BOILER DATA

COMPANY

CONTACT NAME

STREET

CITY

ZIP

PHONE

FAX

CHECK ONE: ☐ Hot Water ☐ Steam ( ) Operating Pressure ☐ Atmospheric (Natural Draft) ☐ Power / Mechanical Draft

BOILER MFG. NAME

MODEL #

SERIAL #

BTU INPUT

TODAY'S DATE

CERTIFICATE EXP. DATE

INS. CARRIER

BURNER MFG. NAME

MODEL #

SERIAL #

ASME SAFETY STANDARD #CSD-1 CONTROLS & SAFETY DEVICES GUIDELINES FOR AUTOMATICALLY GAS FUEL FIRED BOILERS				POWER & MECHANICAL DRAFT BURNERS Input in Btu/h				ATMOSPHERIC (NATURAL DRAFT) BURNERS Input in Btu/h				Associated Standard Paragraph
INSTALLED	NOT INSTALLED	NOT REQUIRED	SYSTEM CONTROL SPECIFICATIONS	Less than 400,000 (Including Modular Boilers with maximum inputs of 400,000 per module)	400,000 to 2,500,000	2,500,000 to 5,000,000	5,000,000 to 12,500,000	Less than 400,000 (Including Modular Boilers with maximum inputs of 400,000 per module)	400,000 to 2,500,000	2,500,000 to 5,000,000	5,000,000 to 12,500,000	
			INTERLOCKS / LIMITS									
			Approved Operating Controllers Steam Boilers (Pressure)	Required (1)	Required	Required	Required	Required	Required	Required	Required	CW-120, CW-140 CW-310 (b), CW-620 (b)
			Hot Water Boilers (Temp)	Required (2)	Required	Required	Required	Required	Required	Required	Required	CW-120, CW-130 CW-310 (b), CW-620 (b)
			High Limits Steam Boilers (Pressure) (MANUAL RESET)	Required (3)	Required	Required	Required	Required	Required	Required	Required	CW-310 (c), CW-620 (a)
			Hot Water Boilers (Temp) (MANUAL RESET)	Required (4)	Required	Required	Required	Required	Required	Required	Required	CW-410 (b), CW-640 (a)
			High Gas Pressure (MANUAL RESET)		(5)	Required	Required			Required	Required	CF-162 CW-410 (b), CW-640 (a)
			Low Gas Pressure (MANUAL RESET)		(5)	Required	Required			Required	Required	CF-162, CF-910, CF-410 Tables CF-1, CF-2, CF-4
			Valve Seal Overtravel Interlock (Proof of Closure Switch)		(6)	(6)	(7)		(6)	(6)	(7)	CF-180
			High Fire Switch (Normally located in mod motor)		(8)	(9)	(9)		(10)	(10)	(10)	CF-210 (a) (2) (c). CF-910 Tables CF-1, CF-2, CF-4
			Low Fire Switch (Normally located in mod motor)			Required	Required			Required	Required	CF-610
			LOW-WATER FUEL CUTOFFS									
			Low Pressure Steam (MANUAL RESET)	(2) Required (11) (12) (13)	(2) Required (11)	(2) Required (11)	(2) Required (11)	(2) Required (11) (12) (13)	(2) Required (11)	(2) Required (11)	(2) Required (11)	CW-120 (a) (b), CF-210 (a) (b), CW-610 (a) (b)
			High Pressure Steam (MANUAL RESET)	(2) Required	(2) Required	(2) Required	(2) Required	(2) Required	(2) Required	(2) Required	(2) Required	CF-210 (d), CW-140 (a)
			Hot Water Boilers (MANUAL RESET)	(1) Required (14) (15)	(1) Required	(1) Required	(1) Required	(1) Required (14) (15)	(1) Required	(1) Required	(1) Required	CF-210 (c), CW-130 (a), CW-630 (a) (b)
			Forced Circulation (MANUAL RESET)	(16)	(16)	(16)	(16)	(16)	(16)	(16)	(16)	CF-210 (e), CW-210 (a) (b)
			Supervise Purge Air		Required (8)	Required (9)	Required (9)		(10)	(10)	(10)	CF-210 (a) (b) (c). Tables CF-1, CF-2, CF-4
			Proven Combustion Air	Required	Required	Required	Required					Tables CF-1, CF-2, CF-4
			Action on Loss of Combustion Air	(17)	(18)	Safety Shutdown	Safety Shutdown					Tables CF-1, CF-2, CF-4
			PILOT VALVE TRAIN									
			Approved Safety Shutoff Valve(s)	Required	Required	Required	Required	Required	Required	Required	Required	CF-180 (c).
			Manual Shutoff Valve(s)	Required	Required	Required	Required	Required	Required	Required	Required	CF-150 (c).
			Gas Pressure Regulator	Required	Required	Required	Required	Required	Required	Required	Required	CF-110 (a) (1) UL795. 25.15, CF-160,CF-161 (b) Figs B-1, B-2, B-3, B-4
