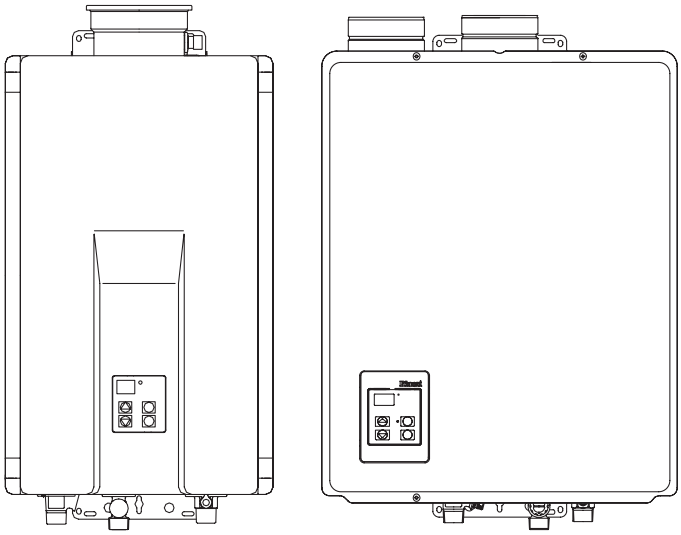
Rinnai®

Direct Vent Tankless Water Heater

Operation and Installation Manual

R50LSi **..... REU-VA2019FFUD**
R75LSi **..... REU-VA2528FFUD(A)**
R94LSi **..... REU-VA2535FFUD**
R98LSi **..... REU-VA3237FFU**
R98LSi-ASME **.... REU-VA3237FFU-ASME**

FOR INDOOR APPLICATIONS ONLY



Register your product at www.rinnairegistration.com or call 1-866-RINNAI1 (746-6241)

ANS Z21.10.3
•
CSA 4.3

INSTALLER: Leave this manual with the appliance.
CONSUMER: Retain this manual for future reference.

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 qualified installer, service agency or the gas supplier.**

R98LSi-ASME

This model has been built in accordance with the requirements of the ASME Boiler and Pressure Vessel Code and have received the Certificate of Authorization from the National Board. The heat exchanger on this unit has the NB and HLW stamps.

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.

Table of Contents

Specifications

Model		*R50LSi*	*R75LSi*	*R94LSi*	*R98LSi*	*R98LSi-ASME*
Minimum Gas Consumption Btu/h		15,000			19,000	
Maximum Gas Consumption Btu/h		150,000	180,000	199,000 Natural Gas 190,000 Propane Gas	237,000	
Hot water capacity (Min - Max) *		0.6 - 5.0 GPM (2.3 - 18.9 L/min)	0.6 - 7.5 GPM (2.3 - 28.4 L/min)	0.6 - 9.4 GPM (2.3 - 35.5 L/min)	0.6 - 9.8 GPM (2.3 - 37 L/min)	
Hot water capacity (45ºF rise)		5.0 GPM (18.9 L/min)	6.6 GPM (25.0 L/min)	7.4 GPM(28 L/min) Natural Gas 7.1 GPM(27 L/min) Propane Gas	8.8 GPM (33 L/min)	
Default Temperature Setting (no controller)		120º F (49º C)				
Temperature Controller Default Temperature Setting		104º F (40º C)				
Maximum Temp Setting (Commercial **)		160º F (71º C)		185º F (85º C)		
Maximum Temp Setting (Residential)		Selectable at 120º F (49º C) or at 140º F (60º C)				
Minimum Temperature Setting		98º F (37º C)				
Weight		50 lb (23 kg)			55 lb (25 kg)	
Efficiency Rating		84.0%				
Noise level		49 dB				
Electrical Consumption	Normal	53 W	65 W	79 W	99 W	
	Standby	2 W				
	Anti-frost Protection	100 W			116 W	
By-Pass Control		Fixed		Electronic		
Minimum Gas Supply Pressure	Natural Gas	5.0 inch W.C.				
	Propane	8.0 inch W.C.				
Maximum Gas Supply Pressure	Natural Gas	10.5 inch W.C.				
	Propane	13.5 inch W.C.				
Type of Appliance		Direct Vent, Temperature controlled continuous flow gas hot water system.				
Operation		With or without remote controls, mounted in kitchen, bathroom, etc.				
Approved Gas Type		Natural Gas or Propane - Ensure unit matches gas type it's being installed on.				
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. Remote Control: 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				
Remote Control Cable		Non-Polarized Two Core Cable (Minimum 22 AWG)				
Energy Star Qualified		Yes	Yes	Yes	No	No

* Minimum flow may vary slightly depending on the temperature setting and the inlet water temperature.
** for commercial and hydronic applications requiring higher temperatures.

Rinnai is continually updating and improving products. 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.

Consumer Safety Information

Safety Definitions

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

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

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

⚠ CAUTION 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 Behavior and Practices

⚠ WARNING

- Keep the area around the appliance clear and free from combustible materials, gasoline, and other flammable vapors and liquids.
- Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.
- This appliance is equipped with a three-prong 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 ground prong from this plug.
- Any alteration to the appliance or its controls can be dangerous and will void the warranty.
- Always check the water temperature before entering a shower or bath.

Safety Features

- **Overheat:** The appliance will automatically shut down when the appliance exceeds a predetermined temperature.
- **Flame Failure:** The appliance will automatically shut down if the burner flame is extinguished.
- **Power Failure:** The appliance will cut off the gas if it loses electrical power.
- **Power Surge Fuse:** A glass fuse protects against overcurrent. If the fuse blows then all indicator lamps will be off.
- **Fusible Link:** In case the overheat feature does not prevent the temperature from rising then the fusible link will break shutting off the appliance.

