D249 Series
Cast Iron Commercial
Natural Gas Steam Boiler
Submittal/Specifications

Engineer:_____

Project Name:_____

Project Location:_____

Contractor:_____

APPLICATION:
Modular Gas Fired Steam heating boiler for indoor installations. Available from 300 MBH to 1500 MBH input. For use with natural gas only. All boiler bases are factory assembled with gas train, controls and wiring and test fired to ensure dependable performance.

CERTIFICATION AND APPROVALS:
The Cast Iron heat exchanger is manufactured and tested in accordance with American Society of Mechanical Engineers Standards (ASME) and certified by Canadian Standards Association (CSA) in the US. The Cast Iron heat exchanger is tested for a maximum allowable working pressure of 15 PSIG (pounds per square inch gauge) in accordance with ASME boiler and pressure vessel code, section IV, rules for construction of heating boilers. A 15 PSIG safety relief valve is shipped standard

CAST IRON BOILER ASSEMBLY:
Long life cast iron boilers are field assembled using tie rods and cast iron push nipples. When the boiler is heated, sections and push nipples expand and contract in the same proportion because they are constructed of like material, providing a positive water tight seal. A combination of burner modules are set to meet specific capacity requirements. Individually shipped boiler sections for ease of handling & easy passage through conventional doors.

BOILERS WITH (OPTIONAL) CSD-1 CONTROLS
From 400 MBH to 1500 MBH input may be ordered with additional combustion and water or steam controls to meet our interpretation of CSD-1. The controls and the installation may be subject to approval by local inspectors. Additional parts or equipment may be required. Consult local authorities.

WARRANTY
The cast iron boiler has a ten year limited warranty on the individual sections. All other components have a limited warranty for one year.

ELECTRONIC IGNITION:
Solid-state electronic spark igniters provide for positive ignition of the pilot burners on each operating cycle. Pilot gas is ignited and burns during each running cycle of the boiler. Main burners and pilot gas are extinguished during the off cycle. Ignition system permits the main gas valve to open only when the pilot burner is proven to be lit. Pilot operation is fully automatic on demand for heat. Should loss of flame occur, the main valve closes, shutting down the individual base. Other bases can remain lit.

Manufactured by:
ECR International Inc.
2201 Dwyer Avenue, Utica, NY 13501
Tel. 800 253 7900
www.ecrinternational.com
PN 240011949 REV. A [09/15/2017]

AUTOMATIC GAS CONTROL

The compact 24 Volt redundant combination gas control valve combines:

- Automatic safety pilot
- Manual shut off (On-Off)
- Pilot filtration
- Automatic electric valve (dual)
- Gas pressure regulation

Dual valve design provides double assurance of 100% shut off of gas to the pilot and main burners on each off cycle.

STANDARD STEAM TRIM LIST:

- **Low Water Cut Off (LWCO)** – Mounted externally, is furnished with the boiler and will automatically shut off gas to the burners if the water level drops below minimum safe levels. Includes Blow Off Valve.
- **Pressuretrol** – Adjustable steam pressure operating control automatically shuts off gas to the burners if steam pressure reaches cut-off set point.
- **Water Level Gauge** – Allows for a visual inspection of the water level in the boiler.
- **Safety Relief Valve** – The field installed valve provides pressure relief of the heating system in case of abnormal conditions. Valve opens at 15 psig (103 kPa) and is rated by AHRI
- **Siphon Loop**

OPTIONS:

The optional CSD-1 controls modify the standard D249 boiler on both the fuel train and steam trim as follows:

Steam Boiler with Boiler Feed Pump Return system:

- Add SF-500 Hydrolevel safeguard Manual Reset LWCO
- Add 150S-B-MK LWCO and Pump Control
- Delete 67D-1 LWCO
- Add L404L Manual Reset Pressure Control

Steam Boiler with Gravity or Condensate Pump Return System:

- Add SF-500 Hydrolevel safeguard Manual Reset LWCO
- Add L404L Manual Reset Pressure Control

The SF-500LWCO is the seconday LWCO to the 67D-1 LWCO furnished standard with the boiler.

