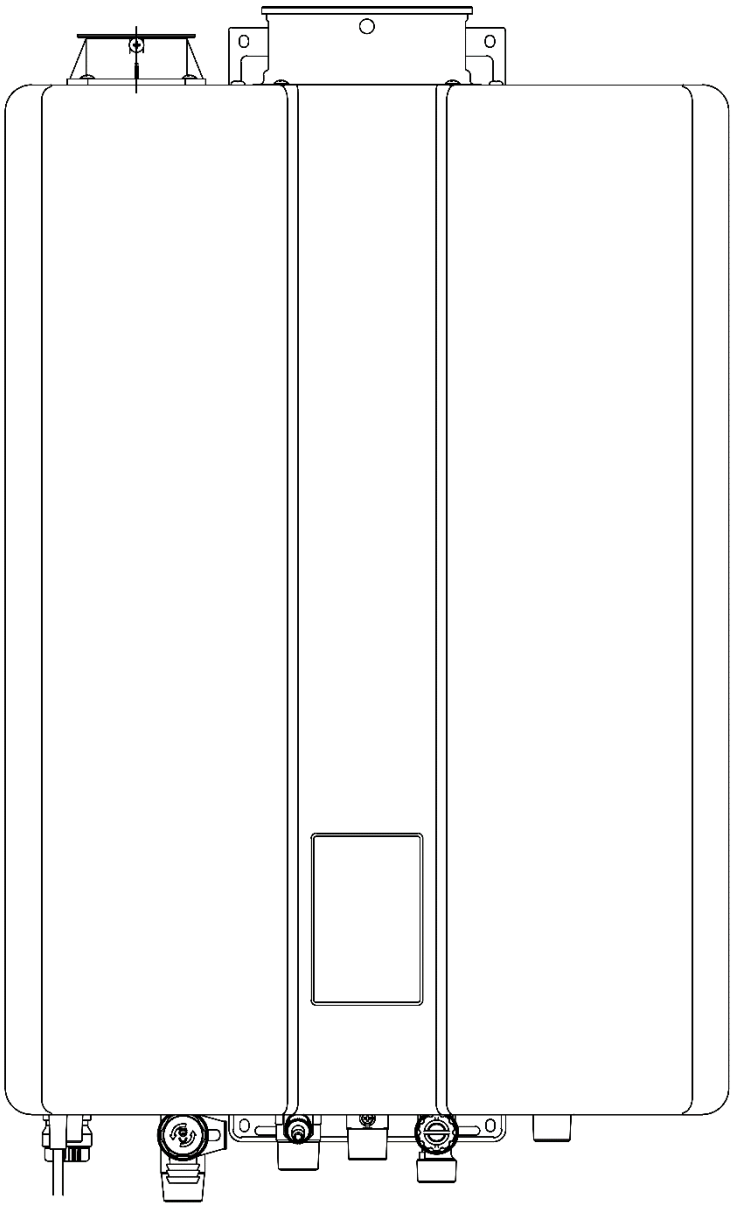
Central Heating
NEW ZEALAND

Rinnai I-Series

LPG Conversion & Commissioning Guide



Contents

1.0 General Information

This section provides instructions for converting gas types on Rinnai I-Series Condensing Boilers.

1.1 To the Installer

- A trained and qualified professional must perform the gas conversion for this boiler. Improper gas conversion will void the warranty and could result in harm or damage to property.
- The trained and qualified professional should have skills such as:
  - Gas line sizing
  - Connecting gas lines, water lines, valves, and electricity
  - Knowledge of applicable local codes
  - Training in installation of condensing boilers.
  - Read all instructions in this manual before attempting the gas conversion. The gas conversion must be performed according to the exact instructions in this manual.
  - Proper gas conversion is the sole responsibility of the installer.
  - When gas conversion is complete leave this manual with the boiler or give the manual directly to the consumer.

This boiler is configured for Natural Gas only. To convert to LPG Gas, follow the instructions contained in this manual.

1.2 To the End User

- Keep this manual for future reference.
- See the Safety Precautions section in this manual for detailed safety precautions.
- Ensure the boiler conversion is performed by a trained and qualified professional.

