

# Heating season

## Equipment breakdown guide

from Liberty Mutual Insurance



There is nothing more gratifying during the fall season than knowing that your boiler is ready for operation. Boiler operators and/or responsible personnel should always make sure that the boiler be inspected, cleaned, and if necessary, adjusted once a year.

Information contained in this guide is designed to assist the customer in the management of their own activities and should not be construed as legal advice.

Customers should always consult with the equipment manufacturer.

This information does not amend, alter, or otherwise affect the provisions or coverage of any insurance policy.

Operating manuals should be available for your installed boiler to ensure that proper lay-up, start-up, inspection, and maintenance is being conducted in accordance with manufacturer recommendations.

Although no check list can include all steps necessary to encapsulate all boiler designs, this list can serve as a guide for those responsible for boiler operation. The steps below should only be completed by a qualified individual with sufficient experience and expertise.

## Maintenance summer lay-up

The summer shutdown period is a good time to accomplish necessary boiler and fuel burning system preventive maintenance.

A suggested checklist of such maintenance is as follows:

- Drain and flush the boiler, open all hand holes and manholes, clean and remove soot from the firesides and scale from the waterside. Examine the boiler for damage and corrosion.
- Have the boiler inspected by an authorized inspector, as required.
- Install new gaskets, replace all hand hole and manhole covers, refill boiler, and perform a hydrostatic test, if required.
- Institute a suitable boiler water treatment program to reduce scale buildup and corrosion.
- Have the fuel burning equipment cleaned and adjusted by a competent service technician. Verify operation of all operating and limit controls, interlocks, and gages. Have the technician disassemble the low water cutoff and water feeding devices, clean, recondition, and reassemble them. Have the technician leak test all fuel safety shutoff valves.
- Lubricate all mechanical equipment such as fans and pumps. Verify motor rotation.
- Check all boiler piping for leaks and missing insulation.
- Ensure provision is made for establishing and keeping a boiler log.

## Before operation

### Start-Up Checks

Immediately prior to boiler start-up perform the following:

- Check that all ventilation and combustion air openings and louvers are clean and free of debris.
- Verify boiler water level.
- Check that all stack dampers are open.
- Examine the boiler furnace for foreign material.
- Check the furnace and flue passes for fuel accumulation.
- Ensure the manual fuel valves are open.

### Normal Start-Up

After completing the start-up checks, close the operating switch and commence the normal starting sequence in accordance with manufacturer recommendations.

The following list suggests a typical starting sequence:

- Operating controls closed.
- Interlocks (safety controls) closed.
- Start fans and purge the boiler.
- Purge requirements met.
- Energize igniter.
- Prove ignition flame within 10 seconds.
- Energize main fuel valve(s).
- Establish and monitor main flame.
- De-energize ignition, main flame proven.
- Release firing rate (combustion) control to demand.
- Normal operation.

This starting sequence should be carefully observed to ensure that all steps are normal. Readings on flame signal strength meters (if fitted) should be observed and recorded in the boiler log.

A normal shutdown should be initiated by opening the manual burner switch. After the post purge has been completed, check the furnace for flame cutoff and ensure there is no residual flame in the furnace. Have fuel safety shutoff valves repaired or replaced if required.

Additional guidance can be found in the boiler operating manuals and in ASME CSD -1, Controls and Safety Devices for Automatically Fired Boilers, or in the National Fire Protection Association's NFPA 8500 standards on prevention of boiler furnace explosions.

## References

Steps to safety: Guide for restarting boilers after summer lay-up. (2010). National Board of Boiler and Pressure Vessel Inspectors, *National Board BULLETIN*.



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