

# Gas Conversion Guide

S633100210 Rev 10/24

Applicable to models with serial number beginning with "F24" and later



Model : RTGR199N1 / RTGR199X1  
RTGS199N1 / RTGS199X1  
LT199NRX1 / LT199PRX1  
LT199NXX1 / LT199PXX1

Condensing gas water heater is configured for Natural Gas(NG) or Propane(LP) from the factory. If your gas supply is different than the factory set gas type, your water heater can be converted to burn the different gas type as follows:

## NOTICE

Conversion kit must be ordered in order to convert gas type (not included with the heater). Verify the supplied gas type before completing the gas conversion. After conversion, the label (included with the conversion kit) displaying the converted gas type must be attached to the water heater. (Refer to Figure 11)

## 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. The information in these instructions must be followed to minimize the risk of fire or explosion or to prevent property damage, personal injury or death. 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. In Canada, The Conversion shall be carried out in accordance with the requirements of the provincial authorities having jurisdiction and in accordance with the requirements of the CSA-B149.1, natural gas and propane installation code.






## CAUTION

This water heater has been set to burn Natural gas (or Propane), but can be converted to burn Propane (or Natural gas). Before operating the heater, verify that the type of gas supplied to your water heater is correct.







\* Part number

ST1147 : Propane to NG conversion kit  
ST1148 : NG to Propane conversion kit

### Included items in the gas conversion kit

#	Part	Shape	Qty	#	Part	Shape	Qty
1	MIXER ASSY' KIT		1	3	Gas Mixer Packing		1
				4	Gas Conversion Guide (This Document)		1
2	O-ring (P62)		1	5	Gas Conversion Stickers (English / French)		1

### Specifications for Orifice and Needle

Parts	Gas Type	
	NG	LP
	199K BTU	199K BTU
MIXER ASSY' KIT		
Orifice	 Engraved "8.4"	 Engraved "6.6"
Needle	 8.7mm is stamped	 6.7mm is stamped

1. Turn off both gas and water supply to the water heater. (Valves are located on the plumbing pipes.) And, turn the power off.
2. Use a screwdriver to remove 4 screws from the front cover. See Figure 1.
3. Remove AGM wire connector. See Figure 2.

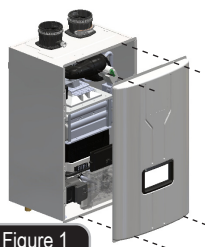


Figure 1

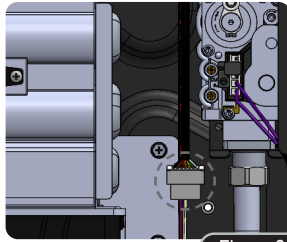


Figure 2

4. Use a screwdriver to remove the 3 screws from the air pipe. See Figure 3.
5. Loosen 2 screws to remove AGM. Separate AGM motor from AGM plate. See Figure 4.



Figure 3



Figure 4

6. Loosen 3 screws to remove 'AGM cover'. See Figure 5.
7. Use a crescent wrench and turn the nut of gas inlet pipe to release. And then loosen 3 screws to remove 'MIXER ASSY' KIT'. See Figure 6.

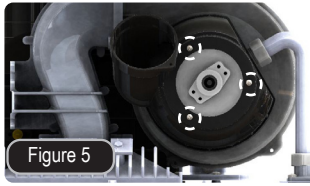


Figure 5

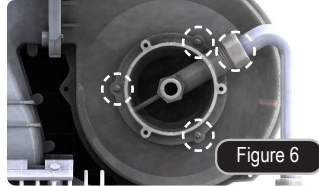


Figure 6

8. Prepare the new parts from the box. Remove the 3 screws holding the 'Needle Assembly' to the MIXER ASSY' KIT.

Needle Assembly 

9. Replace the old 'MIXER ASSY' KIT' with new one for Propane (or Natural gas) use. The gas type is printed on the MIXER ASSY' KIT, refer to the table above. A new O-ring (①) and Packing (②) are supplied with the conversion kit. Make sure to replace each part. Use a hand screwdriver to tighten the MIXER ASSY' KIT and then use a crescent wrench to tighten the gas inlet pipe to the MIXER ASSY' KIT. See Figure 7.

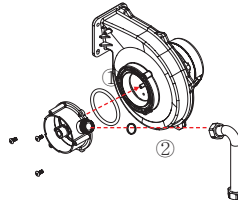




Figure 7

10. Install the new 'Needle Assembly' with the correct gas type. (Verify using Figure 8.)

[NOTE] • Make sure to confirm 'Needle Assembly' specification below.



Figure 8

Item	NG	LP
Needle Assembly	 8.7mm is stamped	 6.7mm is stamped

11. Install 'MIXER ASSY' KIT'. Tighten gas inlet pipe using crescent wrench. See figure 6. For correct orientation, ensure the gas mixer packing is in place.
12. Assemble remaining parts. See Figure 9 for the correct assembly order. For AGM placement, see Figure 12. Assemble the air pipe, see Figure 3. For AGM cover, see Figure 5.

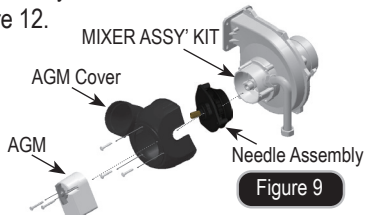


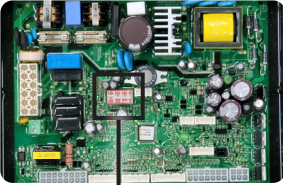
Figure 9

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13. Connect the AGM wire connector.  
14. Turn on water, gas, power.  
15. Change the dip switch on the circuit board.



