

Part 13 - Maintenance

A. Procedures

Periodic maintenance should be performed once a year by a qualified service technician to assure that all the equipment is operating safely and efficiently. The owner should make necessary arrangements with a qualified heating contractor for periodic maintenance of the boiler. The installer must also inform the owner that a lack of proper care and maintenance of the boiler may result in a hazardous condition.

WARNING

BEFORE EACH HEATING SEASON a trained and qualified service technician should perform the inspections as per the boiler inspection and maintenance schedule in this manual. Failure to do so could result in death or serious injury.

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 a 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.

B. Combustion Chamber Coil Cleaning Instructions

*Before beginning this procedure, have on hand the following items:

- a nylon, stainless steel, or brass brush (not steel)
- gloves and eye protection

1. Shut down the boiler by using the following steps:
 - a. Close the gas valve. Shut down the unit, and wait for it to be cool to the touch.
 - b. Disconnect the condensate piping from the outside connection, (not from the boiler side), so flow from condensate reservoir can be observed.
 - c. Disconnect electrical connections from the gas valve, spark electrode, flame rectification probe, and combustion blower.
 - d. Remove the four (4) screws on the aluminum $\frac{3}{4}$ " NPT connector on the right side of the gas valve.
 - e. Disconnect the wiring connected to the combustion blower motor.
 - f. Remove the six (6) 10MM nuts from the burner plate assembly.
 - g. Pull the entire burner plate assembly with blower still attached towards you, while removing or pushing aside any wiring to allow removal of the assembly.
2. Spray the coils liberally with a spray bottle filled with clear tap water. Confine the spray to the area being cleaned. Avoid getting the ceramic target wall wet. If the condensate system is blocked, use a vacuum to clear it.

Outdoor Sensor (7250P-319)		Supply Temperature Sensor (7250P-324) Boiler Sensor (7250P-667) Indirect Sensor (7350P-325)	
Outside Temperature (°F)	Resistance (ohms)	High / Low Temp Sensor Temp. (°F)	Resistance (Ohms)
-22	171800	32	32550
-13	129800	41	25340
-4	98930	50	19870
5	76020	59	15700
14	58880	68	12490
23	45950	77	10000
32	36130	86	8059
41	28600	95	6535
50	22800	104	5330
59	18300	113	4372
68	14770	122	3605
77	12000	131	2989
86	9804	140	2490
95	8054	149	2084
104	6652	158	1753
113	5522	167	1481
		176	1256
		185	1070
		194	915
		202	786
		212	667

Table 32 - Sensor Temperature Resistance

3. Scrub coils of any buildup with a nylon, stainless steel, or brass brush. Do not use a steel brush. Vacuum the debris from the coils.

4. Spray the coils again with clear tap water. Confine the spray to the area being cleaned. Flush the combustion chamber with fresh water until it runs clear from the condensate reservoir. At this point, the boiler should be ready to be reassembled.

- a. Inspect gaskets.
- b. Reinstall the burner assembly
- c. Replace and tighten the six (6) 10MM nuts to the burner plate using staggered tightening sequence. (See detail.)
- d. Reconnect all wiring connections
- e. Inspect the gas valve. Ensure the O-ring is in place.
- f. Replace the four (4) screws on the aluminum connector on the gas valve. Turn the gas back on. (IMPORTANT: CHECK FOR GAS LEAKS!)
- g. Turn boiler power back on and create a heat demand. When boiler is lit observe condensate flow from the boiler. Be sure the boiler is operating properly.
- h. Reconnect the condensate piping to the outside condensate connection.

WARNING

Do not use solvents to clean any of the burner components. The components could be damaged, resulting in unreliable or unsafe boiler operation, substantial property damage, severe personal injury, or death.

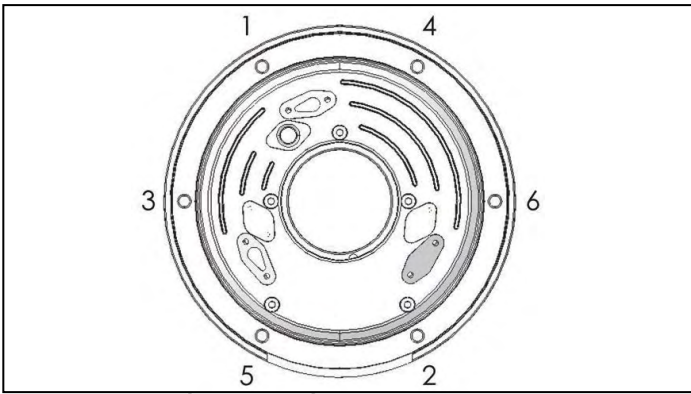


Figure 31 - Heat Exchanger Detail

C. Cleaning Water Side of Heat Exchanger

1. Make sure power is turned off to the boiler. Run water through the hot water system to ensure it is below room temperature.

2. Close isolation valves on the return and supply connections to the boilers as shown in the piping diagrams in this manual. Slowly open the ball valves and release pressure into a bucket. Once pressure is released, connect a hose to the water line to flush the boiler. Scale removing solution may be used, but must be approved for use with stainless steel and FDA approved for use in a potable water system.

3. Thoroughly flush the heat exchanger before commissioning the unit back in service.

