CONVERSION KIT INSTRUCTIONS
NATURAL GAS TO LP & LP TO NATURAL GAS
399 Kit #550003086

⚠ WARNING

This conversion kit shall be installed by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction. If the information in these instructions is not followed exactly, a fire, an explosion or production of carbon monoxide may result causing property damage, personal injury or loss of life. The qualified service agency is responsible for the proper installation of this kit. The installation is not proper and complete until the operation of the converted appliance is checked as specified in the manufacturer's instructions supplied with the kit.

Kit installation shall be completed by qualified agency.

⚠ WARNING

Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read this instruction and understand all requirements, including requirements of authority having jurisdiction, before beginning installation. Installation not complete until appliance operation verified per Installation, Operation & Maintenance Manual provided with boiler.

Converting Boiler:

1. Follow instructions To TURN OFF GAS TO APPLIANCE found on Operating Instructions label on boiler or in Installation, Operation & Maintenance Manual. Verify all electrical power to boiler is turned off.

⚠ WARNING

Electrical shock hazard. Turn OFF electrical power supply at service panel.

2. Remove jacket from boiler.
3. Place appropriate label **"Natural to LP"** and "Converted by" labels onto boiler as shown in figure 1.

OR

4. Place appropriate label **"LP to Natural"** and "Converted by" labels onto boiler as shown in figure 1.
5. Follow instructions in "Combustion Adjustment" section of these instructions for proper startup and verification procedures.
6. Replace jacket.

⚠ CAUTION

Use of combustion analyzer is manufacturer required for safe conversion. DO NOT attempt conversion without use of combustion analyzer. Failure to follow these instructions could result in carbon monoxide poisoning.

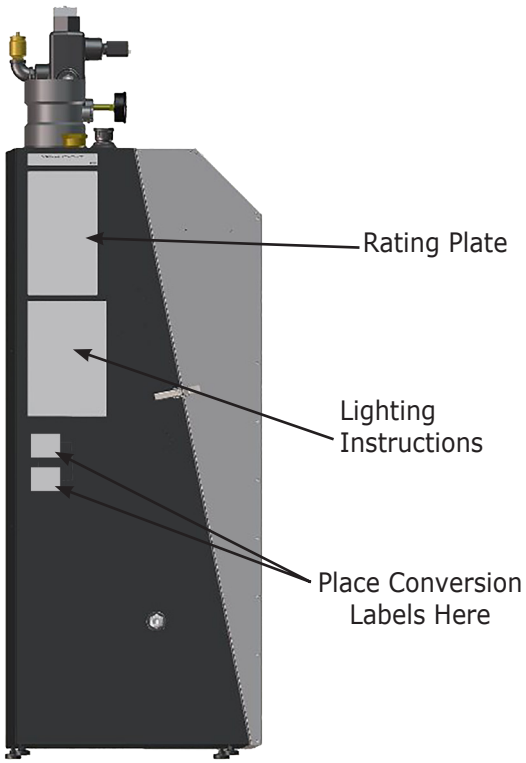
Tools Required:

1. Combustion Analyzer. See notice above.
2. Flat head screw driver.
3. T-40 Torx bit.

Parts List:

399 Gas Conversion Kit # 550003086		
DESCRIPTION	PART #	QTY
Label, "Converted By"	240008688	2
Label, "Nat to LP" conversion plate	240008961	1
Label, "LP to Nat" conversion plate	240008962	1
Instructions	240011155	1

Figure - 5 Conversion Label Placement, 399



CONVERSION KIT INSTRUCTIONS

Combustion Adjustment

Calibrated Combustion Analyzer is necessary for the following combustion adjusment.

NOTICE

Before setting combustion in HIGH fire, activate all heating zones to dump heat generated by the boiler running on high fire.

1. Enter installer menu (Enter + Menu buttons for 4 seconds).
   A. Scroll down to System Test.
   B. Push Enter button to enter System Test. When "System Test Off" displays, push Enter button and "Off" will start flashing.
   C. Scroll up to High Power and push Enter. "High Power" will stop flashing and becomes solid.
   D. Unit is now locked in high fire.

⚠ WARNING

Fire, explosion, asphyxiation and electrical shock hazard. Read this instruction and understand all requirements, including requirements of authority having jurisdiction before making adjustments. Failure to follow these instructions could result in death or serious injury.

2. Perform combustion test on HIGH fire using calibrated combustion analyzer. See Figure 4 for combustion analyzer port location. Adjust CO2 to within specifications by rotating the Throttle Screw, counterclockwise ↶ to increase CO2 level, clockwise ↷ to decrease CO2 level. See Figure 2.

   After adjusting CO2 to correct level, verify:

   (1) CO PPM level is in specified range and

   (2) flame signal is in specified range. See Appendix A page 75 of Installation, Operation and Maintenance Manual.

   CO2 level, CO PPM level, and flame signal for HIGH fire are given in the following table.

HIGH Fire Combustion - 399 MBH					
Gas	CO2			CO	Flame signal
	Min	Max	Design Target		µA
Natural Gas	9.3%	9.7%	9.5%	<200ppm	6.5 – 7.5
Propane	10.0%	11.0	10.5%		

   (3) See Flame appearance Figure 5.