			MAIN VALVE TRAIN									
			Approved Safety Shutoff Valve(s)	(1) Required	(1) or (2) Required (20)	(1) or (2) Required (20)	(2) Required (21)	(1) Required	(1) or (2) Required (20)	(1) or (2) Required (20)	(2) Required (21)	CF-180 (b) (1) (2) (3).
			Valve Closing Time		5 Sec Max	1 Sec Max	1 Sec Max		5 Sec Max	1 Sec Max	1 Sec Max	Tables CF-1, CF-2, CF-4
			Manually Operated Leak Test Valve(s)		(1) or (2) Required (22)	(1) or (2) Required (22)	(1) or (2) Required (22)		(1) or (2) Required (22)	(1) or (2) Required (22)	(1) or (2) Required (22)	CF-150 (d)
			Manual Shutoff Valve(s)	(1) Required	(2) Required	(2) Required	(2) Required	(1) Required	(2) Required	(2) Required	(2) Required	CF-150 (b) (d), ANSI Z21.13: 1.11.4
			Gas Pressure Regulator	Required	Required	Required	Required	Required	Required	Required	Required	CF-150 (b) (d), ANSI Z21.13: 1.15.1 Figs B-1, B-2, B-3, B-4
			APPROVED SAFETY CONTROL SPECIFICATIONS									
			Approval Listing Label: UL/FM/CSA/AGA	Required☐	Required☐	Required☐	Required☐	Required	Required	Required	Required	CG-310 and CG-320
			Prepurge Timing		90 Sec (8)	(9)	(9)		(10)	(10)	(10)	CF-210 (a) (1) (2) (c). Tables CF-1, CF-2, CF-4
			High Fire Purge Proving Circuit		(8)	(9)	(9)		(10)	(10)	(10)	CF-210 (a) (1) (2) (c). Tables CF-1, CF-2, CF-4
			Low Fire Start Circuit			Required	Required			Required	Required	CF-610
			Continuous Pilot	Optional	Optional	Not Permitted	Not Permitted	Optional	Optional	Not Permitted	Not Permitted	Tables CF-1, CF-2, CF-4
			Intermittent Pilot	Optional	Optional	Not Permitted	Not Permitted	Optional	Optional	Optional	Optional	Tables CF-1, CF-2, CF-4
			Interrupted Pilot	Optional	Optional	Required	Required	Optional	Optional	Optional	Optional	Tables CF-1, CF-2, CF-4
			Proved Pilot	Required (25)	Required (25)	Required (25)	Required (25)	Required (25)	Required (25)	Required (25)	Required (25)	CF-320 (a) (1)
			Pilot Flame Establishing Period (PFEP) Continuous Pilot	None	15 Sec (26)	Not Permitted	Not Permitted	None	15 Sec (26)	10 Sec (26)	10 Sec	Tables CF-1, CF-2, CF-4
			Intermittent Pilot	15 Sec	15 Sec	Not Permitted	Not Permitted	15 Sec	10 Sec	10 Sec	10 Sec	Tables CF-1, CF-2, CF-4
			Interrupted Pilot	15 Sec	15 Sec	10 Sec	10 Sec	15 Sec	10 Sec	10 Sec	10 Sec	Tables CF-1, CF-2, CF-4
			Main Flame Establishing Period (MFEP) Continuous Pilot	None	(27)			None	(28)	(29)	(30)	Tables CF-1, CF-2, CF-4
			Intermittent Pilot	None	(27)			15 Sec Max	(28)	(29)	(30)	Tables CF-1, CF-2, CF-4
			Interrupted Pilot	15 Sec Max	15 Sec Max	10 Sec Max (31)	10 Sec Max (31)	15 Sec Max	(28)	(29)	(30)	Tables CF-1, CF-2, CF-4
			Direct Ignition	15 Sec Max	4 Sec Max	4 Sec Max (32)		15 Sec Max				Tables CF-1, CF-2, CF-4
			Supervise Main Flame	(34)	Required	Required	Required	(34)	(34)	(33)	Required	CF-310 (d) (1) (2) (3) (4)
			Flame Failure Response Time (FFRT)	4 Sec Max (36)	4 Sec Max	4 Sec Max	4 Sec Max	4 Sec Max (35) (36)	4 Sec Max	4 Sec Max	4 Sec Max	Tables CF-1, CF-2, CF-4
			Action of Flame Failure	Safety Shutdown (37) (38)	Safety Shutdown (39)	Safety Shutdown	Safety Shutdown	Safety Shutdown (37) (38)	Safety Shutdown (40)	Safety Shutdown (40)	Safety Shutdown (40)	Tables CF-1, CF-2, CF-4
			Action on Limit Opening	Safety Shutdown	Safety Shutdown	Safety Shutdown	Safety Shutdown	Safety Shutdown	Safety Shutdown	Safety Shutdown	Safety Shutdown	CF-162 (a), CF220 (a), CW-130 (d), CW-310 (c), CW-410 (c), CF-910

THIS FORM IS A SURVEY SHEET AND IS NOT PART OF ASME CSD-1

64-0054-2

Footnotes

(1) For modular boilers, each module shall have a pressure control that will shut off the fuel supply when the steam pressure reaches a preset operating pressure.

