



HTP Comfort Solutions LLC • 272 Duchaine Blvd, New Bedford, MA 02745 • www.htproducts.com

CONVERSION INSTRUCTIONS FOR NATURAL GAS TO PROPANE (PHOENIX LIGHT DUTY – PART # 7700P-008)

STOP! Follow these instructions or warranty will be void!

DANGER

This conversion shall be done by a qualified service agency in accordance with these instructions, all applicable codes, and requirements of the authority having jurisdiction. If the information in these instructions is not followed exactly, a fire, explosion, or production of carbon monoxide may result in substantial property damage, severe personal injury, or death.

INSTALLATION MUST COMPLY WITH:

1. National Electrical Code.
2. The latest version of the National Fuel Gas Code, ANSI Z223.1.
3. In Canada, CSA C22.1 Canadian Electrical Code Part 1, and CGA No. B149 (latest version).
4. Local, state, provincial, and national codes, laws, regulations and ordinances.

ITEMS NEEDED FOR CONVERSION

INCLUDED IN KIT

- (1) Transparent Conversion Tag
- (1) Appliance Conversion Date Label
- (1) Plastic Gas ID Tag with (2) Self-Tapping #4 x 3/4" Screws to mount to the Outer Jacket Plastic Cabinet
- U.L. Approved High Temperature Metal Foil Tape
- (1) LP Burner Flange (7700P-107)
- (1) LP Air Inlet Channel Flange (7700P-106)
- (1) Control Board Programmed for LP Operation (7700P-3101)

TOOLS REQUIRED (NOT INCLUDED)

- 5/32 Hex Key
- 7/16 Socket Wrench
- Knife or Flat Head Screwdriver
- CO tester for combustion readings

These instructions are for the conversion of the Phoenix Light Duty Water Heater. DO NOT use this kit to convert any other water heater.

STEP 1: PREPARATION

Turn off all electrical power to the heater. Shut off the gas with the manual shutoff before beginning the conversion. Ensure that you are properly connected to the gas supply. Check the gas piping and pressure to assure proper sizing for the heater firing rate. It is recommended that you contact your gas supplier to verify correct gas piping size and proper connection. It may also be necessary to install a 100% lockup gas pressure regulator of sufficient size to supply the correct pressure and gas flow.

WARNING

Ensure electrical power to the water heater is turned OFF before continuing with the conversion. Failure to do so could result in property damage, serious personal injury, or death.

Wait for water heater to cool before proceeding with the conversion. Failure to do so could result in serious personal injury or death.

WARNING

Breathing Hazard - Carbon Monoxide Gas



- Do not operate heater if flood damaged.
- Install vent system in accordance with local codes and manufacturers installation instructions.
- Do not obstruct heater air intake or exhaust. Support all vent piping per manufacturers installation instructions.
- Do not place chemical vapor emitting products near unit.
- According to NFPA 720, carbon monoxide detectors should be installed outside each sleeping area.
- Never operate the heater unless it is vented to the outdoors.
- Analyze the entire vent system to make sure that condensate will not become trapped in a section of vent pipe and therefore reduce the open cross sectional area of the vent.

Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.

LP-304 4/28/09

STEP 2: REMOVE AND CONVERT COMBUSTION ASSEMBLY FOR LP OPERATION

1. Use the handholds to remove the water heater cabinet cover to expose the combustion assembly.
2. Use a 5/32 Hex Key to loosen the screw connecting the air inlet pipe to the combustion assembly. See Figure 1.
3. Remove the air intake pipe from the water heater. Set aside and save for reinstallation.
4. Disconnect the clip connecting the gas valve to the blower assembly. See Figure 2.
5. Unplug the wire from the gas valve. See Figure 3. Remove the gas valve. Set aside for reinstallation.



Figure 1 – Removing the Air Inlet Pipe

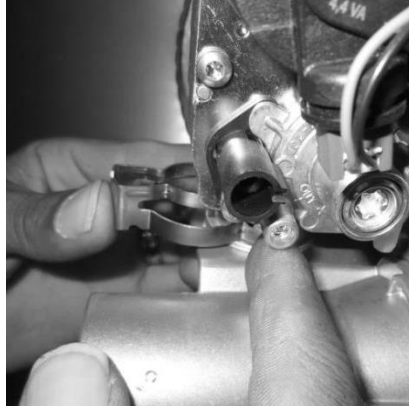


Figure 2 – Gas Valve Clip



Figure 3 – Gas Valve Wire

6. Disconnect all wires from the combustion assembly, including all those on the blower assembly and those on the spark igniter. See Figure 4.

