

## **RENTAL BOILER OPERATION PROCEEDURE**

### **Warnings**

***Read Boilers Information manual. If information on RBI Futera-XLF ( manual # UMXLF-3; 82-0318) boiler user manual are not followed exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.***

***Do not store or use gasoline or other flammable vapours or liquids in the vicinity of these appliances or in this sea can.***

***Do not tamper with boiler controls or by-pass any safety devices.***

***If you smell gas, do not try to light appliance. Do not touch any electrical switch. Do not use your phone in the sea can.***

***Natural gas pressure to unit not to exceed 2 psi, gas pressure greater than 2 psi will damage gas regulators.***

***Gas installation to be performed by qualified installer.***

***Electrical installation to be performed by qualified electrician.***

***Hot Water Supply and Return piping should not exceed equipment ratings.***

***Do not block or restrict fresh air supply to boilers.***

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### **Procedure**

***We recommend start up is done in sequence below***

#### ***Building system start up***

1. Check the fresh air intake to boilers is not blocked.
2. Check the fresh air to sea can is not blocked.
3. Tie in Building supply and return to sea can labelled connections, ensure they are correctly connected.
4. Open valves on the building supply and return.
5. Start pump P-1



6. Confirm flow and bleed any air out of the system.
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### **Glycol system start up (Closed Boiler Loop)**

7. Open valves on glycol system to boilers.
  8. Start pump P-2
  9. Confirm flow and bleed any air out of the system.
  10. Make sure electrical power is on Glycol make up system.(SF-100)
  11. Do not fill glycol make up storage tank more than 2/3 full, pressure relief valves on boiler and air release valves dump back to this tank.
  12. It may be necessary to purge air from the lines before the pump can draw from the tank on the glycol make-up system. This can be done by the diverting valve, which is accessible through the hole on the left side of the cover. Turn the valve handle so it is vertical to purge air. Return to horizontal position for normal operation.
  13. Once system is filled to correct pressure, ensure that there is adequate level of fluid (about 2/3 full).
  14. Periodically check the fluid level in the storage tank. There is a strainer at the bottom of the suction hose inside the tank and should be checked monthly.
  15. SF-100 has a 55 gallon (208 litre) capacity tank.
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### **Boiler start up (Closed Boiler Loop)**

16. Ensure Expansion Tank isolation valves are open.
17. Ensure flow is established and air is bled from system.
18. Ensure boiler combustion air and boiler exhaust are not restricted or blocked.
19. Ensure gas vents piped to outside are not blocked.
20. Read Boilers Information manual. If information on RBI Futera-XLF ( manual # UMXLF-3; 82-0318) boiler user manual are not followed exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.
21. Open natural gas valves to boilers, if you smell gas close valves, do not proceed until source of smell has been repaired by qualified technician.
22. Incoming natural gas pressure not to exceed 2 psi.
23. Turn on electrical power to boilers.
24. Follow RBI Futera-XLF manual for boiler start up procedure.



5. Observe the burner flame after setting low fire. Make sure the flame is stable, but not too tight on the burner (causing infrared operation).

**WARNING** **DO NOT LEAVE THE BURNER IN AN INFRARED STATE.** A few random speckles of red are acceptable, but large concentrations of spots or large areas of red are not. If large amounts of red concentrations are observed, verify combustion readings.

**NOTICE** Leave the manometer connected to the test manifold. It will be needed for high fire operation testing.

### Verify high fire operation

1. Jumper the AA terminals on the HeatNet board and allow the boiler to rise to maximum (100%) input.
2. Allow the boiler to reach steady state combustion at high fire.
3. Verify high fire blower speed as follows:
  - a. With the manometer (or gauge) connected to the test manifold, press the **Ps (signal)** button and read the pressure.
  - b. The pressure at low fire should be as shown in Figure 18.
  - c. If the pressure is NOT correct, follow step 4.
4. If the high fire signal pressure is not correct:
  - a. Remove the jumper on A-A. The boiler will return to low fire.
  - b. Follow the instructions in the XLF Control IOM to calibrate the high fire firing rate. (Slide the HeatNet control calibrate switch to **CAL**. Follow the Control IOM procedure to navigate to the HeatNet control calibration screen.)

