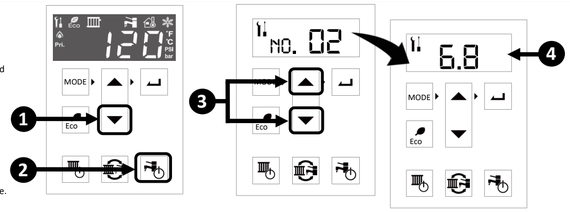
Rinnai®

PERFORMANCE DATA

To Obtain Performance Data:

1. Press and hold the ▼(Down) button for two seconds.
2. While holding the ▼(Down) button, press and hold the **Domestic Hot Water** button (hold both buttons at the same time).
3. Use the ▲(Up) and ▼(Down) buttons to scroll to the desired information described in the **Performance Data Table**.
4. The data for the performance number automatically appears in the display.
5. To exit performance data, repeat step 2 above.



Performance Data Table

#	Data	Unit
01	Water Pressure	PSI/bar*
02	Water Flow Rate	x0.1 GPM/LPM*
03	Supply Temperature	°F/°C*
04	Return Temperature	°F/°C*
05	Freeze Protection Temperature	°F/°C*
06	Exhaust Temperature	°F/°C*
07	Outgoing Temperature	°F/°C*
08	Inlet Temperature	°F/°C*
10	Heat Exchanger Outlet Temperature	°F/°C*
11	Fan Frequency	Hz
13	Water Flow Control Position	0=Mid, 1=Open, 2=Closed
14	Bypass Flow Control Position	Degrees of opening
15	3-Way Valve Control Position	0=Mid, 1=DHW, 2=CH
16	3-Way Valve Control Cycles	x100
17	Venturi Position	0=Closed, 1=Open
18	Venturi Cycles	x100
20	Pump Cycles	x100
21	Pump Hours	x10
22	Pump for Boiler	0=OFF, 1=ON
23	Pump for System (Pump 1)	0=OFF, 1=ON
24	Pump for System (Pump 2)	0=OFF, 1=ON
31	Outdoor Temperature	°F/°C*
32	Additional Controllers Connected	*
50	Energization Hours	x100
51	Combustion Hours	x10
52	Combustion Cycles	x100
53	Combustion Hours (DHW)	x10
54	Combustion Cycles (DHW)	x100
55	Commissioning Cycles	x1

*Units of Measurement

1. Press the **Mode** button.
2. Press the **Up** or **Down** arrows to select a unit.

Controller Model	Temp.	Water Flow	Press.
1: F	°F	gal/min	psi
1: C	°C	L/min	bar

Controllers Connected		
Controller Model	CONNECTED	NOT CONNECTED
Controller Panel	_ _ _ 1	—
Additional Controller (BC)	_ _ 1 _	_ _ 0 _
Additional Controller (BSC)	_ 1 _ _	_ 0 _ _
Additional Controller (BSC2)	1 _ _ _	0 _ _ _

Note: BC, BSC and BSC2 are PCB recognition position.

ELECTRICAL DIAGNOSTICS

DIAGNOSTICS POINTS

COMPONENT	WIRE COLOR	VOLTAGE *When the unit is operating	RESISTANCE	PCB	
				Connector	PIN
Power Supply	Black-White	AC108-132V	N/A	CN24	1-3
Flame Rod	Yellow-Body	more than 2VAC*	N/A	CN1	2
Spark Electrode	Red-Black	11-14VDC*	N/A	CN1	11-22
Combustion Fan	Red-Black	7-48VDC*	N/A	CN1	3-5
	White-Black	2-14VDC*	N/A	CN1	5-9
	Yellow-Black	11-14VDC	N/A	CN1	5-7
Water Flow Control Device	Red-Pink	N/A	40-60Ω	CN1	18-20
	White-Blue			CN1	14-16
	Grey-Orange	11-14VDC	N/A	CN1	11-29
	Brown-Grey	limitter On：less than 1VDC limitter Off：4-6VDC	N/A	CN1	25-29
Venturi Control Device	Blue-White	N/A	33-43Ω	CN1	17-19
	Yellow-Red(No.9)			CN1	13-15
	Black-Red(No.3)	11-14VDC	N/A	CN1	11-29
	Black-Brown	Close Position：less than 1VDC Open Position：4-6VDC		CN1	26-29
	Black-Grey	Close Position：4-6VDC Open Position：less than 1VDC		CN1	24-29
By-Pass Flow Control Device	Red-Pink	N/A	40-60Ω	CN1	10-12
	White-Blue			CN1	6-8
3way Valve	Brown-Grey	limitter On：less than 1VDC limitter Off：4-6VDC	N/A	CN1	23-29
	Orange-Grey	11～14VDC		CN1	11-29
	Pink-Red	N/A	40-60Ω	CN11	1-2
	White-Blue			CN11	3-4
Gas Solenoid Valve	Yellow-Black	11-14VDC*	15-25Ω	CN1	28-30
Outgoing Thermistor	White-White	N/A	59°F：11.4-14kΩ 86°F：6.4-7.8kΩ 113°F：3.6-4.5kΩ 140°F：2.2-2.7kΩ 221°F：0.6-0.8kΩ *Disconnect the connector and measure at thermistor side.	CN11	18-19
	White-White			CN11	10-13
Inlet Thermistor	White-White			CN11	17-19
Exhaust Thermistor	White-White			CN11	16-19
Heat Exchanger Thermistor	White-White			CN11	15-19
Supply Thermistor	White-White			CN11	12-19
Return Thermistor	White-White			CN11	10-20
Freeze Protection Thermistor	Black-Black		32°F：38k-43k; 50°F：22k-26k; 68°F：14k-17k *Disconnect the connector and measure at thermistor side.	CN11	10-14
Transformer	White-Grey	AC108-132V	N/A	CN18	1-2
	Red-Red	AC20-30V (possible to measure at Output terminal as substitute position)		CN18	3-4
Overheat Switch	Black-Black	less than 1VDC	less than 1Ω	7(CN11)-27(CN1)	
Water Flow Sensor	Black-Red	11-14VDC	N/A	CN1	11-29
	Yellow-Black	4-7VDC* more than 6Hz (0.26 GPM)		9(CN11)-29(CN1)	
Water Pressure Sensor	Red-Black	11-14VDC	N/A	CN1	11-29
	Yellow-Black	0kPa：655-745mV; 200kPa：2155-2245mV; 400kPa：3655-3745mV		6(CN11)-29(CHN1)	
Water Level Electrode	White-White	11-14VDC	N/A	8(CN11)-29(CN1)	
Integrated Pump	White-Black	AC108-132V	N/A	CN21	1-2
Air Handler	Red-Black	11-14VDC	N/A	CN8	1-2
Control Panel	Black-Black	11-14VDC	N/A	CN2	1-4
Additional Controller(s)	White-White	11-14VDC	N/A	CN29	1-3