NOTE: It is best practice to label all removed wires. This will ease reinstallation.

7. Use a 7/16 socket to remove the nuts connecting the blower assembly to the water heater. Remove the washers from the bolts. Set aside these nuts and washers for reinstallation. See Figure 5.

NOTE: Take care not to misplace the nuts and washers. Replacement nuts and washers are not included with this kit.

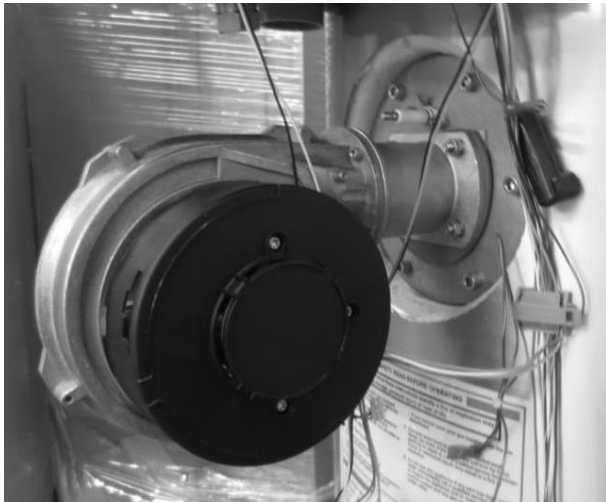


Figure 4 – Wires Disconnected from Combustion Assy



Figure 5 – Nuts and Washers Removed from Blower Assy

8. Remove the blower assembly.

9. Use a knife or flat head screwdriver to remove the black natural gas burner flange from the blower outlet. See Figure 6.
6. Replace with the orange liquid propane burner flange included in the conversion kit. See Figures 7 and 8.

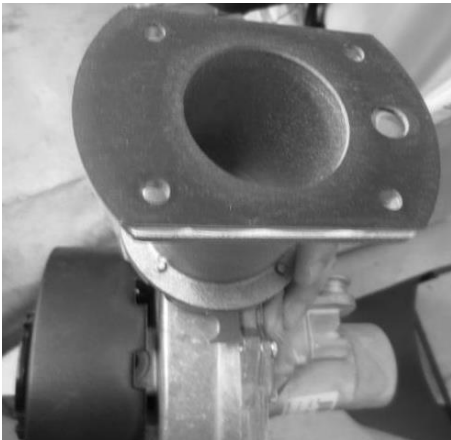


Figure 6 – Remove NG Burner Flange



Figure 7 – LP Burner Flange

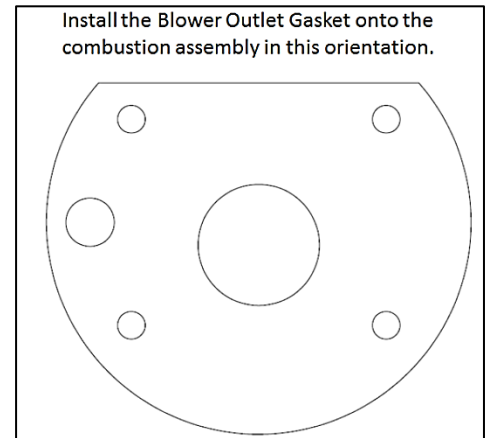


Figure 8 – Correct Flange Orientation

10. Use a 5/32 Hex Key to remove the air inlet channel from the blower. See Figure 9.
11. Remove the circular black natural gas flange from the air inlet channel. Replace with the orange circular flange included in the conversion kit. See Figure 10.

NOTE: The tab on the orange circular flange should point to the bottom of the water heater and the cutout notch must make a “C” when properly installed. See Figure 11.



