Rinnai®

Conversion Manual for Tankless Water Heaters

⇒ for the conversion from Natural Gas (NG) to Liquid Propane Gas (LPG)
⇒ for the conversion from Liquid Propane Gas (LPG) to Natural Gas (NG)
⇒ for adjustments at high altitude (greater than 2000 ft / 610 m) Refer to Adjust Gas Pressure Settings

***V53De*.....REU-AM1620WD-US**

This model is certified for installation in mobile homes.

⚠ 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.

FOR INSTALLATIONS 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 *CGA-B149.1, NATURAL GAS AND PROPANE INSTALLATION CODE.*

The appliance must be installed in accordance with:

- local codes or, in the absence of local codes, the *National Fuel Gas Code, ANSI Z223.1/ NFPA 54* and/or *CSA B149.1, Natural Gas and Propane Installation Code.*
- the *Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280* and/or *CAN/CSA Z240 MH Series, Mobile Homes, Series M86.*

Safety Symbols

This is the safety alert symbol. This symbol alerts you to potential hazards that can kill or hurt you and others.

⚠ DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

Technical Data (Données Techniques)

Natural Gas (Gaz Naturel) Minimum - Maximum supply gas pressure (Pression de gaz d'alimentation - Minimum - Maximum)	MIN 4.5 in (114 mm) W.C. MAX 10.5 in (267 mm) W.C.
Propane Gas (Gaz propane) Minimum - Maximum supply gas pressure (Pression de gaz d'alimentation - Minimum - Maximum)	MIN 8 in (203 mm) W.C. MAX 13.5 in (343 mm) W.C.

Technical Data (Données Techniques)

Model (Modèle)	*V53De*
Minimum Gas Consumption Btu/h (BTU/heure consummation - Minimum)	15,500
Maximum Gas Consumption Btu/h (BTU/heure consummation - Maximum)	120,000

The input rate can be verified by following the procedure in the National Fuel Gas Code (NFPA54 / ANSI Z223.1, 2006 or latest edition).
Le taux d'entrée peut être vérifié en suivant la procédure décrite dans le code national de gaz combustible (NFPA54 / Z223.1 ANSI, 2006 ou plus récente édition).

Parts List (Liste des Pièces)

The gas manifold is stamped either “LPG” for liquid propane gas or “NG” for natural gas.
(Le collecteur de gaz est estampillé soit de "LPG" pour le gaz propane liquide ou de "NG" pour le gaz naturel.)

Model (Modèle)	To Gas type (au gaz)	Kit Number (Numero de kit)	Kit Contents (Contenu de kit)				
			Conversion Rating Plate (Plaque de Conversion)	Gas Manifold (Gaz collecteur)	Damper (Amortisseur)	Instruction Label (Étiquette d'instruction)	Conversion Manual (Manuel de conversion)
V53De	LPG	103000092	100000568	106000144	106000146	100000569	100000566
V53De	NG	103000093	100000567	106000145			

V53De (REU-AM1620WD-US)		**Natural Gas** (Gaz Naturel)		**Propane Gas (**Gaz propane)	
Dip Switch Settings (commutateur position)	**Altitude**	**Max Rate (rythme max)** inches W.C. (mm W.C.)	**Min Rate (rythme min)** inches W.C. (mm W.C.)	**Max Rate (rythme max)** inches W.C. (mm W.C.)	**Min Rate (rythme min)** inches W.C. (mm W.C.)
#2 OFF, #3 OFF	0-2000 ft (0-610 m)	3.90 (99.1)	0.63 (16.0)	4.70 (119.4)	0.79 (20.1)
#2 OFF, #3 ON	2001-5200 ft (610-1585 m)	3.68 (93.5)	0.70 (17.8)	3.75 (95.3)	0.71 (18.0)
#2 ON, #3 OFF	5201-7700 ft (1585-2347 m)	3.60 (91.4)	0.70 (17.8)	3.32 (84.3)	0.74 (18.8)
#2 ON, #3 ON	7701-10200 ft (2347-3109 m)	3.46 (87.9)	0.69 (17.5)	2.71 (68.8)	0.76 (19.3)