Important Safety Notes

There are a number of (live) tests required when performing electrical diagnostics on this product. Proceed with caution at all times to avoid contact with energized components inside the boiler. Only trained and qualified service technicians should attempt to repair this product. Before checking for resistance readings, disconnect the power source to the unit and isolate the item from the circuit (unplug it).

Electrical Diagram

Refer to the Wiring Diagram attached to the back of the front cover.

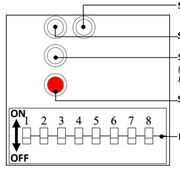
Flame Rod

Place one lead of your meter to the flame rod and the other to ground. When the unit is attempting to ignite, you should read more than 2VAC.

Amp Fuses

This unit has two (10) amp glass fuses located on the PC Board. Remove the fuses and check continuity through it. If you have continuity through each fuse then it is functioning. Otherwise, the fuse is blown and must be replaced.

DIP Switches



SW1 Forced Hi/Low Fire Modes *(Section 12 in Manual)*

SW2 Deaeration Mode *(Section 10 in Manual)*

SW3 Data Transfer Mode
(Transfers PC Board data when replacing PC Board. Verify gas orifice installed is correct for the gas system the unit is installed in. Check flame rod voltage to ground during ignition.)

SW4 Parameter Settings *(Section 12 in Manual)*

DIP Switches *(Section 12 in Manual and table below)*

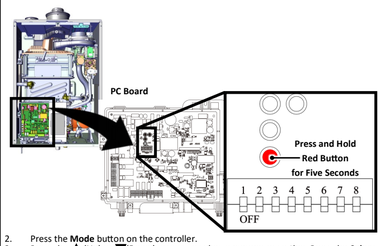
#	DIP Switch Function
1	**Outdoor Temperature Sensor:** Enables or disables outdoor temperature sensor. **OFF (Default):** Outdoor Temperature Sensor in Use **ON:** Outdoor Temperature Sensor Not in Use
2	**Thermostat Usage:** Changes mode between Thermostat Usage and **CH** Button. **OFF (Default):** Thermostat Used **ON: CH** button used. Boiler fires based on return water temperature
3	**DHW Recirculation:** Enables DHW Recirculation function for Pump 2 connection. **OFF (Default):** DHW Recirculation OFF (Pump 2 connection for Zone Pump 2) **ON:** DHW recirculation ON (Pump 2 connection for DHW Pump)
4	**Simultaneous CH and DHW:** Enables simultaneous operation between CH and DHW. **OFF (Default):** DHW Priority; **ON:** Simultaneous CH and DHW Permitted
5	**Gas Valve Solenoid:** Manually shuts down the integrated solenoid gas valve. **OFF (Default):** Normal Operation; **ON:** Fixed Closed
6, 7	**Altitude Setting:** Sets the appropriate elevation of the boiler installation. **(OFF/ON:** Depends on Alttitude)
8	**Vent Type Selection:** Selects the venting material used. The boiler is set from the factory to be installed in a PVC venting system. If CPVC, PP, or other approved venting is used, this setting may be adjusted. See Section 5 in Manual for more information. **OFF (Default):** PVC; **ON:** Other

High Altitude DIP Switch Table

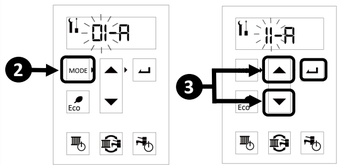
ALTITUDE	DIP Switch 6	DIP Switch 7
0-2,000 ft (0-610 m) (Default)	OFF	OFF
2,001-5,400 ft (610-1,646 m)	ON	OFF
5,401-7,700 ft (1,646-2,374 m)	OFF	ON
7,701-10,200 ft (2,347-3,109 m)	ON	ON

PARAMETER SETTINGS

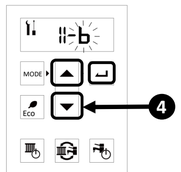
1. To access the Parameter Settings, press and hold the red button on the PC Board for five seconds.



2. Press the **Mode** button on the controller.
3. Press the ▲(Up) or ▼(Down) arrows to select a parameter setting. Press the **Select** button.



