Rinnai

PERFORMANCE DATA

To View Performance Data:

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

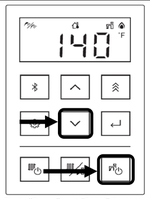


Fig 1. "Down" and "DHW" Buttons

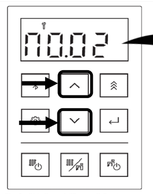


Fig 2. "Up" and "Down" Buttons

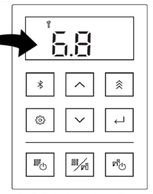


Fig 3. Data Appearing in Display

Table 1(A). Performance Data

#	Data	Unit
01	Water Pressure	PSI/bar[1]
03	Supply Temperature	°F/°C[1]
04	Return Temperature	°F/°C[1]
05	Freeze Protection Temperature	°F/°C[1]
06	Exhaust Temperature	°F/°C[1]
#	Fan Frequency	Hz
11	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 (Pumps 1-3) See Table 1(B) to right for more information.	0=OFF, 1=ON
24	Pump for System (Pump 4)	0=OFF, 1=ON
30	Indirect Tank Thermistor Temperature	°F/°C[1]
31	Outdoor Temperature	°F/°C[1]
40	Energization Hours	x100
41	Combustion Hours	x10
42	Combustion Cycles	x100
45	Commissioning Cycles	x1

[1] See "Units of Measurement" section to right.

Table 1(B). Pump for System (1-3)

Pump for System (1-3)		
System Pump	ON	OFF
Pump 1	_ _ _1	_ _ _0
Pump 2	_ _1_	_ _0_
Pump 3	_1_ _	_0_ _

Units of Measurement

1. Press the "Settings" button.
2. Press the ▲ (Up) or ▼ (Down) arrows to select a unit of measurement (refer to Table 2).

Table 2. Units of Measurement

Units of Measurement	Temp.	Water Flow	Pressure
1: English	°F	gal/min	psi
2: Metric	°C	L/min	bar

ELECTRICAL DIAGNOSTICS

Table 3. Diagnostic Points

COMPONENT	WIRE COLOR	VOLTAGE	RESISTANCE	PCB CONNECTOR	PCB PIN
Power Supply	Black-White	AC108~132V	N/A	CN200	1-3
Flame Rod	Yellow-Body	More than 0.5VAC	N/A	CN8	20
	Black-Body	More than 0.5VAC	N/A	CN7	1
Spark Electrode	White-Black	11~14VDC*	N/A	CN8	2-3
Combustion Fan	Red-Black	7~48VDC*	N/A	CN7	18-19
	White-Black	2~14VDC*	N/A	CN7	16-18
	Yellow-Black	11~14VDC*	N/A	CN7	17-18
Venturi Control Device	Blue-Black	N/A	350~550Ω	CN11	1-9, 2-9, 3-9, & 4-9
	Red-Black			CN11	8-11, 8-12, 8-13, & 8-14
	Black-Black	4~6VDC*	N/A	CN11	8-16 & 6-7
Gas Solenoid Valve	Yellow-Black	11~14VDC[2]	15~25Ω	CN8	11-12
Exhaust 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.	CN7	3-6
Heat Exchanger Thermistor	White-White			CN7	11-14
Supply Thermistor	White-White			CN7	5-6
Return Thermistor	White-White			CN7	8-10
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.	CN7	7-10
Transformer	White-Grey	AC108~132V	N/A	CN202	1-2
	Red-Red	AC20~30V (Possible to measure at Output terminal as substitute position)		CN202	3-4
Overheat Switch	Black-Black	Less than 1VDC	Less than 2Ω	CN8	4-15
Water Pressure Sensor	Red-Black	11~14VDC	N/A	CN8	5-9
	Yellow-Black	0 kPa: 655-745 mV; 200 kPa: 2,155-2,245 mV; 400 kPa: 3,655-3,745 mV		CN8	1-9
Water Level Electrode	White-White	11~14VDC	N/A	CN8	13-14
Integrated Pump	White-Black	AC108~132V	N/A	CN101	1-2
Control Panel	Black-Black	11~14VDC	N/A	CN6	1-2

[2] When the unit is operating.

