



Navien

Condensing Boilers

Gas Conversion Guide

(Altitude : 0~5,399ft)

Make sure to use this Propane conversion kit in altitudes below 5,400ft

Model

NFB-301C
NFB-399C

This boiler is configured for Natural Gas at the factory. If conversion to Propane Gas is required, use the conversion kit supplied with the boiler.

WARNING

This conversion kit must 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.

* 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.

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 CAN-B149.1 and CAN1-B149.2 Installation Code.

Tools Required:

- Phillips Screwdriver
- Flathead Screwdriver
- 5/32 in or 4 mm Allen Wrench
- T40 or 6.65 mm Star Wrench
- Combustion Analyzer or Dual Port Manometer
- Gas Leak Detector

Included Items:

- Gas Orifice (Table 1)
- Gas Pressure and Conversion Kit Number Labels

Model	NG		LP	
	1 STAGE	2 STAGE	1 STAGE	2 STAGE
NFB-301C	Ø6.75	Ø9.25	Ø5.40	Ø6.75
NFB-399C	Ø8.35	Ø15.10	Ø6.55	Ø9.50

Table 1. Orifice Size

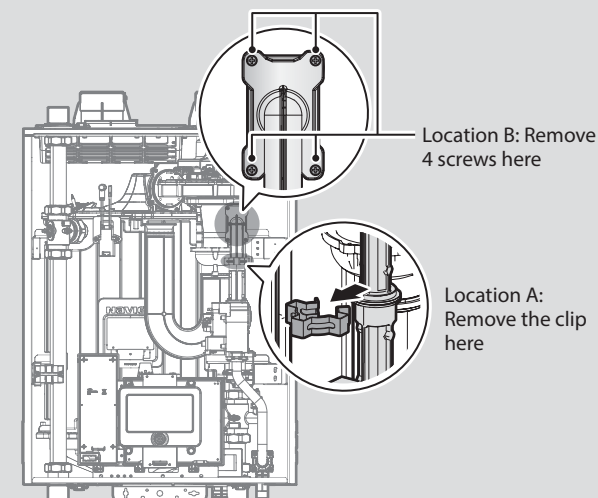


Figure 3. Detaching the Gas Valve Outlet Adapter from the Gas Valve and Fan Motor Assembly

- Once the Gas Orifice is exposed, remove the four screws that hold the part in place. Remove the Gas Orifice from its housing and prepare the new Gas Orifice for the LP conversion for installation.

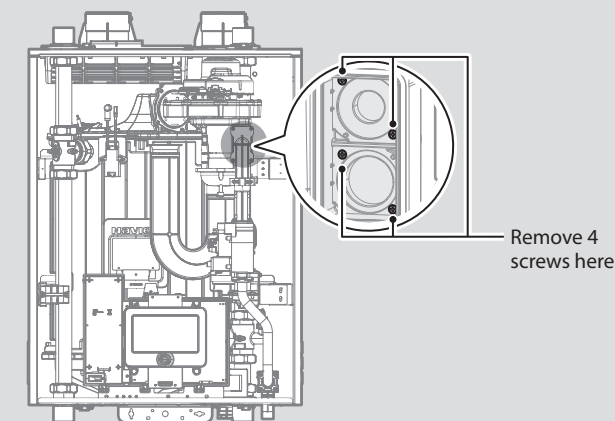


Figure 4. Access to Gas Orifice in Fan Assembly

WARNING

- DO NOT adjust or attempt to measure gas valve outlet pressure. The gas valve is factory-set for the correct outlet pressure. This setting is suitable for natural gas and propane, requiring no field adjustment.
- Attempting to alter or measure the gas valve outlet pressure could result in damage to the valve, causing potential severe personal injury, death or substantial property damage. Navien NFB boilers are shipped ready to fire natural gas ONLY.

Procedure:

- Turn off both gas and water supply to the boiler.
- Unfasten the 4 latches (2 at the top and 2 at the bottom) to remove the front cover and gain access to the internal components. See Figure 1 for illustration of the front cover clamps.