4. Press the ▲(Up) or ▼(Down) arrows to change the selection for the setting number (such as 11-A or 11-b). Then, press the **Select** button.



5. To exit parameter settings and enter normal operation mode, press either the red button on the PC Board or the **Mode** button on the controller.

Parameter Number	Setting Description	Selection A	Selection b	Selection C	Selection d	Parameter Value	Date Adjusted	Parameter Value	Date Adjusted
00	Pressure Indication on the Control Panel The current pressure will cycle on the controller display.	Yes	No						
01	Outdoor Reset Curve This parameter is available when Dip Switch 1 is in the OFF (default) position. Select the proper curve from below. **Curve 1:** Standard baseboard, high efficiency air handler, cast iron or panel radiators. **Curve 2:** Staple up radiant. **Curve 3:** High temperature air handler or undersized baseboard. **Curve 4:** Custom curve based on customer input.	Curve 1	Curve 2	Curve 3	Curve 4				
02	Boost This parameter is available when Dip Switch 1 is in the OFF (default) position.	No	30 Minutes	60 Minutes					
03	Maximum Outdoor Temperature the Boiler will Fire in CH Mode This parameter is available when DIP switch 1 is in the OFF (default) position. This sets the maximum outdoor temperature the boiler will fire in CH mode.	No Maximum	77°F (25°C)						
10	Maximum DHW Set Point Temperature This selects the maximum DHW set point temperature.	120°F (49°C)	140°F (60°C)						
11	How Long Diverter Valve in DHW Position This selects the length of time the 3 Way Valve will stay in the DHW position after using DHW even if a CH demand is present.	3 Minutes	10 Seconds						
12	DHW Recirculation Piping Setup This parameter is available when DIP switch 3 is in the ON position. Ensure this setting corresponds to the DHW recirculation piping.	Crossover Valve	Dedicated Return						
13	DHW Recirculation with Timer Relay Input This parameter is available when DIP switch 3 is in the ON position. This enables an external timer to also control the timing for DWH recirculation to more directly correspond to the customers needs.	Yes	No						
14	CH Temperature Limitation During Simultaneous Operation This parameter is available when DIP switch 3 or 4 is in the ON position. This enables the CH temperature setting to be limited during simultaneous DHW and CH operation.	Yes	No						
15	3 Way Valve Position During Simultaneous Operation This parameter is available when DIP switch 3 or 4 is in the ON position. This adjusts the 3 Way Valve position to open the CH side more for when the flow of the CH side is reduced due to DHW demand. This may restrict the DHW capacity.	Normal	Additional CH						
16	LC Check This setting enables the boiler to check for lime scale conditions in the DHW side of the plate heat exchanger.	Available	No Detection						
17	Adjust DHW Temperature Setting This setting enables the DHW output temperature to be adjusted without adjusting the set point temperature.	0°F (0°C)	1.8°F (1°C)	3.6°F (2°C)	5.4°F (3°C)				
40	Linked Operation Between CH Pump 1 and 2 This parameter enables linked operation between the CH Pump 1 and 2.	No	Yes (Linked Together)						
41	Linked Operation Between Main Boiler Pump and CH Pump 1 This enables the linked operation between the main boiler pump and CH pump 1.	No	Yes (Linked Together) (If selected, hydraulic separation is needed.)						
42	Main Pump Runs When the Target Temperature is Achieved This selects the mode of the main pump running when the target setpoint is achieved.	Continuously	Intervals						
43	External Pump Runs When the Setpoint Temperature is Achieved This selects the mode of the external pump(s) running when the target setpoint is achieved.	Same as Main Pump	Does Not Run						
44	External Pump Runs When Freeze Protection is in Operation This selects how the external pump operates when freeze protection is in operation.	Does Not Run	Same as Main Pump						
45	Freeze Protection Level This selects the freeze protection level. Selecting "B" will prevent the boiler from operating in freeze protection mode more than believed necessary.	Default	When Boiler is Installed in a Warm Room						
46	The Differential Temperature from Ceasing Fire to Firing Again How much temperature drop is permitted by the supply water thermistor before the boiler will fire again. CH Setting Temperature	Normal	Quick						
		Temperature Drop							
	168-182°F (75-82°C)	27°F (15°C)	15°F (8°C)						
	104-166°F (40-74°C)	15°F (8°C)	9°F (5°C)						
47	The Time Which the Boiler is not Allowed to Fire Again for CH This selects the time which the boiler will not be able to fire again for CH after the burner has shutdown.	Normal (3 Minutes)	Quick (10 Seconds)						
48	Will the boiler shut down on a high return water temperature This setting is for whether the boiler will shut down at high return water temperatures.	Yes	No						
60	Not Available	Not Available							
A0	Gas Type For selecting gas type when conducting gas conversion.	Natural Gas	Liquid Propane						
A1	Not Available	Not Available							
A2	Vent Material Used This selects the venting material used. The boiler is set from the factory to be installed in a PVC venting system. If CPVC, PP, or other approved venting is used, this may be adjusted. See section "5.4 PVC Venting Safety Switch" for more information.	PVC	Material other than PVC: CPVC/PP/Other						

For more information, refer to the I-Series Boiler Installation and Operation manual.

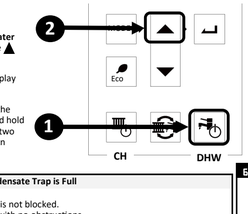
NOTE

Record date and parameter when individual parameters have been adjusted from factory default.

