

XII Service and Maintenance

The following procedure should be performed on a weekly basis:

For boilers equipped with a #67 low water cut-off, blow down the low water cut-off following the instructions on the yellow sticker adjacent to the low water cut-off. During this blow down, the low water cutoff should shut down the burner. If it does not, the low water cut-off should be replaced immediately.

The following procedure should be performed on an annual basis:

1) Turn off electrical power and oil supply to the boiler.

2) Inspect the low water cut-off:

- For Hydrolevel CG450 low water cut-offs - Remove and inspect the probe for scale and sediment buildup. Clean any sediment or scale from the probe with a scouring pad or steel wool. Consult the Hydrolevel CG450 manual for any additional maintenance information. Test the low water cut-off before placing the boiler back into service.
- For McDonnell & Miller #67 low water cut-offs - Remove and inspect switch and float mechanism. Inspect float bowl for mud accumulation. Clean as required. Replace the switch and float mechanism every five years or 100,000 cycles. Consult the McDonnell and Miller #67 manual for any additional maintenance information. Test the low water cut-off before placing the boiler back into service.

3) Allow the boiler to cool to room temperature and drain the boiler. Remove the 1-1/2" plug from the unused return tapping. Use a flashlight to inspect the bottom row of push nipples for accumulated scale or mud. If a significant amount is present, use the following procedure to clean the inside of the heat exchanger:

- a) Temporarily install a 1-1/4" inch or larger full port ball valve in place of the 1-1/2" plug. Temporarily pipe the outlet of this valve to a location where hot water and steam can be safely discharged.
- b) Make sure that this valve is closed and that the water level is at the normal water line.
- c) If a king valve is present in the steam main takeoff, close it. Alternatively, temporarily replace enough of the vents on the mains and/or radiators with plugs so that 2-5 psi can be developed when the boiler is fired.
- d) Fire the boiler and allow it to steam until 2-5 psi is registered on the gauge.
- e) Turn off the burner and immediately fully open the 1-1/4" valve.
- f) Allow the boiler to blow down until either the water runs clear or the water level reaches the bottom of the gauge glass.
- g) Allow all parts of the boiler to cool to room temperature. Drain the boiler completely and remove the 1-1/4" valve.
- h) If significant mud or scale is still present in the bottom of the boiler, repeat steps (b) through (g) until all mud or scale is removed.
- i) Once all mud or scale is removed, replace the 1-1/4" valve and temporary blow-down piping with the standard plug. After all parts of the boiler are at room temperature, refill the boiler to the normal water line.

NOTE

A large accumulation of mud or scale in the bottom of the heat exchanger is usually a sign of excessive feedwater make-up. Such accumulations can cause severe heat exchanger damage. If mud or scale accumulations are found:

- Make sure that all vents are in working order. Vents should not permit any passage of steam or water.
- Check all steam and return piping for leaks. Be aware that buried return piping can leak and go undetected during normal operation.

4) Clean the boiler flue passages as follows:

- a) Remove vent connector and piping.
- b) Remove barometric draft regulator.
- c) Remove top jacket panel to gain access to boiler flue collector.
- d) Unscrew four wing nuts and remove canopy retaining carriage bolts, lift off the canopy and ceramic fiber sealing strips.
- e) Unplug the burner, disconnect the oil lines (if the pump is hard piped), and remove the two 5/16" bolts securing the burner door. Open the burner swing door.
- f) Thoroughly brush boiler flueways from the top and diagonally between casting pin rows. Be careful when brushing the rear passage not to damage the rear target wall insulation.
- g) Vacuum soot and debris from combustion chamber.
- h) Check condition of rear target wall insulation, combustion chamber liner, and burner door insulation; replace if required.
- i) Check burner head for signs of deterioration. Clean the head of any deposits.
- j) Close burner door, reinstall 5/16" bolts, reconnect fuel oil and electrical lines.
- k) Installation of boiler canopy, jacket top panel barometric draft regulator and breeching piping is done in reverse order of removal. Make sure canopy is sealed tight to the casting; replace ceramic fiber sealing strips as needed. All vent piping joints must be flue gas leak free and secured with sheet metal screws.

