

## USER'S INFORMATION MANUAL

# I-Series Condensing Boiler

Wall-Mounted, Gas-Fired Solo Boiler

Central Heating



### SOLO MODELS

i060S (REB-A1800FF-US)  
i090S (REB-A2600FF-US)  
i120S (REB-A3500FF-US)  
i150S (REB-A4400FF-US)

Certified to ANSI Z21.13  
and CSA 4.9



**WARNING** If the information in these instructions are 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.



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# Welcome

Thank you for choosing a Rinnai Condensing Boiler. Before using the boiler, please read this manual completely and retain it for future reference.

As when using any appliance generating heat, there are certain safety precautions you should follow. See the “Safety Precautions” section in this manual for detailed safety precautions.

For the “Rinnai I-Series Condensing Boiler Installation and Operation Manual”, please visit [rinnai.us](http://rinnai.us).

# Acronyms and Abbreviations

Following is a list of common acronyms and abbreviations used in this manual:

<b>ANSI</b>	American National Standards Institute
<b>CH</b>	Central Heating
<b>Solo</b>	Heating Only Boiler capable of DHW through an indirect tank
<b>DHW</b>	Domestic Hot Water
<b>LWCO</b>	Low Water Cut Off
<b>NG</b>	Natural Gas
<b>PP</b>	Polypropylene
<b>PRV</b>	Pressure Relief Valve
<b>PSI</b>	Pounds per square inch

## *For Your Records*

**Dealer Name:** \_\_\_\_\_  
**Dealer Phone #:** \_\_\_\_\_  
**Purchase Date:** \_\_\_\_\_  
**Serial #:** \_\_\_\_\_

*Located on the left side of unit*

# 1 Safety

## **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.
- The warning signs in this manual are here to prevent injury to you and others. Please follow them explicitly.

## 1.1 Safety Symbols

This manual contains the following important safety symbols. Always read and obey all safety messages.



Safety alert 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 personal injury or death.

## **WARNING**

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

## **CAUTION**

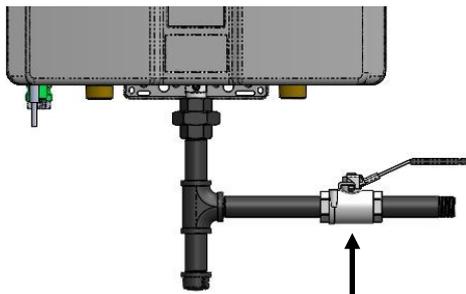
Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

## 1.2 Safety Precautions

Please read and follow the safety precautions listed below.

### DANGER

Should overheating occur or the gas supply fail to shut off, do not turn off or disconnect the electrical supply to the pump. Instead, shut off the gas supply at a location external to the appliance.



Gas shut off valve

### WARNING

**Environment:** Air surrounding the boiler, 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. In applications utilizing room air where there are high levels of particulates, Rinnai offers a room air screen. The boiler, venting, and vent termination(s) should not be installed in any areas where the air may contain these corrosive compounds.

### WARNING

#### Inspecting the Exhaust and Intake Venting System:

- Visually inspect the entire exhaust vent and intake system. Look closely for blockages, deterioration, leaks or any other type of damage to the system. Repair any joints that show signs of leakage. Make sure the intake vent pipe is connected and properly sealed (if applicable).
- Examine the exhaust vent and air intake to make sure they are clean and free of obstructions.

California law requires the following Proposition 65 warning to be provided:



### WARNING

This product can expose you to chemicals including lead, lead compounds and carbon disulfide which are known to the State of California to cause cancer, birth defects or other reproductive harm. For more information, visit [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## **WARNING**

- Check the water pressure in the central heating installation regularly. See the “Rinnai I-Series Condensing Boiler Installation and Operation Manual” for specific glycols, inhibitors, and system cleaners permitted. Contact your installer in case of doubt.
- Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control which has been under water.
- Flammable liquids such as cleaning solvents, aerosols, paint thinners, adhesives, gasoline and propane must be handled and stored with extreme care. These flammable liquids emit flammable vapors and when exposed to an ignition source can result in a fire hazard or explosion. Flammable liquids should not be used or stored in the vicinity of this or any other gas appliance.
- Do not obstruct combustion air to the boiler.
- Do not use an extension cord or adapter plug with this appliance.
- Any alteration to the appliance or its controls can be dangerous and will void the warranty.

## **WARNING**

- DO NOT operate the boiler without the front panel installed. The front panel should only be removed for service/maintenance or replacing internal components.
- BURN HAZARD. Hot exhaust and vent may cause serious burns. Keep away from the boiler. Keep small children and animals away from the boiler.
- Heating supply and heating return water pipes leaving the boiler can be hot to touch.
- Rinnai recommends that every home have a carbon monoxide (CO) alarm in the hallway near bedrooms in each sleeping area. Check batteries monthly and replace them annually.
- If using an Indirect Tank for DHW, always check the water temperature before entering a shower or bath.

## 1.3 Gas Operating Instructions

### 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 turn the gas control valve. Never use tools. If the gas control valve will not turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

### OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this label.
2. Set the temperature controller to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance does not have a pilot. It is equipped with a direct ignition device which automatically lights the burner. DO NOT try to light the burner by hand.
5. Turn the manual gas control valve located at gas inlet of appliance clockwise  to the 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 on this label. If you don't smell gas, go to the next step.
7. Turn the manual gas control valve located at gas inlet of appliance counterclockwise  to the ON position.
8. Turn on all electric power to the appliance.
9. Set the temperature controller to desired setting.
10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

### TO TURN OFF GAS TO APPLIANCE

1. Set the temperature controller to the lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Turn the manual gas control valve located at gas inlet of appliance clockwise  to the OFF position.