**WARNING** The maximum firing rate value in the HeatNet control is factory set at 90%. At this setting, at sea level, and with typical vent length, the **boiler will be at rate**. DO NOT increase the HeatNet control's maximum rate setting above 90% unless needed for high altitude installations.

- c. If **Ps** is too high, reduce the HeatNet control's maximum firing rate setting by 2%. Then slide the calibration switch to **NORMAL** and exit the HeatNet control's calibration screens. Replace the jumper on A-A and allow the boiler to return to high fire. Return to step 2 to repeat the process. If necessary, repeat this sequence, reducing the firing rate by 2% each time.

- d. If **Ps** is too low, increase the firing rate setting by 2%. Then slide the calibration switch to **NORMAL** and exit the HeatNet control's calibration screens. Replace the jumper on A-A and allow the boiler to return to high fire. Return to step 2 to repeat the process. If necessary, repeat this sequence, increasing the firing rate by 2% each time.
  - e. Check the pressure signal again. If the signal is now correct, reconnect the jumper on AA and proceed to step 5.
  - f. If the pressure signal is still not correct, verify that the air trim adjustment (see Figure 19, page 3) is in the half-open (factory setting) position. If it is at factory setting, you will need to contact technical support at the factory to troubleshoot the pressure signal issue.
5. If the pressure signal is correct, measure the flue gas CO<sub>2</sub>. It should be between 9% and 9.5%.
    - a. If CO<sub>2</sub> is correct, proceed to step 6.
    - b. If CO<sub>2</sub> is not within this range, adjust the air trim adjustment slightly (see Figure 19, page 3) on top of mixing box to achieve a CO<sub>2</sub> of 9% - 9.5%.
    - c. If adjusting the air trim adjustment does not correct the problem, contact technical support at the factory to troubleshoot the problem.
  6. If CO<sub>2</sub> and pressure signal are correct, allow the boiler to reach steady state and verify supply gas pressure and check input rates as explained in the Gas Supply Piping section.
  7. Remove jumper on AA and allow boiler to settle into minimum input. Observe the combustion readings to ensure the boiler is operating correctly.
  8. When finished, disable the low fire hold switch and replace test ports to normal state. Remove the manometer connections and close the control panel door.
  9. The Futera XLF boiler allows for many modes of operation and control methods. Reference the XLF HeatNet Control IOM.

### TO TURN OFF GAS TO APPLIANCE

1. Set the operating control to its lowest setting.
2. Turn off all electric power to the boiler if service is to be performed.
3. Close the manual main and pilot gas shut-off valves.



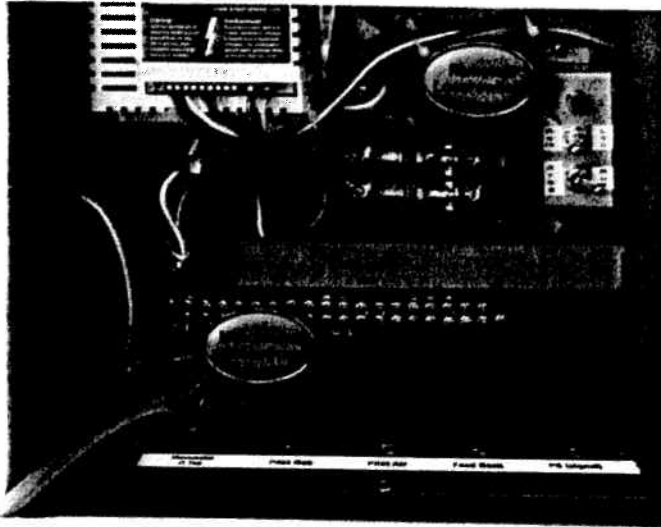
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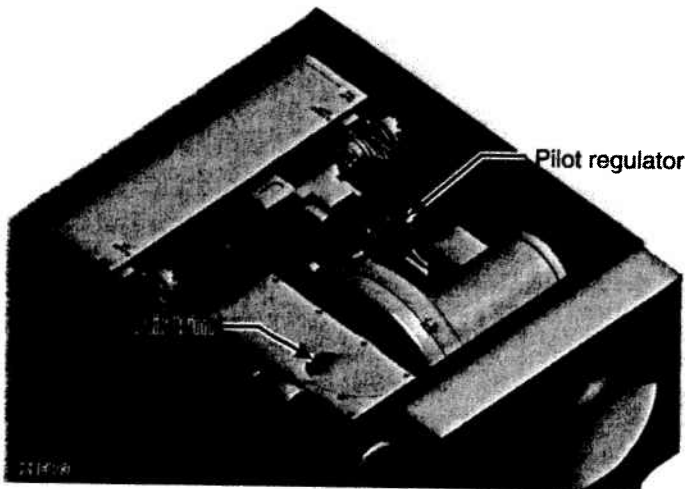


