

NAVIENTM

Non-Condensing Water Heaters

Gas Conversion Guide



Model

NPN-160U/180U/199U
NPN-120E/160E/180E/199E

This water heater is configured for Natural Gas or Propane Gas from the factory. If a gas conversion is required from Natural Gas to Propane, then the included gas conversion kit must be used and the conversion process must be completed by a qualified service agency to ensure a proper conversion and operation as specified in this manual.

! DANGER

Do not perform a gas conversion without an officially approved conversion kit and the instructions supplied by Navien. Gas conversion using any other parts or the failure to strictly conform to conversion instructions will result in excessive carbon monoxide emissions and extremely dangerous conditions which may include but are not limited to fire, explosion, severe personal injury, and/or death.

! WARNING

- This conversion kit shall be installed by a qualified service agency* in accordance with Navien'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.
- Turn off electrical supply to the water heater and close the manual gas shut-off valve to isolate the water heater during conversion. Allow the water heater to cool if it has been operating.
- For propane: The propane supplier mixed an odorant with the propane to make its presence detectable. In some instances the odorant can fade, and the gas may no longer have an odor. Before startup (and periodically thereafter), have the propane supplier verify the correct odorant level in the gas.

* A qualified service agency is any individual, firm, corporation or company which either in person or through a representative is engaged in and is responsible for the connection, utilization, repair or servicing of gas utilization equipment or accessories; who is experienced in such work, familiar with all precautions required, and has complied with all of the requirements of the authority having jurisdiction.

4. Use a Phillips screwdriver to detach the Front Panel from the water heater by removing the 2 screws at the bottom of the water heater.

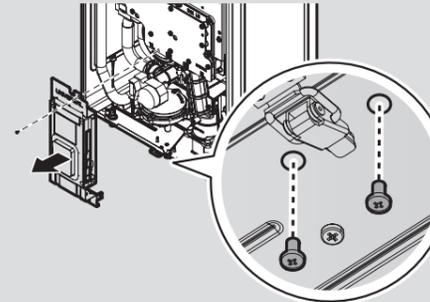


Figure 3

5. Remove the ignition transformer and disconnect the flame detector cable and the multi-stage gas valve cable. Then, remove the 10 bolts as shown in Figure 4-2 to detach the original Gas Manifold Assembly from the water heater.

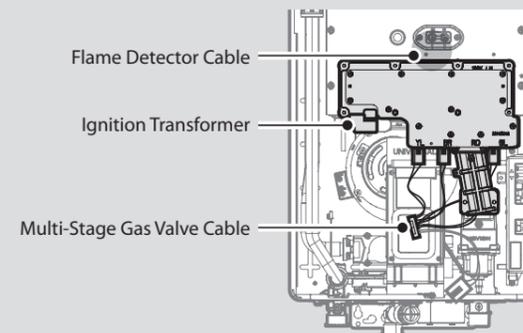


Figure 4-1

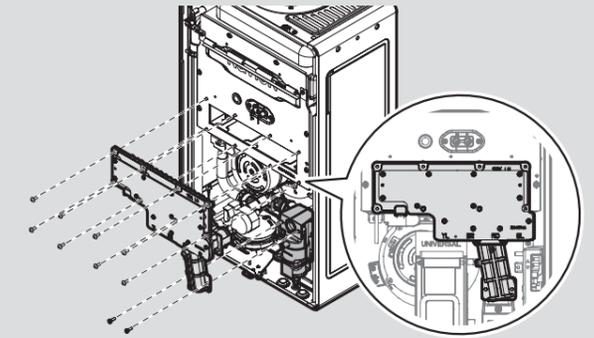


Figure 4-2

6. Reinstall the new Gas Manifold Assembly and the Front Panel to their original positions. (Use the 10 bolts for the Gas Manifold Assembly and the 3 screws for the Front Panel.) Then, reinstall the ignition transformer and reconnect the flame detector cable and the multi-stage gas valve cable.