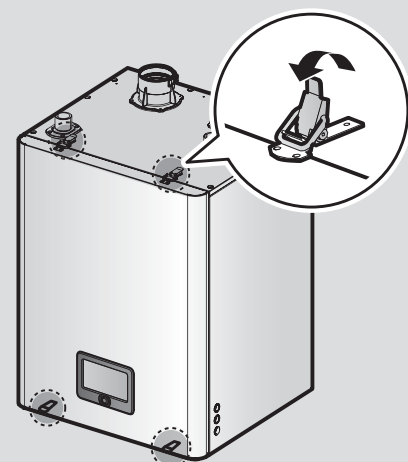


Figure 1. NFB Series Front cover

- Remove the front cover and place it in a safe location to prevent accidental damage.

- With the internal components exposed, locate the gas inlet pipe and the gas valve, as shown in Figure 2.

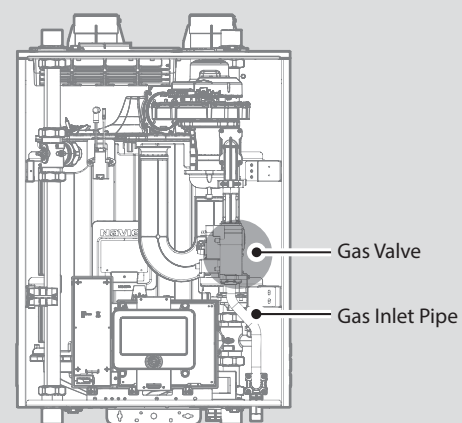


Figure 2. NFB Series Internal Components

- Remove the clip at location A – the connection above the gas valve where it connects to the gas valve outlet adapter. See Figure 3 for reference.
- Find location B - the connection above the gas valve where it is attached to the fan motor assembly. Carefully remove the four screws using a Phillips-head screwdriver and pull the gas valve outlet adapter away from the fan assembly to access the gas orifice.

1 3
2 4

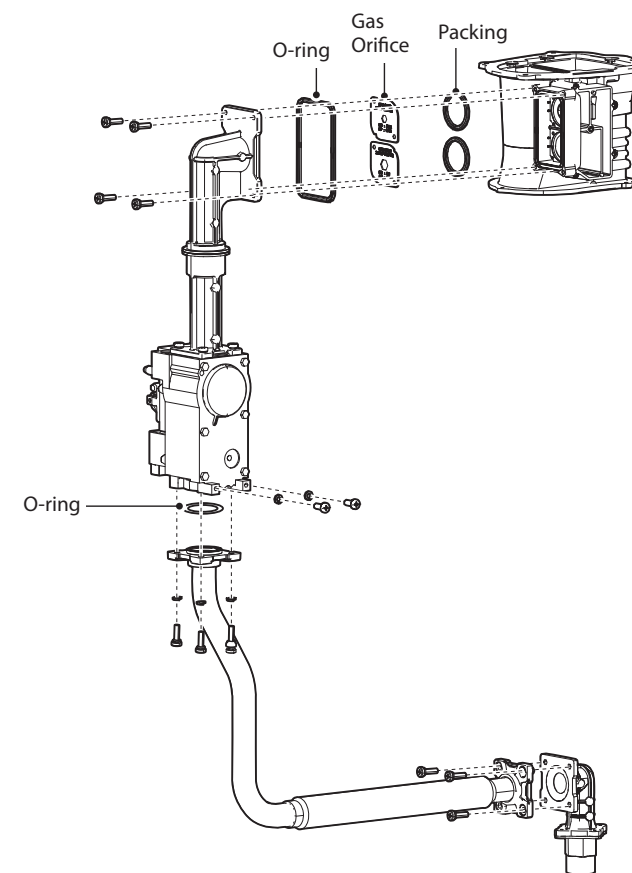


Figure 5. Exploded View of Gas Pipe Assembly

DANGER

See Figure 5. Inspect the O-ring between the gas valve and gas valve inlet adapter whenever they are disassembled. The O-ring must be in good condition and must be installed. Failure to comply will cause a gas leak, resulting in severe personal injury or death.