Description of Operation

The Rinnai water heater is one of the most advanced water heaters available. It provides a continuous supply of hot water at a preset temperature. This appliance is direct vent where air is brought in from the outside and combustion gases are exhausted to the outside.

While electricity, water, and gas supplies are connected, the Rinnai water heater produces hot water whenever a hot water tap is open.

Ignition is electronic. There is no pilot light consuming gas while the water heater is not being used. The gas burner lights automatically when the hot water tap is opened and goes out when the tap is closed.

Installation of the temperature controller is highly recommended. The temperature controller can set the temperature within a specific range and can provide error codes to diagnose any problems.

The temperature of the outgoing hot water is constantly monitored. The Rinnai water heater may adjust the water flow in order to maintain the temperature setting. The water flow may vary from summer to winter due to the difference in ground water temperature.

Operating Instructions

Features Available on Temperature Controllers

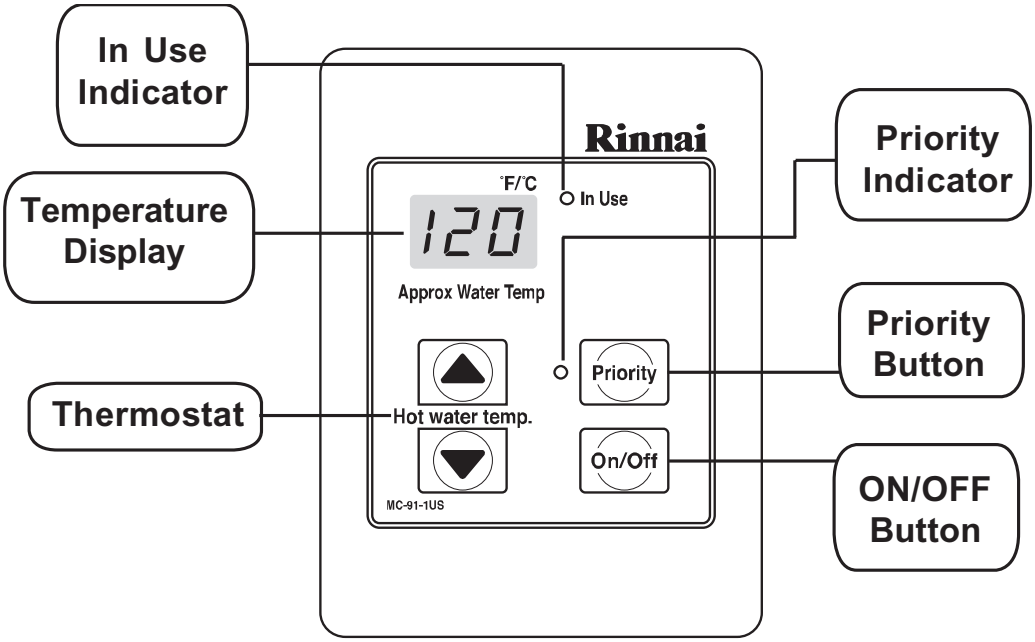
The MC-91 temperature controller is supplied with the appliance. Additional functions are available through the use of optional controllers.

Features	MC-91	MCC-91	MC-100	BC-100	MC-502	Description
Call			●	●		Sends a short series of beeps to all controllers in the system. It is not an intercom.
Clock			●	●		12 hour AM/PM clock.
Error Codes	●	●	●	●	●	When a fault is detected an error code flashes at the temperature display on models MC-91, MCC-91, and MC-502; and flashes at the clock display on models MC-100 and BC-100.
Function			●			Used on this model to set the clock or sound volume.
In Use Indicator	●	●	●	●	●	Indicates that hot water is being supplied (i.e. a hot water tap is open)
ON/OFF Button	●	●	●	●	●	Used to turn the water heater ON or OFF.
Power Save				●		Allows the temperature controller to be in an energy saving mode.
Priority Button / Indicator	●	●	●	●	●	Indicates that this controller is setting the temperature . Priority can be switched to another controller by pressing its Priority Button when no hot water is running.
Sound Volume			●	●		Used to adjust the voice prompt volume.
Temperature Display	●	●	●	●	●	Shows the temperature setting.
Thermostat	●	●	●	●	●	Increases or decreases the temperature setting.
Water Smart / Bath Fill Button / Indicator				●		Used to select the Water Smart / Bath Fill Function to fill a bath with a predetermined volume of water.
Water Volume				●		Used to select the water volume for the Water Smart / Bath Fill Function.