DIAGNOSTIC CODES

To display diagnostic codes:

1. Press and hold the **Domestic Hot Water** button for two seconds and then the ▲(Up) button simultaneously.
2. The last nine maintenance codes display and flash one after the other.
3. To exit diagnostic codes and return the boiler to normal operation, press and hold the **Domestic Hot Water** button for two seconds, and then the ▲(Up) button simultaneously.



Error Reset	
Power Reset	Heat Exchanger Overheat (140), Venturi Control (150), High Exhaust Temperature (540), and Freeze issue (890) can be reset by shutting down power to the boiler.
Interlock Reset	Venturi (170) and Solenoid Valve Circuit (520) can be reset by pushing and holding button SW1 and 2 for five seconds.
Combustion Error during DHW	Error can be reset by closing faucet.
Other Reset	Other error can be reset by Domestic On/Off button or Central Heating button.

100 Air Supply or Exhaust Blockage/Condensate Trap is Full
- Fan current initial check error.
- Ensure condensate line and trap is not blocked.
- Ensure internal air filter is clean with no obstructions.
- Ensure high altitude setting is set properly (See High Altitude Setting).
- Ensure combustion air and exhaust vents are not blocked and the approved venting materials are being used.
- Ensure either the exhaust ring or intake cap is removed properly.
- Ensure vent length is within limits.
- Check fan for debris and ensure wheel turns freely.
- Verify fan check valve is not stuck between fan casing and burner body.

10 No Ignition (Unit Not Turning On)
- Ignition Error.
- Check that the gas is turned on at the boiler, gas meter, and/or propane cylinder.
- If the unit is installed in a propane system, ensure that gas is in the tank.
- Bleed all air from the gas lines.
- Check the ground wire for the PC Board.
- Ensure the flame rod wire is connected.
- Ensure the igniter is operational.*
- Ensure the venting is installed in accordance with the I-Series Boiler Installation and Operation manual.
- Check that the surface of the electrode and flame rod are clean.
- Check gas solenoid valves for open or short circuits.*
- Verify gas orifice installed is correct for the gas system the unit is installed in.
- Check flame rod voltage to ground during ignition.

120 Flame Failure
- Boiler has flame failure.
- Check that the gas is turned on at the boiler, gas meter, and/or propane cylinder.
- If the unit is installed in a propane system, ensure that gas is in the tank.
- Ensure the venting is installed in accordance with the I-Series Boiler Installation and Operation Manual.
- Ensure the flame rod wire is connected.
- Ensure the gas type and inlet gas pressure are correct.
- Bleed all air from the gas lines.
- Check the ground wire to the PC Board.
- Check flame rod voltage to ground during ignition.

140 Heat Exchanger Overheat
- Overheat switch is tripped.
- Measure the resistance of the Overheat Switch.*
- Check the heat exchanger surface for hot spots which may indicate blockage due to scale buildup.
- Ensure the boiler pump is not locked up.
- Ensure that all of the valves in the CH circuit are open.
- Ensure the boiler and CH circuit does not have a freezing condition.
- The surface of the heat exchanger may turn to a black color as stainless steel is tempered even in normal conditions. This does not indicate an abnormal condition.
- Check for damage on the exhaust, seal, and venting.

150 Venturi Control
- Venturi operation error.
- Ensure the venturi motor is operating correctly.*
- Replace the gas valve assembly.

151 High Outgoing Temperature
- Safety shutdown because DHW outgoing temperature is too hot.
- Check sensor wiring for damage of outgoing thermistor.
- Measure resistance of outgoing thermistor.*
- Ensure the gas valve has no damage and the orifice is installed correctly.
- Replace the gas valve assembly.

170 Venturi Blockage
- Check the venturi and silencer for blockage.
- Before resetting this error, check if the condensate drain is block and if the venting is connected properly.

150 Electrical Grounding
- Secondary circuit ground fault.
- Check all electrical components for electrical short.

250 Condensate Pump (Accessory)
- Boiler will operate for 60 seconds.
- Confirm wire connections and harnesses are good.
- Ensure the condensate reservoir is empty and condensate pump is operational.

300 Freeze Protection Thermistor
- Check sensor wiring for damage.
- Measure the resistance of the sensor.
- Replace if necessary.

301 Outgoing Thermistor
- Check sensor wiring for damage.
- Clean sensor of any scale buildup present.
- Measure the resistance of the sensor.
- Replace if necessary.

331 Heat Exchanger Thermistor
- Check sensor wiring for damage.
- Measure the resistance of the sensor.
- Replace if necessary.

341 Inlet Thermistor
- Check sensor wiring for damage.
- Measure the resistance of the sensor.
- Replace if necessary.

353 Supply Thermistor
- Check sensor wiring for damage.
- Clean the surface of the sensor.
- Measure the resistance of the sensor.
- Check return thermistor.
- Replace if necessary.

380 Exhaust Thermistor
- Check sensor wiring for damage.
- Clean the surface of the sensor.
- Measure the resistance of the sensor.
- Check the return thermistor.
- Replace if necessary.

363 Return Thermistor
- Check sensor wiring for damage.
- Measure the resistance of the sensor.
- Replace if necessary.

383 Outdoor Thermistor
- Ensure that DIP switch 1 is set to the appropriate position.
- Check sensor wiring for damage.
- Measure the resistance of the sensor.
- Replace if necessary.

