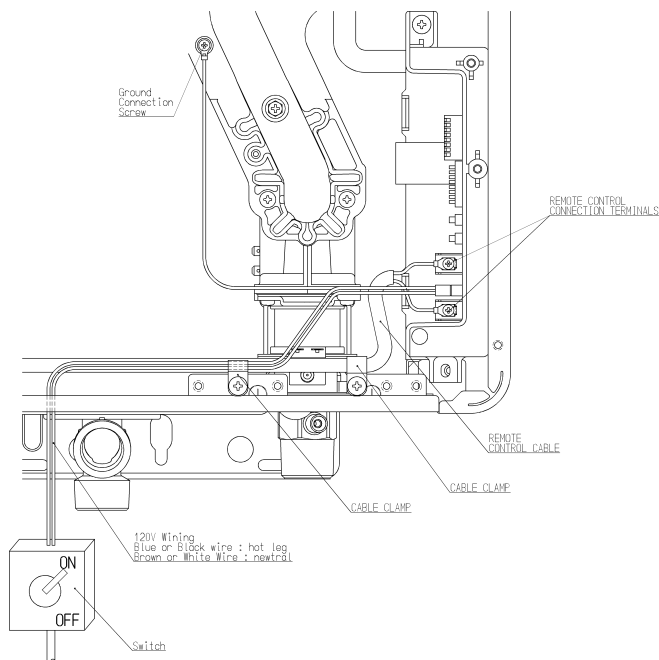
Water heaters are equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding terminal from this plug.

Do not rely on the gas or water piping to ground the water heater. A screw is provided in the junction box for the grounding connection.

The water heater requires 120 VAC, 60 Hz power from a properly grounded circuit.

If using the 5 foot long power cord, plug it into a standard 3 prong 120 VAC, 60 Hz properly grounded wall outlet.

The wiring diagram is located on the Technical Sheet attached to the inside of the front cover.



## Adjust for High Altitude (or U.S. installations)

The gas and power to the water heater should be turned off. On the SW1 DIP switch (tan switches), set switches 2 and 3 to the values shown in table below for your altitude. The default setting for the appliance is 0-2000 ft (0-610 m) with switches No. 2 and No. 3 in the OFF position.

When the DIP switch is adjusted, it is not necessary to adjust the gas pressure setting for high altitude.

Altitude	SW1 Switch No. 2	SW1 Switch No. 3
0-2000 ft (0-610 m)	OFF	OFF
2001-5200 ft (610-1585 m)	OFF	ON
5201-7700 ft (1585-2347 m)	ON	OFF
7701-10200 ft (2347-3109 m)	ON	ON

## Adjust for High Altitude 610 - 1372 m (2001 - 4500 ft) for Canada Only

The gas and power to the water heater should be turned off. On the SW1 DIP switch (tan switches), set switches 2 and 3 to the values shown in table below for your altitude. The default setting for the appliance is 0-2000 ft (0-610 m) with switches No. 2 and No. 3 in the OFF position.

When the DIP switch is adjusted, it is not necessary to adjust the gas pressure setting for high altitude.

Altitude	SW1 Switch No. 2	SW1 Switch No. 3
0-2000 ft (0-610 m)	OFF	OFF
2001-4500 ft (610-1372 m)	OFF	ON

The conversion shall be carried out by a manufacturer's authorized representative, in accordance with the requirements of the manufacturer, provincial or territorial authorities having jurisdiction and in accordance with the requirements of the CAN/CGA-B149.1 or CAN/CGA-B149.2 Installation Codes

## Adjust for Vent Length

Adjust switch No. 1 in the SW1 DIP switch (tan switches) if required. Refer to the section “Maximum vent length”.

## Checklist for Gas and Electricity

- ☐ A manual gas control valve is placed in the gas line to the water heater.
- ☐ Check the gas lines and connections for leaks.
- ☐ Confirm that the gas inlet pressure is within limits.
- ☐ Confirm that the water heater is rated for the gas type supplied.
- ☐ Confirm that the electricity is supplied from 120 VAC, 60 Hz power source and is in a properly grounded circuit.
- ☐ An extension cord or an adapter plug has not been used with the water heater.
- ☐ Verify that switch No. 1 in the SW1 DIP switch (tan switches) has been adjusted for vent length if necessary. Refer to the section on Maximum Vent Length.

## Installation of Temperature Controller

### **WARNING**

Turn the power off. Do not attempt to connect the temperature controllers with the power on. Although the controller is a low voltage device, there is 120 volt potential next to the temperature controller connections inside the unit.

Do not connect the temperature controller to the 120VAC terminals provided for the optional solenoid drain valves.

Models have a controller built into the front panel. Additional controllers can be installed.

### Controller Location

- The controller should be out of reach of small children.
- Avoid locations where the controller may become hot (near the oven or radiant heater).
- Avoid locations in direct sunlight. The digital display may be difficult to read in direct sunlight.
- Avoid locations where the temperature controller could be splashed with liquids.
- Do not install in locations where it can be adjusted by the public.

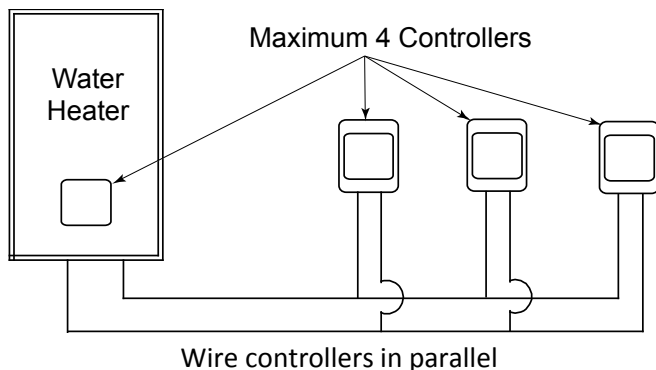
### Cable Lengths and Sizes

The cable for the temperature controller should be a non-polarized two-core cable with a minimum gauge of 22 AWG. The maximum cable length from each controller to the water heater depends on the total number of wired controllers connected to the water heater.

Number of Wired Controllers	Maximum Cable Length for each Controller to Water Heater
1	328 ft (100 m)
2	164 ft (50 m)
3	65 ft (20 m)

## Configurations

A maximum of 4 temperature controllers can be installed for a water heater or bank of water heaters. This includes the controller built into an indoor water heater. Controllers can only be wired in parallel. Controllers cannot be wired in series.

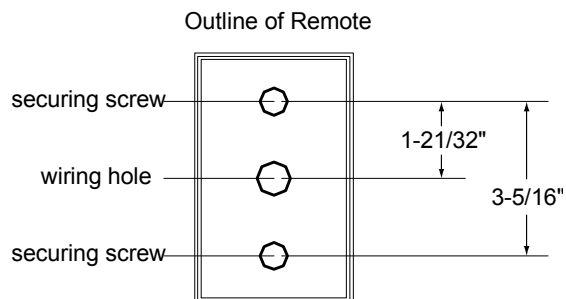


The 4 temperature controllers can consist of multiple MC-91-2 or MCC-91-2.

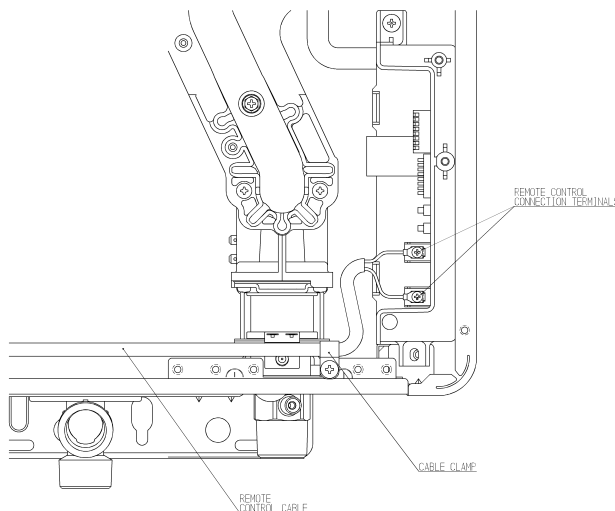
If 4 MC-91-2's are installed, simultaneously press the Priority and On/Off buttons on the fourth controller until a beep sounds.

## Mounting the controller

1. Make three holes in the wall as shown.



2. Run the cable between the controller and the water heater or the controller and another controller.
3. Remove the face plate from the temperature controller using a screwdriver.
4. Connect the cable to the temperature controller.
5. Mount the controller to the wall using the holes drilled in step 1.
6. Disconnect the power from the water heater.
7. Remove the plastic cover from the PCB and electrical connections.
8. Thread the cable through the access hole at the base of the unit and connect the wires to the controller terminals on the right hand side bottom of the PCB.
9. Secure the controller cable using the clamp provided.
10. Replace plastic cover over PCB and then replace the cover of the water heater.



