**Navien**

Condensing Boiler
Gas Conversion Guide

Model
NHB-055/080/110/150

This boiler is configured for Natural Gas from the factory. If conversion to Propane Gas is required, the conversion kit supplied with the boiler must be used.

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**WARNING**

This conversion kit shall be installed by a qualified service agency according to the instructions. 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.

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**Tools Required:**
- Phillips Screwdriver
- Flathead Screwdriver
- 5/32 in or 4mm Allen Wrench
- Combustion Analyzer or Dual Port Manometer
- Gas Leak Detector

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**Included Items:**
- Gas Orifice (refer to below table)
- Gas Pressure and Conversion Kit Number Labels

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**Table 1. Orifice Size**

<table>
<thead>
<tr>
<th>Model</th>
<th>NG 1STAGE</th>
<th>2STAGE</th>
<th>LP 1STAGE</th>
<th>2STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHB-055</td>
<td>0.20</td>
<td>0.55</td>
<td>0.40</td>
<td>0.50</td>
</tr>
<tr>
<td>NHB-080</td>
<td>0.20</td>
<td>0.55</td>
<td>0.40</td>
<td>0.50</td>
</tr>
<tr>
<td>NHB-110</td>
<td>0.25</td>
<td>0.00</td>
<td>0.45</td>
<td>0.385</td>
</tr>
<tr>
<td>NHB-150</td>
<td>0.40</td>
<td>0.00</td>
<td>0.65</td>
<td>0.25</td>
</tr>
</tbody>
</table>

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**Procedures:**
1. Turn off both gas and water supply to the boiler.
2. Using a Phillips screwdriver, remove 4 screws (2 from the top and 2 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.

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**Figure 1. Screw Location**

3. Remove the front cover and place it in a safe location to prevent accidental damage.
4. Label all the wires on the PCB.
5. Disconnect all the wires.
6. Loosen the three screws indicated in the figure. (Refer to Figure 2.)
7. Remove the PCB assembly.

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**Figure 2. Screw Location**

8. With the internal components exposed, locate the gas inlet pipe and the gas valve in the middle of the unit as shown in Figure 3.
9. Use a Phillips screwdriver to remove the two screws at location A - the connection below the gas valve where it connects to the gas. See Figure 4 for reference. Carefully separate the pipe from the gas valve.
10. Detach the gas inlet pipe from the gas valve and find location B - the connection about the gas valve where it is attached to the fan motor assembly. Carefully remove the four screws by hand using a Phillips screwdriver and pull the gas valve away from the fan assembly to access the gas orifice.

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**Figure 3. Gas Valve**

**Figure 4. Screw Location**

11. Expose the Gas Orifice and remove the two 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.

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**Figure 5. Access to Gas Orifice in Fan Assembly**

12. Replace the old Orifice piece with the new part for use with LP gas. Ensure that the Orifice is properly seated inside the port before proceeding to the next step.
13. Replace the gas inlet pipe to its original position and use all screws to secure all connections.

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**Figure 6. Exploded View of Gas Pipe Assembly**

**Figure 7. Orifice Identification**

**Note**

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

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**DANGER**

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

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**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 NHB boilers are shipped ready to fire natural gas ONLY.

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14. Place the PCB assembly back on to the boiler and tighten the three screws.
15. Check the labels carefully and then connect all the wires.
16. Set the front panel Dip Switch to change the gas type. For LP, set Dip Switch 2 #2 to On. For NG, set Dip Switch 2 #2 to Off.

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**WARNING**

Ensure that you have turned off the power to the boiler before accessing the Dip Switches.

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17. Turn on the gas and water supply to the boiler.
18. Measure and adjust the gas/air ratio.
   Option 1. Using Combustion Analyzer (recommended)
   a. Loosen the screw, rotate the plate and remove the gasket to access the emissions monitoring port as shown in Figure 8.
   b. Insert the analyzer into the port (Figure 8).

<table>
<thead>
<tr>
<th>Model</th>
<th>Fuel</th>
<th>High fire %CO₂</th>
<th>Low fire %CO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHB-055</td>
<td>NG</td>
<td>8.9</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>LP</td>
<td>10.2</td>
<td>10.8</td>
</tr>
<tr>
<td>NHB-080</td>
<td>NG</td>
<td>8.9</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>LP</td>
<td>10.2</td>
<td>10.8</td>
</tr>
<tr>
<td>NHB-110</td>
<td>NG</td>
<td>8.9</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>LP</td>
<td>10.2</td>
<td>10.8</td>
</tr>
<tr>
<td>NHB-150</td>
<td>NG</td>
<td>8.9</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>LP</td>
<td>102</td>
<td>10.8</td>
</tr>
</tbody>
</table>

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

19. 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 12.

Table 3. Offset Value for Low Fire

<table>
<thead>
<tr>
<th>Model</th>
<th>Kit Part No.</th>
<th>Gas Type</th>
<th>Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHB-055</td>
<td>NACN1</td>
<td>NG</td>
<td>-0.04 in x 0.01 in</td>
</tr>
<tr>
<td></td>
<td>NACL1</td>
<td>LP</td>
<td>-0.03 in x 0.01 in</td>
</tr>
<tr>
<td>NHB-080</td>
<td>NACN2</td>
<td>NG</td>
<td>-0.04 in x 0.01 in</td>
</tr>
<tr>
<td></td>
<td>NACL2</td>
<td>LP</td>
<td>-0.02 in x 0.01 in</td>
</tr>
<tr>
<td>NHB-110</td>
<td>NACN3</td>
<td>NG</td>
<td>-0.04 in x 0.01 in</td>
</tr>
<tr>
<td></td>
<td>NACL3</td>
<td>LP</td>
<td>-0.02 in x 0.01 in</td>
</tr>
<tr>
<td>NHB-150</td>
<td>NACN4</td>
<td>NG</td>
<td>-0.04 in x 0.01 in</td>
</tr>
<tr>
<td></td>
<td>NACL4</td>
<td>LP</td>
<td>-0.02 in x 0.01 in</td>
</tr>
</tbody>
</table>

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

c. Activate multiple zones and set the boiler to operate at 1-stage MIN mode.

Note: For operation mode selection, refer to “Setting the Operation Mode” on page 8.

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 9. Using a 5/32 in or 4 mm Allen wrench, turn the set screw no more than 1/4 turn clockwise to raise or counterclockwise to lower the CO₂ value.

Option 2. Using Digital Manometer

a. Open the offset pressure port by loosening the screw two turns as shown in Figure 10.

b. Connect Digital Pressure Manometer

Figure 10. Connect Digital Pressure Manometer

Figure 9. Set Screw Location

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

d. Activate multiple zones and set the boiler to operate at 2-stage D.MAX mode (refer to page 8). 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.