The conversion kit shall be installed by a qualified service agent in accordance with the manufacturer instructions and all applicable codes and requirements of the authority having jurisdiction. The information in these instructions must be followed to minimize risk of fire or explosion or to prevent property damage, personal injury or death. The installation is not completed until the operation of the converted appliance is checked as specified in this document . Failure to correctly assemble the components according to these instructions may result in a gas leak or explosion.

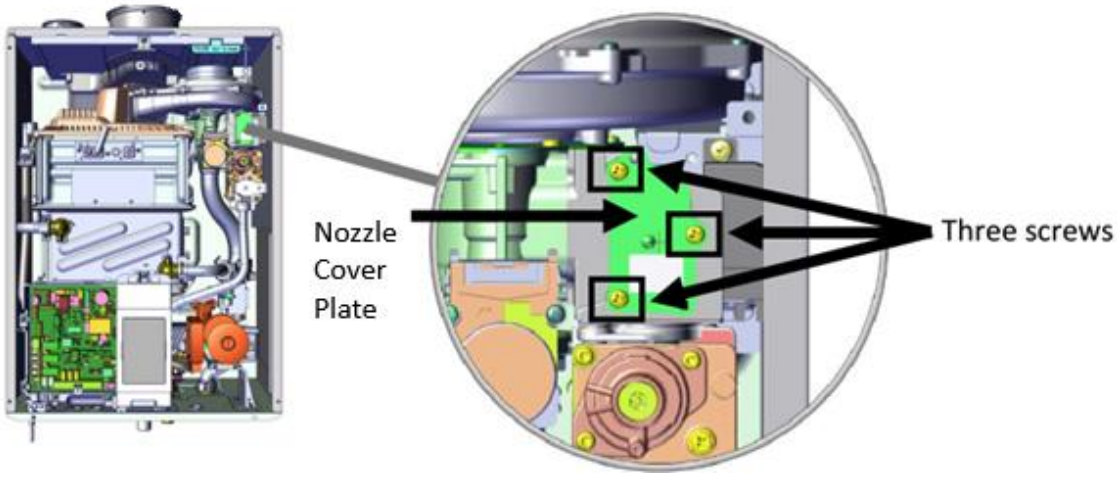
2.0 Gas conversion

Before you get started, confirm that the inlet gas pressure is between the minimum and maximum pressure allowed for this boiler.

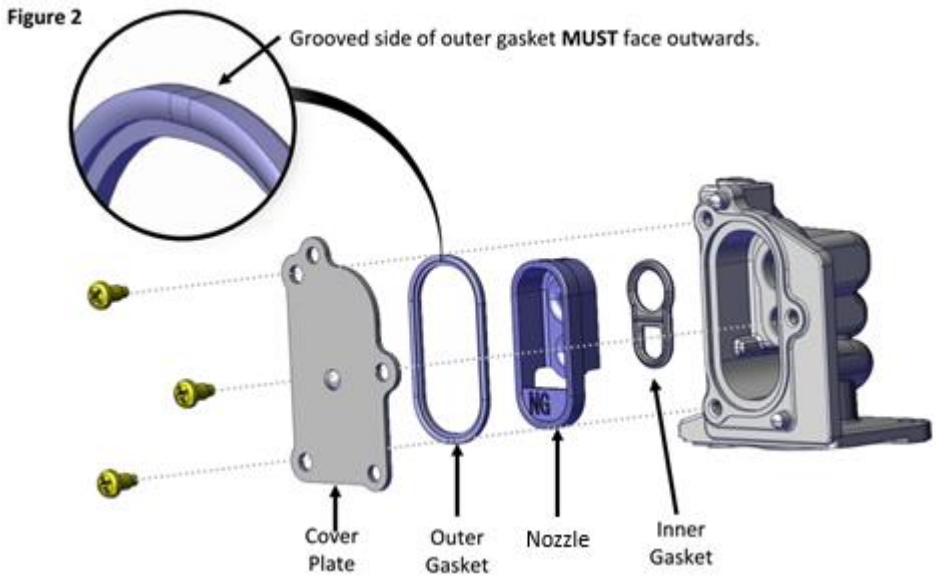
The gas supply shall be shut off prior to disconnecting the electrical power, before proceeding with the conversion.