PC BOARD BUTTONS

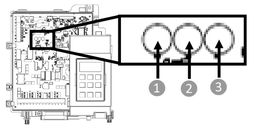


Fig 4. PC Board Buttons

Table 4. PC Board Buttons

Item #	PC Board Switch #	Primary Function	Notes
1	Button 1	Parameter Setting Mode	Refer to section "12.4 Parameter Settings" in Boiler Installation and Operation Manual.
2	Button 2	Deaeration Mode	Refer to section "10. Commissioning" in Boiler Installation and Operation Manual.
3	Button 3	Data Transfer Mode/ Test Combustion Mode/Flushing Mode	This is for transferring PCB data when replacing the PCB. Refer to the instructions included in the replacement parts. Also, this is used for setting the boiler into forced combustion mode and flushing mode.

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 boiler front cover.

Flame Rod

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

Amp Fuses

This unit has two (2) 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.

PARAMETER SETTINGS

1. To access the parameter settings, press and hold the SW 1 Button on the PC Board for five seconds (Fig 5). 00-R appears on the display (Fig 6).

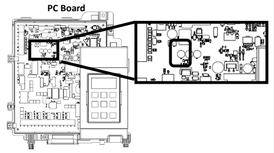


Fig 5. SW 1 Button on PC Board

2. Press the ▲ (Up) or ▼ (Down) arrows to select a parameter setting. Then, press the "Select" button (Fig 7).

Fig 6. "00-R" shown in display

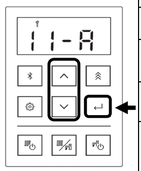


Fig 7. "Up," "Down" and "Select" Buttons

3. Press the ▲ (Up) or ▼ (Down) arrows to change the selection for the setting number (such as 11-R or 11-b). Then, press the "Select" button (Fig 8).

Fig 8. "Up," "Down" and "Select" Buttons

4. To exit parameter settings and enter normal operation mode, press and hold the SW1 Button on the PC Board.

For more information on parameter settings, refer to the "I-Series Plus Condensing Boiler Installation and Operation Manual."