## Final Checklist

- ☐ The water heater is not subject to corrosive compounds in the air.
- ☐ The water supply does not contain chemicals or exceeds total hardness that will damage the heat exchanger.
- ☐ Clearances from the water heater unit are met.
- ☐ Clearances from the vent termination / air intake are met.
- ☐ Ensure you have used the correct venting products for the model installed and that you have completely followed the venting manufacturer's installation instructions and these installation instructions.
- ☐ Verify that the vent system does not exceed the maximum length for the number of elbows used.
- ☐ Verify that switch No. 1 in the SW1 DIP switch (tan switches) has been adjusted for vent length if necessary. Refer to the section on Maximum Vent Length.
- ☐ Verify that the vent pipe has a downward slope or grade to the outside of 1/4 inch per foot (1.2° ) OR if the vent pipe is sloped toward the water heater (as some local codes require), that a condensate collector is installed to allow condensation to drain away from the water heater to a proper drain source.
- ☐ Verify that condensate will not be allowed to drain back into the water heater.
- ☐ Purge the water line of all debris and air by closing the hot isolation valve and opening the cold isolation valve and its drain. **Debris will damage the water heater.** Use a bucket or hose if necessary.
- ☐ Ensure that hot and cold water lines are not crossed to the unit and are leak free.
- ☐ Clean the inlet water filter by closing the cold and hot water inlet isolation (shut-off) valves. Put a bucket under the filter at the bottom of the water heater to catch any water that is contained inside the unit. Unscrew the water filter. Rinse the filter to remove any debris. Install the filter and open the isolation valves.
- ☐ Ensure that a pressure relief valve is installed with a rating that exceeds the BTU input of the water heater model. Refer to the rating plate on the side of the water heater for BTU input.
- ☐ A manual gas control valve has been placed in the gas line to the water heater.
- ☐ Check the gas lines and connections for leaks.
- ☐ Confirm that the gas inlet pressure is within limits.
- ☐ Confirm that the water heater is rated for the gas type supplied.
- ☐ Confirm that the electricity is supplied from a 120 VAC, 60 Hz power source, is in a properly grounded circuit, and turned on.
- ☐ Verify the temperature controller is functioning properly.
- ☐ Verify that switches No. 2 and No. 3 in the SW1 DIP switch (tan switches) is set correctly for your altitude.
- ☐ Verify the system is functioning correctly by connecting your manometer to the gas pressure test port on the water heater. Operate all gas appliances in the home or facility at high fire. The inlet gas pressure at the water heater must not drop below that listed on the rating plate.
- ☐ If the water heater is not needed for immediate use, then drain the water from the heat exchanger.
- ☐ Install the front panel.
- ☐ Explain to the customer the importance of not blocking the vent termination or air intake.
- ☐ Explain to the customer the operation of the water heater, safety guidelines, maintenance, and warranty.
- ☐ The installation must conform with local codes or, in the absence of local codes, with the *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or the *Natural Gas and Propane Installation Code, CSA B149.1*. If installed in a manufactured home, the installation must conform with the *Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280* and/or *CAN/SCA Z240 MH Series, Mobile Homes*.
- ☐ Inform the consumer if the isolation valves are not installed or if a water softening system is not installed.
- ☐ **Leave the entire manual taped to the water heater or give the entire manual directly to the consumer.**

# Technical Data

## Specifications

		<i><b>UGT-180</b></i>	<i><b>UGT-199</b></i>
Minimum Gas Consumption Btu/h		10,300	
Maximum Gas Consumption Btu/h		180,000	199,000
Hot water capacity (Min - Max) *		0.26 - 7.5 GPM (1.0 - 28.5 L/min)	0.26 - 9.8 GPM (1.0 - 37.0 L/min)
Temperature Setting (no controller)		120° F (49° C) or 140° F (60° C)	
Maximum Temp Setting (residential)		Selectable at 120° F (49° C) or at 140° F (60° C)	
Maximum Temp Setting (MCC-91 controller)		160° F (71° C)	185° F (85° C)
Minimum Temperature Setting		98° F (37° C)	
Weight		45.6 lb (20.7 kg)	46.3 lb (21.0 kg)
Energy Factor		0.82	
Noise level		49 dB (excluding start up or shutdown)	
Electrical Data	Normal	76 W	97 W
	Standby	2 W	
	Anti-frost Protection	120 W	
	Max Current	Without recirculation pump: 4 A With recirculation pump: 8 A (exact value depends on the pump)	
	Fuse	10 A	
By-Pass Control		Fixed	Electronic
Gas Supply Pressure	Natural Gas	4.0 - 10.5 inch W.C.	
	Propane	8.0 - 13.5 inch W.C.	
Type of Appliance		Direct Vent, Tankless, Temperature controlled continuous flow gas hot water system	
Connections		Gas Supply: 3/4" MNPT, Cold Water Inlet: 3/4" MNPT, Hot Water Outlet: 3/4" MNPT	
Ignition System		Direct Electronic Ignition	
Electric Connections		Appliance: AC 120 Volts, 60Hz. Temperature Controller: DC 12 Volts (Digital)	
Water Temperature Control		Simulation Feedforward and Feedback	
Water Supply Pressure		Minimum Water Pressure: 20 PSI (Recommended 30-80 PSI for maximum performance)	
Maximum Water Supply Pressure		150 PSI	
Temperature Control Cable		Non-Polarized Two Core Cable (Minimum 22 AWG)	
Energy Star Qualified		No	
Certified for installation in manufactured (mobile) homes		Yes	
Complies with South Coast Air Quality Management District 14 ng/J or 20 ppm NOx emission levels		Yes	No

\* Minimum flow may vary slightly depending on the temperature setting and the inlet water temperature.

Minimum activation flow is 0.4 GPM (1.5 L/min).

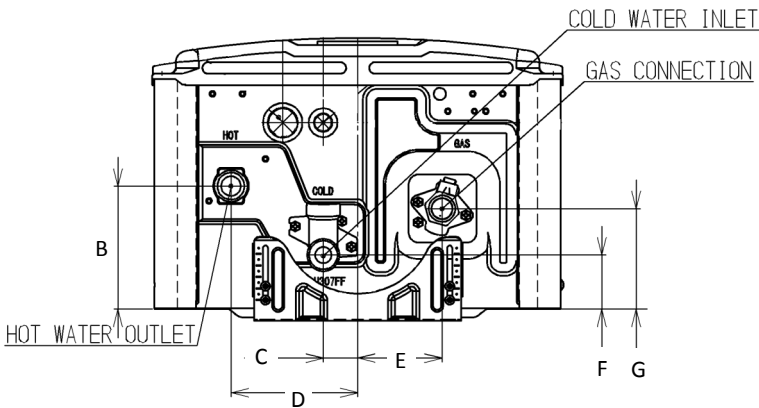
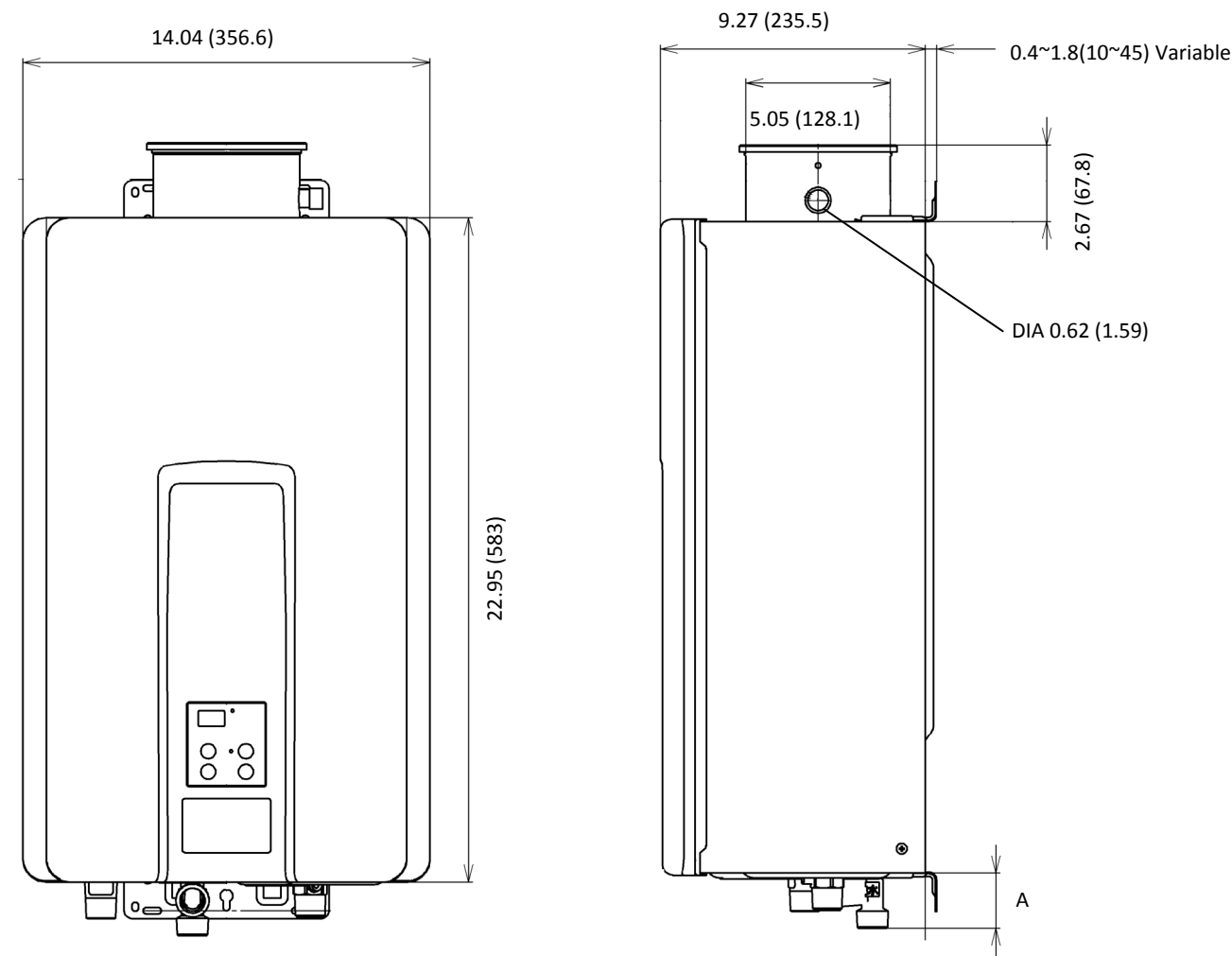
Our products are continually being updated and improved; therefore, specifications are subject to change without prior notice.

The maximum inlet gas pressure must not exceed the value specified by the manufacturer. The minimum value listed is for the purpose of input adjustment.

