

COMMERCIAL BOILER PREVENTIVE MAINTENANCE CHECKLIST

(Daily Operator Log)

Daily Operator Log

Week of: Boiler ID: Operator:

TASK	MON	TUE	WED	THU	FRI	SAT	SUN
Record operating pressure and temperature against normal setpoints. Note any deviation.							
Check the water level in the gauge glass. Blow down the gauge glass to confirm a true reading.							
Observe the burner flame through the sight port: it should be steady and correctly colored for the fuel. Yellow or wavering flames need investigation.							
Read flue gas / stack temperature and compare to baseline. A rise over 50°F above baseline signals fouled heat-transfer surfaces.							
Perform a bottom blowdown per the facility schedule to remove sludge and sediment. Never blow down an unattended boiler.							
Check the boiler room for gas or fuel odor, water leaks, and unusual noise or vibration.							
Confirm combustion air louvers and vents are open and unobstructed.							
Verify the feedwater pump, condensate return, and makeup water are operating normally.							
Confirm the current inspection certificate is posted and has not expired.							
Additional Task:							

Instructions:

Complete each operating day (per shift for continuously fired boilers). Daily operator logs are the backbone of a boiler program and are expected by ASME CSD-1 and most state boiler codes. Low-water condition is the most common cause of catastrophic boiler failure, so the gauge-glass check is critical — blow down the gauge glass so you are reading real water level, not a stuck column. Never perform a blowdown on an unattended boiler, and confirm the boiler room drain can accept full blowdown flow before opening any valve. Operating without a current, posted inspection certificate is illegal and voids insurance.

COMMERCIAL BOILER PREVENTIVE MAINTENANCE CHECKLIST

(Weekly Safety Device Testing — ASME CSD-1)

Weekly Safety Device Testing

Month: Boiler ID: Technician:

TASK	1ST	2ND	3RD	4TH	5TH
Perform the low-water cutoff (LWCO) test by slow drain / evaporation: lower the water level and confirm the burner shuts off BEFORE water drops below the safe point.					
Test the secondary (auxiliary) low-water cutoff independently and confirm it functions on its own.					
Flush the float-type LWCO and feedwater control to remove sediment that can cause a stuck float.					
Test the flame safeguard / flame scanner: simulate flame failure and confirm the burner locks out within about 2–4 seconds.					
Verify the flame safeguard requires an intentional manual reset — it must not auto-restart.					
Test the operating and high-limit pressure/temperature controls to confirm they shut down the burner at setpoint.					
Check low-gas and high-gas pressure switch setpoints and confirm they trip correctly.					
Verify interlock circuits: flow switch, LWCO, and high-limit all break the burner circuit when tripped.					
Confirm pre-purge and post-purge cycle timing matches the OEM specification.					
Additional Task:					

Instructions:

Perform weekly by a qualified boiler operator or controls technician (roughly 30–40 minutes), per ASME CSD-1. A stuck low-water cutoff is the failure mode most closely linked to historic boiler explosions, which is why weekly LWCO testing is mandated. Jurisdictional inspections focus on the pressure vessel and rarely cover these combustion-safety controls — testing them is the facility's responsibility under ASME CSD-1 (smaller boilers) or NFPA 85 (heat input above 12.5 MMBtu/hr, multiple-burner, and HRSG units). Document every test; these records feed your next inspection scope.

COMMERCIAL BOILER PREVENTIVE MAINTENANCE CHECKLIST

(Monthly & Water Treatment)

Monthly Comprehensive Inspection

Month..... Year: Boiler ID: Technician:

TASK	STATUS
Manually lift-test the ASME-stamped safety relief valve and confirm it reseats without leaking (follow OEM guidance).	
Test boiler water pH — target roughly 10.5–12.0 for steam boilers. Adjust chemical treatment as needed.	
Measure total dissolved solids (TDS) / conductivity and blow down to hold within the ASME limit for the boiler.	
Test makeup water hardness and confirm the softener is regenerating correctly.	
Perform a surface blowdown (skimming) to remove dissolved solids at the water surface; adjust frequency to conductivity.	
Run a combustion analysis: measure O ₂ , CO, and stack temperature; tune the burner for efficient, safe combustion.	
Inspect and clean the burner, igniter, and pilot assembly. Check electrodes and flame rod / UV scanner for fouling.	
Inspect fuel train components and test fuel valves for leak-tight shutoff.	
Check refractory, gaskets, observation ports, and casing for cracks, leaks, or heat damage.	
Inspect condensate and feedwater systems for leaks and proper operation.	
Additional Task:	