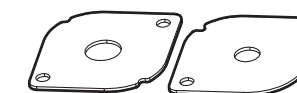
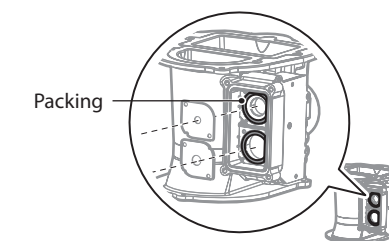


Figure 6. Orifice Identification

- Remove the Gas Orifice, ensure that the packing is properly seated inside the port, and then install the new Gas Orifice for use with LP gas. Ensure that the Orifice is properly seated on the packing inside the port before proceeding to the next step.



- Replace the gas inlet pipe to its original position and use all screws to secure all connections.

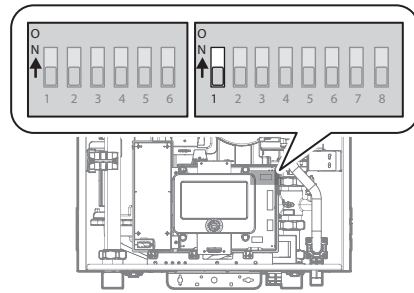
Note Do not overtighten as this may damage or crack the components.

! DANGER

Inspect the O-ring between the gas valve and gas valve inlet adapter whenever they are disassembled. The O-ring must be in good condition and must be installed. Failure to comply will cause a gas leak, resulting in severe personal injury or death.

- Set the PCB DIP switch to change the gas type. For LP, set DIP switch 2 #1 to ON. For NG, set DIP SW2 #1 to OFF.

! WARNING
Ensure that you have turned off the power to the boiler before accessing the DIP switches.



Switch	Function	Setting	
1	Gas Type	Natural Gas (NG)	1-OFF
		Propane Gas (LP)	1-ON

! DANGER

- When conversion is required, be sure to set the PCB DIP switch 2 #1 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.

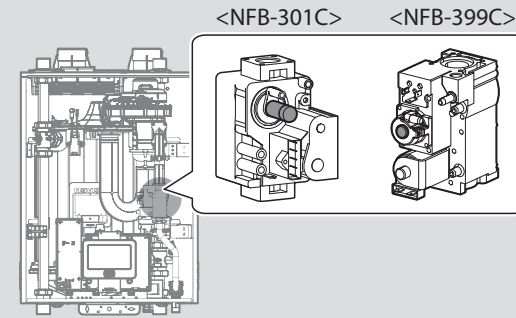


Figure 8. Set Screw Location

Note The set screw is located behind the screw-on cover. This must be removed first.

- Activate multiple zones and set the boiler to operate at 2Step MAX mode. Measure the CO₂ value at high fire. If the CO₂ values do not match Table 2 at high fire, do not adjust the gas valve. Check for the proper Gas Orifice.

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

Option 2. Using Digital Manometer

- Open the offset pressure port by loosening the screw two turns as shown in Figure 9.

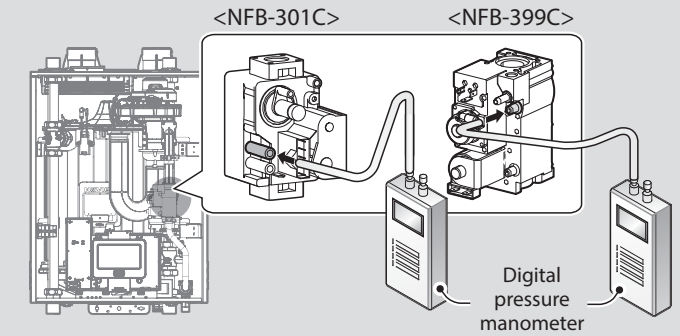


Figure 9. Connect Digital Pressure Manometer

- Connect a manometer to the offset pressure port. For dual port manometers, use the positive pressure side.

Model	Kit Part No.	Gas Type	Offset
NFB-301C	NAC-N301	NG	-0.06 in ±0.01 in
	NAC-L301	LP	-0.01 in ±0.01 in
NFB-399C	NAC-N399	NG	-0.03 in ±0.01 in
	NAC-L399	LP	-0.01 in ±0.01 in

Table 3. Offset value for low fire

- Turn on the gas and water supply to the boiler.
- Measure and adjust the gas/air ratio.

