



ROUTINE BOILER MAINTENANCE

Daily Maintenance

1. Check water level glass gauge, record the pressure gauge and temperature gauges
2. Check LWCO and ALWCO operation - blowdown water column - make the burner shut down
3. Drain gauge glass
4. Turn off burner control switch, observe response to flame failure
5. Observe operating control and high limit control
6. Perform Bottom Blowdown to remove sludge and sediment
7. Observe Burner refractory cone, looking for broken chunks

Weekly Maintenance

1. Check all linkages on burner controls and on the automatic draft controllers
2. Check air damper on burner
3. Check valve operation in gas train
4. Check pilot and igniter, look at the condition of flame
5. Check operation of LWCO - blowdown boiler water level through drain. Watch gauge glass to see burner cut off before losing sight of water

Monthly Maintenance

1. Test limit controls on boiler
2. Test flame detection controls
3. Check blowdown for sludging at bottom of boiler
4. Verify blowdown separator and cooler operation
5. Check floor drains for proper function
6. Check boiler fresh air inlet screens

Annual Maintenance

1. Disassemble and check LWCO and ALWCO for sludge, corrosion or electrical switch defects
2. Verify and tune up burners and settings
Quarterly tuning by a qualified technician is recommended
3. Inspect fire side for soot or damage and water side for scale or corrosion & Clean the boiler inside and out
4. Hydro test boiler for leaks (tube joints and piping)
5. Inspect all refractory for fallen broken chunks
6. Check gas regulator pressure settings
7. Replace or recertify safety valves
8. Bubble test fuel train safety shut-off valves



SUGGESTED BOILER MAINTENANCE

After the burner has been started and adjusted by the Service Provider, linkage settings, fuel pressures and control settings should not be changed or tampered with by persons not thoroughly experienced with the burner and control system. Service calls caused by "tinkering" or poor maintenance procedures are not typically covered by any guarantee or service plan.

General Maintenance

1. Keep the boiler, burner and entire boiler room clean. A clean boiler room is essential to first class boiler operation.
2. Keep the burner and boiler control covers in place. The electrical contacts in the controls are very sensitive.
3. Never close vents supplying air to the boiler room. If cold air currents cause difficulty with other boiler room equipment, air ducts should be installed to direct the flow of fresh air.
4. Repair all leaks promptly. All piping connections to the boiler and burner should be maintained leak proof because even a minor leak, if neglected, may soon become serious.
5. Foaming or priming may occur in a steam boiler and cause large quantities of water to pass over into the steam main. It can be detected by violent fluctuations or sudden dropping of the water level in the glass. This will result in nuisance shutdowns of the burner due to the sudden dropping of the water level causing the low water cutoff to shut off the burner.
6. This trouble may be caused by dirt or oil in the boiler water, an overdose of boiler compounds, carrying too high a water level in the boiler or a high overload on the boiler. In case of serious trouble, stop the burner and decrease the load on the boiler. Then correct the condition according to the boiler manufacturer's instructions.

Daily Maintenance

1. Check boiler water level in the sight glass and the steam pressure on the gauge to the steam boilers. Check temperature reading and water pressure on hot water boilers. Record this in your logbook.
2. Check the low water cutoff operation by opening the blow down valve on the low water cutoff to remove rust and dirt. Determine that the burner cuts out with low water in the sight glass. Immediate corrective action must be taken if burner does not cut off with low water in the sight glass. Record this in your logbook.
3. Turn off burner control switch and close pilot manual gas cock. Turn on burner control switch and determine that burner flame safeguard locks out on flame failure before the main gas valve is energized. Immediate corrective action must be taken if flame safeguard does not lock out to indicate flame failure. Record this in your logbook.
4. Observe the operation of the boiler limit and operating controls to determine that the burner is being cut off at the proper setting. Adjust per the manufacturer's instruction sheet as required. Record this in your logbook.

Weekly Maintenance

1. Check all burner linkages. Tighten if necessary. Record this in your logbook.



2. Test the low water cutoff by opening the boiler blowdown valve to remove rust and dirt from the boiler mud leg or drum and determine that the burner cuts off when low water point is reached in the sight glass. Record this in your logbook.
3. Check all phases of the operation of the control circuit for proper operation. Record this in your logbook.
4. Operate burner manual shutoff valves to determine that they are working freely and properly. Lubricate if necessary. Record this in your logbook.
5. Perform all tests and inspections required under "Daily Maintenance."