(2) For modular boilers, each module shall have at least one temperature actuated control to shut off the fuel supply when the system water reaches a preset operating temperature.

(3) The assembled modular boiler shall have a high steam pressure limit control that will prevent the generation of steam pressure in excess of the maximum allowable working pressure.

(4) The assembled modular hot water boiler shall have a high temperature limit control that will prevent the water temperature from exceeding the maximum allowable temperature.

(5) Required for direct ignition systems. Not required for ignition systems with pilots.

(6) Optional one safety shutoff valve with valve seal overtravel (proof-of-closure) interlock.

(7) One of the two safety shutoff valves with valve seal overtravel (proof-of-closure) interlock.

(8) Four air changes in 90 seconds or four air changes at 60% damper opening with both air flow and damper position proven.

(9) Four air changes at 60% damper opening with both air flow and damper position proven.

(10) Units equipped with automatically operated air shutters or dampers which are closed or positioned to restrict air when burner is not firing, shall provide means to open the air shutter or damper to the high fire position for at least 90 seconds prior to light off.

(11) One of the two low-water fuel cutoffs may be a combined feeder/cutoff device.

(12) For low pressure steam units with inputs of 400,000 Btu/h or less, only one low-water fuel cutoff is required in gravity return units installed in residences as defined by the authority having jurisdiction.

(13) For modular low pressure steam boilers, each module shall be equipped with an automatic low-water fuel cutoff. The assembled modular boiler shall have a second low-water fuel cutoff. Operation of this low-water fuel cutoff shall shut off the fuel supply to all modules.

(14) Except those installed in residences (as defined by the authority having jurisdiction).

(15) An assembled modular boiler shall be protected by a low-water fuel cutoff located so that it will detect a low-water condition before the level falls below the lowest safe waterline in any module. Operation of the low-water fuel cutoff shall shut off the fuel to all modules.

(16) In lieu of the requirements for low-water fuel cutoffs in a water tube or coil-type boiler requiring forced circulation, they shall have an accepted sensing device to prevent burner operation at a flow rate inadequate to protect the boiler from overheating. Where there is a definitive waterline, a low-water fuel cutoff shall be provided in addition to the sensing device. Functioning of the low-water fuel cutoff shall cause safety shutdown.

(17) Close main valve and recycle.

(18) Safety shutdown and lockout or recycle once only for ignition systems with pilots.

(19) Two safety shutoff valves in series. May be in single control body.

(20) Two safety shutoff valves in series or one safety shutoff valve with valve seal overtravel (proof-of-closure) interlock.

(21) One safety shutoff valve to incorporate valve seal overtravel (proof-of-closure) interlock.

(22) When two safety shutoff valves are provided in the fuel train, an additional leak test valve is required so that each safety shutoff valve may be tested independently of the other.

(23) Gas pressure relief valves, where required, shall be located upstream of all operating and safety controls and downstream of the gas pressure regulator in both the main and pilot gas supply system. The relief valve line is to be directed to the atmosphere.

(24) Water level control alarms, when used, shall be distinctly audible above the ambient noise level and may be used in conjunction with indicating lights.

(25) When pilot is used.

(26) Initial start only.

(27) Pilot only: 15 seconds maximum if interrupted pilot used.

(28) Pilot only: 15 seconds maximum if interrupted pilot used, 25 to 30 seconds if safety shutoff valve has full opening.

(29) Pilot only: 10 seconds maximum for modulating or high-low firing.

(30) Pilot only: 10 seconds maximum.

(31) Interrupted pilot only.

(32) Maximum input at light off shall not exceed 2,500,000 Btu/h.

(33) Required with modulating or high-low firing.

(34) Required if interrupted pilot.

(35) If the ignition system includes a relight feature, the relight attempt shall be initiated with: 0.8 second upon loss of flame.