FIGURE 2 - Model 399 MBH

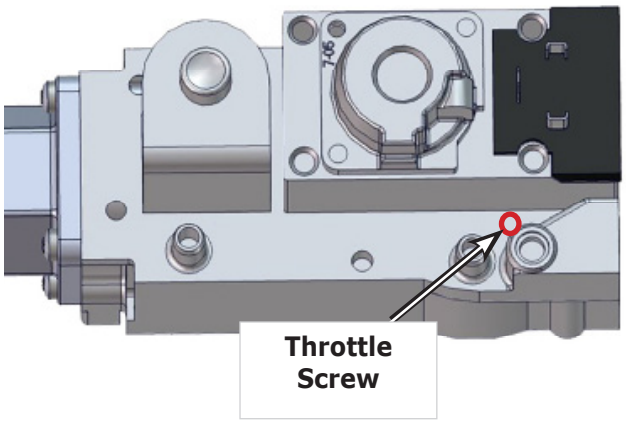
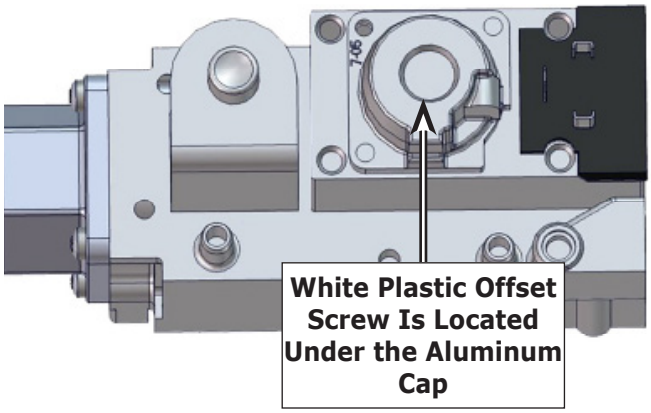


FIGURE 3 - Offset Screw Location - Model 399 MBH



CONVERSION KIT INSTRUCTIONS

3. Switch to LOW fire in boiler System Test. On user interface push Enter. "HIGH power" starts flashing. Scroll down to "Low Power". Push Enter. "Low Power" stops flashing and becomes solid. Boiler is now locked in LOW fire.

Adjust Offset Screw slowly and in small steps, no more than 1/8 of a turn each time.

Perform combustion test on LOW fire using calibrated combustion analyzer. Adjust CO2 to within specifications by turning Offset Screw, clockwise ↻ to increase CO2 level, counterclockwise ↺ to decrease CO2 level. After adjusting CO2 to correct level, verify

(1) CO PPM level is in specified range and

(2) flame signal is in specified range.

CO2 level, CO PPM level, and flame signal for LOW fire see following tables.

LOW fire combustion - 399 MBH					
Gas	CO2			CO	Flame signal
	Min	Max	Design Target		µA
Natural Gas	8.8%	9.2%	9.0%	<100ppm	>4.5
Propane	9.8%	10.5%	10.0%		

4. See Figure 3 for location of Offset Screw on modulating gas valve of various boiler models. T40 male Torx bit is necessary for removal of Offset Screw cap and adjustment of Offset Screw.

5. Set boiler to High Power using System Test to confirm combustion in High Fire (Step 2).

6. Combustion setting is now complete.

A. Exit System Test mode by pushing Enter. High Power will start flashing.

B. Scroll down to "OFF". Push Enter button "OFF" stops flashing.

C. Push Menu button twice to escape Installer Manual. Boiler returns to CH mode or DHW mode depending on type of call for heat available.

7. Check ignition quality 4 times with front jacket off. Close internal manual gas valve for 5 seconds and then re-open it. Boiler will go through post purge – prepurge – ignition sequence. Reset boiler if boiler goes into lockout.

8. Check ignition quality 4 times with the front jacket on. Close the external gas shutoff valve for 5 seconds and re-open it. Boiler will go through a post purge – prepurge – ignition sequence. Reset the boiler if boiler goes into lockout.

FIGURE 4 - Combustion Analyzer Port - 399 MBH

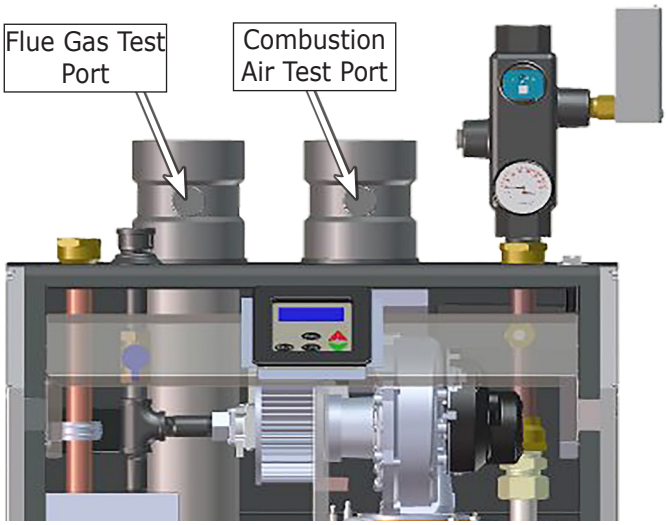


FIGURE 5 - Burner Flame