1- Turn off the boiler's gas supply by turning off the gas control valve.
2- Remove the boiler's front panel by removing the four screws that secure the panel.
3- Locate the nozzle cover plate on top portion of gas valve (figure 1)
4- Remove the three screws securing the nozzle cover plate (figure 1)

Figure 1



5- Remove the plastic nozzle (NG) from the housing (figure 2)
6- Install the new inner and outer gaskets onto the new nozzle
7- Install new nozzle into housing (check the gas type displayed on the nozzle: Red nozzle is LPG; White nozzle is NG)
8- Confirm gaskets are correctly in place (the groove side of gasket must be facing outwards)



Note: The Nozzle (NG) pictured in blue in the above image should be White

9- Reinstall the nozzle cover plate using the three screws to secure it to the gas valve
10- Turn on the power and gas. Inspect for gas leaks.
11- Proceed to the next section (3.0 Commissioning)

3.0 Commissioning

This document must be read in conjunction with the I-Series Boiler Installation Manual provided with the unit. It is essential the manual is read and followed to ensure the installation is as per manufacturer's specification. The purpose of this document is to assist with the commissioning of the boiler and parameters and connection of third-party controls.

1.1 Pre Commissioning

- Ensure the boiler and flue are installed in accordance with the installation manual and the gas code.
- Ensure the power is isolated from the unit.
- Remove the front cover of the unit to expose the water pump and electrical enclosure etc.
- Ensure all electrical connections are made as per manufacturers or CHNZ wiring diagrams.

- Ensure hydronic connections of the boiler and all accessories are correct and as per design.
- Ensure condensate drain is connected using suitable materials (PVC) and trap is primed. Ensure drainage is to an appropriate location.
- Ensure that the boiler is supplied with the correct static gas pressure.
- Check the pre-charge of the system expansion vessel(s) is set to 1 bar with a static system pressure of 0 Bar.

  Natural gas - Min supply pressure 1.13 kPa, Max supply pressure 3.0 kPa.

- Failure to observe the above may result in incorrect operation of the boiler.

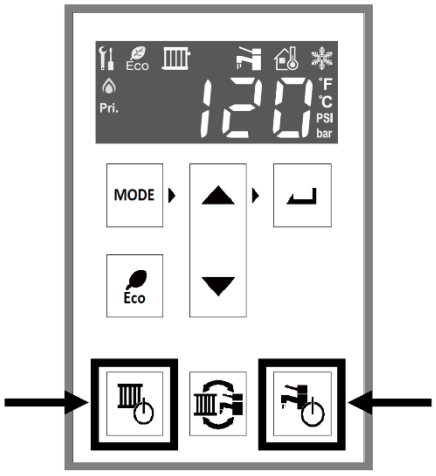
1.2 Filling the System with Water

- Ensure all valves are open and thoroughly flush the system with a flushing cart, or suitable mains pressure, until there is no sign of air returning through the primary feed pipes. This will remove most of the air from the system.
- Now ensure boiler and system AAVs are open and pressurise the system to 1 Bar on the system pressure gauge.