Table 5. Parameter Settings

Parameter #	Setting Description	A (Default)	b	C	d	E	F	H
		Selection						
00	**Outdoor Temperature Sensor:** Enables or disables the outdoor temperature sensor.	In Use	Not In Use					
01	**Outdoor Reset Curve: (*)** This parameter shows up only when selecting Outdoor Temperature Sensor "In Use" as selecting parameter number 00. For selecting outdoor reset curve, see 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: Low Mass Radiant, Curve 5: High Mass Radiant, Curve 6: Radiators, Curve 7: Custom curve based on customer input.	1	2	3	4	5	6	7
02	**Boost:** Available when parameter 00 is selected as "A." Boost Mode increases the CH set temperature above the outdoor reset curve target when the boiler has been running on an unusually long call for heat.	30 Minutes	60 Minutes					
03	**Maximum Outdoor Temperature:** Available when parameter 00 is set to as "A." Sets maximum outdoor temperature the boiler will fire in CH mode and can prevent boiler from firing in warm outdoor temperatures.	77°F (25°C)	No Maximum					
04	**Service Soon:** 55 is a time-based service indicator set during installation.	Disabled	0.5 Year	1 Year	2 Years			
05	**Pressure Indication on Controller Panel:** The current pressure will cycle on the controller display. If an external pressure gauge is present, it is permissible to change the setting to "No."	Yes	No					
06	**De-Rate:** This parameter is to limit maximum input when it is necessary.	No	Setting 1	Setting 2				
28	**Indirect Tank:** Enables the Indirect Tank Function for Pump 4.	On	Off					
29	**Indirect Tank Thermistor/Thermostat Selection:** Selects the method of controlling the indirect tank.	Thermostat	Thermistor					
30	**Indirect Tank Supply Temperature with Thermistor Control:** This parameter is available when parameter number 28 is selected as "A" and parameter number 29 is selected as "b." This selects the supply temperature for the indirect tank when using a thermostat. 180°F (Default) is the maximum supply temperature. The higher the supply temperature to the tank, the quicker the tank will heat up. If this temperature is too high, select other settings as appropriate. Ensure the indirect tank supply temperature is 18°F (10°C) higher than the set point temperature of the tank thermostat. **Indirect Tank Supply Temperature with Thermostat Control:** This parameter is available when parameter number 28 is selected as "A" and parameter number 29 is selected as "A." This selects the supply temperature for the indirect tank when using a thermostat. 180°F (Default) is the maximum supply temperature. The higher the supply temperature to the tank, the quicker the tank will heat up. If this temperature is too high, select other settings as appropriate.	180°F (82°C) 180°F (82°C)	Tank Setting Temperature +18°F (10°C) 160°F (71°C)	Tank Setting Temperature +27°F (15°C) 140°F (60°C)				
31	**Allowed indirect tank temperature drop before firing (with thermistor)** This parameter is available when parameter number 28 is selected as "A" and parameter number 29 is selected as "b." This selects the differential temperature between the indirect tank setpoint temperature and thermistor reading. The smaller the value, the more frequently the indirect tank will call for heat.	5.4°F (3°C)	10.8°F (6°C)	16.2°F (9°C)	21.6°F (12°C)			
32	**Indirect Tank Operation Option** This parameter is available when parameter number 28 is selected as "A." When a 3-Way Valve and the boiler pump are to be used for recovering the indirect tank, select "b". Only 120 VAC 3-Way Valves may be used in this application.	Use Pump	Use 3-Way Valve					
33	**Indirect Tank Simultaneous Heating-Up** This parameter is available when parameter number 28 is selected as "A" and parameter number 32 is selected as "A." This selects the operation of the indirect tank heating by priority or simultaneously with CH. When "Indirect Tank Priority" is selected, other pumps except for the indirect tank pump will not operate while the tank is being heated. When "Simultaneous Heating with Indirect Tank and CH", all pumps may operate simultaneously. When in Simultaneous mode, if the tank does not achieve the Indirect Tank Setpoint Temperature within 60 minutes, it will transition to Indirect Tank Priority.	Indirect Tank Priority	Simultaneous Heating with Indirect Tank and CH					
34	**Indirect Tank Priority Time** This parameter is available when parameter number 28 is selected as "A." This selects the time that the indirect tank will maintain priority. After this period of time passes, the indirect tank will cease to be heated and central heating will have priority. If there is still an indirect tank demand after 60 minutes passes of CH priority, indirect tank priority will begin again.	60 Minutes	40 Minutes	90 Minutes				