IMPORTANT

- CLEAN THE BOILER EVEN IF THERE ARE NO SIGNIFICANT SOOT DEPOSITS. FAILURE TO REMOVE ALL SULFUR AND ASH DEPOSITS ANNUALLY CAN CAUSE SEVERE CORROSION DAMAGE.
- WHEN CLEANING THE REAR FLUE PASSAGE, BE CAREFUL NOT TO PUSH THE BRUSH TOO FAR BEYOND THE BOTTOM OF THE PINS. DOING SO MAY DAMAGE THE TARGET WALL.

3) Inspect the vent system:

- a) Make sure that the vent system is free of obstructions and soot.
- b) Make sure that all vent system supports are intact.
- c) Inspect joints for signs of condensate or flue gas leakage.
- d) Inspect venting components for corrosion or other deterioration. Replace any defective vent system components.

4) Service the oil burner:

- a) Replace oil nozzle with identical make and model (see Table 3).
- b) Inspect the electrodes. Replace if they are deteriorated. Make sure that the electrode position is set according to the burner manufacturer's instructions.
- c) Remove and clean fuel pump strainer.
- d) Remove any accumulations of dust, hair, etc. from the air shutter, blower wheel, and other air handling parts of the burner.

5) Replace the fuel oil line filter element and gaskets.

6) Inspect all oil piping and fittings for kinks and leaks. Repair any found.

7) Inspect the system piping, tankless coil and tankless coil cover gaskets, and boiler plugs for water leaks. Repair any leaks found immediately.

8) Verify operation of relief valve by manually lifting lever; replace relief valve immediately if valve fails to relieve pressure.

9) Open fuel line shut-off valve(s) and restore electrical power to the boiler.

10) Fire the boiler and check it out using the procedure outlined in "Start-up and Checkout". This must include checking the burner adjustments using instruments. Check for proper operation of all controls.

TANKLESS HEATER MAINTENANCE

- During the warm months, make sure that the water level in the boiler is 23-1/2 to 25 inches above the floor. Failure to do this may result in inadequate hot water and/or steaming when there is no call for heat.
- Maintain the mixing valve in accordance with the valve manufacturer's instructions.

Important Product Safety Information **Refractory Ceramic Fiber Product**

Warning:

The Parts list designates parts that contain refractory ceramic fibers (RCF). RCF has been classified as a possible human carcinogen. When exposed to temperatures about 1805°F, such as during direct flame contact, RCF changes into crystalline silica, a known carcinogen. When disturbed as a result of servicing or repair, these substances become airborne and, if inhaled, may be hazardous to your health.

AVOID Breathing Fiber Particulates and Dust

Precautionary Measures:

Do not remove or replace RCF parts or attempt any service or repair work involving RCF without wearing the following protective gear:

1. A National Institute for Occupational Safety and Health (NIOSH) approved respirator
 2. Long sleeved, loose fitting clothing
 3. Gloves
 4. Eye Protection
- Take steps to assure adequate ventilation.
 - Wash all exposed body areas gently with soap and water after contact.
 - Wash work clothes separately from other laundry and rinse washing machine after use to avoid contaminating other clothes.
 - Discard used RCF components by sealing in an airtight plastic bag. RCF and crystalline silica are not classified as hazardous wastes in the United States and Canada.

First Aid Procedures:

- If contact with eyes: Flush with water for at least 15 minutes. Seek immediate medical attention if irritation persists.
- If contact with skin: Wash affected area gently with soap and water. Seek immediate medical attention if irritation persists.
- If breathing difficulty develops: Leave the area and move to a location with clean fresh air. Seek immediate medical attention if breathing difficulties persist.
- Ingestion: Do not induce vomiting. Drink plenty of water. Seek immediate medical attention.