1.3 Deaeration Function

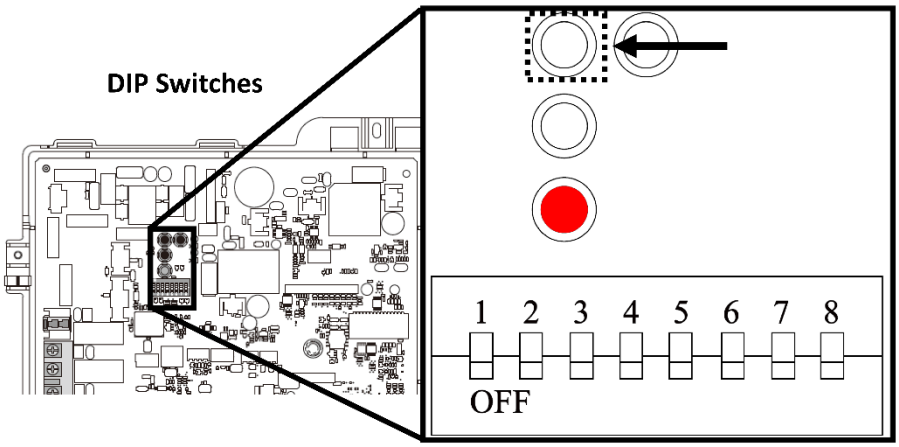
From The Boiler Control Panel

- The boiler deaeration function can be enabled by pressing and holding the DHW button then simultaneously press the CH button on the control panel (shown below).
- The deaeration function will last approximately 15 minutes and the boiler display will show “END” when this function is complete.
- Ensure system AAVs are closed once deaeration is completed.



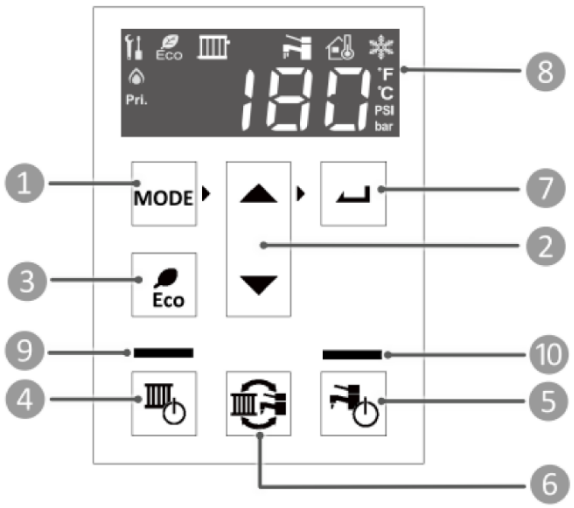
From The Boiler PCB

- The boiler deaeration function can be enabled by pressing and holding the top left black button on the boiler PCB (shown below) for 3 seconds.
- The deaeration function will last approximately 15 minutes and the boiler display will show “END” when this function is complete.
- Ensure system AAVs are closed once deaeration is completed.



2.0 Operation

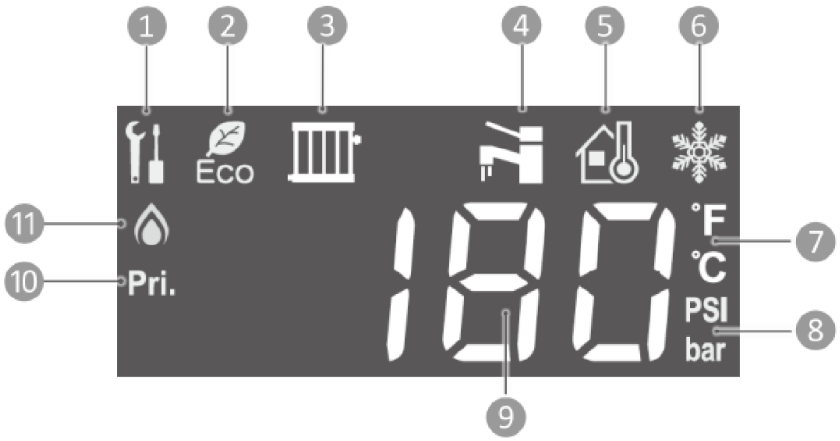
2.1 Control Panel Navigation



1. **MODE:** Select 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 (CH):** 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.
5. **DOMESTIC HOT WATER (DHW) ON:** Press to run the boiler in Domestic Hot Water mode.
6. **SWITCHING OPERATION MODE:** Press to change the display between DHW and CH for temperature setting.
7. **SELECT BUTTON:** Press to select the option in the display window.
8. **DISPLAY WINDOW:** Display boiler status information. See Display Window sect on for more information
9. **CH BUTTON LED:** When the LED light above the CH butt on is illuminated, CH mode is active.
10. **DHW BUTTON LED:** When the LED light above the DHW butt on is illuminated, DHW mode is active.