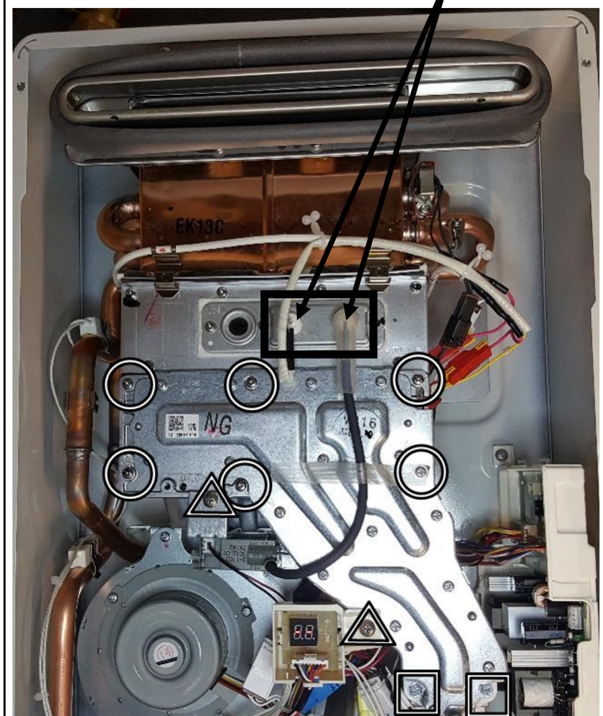
Gas Conversion Procedure

Confirm that the inlet gas pressure is between the minimum and maximum pressures allowed for this appliance.

1. Disconnect the electrical power.
2. Turn off the gas supply and water.
3. Remove 4 screws securing the front panel. Remove front panel.
   NOTE: Set aside screws in Steps 3-6 separately.
4. Remove the 6 screws ○ that attach the gas manifold to the burner case on the heat exchanger assembly. **See Figure 1**.
5. Remove the display mounting screw and the ignitor unit screw △ to replace the gas manifold. **See Figure 1**.
6. Remove the 2 screws □ that attach the gas manifold to the gas valve. These screws are machine screws and must be used at these locations.
7. Disconnect electrode and flame rod wires and remove the gas manifold.
8. Make sure that the black O-Ring is intact on the gas control valve (**see Figure 2**) and the gasket is intact on the replacement gas manifold. Position the new gas type manifold in place.
9. Install the gas manifold with the 2 machine screws □ at the gas valve.
10. Install replacement gas manifold with 6 screws ○ at burner case on the heat exchanger assembly.
11. Install the ignitor module & bracket screw and the status monitor screw.
12. Connect the electrode and flame rod wires.
13. Turn on the 120 V power supply.
14. Push and hold PB2 to enter MODE function. LED displays 1, then changes to A or C.
15. Set the gas type value to the appropriate type A (LPG) or C (NG). To do this, push PB4 until LED displays A (LPG) or C (NG).
16. Press and hold PB2 to exit MODE function.
17. Complete the section, **Adjust Gas Pressure Settings**.
18. Complete the section, **Check Operation**.
19. Complete the data on the conversion rating plate and place it on the left side of the unit to cover up the gas pressures and gas label (on indoor models) for the other gas type. Do not cover up the Recover Rating.
20. Place the instructions label on the top right side of the unit.