MC-91-1US & MCC-91-1US

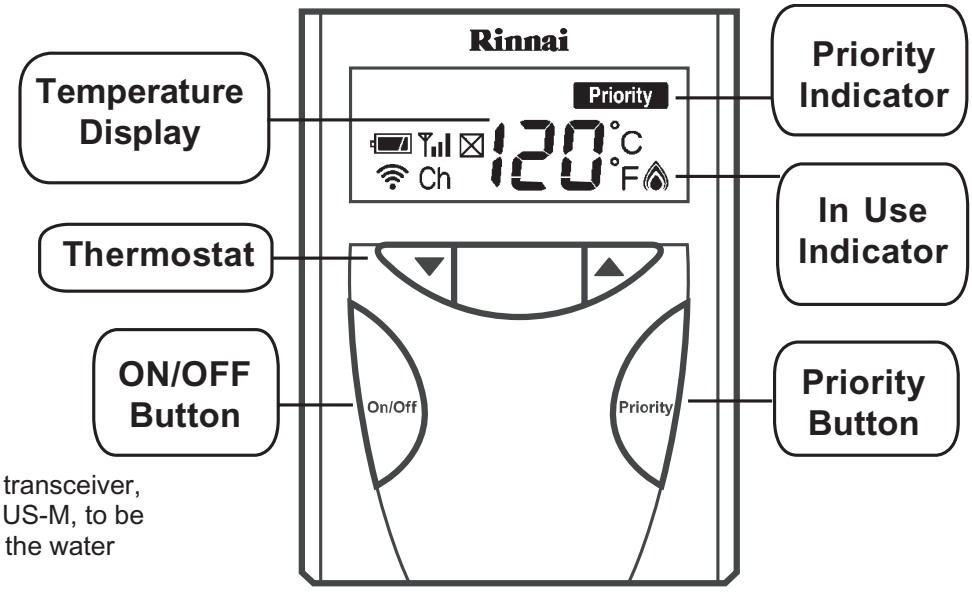
Dimensions (inches): 3.5 W x 4.75 H x 0.75 D

The MC-91 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 controller is for commercial and hydronic applications requiring higher temperatures. When the MCC-91 controller is connected, these higher temperatures are available on all controller models in the system. Refer to the section on temperature ranges.



MC-502RC-1US-S * (Wireless)

Dimensions (inches): 4.33 W x 5.90 H x 1.16 D



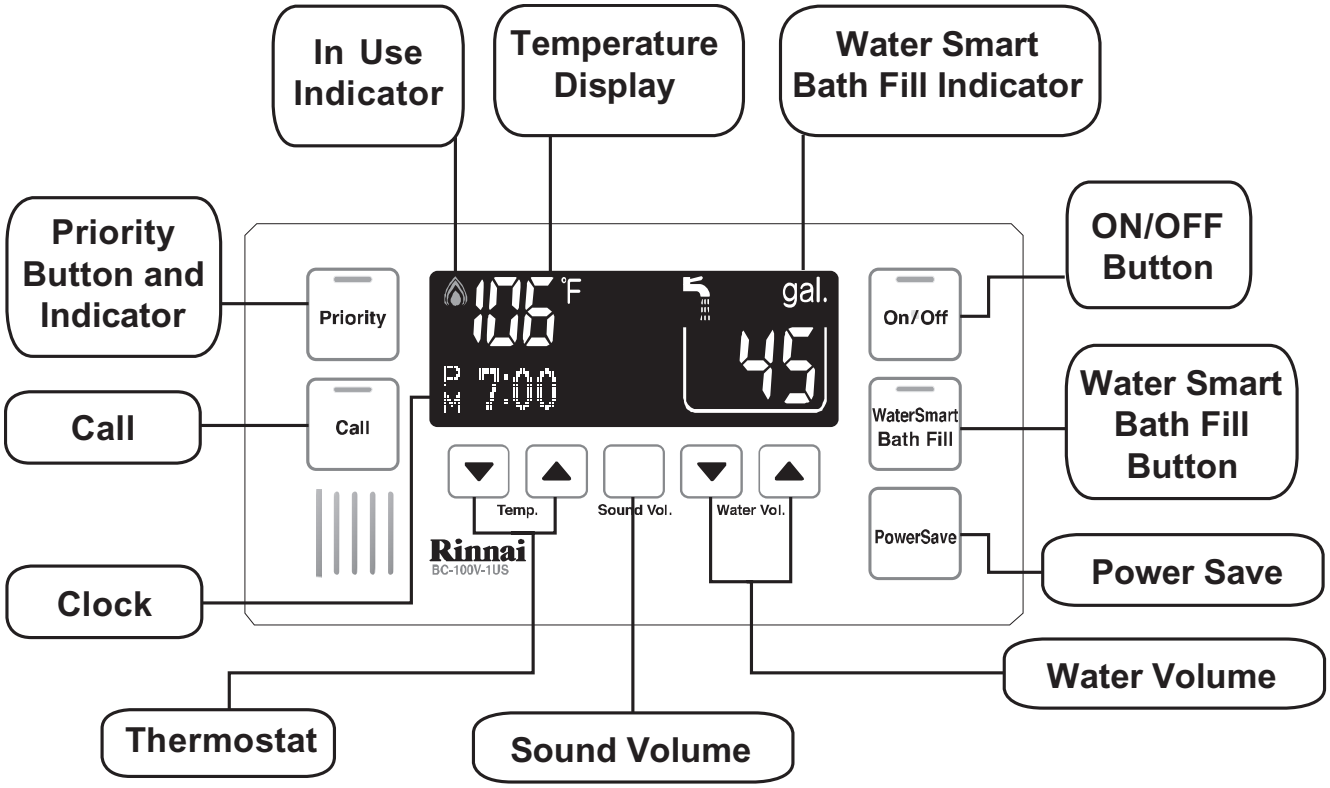
* Requires the transceiver, MC-502RC-1US-M, to be connected to the water heater.

Refer to the MC-502RC-1US-S manual and the Wireless Controller Installation Instructions for complete details on features, operation, and installation.