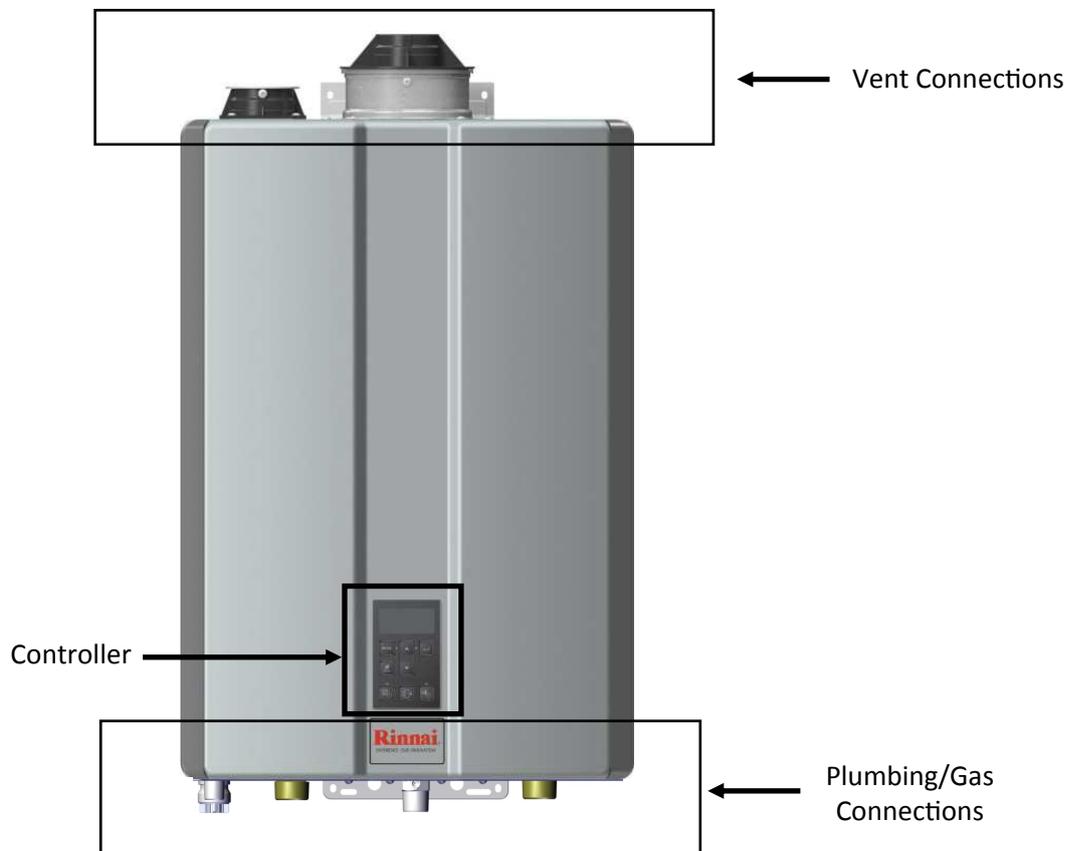
# 2

# About the Boiler

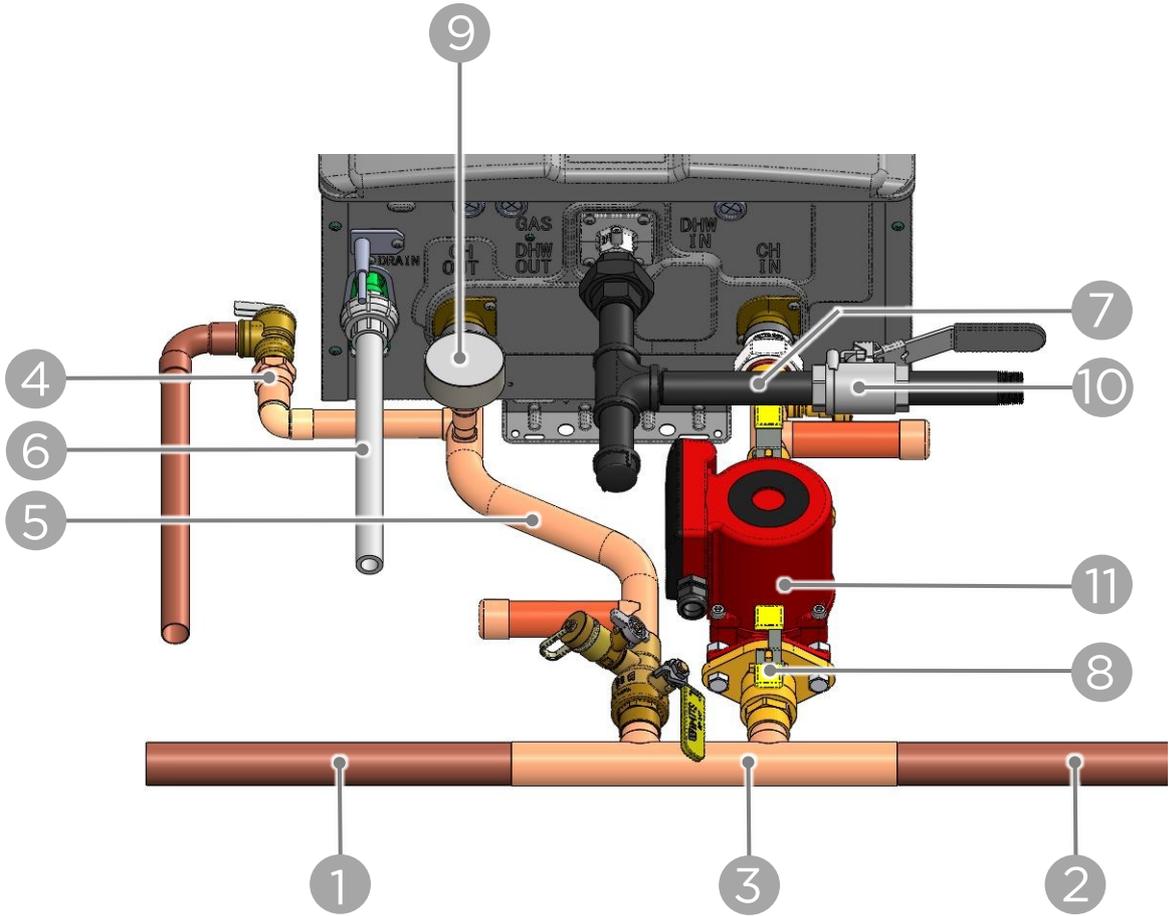
The I-Series Condensing Boiler is a wall-mounted, gas-fired boiler designed to provide heating to the building with the ability to connect an indirect tank for DHW production.

For complete boiler information, refer to the “Rinnai I-Series Condensing Boiler Installation Manual” supplied with the boiler, or visit [rinnai.us](http://rinnai.us).