# Dimensions

Inches (millimeters)

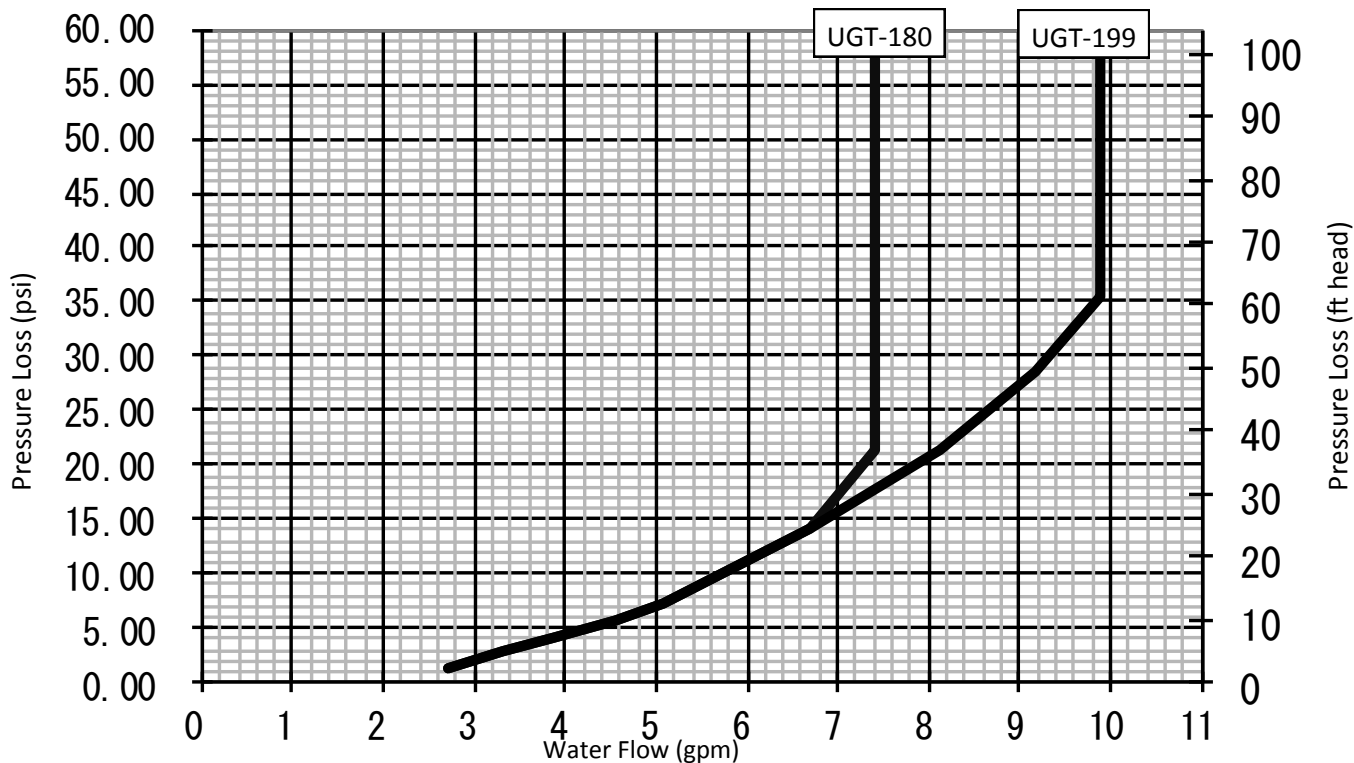
## UGT-180, UGT-199



DIMEN- SION	Inches (mm)	DIMEN- SION	Inches (mm)
A (GAS)	1.31 (33.2)	D	4.33 (110)
A (COLD)	1.93 (49)	E	2.89 (73.3)
A (HOT)	1.35 (34.4)	F	1.85 (47)
B	4.21 (106.9)	G	3.44 (87.3)
C	1.17 (29.8)		



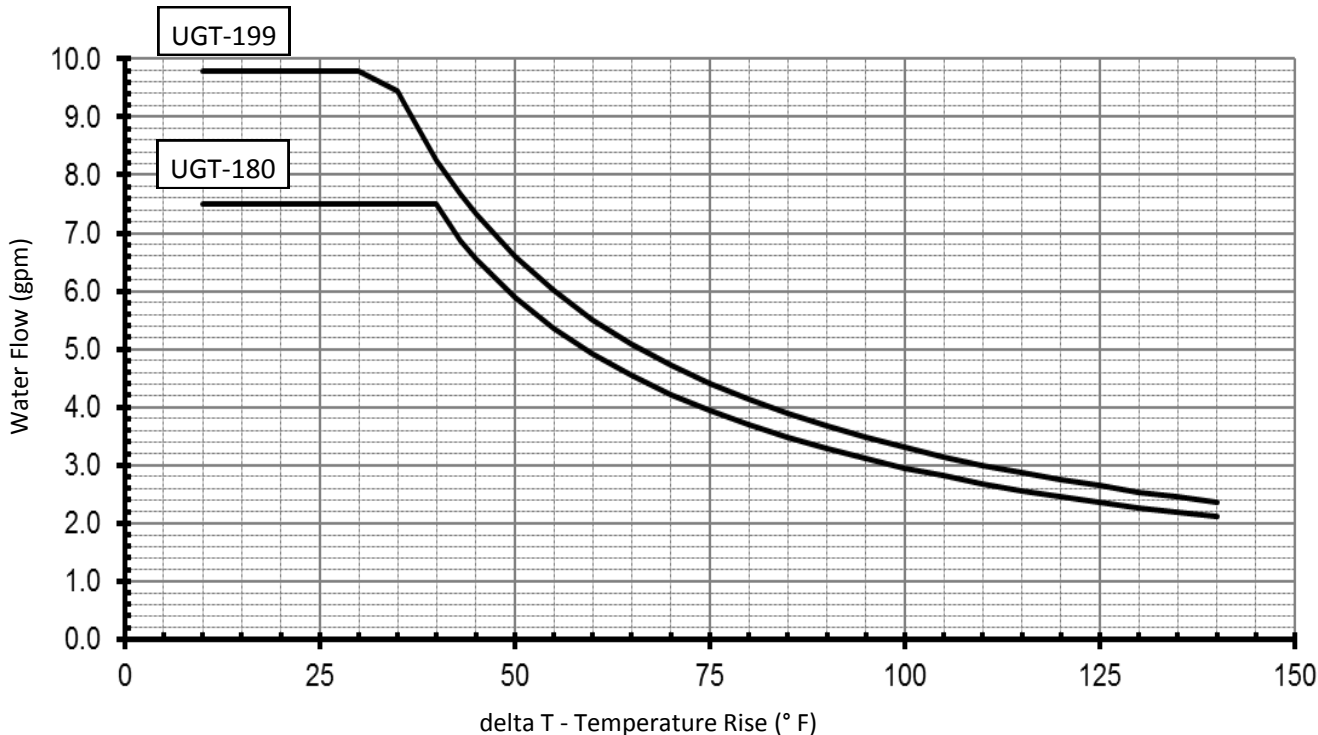
# Pressure Drop Curve



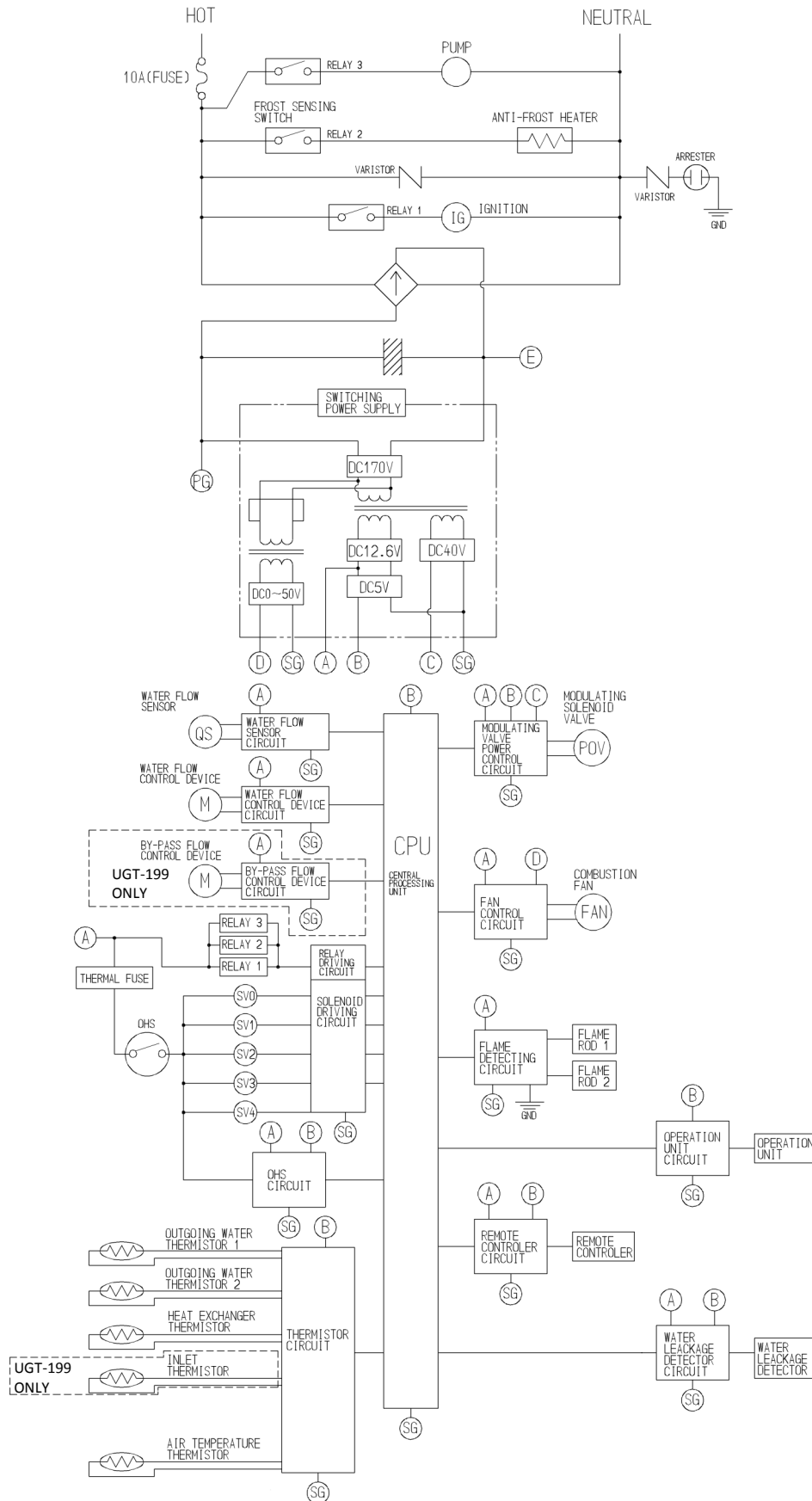
## NOTICE

The chart below only applies to incoming water temperatures of 70°F (21°C) or less. For incoming water temperatures greater than 70°F (21°C) please contact Giant.