Option 1. Using Combustion Analyzer (recommended)

- Loosen the screw, rotate the plate and remove the gasket to access the emissions monitoring port as shown in Figure 7.
- Insert the analyzer into the port (Figure 7).

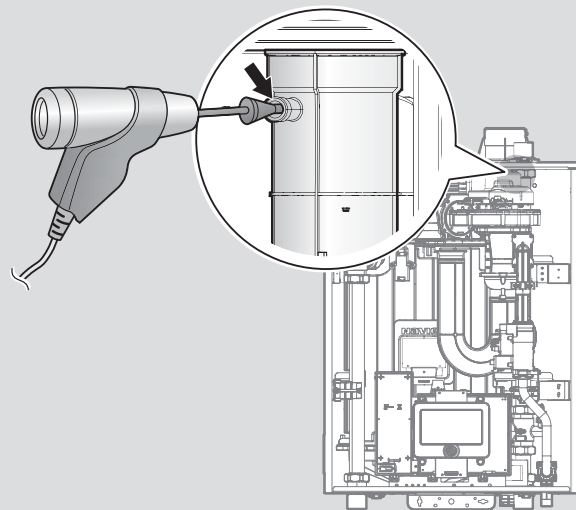


Figure 7. Insert the Analyzer

Model	Fuel	High fire	Low fire
		%CO ₂	%CO ₂
NFB-301C	NG	9.2	8.9
	LP	10.8	10.7
NFB-399C	NG	9.4	8.9
	LP	10.6	10.4

Table 2. CO₂ value
(CO₂ values must be within 0.5% of the values listed.)

- Activate multiple zones and set the boiler to operate at 1Step MIN mode. Measure the CO₂ value at low fire. If the CO₂ value is not within 0.5% of the value listed in Table 2, the gas valve set screw will need to be adjusted. If adjustment is necessary, locate the set screw as shown in Figure 8. Using a Allen or Star Wrench, turn the set screw no more than 1/4 turn clockwise to raise or counterclockwise to lower the CO₂ value.

5 7
6 8

- Activate multiple zones and set the boiler to operate at 1Step MIN mode. Measure the offset value at low fire and compare it to the values in Table 3. If the offset value is out of range, the gas valve set screw will need to be adjusted. If adjustment is necessary, locate the set screw as shown in Figure 10. Using a Allen or Star Wrench, turn the set screw no more than 1/4 turn clockwise to raise or counterclockwise to lower the offset value.

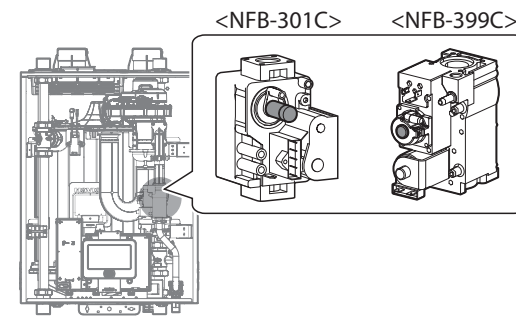


Figure 10. Set Screw Location

Note The set screw is located behind the screw-on cover. This must be removed first.

- At high fire, do not check the offset value and never adjust the gas valve.

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

- Once the CO₂ or offset values have been confirmed, apply the included conversion stickers to show that the appliance has been converted to propane gas. Place these labels adjacent to the rating plate as shown in Figure 11.

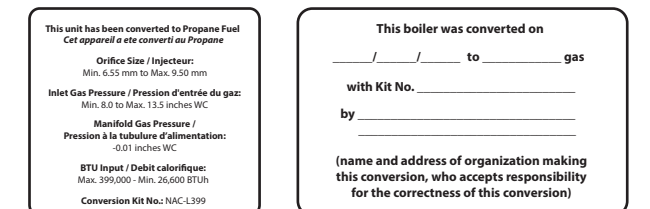


Figure 11. Proper Placement of Gas Conversion Labels

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