2.1 Display Identification



1. **MAINTENANCE MODE ICON:** Appears when the boiler is in Parameter Settings Mode, Deaeration Mode, Performance Data Mode, Error History Mode, etc.
2. **ECO SETTING ACTIVE:** Eco maintains temperature in the primary heat exchanger to provide quicker delivery of hot water to fixtures.
3. **CENTRAL HEATING MODE ACTIVE**
4. **DOMESTIC HOT WATER ACTIVE**
5. **OUTDOOR TEMPERATURE SENSOR CONNECTED**
6. **FREEZE PROTECTION ACTIVE**
7. **UNIT OF MEASUREMENT FOR TEMPERATURE**
8. **UNIT OF MEASUREMENT FOR PRESSURE:** Pressure and temperature are alternately displayed on the controller.
9. **SET POINT TEMPERATURE, CURRENT TEMPERATURE OR CURRENT PRESSURE, AND DIAGNOSTIC INFORMATION**
10. **PRIORITY CONTROL**
11. **FLAME ESTABLISHED LIGHT: Boiler has fired and is operating**

3.0 Connection of External Accessories

The Rinnai I-Series can be configured to use an external thermostat for heating control, control additional circulating pumps and accept an outdoor sensor.
Follow the below instructions regarding connection and configuration.

3.1 Connection of an External Thermostat

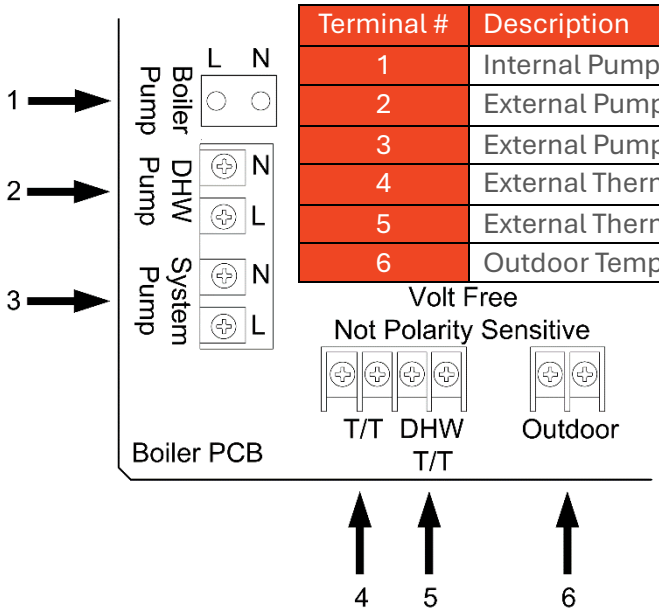
External thermostats using volt free normally open (NO) contacts should be connected to terminals T/T (Terminal #4) found at the bottom of the boiler PCB. **See figure 1.**
To enable the boiler to accept an external demand, DIP Switch 2 should be changed to the ON position (up).

3.2 Connection of an External Pump for Heating

If using an additional external circulating pump, it should be connected to terminals "System Pump" (terminal #3) found on the left-hand side of the boiler PCB.
See figure 1. See parameter list for configuration.

3.3 Connection of an Outdoor Temperature Sensor

Connection of an outdoor temperature sensor should be made to terminals Outdoor TH (terminal #6) found at the bottom of the boiler PCB. **See figure 1.**
To enable the boiler to accept an outdoor sensor, DIP Switch 1 should be set to the ON position (up). See Parameters section regarding outdoor climatic curve settings.