Fuel Train:

Substitute CSD-1 fuel train(s) for standard which includes (per base): Intermittent Pilot Module (PT#1140007) control Stop with alarm 1003-612A and (PI1140008) Control CSD-1 Lockout Board DB1145-2 with manual reset: Independent Pilot Gas Line (Manual shut-off valve, Pressure regulator, Safety shut-off valve); Main Gas Line (Gas Valve, Two leak test cocks, Manual shut-off downstream of the main gas valve).

Notes:

1. The D249300S and D249400S do not requite fuel train modifications for CSD-1. the standard fuel train is furnished.
2. ***Control equipment is included to meet Dunkirk's interpretation of CSD-1. Consult local authorities before boiler installation. Additional controls, if required can be provided at an additional price.***

RATINGS AND CAPACITIES

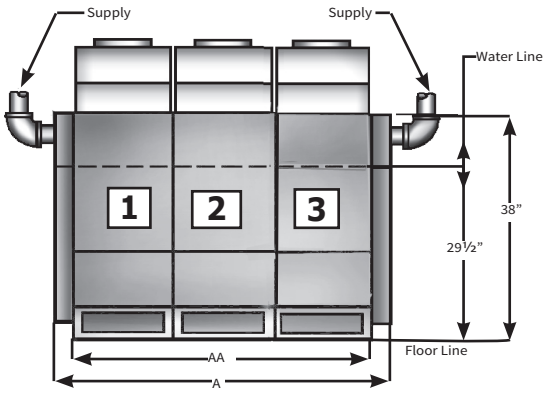
AHRI CERTIFIED® www.ahridirectory.org

Ratings and Capacities

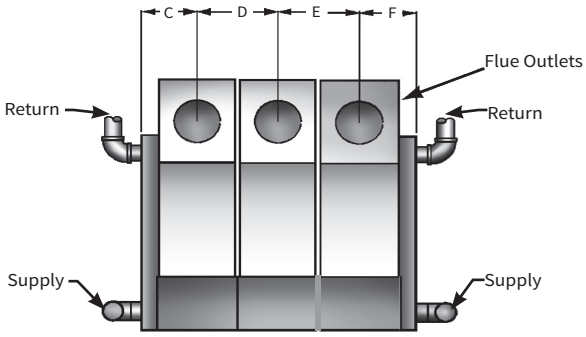
Input/Size (Mbh)	Output (1)	Net AHRI Ratings (2)		Flue Outlet No. & Size			Chimney Size (6)	Flue Collector Size to Chimney	Horse-power Gross Output (4)	Therm. Eff.
	Gross Output Mbh	Steam (Sq Ft)	Steam Mbh	8"	10"	12"	I.D. x Ht.			
300	233	729	175	1			8"x20'	8	6.96	77.0
400	310	971	233		1		10"x20'	10	9.25	
500	388	1213	291			1	12"x20'	12	11.58	
600	465	1454	349	2			12"x20'	12	13.88	77.0
700	543	1696	407	1	1		12"x20'	12	16.21	
800	620	1938	465		2		14"x20'	14	18.51	
900	698	2183	524		1	1	14"x20'	14	20.84	
1000	775	2421	581			2	14"x20'	14	23.13	
1100	853	2667	640	1	2		16"x20'	16	25.46	77.0
1200	930	2908	698		3		16"x20'	16	27.76	
1300	1008	3150	756	1		2	16"x20'	16	30.09	
1400	1085	3392	814		1	2	18"x20'	18	32.39	
1500	1163	3633	872			3	18"x20	18	34.72	

1) Ratings are at sea level to 2,000 feet. For altitudes above 2,000 feet, reduce all ratings 4% for each 1,000 feet above sea level
2) Net steam ratings based on an allowance of 1.333 (300-1500). Contact Technical Support before selecting boiler for installations having unusual piping and pick-up factors, such as intermittent system operations, extensive piping systems, etc.
3) Ratings in square feet are computed at 240 Btuh/square foot for steam boilers.
4) Ratings based on 33,500 Btuh per horsepower.
5) Pressure drop based on given flow from single outlet and returning to single inlet at the opposite end of the boiler.
6) Chimney sizes shown are one option based on a typical venting system, and sized according to the National Fuel Gas Code, assuming Type B double wall vent and vent connectors, Other venting system designs are acceptable as shown on Flue Connection And Venting section of this manual. For further chimney design and sizing information, consult the National Fuel Gas Code, ANSI Z223.1/NFPA 54-latest revision, or ASHRAE HVAC Systems and Equipment Handbook, Chimney, Gas Vent, and Fireplace Systems, or the Standard for Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances. NFPA 211. Follow standard engineering practice.