Figure 1

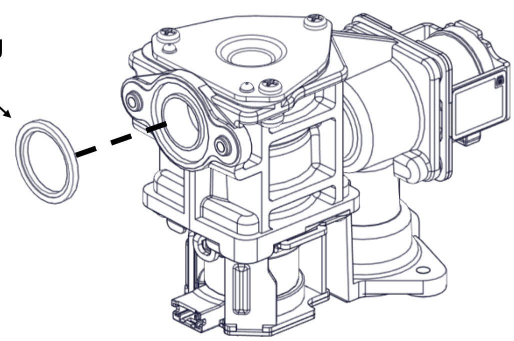
Electrode and flame rod wires



○ 6 screws (gas manifold)	△ 1 ignitor module and bracket screw and 1 status monitor screw	□ 2 machine screws (gas valve)

Figure 2

O-Ring



NOTICE	If subsequent conversions are made then a new conversion label must be placed on the water heater to accurately reflect the gas type.

Adjust Gas Pressure Settings

Complete this section for high altitude installation or after converting for gas type.
Confirm that the inlet gas pressure is between the minimum and maximum pressures allowed for this appliance.

⚠ CAUTION

Do not touch any other areas on the PC board besides the "SW" switches while power is supplied to the appliance. Parts of the PC board are supplied with 120 volts AC.

⚠ CAUTION

Do not touch the areas at or near the heat exchanger or hot water lines. These areas become very hot and could cause burns.

1. Turn OFF the gas supply.
2. Remove the front panel (four screws).
3. Check the gas type using the new rating label on the side of the unit.
4. Confirm gas type was selected correctly from the **Gas Conversion Procedure** section (steps 14-16).
5. Turn OFF the power supply.
6. Remove the test port sealing screw and attach a manometer to the burner test point located on the gas control. **Figure 1**.
7. Turn on the gas supply and the power supply.
8. If a controller is installed, turn the unit ON and select maximum delivery temperature.
9. Open all available hot water taps to flow water through the water heater at the maximum flow rate obtainable. (At least 3 gallons per minute is recommended. If there is not enough water flowing, the water heater could shut off or sustain damage due to overheating.)
10. To set unit into "Forced Low", press and hold PB5 until the LED display will show "L". The front status monitor will show "FL". **Figure 2**
11. Calibrate to Forced Low using PB3 to increase gas pressure and PB4 to decrease. **Figure 2**
12. To set unit into "Forced High", press and hold PB5 until the LED display will show "H". The front status monitor will show "FH". **Figure 2**
13. Calibrate to Forced High using PB3 to increase gas pressure and PB4 to decrease. **Figure 2**
14. Use the Gas Pressure Settings on "Technical Data" page of this manual for your model, gas type, and altitude.
15. Return the unit to normal operation by pressing and holding PB5 until the LED display turns off.
16. Close hot water taps.
17. Turn off both gas supply and 120 V power supply.
18. Remove manometer and install test port sealing screw.
19. Turn on both the gas supply and 120 V power supply.
20. Operate the unit and check for gas leaks.
21. Install the front panel using four screws.

Figure 1 Burner test point

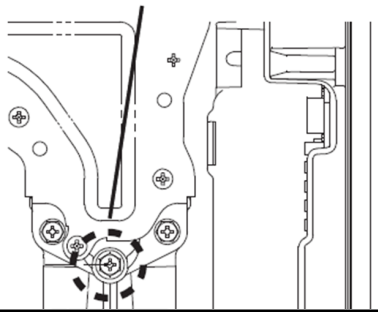
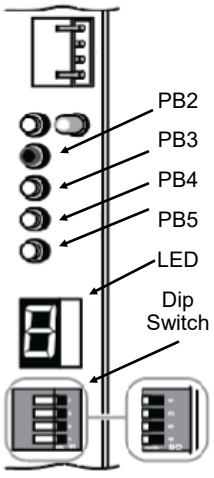


Figure 2

1. **Push Button 2 (PB2) - Black**
   MODE button, places the PCB into programming mode.
2. **Push Button 3 (PB3) - White**
   MENU button, cycles through available menus (1 - 6). Increases gas pressure during forced mode operation.
3. **Push Button 4 (PB4) - White**
   VALUE button, cycles through available menu values. Decreases gas pressure during forced mode operation.
4. **Push Button 5 (PB5) - White**
   Forced High/Low selection rate setting.
5. **LED Digital Display**
   Displays MENU (1, 2, etc.), VALUE (A, b, etc.) and Forced Low/High status (L or H).
6. **Dipswitch**
   By factory default, all switches are in OFF position. Used for High Altitude adjustment.