## 2.1 Front View



## 2.2 Bottom View

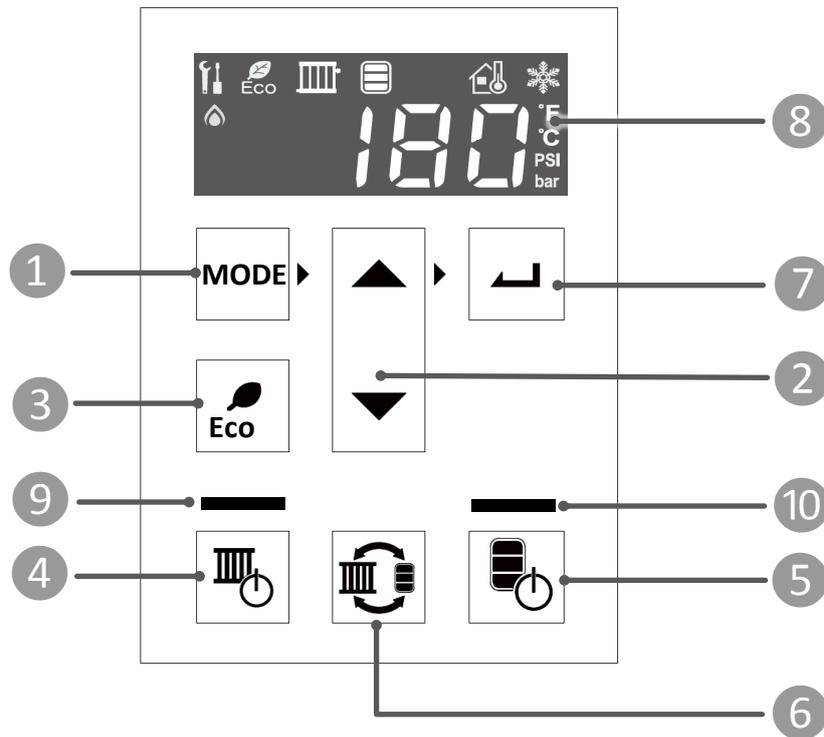


All items are field-supplied unless otherwise noted.

- |                                                                 |                                   |
|-----------------------------------------------------------------|-----------------------------------|
| 1. Supply to Central Heating System                             | 6. Condensate Drain               |
| 2. Return from CH System                                        | 7. Gas Supply                     |
| 3. Primary-Secondary Heating Kit                                | 8. Central Heating Return         |
| 4. Central Heating Pressure Relief Valve (supplied with boiler) | 9. Central Heating Pressure Gauge |
| 5. Central Heating Supply                                       | 10. Gas Shut Off Valve            |
|                                                                 | 11. Boiler Pump                   |

## 2.3 Control Panel

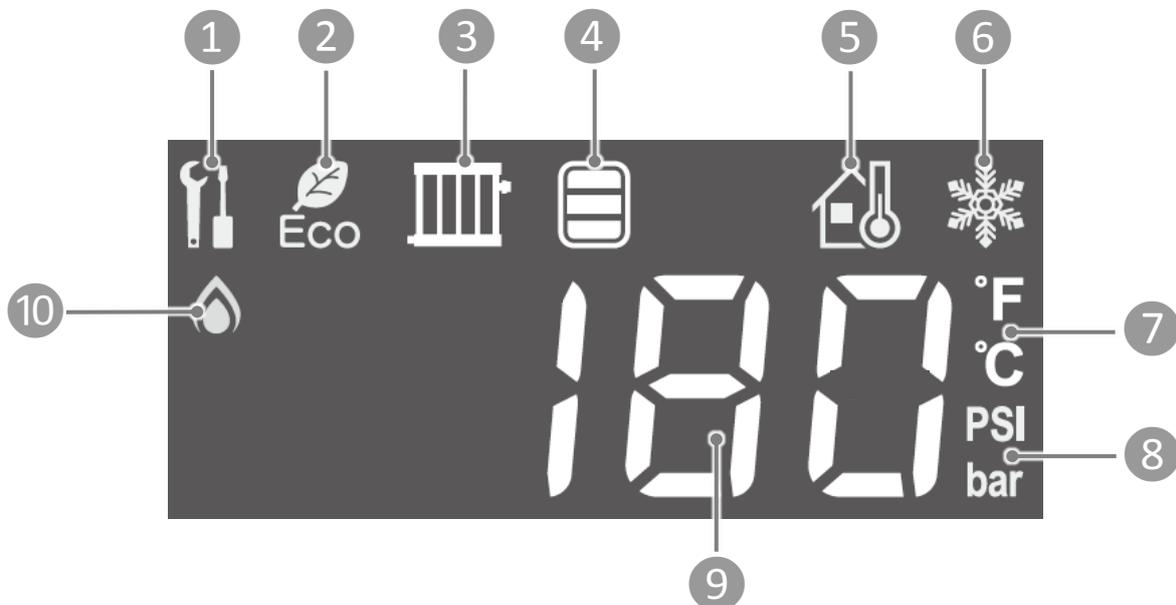
### 2.3.1 Control Panel Features



- 1 MODE**  
Selects various boiler settings.
- 2 Up/Down Arrows**  
Scrolls through available menu options including adjusting the temperature.
- 3 Eco**  
Selects Eco or Comfort operation mode.
- 4 Central Heating**  
From the factory, this option is turned off by default. The boiler runs off thermostat inputs on the control board. For any adjustments, contact a trained and qualified professional for setting assistance. Adjustments must be made by a trained and qualified professional for this mode to operate correctly.
- 5 Indirect Tank On**  
Press to run the boiler in DHW with Indirect Tank mode.
- 6 Switching Operation Mode**  
Press to switch between DHW (Indirect Tank) and CH for temperature setting.
- 7 Select Button**  
Press to select the option in the display window.
- 8 Display Window**  
Displays boiler status information.  
*See **Display Window** section for more information.*
- 9 CH Button LED**  
When the LED light above the **CH** button is illuminated, CH mode is active.
- 10 Indirect Tank Button LED**  
When the LED light above the **Indirect Tank** button is illuminated, Indirect Tank mode is active.

## 2.3.2 Display Window

When the boiler is turned on, the main screen (also called the home screen) appears in the display.