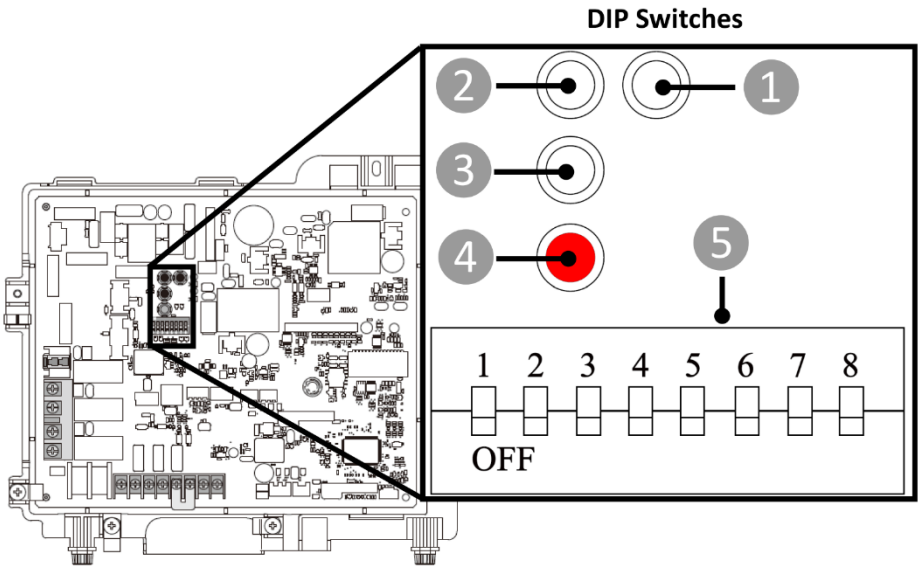
Terminal #	Description	Notes
1	Internal Pump Connection	230V AC
2	External Pump Connection (DHW)	230V AC, 2A Max
3	External Pump Connection (Heating)	230V AC, 2A Max
4	External Thermostat 1 (T/T)	Low voltage only
5	External Thermostat 2 (DHW, T/T2)	Low voltage only
6	Outdoor Temperature Sensor	10k @25°C

Fig. 1

4.0 Parameters and Features

4.1 PCB and DIP Switches Identification

To access the PCB, remove the boiler's front panel by removing the four screws that secure the panel in place. Use the diagram below to identify buttons and DIP switches



Item #	PCB Button	Primary Function	Notes
1	Button #1	Forced High/Low Fire Modes	Refer to section "12.9 Forced Hi/Low Fire Modes" of the installation manual
2	Button #2	Deaeration Mode	Refer to section 1.3
3	Button #3	Data Transfer Mode	This is for transferring PCB data when replacing the PCB. Refer to the instructions included in the replacement parts.
4	Button #4	Parameter Settings	Refer to section 4.4
5	DIP Switch	DIP Switch Settings	Refer to section 4.2

