

9. MAINTENANCE

WARNING

Product Safety Information Refractory Ceramic Fiber Product

This appliance contains materials made from refractory ceramic fibers (RCF). Airborne RCF fibers, when inhaled, have been classified by the International Agency for Research on Cancer (IARC), as a possible carcinogen to humans. After the RCF materials have been exposed to temperatures above 1800°F, they can change into crystalline silica, which has been classified by the IARC as carcinogenic to humans. If particles become airborne during service or repair, inhalation of these particles may be hazardous to your health.

Avoid Breathing Fiber Particulates and Dust

Suppliers of RCF recommend the following precautions be taken when handling these materials:

Precautionary Measures:

Provide adequate ventilation.

Wear a NIOSH/MSHA approved respirator.

Wear long sleeved, loose fitting clothing and gloves to prevent skin contact.

Wear eye goggles.

Minimize airborne dust prior to handling and removal by water misting the material and avoiding unnecessary disturbance of materials.

Wash work clothes separately from others. Rinse washer thoroughly after use.

Discard RCF materials by sealing in an airtight plastic bag.

First Aid Procedures:

Inhalation: If breathing difficulty or irritation occurs, move to a location with fresh clean air. Seek immediate medical attention if symptoms persist.

Skin Contact: Wash affected area gently with a mild soap and warm water. Seek immediate medical attention if irritation persists.

Eye Contact: Flush eyes with water for 15 minutes while holding eyelids apart. Do not rub eyes. Seek immediate medical attention if irritation persists.

Ingestion: Drink 1 to 2 glasses of water. Do not induce vomiting. Seek immediate medical attention.

A. GENERAL

1. Disconnect this boiler from the gas supply piping during any pressure testing of the gas system.
2. Check pipes adjacent to cold walls or in unheated spaces. Insulate and tape them if necessary to be sure they can't freeze up. Keeping the water moving at all times will reduce the likelihood of freezing.
3. If there is considerable foreign matter in the boiler water, the boiler should be shut down and allowed to cool, then drained and thoroughly flushed out. Use the drain valve at the bottom of the right side to drain the boiler. Pipe the drain cock to a suitable drain or containment device (if antifreeze is used). Flush the system to remove remaining matter. If there is evidence that hard scale has formed on the internal surfaces, the boiler should be cleaned by chemical means as prescribed by a qualified water treatment specialist.
4. There must be no signs of continuous wetness at the chimney. If signs of continuous wetness are observed, a qualified service agency must be consulted to modify the vent configuration to prevent the formation of condensate, which may damage the vent pipe.

B. DAILY MAINTENANCE (WITH BOILER OPERATING)

Daily boiler observation can be performed by the owner. If any potential problems are found, a qualified installer or service technician/agency must be notified.

1. Remove any combustible materials, gasoline and other flammable liquids and substances that generate flammable vapors from the area where the boiler is contained. Make certain that the boiler area has ample air for combustion and ventilation and that there are no obstructions to the free flow of air to and from the boiler.
2. Observe general boiler conditions (unusual noises, vibrations, etc.)
3. Observe operating temperature and/or pressure on the gauge located on the right side of the boiler. Boiler pressure should never be higher than 5 psi below the rating shown on the safety relief valve. The valve rating can be found on the top of the safety relief valve (see Figure 6.1 or 6.6 for location of the safety relief valve). Boiler temperature should never be higher than 250°F.
4. Check for water leaks in boiler and system piping.
5. Smell around the appliance area for gas. If you smell gas, follow the "To Turn Off Gas to Appliance" procedure listed in the Lighting/Operating Instructions in Section 8.

C. WEEKLY MAINTENANCE (WITH BOILER OPERATING)

1. Flush float-type low-water cut-off (if used) to remove sediment from the float bowl as stated in the manufacturer's instructions.

D. MONTHLY MAINTENANCE (WITH BOILER OPERATING)

1. Check boiler room floor drains for proper functioning.
2. Check function of the safety relief valve (monthly unless specified otherwise by manufacturer) by performing the following test:
 - a. Check valve piping to determine that it is properly installed and supported.
 - b. Check boiler operating temperature and pressure.
 - c. Lift the try lever on the safety relief valve to the full open position and hold it for at least five seconds or until clean water is discharged.
 - d. Release the try lever and allow the valve to close. If the valve leaks, operate the lever two or three times to clear the valve seat of foreign matter. It may take some time to determine if the valve has shut completely.
 - e. If the valve continues to leak, it must be replaced before the boiler is returned to operation.
 - f. Check that operating pressure and temperature have returned to normal.
 - g. Check again to confirm that valve has closed completely and is not leaking.
3. Test low-water cut-off (if used) as described by the manufacturer.
4. Test limit by lowering the limit set point until the main burners shut down. When proper operation is confirmed, return the set point to the desired setting.
5. Test function of gas safety shut-off features as described by gas valve and ignition control manufacturer.
6. Cycle the boiler at least once and check operation of the vent damper.

E. ANNUAL MAINTENANCE (BEFORE START OF HEATING SEASON)

DANGER

When servicing or replacing components, be absolutely certain that the following conditions are met:

- Water, gas and electricity are off.
- The boiler is at room temperature.
- There is no pressure in the boiler.

1. Check flueways and burners for cleanliness and clean if necessary. Use the following procedure if cleaning is required:
 - a. Refer to the Operating Instructions in Section 8 "To Turn Off Gas to Appliance."
 - b. Turn off all electrical power to the boiler.
 - c. Remove burners and brush gas outlet ports lightly using a soft bristle brush.

- d. Remove the vent pipe, vent damper, top jacket panels and flue collector.
 - e. Brush flueways with wire brush.
 - f. To the extent possible, inspect inside of vent pipe and vent damper for obstructions in flow or vent damper movement. Remove or replace as necessary.
 - g. When replacing the flue collector, be certain that the blanket seal between the flue collector and top section makes a tight seal to prevent leakage of the products of combustion.
 - h. Re-install the top of the jacket, vent damper and vent pipe.
 - i. Connect blocked vent switch wiring harness to blocked vent switch.
 - k. Re-install burners.
- 2. Inspect entire venting system for corrosion, support and joint integrity. Repair as necessary.
 - 3. Check the pilot and main burner flame. See Figure 8.1. The pilot should provide a steady flame enveloping 3/8" to 1/2" of the flame sensor. If required, adjust the pilot as stated in the gas valve manufacturer's instructions. The main burner flame inner cone should be approximately 1-1/2" high and should have a very sharp, blue color characteristic.

F. AS REQUIRED MAINTENANCE

Test and inspect low water cut-off(s) per manufacturer's instructions.

If the steam boiler water level is erratic and dirt & deposits appear in the water gauge glass, skim the boiler as described in Section 8.