Advanced Heating and Hot Water Systems

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REFRACTORY REPLACEMENT INSTRUCTIONS FOR MOD CON 500, 850, 1000, AND 1700 BOILERS

(Part # 7250P-162)

STOP! Follow these instructions or warranty will be void!

⚠ DANGER

This installation shall be done by a qualified service agency in accordance with these instructions, all applicable codes, and requirements of the authority having jurisdiction. Failure to follow these instructions will result in substantial property damage, severe personal injury, or death.

⚠ DANGER

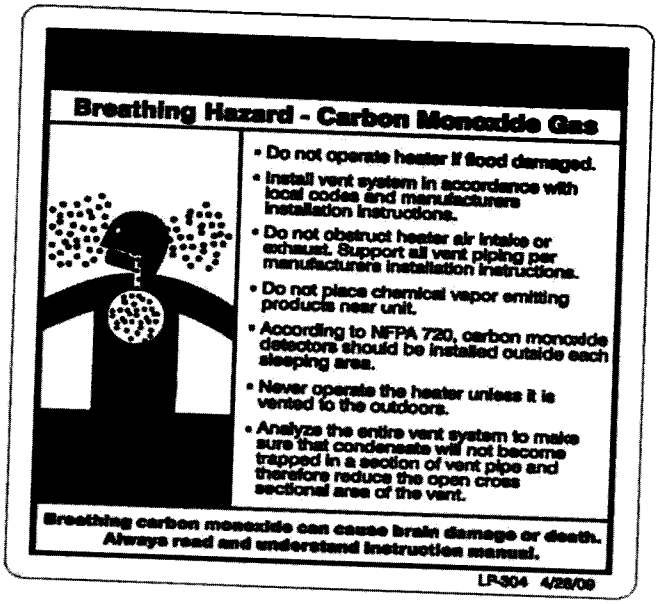
IF THE INFORMATION IN THIS MANUAL IS NOT FOLLOWED EXACTLY, A FIRE OR EXPLOSION MAY RESULT, CAUSING PROPERTY DAMAGE, PERSONAL INJURY, OR LOSS OF LIFE. DO NOT STORE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

WHAT TO DO 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 the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department. Installation and service must be provided by a qualified installer, service agency, or the gas supplier.

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.



INCLUDED IN KIT

The repair kit includes the following one (1) ceramic refractory (part # 7250P-162) and these instructions.

TOOLS REQUIRED (NOT INCLUDED)

- Flat Head screwdriver
- Phillips Head screwdriver
- 5 mm Allen key
- 10 mm wrench
- ½" wrench
- Flashlight
- Wet/Dry Vac with Long Attachment, or Plunger

STEP 1: PREPARATION

1. Turn off all electrical power to the boiler.

⚠ DANGER

Do not proceed with installation if the boiler remains powered. Failure to follow this warning will result in property damage, serious personal injury, or death from electrical shock.

2. Turn off gas supply to the boiler.

⚠ WARNING

Ensure gas supply to the boiler is shut off before continuing with burner removal and installation. Failure to follow this warning could result in property damage, serious personal injury, or death.

3. If boiler had been operating recently, make sure it has had sufficient time to cool before continuing with installation.

⚠ WARNING

Wait until boiler has had sufficient time to cool before proceeding with the installation. Failure to follow this warning could result in property damage, serious personal injury, or death.

STEP 3: REMOVING THE BURNER ASSEMBLY

1. Remove boiler front cover by firmly and carefully pulling the cover away at the handhold. Place the front cover in a safe location to avoid breaking the connecting tabs.

2. Disconnect the Molex connectors from the blower. See Figures 1 and 2.

NOTE: MOD CON 850 AND 1700 COMBUSTION SYSTEMS ARE REPRESENTED IN FIGURES 1 - 13.