# Water Flow Curve



# Ladder Diagram



## Recirculation Mode

This water heater has the ability to control a recirculation pump. Two modes are available, Economy and Comfort, which recirculate the water in the plumbing system to provide hot water more quickly when a tap is opened.

Recirculation mode is for residential installations only. Recirculation mode cannot be used with the an air handler or with multiple water heaters.

The maximum water heater temperature setting while in recirculation mode is 140°F (60°C).

## Pump Requirements

Voltage: 120V, 60 Hz

Amperage: less than 2 amps

NOTE: The PC board will be damaged if amperage exceeds 2 Amps.

In-rush current: Less than 2.5 Amps.

**Check valve:** An integral flow check (IFC) valve is required. See plumbing diagram.

## Pump Size

The pump should be sized for 2.5 GPM at the pressure loss through the tankless water heater and the supply and return plumbing in the recirculation loop.

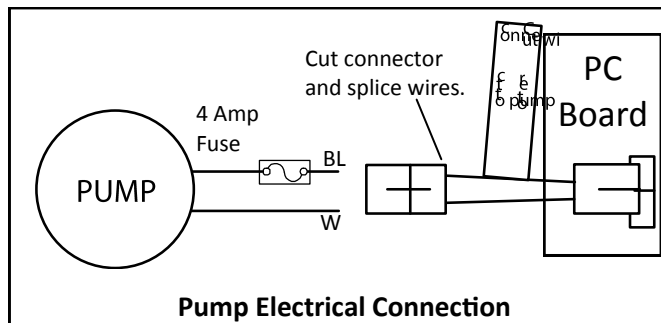
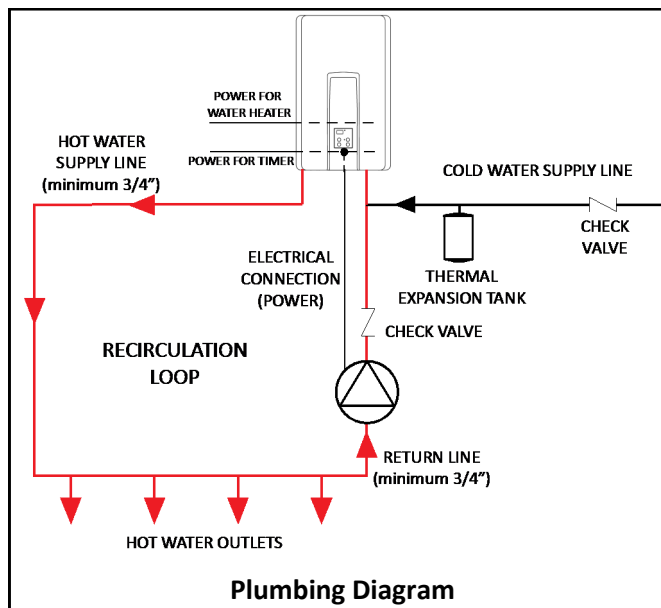
## Installation

1. Turn off the electrical power supply by unplugging the power cord or by turning off the electricity at the circuit breaker.
2. Install the recirculation pump on the return line according to the pump manufacturer installation instructions. Install a check valve in the return line as shown in the Plumbing Diagram if one is not integrated into the pump.
3. The wire harness for the recirculation pump is bundled with the wire harness from the PC board. The connector has a black and white wire with the label "Cut wire to connect to pump". To connect to the pump, cut the connector, splice the wires, and add 4 Amp fuse to the hot wire (black) of the pump. Connect the ground wire from the pump to a screw at the base of the water cabinet . Refer to the Pump Electrical Connection Diagram. Follow Electrical Code and pump manufacturers recommendations.

4. Adjust the dip switch by moving the 4th switch in the white set of switches (SW2) to ON.  
For Economy mode, set the 8th switch in the white set of switches (SW2) to OFF (default).  
For Comfort mode, set the 8th switch in the white set of switches (SW2) to ON.

	<b>Settings for SW2</b> <b>(bank of white switches)</b>	
	<b>Switch 4</b>	<b>Switch 8</b>
<b>Economy Mode</b>	ON	OFF
<b>Comfort Mode</b>	ON	ON

5. Connect power to the water heater. Press the Power button on the controller. The pump and water heater will turn on to raise the recirculation loop temperature.



## Recirculation Mode

### Sequence of Operation

DIP switches (SW2 - white switches, #4, #8) should be set correctly for recirculation and mode. The water heater should be turned on.

Pump recirculation begins when the water heater is turned on. The water heater inlet and outlet thermistors measure the water temperature.

The water heater produces hot water at the temperature setting. If the inlet thermistor detects abnormal temperature then diagnostic code 51 is generated and the pump will turn off.

When the return water temperature reaches approximately 15°F (8.3°C) below the temperature setting, the water heater and pump will turn off.

The cycle will restart at the approximate time interval in the table based on the temperature thermistor readings.

### Economy Mode

The Economy mode operates as follows:

- Less energy consumed due to fewer pump cycles
- Assumes plumbing is insulated (minimal pipe heat loss)
- Pump cycles on every 31 to 79 minutes (see table).

### Comfort Mode

The Comfort mode operates as follows:

- Higher energy consumption due to more pump cycles
- Assumes plumbing is not insulated resulting in higher pipe heat loss
- Pump cycles on every 15 to 39 minutes (see table).

Water Heater Temperature Setting		Typical Pump ON Intervals* (minutes)	
°F	°C	Economy Mode	Comfort Mode
140	60	31	15
135	57	31	15
130	54	31	15
125	52	31	15
120	49	31	15
115	46	35	18
110	43	42	21
108	42	45	22
106	41	49	24
104	40	54	27
102	39	60	30
100	38	68	34
98	37	79	39

\* The pump will cycle on at these calculated intervals which are based on the temperature setting, insulation, and estimated heat loss in the system. The values for your installation may vary.



## Direct Vent Tankless Water Heater Operation Instructions

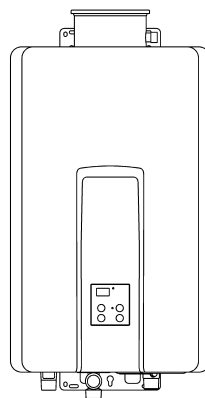
**FOR INDOOR APPLICATIONS ONLY**

**UGT-199N**

**UGT-199P**

**UGT-180N**

**UGT-180P**



### Important Facts about your Water Heater

Thank you for purchasing a Giant Tankless Water Heater. For proper operation and safety, it is important to follow the instructions and adhere to the safety precautions.

Read all of the instructions and the warranty thoroughly before operating this water heater. Keep this manual in a safe place.

NOTICE: Giant sometimes shares customer contact information with businesses that we believe provide products or services that may be useful to you. By providing this information, you agree that we can share your contact information for this purpose. If you prefer not to have your information shared with these businesses, please contact customer service and ask not to have your information shared. We will however, continue to contact you with information relevant to the product(s) you registered and/or you account with us.



#### **WARNING**

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

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- WHAT TO DO IF YOU SMELL GAS
  - Leave the premises.
  - Do not try to light any appliance.
  - Do not touch any electrical switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a licensed professional.

# Consumer Operation Guidelines for the Safe Operation of your Water Heater

## FOR YOUR SAFETY READ BEFORE OPERATING





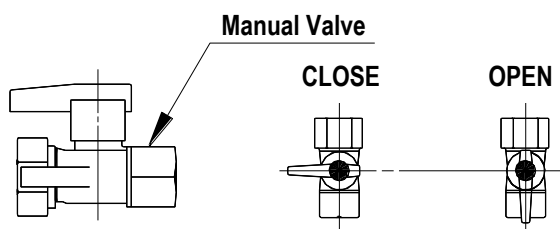
### WARNING

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


- A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
- B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.  
  
WHAT TO DO IF YOU SMELL GAS
  - Do not try to light any appliance.
  - Do not touch any electric switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, do not try to repair it, call a qualified licensed professional. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified licensed professional to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

## OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance using the ON/OFF button.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
5. Locate the manual gas valve on the side of the heater. Turn the manual valve clockwise to the full OFF position. 
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to the next step.
7. Turn the manual gas valve counterclockwise to the full ON position. 
8. Turn on all electric power to the appliance using the ON/OFF button.
9. Set the thermostat to desired setting.
10. Open a hot water tap. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your licensed professional or gas supplier. See manual for additional information.



## TO TURN OFF GAS TO APPLIANCE

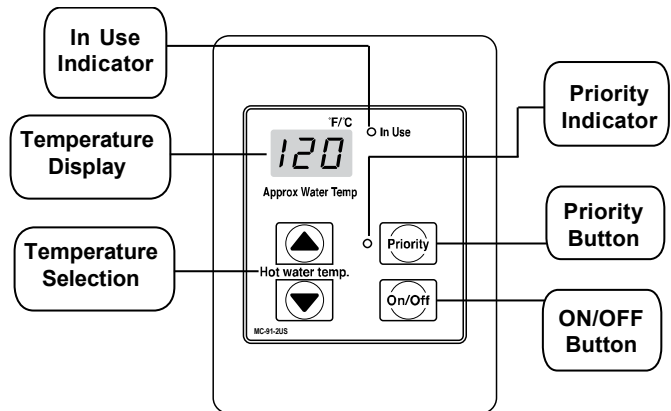
1. Turn off all electric power to the appliance using the ON/OFF button.
2. Set the thermostat to lowest setting.
3. Locate the manual gas valve on the side of the heater. Turn the manual valve clockwise to the full OFF position. 