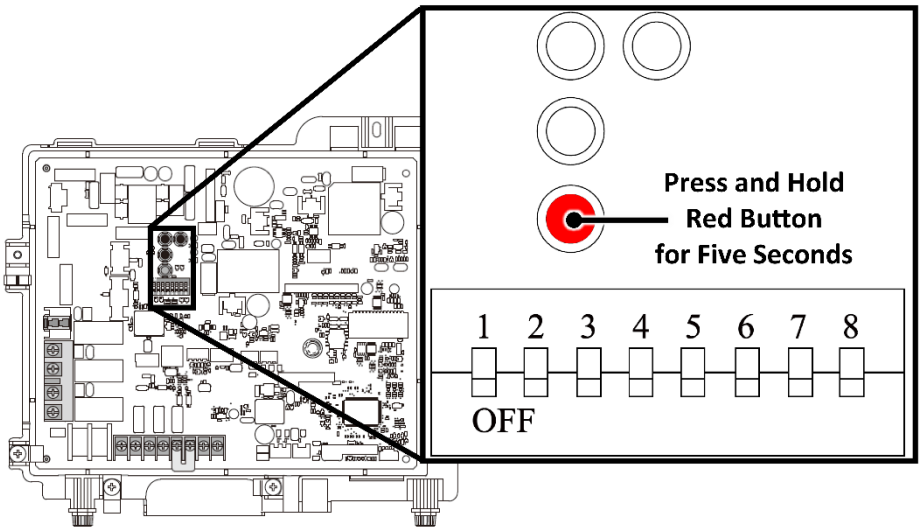
4.2 DIP Switch Settings

DIP Switch #	Function	Description	OFF (default)	ON
1	Outdoor Temperature Sensor	Enables or disables the Outdoor Temperature Sensor	Outdoor Temperature Sensor not in use	Outdoor Temperature Sensor in use
2	Thermostat usage	Changes the mode between external Thermostat control or boiler control	Central Heating ON butt on used. Boiler fires based on return water temperature	Thermostat used
3	DHW Recirculation	Enables the DHW Recirculation function for Pump 2 connection	Pump 2 Connection Enabled for Second CH Zone Pump	DHW recirculation ON (Pump 2 connection for DHW Recirculation Pump)
4	Simultaneous Central Heating and Domestic Hot Water	Enables simultaneous operation between Central Heating and Domestic Hot Water	Domestic Hot Water Priority (Heating OR Hot Water)	Simultaneous Central Heating and Domestic Hot Water Permitted
5	Gas Valve Solenoid	Shuts down the integrated solenoid gas valve manually	Normal Operation	Fixed Closed (Prevents boiler operation)
6	Altitude Setting	Sets the appropriate elevation of the boiler installation	Depends on altitude (See altitude section 8.5.3 for specific values)	
7	Altitude Setting			
8	Vent Type Selection	Not used in NZ (do not alter)	N/A	N/A

4.3 Accessing Boiler Parameters

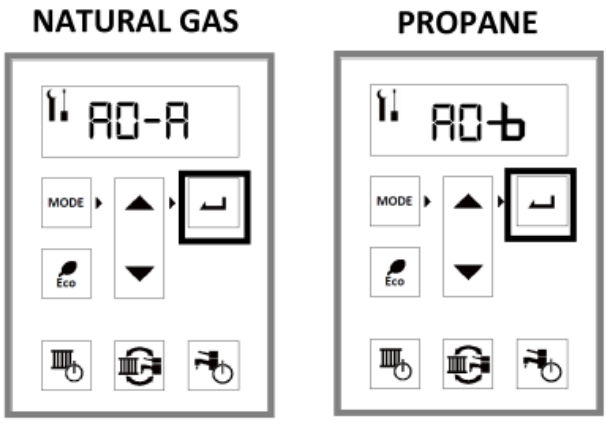
To access the parameters available on the boiler display, follow the below steps.

1. Remove the boiler's front panel by removing the four screws that secure the panel.
2. Locate the PCB (Lower left side of unit)
3. Locate the red button on the PCB
4. Press and hold the red button for five seconds



5. Press the **Mode** button on the controller
6. Scroll to parameter A0 and press the **Select** button

7. Press the **Up** or **Down** arrows to select the appropriate gas type.
    - Select **A** for Natural Gas
    - Select **b** for LPG



8. Parameter settings for conversion are complete. To enter normal operation mode, press the **Mode** button.
9. For further parameters settings repeat the below sequence,
10. Press the **Up** or **Down** arrows to select a parameter setting number. Then, press the **Select** button.
11. Press the **Up** or **Down** arrows to change the parameter number (such as 11-A or 11-b). Then, press the **Select** button on the controller to confirm.
12. To exit the parameter settings and return to normal operation, press either the **red** button on the PCB or the **Mode** button on the controller.

4.4 List of Key Parameters

Below is a list of key parameters identified by CHNZ to suit most standard boiler installations. For more bespoke control and fine tuning of specific parameters please reference the full I-Series manual 8.6.2 Parameter Settings Table.