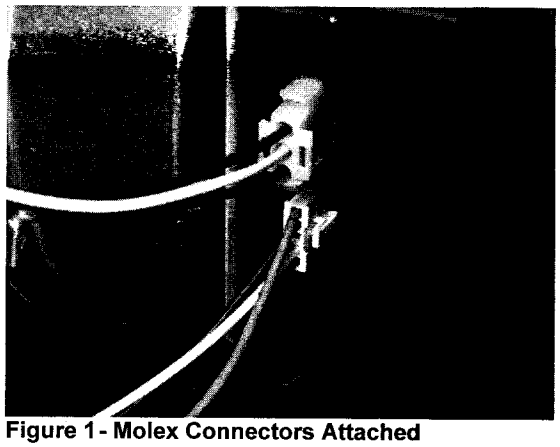


Figure 1 - Molex Connectors Attached

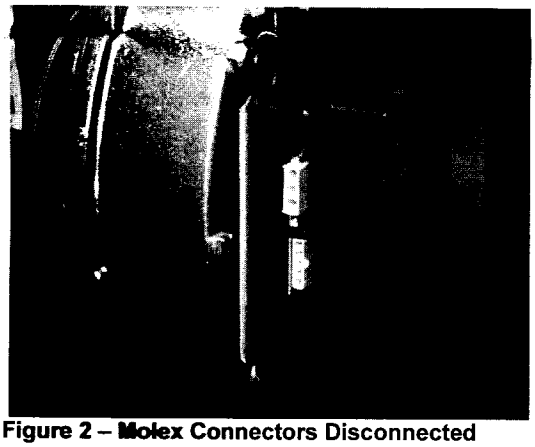


Figure 2 – Molex Connectors Disconnected

3. Disconnect spark wire and ground from spark electrode. See Figure 3.

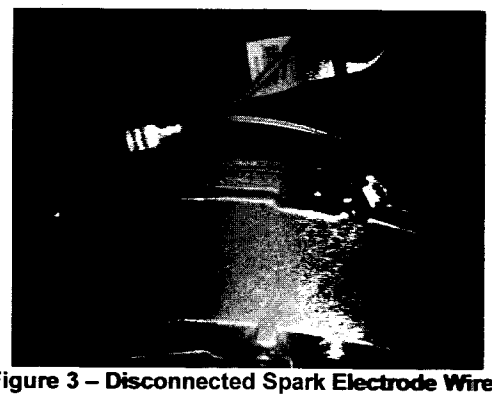


Figure 3 – Disconnected Spark Electrode Wires

4. Disconnect flame rectification wire.

5. a. ON MOD CON 850 and 1700 MODELS: Use a 5mm Allen key to loosen 4 screws on the left side of the gas valve. See Figure 4. Remove the 2 front screws. Leave the 2 rear screws loosened, but connected to the gas valve. This will allow for easier proper realignment.

NOTE: DO NOT lose gas valve O-ring or screws. These parts ARE NOT included with this kit, and are needed for reinstallation.

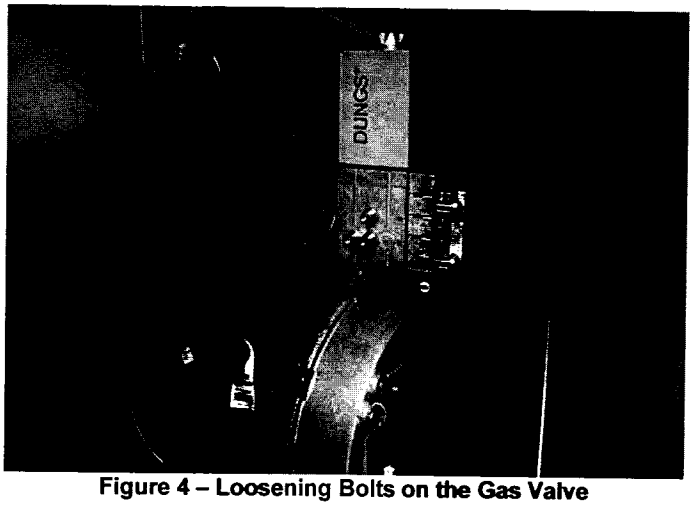


Figure 4 – Loosening Bolts on the Gas Valve

5. b. ON MOD CON 500 and 1000 MODELS: Use an adjustable wrench to loosen and remove the gas line from the blower assembly.