35	CH Temperature Limitation to Allow Simultaneous Operation with Indirect Tank This parameter is available when parameter number 28 is selected as "A," parameter number 32 is selected as "A" and parameter number 33 is selected as "b." This enables CH setting limitation during simultaneous heating. This can prevent unintentionally supplying high temperature supply water to low water heating temperature applications such as floor heating. During simultaneous operation, the heating supply temperature is based on the indirect tank supply temperature. When "NO" is selected, make sure that the CH system and heating application is designed to allow for the high supply temperature.	Yes	No					
40	**Linked Operation Among Each CH Pumps** This parameter enables linked operation among each CH pumps. For example, when parameter b is selected and T/T 1 is active, both pump 1 and 2 are ON. The T/T wire must be connected to the T/T1 connection. This setting is primarily for an application that requires two pumps or more for one zone, such as in use with an injection loop or similar system.	No	Linked Together CH Pump 1 and Pump 2	Linked Together CH pump 1, pump 2 and pump 3	Linked Together CH pump 1, pump 2, pump 3 and pump 4			
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. Example: when the main pump is on, pump 1 is also on.	No	Yes (Linked together)					
42	**Main Pump Runs When the Target Temperature is Reached:** This selects the mode of the main pump running when the target setpoint is achieved. This setting is for whether running on intervals to reduce pump operation or continuously running to reduce wait time to re-fire. Intervals are 10 minutes ON and 30 minutes OFF.	Continuously	Intervals					
43	**External Pump Runs When the Temperature is Reached:** For selecting the mode of external pump running when the temperature is reached to setting. This is setting for whether stopping external pump running to reduce pump operation timing or operating as same as main pump operation to enable to deliver remained heat in heat exchanger	Same as Main Pump	Does Not Run					
44	**External Pump Running at Freeze Protection Operation:** Selects the mode of external pump running when freeze protection operation. This is setting for whether stopping external pump running to reduce pump operation timing or operating as same as main pump operation to enable to deliver remained heat to the system for keeping system piping from freezing. But it could reduce the temperature inside heat exchanger.	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.	Normal	For Warm Room Temp					
46	**The Differential Temperature From Extinguishing Fire to Fire Again:** How much temperature drop is permitted by the supply water thermistor before the boiler will fire again. When selecting "Quick", the boiler will fire more frequently and achieve more temperature control CH Setting Temperature 168°F -182°F (75-82°C) 104°F -166°F (40-74°C)	Normal Temperature Drop 27°F (15°C) 15°F (8°C)	Quick Temperature Drop 15°F (8°C) 9°F (5°C)					
47	**The Time Which Not Allow to Fire Again for CH:** For selecting time which not allow to fire again for CH after shutdown burner. This is setting for whether preventing from frequently operating unit or allowing frequent operation for quick heating up again.	Normal (3 Minutes)	Quick (10 Seconds)					
48	**Heating Eco Mode On Time** This setting changes the on time of the heating Eco mode. This mode enables greater energy savings by reducing the length of time the boiler is operating. The output temperature of the boiler is slower in this mode.	30 Minutes	15 Minutes					
50	**Air Handler Connection:** The setting changes to enable to AH output with linking pump 3.	No	Yes					
51	**Air Handler Post Pump Extension Setting:** Extending the post Pump timing of pump 3.	15 Seconds	40 Seconds					
60	**N/A:** Manufacture Use Only	Manufacture Use Only	Manufacture Use Only					
61	**Thermostat Usage:** Changes the mode between Thermostat Usage and Central Heating Button.	Thermostat Used	CH ON button used. Boiler fires based on return water temperature.					
R0	**Gas Type:** For selecting gas type when conducting gas conversion.	Natural Gas	Liquid Propane					
R1	**Model:** Manufacture Use Only	Manufacture use only	Manufacture use only					
R2	**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 the section on PVC Safety Switch for more information.	PVC	Material other than PVC: CPVC, PP, or Other.					
R3	**Altitude Setting:** Sets the elevation of the boiler installation.	Level 0: 0-2,000 ft (0-610m)	Level 1: 2,001-5,400 (610-1646m)	Level 2: 5,401-7,700 ft (1,646-2,347m)	Level 3: 7,701-10,200 ft (2,347-3,109m)			