## How to use the Temperature Controller

Dimensions (inches): 3.5 W x 4.75 H x 0.75 D

The MC-91-2 controller is the standard temperature controller that is supplied with the water heater. On indoor models it is integrated into the front panel. The MCC-91-2 controller is for commercial and hydronic applications requiring higher temperatures. When the MCC-91-2 controller is connected, these higher temperatures are available on all controller models in the system. Refer to the section on temperature ranges.

DO NOT repeatedly operate the water heater and then use a hot water tap while the controller is turned off. Operating the water heater in this way to alternately produce hot water may cause water to condense on the outside of internal parts and accumulate in the water heater cabinet.



### **WARNING**

- Before operating, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
- Keep the area around the appliance clear and free from combustible materials, gasoline, and other flammable vapors and liquids.
- Always check the water temperature before entering a shower or bath.
- Do not use this appliance if any part has been under water. Immediately call a licensed professional to inspect the appliance and to replace any part of the control system and any gas control which has been under water.
- Should overheating occur or the gas supply fail to shut off, turn off the manual gas control valve to the appliance.
- Do not adjust the DIP switch unless specifically instructed to do so.
- Do not use an extension cord or an adapter plug with this appliance.
- Any alteration to the appliance or its controls can be dangerous and will void the warranty.


If you install this water heater in an area that is known to have hard water or that causes scale build-up the water must be treated and/or the heat exchanger flushed regularly. Damage and repair due to corrosive compounds in the air is not covered by warranty.




Keep the air intake location free of chemicals such as chlorine or bleach that produce fumes. These fumes can damage components and reduce the life of your appliance. Damage and repair due to scale in the heat exchanger is not covered by warranty.

## How to Set the Temperature

This water heater requires a minimum flow rate to operate. This rate can be found on the specification page in this manual. In some cases when you are not getting hot water or if the water alternates between hot and cold, it is due to the water flow being below or close to the minimum flow rate. Increasing the flow rate should resolve these problems in these cases.

If you are experiencing issues with higher temperature settings, then reduce the temperature setting. Selecting a temperature closer to that which is actually used at the faucet will increase the amount of hot water being delivered to the faucet, due to less cold water mixing at the fixture.

	<p><b>! DANGER</b></p> <p>Hot water can be dangerous, especially for infants or children, the elderly, or infirm. There is hot water scald potential if the thermostat is set too high. Water temperatures over 125° F (52° C) can cause severe burns or scalding resulting in death.</p> <p>Hot water can cause first degree burns with exposure for as little as:</p> <ul style="list-style-type: none"><li>3 seconds at 140° F (60° C)</li><li>20 seconds at 130° F (54° C)</li><li>8 minutes at 120° F (49° C)</li></ul> <p>Test the temperature of the water before placing a child in the bath or shower.</p> <p>Do not leave a child or an infirm person in the bath unsupervised.</p>
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1. If the water heater is off, press the Power button to turn on.
  2. If the Priority light is off, then press the “Priority button” on the temperature controller. The green Priority light will glow indicating that this controller is controlling the temperature and that the water heater is ready to supply hot water. (The priority can only be changed while no hot water is running.)
  3. Press the up or down buttons to obtain the desired temperature setting.
-   
  
Hot water temp.
- All hot water sources are able to provide water at this temperature setting until it is changed again at this or another temperature controller.

<b>NOTICE</b>	While any hot water is being provided, the temperature setting can only be adjusted between 98° F and 110° F.
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<b>NOTICE</b>	Check local codes for the maximum water temperature setting allowed when used in nursing homes, schools, day care centers, and all other public applications.
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<b>NOTICE</b>	If a newly installed unit with a controller has not been powered for at least 6 hours then the temperature will return to the default setting of 104° F (40° C) if power is interrupted.
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<b>NOTICE</b>	There may be a variation between the temperature displayed on the temperature controller and the temperature at the tap due to weather conditions or the length of pipe to the water heater.
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## Temperatures Available with a Controller


The water heater can deliver water at only one temperature setting at a time. The available temperatures are provided below. A temperature lower than 98° F (37° C) can be obtained at the tap by mixing with cold water.

To change the temperature scale from Celsius to Fahrenheit or vice versa, press and hold the “On/Off” button for 5 seconds while the water heater is OFF.

Temperature Settings Available (Fahrenheit °F)																
UGT-180	98	100	102	104	106	108	110	115	120	125	130	135	140	150	160	
UGT-199										*	*	*	*	**	**	185**
Celsius °C	37	38	39	40	41	42	43	46	49	52	54	57	60	66	71	85

\* Temperature settings from 125-140 °F (52-60 °C) are available by setting switch 6 to ON in the SW1 Dip switch (tan switches). These models have a default maximum temperature of 120° F (49° C) and an option (switch 6) to increase the maximum temperature to 140 °F (60 °C).

\*\* These settings require the MCC-91-2 controller. When the MCC-91-2 controller is connected, these higher temperatures are available on all controller models in the system. Use of an MCC-91-2 controller in a residential dwelling will reduce the warranty coverage to that of a commercial warranty application.


 <b>WARNING</b>	DO NOT adjust the other switches unless specifically instructed to do so.
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**These temperatures are suggestions only:**

- Kitchen 120 °F (49° C)
- Shower 98 - 110 °F (37 - 43 °C)
- Bath Fill 102 - 110 °F (39 - 43 °C)

## Alternate Temperature Settings

A different range of temperature settings is available by setting switches 2 and 3 of the SW2 dip switch (white switches) to ON. The table below shows the settings available with the MC-91-2 and MCC-91-2 controller.

 <b>WARNING</b>	MC-91-1, MCC-91-1, MC-100V-1, and BC-100V-1 controllers are not compatible with Alternate Temperature Settings. Alternate Temperature Settings are for commercial applications only.
	DO NOT use the MC-91-1, MCC-91-1, MC-100V-1, or BC-100V-1 controllers when dip switches 2 and 3 (white switches) are in the ON position.

Alternate Temperature Settings Available (Fahrenheit °F)																
UGT-180	110	115	120	125	130	135	140	145	150	155	160					
UGT-199												165	170	175	180	185
Celsius °C	43	46	49	52	54	57	60	63	66	68	71	74	77	79	82	85

MC-91-2

MCC-91-2

## Temperature Options Without a Temperature Controller

The default temperature setting for this appliance installed without a temperature controller is 120° F (49° C). If desired, the temperature setting can be changed to 140° F (60° C) by adjustment of a switch.

In the SW1 Dip switch (tan switches), set switch 5 to ON to obtain 140° F water temperature setting. Set switch 5 to OFF (default) to obtain 120° F water temperature setting. If a temperature controller is installed, then switch 5 has no effect on temperature settings.

## Setting Controller to Mute

On the MC-91-2 to eliminate the beeps when keys are pressed or to turn the beeps back on, press and hold both the up and down buttons until a beep is heard (approximately 5 seconds).

## Locking the Controller

The MC-91-2 controller can be locked by pressing the Priority button and the up button together for 5 seconds. A beep will sound confirming that the controller is locked. The display will alternately show “LOC”, the temperature setting, and a diagnostic code if one has been activated. All of the controllers in the system are also locked.

To unlock the controller press the Priority button and the up button together for 5 seconds.

## Diagnostic Codes

This water heater is designed to display diagnostic codes. If there is a potential operation concern refer to the code and remedy on the next page.

### To Display Diagnostic Information

To display the most recent diagnostic information codes press and hold the “On/Off” button for 2 seconds on the MC-91-2 controller. While holding the “On/Off” button press the up button. The last 9 diagnostic codes will flash one after the other. To exit this mode press the “On/Off” and up button as before.

To enter or exit the maintenance monitor information mode press and hold the down button for 2 seconds and without releasing it press the ON/OFF button.

To obtain the water flow rate press the up or down buttons until “01” displays. The water flow rate will then appear. For example “58” means 5.8 gal/min.

To obtain the outgoing water temperature press the up or down buttons until “02” displays. The temperature will appear in degrees Fahrenheit.

No.	Data	Unit
01	Water flow rate	0.1 gal/min
02	Outgoing water temperature	Degrees Fahrenheit

## Diagnostic Codes and Remedies



### WARNING

Some of the checks below should be done by a licensed professional. Consumers should never attempt any action that they are not qualified to perform.