**Figure 18** Manometer connections to the test manifold (in control cabinet)



- c. Measure pilot gas pressure by pressing and holding the service valve marked **PILOT GAS**.
- d. Set pilot gas pressure to 3.0 inches w.c. ( $\pm 0.5$  inch) by adjusting the pilot gas pressure regulator, inside the air box. Access from the boiler top cover. See Figure 19.

**Figure 19** Access to air trim adjustment and pilot regulator



- e. Check pilot air pressure using service valve marked **PILOT AIR**.
- f. Pilot air pressure should be 0.60 inches w.c. ( $\pm 0.10$  inches).

**WARNING** Combustion readings must be in the range specified in the following instructions. Adjust the boiler as necessary to ensure proper combustion.

### Verify low fire operation

1. Connect a manometer or Magnehelic gauge with the pressure side to the manifold pressure port. See Figure 18, page 3 for locations.
2. Set Honeywell R7800 control to RUN position. The boiler will operate at low fire because the low fire switch is in the low fire position.
3. Measure the flue gas CO<sub>2</sub> with the boiler running at low fire. Set low fire CO<sub>2</sub> to 8.0% – 8.5% by adjustment on the Dungs valve using a 3mm Allen wrench.
  - a. Turn the wrench in small increments (10 degrees at a time).
  - b. Allow time after each adjustment for the boiler to reach steady state.
4. After setting the CO<sub>2</sub>, measure the pressure signal, **Ps**.
  - a. Press the **Ps (signal)** button and read the pressure. The pressure at low fire should be as shown in Figure 18.
  - b. If the pressure is outside this range, follow instructions in the XLF Control IOM to calibrate the firing rate. Increase rate if the pressure signal is low, or decrease rate if the signal is high.
  - c. Return to step 1 to adjust low fire CO<sub>2</sub> after changing low fire firing rate.

**WARNING** If using a U-tube manometer turned sideways for low pressure readings, you **MUST** turn the manometer upright before attempting to measure pressures at other than low fire. Pressure signal will reach up to 9 inches when the boiler is at high fire, and can cause fluid to be pulled out of the manometer into the boiler. Should this occur, immediately shut down the boiler and contact the factory for procedure. Preferably, use a Magnehelic gauge instead of a U-tube manometer to measure the pressure to avoid this potential hazard.

**Table 13** Pressure signal (Ps) (Nat Gas)

Firing rate %	XLF-2500	XLF-3000	XLF-3500	XLF-4000
	Signal Inches w.c.	Signal Inches w.c.	Signal Inches w.c.	Signal Inches w.c.
100%	-9.50	-11.00	-6.0	-8.5
20%	(-0.50) $\pm$ .1	(-0.50) $\pm$ .1	(-0.50) $\pm$ .1	(-0.50) $\pm$ .1

To determine signal in mm w.c., multiply signal pressure by 25.4.

For LP Gas: All units are tested at factory. LP Combustion Values are located on Combustion Data label.

**WARNING** To ensure proper boiler operation, boilers that use room air and vented side wall must not be fired at less than 33 % input.

# RBI®

**WARNING:** If the information in this manual is not followed exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.

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.



# FUTERAXLF

**Finned copper tube  
Gas boilers (MB) &  
Water heaters (MW)**

## User's Information Manual

**Read all instructions thoroughly, and perform regular maintenance and service as directed. Keep this manual on or near the boiler.**

Designed and tested according to A.S.M.E. Boiler and Pressure Vessel Code, Section IV for a maximum allowable working pressure of 160 psi, 1103 kpa water.