DIAGNOSTIC CODES

To Display Diagnostic Codes:

1. Press and hold the "DHW" button for two seconds and then the ▲ (Up) button simultaneously (Fig 9).
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 "DHW" button for two seconds, and then the ▲ (Up) button simultaneously.

Fig 9. "Up" and "DHW" Buttons

Table 6. Error Reset

Power Reset	Venturi Control (150), Gas Valve Adjustment Limit (180), Gas Valve Adjustment(220), High Exhaust Temperature (540), and Freeze Issue (890) can be reset by shutting down power to the boiler.
Interlock Reset	Please call Rinnai Technical Support.
Other Reset	Other error can be reset by Indirect Tank "On/Off" button or "Central Heating" (CH) button.

Table 7. Diagnostic Codes

108 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.

110 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 to this 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 to this 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.

161 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.

180 Gas Valve Adjustment Limit
- Ensure gas type is correct.
- Ensure the ground from PCB is correct.
- Ensure gas type parameter is correct.
- Please call Rinnai Technical Support.

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

210 Data Transfer Error
- If the PCB has been replaced, ensure the data transfer process is complete.

220 Gas Valve Adjustment
- Ensure a Reed switch is located properly.
- Ensure the gas valve adjustment is operating correctly.*

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.

301 Freeze Protection 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 the return thermistor.
- Replace if necessary.

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

371 Indirect Thermistor
- Check if the indirect thermistor is not used at the setting for thermistor usage.
- Check sensor wiring for damage.
- Measure resistance of sensor and replace sensor, if necessary.
- 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.

393 Outdoor Thermistor
- Ensure that parameter number 00 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 V AC. If it is not, a transformer is needed.

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
- Make sure boiler pump activates during operation.
- 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 boiler is used in a hard water area, flush the DHW plate heat exchanger.
- Check the exhaust duct, seal, and venting for damage.

610 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.

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.
- Ensure the heater circuit is not grounded.
- 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.

831 Indirect Tank Temperature
- Indirect tank runs for more than six hours without cycling off.
- Check if the tank size is adequate.
- Check the thermistor location.
- Confirm that primary-secondary piping is utilized (such as low loss header, closely spaced tees, etc.)
- Check if the supply temperature for the tank is higher than the tank setting temperature (see parameter 30 in "Parameter Settings" section).
- Check sensor wiring for damage.
- Measure resistance of sensor.*
- If something is wrong on the sensor, replace the sensor.

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.

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 CH (or DHW). FFF appears on the monitor (right image).

55 Service Soon (55)
- Service Soon (55) is a time-based service indicator set during installation. See parameter 04 in the "Parameter Settings" section for more information.
- To reset the 55 code, press the Central Heating (CH) button 5 times until 55 disappears.

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 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.

NO CODE CH Capacity is Insufficient
- Ensure the parameters are properly set for the installation.

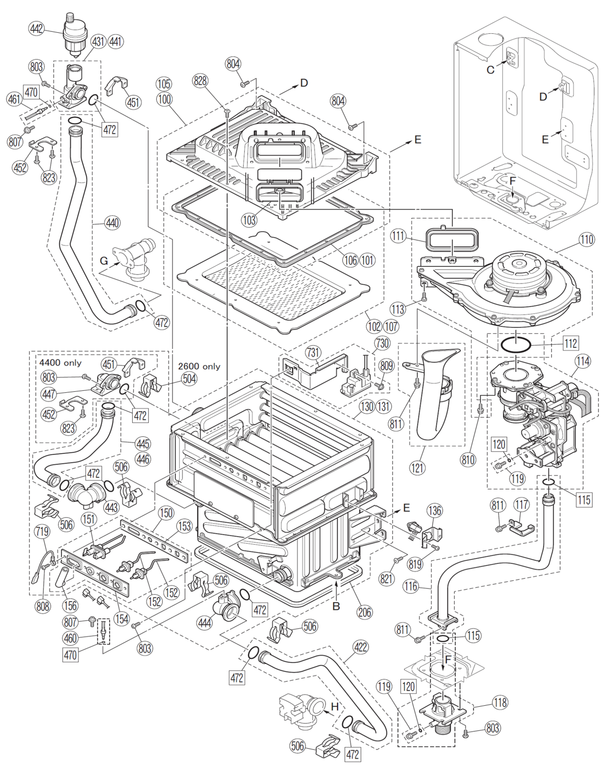
NO CODE Fan Even With No Demand
- The boiler may start or operate the pump for freeze protection operation.