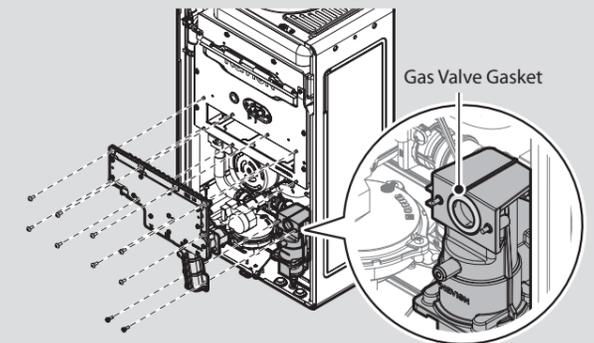


Figure 5

1 3
2 4

! WARNING

Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Tools Required:

- Phillips Screwdriver
- Dual Port Manometer
- Gas Leak Detector

Included Items:

Tee Hose Connector & Hose	8 Screws (for Manifold, 4X14) and 2 Screws (for Gas Valve, 4X10)	Spare Gas Valve Packing
Gas Manifold Assembly	Gas Pressure and Conversion Kit Number Labels	Gas Conversion Guide (Installation Manual)

Procedure:

1. Turn off both gas and water supply to the water heater.
2. Remove the two upper screws from the front cover assembly using a Phillips head screwdriver. Then, release the toggle latch from the bottom of the front cover assembly to gain access to the internal components. See Figure 1 for illustration of the front cover on the unit.

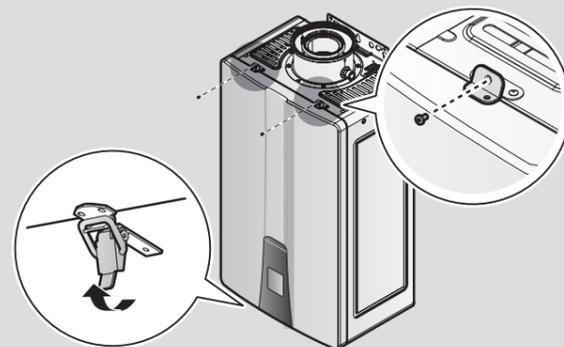


Figure 1. NPN Series Front cover

3. Once the front cover is removed, place it in a safe location to prevent accidental damage. With the internal components exposed, locate the Gas Inlet Pipe and the Gas Valve near the right side of the unit which are highlighted in Figure 2.

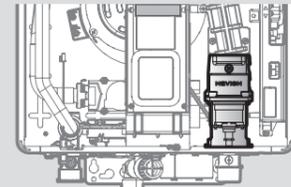
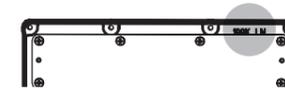


Figure 2. NPN Series Internal Components

! DANGER

Ensure that the gas you use matches the indicated NG (LN)/LP gas type. Otherwise, the water heater may not operate properly or may become severely damaged.



! WARNING

Ensure that the Gas Valve Gasket is in place. Otherwise, gas may leak, potentially resulting in an explosion and personal injury.

Note Do not overtighten the screws, as this may damage or crack the components.

7. Configure the Front Panel DIP switch setting according to the gas type.

! WARNING

Be sure to turn off the power before changing the DIP switch setting.

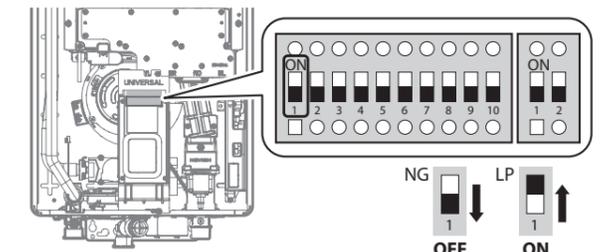


Figure 6-1. NPN Indoor Models

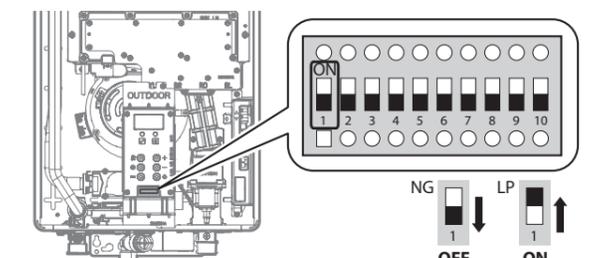


Figure 6-2. NPN Outdoor Models

! DANGER

- When conversion is required, be sure to set the Front Panel DIP switches according to the supply gas type.
- Failure to properly set the DIP switches could cause carbon monoxide poisoning, resulting in severe personal injury or death.

8. Turn on the gas and water supply to the water heater.
9. Measure and adjust the gas/air ratio using Dual Port Manometer.
 - a. Open the offset pressure port by loosening the screw.
 - b. Connect the + hose to the manifold, and then connect the - hose to the pressure feedback hose using a Tee hose connector as shown in Figure 7.