400 Pressure Sensor
- Check sensor wiring for damage.
- Measure the voltage of the sensor.
- Replace if necessary.

430 High/Low Water Pressure
- If the water pressure is too low, add water into the system until at least 13 PSI is observed.
- Ensure there are no leaking components in the CH system.
- If the pressure is too high, adjust the pressure to a maximum of 30 PSI.
- Ensure the pressure relief valve and water fill are working correctly.

443 Low Water Cut-Off (LWCO)
- Ensure the LWCO device is working correctly.
- Ensure the LWCO jumper is connected properly when LWCO is not in use.
- Ensure the output is 24 VAC on the PCB. If it is not, check the transformer harness and output of transformer.

520 Solenoid Valve Circuit
- Check the flame rod and wire for damage.
- Close the gas shut off valve installed near the boiler.
- Ensure the flame rod and wire are not wet.
- Check the output from the PC Board to the solenoid gas valve.
- If the output from the PC Board is abnormal, replace the PC Board.
- If the output from the PC Board is normal, replace the gas control.

540 High Exhaust Temperature
- Check the exhaust thermistor wiring for damage.
- Clean the surface of the thermistor.
- Measure the resistance of the exhaust thermistor.*
- If the sensor has been replaced and the error still appears, check the return thermistor.
- If the boiler is used in a hard water area, flush the DHW plate heat exchanger.
- Check the exhaust duct, seal, and venting for damage.

600 Combustion Fan
- Check the motor wire harness for loose or damaged connections.
- Measure resistance and voltage of motor wire harness.*
- Ensure the combustion fan spins freely.

631 DHW Recirculation Pump
- Ensure the DHW recirculation matches the Parameter 12 setting.
- Ensure the dedicated return line is properly installed.
- Ensure the inlet water filter and bypass filter are clean and free of debris.
- Ensure the DHW recirculation pump is connected to the DHW Pump Terminal.
- Ensure the capacity of the recirculation pump is sized appropriately for the piping (DHW recirculation pump should be higher than 1.3 GPM).
- Ensure air is removed from the recirculation line.

651 Water Flow Control
- Measure the resistance values and voltage of the water flow control.*
- Ensure the harness and connector are not wet.
- If the voltage from the PC Board is abnormal, replace the PC Board; otherwise, replace the water flow servo valve.

651 Bypass
- Measure the resistance values and voltage of the bypass servo valve.*
- Ensure the harness and connector are not wet.
- If the voltage from the PC Board is abnormal, replace the PC Board; otherwise, replace the bypass servo valve.

540 3-Way Valve
- Check the CH system water quality.
- Measure the resistance values and voltage of the 3-way valve control.*
- Replace the 3-way valve control device.

681 Hot Water Supply Temperature Abnormality
- If the DHW water temperature is higher than the set point temperature because the boiler bypass servo fails to close.
- Measure resistance values and voltage of the bypass flow control.*
- Replace the bypass flow control device if needed; otherwise, check the inlet thermistor and heat exchanger thermistor wiring for damage.
- Measure the resistance of the sensor.
- Replace if needed.
- Clean the sensor of any scale buildup present.

700 PC Board
- PC Board circuit error.
- Replace PC Board.

710 Solenoid Valve Circuit
- Ensure Dip switch 5 on the PC Board is in the OFF position (default).
- Ensure the gas control wire is not loose or damaged.
- Replace the PC Board.

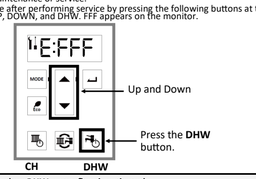
720 Flame Rod
- Check the flame rod and wire for damage.
- Ensure the flame rod and wire are not wet.
- If there is no issue with the flame rod or wiring, replace the PC Board.

890 Freeze Issue
- The boiler checks the heat exchanger temperature at the time of operation.
- If the temperature is too low, an error will occur.
- Check if there is freezing in the boiler or CH system.

999 PC Board Mismatch
- This code occurs when the PC Board and the internal logic do not match.
- Check if the software versions of the board and operation board do not match.

LC Scale Buildup in Heat Exchanger
- Flush the DHW plate heat exchanger.
- The LC code will reset automatically when scaling is removed. If the LC code remains, check the DHW thermistor, flow sensor or boiler pump.

FFF Maintenance Indicator
- This code is a placeholder in diagnostic code history indicating a service provider performed maintenance or service.
- Enter this code after performing service by pressing the following buttons at the same time: UP, DOWN, and DHW. FFF appears on the monitor.



No Code Nothing happens when DHW water flow is activated
- Verify the minimum flow rate required to fire the boiler is seen.
- Measure the resistance of the flow control sensor.*
- Clean the inlet water supply filter.
- On new installations, ensure the hot and cold water lines are not reversed.
- Confirm the inlet water temperature is not too high.
- Ensure the integrated boiler pump operates properly.
- Ensure the DHW operation switch is on.

No Code Decreasing or fluctuating DHW water flow volume
- Ensure the gas pressure is proper.
- Ensure the water pressure is proper.
- Ensure the inlet water filter for DHW is clean.
- Ensure there is not lime scale buildup present.
- Ensure the vent and vent settings are properly set up.
- If a DHW recirculation system is used, the DHW flow volume may vary slightly.
- Ensure all air has been purged from the system.
- Ensure the pump is set to speed 3.
- During simultaneous CH and DHW operation mode, it is possible to see decreased DHW flow.

No Code Fluctuating DHW outgoing temperature
- Ensure the gas pressure is proper.
- Ensure the water pressure is proper.
- Ensure the DHW thermistor, flow servo, and bypass servo are in good condition.
- Ensure the inlet filter for DHW is clean.
- If a DHW recirculation system is used, the DHW temperature may vary slightly.
- Ensure all air is removed from the system.