6. Remove 4 bolts from blower flange with a ½" wrench. Remove entire blower assembly. See Figure 5.

NOTE: Do not lose the ½" bolts. These are required for reinstallation and ARE NOT included in this kit.

7. Remove 6 nuts from the burner assembly with a 10 mm wrench. See Figure 6.

NOTE: Do not lose the 10 mm nuts. These are required for reinstallation and ARE NOT included in this kit.

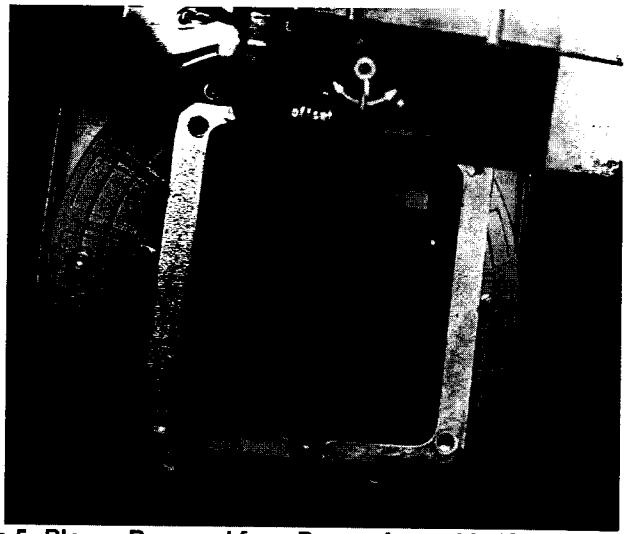


Figure 5- Blower Removed from Burner Assembly (Gasket Shown)

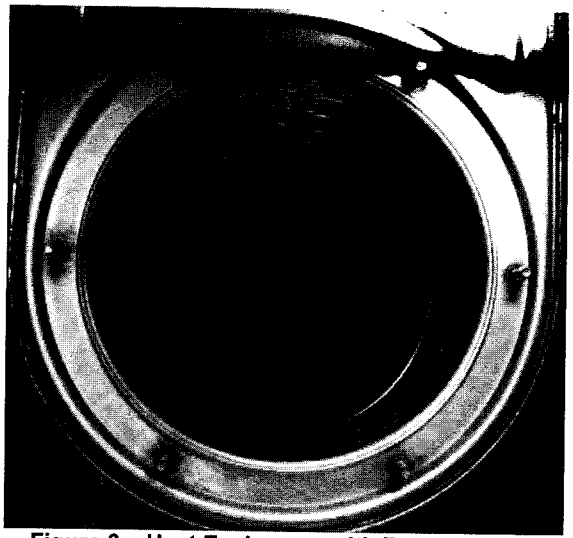


Figure 6 – Heat Exchanger with Burner Removed

8. Carefully remove the burner assembly and place in a safe location to protect it from damage.

⚠ WARNING

The combustion chamber insulation in this product contains ceramic fiber material. Ceramic fibers can be converted to cristobalite in very high temperature applications. The International Agency for Research on Cancer (IARC) has concluded, "Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1)."

- **Avoid breathing dust and contact with skin and eyes.**
- **Use NIOSH certified dust respirator (N95). This type of respirator is based on the OSHA requirements for cristobalite at the time this document was written. Other types of respirators may be needed depending on job site conditions. Current NIOSH recommendations can be found on the NIOSH website: http://www.cdc.gov/niosh/homepage.html. NIOSH approved respirators, manufacturers, and phone numbers are also listed on this website.**
- **Wear long-sleeved, loose fitting clothing, gloves, and eye protection.**
- **Apply enough water to the combustion chamber lining to prevent dust.**
- **Wash potentially contaminated clothes separately from other clothing. Rinse clothes washer thoroughly.**

NIOSH stated First Aid.

- **Eye: Irrigate immediately.**
- **Breathing: Fresh air.**

9. Shine a flashlight into the heat exchanger and inspect the refractory. If the refractory is significantly damaged, the heat exchanger will need to be inspected more thoroughly for damage.