Figure 9 – Disconnecting Air Inlet Channel

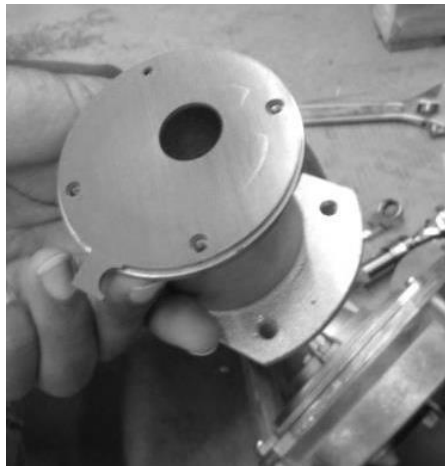


Figure 10 – LP Air Inlet Channel Flange

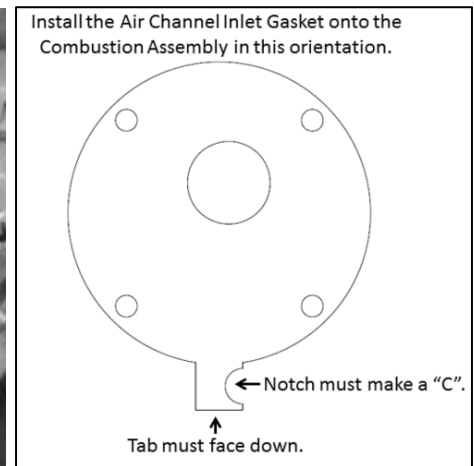


Figure 11 – Correct Flange Orientation

12. Use a 5/32 Hex Key to reinstall the air inlet channel on the blower. See Figure 9. Ensure the tab on the air inlet channel gasket faces the bottom of the blower and water heater, and is installed as described in Figure 11.
13. Reinstall the blower assembly on the water heater. See Figure 5. Place the washers on the bolts, and use a 7/16 socket to reinstall the nuts connecting the blower assembly to the water heater. See Figure 4.
14. Reconnect all wires to the combustion assembly, including all those on the blower assembly and those on the spark igniter.
15. Reconnect the clip connecting the gas valve to the blower assembly. See Figure 2.
16. Plug the wire into the gas valve. See Figure 3.
17. Reinstall the air inlet pipe. Use a 5/32 Hex Key to tighten the bolt connecting the air inlet pipe to the combustion assembly. See Figure 1.

STEP 3: REMOVE AND REPLACE CONTROL BOARD

1. Remove the eight (8) screws from the top cover of the water heater cabinet. Two (2) of these screws are located on the top of the cover. Three (3) screws are located on either side. See Figure 12.

NOTE: Take care not to lose these screws. Replacements are not included in this kit.

2. Remove and set aside the top cover.
3. Remove four (4) screws from the control bracket. See Figure 13.

NOTE: Take care not to lose these screws. Replacements are not included in this kit.

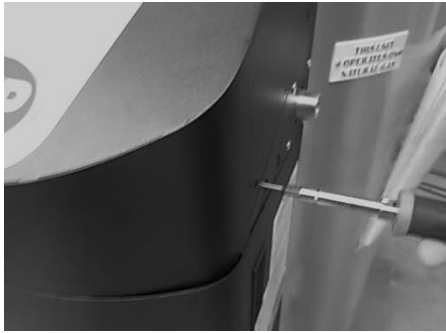


Figure 12 – Top Cover

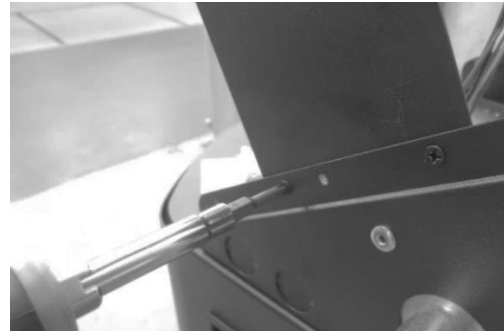


Figure 13 – Control Bracket

4. Remove the four (4) screws from the control board. See Figure 14.

NOTE: Take care not to lose these screws. Replacements are not included in this kit.

5. Disconnect all wires from the control board. See Figure 15.

NOTE: It is best practice to label all removed wires. This will ease reinstallation.