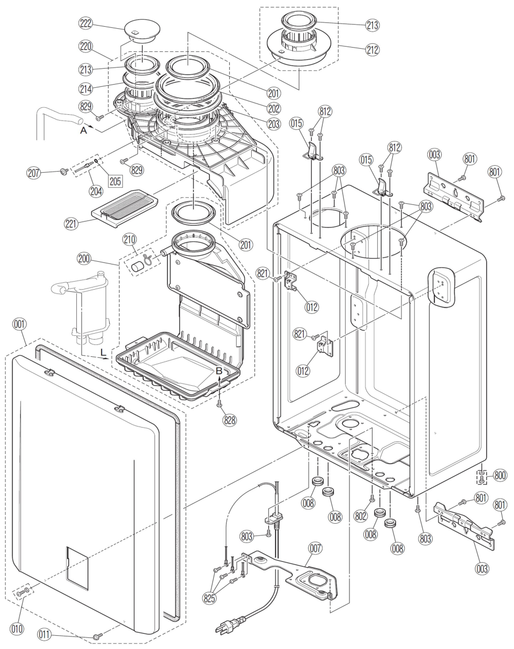
[3] See "Electrical Diagnostics" section of this document.

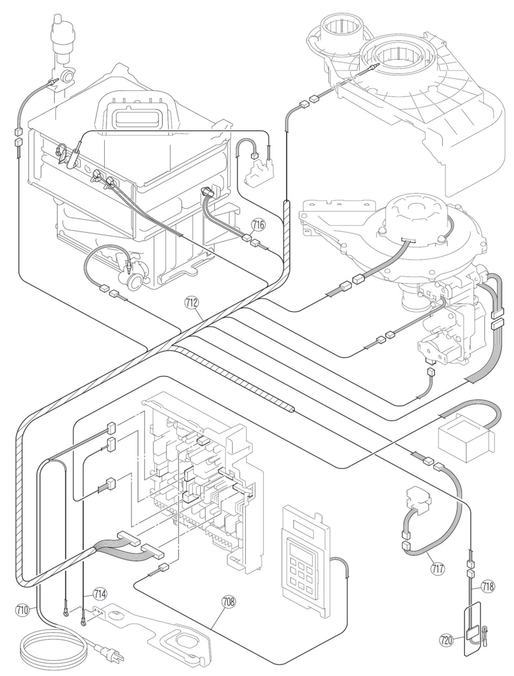
H239-0775-2

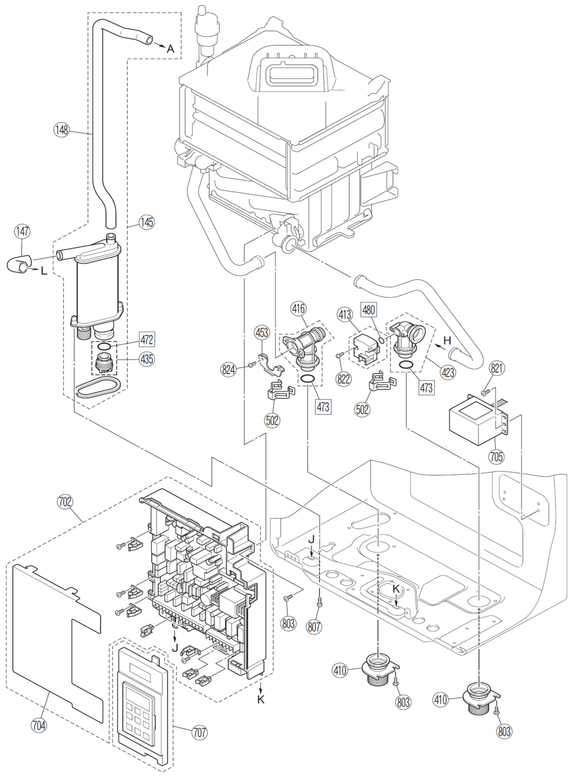
070 00012 66375 3

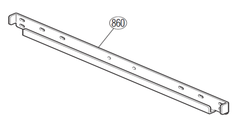
Gas Conversion Kits		
Models	**Gas Type**	**Kit Number**
IP150S	NG/LPG	803000082
IP120S		
IP090S		
IP060S		