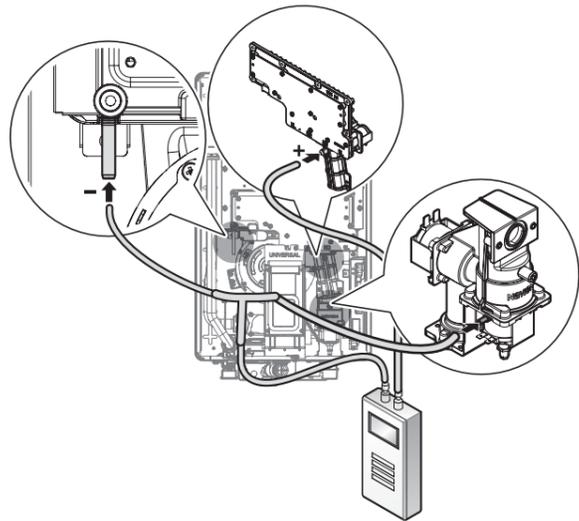


Figure 7

- c. Fully open a hot water fixture and set the water heater to operate in MIN mode by setting the DIP switches. Measure the manifold pressure and compare it to the values in Table 1. If the manifold pressure is out of range, the gas valve set screw will need to be adjusted.

If adjustments are necessary, locate the set screw as shown in Figure 9, and loosen the nut. Using a Phillips-head screwdriver, turn the set screw clockwise to raise the manifold pressure or counterclockwise to lower it. Close the nut after adjusting the gas differential pressure.

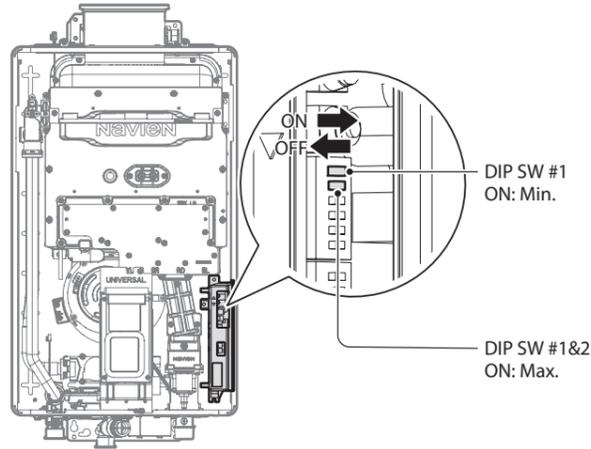


Figure 8

Gas Type	Model	Manifold & Feedback Differential Pressure
NG	NPN-120E-NG	1.44 in WC ± 0.01 in WC
	NPN-160U-NG	1.60 in WC ± 0.01 in WC
	NPN-160E-NG	1.53 in WC ± 0.01 in WC
	NPN-180U-NG	0.75 in WC ± 0.01 in WC
	NPN-180E-NG	0.52 in WC ± 0.01 in WC
	NPN-199U-NG	0.95 in WC ± 0.01 in WC
LP	NPN-120E-LP	5.19 in WC ± 0.01 in WC
	NPN-160U-LP	4.83 in WC ± 0.01 in WC
	NPN-160E-LP	4.72 in WC ± 0.01 in WC
	NPN-180U-LP	3.91 in WC ± 0.01 in WC
	NPN-180E-LP	3.72 in WC ± 0.01 in WC
	NPN-199U-LP	4.80 in WC ± 0.01 in WC

Table 2. Manifold & feedback differential pressure for high fire

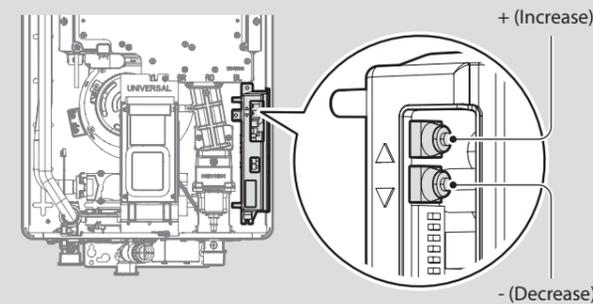
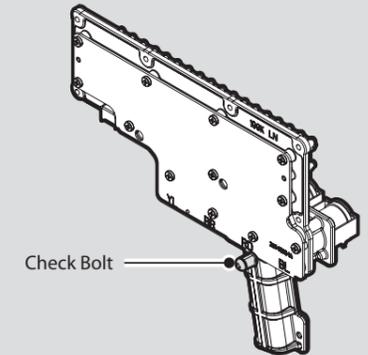


Figure 10

10. Set the DIP switches to their default settings.

! DANGER

- After checking the gas differential pressure setting, remove the manometer hose and reinstall the check bolt located on the front of the manifold body. Otherwise, gas may leak, potentially leading to severe personal injury, death, or substantial property damage.