6. Remove the control board.

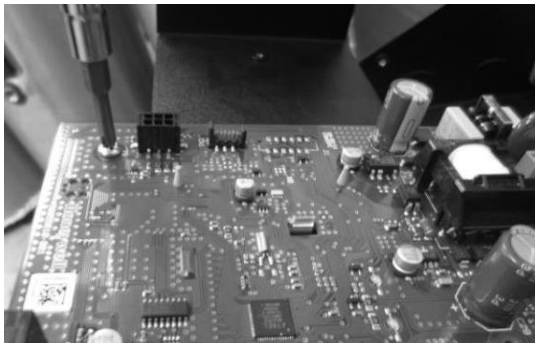


Figure 14 – Control Board Screws

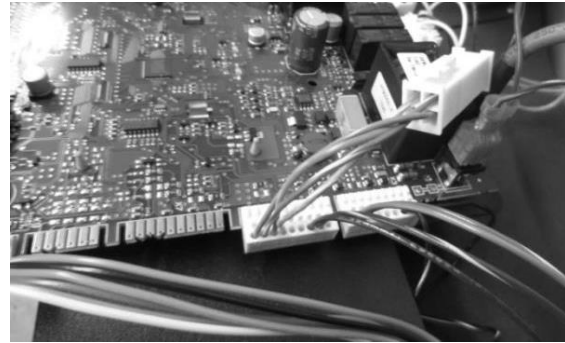


Figure 15 – Control Board Wires

7. Install the new control board with the four (4) screws removed in Step 5. See Figure 14.
8. Plug all control board wires into the new control board. See Figure 15.

NOTE: Ensure the spark cable and ground wires are properly secured before reinstalling the control bracket.

9. Reinstall the control bracket using the four (4) screws removed in Step 3. See Figure 13.
10. Reinstall the top cover of the water heater cabinet using the eight (8) screws removed in Step 1. Two (2) of these screws are located on the top of the cover. Three (3) screws are located on either side. See Figure 12.

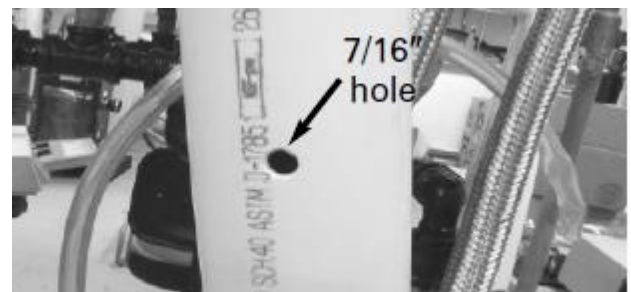


Figure 16 – Hole to be Used as Test Port

STEP 4: VERIFYING THE COMBUSTION SETTING

1. Drill a 7/16" hole into the exhaust piping one (1) foot from the heater to be used as a test port for the gas tester (CO Meter). See Figure 16.

⚠ WARNING

It is very important that this conversion is set within the recommended CO measurements. Visually looking at the burner does not determine flame quality. CO measurement with a combustion meter is the only way to assure a correct adjustment. Failure to properly adjust the flame could result in serious injury or death.

IF YOU SMELL GAS:

- Do not try to light any appliance.
- Do not touch any electrical switch.
- Do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone.
- Follow gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency, or the gas supplier.

2. Turn the manual gas shut off back on.
3. Turn on power to the heater. Verify that the tank temperature is no higher than 100°F so the burner will reach high fire. You may have to run some water through the tank to get the temperature below 100°F.

NOTE: The burner will attempt to light at this time. This is normal.

4. You can now proceed to adjust the gas by turning the throttle screw located in the front of the gas valve (see Figure 17). To adjust the valve, you will need a 5/32 Hex Key. Turn the throttle **CLOCKWISE** to increase gas supply, and **COUNTER-CLOCKWISE** to decrease gas supply.

⚠ DANGER

Installation conditions, including length of the gas line, gas pressures, richness of the gas, etc. will dictate the appropriate number of turns to properly convert the appliance to propane or natural gas. It is very important that this conversion is set within the recommended CO measurements with a combustion meter, as this is the only way to assure correct adjustment and conversion. Failure use a combustion meter to determine correct gas valve adjustment and fuel conversion will result in property damage, serious personal injury, or death.