Parameter #	Description	Default	Set To
01	**Outdoor Climatic Curve Control** This parameter is available when Dip Switch 1 is in the ON position. Select the appropriate curve below. **Curve 1:** Standard fan coils, radiators. **Curve 2**: Underfloor Heating. **Curve 3:** High temperature fan coil or undersized low level fan coil. **Curve 4:** Custom curve based on customer input. See section 8.6.3 of I-Series manual for more info.	Curve 1	Based on emitter type
10	**Max DHW Set Point Temperature** This selects the maximum limit DHW can be set to. ***Reduce to 55°C if there is no tempering valve installed**	60°C	See Note in Description
11	**Time diverter valve stays in DHW position** (Only relevant in DHW priority mode, when DIP switch 3 and 4 is in the 'OFF' position)	3 Minutes	10 Seconds
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. This can prevent unintentionally supplying high temperature water to low temperature CH applications during simultaneous operation. When selecting 'NO' limitation, the flow temperature may be up to 82°C regardless of the temperature set on the boiler. Ensure that the CH system and heating application is designed for high temperature.	Yes	Yes
41	**Linked Operation between Main Boiler Pump and CH Pump 1** This parameter is only in use when DIP switch 2 is in the ON position. This enables the linked operation between the main boiler pump and CH Pump 1. For example, when the main pump is on, pump 1 is also on. When DIP switch 2 is in the OFF position, the pumps are automatically linked.	No	Yes (Linked together. If selected, hydraulic separation is required)

Parameter #	Description	Default	Set To
01	**Outdoor Climatic Curve Control** This parameter is available when Dip Switch 1 is in the ON position. Select the appropriate curve below. **Curve 1:** Standard fan coils, radiators. **Curve 2**: Underfloor Heating. **Curve 3:** High temperature fan coil or undersized low level fan coil. **Curve 4:** Custom curve based on customer input. See section 8.6.3 of I-Series manual for more info.	Curve 1	Based on emitter type

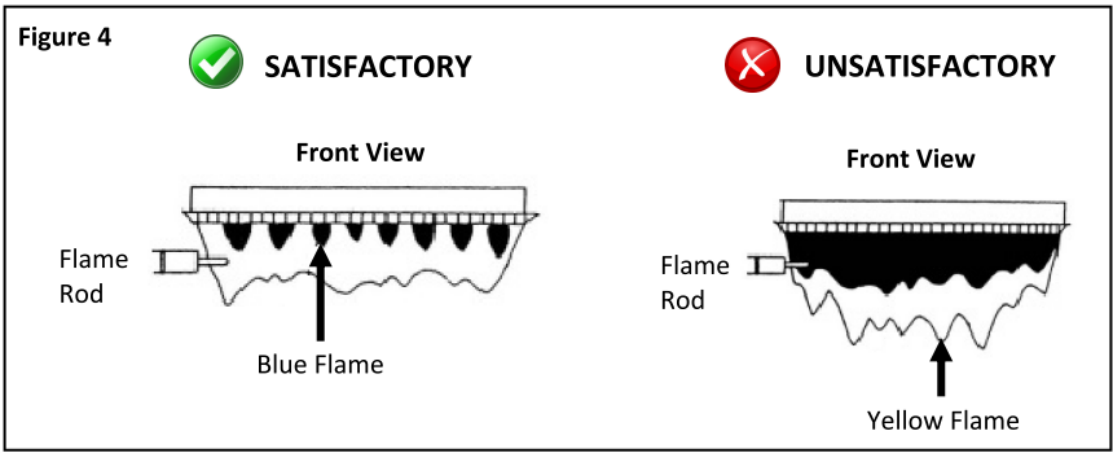
5.0 Check Operation

5.1 Check the normal operation sequence:

a. When you press the ON/OFF button, the LED display will illuminate, the combustion fan will begin to run if water is flowing, and the spark will ignite the main burner.
b. This boiler has an automatic ignition system. When the main burner has lit, the flame symbol for “in use” will glow red and the spark will stop.

5.2 Visual inspection of flame:

Check that the burner flames are operating normally. The flame can be seen through the circular window above the burner. When operating normally, the burner flame should burn evenly over the entire surface. The flame should be clear, blue, and stable. A yellow flame is abnormal, and maintenance is required



5.3 Reinstall the boiler front panel using the four screws to secure it.

6.0 Errors and Troubleshooting

To reset errors, the Central Heating or Domestic Hot Water button on the control panel will be blinking. Press the button to reset the code.

At the point of commissioning, a common error is 640 (Insufficient water flow). This is likely caused by air still being present in the system or installation debris blocking the filter ball valve. Check and clean the filter ball valve installed at the boiler and reset. For all other faults, please refer to the manufacturer's instruction manual.

Contact

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