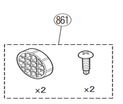


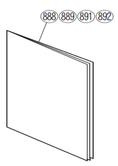


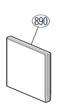


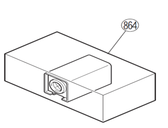


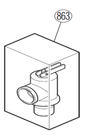


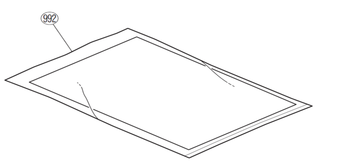












ITEM	DESCRIPTION	PART NUMBER	IP150S	IP120S	IP090S	IP060S
001	Front Cover Panel Assembly FF	809000306	1	1	1	1
003	Wall Mount Bracket	109000594	2	2	2	2
007	Connection Reinforcement Plate	809000307	1	1	1	1
008	Rubber Bushing	CF79-41020-A	4	4	4	4
010	Residential Screw and Washer	106000645	1	1	1	1
011	Ground Screw	109000076	1	1	1	1
012	Combustion Chamber Support Plate	109000597	2	2	2	2
015	Latch	109001393	2	2	2	2
100	Burner Assembly-Large	806000082	1	1		
101	Burner Gasket-Large	109000609	1	1		
102	Burner Plate Assembly-L	806000050	1	1		
103	Combustion Check Valve Assembly	108000135	1	1	1	1
105	Burner Assembly-medium	806000083			1	1
106	Burner Gasket-medium	109000610			1	1
107	Burner Plate Assembly-M	806000052			1	1
110	Combustion Fan Assembly	108000130	1	1	1	1
111	Fan Mounting Packing	109001396	1	1	1	1
112	O-ring	109000612	1	1	1	1
113	Hexagon Head Screw	ZQAA0514UK	3	3	3	3
114	Gas Valve Assembly	806000084	1	1	1	1
115	O-ring	109000252	2	2	2	2
116	Gas Connection Pipe	806000085	1	1	1	1
117	Gas Tube Bracket	109000635	1	1	1	1
118	Inlet Gas Supply Connection	106000119	1	1	1	1
119	Inlet Gas Test Port Screw	106000138	2	2	2	2
120	O-ring	M10B-13-4	2	2	2	2
121	Noise Filter	106000271	1	1	1	1
130	Heat Exchanger Assembly-Large	807000234	1	1		
131	Heat Exchanger Assembly-Middle	807000235			1	1
136	OHS Bracket	109000614	1	1	1	1
145	Condensate Trap	807000236	1	1	1	1
147	Condensation Drain Tube	807000237	1	1	1	1
148	Drain Tube at Air Intake	807000238	1	1	1	1
150	Electrode/Flame Rod Assembly	805000150	1	1	1	1
151	Electrode	805000151	1	1	1	1
152	Flame Rod	805000152	1	1	1	1
153	Electrode Gasket	805000153	1	1	1	1
154	Electrode Plate	809000308	1	1	1	1
156	Electrode Sleeve	109000620	1	1	1	1
200	Exhaust Duct Assembly	808000044	1	1	1	1
201	Exhaust Gasket	109001403	2	2	2	2
202	Intake Gasket	109001404	1	1	1	1
203	Air Supply Seal Ring	109001405	1	1	1	1