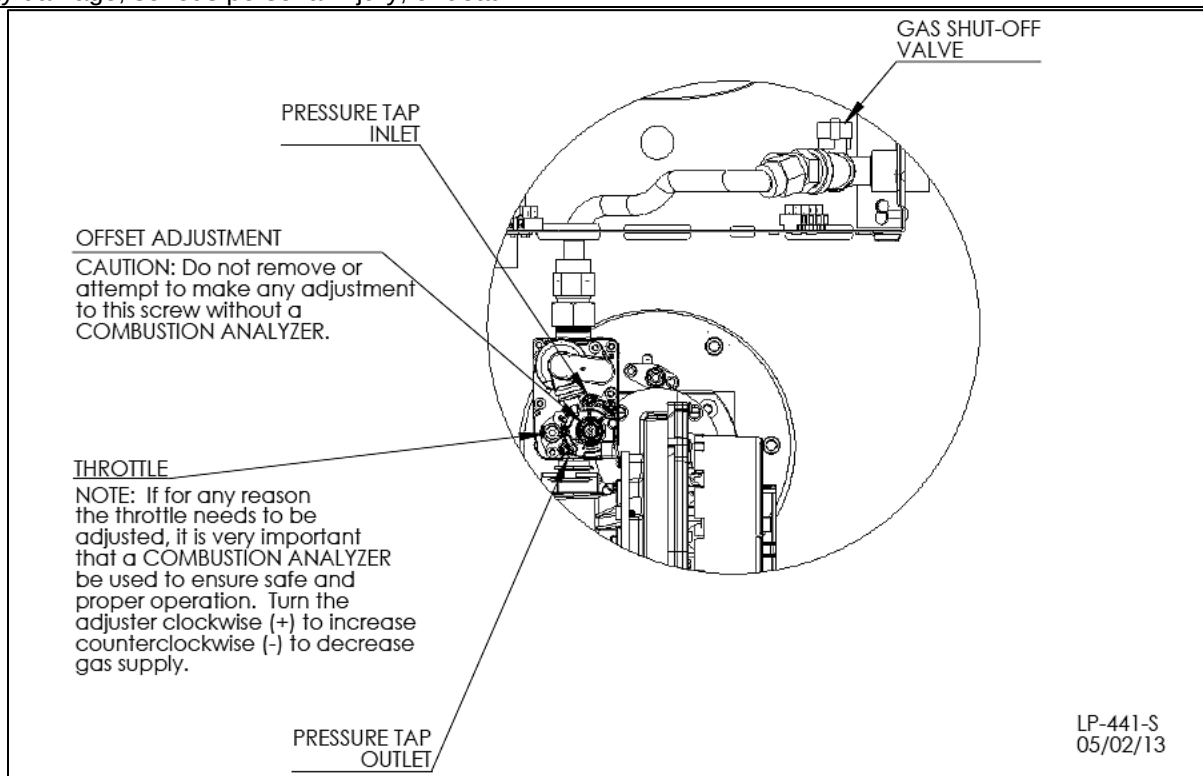


Figure 17 – Gas Valve Detail

5. Put the water heater into Test Mode by pressing **-** and **+** together for 5 seconds. In this mode the water heater operates without modulation, and the combustion system initially runs at the maximum fan speed. The SERVICE symbol is displayed on the LCD when Test mode is active.
6. Place the combustion analyzer probe into the exhaust pipe through the 7/16" hole (see Figure 18).
7. Use the **-** and **+** push buttons to change the fan speed (steps of 50 rpm) between the range *maximum fan speed* and *minimum fan speed*.
8. It is recommended that you take the gas reading first at full fan speed. Use **+** to go directly to the *maximum fan speed*. See Table 1 for fan speeds. Wait for the meter and CO reading to stabilize before continuing. Ensure CO reading falls within that stated in Table 2.

NOTE: Ensure the minimum and maximum fan speeds match those stated in the water heater installation manual.

9. After you obtain the maximum fan speed reading, use **-** to go directly to the *minimum fan speed*. Wait for the meter and CO reading to stabilize before continuing. Ensure CO reading falls within that stated in Table 2.
10. If the readings obtained are lower than the combustion readings in the chart, adjust the throttle screw in the counterclockwise direction (approx. ¼ turn) and recheck the readings. Repeat this procedure until the values obtained on the CO meter agree with Table 2.

NOTE: Test Mode will run for a maximum of 15 minutes. Test mode can be disabled by pressing the **reset** button.