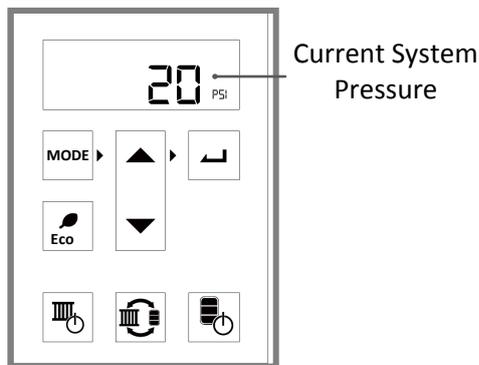
- |                                                                                                                                                                   |                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1</b> Maintenance Mode Icon<br/>Appears when the boiler is in Parameter Settings Mode, Deaeration Mode, Performance Data Mode, Error History Mode, etc.</p> | <p><b>6</b> Freeze Protection Active</p>                                                                                                                             |
| <p><b>2</b> Eco Setting Active<br/>(When no icon is present, Comfort Mode is active.)</p>                                                                         | <p><b>7</b> Unit of Measurement for Temperature</p>                                                                                                                  |
| <p><b>3</b> Central Heating Mode Active</p>                                                                                                                       | <p><b>8</b> Unit of Measurement for Pressure<br/><b>Note:</b> Pressure and temperature are alternately displayed on the controller.</p>                              |
| <p><b>4</b> Indirect Tank<br/>Blinking: Operation is occurring.<br/>Light is On: Indirect Tank temperature is satisfied.</p>                                      | <p><b>9</b> Setpoint Temperature, Current Temperature or Current Pressure<br/><b>Note:</b> Pressure and temperature are alternately displayed on the controller.</p> |
| <p><b>5</b> Outdoor Thermostat Connected</p>                                                                                                                      | <p><b>10</b> "In Use" Light (boiler has fired and is running)</p>                                                                                                    |

## 2.3.3 Pressure and Temperature Display

The boiler will display the current pressure or temperature as shown below.

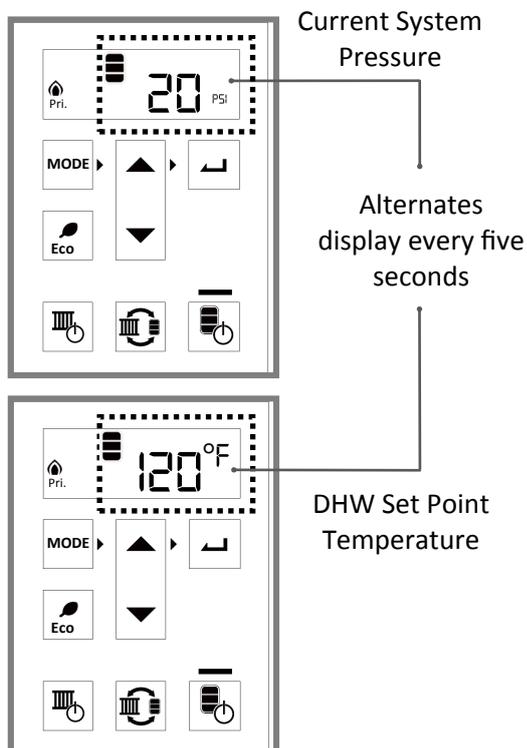
### Standby

If the boiler is in standby and the **CH ON** and **Indirect Tank ON** buttons are not illuminated, the current system pressure will display.



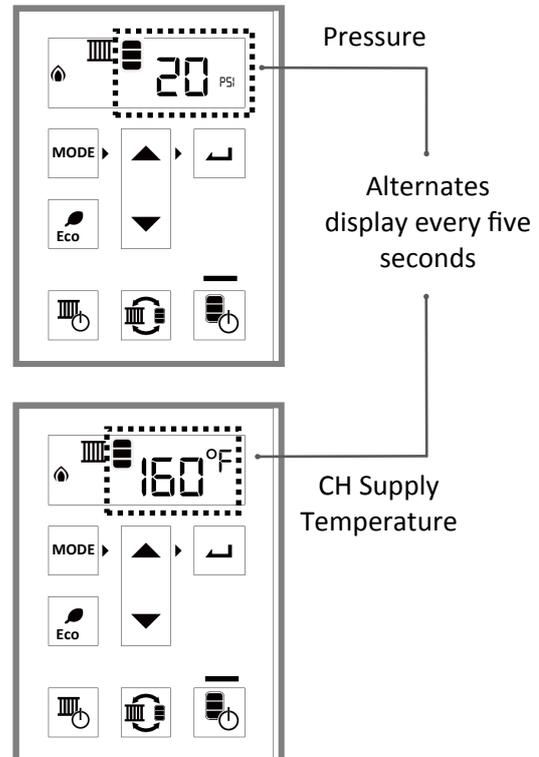
### Domestic Hot Water Operation

When the boiler is in Indirect Tank Operation or Standby (**Indirect Tank** icon is displayed), the current system pressure and the Indirect Tank set point temperature will alternately display.



### Central Heating Operation

When the boiler is in CH operation and CH standby (**CH** icon is displayed), the current pressure and the CH supply temperature will alternately display.



- If a warning diagnostic code appears, the code will cycle quicker between the current pressure, temperature, and the diagnostic code.
- If an error diagnostic code appears, only the code will display.

# 3

## Operating the Boiler

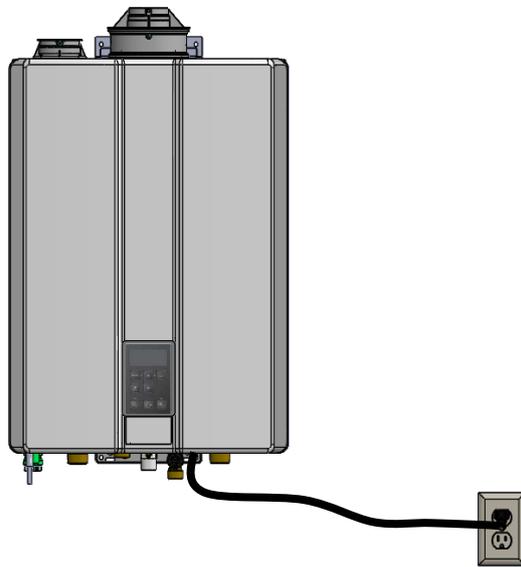
This section includes instructions for starting and operating the boiler.

### **⚠ WARNING**

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

### 3.1 Turning the Boiler On or Off

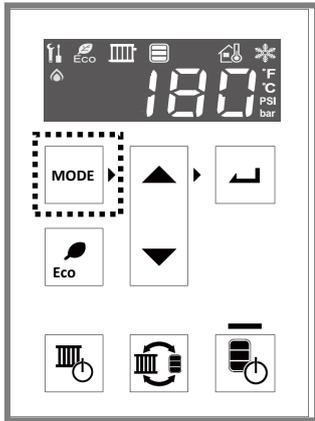
Connect power to the boiler by plugging it into a power outlet. The controller will light up and is now ready to be set for CH or DHW (if using an Indirect Tank).