Check Operation

Normal Operating Sequence

When pressing the ON/OFF button, the LED display will illuminate, the combustion fan will begin to run if water is flowing, and the sparker will ignite the main burner.

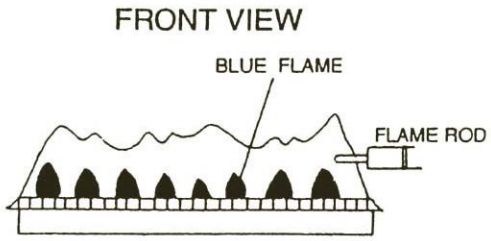
This heater has an automatic ignition system. When the main burner has lit, the combustion lamp will glow red, and the spark will stop.

Visual Inspection of Flame

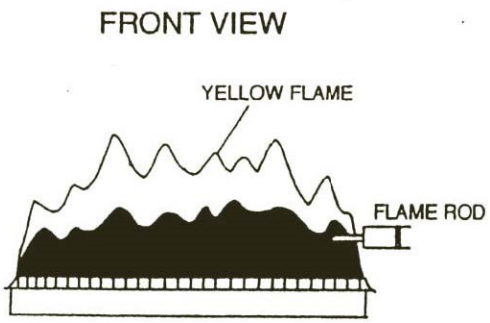
Check that the burner flames are operating normally. The flame can be seen through the circular window above the burner.

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.

SATISFACTORY



UNSATISFACTORY



FOR YOUR SAFETY READ BEFORE OPERATING

⚠ WARNING **⚠ AVERTISSEMENT**	If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

B. BEFORE OPERATING, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS:

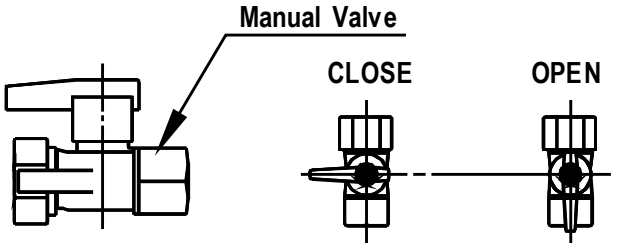
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, do not try to repair it, call a qualified licensed professional. Force or attempted repair may result in a fire or explosion.

D. Do not use this appliance if any part has been under water. Immediately call a qualified licensed professional to inspect the appliance and to replace any part of the control system and any gas control which has been under water.
(N'utilisez pas cet appareil s'il a été plongé dans l'eau, même partiellement. Faites inspecter l'appareil par un technicien qualifié et remplacez toute partie du système de contrôle et toute commande qui ont été plongés dans l'eau).

OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off electric power to the appliance using the ON/OFF button.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
5. Turn the gas valve clockwise to the full OFF position



6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to the next step.
7. Turn the gas valve counterclockwise to the full ON position.
8. Turn on electric power to the appliance using the ON/OFF button.
9. Set the thermostat to desired setting.
10. Open a hot water tap. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your licensed professional or gas supplier. See manual for additional information.

TO TURN OFF GAS TO APPLIANCE

1. Turn off all electric power to the appliance using the ON/OFF button.
2. Set the thermostat to lowest setting.
3. Turn the gas valve clockwise to the full OFF position.

Learn more about Rinnai high-performance Tankless Water Heaters, Hybrid Water Heating Systems, Boilers, Vent-Free Fan Convectors and EnergySaver® Direct Vent Wall Furnaces at:

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Local, state, provincial, federal and national fuel gas codes must be adhered to prior to and upon installation.

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