**WARNING:** Failure to properly vent this unit can cause excessive amounts of carbon monoxide, resulting in severe personal injury or death!

## BEFORE YOU START

All aspects of the boiler/water heater installation must conform to the requirements of the authority having jurisdiction, or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1-latest revision. Where required by the authority having jurisdiction, the installation must conform to the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1.

In Canada, the installation must be in accordance with the requirements of CSA B149.1 or .2, Installation Code for Gas Burning Appliances and Equipment.

The owner should maintain a record of all service work performed with the date and a description of the work done. Include the name of the service organization for future reference.

Direct all questions to your RBI distributor or contact the RBI Customer Service Department at: 260 North Elm Street, Westfield, MA 01085 for US or 7555 Tranmere Drive, Mississauga ONT L5T 1L4 for Canada. Always include the model and serial numbers from the rating plate of the boiler/water heater in question.

**CAUTION** Servicing, inspection and adjustment must be done by a trained technician in accordance with all applicable local and national codes. Improper servicing or adjustment can damage the boiler/water heater!

The boiler/water heater should be cleaned and inspected once a year, before each heating season. Make sure that the burner, ignition components and vent system are free from dust, soot, dirt, corrosion or other deposits that would impair the boiler/water heater's performance and safe operation.

**WARNING** Never store combustible materials, gasoline or any product containing flammable vapors or liquids in the vicinity of the boiler/water heater. Failure to comply with this warning can result in an explosion or fire causing extensive property damage, severe personal injury or death!

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.

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 that has been under water.

**DANGER** Propane gas may not always be detected by smell. Propane gas is heavier than air and can collect in low areas.

Propane gas can ignite and explode if an ignition source is present and result in death, serious injury and property damage!

**WARNING** The following start-up procedure assumes that all water piping, gas piping and electrical connections are correct as stated in this manual and the installation meets all State, Local, and City codes.

**NOTICE** See the Futera XLF Control IOM for troubleshooting information and control operation.

## OPERATING INSTRUCTIONS

### Operating instructions

1. If, at any time, the boiler will not operate properly, follow the instructions "TO TURN OFF GAS TO APPLIANCE," and call your service technician or gas supplier.
2. Turn off all electrical power to the boiler.
3. Close main gas shut-off valve (field supplied).
4. Purge the gas piping up to the boiler's manual gas valve (located ahead of the main gas valve). When the bleeding is complete, check all gas joints up to the gas valve for leaks.
5. Wait five (5) minutes to clear out any gas.
6. Make sure all limits, pressures switches and safety device contacts are closed.
7. Open the main gas shut-off valve.
8. Disable any external call for heat, such as from a building management system or remote operating controller.
9. Toggle the remote/local switch (in control cabinet — see Figure 18) to **REMOTE**.
10. Turn on electrical power to the boiler.
11. Turn the power switch on the front of the boiler control cabinet to **ON**.
12. The HeatNet display will light up when the power is on. If all interlocks are properly closed, the display will say **STANDBY**. If not, refer to the XLF HeatNet Control IOM for troubleshooting.
13. Slide the HeatNet control's low fire switch (on HeatNet control board) to the **LOW FIRE** position.
14. The boiler will begin the start-up sequence.
15. Allow the boiler to pre-purge and enter the pilot ignition cycle.
16. If pilot lights (indicated by a good flame signal 5.0 VDC) proceed to step 18. (See Honeywell R7800 literature for use of a meter to check flame signal if keypad readout is not available.)
17. If pilot is unstable (indicated by a low or erratic flame signal causing pilot flame failure), toggle the low fire switch to **DISABLE**, then back to **ENABLE** to start another cycle (reset the Honeywell control if necessary). Repeat for one or two more times to ensure the pilot line is purged of all air. If pilot is still unstable, the pilot gas pressure may need to be increased. See step 18.
18. Pilot pressure adjustment:
  - a. Switch the Honeywell control to **TEST** position within the first 10 seconds of the pilot ignition sequence.
  - b. Connect one side of a manometer or pressure gauge to the manometer pressure port (barbed) on the pressure test manifold (located inside control panel). See Figure 18. Leave the other side of the manometer open to the room.