## 3.2 Change Units of Measurement

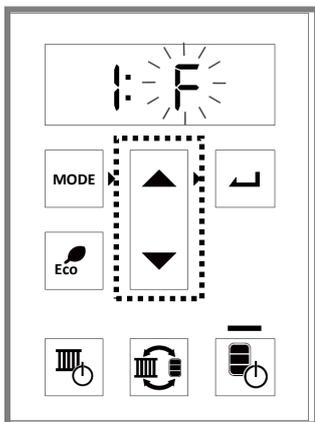
To change the units of measurement appearing on the boiler display, follow the steps below.

1.



Press the **Mode** button.

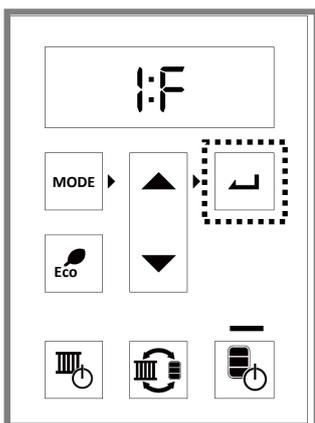
2.



Press the **Up** or **Down** arrows to select a unit.

- F = U.S. Measurements (°F/PSI)
- C = Metric (°C/bar)

3.

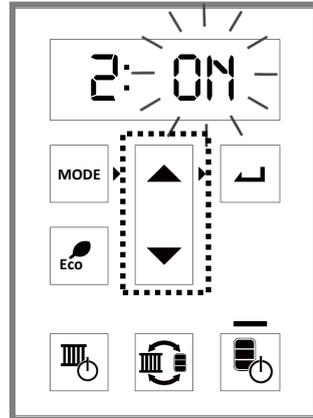


Press the **Select** button.

## 3.3 Change Control Panel Sounds

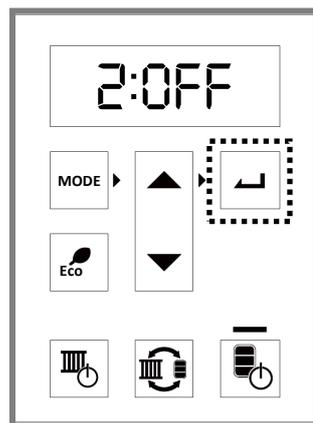
To turn the control panel click sound on or off, follow the steps below.

1.



Press the **Mode** button twice. 2:ON should appear on the display. Press the **Up** or **Down** arrows to select **ON** or **OFF**.

2.



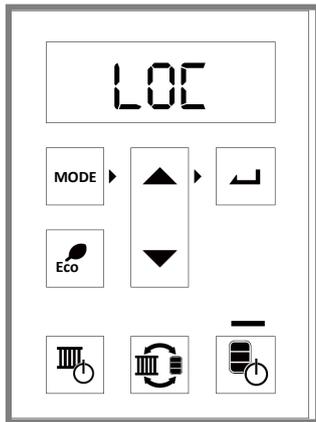
Press the **Select** button.

## 3.4 Change Child Lock Function

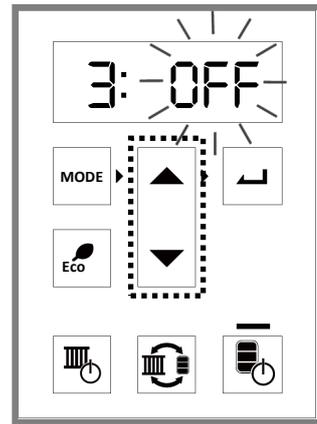
To turn the child lock function on or off, follow the steps below.

### NOTE

- When Child Lock is enabled, the only function available is to turn off Central Heating (by pressing the **Central Heating** button on the controller); this occurs only if DIP switch 2 is set to the ON position. See the “DIP Switches” section in the “Rinnai I-Series Condensing Boiler Installation and Operation Manual” for more information.
- When there are multiple controllers installed on the same boiler, you can only lock the controller that has priority.
- If a button is pressed when the Child Lock function is engaged, “LOC” will be displayed on the controller.



1.



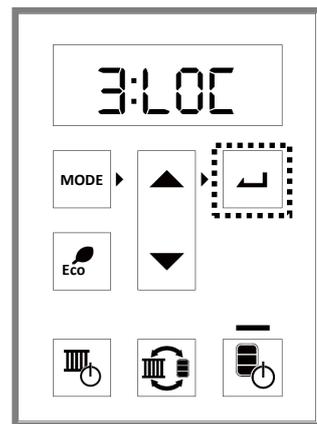
Press the Mode button three times.

**3:OFF** should appear on the display.

Press the **Up** or **Down** arrows to select:

- OFF - Child Lock OFF
- LOC - Child Lock ON

2.



Press the **Select** button.

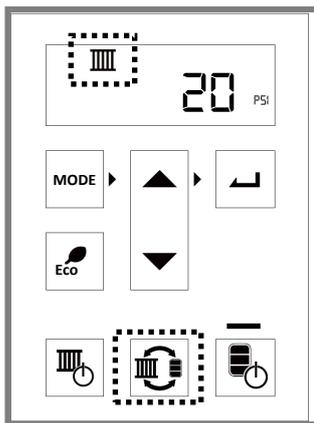
## 3.5 Adjust the Central Heating Temperature

To adjust the CH setpoint temperature, follow the steps below.

### IMPORTANT

When outdoor reset control activates, the target supply temperature for the CH system will not follow the CH setting temperature.

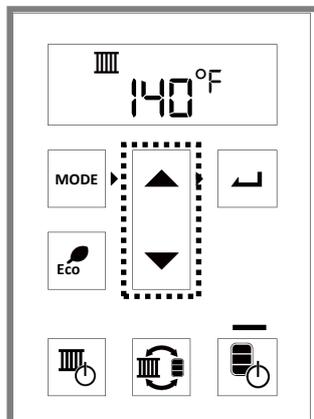
1.



Press the **Switch Operation Mode** button until the **Central Heating Active** button appears on the home screen.

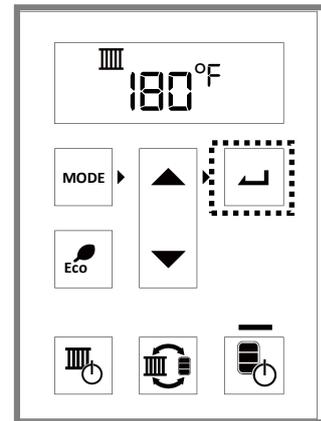


2.