Monthly Maintenance

1. Check pilot assembly. Record this in your logbook.
 - a. The ignition electrode must be centered in the ignitor body.
 - b. The ignition electrode and pilot assembly should be inspected and cleaned if necessary.
 - c. The high tension wire between the transformer and the ignition electrode should be checked for deterioration.
 - d. The flame scanner should be inspected and cleaned if necessary.
2. Check air dampers for smooth operation. Remove accumulation of lint or dirt. Record this in your logbook.
3. Oil firing.
 - a. Check ignition electrodes. Clean if necessary.
 - b. Clean oil atomizing nozzle if necessary.
 - c. Inspect oil filters. Replace or clean filter cartridge if necessary.
 - d. Inspect filter on air compressor, if used.
 - e. Record this in your logbook.
4. Lubricate motors in accordance with motor manufacturer's instructions. Record this in your logbook.
5. Perform all tests and inspections required under "Weekly Maintenance".

Annual Maintenance

1. Have the burner inspected and checked by a qualified service representative. Record this in your logbook.
2. If the boiler is to be out of service for the summer, close all manual valves. Turn off burner by control switch, being sure to leave electrical power on the control panel. Leaving power on the control panel will prevent humidity damage to the flame safeguard.



PERIODIC TESTING RECOMMENDED CHECKLIST

Item	Frequency	Accomplished	Remarks
Check burner and boiler control linkage	Weekly	Operator	Make visual inspection
Check fuel system for leaks	Monthly	Operator	Make inspection visually and with leak detection instrumentation
Gauges, monitors and indicators	Daily	Operator	Make visual inspection and record readings in log
Oil pump inlet vacuum	Daily	Operator	Make visual inspection and record readings in log
Oil pressure at pump, burner and/or regulating valve	Daily	Operator	Make visual inspection and record readings in log
Instrument and equipment	Daily	Operator	Make visual check against recommended specifications
Check burner flame	Daily	Operator	Visual inspection for changes
Firing rate control	Weekly Quarterly Quarterly	Operator Service technician Service technician	Verify factory settings Verify factory settings Check with combustion test
Stack temperature	Daily	Operator	Record in log
Flue, vent, stack or outlet dampers	Monthly	Operator	Make visual inspection of linkage, check for proper operation, lubricate as needed
Igniter	Weekly	Operator	Make visual inspection, check flame signal strength if meter fitted (See "Combustion safety controls")
Oil nozzle(s) and strainers	Semiannually	Operator	Check for dirt and wear
Low-water fuel cutoff and alarm	Daily/Weekly Semiannually	Operator Operator	Refer to instructions Perform a slow drain test in accordance with ASME Boiler and Pressure Vessel Code Section VI
High limit safety control	Annually	Service technician	Refer to instructions
Operating control	Annually	Service technician	Refer to instructions
Fuel valves			
Pilot and main	Weekly	Operator	Open limit switch - make aural and visual check - check valve position indicators and check fuel meters if so fitted
Pilot and main gas or main oil	Annually	Service technician	Perform leakage tests (bubble test)- refer to instructions



PERIODIC TESTING RECOMMENDED CHECKLIST

Item	Frequency	Accomplished	Remarks
Low draft, fan, air pressure and damper position interlocks	Monthly	Operator	Refer to instructions
High and low gas pressure interlocks	Monthly	Operator	Refer to instructions
High and low oil pressure interlocks	Monthly	Operator	Refer to instructions
High and low oil temperature interlocks	Monthly	Operator	Refer to instructions
Fuel valve interlock switch	Annually	Service technician	Refer to instructions
Purge switch	Annually	Service technician	Refer to instructions
Burner position interlock	Annually	Service technician	Refer to instructions
Low fire start interlock	Annually	Service technician	Refer to instructions
Automatic changeover control (dual fuel)	At least Annually	Service technician	Under supervision of gas utility
Safety valves	Annually	Operator	Replace or send out for recertification to qualified Safety valve repair shop
Inspect burner components	Semiannually	Service technician	Refer to instructions
Clean burner fan	Annually or as required	Operator	Remove buildup on fan blades
Combustion safety controls			
Flame failure	Weekly	Operator	Close manual fuel supply for (1) pilot, (2) main fuel cock, and/or valve(s); check safety shutdown timing; log
Flame signal strength	Weekly	Operator	If flame signal meter installed, read and log; for both pilot and main flames, notify service organization if readings are very high, very low, or fluctuating; refer to instructions
Pilot turndown tests	As required/annually	Service technician	Required after any adjustments to flame scanner mount or pilot burner verify annually - refer to instructions
Refractory hold in	As required/annually	Service technician	See "Pilot turndown tests"