

Maintenance Guidelines for Boiler Combustion Safeguards

Periodic Testing Recommended Checklist [See Manufacturer's Instructions]

Adapted from Table D-1 of ASME CSD-1, Controls and Safety Devices for Automatically Fired Boilers

The instructions shown below are a recommended testing and maintenance guide. Operation and maintenance instructions are intended for general applications. In all cases, the manufacturer's detailed instructions should be followed.

The owner or user of an automatic boiler system should establish a formal periodic preventive maintenance and testing program. Tests should be conducted on a regular basis and the results recorded in a logbook. This table contains a recommended checklist. Because of the variety of equipment, owners and users should create a detailed checklist in accordance with the boiler manufacturer's instructions and related jurisdictional requirements.

The maintenance tables that follow address primarily boiler fuel train protection, inspection, and maintenance issues. The majority of waterside maintenance and protection have not been included.

D	W	M	S/A	A	A/R	Component/Item	Recommended Test	Operator	Technician
X						Gauges, monitors, and indicators	Record readings from visual inspection in logbook	X	
			X			Gauges, monitors, and indicators	Recalibrate all indicating and recording gauges		X
X						Instrument and equipment settings	Visual check against factory recommended specs	X	
X						Low water fuel cutoff device [high pressure boilers]	Test according to manufacturer's instructions	X	
	X					Low water fuel cutoff device [low pressure boilers]	Test according to manufacturer's instructions	X	
			X			Low water fuel cutoff device [steam boilers]	Slow drain test		X
					X	Low water fuel cutoff device	Test, recondition, or replace		X
				X		Operating and/or limit controls	Test high limit and operating temperature or steam pressure controls		X
					X	Safety/safety relief valves	Test safety/safety relief valves		X

D = Daily W = Weekly M = Monthly S/A = Semi-annual A = Annual A/R = As required

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D	W	M	S/A	A	A/R	Component/Item	Recommended Test	Operator	Technician
						Flue, vent, stack or outlet dampers	Visual inspection of linkage, check for proper operation	X	
X						Burner flame	Visual inspection [use protective eyewear as needed]	X	
	X					Igniter	Visual inspection, check flame signal strength if meter fitted	X	
	X					Flame signal strength	Read and log signal meter for pilot and main flames. Log safety shutdown timing.	X	
	X					Flame failure detection system	Close manual fuel supply for both pilot and main flames. Log safety shutdown timing.	X	
			X			Flame failure detection system	Check system components [vacuum tubes, relays, etc.]		X
				X		Flame failure detection system	Replace vacuum tubes, scanners, or flame rods per the manufacturer's instructions		X
				X	X	Flame failure detection system	Pilot turndown test		X
				X	X	Flame failure detection system	Hot refractory hold in test		X
	X					Firing rate control	Check to verify factory settings	X	
			X			Firing rate control	Check to verify factory settings		X
				X		Firing rate control	Combustion test – verify manufacturer's setting		X
	X					Pilot and/or main fuel valves	Open limit switch and make aural and visual check.	X	
				X		Pilot and/or main fuel valves	Check coils and diaphragms		X
				X		Pilot and/or main fuel valves	Test fuel valve interlock switch		X
				X		Pilot and/or main fuel valves	Perform leakage test on pilot and main fuel valves		X
		X				Low draft, fan, air pressure, and damper position interlocks	Test low draft, fan, air pressure, and damper position interlocks per manufacturer's instructions	X	
				X		Low draft, fan, air pressure, and damper position interlocks	Test purge switch in accordance with manufacturer's instructions		X

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D	W	M	S/A	A	A/R	Component/Item	Recommended Test	Operator	Technician
		X				Low fire interlock	Check according to manufacturer's instructions	X	
				X		Low fire interlock	Test according to manufacturer's instructions		X
		X				Oil pressure and temperature interlocks	Test according to manufacturer's instructions	X	
		X				Gas pressure interlocks	Test according to manufacturer's instructions	X	
			X			Interlocks and valves	Check piping and wiring of all interlocks and shut off valves		X
				X		Atomizing air/steam interlock	Test according to manufacturer's instructions		X
				X		Burner position interlock	Test according to manufacturer's instructions		X
				X		Rotary cup interlock	Test according to manufacturer's instructions		X
			X			Burner components	Inspect according to manufacturer's instructions		X
				X	X	Burner components	Check dual fuel change over control		X
				X		Burner components	Clean atomizers and oil strainers for oil fired burners		X
				X		Burner components	Check drip leg and gas strainer for gas fired burners		X

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