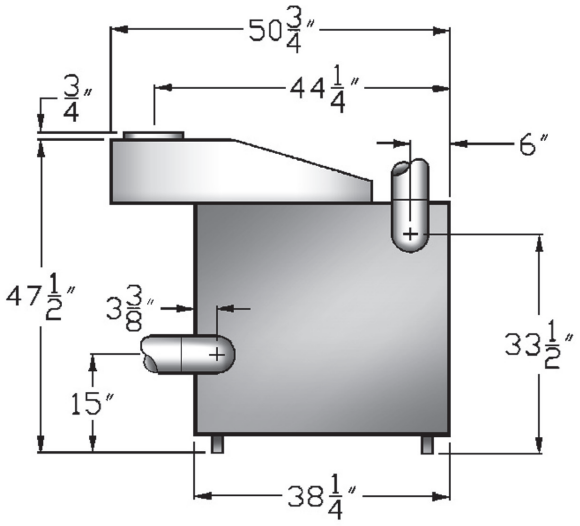
Front View



Top View



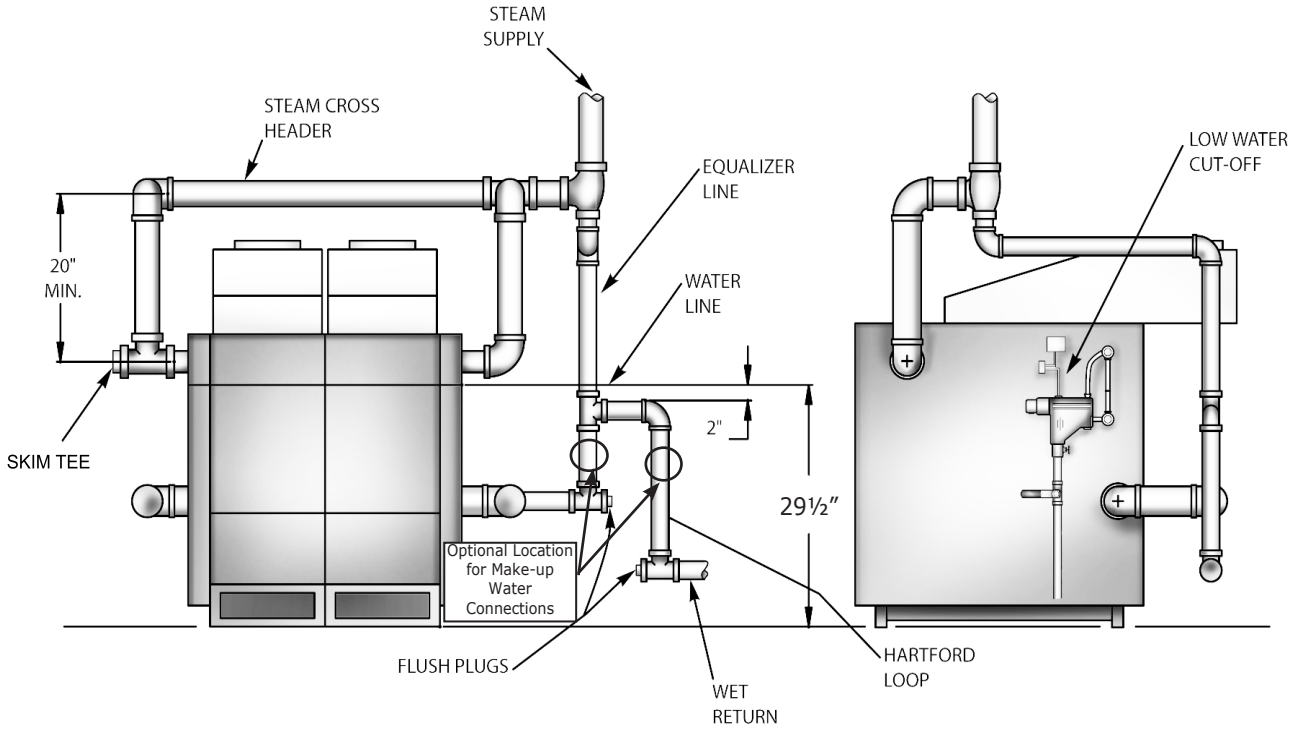
Left Side View



ALL SUPPLY AND RETURN CONNECTIONS ARE 4 INCH

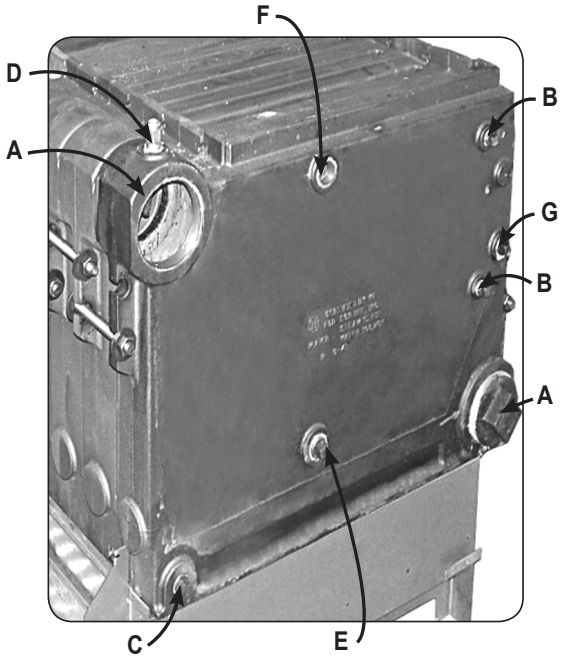
Boiler Model No.	Water Content in Gallons	Shipping Weight Lbs.	A Jacket Width L to R	AA Base & Battery Length	C	D	E	F	*Boiler Modules		
									*1	*2	*3
300	20	922	20 3/4	16 3/4	10 3/8	–	–	10 3/8	300	x	x
400	25	1133	25	21	12 1/2	–	–	12 1/2	400	x	x
500	30	1344	29 1/4	25 1/4	14 5/8	–	–	14 5/8	500	x	x
600	35	1555	33 1/2	29 1/2	10 3/8	12 3/4	–	10 3/8	300	300	x
700	40	1766	37 3/4	34 3/4	10 3/8	14 7/8	–	12 1/2	300	400	x
800	45	1977	42	38	12 1/2	17	–	12 1/2	400	400	x
900	50	2188	46 1/2	42 1/4	12 1/2	19 1/8	–	14 5/8	400	500	x
1000	55	2399	50	46 1/2	14 5/8	21 1/4	–	14 5/8	500	500	x
1100	60	2610	54 3/4	50 3/4	10 3/8	14 7/8	17	12 1/2	300	400	400
1200	65	2821	59	55	12 1/2	17	17	12 1/2	400	400	400
1300	70	3032	63 1/4	59 1/4	10 3/8	17	21 1/4	14 5/8	300	500	500
1400	75	3243	67 1/2	63 1/2	12 1/2	19 1/8	21 1/4	14 5/8	400	500	500
1500	80	3454	71 3/4	67 3/4	14 5/8	21 1/4	21 1/4	14 5/8	500	500	500

STEAM BOILER PIPING



OPENING	SIZE	STEAM
A	4"	Supply and Return
B	½"	Primary LWCO and Gauge Glass Set
C	¾"	Drain, Left End
C	¾"	Drain, Right End
D	½"	Plugged
E	1"	Accessories
*F	1"	Safety Valve
G	¾"	Plugged or Electronic (Probe Type) LWCO

***If using opening F** for other than Safety Valve or Safety Relief Valve, or Safety/Relief valve is larger than 1", Install Safety/Relief Valve in Header Piping as near boiler as possible.



Dunkirk

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