BC-100V-1US

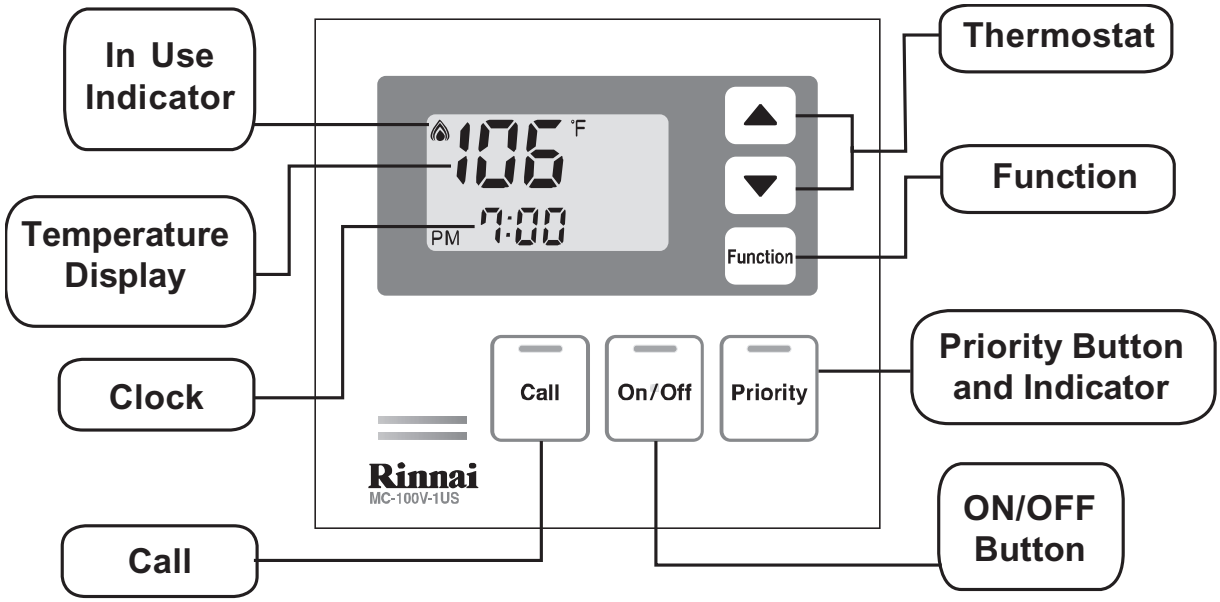
Dimensions (inches): 8.0 W x 4.125 H x 0.875 D

NOTICE	The BC-100V controller is water resistant. Avoid splashing the controller.



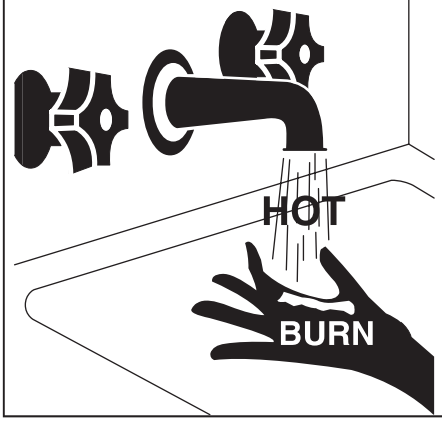
MC-100V-1US

Dimensions (inches): 5.0 W x 4.75 H x 0.75 D



Setting the Temperature

⚠ DANGER



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 125º F (51º C) can cause severe burns or scalding resulting in death.

Hot water can cause first degree burns with exposure for as little as:

3 seconds at 140º F (60º C)

20 seconds at 130º F (54º C)

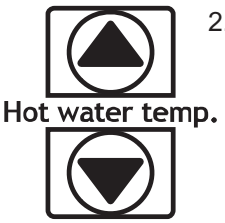
8 minutes at 120º F (48º C)

Test the temperature of the water before placing a child in the bath or shower.

Do not leave a child or an infirm person in the bath unsupervised.

1. Press the “Priority button” on the temperature controller. The Priority light will glow indicating that this controller is controlling the temperature and that the Rinnai water heater is ready to supply hot water.

   The priority can only be changed while no hot water is running.



2. Press the ▲ or ▼ buttons to obtain the desired temperature setting.

   All hot water sources are able to provide water at this temperature setting until it is changed again at this or another temperature controller.

NOTICE While any hot water is being provided, the temperature setting can only be adjusted between 98º F and 110º F.

NOTICE Check local codes for the maximum water temperature setting allowed when used in nursing homes, schools, day care centers, and all other public applications.

NOTICE If a newly installed unit with a temperature controller has not been powered for at least 6 hours then the temperature will return to the default setting of 104º F (40º C) if power is interrupted.

NOTICE 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.

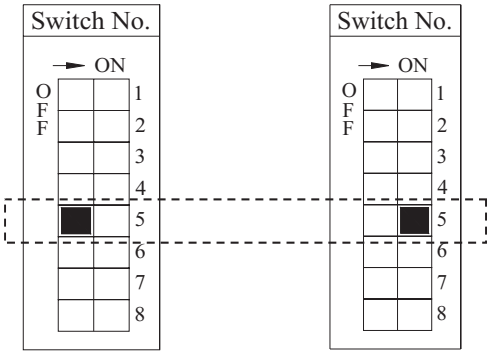
Temperature Options Without a Temperature Controller

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

Set dip switch 5 to ON to obtain 140º F water temperature setting.

Set dip switch 5 to OFF (default) to obtain 120º F water temperature setting.

120º F (49º C) 140º F (60º C)



⚠ WARNING DO NOT adjust the other dip switches unless specifically instructed to do so.