ITEM	DESCRIPTION	PART NUMBER	IP150S	IP120S	IP090S	IP060S
204	Exhaust Thermistor	105002024	1	1	1	1
205	O-ring	107000323	1	1	1	1
206	Exhaust Duct Gasket	808000051	1	1	1	1
207	Thermistor Screw	109000622	1	1	1	1
210	Rubber Cap	109001407	1	1	1	1
212	Exhaust Adapter Ring	108000132	1	1	1	1
213	Air Inlet Seal Ring - 2 inch	109001408	1	1	1	1
214	Air Inlet Gasket	109001409	1	1	1	1
220	Duct Assembly	108000133	1	1	1	1
221	Air Inlet Filter	108000086	1	1	1	1
222	Air Inlet Cap	108000134	1	1	1	1
410	CH Connection	807000182	2	2	2	2
413	Water Pressure Sensor Assembly	807000185	1	1	1	1
416	Plate HEX-CH Heating Connection-2	807000209	1	1	1	1
422	CH Heating Return Pipe Assembly	807000208	1	1	1	1
423	CH Heating Connection Assembly	807000210	1	1	1	1
431	Heat Exchanger Pipe Connection	807000193	1	1		
435	Trap Screw	807000195	1	1	1	1
440	HEX-CH Heating Connection Pipe	807000196	1	1	1	1
441	Heat Exchanger Pipe Connection-medium	807000197			1	1
442	Air Vent	808000052	1	1	1	1
443	Latent HEX Connection-1	807000198	1	1	1	1
444	Latent HEX Connection-2	807000199	1	1	1	1
445	Connecting Pipe Assembly	807000200	1	1		
446	Connecting Pipe Assembly-medium	807000201			1	1
447	Connecting Joint	807000202	1	1		
451	Pipe Bracket	809000168	2	2	2	2
452	Retention Clip	809000169	2	2	2	2
453	Pipe Bracket	809000170	1	1	1	1
460	Thermistor Sensor	805000154	1	1	1	1
461	Thermistor Sensor	805000155	1	1	1	1
470	O-ring	807000215	2	2	2	2
472	O-ring	807000204	11	11	11	11
473	O-ring	807000205	2	2	2	2
480	O-ring	807000207	1	1	1	1
502	Clip	809000173	2	2	2	2
504	Clip	809000174			1	1
506	Clip	109000638	5	5	5	5
702	PC Board - CH	805000167	1	1	1	1
704	PCB Cover	809000312	1	1	1	1
705	Power Transformer	805000158	1	1	1	1
707	Controller Unit	805000159	1	1	1	1
708	Controller Unit Harness	105002042	1	1	1	1

ITEM	DESCRIPTION	PART NUMBER	IP150S	IP120S	IP090S	IP060S
710	Power Cord	805000160	1	1	1	1
712	Sensor Harness-2	805000168	1	1	1	1
714	Heater Ground Harness	805000162	1	1	1	1
716	Over Heat Switch	805000164	1	1	1	1
717	Water Pressure Connection Harness	805000090	1	1	1	1
718	Thermistor Sensor	805000165	1	1	1	1
719	Igniter Ground Harness	105000243	1	1	1	1
720	Guide Seal	809000176	1	1	1	1
730	Igniter Assembly (Module)	805000166	1	1	1	1
800	Screw	109000746	4	4	4	4
801	Screw	CP-30583	4	4	4	4
802	Screw	ZBA0408UK	3	3	3	3
803	Screw	CP-30580	25	25	25	25
804	Screw	109000648	2	2	2	2
807	Screw	U217-449	6	6	6	6
808	Screw	109001417	5	5	5	5
809	Screw	CP-80452	1	1	1	1
810	Screw	109000179	3	3	3	3
811	Screw	109001416	3	3	3	3
812	Screw	109000649	4	4	4	4
819	Screw	ZFAB0406UK	2	2	2	2
821	Screw	109000598	14	14	14	14
822	Screw	809000178	2	2	2	2
823	Screw	ZAA0408UK	2	2	2	2
824	Screw	809000179	1	1	1	1
825	Screw	109000793	2	2	2	2
828	Screw	809000182	10	10	10	10
829	Screw	809000310	2	2	2	2
840	Cable Clip	109001297	1	1	1	1
841	Cable Clip	809000311	1	1	1	1
842	Cable Clip	CP-90124-3	1	1	1	1
860	Mount Bracket	109000628	1	1	1	1
861	Vent Screen Set	108000104	1	1	1	1
863	Pressure Relief Valve	807000243				
864	Outdoor Thermistor Kit	803000081	1	1	1	1
888	User Manual - EN	800000193	1	1	1	1
889	Installation Manual - EN	800000191	1	1	1	1
890	Tech Sheet	800000196	1	1	1	1
891	User Manual - FR	800000206	1	1	1	1
892	Installation Manual - FR	800000207	1	1	1	1
992	Gas Conversion Kit	803000082	1	1	1	1