Adjust the temperature with the **Up** or **Down** arrows until the appropriate temperature is displayed.

3.



Press the **Select** button to confirm the temperature.

This temperature setting is displayed for a few seconds and then returns to standby mode.

**⚠ WARNING**

Only adjust the target setpoint temperature of the system by consulting with the installer of the system or other qualified professionals. If the target setpoint temperature is adjusted too high for the heat emitters in use, property damage may occur.

The CH target setpoint temperature can be set in 2°F (1°C) increments between 104°F-180°F (40°C-82°C).

Factory Default: 140°F (60°C)

Below are some typical target temperatures for various heat emitters. These are basic guidelines; thus, check with the emitter manufacturer or consult your heating design engineer.

Target Setpoint Temperatures		
Type of Heat Emitter	Typical Minimum Supply Temperature	Typical Maximum Supply Temperature
Hydronic Air Handler	120 - 140°F (49 - 60°C)	140 - 180°F (60 - 82°C)
Unit Heater	130 - 140°F (54 - 60°C)	160 - 180°F (71 - 82°C)
Base Board Convectors	100* - 140°F (38 - 60°C)	140 - 180°F (60 - 82°C)
Cast Iron/ Panel Radiator	90* - 120°F (32 - 49°C)	140 - 180°F (60 - 82°C)
Undermount Radiant	100* - 120°F (38 - 49°C)	120 - 150°F (49 - 66°C)

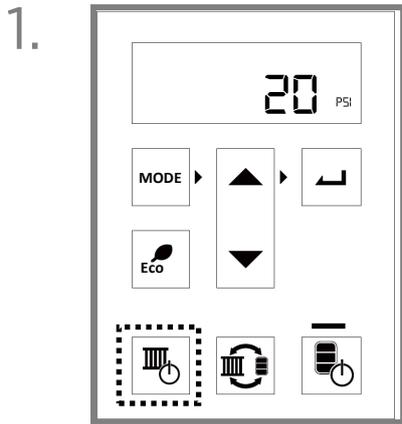
\*Other hydronic components may be necessary to achieve minimum supply temperatures.

### 3.5.1 Sequence of Operation for Central Heating Temperature

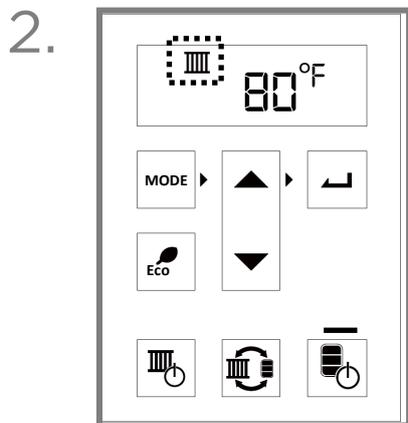
The boiler can operate in either of two settings:

- A room thermostat
- The **CH** button being activated

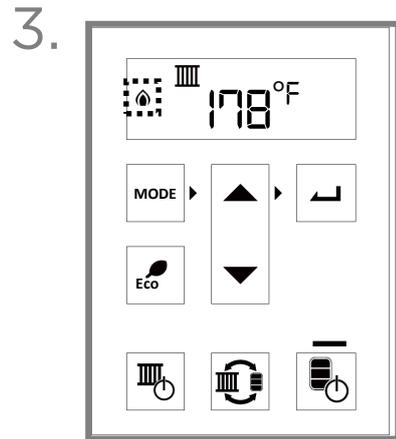
Below is the sequence of operations for starting central heating via the room thermostat (default):



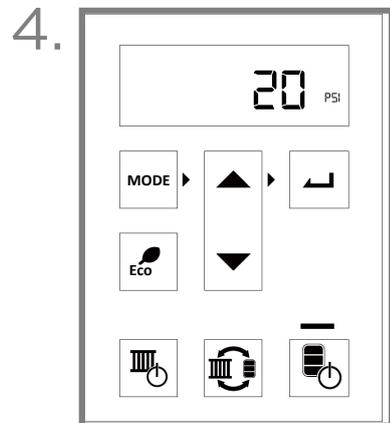
In room thermostat mode, the **CH** button does not affect heating operation. Operation is only possible with a call for heat from the room thermostat.



When a call for heat comes from the thermostat, the heating operation starts and the **CH Active** icon is illuminated.



When the boiler ignites, the **In Use** icon is illuminated.

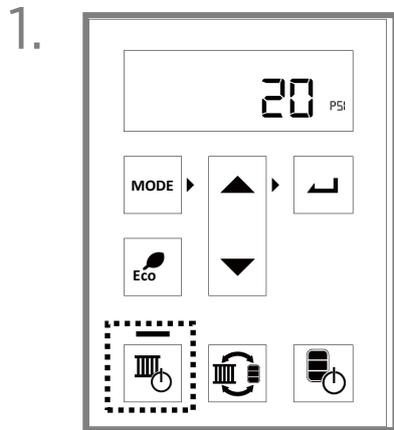


When the call for heat from the thermostat ends, the heating operation will turn off and the **CH Active** icon will no longer be illuminated.

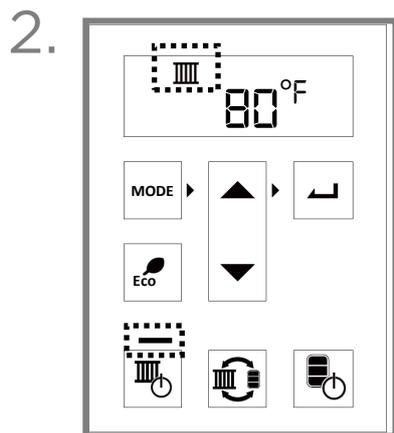
**NOTE**

The **CH** icon will continue to display for 24 hours beyond the last call for heat from the thermostat.