Temperature Ranges

This water heater will attempt to provide hot water at the temperature setting even when the water flow is varied or when more than 1 tap is in use. The water heater can deliver water at only one temperature setting at a time. The available temperatures for a given model are provided below.

Model	Temperature Settings Available (ºF)															
R50LSi ***R75LSi***	98	100	102	104	106	108	110	115	120	125 *	130 *	135 *	140 *	150 **	160 **	
R94LSi ***R98LSi*** ***R98LSi-ASME***	98	100	102	104	106	108	110	115	120	125 *	130 *	135 *	140 *	150 **	160 **	185 **
Temp in Celsius ºC	37	38	39	40	41	42	43	46	49	52 *	54 *	57 *	60 *	66 **	71 **	85 **

* **Re-setting the Maximum Temperature**

If the model name on the side of the water heater ends with "-UC" (ex. "REU-VA2535FFUD-UC"), then these units have a default maximum temperature of 120º F (49º C) and an option to increase the maximum temperature to 140 ºF (60 ºC). Temperature settings from 125-140 ºF (52-60 ºC) are available by setting dip switch 6 to ON in the SW1 bank of 8 dip switches.
Units with model names ending in "-US" have a default maximum temperature of 140 ºF (60 ºC).

** **MCC-91 Temperature Controller**

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

The MCC-91 controller is intended for commercial and hydronic applications only. If an MCC-91 controller is used in a residential dwelling for a hydronics application, a mixing valve must also be installed to limit the potable hot water temperature to a safe temperature. Water temperatures over 125º F (51º C) can cause severe burns or scalding. Refer to the Danger Alert on water temperatures. Rinnai shall not, in any event, be liable for damages resulting from such misuse or misapplication.

Suggested temperatures are

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

These temperatures are suggestions only.

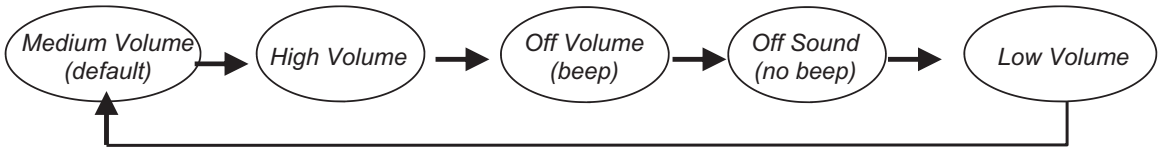
A temperature lower than 98º F (37º C) can be obtained at the tap by mixing with cold water.

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.

Setting the Sound Volume (Voice Prompt)

MC-100V Press the "Function" button to adjust the voice prompt volume. The default sound volume is set to Medium. Each subsequent press of the ▲ or ▼ button cycles through the volume levels in the order below.

BC-100V Press the "Sound Vol." button to adjust the voice prompt volume. The default sound volume is set to Medium. Each subsequent press of the button cycles through the volume levels in the order below.



Overview

This function is exclusive to the BC-100V temperature controller. The bath fill function allows the consumer to fill a tub with a preset volume of water at a preset temperature. This is done by pressing the bath fill button on the BC-100V controller while no hot water is flowing and then opening only the hot water tap. The water heater will cease the hot water flow when the preset volume has been reached. The hot water tap should then be closed and the bath fill button pressed.

The temperature settings for the bath fill function are limited to those in the table below.

	Bath Fill Temperature Settings Available								
ºF	98	100	102	104	106	108	110	115	120
ºC	37	38	39	40	41	42	43	46	49

NOTICE

Power Loss

If power is lost during the bath fill function, the water heater will shut down but the water will continue to flow. When power returns, the water shuts off and Error Code 03 appears on the controller.

If power is lost after the bath has filled but before the bath fill function button is de-selected, then the water will not flow during the power loss or after the power is returned. Once power returns, close the hot water tap and de-select the bath fill function. No error code appears.

NOTICE

Multiple Water Heaters

The bath fill function will not work properly if it is connected to multiple water heaters. The tub will overfill because the bath fill function is not able to measure the water volume when connected to multiple water heaters.

NOTICE

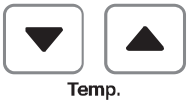
Anti-scald Fixtures

Do not use with single handle fixtures that have anti-scald features built into them. These fixtures allow a predetermined amount of cold water which is not taken into account by the bath fill function.

Setting the Water Volume

The default volume is set to 25 gallons. The volume can be set between 10 and 120 gallons.

1. 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 Rinnai water heater is ready to supply hot water.



2. Press the “Temp” ▲ or ▼ buttons to obtain the desired temperature setting.

3. Press the “Water Vol.”▲ or ▼ buttons to obtain the desired water volume in gallons.

NOTICE

To Prevent Over Filling

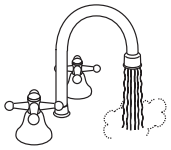
Be careful not to overfill the bath. An average bath volume is 60 gallons. When filling the bath using this function for the first time:

- Monitor and remain by the bath while the water is running.
- Use a low bath fill volume less than 25 gallons

Using the Water Smart / Bath Fill Function

Filling the Tub

1. Press the “Water Smart / Bath Fill” button once. The button will illuminate, a tone will sound, and the word “Bath” will appear next to the temperature setting.



2. The voice prompt will announce “The hot water system is ready. Open the hot water tap.”
   Open the hot water tap. The “In Use” indicator will illuminate on all controllers. The hot water will begin to flow.