Code	Definition		Remedy
03	Power interruption during Bath Fill (Water will not flow when power returns).		Turn off all hot water taps. Press ON/OFF twice.
10	Air Supply or Exhaust Blockage		Check that nothing is blocking the flue inlet or exhaust. Check all vent components for proper connections.
		licensed professional only	Ensure approved venting materials are being used. Ensure vent length is within limits. Verify dip switches are set properly. Check fan for blockage.
11	No Ignition (heater not turning on)		Check that the gas is turned on at the water heater, gas meter, or cylinder. If the system is propane, make sure that gas is in the tank. Ensure appliance is properly grounded.
		licensed professional only	Ensure gas type and pressure is correct. Ensure gas line, meter, and/or regulator is sized properly. Bleed all air from gas lines. Verify dip switches are set properly. Ensure igniter is operational. Check igniter wiring harness for damage. Check gas solenoid valves for open or short circuits. Remove burner cover and ensure all burners are properly seated. Remove burner plate and inspect burner surface for condensation or debris. Check the ground wire for the PC board.
12	No Flame		Check that the gas is turned on at the water heater, gas meter, or cylinder. Check for obstructions in the flue outlet. If the system is propane, make sure that gas is in the tank.
		licensed professional only	Ensure gas line, meter, and/or regulator is sized properly. Ensure gas type and pressure is correct. Bleed all air from gas lines. Ensure proper venting material was installed. Ensure condensation collar was installed properly. Ensure vent length is within limits. Verify dip switches are set properly. Check power supply for loose connections. Check power supply for proper voltage and voltage drops. Ensure flame rod wire is connected. Check flame rod for carbon build-up. Disconnect and reconnect all wiring harnesses on unit and PC board. Check for DC shorts at components. Check gas solenoid valves for open or short circuits. Remove burner plate and inspect burner surface for condensation or debris.
14	Thermal Fuse has activated		Check for restrictions in air flow around unit and vent terminal.
		licensed professional only	Check gas type of unit and ensure it matches gas type being used. Check for low water flow in a circulating system causing short-cycling. Ensure dip switches are set to the proper position. If switch #5 in the SW2 bank is in the OFF position, turn it to the ON position. Check for foreign materials in combustion chamber and/or exhaust piping. Check heat exchanger for cracks and/or separations. Check heat exchanger surface for hot spots which indicate blockage due to scale build-up. Refer to instructions in manual for flushing heat exchanger. Hard water must be treated to prevent scale build up or damage to the heat exchanger. Measure resistance of safety circuit. Ensure high fire and low fire manifold pressure is correct. Check for improper conversion of product.
16	Over Temperature Warning (safety shutdown because unit is too hot)		Check for restrictions in air flow around unit and vent terminal.
		licensed professional only	Check for low water flow in a circulating system causing short-cycling. Check for foreign materials in combustion chamber and/or exhaust piping. Check for blockage in the heat exchanger.

Code	Definition		Remedy
19	Electrical Grounding	licensed professional only	Check all components for electrical short.
32	Outgoing Water Temperature Sensor		Check sensor wiring for damage. Measure resistance of sensor. Clean sensor of scale build-up. Replace sensor.
33	Heat Exchanger Outgoing Temperature Sensor		
34	Combustion Air Temperature Sensor		Check for restrictions in air flow around unit and vent terminal. Check sensor wiring for damage. Measure resistance of sensor. Clean sensor of scale build-up. Ensure fan blade is tight on motor shaft and is in good condition. Replace sensor.
51	Inlet water temperature thermistor (UGT-199 only)		Check sensor wiring for damage. Measure resistance of sensor. Clean sensor of scale build-up.
52	Modulating Solenoid Valve Signal		Check modulating gas solenoid valve wiring harness for loose or damaged terminals. Measure resistance of valve coil.
61	Combustion Fan		Ensure fan will turn freely. Check wiring harness to motor for damaged and/or loose connections. Measure resistance of motor winding.
65	Water Flow Control		The water flow control valve has failed to close during the bath fill function. Immediately turn off the water and discontinue the bath fill function. Contact a licensed professional to service the appliance.
70	PC Board		Check PC board DIP switches for correct position. Check the connection harness at the connection on the PC board. Replace PC board.
71	Solenoid Valve Circuit		Replace the PC Board.
72	Flame Sensing Device		Verify flame rod is touching flame when unit fires. Check all wiring to flame rod. Remove flame rod and check for carbon build-up; clean with sand paper. Check inside burner chamber for any foreign material blocking flame at flame rod. Measure micro amp output of sensor circuit with flame present. Replace flame rod.
79	Water Leak Detected		Water has been detected at the bottom of the unit. Turn off water supply. Check all plumbing internally for leakage.
LC # (LC0, LC1, LC2,...)	Scale Build-up in Heat Exchanger (when checking maintenance code history, "00" is substituted for "LC")		LC0~LC9 indicates that there is scale build up in the heat exchanger and that the heat exchanger needs to be flushed to prevent damage. Refer to the flushing instructions in the manual. <b>Hard water must be treated to prevent scale build up or damage to the heat exchanger.</b> To operate the water heater temporarily until the heat exchanger can be flushed, push the On/Off button on the temperature controller 5 times. Repeated LC codes will eventually lockout the water heater. Please call technical department at 1-800-363-9354.
FF	Maintenance has been performed		Indicates a licensed professional performed maintenance or corrected an issue.
No code	Nothing happens when water flow is activated.		Clean inlet water supply filter. On new installations ensure hot and cold water lines are not reversed. Verify you have at least the minimum flow rate required to fire unit.
		licensed professional only	Check for cold to hot cross over. Isolate circulating system if present. Turn off cold water to the unit, open pressure relief valve; if water continues to flow, there is bleed over in your plumbing. Verify turbine spins freely. Measure the resistance of the water flow control sensor. If the display is blank and clicking is coming from the unit, disconnect the water flow servo motor (GY, BR, O, W, P, BL, R). If the display comes on then replace the water flow servo motor.

## Required Maintenance

The appliance must be inspected annually by a licensed professional. Repairs and maintenance should be performed by a licensed professional. The licensed professional must verify proper operation after servicing.

### **WARNING**

To protect yourself from harm, before performing maintenance:

- Turn off the electrical power supply by unplugging the power cord or by turning off the electricity at the circuit breaker. (The temperature controller does not control the electrical power.)
- Turn off the gas at the manual gas valve, usually located immediately below the water heater.
- Turn off the incoming water supply. This can be done at the isolation valve immediately below the water heater or by turning off the water supply to the building.

### **WARNING**

Keep the appliance area clear and free from combustible materials, gasoline, and other flammable vapors and liquids.

**The following maintenance items are required for the proper operation of your water heater.**

The appliance must be inspected annually by a licensed professional. Repairs and maintenance should be performed by a licensed professional. The licensed professional must verify proper operation after servicing.

### **Cleaning**

It is imperative that control compartments, burners, and circulating air passageways of the appliance be kept clean.

Clean as follows:

1. Turn off and disconnect electrical power. Allow to cool.
2. Close the water shut off valves. Remove and clean the water inlet filter.
3. Remove the front panel by removing 4 screws.
4. Use pressurized air to remove dust from the main burner, heat exchanger, and fan blades. Do not use a wet cloth or spray cleaners on the burner. Do not use volatile substances such as benzene and thinners. They may ignite or fade the paint.
5. Use soft dry cloth to wipe cabinet.

### **Vent System**

The vent system should be inspected at least annually for blockages or damage. If the vent is blocked contact a licensed professional.

### **Motors**

Motors are permanently lubricated and do not need periodic lubrication. However you must keep fan and motor free of dust and dirt by cleaning annually.

### **Temperature Controller**

Use a soft damp cloth to clean the temperature controller. Do not use solvents.

### **Lime / Scale Build-up**

If you receive diagnostic code "LC#" (LC1, LC2,...), refer to the procedure, *Flushing the Heat Exchanger*. Refer to the section on *Water Quality* to see if your water needs to be treated or conditioned. (When checking maintenance code history, "00" is substituted for "LC#".)

### **Snow Accumulation**

Keep the area around flue terminal free of snow and ice. The appliance will not function properly if the intake air or exhaust is impeded (blocked or partially blocked) by obstructions.

### **Clean the water filter**

Clean the inlet water filter by closing the cold and hot water inlet isolation (shut-off) valves. Put a bucket under the filter at the bottom of the water heater to catch any water that is contained inside the unit. Unscrew the water filter. Rinse the filter to remove any debris. Install the filter and open the isolation valves.

## **WARNING**

Testing the pressure relief valve should only be performed by a licensed professional. Scalding hot water may be released under pressure.

### **Pressure Relief Valve:**

Operate the valve manually once a year. In doing so, it will be necessary to take precautions with regard to the discharge of potentially scalding hot water under pressure. Ensure discharge has a place to flow. Contact with your body or other property may cause damage or harm.

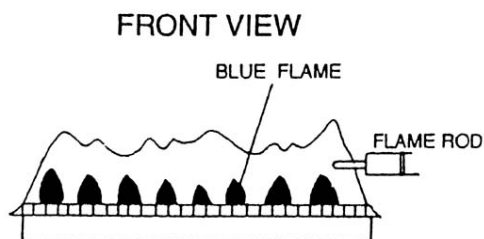
### **Visual Inspection of Flame**

Verify proper operation after servicing.

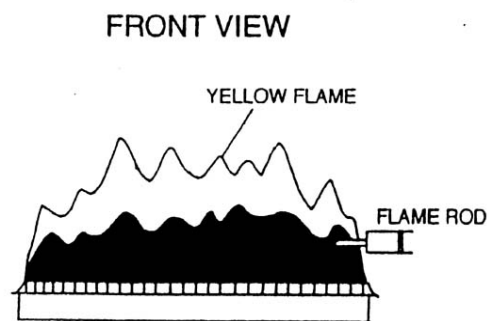
The burner must flame evenly over the entire surface when operating correctly. The flame must burn with a clear, blue, stable flame. See the parts breakdown of the burner for the location of the view ports.

The flame pattern should be as shown in the figures below.

#### **SATISFACTORY**



#### **UNSATISFACTORY**



### **Freeze Protection**

Make sure that in case of freezing weather that the water heater and its water lines are adequately protected to prevent freezing. Damage due to freezing is not covered by the warranty. Refer to the section on Freeze Protection.

### **Winterizing**

These recommendations are intended to suggest practices which are effective for winterizing the water heater. They should be used as a guide only. No liability is assumed for any issues resulting from the use of this information.

#### **GAS**

Shut off the gas to the water heater. It is generally preferable to shut off the gas service to the entire location if gas is not going to be used.

#### **WATER**

Shut off the cold water supply to the water heater. It is generally preferable to shut off the water to the entire location if water is not going to be used.

Drain the water heater by opening the drain valves on the cold water line and hot water line.

Open several hot water taps and remove the filter assembly at the water inlet in order to allow room for expansion in case there is water in the lines that freeze.

#### **ELECTRIC**

Disconnect the power supply by either unplugging the electrical cord or by turning off the circuit breaker to the water heater to prevent potential damage from irregular power surges or interruptions.