- Ensure the leak prevention gasket is in place when reinstalling the check bolt.

5 7
6 8

Gas Type	Model	Manifold & Feedback Differential Pressure
NG	NPN-120E-NG	0.39 in WC ± 0.01 in WC
	NPN-160U-NG	0.48 in WC ± 0.01 in WC
	NPN-160E-NG	0.39 in WC ± 0.01 in WC
	NPN-180U-NG	0.24 in WC ± 0.01 in WC
	NPN-180E-NG	0.24 in WC ± 0.01 in WC
	NPN-199U-NG	0.24 in WC ± 0.01 in WC
LP	NPN-120E-LP	1.25 in WC ± 0.01 in WC
	NPN-160U-LP	1.18 in WC ± 0.01 in WC
	NPN-160E-LP	1.10 in WC ± 0.01 in WC
	NPN-180U-LP	0.98 in WC ± 0.01 in WC
	NPN-180E-LP	0.98 in WC ± 0.01 in WC
	NPN-199U-LP	0.98 in WC ± 0.01 in WC

Table 1. Manifold & feedback differential pressure for low fire

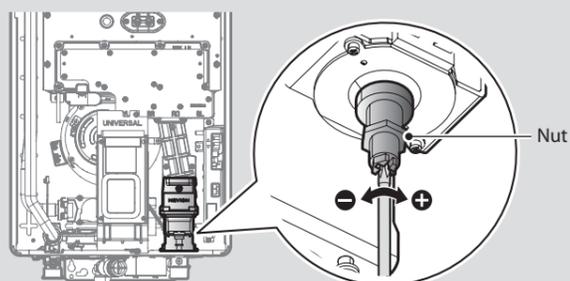


Figure 9

- d. Fully open several hot water fixtures and set the water heater to operate in MAX mode by setting the DIP switches. Measure the manifold pressure and compare it to the values in Table 2. If the manifold pressure is out of range and has to be adjusted, adjust the tact switch on the upper part of the controller shown in Figure 10. Press the Up/Down switch on the controller to raise or lower the manifold pressure.

! DANGER

Improper gas valve settings can cause severe personal injury, death or substantial property damage.

! WARNING

Reset the DIP SW #1 and #2 of the controller to OFF after setting the manifold pressure. If not, hot water may not be supplied and/or the product may be damaged.

11. Once the manifold pressure values have been confirmed and the gas conversion has been properly completed based on the provided instructions, apply the included conversion stickers to show that the appliance has been converted to natural gas or propane gas. Complete the label and place it adjacent to the rating plate as shown in Figure 11.

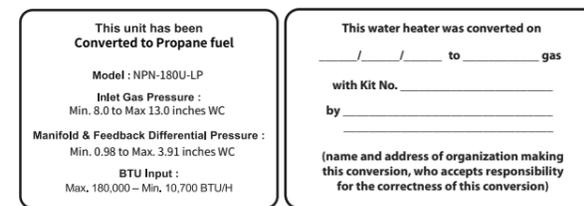


Figure 11. Proper Placement of Gas Conversion Labels

Gas Conversion Check List:

Connecting the Gas Supply	Yes	No
Does the gas supply match the gas manifold assembly and the DIP SW setting?		
Is the gas line at least 1/2 in or 3/4 in ID (Inner Diameter)?		
Is the gas supply line sufficient in length and diameter to deliver the required BTUs?		
Have you measured the pressure of the gas supply line?		

Connecting the Gas Supply	Yes	No
Is the gas supply pressure within the recommended ranges specified in this manual?		
Is the gas supply line equipped with a manual full port valve?		
Have you tested the gas line pressure and all fittings for leaks? (Including internal components)		
Has the gas company inspected the installation, if required?		
Have you reinstalled the check bolt located on the front of the gas valve after setting the manifold and feedback differential pressure?		
Have you returned the DIP S/W #1 and #2 settings to OFF after setting the manifold and feedback differential pressure?		



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