3. When the preset volume of water has been produced then
   - the water flow will cease
   - the “Water Smart / Bath Fill” button will flash
   - a tone will sound
   - the voice prompt will announce, “Bath fill is complete. Turn off the bath hot water tap and push the Bath Fill button.”

4. Turn off the bath hot water tap and push the Bath Fill button. The water heater will not allow hot water to flow from any source until the “Water Smart / Bath Fill” button is pushed.
   The button light will go out and the word “Bath” will disappear from the display.

NOTICE

To Stop the Bath Fill Before it Finishes

To stop the water flow during the Bath Fill function, press the “Water Smart / Bath Fill” button. The button will flash and the voice prompt will announce, “Hot water is not available. Turn off all hot water taps and push the Bath Fill button.” Follow the voice prompt instructions.

NOTICE

When Other Taps Are Open

During the bath fill function, any hot water flowed at other locations, subtracts from the total amount of water for the bath. For example if the bath fill function is set for 50 gallons and 5 gallons of hot water are used at other locations during the fill period then the bath will only fill with 45 gallons.

Setting Controller to Mute

Models MC-91 and MCC-91

To eliminate the beeps when keys are pressed or to turn the beeps back on, press and hold both the ▲ and ▼ buttons until a beep is heard (approximately 5 seconds).

Setting the Clock

MC-100V Press the “Function” button twice within 10 seconds to set the clock. Press the ▲ or ▼ button to reach the desired time. The clock on the BC-100V automatically shows the time which has been set on the MC-100V.

⚠ WARNING

Turn off the electrical power supply, the manual gas valve and the manual water control valve whenever servicing the unit.

Repairs should be performed by a qualified service technician. The appliance should be inspected annually by a qualified service technician. Verify proper operation after servicing.

Cleaning

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

Clean as follows:

1. Turn off and disconnect electrical power. Allow to cool.
2. 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.

Motors

Motors are permanently lubricated and do not need periodic lubrication. 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 Buildup

If you receive Error Code “LC”, 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

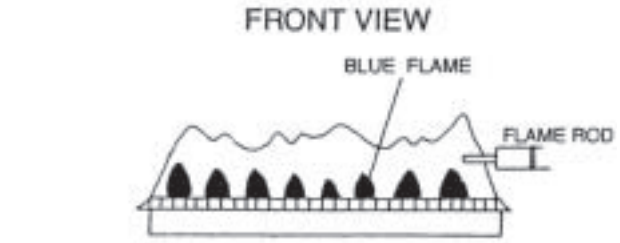
Keep the area around flue terminal free of snow and ice. The appliance will not function properly if the intake air or exhaust is impeded (blocked or partially blocked) by obstructions.

Visual Inspection of Flame

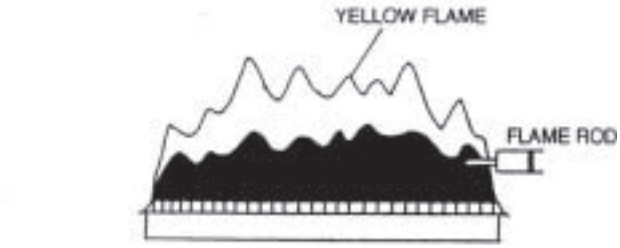
The burner must flame evenly over the entire surface when operating correctly. The flame must burn with a clear, blue, stable flame. See the parts breakdown of the burner for the location of the view ports.

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

SATISFACTORY



UNSATISFACTORY



Error Codes

The Rinnai water heater has the ability to check its own operation continuously. If a fault occurs, an error code will flash on the Display of the temperature controller. This assists with diagnosing the fault and may enable you overcome a problem without a service call. Please identify the code displayed when inquiring about service.

⚠ WARNING Some of the checks below may need to be done by a qualified service technician. Call a service technician for any remedy that involves gas or electricity. Call a service technician if you have any doubt or reservation about performing the remedy yourself.

Error Code Table

Error	Fault	Remedy
02	No burner operation during freeze protection mode	Service Call
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	Ensure Rinnai approved venting materials are being used. Check that nothing is blocking the flue inlet or exhaust. Check all vent components for proper connections. Ensure vent length is within limits. Ensure condensation collar was installed correctly. Verify dip switches are set properly. Check fan for blockage.
11	No Ignition	Check that the gas is turned on at the water heater, gas meter, or cylinder. 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 appliance is properly grounded. Disconnect EZConnect™ or MSA controls to isolate the problem. 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.
12	Flame Failure	Check that the gas is turned on at the water heater and gas meter. Check for obstructions in the flue outlet. 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 Rinnai venting material was installed. Ensure condensation collar was installed properly. Ensure vent length is within limits. Verify dip switches are set properly. Ensure appliance is properly grounded. Disconnect keypad. Disconnect EZConnect™ or MSA controls to isolate the problem. 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 re-connect 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.