#### **VENT TERMINATION**

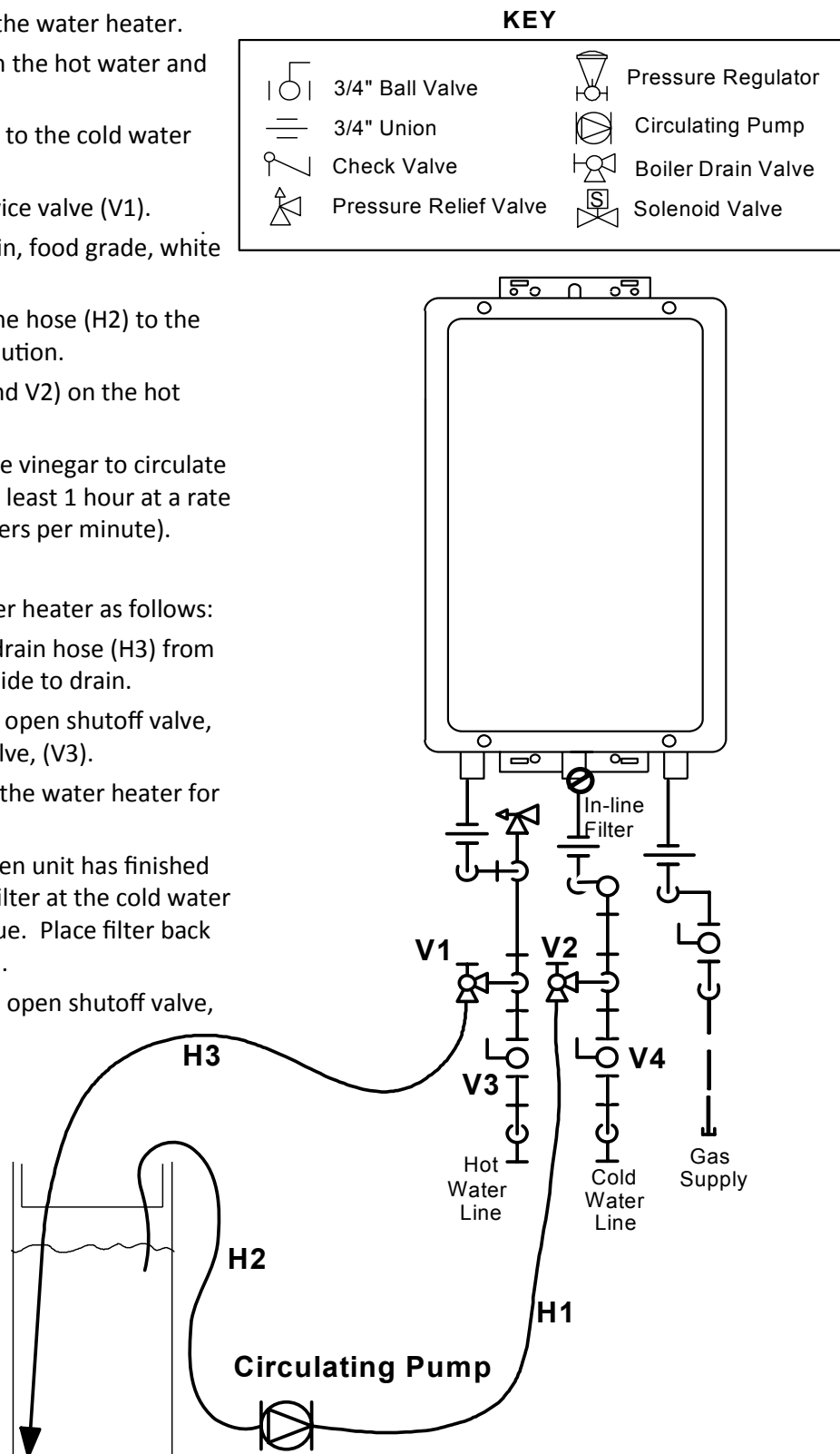
Place a cover over the vent termination (intake and exhaust) if it can be safely accessed. The cover should be easy to apply and remove. This will prevent debris, leaves, and small animals from entering the venting and water heater which could cause air flow issues upon return to service.

## Flushing the heat exchanger

An LC0~LC9 or "00" diagnostic code indicates the unit is beginning to lime up and must be flushed. Failure to flush the appliance will cause damage to the heat exchanger. Damage caused by lime build-up is not covered by the unit's warranty. Giant strongly recommends installation of isolation valves to allow for flushing of the heat exchanger.

1. Disconnect electrical power to the water heater.
2. Close the shutoff valves on both the hot water and cold water lines (V3 and V4).
3. Connect pump outlet hose (H1) to the cold water line at service valve (V2).
4. Connect drain hose (H3) to service valve (V1).
5. Pour 4 gallons of undiluted virgin, food grade, white vinegar into pail.
6. Place the drain hose (H3) and the hose (H2) to the pump inlet into the cleaning solution.
7. Open both service valves (V1 and V2) on the hot water and cold water lines.
8. Operate the pump and allow the vinegar to circulate through the water heater for at least 1 hour at a rate of 4 gallons per minute (15.1 liters per minute).
9. Turn off the pump.
10. Rinse the vinegar from the water heater as follows:
  - a. Remove the free end of the drain hose (H3) from the pail. Place in sink or outside to drain.
  - b. Close service valve, (V2), and open shutoff valve, (V4). Do not open shutoff valve, (V3).
  - c. Allow water to flow through the water heater for 5 minutes.
  - d. Close shutoff valve (V4). When unit has finished draining remove the in-line filter at the cold water inlet and clean out any residue. Place filter back into unit and open valve (V4).
  - e. Close service valve, (V1), and open shutoff valve, (V3).
11. Disconnect all hoses.
12. Restore electrical power to the water heater.

Following flush procedure call technical assistance (1-800-363-9354) for PCB reset information.



# Manual Draining of the Water Heater



## WARNING

To avoid burns, wait until the equipment cools down before draining the water. The water in the appliance will remain hot after it is turned off.

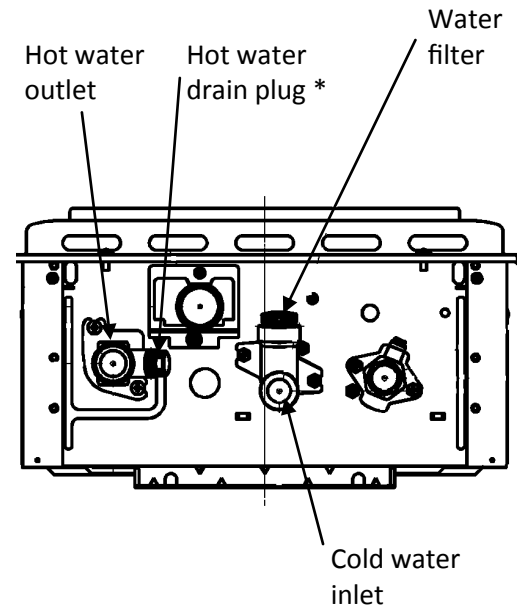
If the water heater is not going to be used during a period of possible freezing weather, it is recommended that the water inside the water heater be drained.

### To manually drain the water:

1. Shut off cold water supply and gas supply.
2. Turn off the temperature controller.
3. Disconnect the power to the water heater.
4. Place a container to catch the water. Remove the drain caps on both isolation valves and open both valves above the caps (blue and red valve handles). -OR- Open hot water drain plug at the hot water outlet.
5. Remove water filter to drain the cold water.

### To resume normal operation:

1. Confirm that all water drain plugs are removed, that the gas supply is turned off, and that all taps are closed.
2. Screw in the water filter in the cold water inlet.
3. Replace the drain caps and close both isolation valves. -OR- Screw in the hot water drain plug.
4. Open the cold water supply.
5. Open a tap and confirm that water flows, and then close.
6. Turn on the power.
7. After confirming that the temperature controller is off, turn on the gas supply.
8. Turn on the temperature controller.

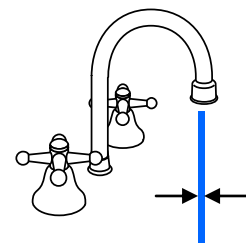


\* Use a wrench or other tool to unscrew the hot water drain plug.

### **Running a low volume of water through the water heater to prevent freezing**

If the temperature exceeds the ability of the water heater to freeze protect itself, or if power is lost, the following steps may prevent the water heater and external piping from freezing. (Units connected with EZ Connect (2 unit link) should be drained to prevent freezing if not in use.)

1. Turn the water heater off.
2. Close the gas supply valve.
3. Turn on a hot water tap to flow water about 0.1 gal/min or where the stream is about 0.2 inches thick.



0.1 gal/min or about  
0.2 inch thick

### **When the water heater or external piping has frozen**

1. Do not operate the water heater if it or the external piping is frozen.
2. Close the gas and water valves and turn off the power.
3. Wait until the water thaws. Check by opening the water supply valve.
4. Check the water heater and the piping for leaks.