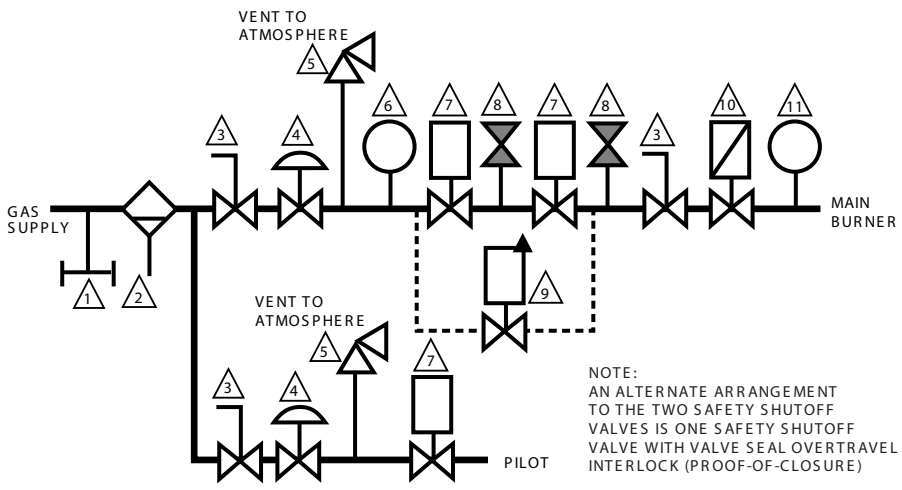
(36) For power, and mechanical draft, burners and natural draft burners with inputs less than 400,000 Btu/h and a continuous pilot, 180 seconds maximum for pilot flame failure.

(37) If system has intermittent pilot, wait 5 minutes before resetting ignition system (instructional requirements).

(38) If system has interrupted pilot or direct ignition and the ignition includes a relight feature, the relight attempt shall be initiated within 0.8 second of loss of flame.

(39) A single recycle is allowed only for systems with pilots.

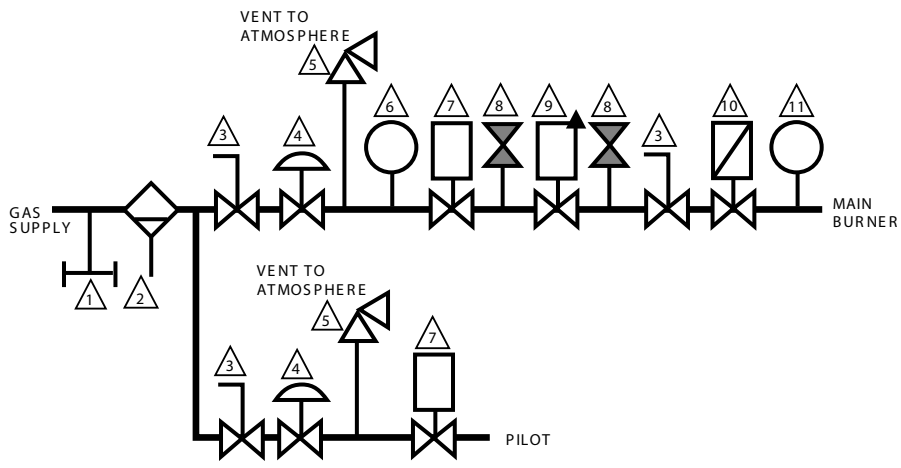
(40) Or, recycle once after 5 minuted time delay.



1 DRIP LEG
2 GAS STRAINER (IF REQUIRED)
3 MANUAL SHUTOFF VALVE
4 PRESSURE REGULATOR
5 PRESSURE RELIEF VALVE (IF REQUIRED)
6 LOW GAS PRESSURE SWITCH
7 SAFETY SHUTOFF VALVE
8 LEAKAGE TEST VALVE
9 SAFETY SHUTOFF VALVE WITH VALVE SEAL OVERTRAVEL INTERLOCK (PROOF-OF-CLOSURE)
10 OPTIONAL MODULATING VALVE
11 HIGH GAS PRESSURE SWITCH

M17772

Figure 4



1 DRIP LEG
2 GAS STRAINER (IF REQUIRED)
3 MANUAL SHUTOFF VALVE
4 PRESSURE REGULATOR
5 PRESSURE RELIEF VALVE (IF REQUIRED)
6 LOW GAS PRESSURE SWITCH
7 SAFETY SHUTOFF VALVE
8 LEAKAGE TEST VALVE
9 SAFETY SHUTOFF VALVE WITH VALVE SEAL OVERTRAVEL INTERLOCK (PROOF-OF-CLOSURE)
10 OPTIONAL MODULATING VALVE
11 HIGH GAS PRESSURE SWITCH

M17773

Figure 5

Comments: _____

ASME CSD-1: Fuel Trains

Figure 4
400,000-5,000,000 BTU/HR

Figure 5
5,000,000-12,500,000 BTU/HR

Survey Company Name: _____

Technician Signature: _____

Customer Signature: _____

Date: _____