Figure 18 – Inserting the Nozzle

⚠ WARNING

Breathing Hazard - Carbon Monoxide Gas



- Do not operate heater if flood damaged.
- Install vent system in accordance with local codes and manufacturers installation instructions.
- Do not obstruct heater air intake or exhaust. Support all vent piping per manufacturers installation instructions.
- Do not place chemical vapor emitting products near unit.
- According to NFPA 720, carbon monoxide detectors should be installed outside each sleeping area.
- Never operate the heater unless it is vented to the outdoors.
- Analyze the entire vent system to make sure that condensate will not become trapped in a section of vent pipe and therefore reduce the open cross sectional area of the vent.

Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.

LP-304 4/28/09

FAN SPEEDS			
BTU (FUEL)	IGNITION	MIN	MAX
76000 (NATURAL)	5000	2150	6300
76000 (LP)	3800	2100	6300

Table 1 – Fan Speeds

COMBUSTION SETTINGS ON ALL MODELS						
Fan Speed	Natural Gas			Propane LP		
	Low	Ignition	High	Low	Ignition	High
Carbon Monoxide PPM	1 – 10	2 - 15	2 – 20	1 – 10	2 - 15	2 – 20
Carbon Dioxide (CO ₂)	8 - 10%	8 – 10%	8 - 10%	8 ½ - 10 ½%	8 ½ - 10 ½%	9 - 11%

Table 2 – Combustion Settings on All Models

11. When the readings are within the specified range, record the readings on the enclosed registration form.
12. Use the handholds to reinstall the water heater cabinet cover.

STEP 5: COVER HOLE IN PIPE

After the combustion test is complete, leave Test Mode and

return to normal operation by pressing the **reset** button. The outlet temperature will be displayed. Wrap the supplied high temperature foil tape completely around the PVC pipe (as shown in Figure 19). Make sure that the area is clean before applying the tape to the PVC pipe. It is recommended that you wrap the entire diameter of the pipe to assure proper adhesion to the pipe surface.



Figure 19 – Covering the Hole in the Exhaust Vent

STEP 6: PLACE LABELS

Place labels provided with the conversion instructions in the proper locations.

- Place the label with information filled in by the Qualified Service Technician in an area close to the gas shut off as shown in Figure 20.
- Place the CLEAR WARNING LABEL THAT STATES THE TYPE OF GAS CONVERSION (provided in your conversion kit) over the existing rating label on the heater (as shown in Figure 21). Make sure to keep the model and serial numbers exposed.
- Replace the “THIS UNIT OPERATES ON” plastic tag with the new gas type (provided in the conversion kit) in the same location as the one on the heater using the provided screws (see Figure 22). NOTE: On older models, you may not have this type of tag. In this case, remove all labels referencing gas type (with the exception of the ratings label) and place the new tag provided in as conspicuous location as close to the gas valve as possible. NOTE: You may need to drill (2) 1/16” holes in order to mount the tag.
- It is VERY important that the conversion verification envelope with the Model and Serial numbers be completed and sent back to the factory to register the heater conversion and continue warranty coverage. **NOTE: FAILURE TO DO SO MAY VOID WARRANTY!** It is recommended you keep a copy of this for your records.

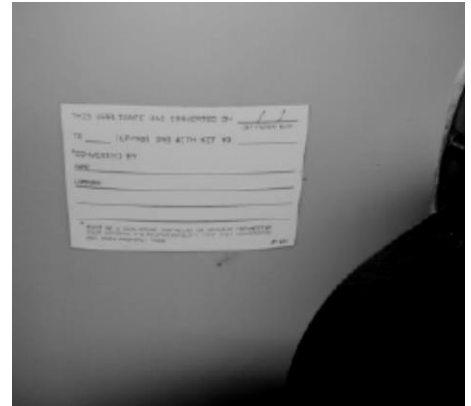


Figure 20 – Label Filled In by Service Technician

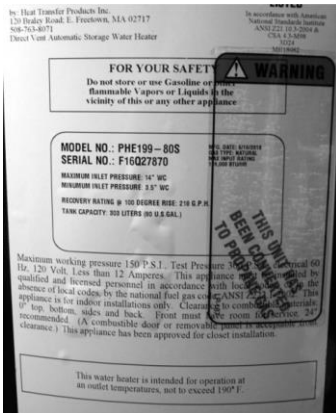


Figure 21 - Clear Label



Figure 22 – Plastic Tag