No Code Boiler does not start heating with a heating demand present
- Supply temperature or return temperature inside the boiler may be too hot.
- Ensure the pump operates properly.
- If there is a demand immediately after using DHW, wait at least three minutes for operation.

No Code The boiler does not operate with the CH setting button
- If DIP switch 2 is OFF, CH operation will operate via the room thermostat.

No Code DHW recirculation does not begin
- Ensure the DHW recirculation pump is connected to the DHW_Pump terminal.
- Ensure DIP switch 3 is ON.
- Ensure the DHW recirculation plumbing type is set properly per Parameter 12.
- Ensure the DHW recirculation with timer relay input is set properly per Parameter 13.
- Ensure the wiring to the external timer is correct.
- Ensure the external timer is ON, if in use.
- The recirculation logic has an OFF interval after use.

No Code Simultaneous DHW and CH is not functional
- Ensure DIP switch 4 is ON.
- If CH set point temperature is lower than 140°F, it is not permitted (this includes outdoor reset temperature settings).
- Ensure the DHW inlet temperature is not too hot.
- Ensure the heating load for DHW and CH are within limits to handle both simultaneously.

No Code Cannot change the DHW set point temperature
- When DHW is being produced, the temperature setting can only be adjusted between 98°F and 110°F.

No Code Supply temperature is different from the setting temperature on the controller
- During outdoor sensor control, the supply temperature will vary dependent on the outdoor temperature.
- During simultaneous operation of DHW and CH, the supply temperature for CH is based on DHW control.

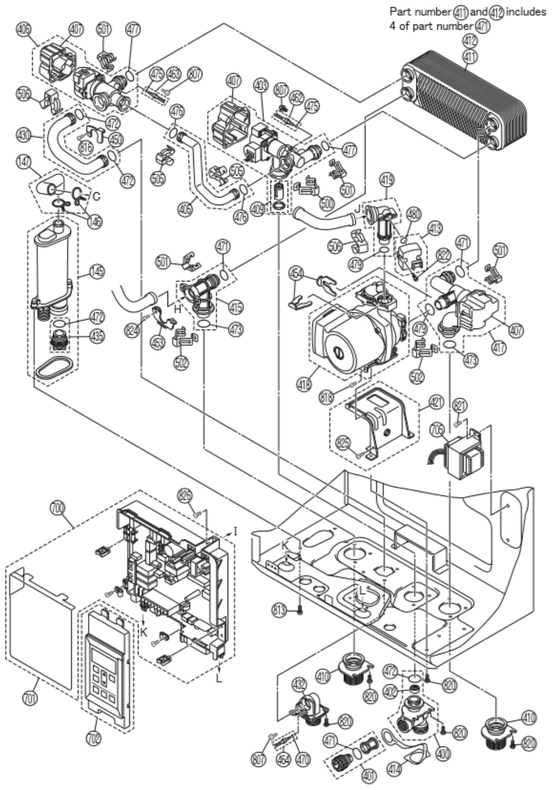
No Code CH capacity is insufficient
- Ensure the parameters are properly set for the installation.
- During simultaneous operation of DHW and CH, flow volume to heating can be reduced.

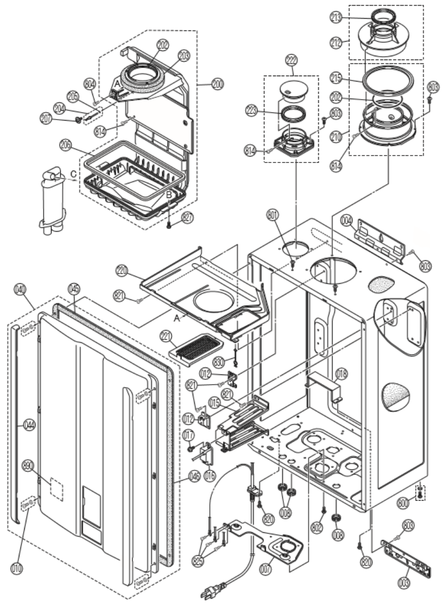
No Code Pump or fan even with no demand
- The boiler may start or operate the pump for freeze protection operation.
- The pump may intermittently operate to prevent it from becoming stuck.

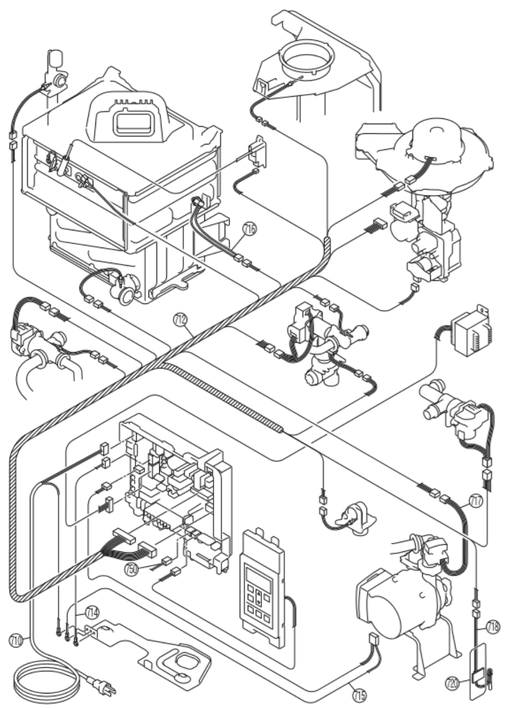
No Code Cannot turn off ECO mode
- During DHW recirculation, ECO switch will always be on.