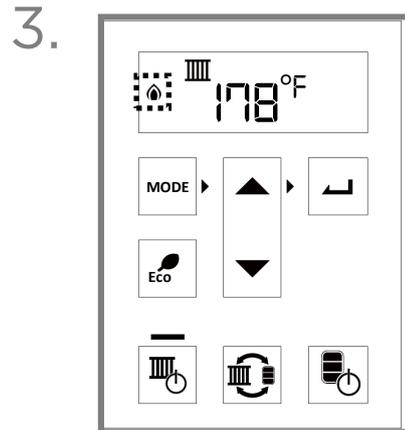
If the boiler installer selected to begin central heating by pressing the **CH** button, below is the sequence of operations appearing on the controller:



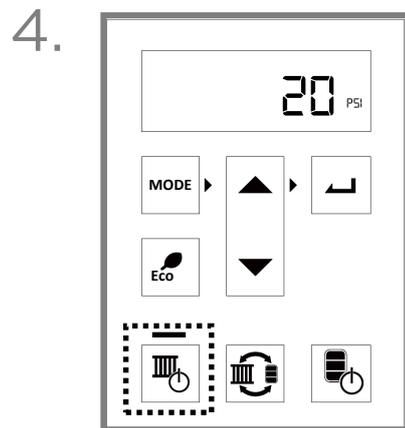
Press the **CH** button to begin operating the CH system.



The **CH Active** icon is displayed and the LED above the **CH** button is illuminated.



When the boiler ignites, the **In Use** icon is illuminated.



Press the **CH** button again to stop CH operation. The boiler will cycle ON/OFF based on the temperature water the boiler observes.

When the heating stops, the LED above the **CH** button will no longer be illuminated, and the **CH Active** icon will no longer be illuminated.

**NOTE**

This operation is only available when the **CH** button is selected. See the “Rinnai I-Series Condensing Boiler Installation and Operation Manual” for further details.

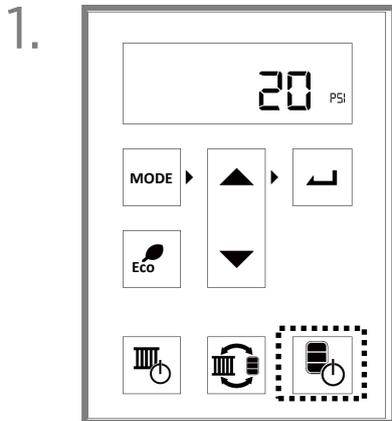
### 3.5.2 Setting CH Comfort Modes

Central Heating Eco mode is a gas saving function available on the I-Series Solo boilers.

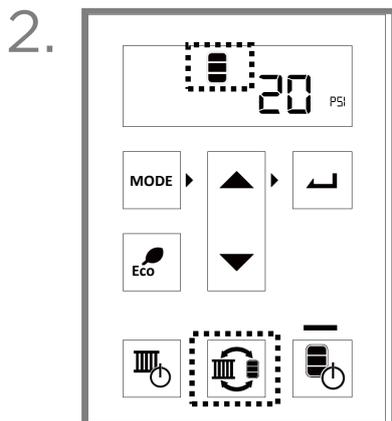
Eco Mode (Default)	Comfort Mode
<p>To reduce the amount of gas used in CH operation, Eco mode will turn the space heating off for five minutes at random intervals.</p> <div data-bbox="194 795 788 1265"> </div> <p>The <b>Eco</b> icon will illuminate when Eco Mode is active.</p>	<p>The boiler will operate via a call for heat from the thermostat or the <b>CH</b> button, depending on the selection made on DIP Switch 2. This mode will use more gas but will provide a more consistent home heating temperature.</p> <div data-bbox="829 795 1396 1265"> </div> <p>The <b>Eco</b> icon will not illuminate when Comfort Mode is active.</p>

## 3.6 Indirect Tank DHW Basic Operation Settings

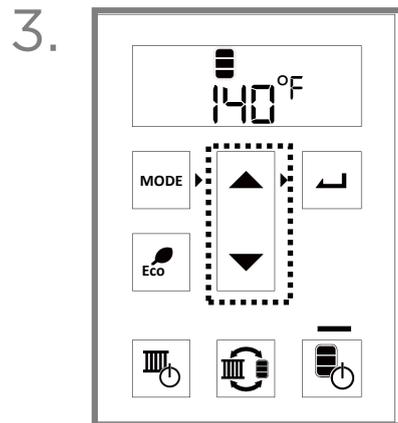
The appliance can change the indirect tank set point temperature at the boiler controller when the indirect tank is connected to the boiler PC Board. This is only applicable when using the indirect tank thermistor.



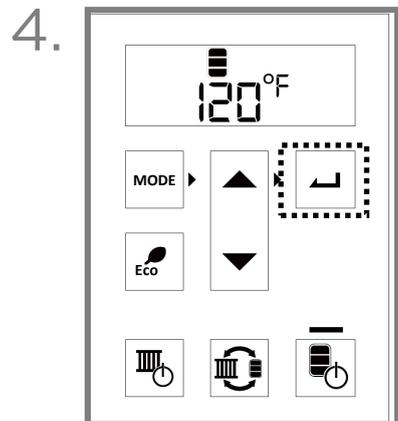
Press the **Indirect Tank** button, if the LED is not illuminated above it. If it is, proceed to step 2.



Press the **Switch Operation Mode** button until the **Indirect Tank** button appears on the home screen.



Adjust the temperature with the **Up** or **Down** arrows until the appropriate temperature is displayed.



Press the **Select** button to confirm the temperature. The set point temperature will be displayed for a few seconds and will then return to the standby mode.

	Indirect Tank Temperature Settings			
Temperature	120°F (50°C)	130°F (55°C)	140°F (60°C)	150°F (65°C)

# 4

# Troubleshooting

## WARNING

Consumers should never attempt any action that they are not qualified to perform.

## 4.1 Troubleshooting

If you believe the boiler is not operating as designed, check possible reasons from the list below.

If an Error Diagnostic Code appears, contact a local Service Provider.

Central Heating	The room temperature is not getting warm.	Is the target setpoint temperature of central heating appropriate for your application? (Refer to the “Target Setpoint Temperatures” table in section 3.5 of this manual.)
		When an outdoor sensor control is used, the supply temperature for central heating will vary depending on the outdoor temperature. To change the setting, contact your dealer.
		When Eco Mode is On, the heating system may shut down for 5 minutes. Press the <b>Eco</b> button on the controller to turn Eco Off.
		When heating an indirect tank with the domestic priority setting ON, the central heating may be in standby. To change the setting of the priority time or simultaneous heating operation, contact your dealer.
		Check that the gas is turned on at the boiler, gas meter, or cylinder.
		When using propane gas, is there sufficient gas available?