Error	Fault	Remedy
14	Thermal Fuse	Check gas type of unit and ensure it matches gas type being used. Check for restrictions in air flow around unit and vent terminal. Check for low water flow in a circulating system causing short-cycling. Ensure dip switches are set to the proper 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. 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	Check for restrictions in air flow around unit and vent terminal. 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 clogged heat exchanger.
32	Outgoing Water Temperature Sensor Fault	Check sensor wiring for damage. Measure resistance of sensor. Clean sensor of scale build up. Replace sensor.
33	Heat Exchanger Outgoing Temperature Sensor Fault	Check sensor wiring for damage. Measure resistance of sensor. Clean sensor of scale build up. Replace sensor.
34	Combustion Air Temperature Sensor Fault	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.
52	Modulating Solenoid Valve Signal Abnormal	Check modulating gas solenoid valve wiring harness for loose or damage terminals. Measure resistance of valve coil.
61	Combustion Fan Failure	Ensure fan will turn freely. Check wiring harness to motor for damaged and/or loose connections. Measure resistance of motor winding.
65	Water Flow Servo Faulty (does not stop flow properly)	If blank screen is present on remote control then the flow control has shorted out. Unplug flow control. If remote lights up and unit starts operating then replace flow control assembly.
71	SV0, SV1, SV2, and SV3 Solenoid Valve Circuit Fault	Check wiring harness to all solenoids for damage and/or loose connections. Measure resistance of each solenoid valve coil.
72	Flame Sensing Device Fault	Ensure flame rod is touching flame when unit fires. Check all wiring to flame rod for damage. 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.
LC	Scale Build-up in Heat Exchanger (when checking maintenance code history “00” is substituted for “LC”)	Flush heat exchanger. Refer to instructions in manual. Replace heat exchanger. NOTE: The LC code is the only error code that will allow the unit to keep running. The display will alternate between the LC code and the temperature setting. The controller will continue to beep. The LC code will reset if power is turned off and then on.
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. Check for bleed over. Isolate unit from building by turning off hot water line to building. Isolate the circulating system if present. Open your pressure relief valve; if unit fires, there is bleed over in your plumbing. Ensure you have at least the minimum flow rate required to fire unit. Ensure turbine spins freely. Measure the resistance of the water flow control sensor. Check for DC shorts at components

Trouble Shooting for Common Issues

I don't have any hot water when I open the tap.

Make sure there is gas, water, and electricity to the Rinnai water heater (power is turned on and the gas is turned on)

When I was using the hot water, the water got cold.

If you adjusted the flow from the tap to lessen it, you may have gone below the minimum flow required. The Rinnai Water Heater Requires a minimum flow rate to operate. (See the specification page for the flow rate of your model.) Decrease the temperature setting at the temperature controller or increase the water flow.

White smoke comes out of the exhaust.

During colder weather when the exhaust temperature is much hotter than the outside air, the exhaust fumes condense producing water vapor.

When I open a hot tap, I do not immediately get hot water.

Hot water must travel through your plumbing from the Rinnai water heater to the faucet. The time period for hot water to reach your fixture is determined by the amount of water in the plumbing system between the water heater and the fixture, water pressure, and the flow rate of the fixture.

After I turn off the hot water tap, the fan on the Rinnai water heater continues to run.

The fan is designed to continue running for a short time after the flow of water stops. This is to ensure constant water temperatures during rapid starting and stopping, as well as exhausting any residual gas flue products from the unit.

Accessing Operating Information

Models MC-91 and MCC-91

To display the most recent error codes press and hold the "On/Off" button for 2 seconds. While holding the "On/Off" button press the ▲ button. The last 9 error codes will flash one after the other. To exit this mode press the "On/Off" and ▲ button as before.

To display the water flow through the water heater press and hold the ▲ button for 2 seconds and without releasing the ▲ button press the "On/Off" button.

To display the outlet water temperature press and hold the ▼ button for 2 seconds and without releasing the ▼ button press the "On/Off" button.

Water Quality

Consideration of care for your water heater should include evaluation of water quality. If the water quality exceeds the target levels provided in the table, you may want to treat or condition the water.

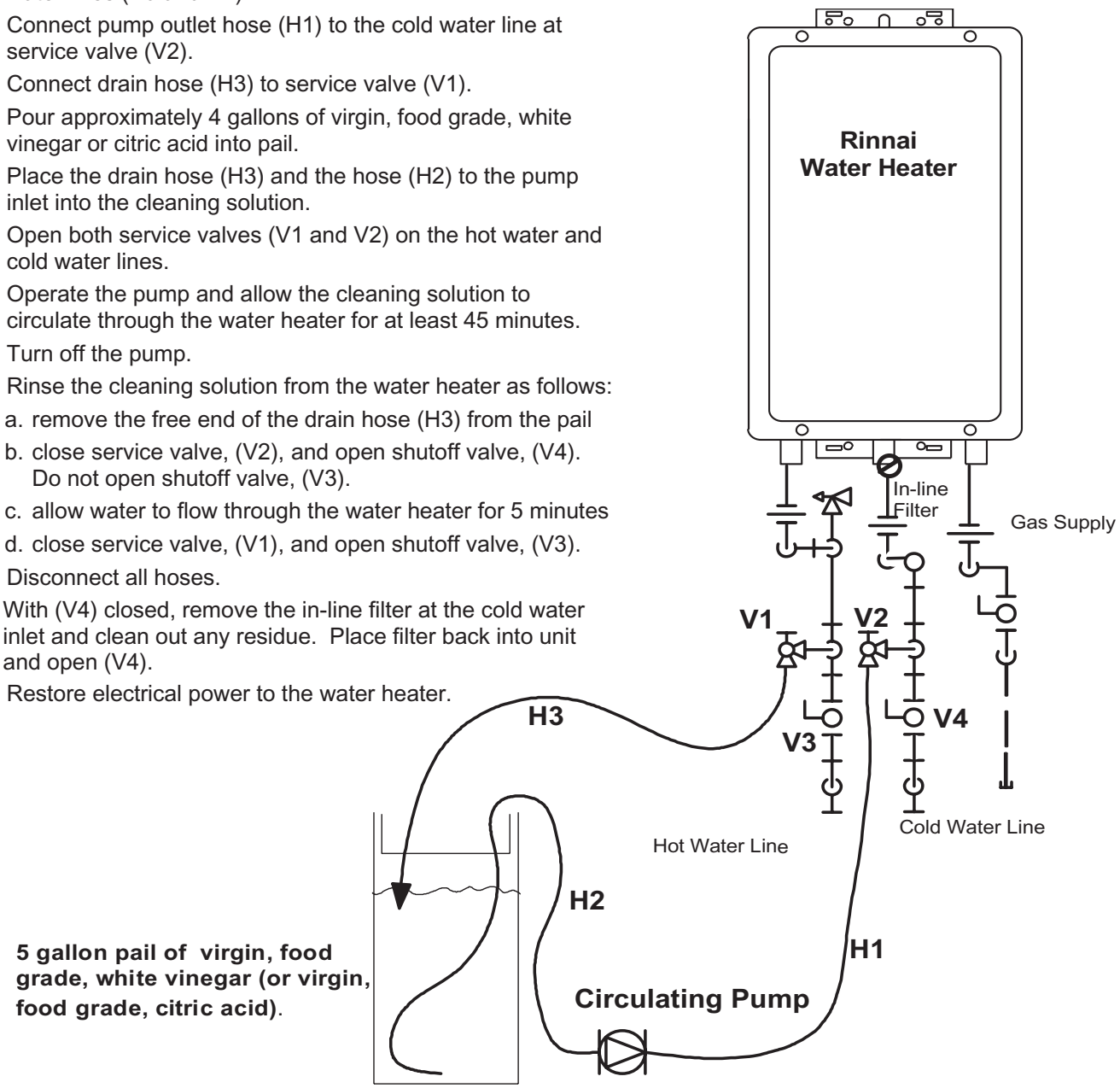
* Source: Part 143 National Secondary Drinking Water Regulations