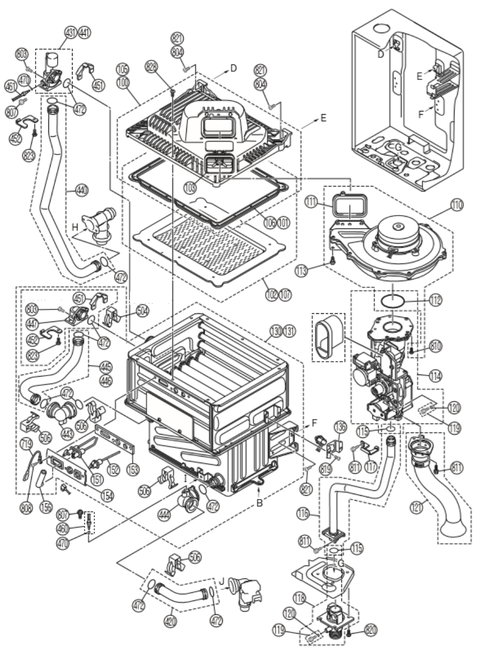
* See "Electrical Diagnostics" section of this document.

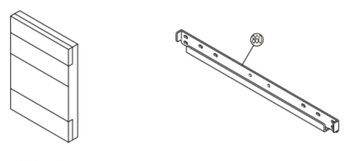
Gas Conversion Kits		
Models	**Gas Type**	**Kit Number**
i120C	NG/LPG	803000040
i090C		
i060C		











ITEM	DESCRIPTION	PART NUMBER	i120C	i090C	i060C
003	Lower Wall Mount Bracket	109000281	1	1	1
004	Upper Wall Mount Bracket	109000594	1	1	1
007	Connection Reinforcement Plate	809000165	1	1	1
008	Rubber Bushing	CF79-41020-A	3	3	3
010	Residential Screw and Washer	106000645	4	4	4
012	Combustion Chamber Support Plate	109000597	2	2	2
015	Igniter Bracket	109000599	1	1	1
016	Igniter Assembly	105000230	1	1	1
017	Grounding Screw	CP-80452	1	1	1
018	Plate HEX Bracket	809000166	1	1	1
040	Front Panel Assy	809000167	1	1	1
044	Screw Cover	109000230	2	2	2
045	Front Panel Packing-Top	109000120	2	2	2
046	Front Panel Packing-Side FF	109000608	2	2	2
100	Burner Assembly-Large	806000049	1		
101	Burner Gasket-Large	109000609	1		
102	Burner Plate Assembly-Large	806000050	1		
103	Combustion Check Valve Assembly	107000262	1	1	1
105	Burner Assembly-Medium	806000051		1	1
106	Burner Gasket-Medium	109000610		1	1
107	Burner Plate Assembly-Medium	806000052		1	1
110	Combustion Fan Assembly	108000081	1	1	1
111	Fan Mounting Packing	109000611	1	1	1
112	O-ring	109000612	1	1	1
113	Hexagon Head Screw	ZQAA0514UK	3	3	3
114	Gas Valve Assembly	106000117	1	1	1
115	O-ring	109000252	2	2	2
116	Gas Connection Pipe	806000054	1	1	1
117	Gas Tube Bracket	109000635	1	1	1
118	Inlet Gas Supply Connection	106000119	1	1	1
119	Inlet Gas Test Port Screw	106000138	2	2	2
120	O-ring	M10B-13-4	2	2	2
121	Noise Filter	106000120	1	1	1
130	Heat Exchanger Assembly-Large	807000173	1		
131	Heat Exchanger Assembly-Medium	807000174		1	1
136	OHS Bracket	109000614	1	1	1
145	Condensate Trap	807000175	1	1	1
146	Band RC98HPi/e, Cond Drain Tube, Bottom KT	109000138	2	2	2
147	Condensate Drain tube	807000176	1	1	1
151	Electrode	105000233	1	1	1
152	Flame Rod	105000234	1	1	1
153	Electrode Packing	109000617	1	1	1
154	Electrode Plate	109000618	1	1	1
156	Electrode Sleeve	109000620	1	1	1
200	Exhaust Duct Assy	808000050	1	1	1
202	O-ring	108000018	2	2	2
203	Exhaust Duct Packing	109000621	1	1	1
204	Thermistor	105000235	1	1	1
205	O-ring	107000323	1	1	1
206	Exhaust Duct Seal	808000051	1	1	1
207	Thermistor Screw	109000622	1	1	1
210	Flue Connection Assembly	108000083	1	1	1
212	Exhaust pipe connection port - 2 inch	108000084	1	1	1
213	Exhaust Gasket - 2 inch	109000623	1	1	1
215	Air Supply Pipe Seal Ring	108000017	1	1	1