Controller	The <b>CH</b> button does not work.	If the boiler is set up for CH via a room thermostat, the <b>CH</b> button will not work to operate the boiler.
	The <b>Indirect Tank</b> button does not work.	The Indirect Tank is not set up in Settings. Contact a service provider for assistance.
	After the power is out or the power plug is pulled out, the setpoint temperature has changed.	The setpoint temperature may change after the boiler has had power restored. The setpoint temperature will need to be entered again.
Others	The sound of a pump occurs when CH is not in use.	When the outdoor temperature is low, the freeze prevention operation may start with pump operation.
		When the boiler is not activated, the pump may operate for preventing locking up.
	The boiler does not begin operation after power has been restored.	When power has been restored after a power outage or the power plug is disengaged, the boiler will not start operating while initializing. Wait for 5 minutes and start using the boiler as normal.

## 4.2 Diagnostic Codes

When the boiler detects an error or unexpected performance, a diagnostic code will display on the controller and a beeping sound will generate. Contact a qualified service provider whenever a diagnostic code shuts down the boiler.

Diagnostic Code	Diagnostic Code Cause
E:100	Air Supply or Exhaust Blockage/Condensate Trap is Full
E:110	No Ignition
E:120	Flame Failure
E:140	Heat Exchanger Overheat
E:150	Venturi Control
E:170	Venturi Blockage
E:181	Indirect Tank Temperature
E:190	Electrical Grounding
E:250	Condensate Pump (Accessory)
E:310	Freeze Protection Thermistor
E:353	Supply Thermistor
E:363	Return Thermistor
E:371	Indirect Tank Thermistor
E:380	Exhaust Thermistor
E:393	Outdoor Thermistor
E:400	Pressure Sensor
E:430	High/Low Water Pressure
E:443	Low Water Cut Off
E:520	Solenoid Valve Circuit
E:540	High Exhaust Temperature
E:610	Combustion Fan
E:700	PC Board
E:710	Solenoid Valve Circuit
E:720	Flame Rod
E:890	Freeze Issue
E:999	PC Board Mismatch

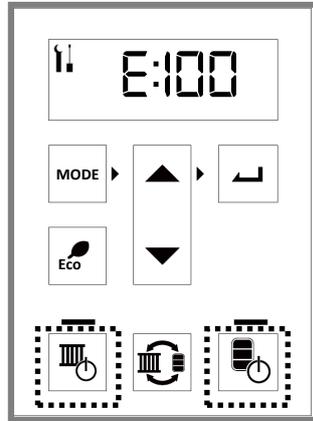
## 4.2.1 Reset Diagnostic Codes

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To reset a diagnostic code, press the **Central Heating** or **Indirect Tank** button on the control panel.

**Note:**

Some diagnostic codes may not reset by pressing the **CH** or **Indirect Tank** buttons. In these cases, contact your service provider for troubleshooting assistance.



When an error code repeats itself, or if the error cannot be reset by following the above steps, contact a qualified licensed professional.

# 5

## Maintenance

### **WARNING**

- Maintenance is required to maintain safe operation of the boiler.
- The boiler must be inspected annually by a licensed professional. Repairs and maintenance shall be performed by a licensed professional. The licensed professional must verify proper operation after servicing.
- Keep the boiler area clear and free from combustible materials, gasoline, and other flammable vapors and liquids.
- 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 boiler controller does not control the electrical power.)
  - Turn off the gas at the manual gas control valve, usually located immediately below the boiler.
  - Turn off the incoming water supply. This can be done at the isolation valve immediately below the boiler or by turning off the water supply to the building.
- If you encounter a problem that is difficult to solve, stop the operation and immediately contact a licensed professional.

### 5.1 Owner Maintenance Schedule

<b>MONTHLY</b>
<b>Boiler Area</b>
Verify the area is free of combustible materials, gasoline and other flammable vapors and liquids.
Verify the area is clean from dust and obstructions.
Verify the air intake area is free of any contaminants listed in the “Rinnai I-Series Condensing Boiler Installation and Operation Manual.” Any contaminants in the boiler intake air vicinity must be removed. If they cannot be removed, contact a licensed professional.
<b>Piping</b>
Inspect all water, gas, and condensation piping for leaks. Look for signs of leaking lines or corrosion.
Confirm the condensation line is not blocked. If a condensation drain pump is used, confirm the condensation drain pump operates correctly.
<b>Venting</b>
Verify the boiler vent discharge and air intake is clean and free of obstructions.
Check for leakage, damage, or deformation of venting.
<b>Boiler</b>
Verify the boiler is free from any abnormal situations, such as diagnostic error codes, loud noises, leakage or other potential issues.
Check that the pressure on the controller display or external pressure gauge indicates 17 to 26 PSI (117 to 180 kPa).

## 5.2 Freeze Protection

### Freeze Protection Operation

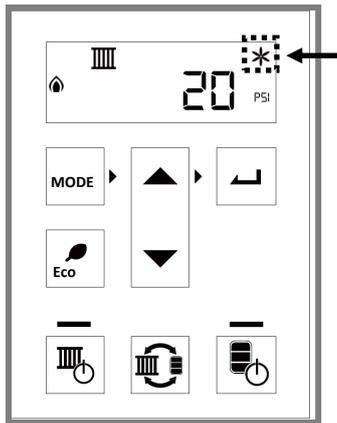
When the boiler detects low outdoor ambient temperatures, the boiler will begin its freeze protection operation. The freeze protection operation can protect the boiler from freezing down to as low as  $-22^{\circ}\text{F}$  ( $-30^{\circ}\text{C}$ ) outdoor ambient temperature.

When freeze protection is in operation, the pump may circulate water and/or the boiler may dry fire to prevent the boiler from freezing.

Ensure power and gas are supplied to the boiler for freeze protection to function.

The internal freeze protection will not necessarily prevent the system piping from freezing.

When freeze protection is active, this icon will be illuminated.



During freeze protection operation, the pressure and supply temperature will alternately display on the controller.

When the system needs to be shutdown for extended periods of time, the boiler and all system piping should be drained. The power and gas supply should then be disconnected from the boiler. Freezing damage may occur if there is water remaining in the boiler or system piping. The plumbing lines should also be blown out via compressed air.

# Notes

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Learn more about Rinnai high-performance Tankless Boilers, Hybrid Water Heating Systems, Boilers, Vent-Free Fan Convectors and EnergySaver® Direct Vent Wall Furnaces at:

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Local, state, provincial, federal and national fuel gas codes must be adhered to prior to and upon installation.

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