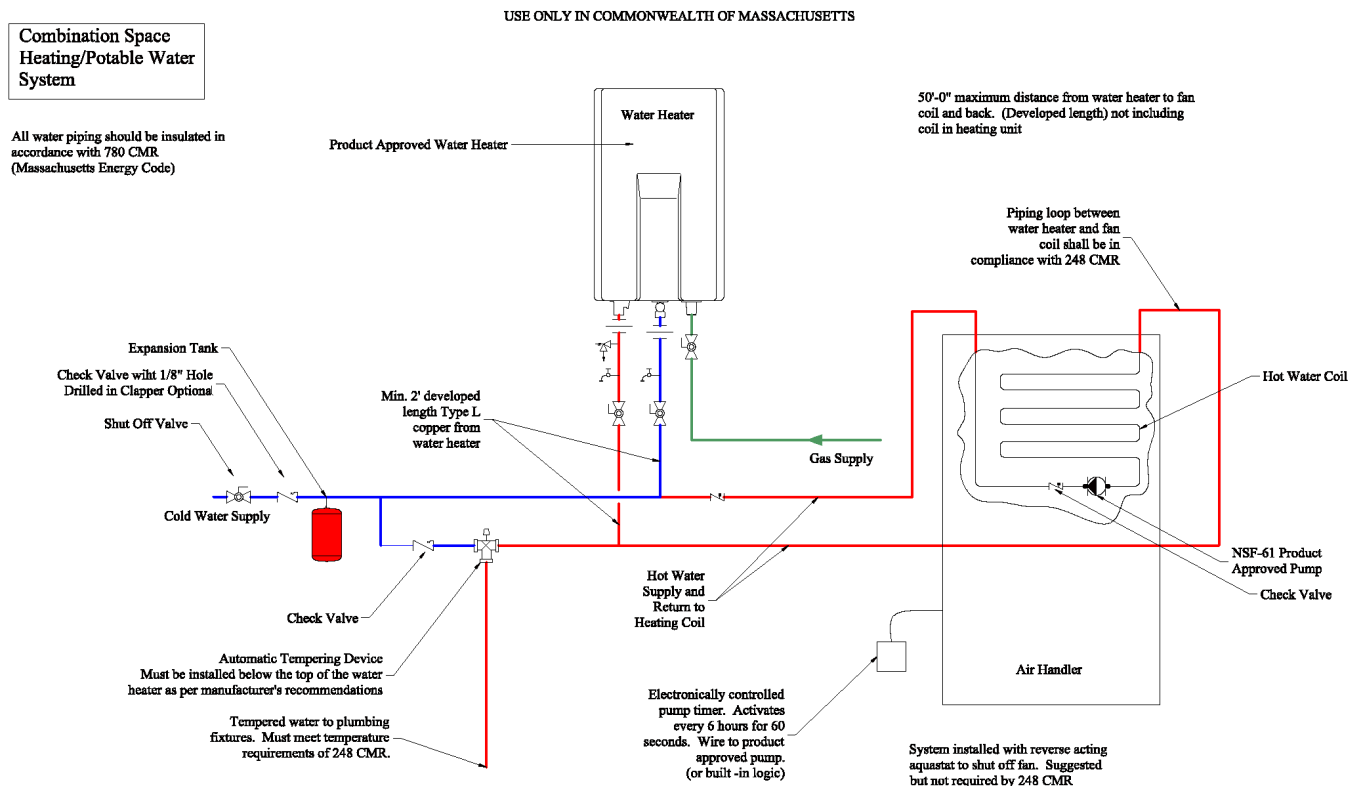
# State Regulations

**NOTICE BEFORE INSTALLATION** This direct-vent appliance must be installed by a licensed professional. If you are not properly trained, you must not install this unit.

**IMPORTANT: In the State of Massachusetts (248 CMR 4.00 & 5.00)**

For all side wall horizontally vented gas fueled equipment installed in every dwelling, building or structure used in whole or in part for residential purposes, including those owned or operated by the Commonwealth and where the side wall exhaust vent termination is less than seven (7) feet above finished grade in the area of the venting, including but not limited to decks and porches, the following requirements shall be satisfied:

1. **INSTALLATION OF CARBON MONOXIDE DETECTORS.** At the time of installation of the side wall horizontal vented gas fueled equipment, the installing plumber or gasfitter shall observe that a hard wired carbon monoxide detector with an alarm and battery back-up is installed on the floor level where the gas equipment is to be installed. In addition, the installing plumber or gasfitter shall observe that a battery operated or hard wired carbon monoxide detector with an alarm is installed on each additional level of the dwelling, building or structure served by the side wall horizontal vented gas fueled equipment. It shall be the responsibility of the property owner to secure the services of qualified licensed professionals for the installation of hard wired carbon monoxide detectors
  - a. In the event that the side wall horizontally vented gas fueled equipment is installed in a crawl space or an attic, the hard wired carbon monoxide detector with alarm and battery back-up may be installed on the next adjacent floor level.
  - b. In the event that the requirements of this subdivision can not be met at the time of completion of installation, the owner shall have a period of thirty (30) days to comply with the above requirements; provided, however, that during said thirty (30) day period, a battery operated carbon monoxide detector with an alarm shall be installed.
2. **APPROVED CARBON MONOXIDE DETECTORS.** Each carbon monoxide detector as required in accordance with the above provisions shall comply with NFPA 720 and be ANSI/UL 2034 listed and IAS certified.
3. **SIGNAGE.** A metal or plastic identification plate shall be permanently mounted to the exterior of the building at a minimum height of eight (8) feet above grade directly in line with the exhaust vent terminal for the horizontally vented gas fueled heating appliance or equipment. The sign shall read, in print size no less than one-half (1/2) inch in size, "**GAS VENT DIRECTLY BELOW. KEEP CLEAR OF ALL OBSTRUCTIONS**".
4. **INSPECTION.** The state or local gas inspector of the side wall horizontally vented gas fueled equipment shall not approve the installation unless, upon inspection, the inspector observes carbon monoxide detectors and signage installed in accordance with the provisions of 248 CMR 5.08(2)(a)1 through 4.



# Limited Warranty for Performance Series UGTC-152, UGTC-199

## GENERAL

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

## WHAT IS COVERED?

The Giant Standard Limited Warranty covers any defects in materials or workmanship when the product is installed and operated according to Giant written installation instructions, subject to the terms within this Limited Warranty document. This Limited Warranty applies only to products that are installed correctly. Improper installation may void this Limited Warranty. Giant strongly suggests that you use a licensed professional who has attended a Giant installation training class before installing this water heater. This Limited Warranty coverage as set out in the table below extends to the original purchaser and subsequent owners, but only while the product remains at the site of the original installation. This Limited Warranty only extends to the first / original installation of the product and terminates if the product is moved or reinstalled at a new location.

## HOW LONG DOES WARRANTY COVERAGE LAST?

[1] Period of coverage is reduced to three (3) years from date of purchase when used as a recirculating water heater within a hot water recirculation loop, where the water heater is in series with a recirculation system and all recirculating water flows through the water heater, and where an aquastat / thermostat, timer, or an on demand recirculation system is not incorporated.

Item	Period of Coverage (from date of purchase)		
	Residential Applications	If used for both residential water heating and space heating purposes	Commercial Applications
Heat Exchanger	12 years [1] [2] [3]	10 years [1] [3]	5 years [1] [2]
All Other Parts and Components	5 years [1]	5 years [1]	5 years [1]
Reasonable Labour	1 year	1 year	1 year

On demand recirculation is defined as a hot water recirculating loop or system that utilizes existing hot and cold lines or a dedicated return line, and only activates when hot water is used. It can be activated by a push button, motion sensor, or voice activation but not by a temperature sensor. A timer added to a standard recirculating pump is not considered as on demand.

[2] Period of coverage is reduced to five (5) years from date of purchase if the Giant water heater temperature setting exceeds 160° F (71° C).

NOTE: The integrated controller on indoor models has a one (1) year warranty on parts.

## THIS WARRANTY WILL NOT APPLY

1. To defects or malfunctions resulting from failure to properly install, operate, or maintain the unit in accordance with the printed instructions.
2. If the installation does not conform to CSA and/or ETL Standards as well as any applicable national or local building codes.
  - a. Product being installed in a corrosive environment
  - b. Condensate damage
  - c. Improper venting
  - d. Incorrect gas type
  - e. Incorrect gas or water pressure
3. To any damage or failure caused by abuse, accident, fire, floods, freezing, or other acts of God.
4. To any damage or failure caused by operating the heater without an approved temperature and pressure-relief valve having been installed.
5. To any damage or failure caused by utilizing the heater in conjunction with any other energy saving device or other source(s) of energy not approved Giant; or for other than use with potable water without any additives such as salt, chlorine, or chemicals other than those added for the purpose of rendering the water fit to drink.
6. To any damages or failure caused by having affixed to the heater any replacement part(s) manufactured by another company or replacement part(s) not approved by the manufacturer.
- 7.7) To any damage caused by not having the water heater installed adjacent to a free flowing drain in the event of water leakage.
8. If the heater is operated at water temperatures exceeding the maximum setting of the operating and/or high limit control or the heater is not supplied with potable water, free to circulate at all times.
9. Incorrect sizing.
10. Improper maintenance (such as but not limited to scale build-up, freeze damage, or vent blockage).
11. Problems or damage due to fires, flooding, electrical surges, freezing or any acts of God.
12. If the heater is installed outside of Canada or the United States.

There is no warranty coverage on product installed in a closed loop application, commonly associated with space heating only applications.

Use of an MCC-91-2 controller in a residential dwelling will reduce the warranty coverage to that of a commercial warranty application except when an MCC-91-2 is used with a hydronic air handler for temperatures no higher than 160°F (71°C).

This Limited Warranty does not apply to any product whose serial number or manufacture date has been defaced.

This Limited Warranty does not cover any product used in an application that uses chemically treated water such as a pool or spa heater.

## **SHIPPING COSTS**

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

## **HOW TO MAKE A CLAIM**

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

If an exact replacement is not available, a current model water heater or component part with comparable operating features will be provided by the manufacturer. If government regulations or industry standards require the replacement model water heater or component part to have features not found on the defective model water heater or component part, you will be charged the difference in price associated with these required features. If you pay the difference in price for these required features, you will receive a complete new Standard Basic Limited Warranty for the replacement water heater.

## **MISCELLANEOUS**

No one is authorized to make any other warranties on the manufacturer's behalf. Any implied warranties of any nature offered by a third party other than what is stated in this Standard Basic Limited Warranty will not be honoured. No claims for incidental or consequential damages (including damages from leakage) will be accepted.

## **LIMITATION ON WARRANTIES**

Giant Factories Inc. shall not be liable for indirect, incidental, special, consequential or other similar damages that may arise, including lost profits, damage to person or property, loss of use, inconvenience, or liability arising from improper installation, service or use.