Dip Switch		State	
5	Gas Type	NG : ON	LP:OFF
6	High Fire	6: ON	7: OFF
7	Low Fire	6: OFF	7: ON
6, 7	Normal Operation	6: OFF	7: OFF

	199K BTU Gas Type : LP	199K BTU Gas Type : NG
High Fire		
Low Fire		
Normal Operation		

16. Open multiple hot water fixtures and see if the heater starts the combustion and produce hot water. During the combustion, turn off the heater by using power button of the Display panel and turn it back on to confirm ignition and combustion. Repeat this couple of times.  
If the ignition starts smoothly and silent combustion, close all faucets, skip step 17 and 18 and go to step 19. If any abnormal Ignition or combustion noise has been observed, gas valve adjustment for the converted gas is required and follow the step 17 and 18.
17. Operate the water heater in the low fire state (see Step 15). Verify combustion of the water heater by measuring carbon dioxide in the combustion products.  
If the CO<sub>2</sub> value is not within  $\pm 0.1\%$  of the value listed in Table 1, the gas valve set screw needs to be adjusted.  
If adjustment is necessary, open the manifold pressure port by loosening the screw two turns as shown in Figure 10. Connect a digital manometer to the manifold pressure port.  
For dual port digital manometer, use the positive pressure side.  
Turn the set screw no more than 1/4 turn clockwise to raise or counterclockwise to lower the CO<sub>2</sub> value.

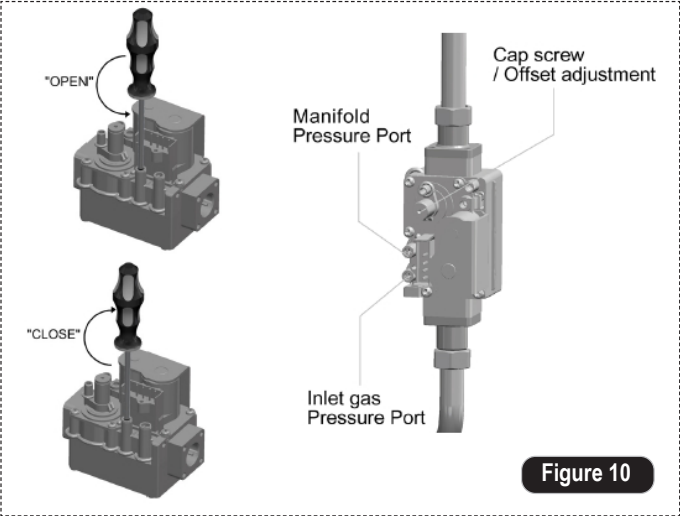
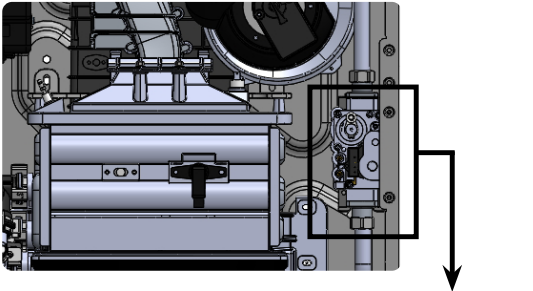


Figure 10

18. If carbon dioxide and manifold pressure value are matched with Table 1 in the low fire combustion, change dip switch setting from low to high fire and check carbon dioxide and manifold pressure values. If the values are matched with Table 1, shut off the unit and close the main gas supply. Then disconnect the hose that is connected to the manifold pressure port, then tighten the screw for the manifold pressure port, and change dip switch setting back to normal operation. Finally, close the front cover.

Table 1

Manifold pressure		LP	NG
		2" VENT / 3" VENT	2" VENT / 3" VENT
199K BTU	High fire	-0.30" $\pm$ 0.05" W.C	-0.20" $\pm$ 0.05" W.C
	Low fire	0.00" $\pm$ 0.05" WC	0.00" $\pm$ 0.05" WC

CO <sub>2</sub> value		LP		NG	
		2" VENT	3" VENT	2" VENT	3" VENT
199K BTU	High fire $\pm 0.1\%$	10.7%	10.8%	9.0%	9.1%
	Low fire	9.0% ~ 10.5%		8.3% ~ 9.5%	

19. Attach the label (Figure 11) in a conspicuous location adjacent to the rating plate.  
(French labels also included in box.)

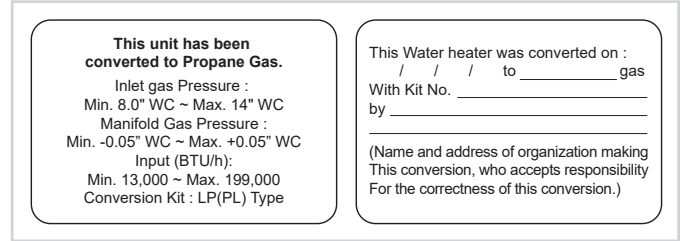


Figure 11

## Warning : AGM Mounting Position.

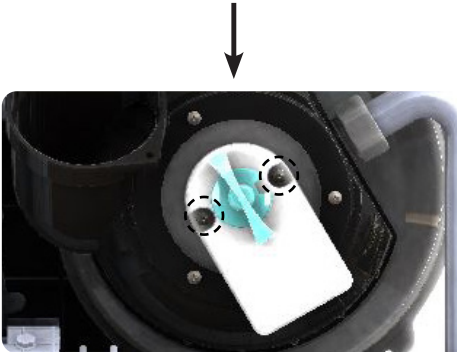


Figure 12