10. Follow the heat exchanger cleaning procedure as described in the appliance Installation Manual, Maintenance section.

11. Use a Wet/Dry Vac to clean all of the debris from the combustion chamber. Ensure all pieces of the refractory are removed from the heat exchanger before continuing to refractory installation.

STEP 4: INSTALLING THE NEW REFRACTORY

⚠ WARNING

The new refractory ships wrapped in plastic. DO NOT REMOVE THIS WRAPPING. Install the refractory with the wrapping intact. Failure to follow this warning could result in property damage, serious personal injury, or death. See NIOSH warning above.

1. Examine the new refractory. See Figures 7 and 8.

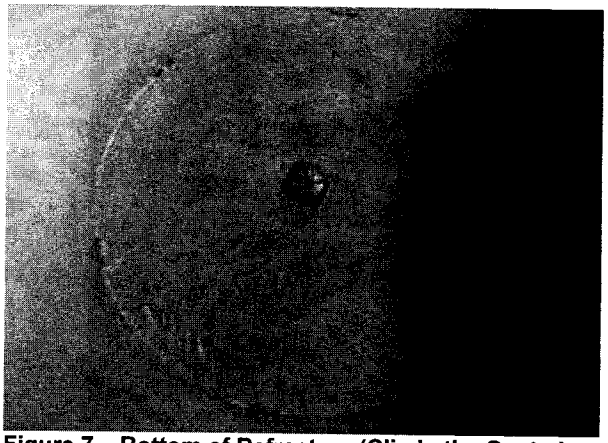


Figure 7 – Bottom of Refractory (Clip in the Center)

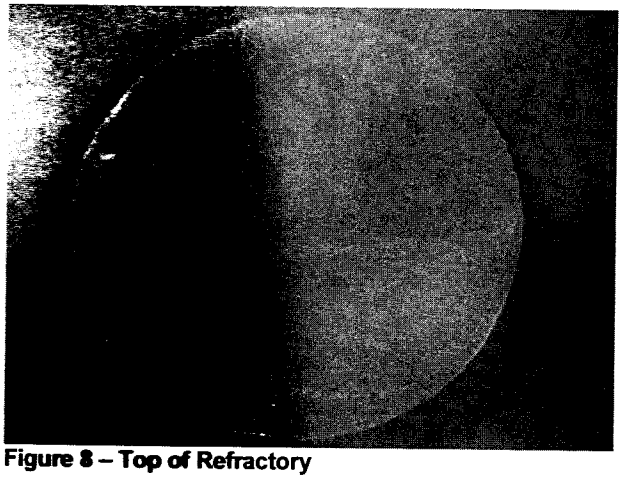


Figure 8 – Top of Refractory

The bottom of the refractory features a clip directly in the center. The top of the refractory does not. The bottom of the refractory is to be installed facing the heat exchanger target wall. The top of the refractory faces out.

2. Place the new refractory into the heat exchanger. See Figure 9.

3. Use a Plunger or Wet/Dry Vac nozzle to guide the refractory into the target wall of the heat exchanger. See Figure 10.