	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

Flushing the Heat Exchange (Error Code: LC or 00)

An “LC” or “00” error 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 buildup is not covered by the unit’s warranty. After flushing, reset the LC fault code by turning off the power to the unit and turning the power back on.

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 approximately 4 gallons of virgin, food grade, white vinegar or citric acid 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 cleaning solution to circulate through the water heater for at least 45 minutes.
9. Turn off the pump.
10. Rinse the cleaning solution from the water heater as follows:
    a. remove the free end of the drain hose (H3) from the pail
    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 service valve, (V1), and open shutoff valve, (V3).
11. Disconnect all hoses.
12. With (V4) closed, remove the in-line filter at the cold water inlet and clean out any residue. Place filter back into unit and open (V4).
13. Restore electrical power to the water heater.



What will Rinnai do?

Rinnai will repair or replace the covered product or any part or component that is defective in materials or workmanship as set forth as follows. Rinnai will pay reasonable labor charges associated with the repair or replacement of any such part or component. All repair parts must be genuine Rinnai parts. All repairs or replacements must be performed by an individual or servicing company that is properly trained, state qualified or licensed to do the type of repair.

Replacement of the product may be authorized by Rinnai only. Rinnai does not authorize any person or company to assume for it any obligation or liability in connection with the replacement of the product. If Rinnai determines that repair of a product is not possible, Rinnai will replace the product with a comparable product, at Rinnai's discretion. If a component or product returned to Rinnai is found to be free of defects in material or workmanship, or damaged by improper installation or damaged during return shipping, the warranty claim for product, parts and labor may be denied.

How do I get service?

You must contact a state qualified/licensed contractor or authorized service provider for the repair of a product under this Warranty. For the name of a qualified/authorized service provider please contact your place of purchase, visit the Rinnai website (www.foreverhotwater.com), call Rinnai at 1-800-621-9419 or write to Rinnai at 103 International Drive, Peachtree City, Georgia 30269.

Proof of purchase is required to obtain warranty service. You may show proof of purchase with a dated sales receipt, or by registering within 30 days of purchasing the product. To register your tankless water heater, please visit www.rinnairegistration.com. For those without internet access, please call 1-866-RINNAI1 (746-6241). Receipt of Registration by Rinnai will constitute proof-of-purchase for this product. However, Registration is not necessary in order to validate this Warranty.

What is not covered?

This Warranty does not cover any failures or operating difficulties due to the following:

- accident, abuse, or misuse
- alteration
- misapplication
- force majeure
- improper installation (such as but not limited to inadequate water quality, condensate damage, improper venting, incorrect gas type, incorrect gas or water pressure, or absence of a drain pan under the appliance)
- improper maintenance (such as but not limited to scale buildup, freeze damage, or vent blockage)
- incorrect sizing
- any other causes other than defects in materials or workmanship

This Warranty does not apply to any product whose serial number or manufacture date has been defaced. This Warranty does not cover any product used in an application that uses chemically treated water such as a pool or spa heater. This appliance is suitable for filling large or whirlpool bath tubs with potable water. Refer to the Water Quality Section in the Operation and Installation Manual.

No one is authorized to make any other warranties on behalf of Rinnai America Corporation. Except as expressly provided herein, there are no other warranties, expressed or implied, including, but not limited to warranties of merchantability or fitness for a particular purpose, which extend beyond the description of the warranty herein and further Rinnai 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. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.

Limitation on implied warranties

Any implied warranties of merchantability and fitness arising under state law are limited in duration to the period of coverage provided by this limited Warranty, unless the period provided by state law is less. Some states do not allow limitations on how long an implied Warranty lasts, so the above limitation may not apply to you.

This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.