Instructions:

Perform monthly; combustion analysis and safety-control calibration require a certified technician. Water treatment is not optional — just 1.5 mm of calcium-carbonate scale raises fuel consumption by roughly 3% and pushes tube-metal temperature into the danger zone, and scale, oxygen pitting, and carryover are the leading causes of tube failure. Hold steam-boiler water chemistry within ASME limits and log every result. Rising stack temperature and off-target combustion numbers are early warnings of fouling that waste fuel and shorten boiler life.

COMMERCIAL BOILER PREVENTIVE MAINTENANCE CHECKLIST

(Annual Professional Service & Inspection)

Annual Professional Service & Inspection

Service Date: Technician / Inspector:

TASK	STATUS
Schedule the annual external inspection by an authorized boiler inspector; internal inspection every 12–24 months per jurisdiction.	
Open the boiler for fireside and waterside cleaning: remove soot, scale, and sediment from tubes and surfaces.	
Inspect the pressure vessel, tubes, and welds for scale, pitting, corrosion, thinning, or cracking.	
Replace or recertify the safety relief valve on schedule (commonly ≤ 3 years hot-water, ≤ 6 years steam; follow AHJ and OEM).	
Rebuild or replace the low-water cutoff as needed and verify both primary and secondary devices.	
Verify the burner management system / flame safeguard is within its replacement or recertification interval.	
Perform a full combustion tune-up and record baseline efficiency, O ₂ , CO, and stack temperature.	
Inspect and service pumps, valves, controls, wiring, and the expansion/feedwater systems.	
Perform any required hydrostatic test to confirm pressure-vessel integrity.	
File the signed inspection report, correct any deficiencies, and post the new certificate before the old one expires.	
Additional Task:	

Instructions:

ASME-code boilers require an external inspection annually and an internal inspection every 12–24 months depending on state jurisdiction. Combustion, controls, and pressure-part work require a certified technician. If a boiler fails a jurisdictional or insurance inspection, the inspector can red-tag it – it cannot legally operate until the deficiency is corrected and re-inspected. Over 70% of boiler failures trace back to deferred maintenance and neglected water treatment, so keep annual service on schedule and never let the posted certificate lapse.

COMMERCIAL BOILER PREVENTIVE MAINTENANCE CHECKLIST

(Documentation & Compliance)

Documentation & Compliance

Date:

TASK	STATUS
Maintain the daily operator log: pressure, temperature, water level, blowdown, and stack temperature for every operating day.	
Keep weekly safety-device test records: LWCO (primary and secondary), flame safeguard, limits, and interlocks, per ASME CSD-1.	
Log all blowdowns and water-treatment results: pH, TDS/conductivity, hardness, and chemical dosing.	
File combustion-analysis reports with O ₂ , CO, and stack temperature trended against baseline.	
Retain all annual inspection reports, hydrostatic tests, and relief-valve certification/replacement records.	
Keep the current inspection certificate posted in the boiler room and file expired certificates.	
Record all corrective actions and parts replaced (relief valves, LWCO, controls) with dates and technician.	
Make records available to the jurisdictional inspector and insurer on request; retain per AHJ requirements.	
Additional Task:	

Instructions:

Boiler records serve safety, legal compliance, and insurance at once. ASME CSD-1 and state boiler codes require documented safety-device testing, and insurers review maintenance history after any incident. A timestamped record of every daily check, LWCO test, and blowdown turns a multi-day audit into a short one and demonstrates the boiler was operated safely. Keep the inspection certificate current and posted – an expired certificate is an illegal operation and a major insurance exposure.