4. Press the refractory firmly but gently against the target wall until it fully engages.

Figure 9 - Refractory Placed in Heat Exchanger

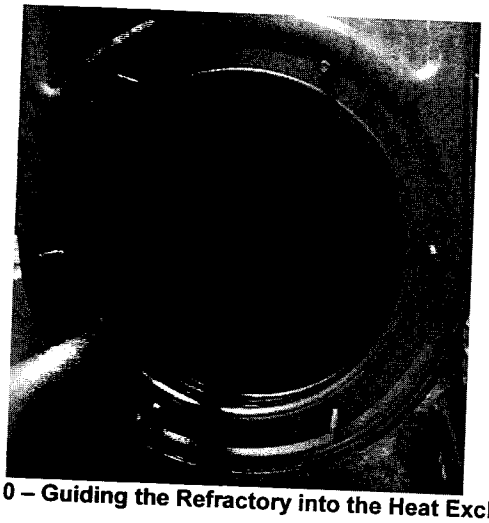


Figure 10 – Guiding the Refractory into the Heat Exchanger

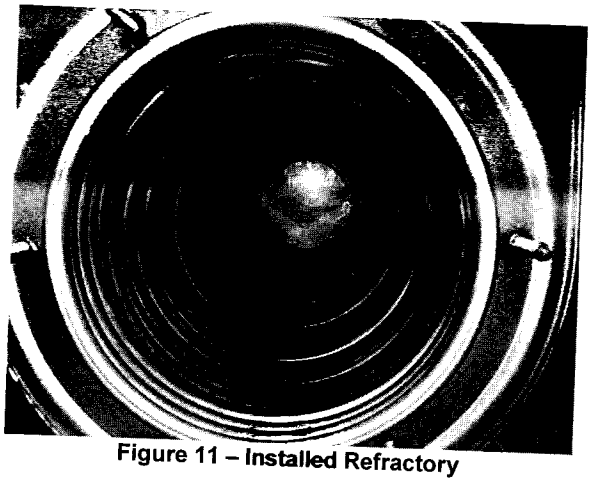


Figure 11 – Installed Refractory

STEP 4: RESTARTING

1. Replace burner and blower assemblies. See Figure 12.

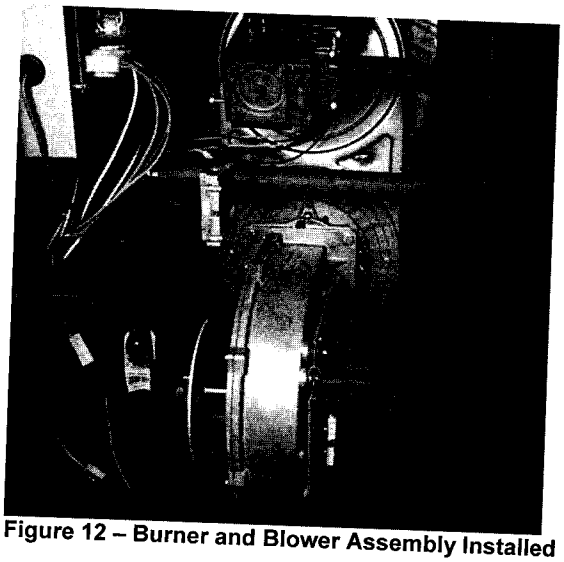


Figure 12 – Burner and Blower Assembly Installed

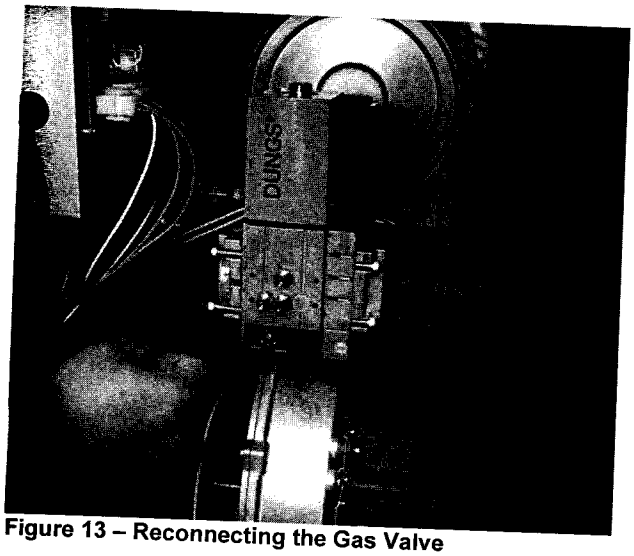


Figure 13 – Reconnecting the Gas Valve

NOTE: Ensure the burner assembly gasket (Figure 5) is installed in the air channel and seats properly between the burner assembly and blower.

2. Reconnect the gas valve to the blower.

NOTE: Ensure O-Ring is in the gas valve and properly aligned.

3. Reconnect spark wire, ground, and flame rectification probe.

4. Reconnect blower Molex connections.

5. Restore gas to the boiler. Check for leaks.

⚠ WARNING

WHAT TO DO 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 the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department. Installation and service must be provided by a qualified installer, service agency, or the gas supplier.

6. Restore power to the boiler. Observe operation for a half hour to ensure the boiler is operating correctly.