ITEM	DESCRIPTION	PART NUMBER	i120C	i090C	i060C
220	Air Supply Box	108000085	1	1	1
221	Air Supply Filter (set)	108000086	1	1	1
222	Air Supply Assembly	108000087	1	1	1
223	Air Supply Gasket - 2 inch	109000624	1	1	1
400	3/4 DHW Cold Connection	807000177	1	1	1
401	Water Supply Filter Plug Assembly	107000317	1	1	1
402	Rectifier (402) V2532FfuW/WC/2526W	M8D1-15	1	1	1
403	Water Flow Servo and Sensor Assembly	807000178	1	1	1
405	Bypass Tube	807000179	1	1	1
406	Bypass Servo Assembly	807000180	1	1	1
407	Cover	107000093	3	3	3
409	Flow Turbine Assembly	807000181	1	1	1
410	CH Outlet Connection	807000182	2	2	2
411	Plate HEX-Large	807000183	1		
412	Plate HEX-Medium	807000184		1	1
413	Water Pressure Sensor Assembly	807000185	1	1	1
414	Plug Band	109000018	1	1	1
415	Plate HEX-CH Heating Connection	807000186	1	1	1
417	3 Way Valve Assembly	807000187	1	1	1
418	Circulation Pump Assembly	807000188	1	1	1
419	Pump Connection Assembly	807000189	1	1	1
420	Pump-Plate HEX Connection Tube	807000190	1	1	1
421	Pump Stand	807000191	1	1	1
430	DHW Outlet Tube	807000192	1	1	1
431	Heat Exchanger Pipe Connection	807000193	1		
432	DHW Outlet	807000194	1	1	1
435	Trap Drain Plug Assy	807000195	1	1	1
440	HEX-CH Heating Connection Pipe	807000196	1	1	1
441	Heat Exchanger Pipe Connection Assy-Medium	807000197		1	1
443	Secondary Heat Exchanger Outlet Fitting	807000198	1	1	1
444	Secondary Heat Exchanger Inlet Fitting	807000199	1	1	1
445	Primary-Secondary Pipe Assy-Large	807000200	1		
446	Primary-Secondary Pipe Assy-Medium	807000201		1	1
447	Primary-Secondary Connecting Fitting	807000202	1		
450	Pipe Bracket	U211-322X01	1	1	1
451	Pipe Bracket	809000168	2	1	1
452	Retention Clip	809000169	2	1	1
453	Pipe Bracket	809000170	1	1	1
454	Clip	809000171	2	2	2
460	Thermistor Sensor	805000079	1	1	1
461	Thermistor Sensor	805000080	1	1	1
462	Thermistor Sensor	805000081	1	1	1
463	Thermistor Sensor	805000082	1	1	1
464	TWIN Thermistor	805000083	1	1	1
470	O-ring	807000202	3	3	3
471	O-ring	807000203	3	3	3
472	O-ring	807000204	14	13	13
473	O-ring	807000205	2	2	2
475	O-ring Water Heater 2 KT	M10B-2-4	2	2	2
476	O-ring	M10B-2-14	2	2	2
477	O-ring KT	M10B-2-16	2	2	2
478	O-ring, All Water Heaters 2 KT	M10B-2-18	1	1	1
479	O-ring	807000206	2	2	2
480	O-ring	807000207	1	1	1
500	Clip	109000636	1	1	1

ITEM	DESCRIPTION	PART NUMBER	i120C	i090C	i060C
501	Clip	809000172	4	4	4
502	Clip	809000173	2	2	2
504	Clip (i090C and i060C only)	809000174		1	1
505	Clip	109000639	2	2	2
506	Clip	109000638	6	6	6
700	PC Board Assembly-Combi	805000084	1	1	1
701	PCB Cover	809000175	1	1	1
702	Integrated Remote Control Assy	805000085	1	1	1
705	Transformer	805000086	1	1	1
710	Power Cord Assembly FF	105000238	1	1	1
712	Sensor Harness	805000087	1	1	1
714	Heater Ground Harness	805000088	1	1	1
715	Pump Harness	805000089	1	1	1
716	Over Heat Switch	105000299	1	1	1
717	Water Pressure Connection Harness	805000090	1	1	1
718	Thermistor Sensor	805000091	1	1	1
719	Igniter Ground Harness	105000243	1	1	1
720	Guide Seal	809000176	1	1	1
750	Remote Control Harness	105000249	1	1	1
800	Screw	109000746	4	4	4
801	Screw	CP-30583	2	2	2
802	Screw	ZBA0408UK	3	3	3
803	Screw	CP-30580	17	15	15
804	Screw	109000648	3	3	3
807	Screw	U217-449	5	5	5
808	Screw	109000641	3	3	3
810	Screw	109000179	8	8	8
811	Screw	108000021	2	2	2
813	Screw	ZAD0408UK	2	2	2
814	Screw	109000651	6	6	6
816	Screw	CP-20883-410UK	1	1	1
818	Screw	ZFAB0408SZ	2	2	2
819	Thermistor Screw	ZFAB0406UK	2	2	2
820	Screw	809000177	22	22	22
821	Truss Screw	109000598	18	18	18
822	Screw	809000178	4	4	4
823	Screw	ZAA0408UK	2	1	1
824	Screw	809000179	1	1	1
825	Ground Screw	109000793	4	4	4
826	Screw	809000180	1	1	1
827	Screw	809000181	2	2	2
828	Screw	809000182	8	8	8
830	Cable Clip	809000183	1	1	1
860	Wall Bracket	109000628	1	1	1
861	Vent Screen Set	108000104	1	1	1
862	LP Conversion Orifice-Included	806000055	1	1	1
863	Pressure Relief Valve	807000211	1	1	1
864	Outdoor Temperature Sensor	805000096	1	1	1
888	User manual	800000114	1	1	1
889	Installation and Operation Manual	800000111	1	1	1
890	Tech sheet	800000115	1	1	1
891	User Manual-French	800000145	1	1	1
892	Installation and Operation Manual-French	800000146	1	1	1