

SPECIFICATIONS AND PERFORMANCE



80% AFUE Efficiency

D-247 Cast Iron Hot Water or Steam Boiler

P/N# 240005693, Rev. 1.0 [10/05]

AVAILABLE HEATING INPUTS OF:

300 MBH (87.99 kw) through 3000MBH (879.89 kw)

PRODUCT DESCRIPTION

▲ **Application** – Natural Gas fired hot water or steam boilers are available with heating inputs of 300 MBH (87.99 kw) through 3000 MBH (879.89 kw). The 28 sizes meet the heating needs for schools, churches, office buildings, factories, etc. The boilers are rated at an AFUE of 80% combustion efficiency.

Benefits:

- Units may be grouped to make any size from 300 to 3,000 Btu.
- Stage firing of individual bases in water application for improved efficiency and reliability.

▲ **Approvals** – Manufactured and tested in accordance with American Society of Mechanical Engineers (ASME) standards. The boiler is certified by the Canadian Service Approval (CSA) in the US. The I=B=R ratings are certified in accordance the Gas Appliance Manufacturers Association (GAMA). material and Equipment Acceptance number for the City of New York is MEA 39-86R Vol. IV.

▲ **Boilers with (Optional) CSD-1 Controls** – from 300 MBH (87.99 kw) to 2500 MBH (732.49 kw) 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 having jurisdiction before the installation of the boiler.

▲ **Warranty** – The cast iron boiler heat exchanger has a one year warranty. All other components have a limited warranty for one year unless the component manufacturer extends their warranty.

STANDARD FEATURES

- ▲ **Cabinet:**
- Constructed of heavy gauge steel with an enamel paint finish
 - Fully insulated with fiberglass insulation, keeping surface temperatures low
 - Supply and return connections are furnished on both sides of the cabinet
 - Burner access panel is easily removed for servicing

▲ **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.

Benefits:

- Individually shipped boiler sections for ease of handling & easy passage through conventional doors.
- Boiler flueways easily accessible for cleaning & servicing.

▲ **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.

▲ **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.

▲ **Aluminized Steel Burners** – Each lanced port burner provides quiet and clean combustion.

▲ **Drain Valve (Brass)** – 3/4" (19mm) is furnished as standard equipment for field installation on the side of the boiler. See dimensional drawing for location.

STANDARD WATER TRIM LIST

▲ **Aquastat** – Immersion type high limit control with well for controlling maximum water temperature.

▲ **Relief Valve** – The field installed valve provides for pressure relief of the heating system in case of abnormal operating conditions. The valve opens at 30 psig (210 kPa) and is rated by ASME. A 50 psig (345 kPa) valve is also available.

▲ **Water Temperature/Pressure Gauge** – Furnished as standard for field installation on the boiler. The temperature and the pressure of the water are shown on the gauge.

STANDARD STEAM TRIM LIST

▲ **Low Water Cut Off (LWCO)** – is furnished with the boiler and will automatically shut off gas to the burners if the water level drops below minimum safe levels.

▲ **Pressuretrol** – Adjustable steam pressure operating control automatically shuts off gas to the burners if steam pressure reaches cut-off setpoint.

▲ **Water Level Gauge** – Allows for a visual inspection of the water level in the boiler.

▲ **Pop Safety 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 ASME.

D-247 CAST IRON COMMERCIAL HOT WATER OR STEAM BOILER

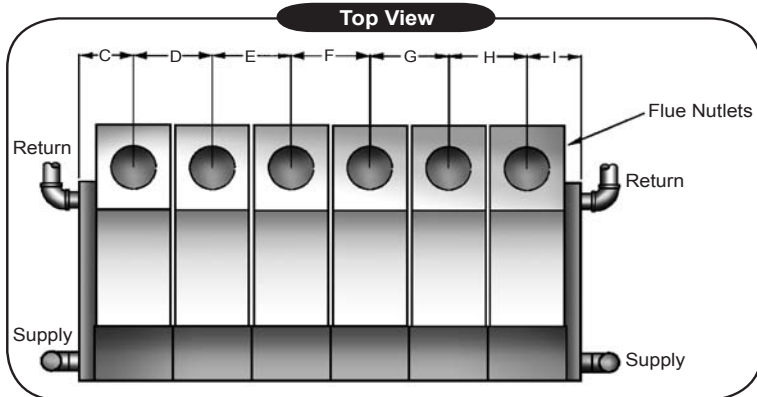
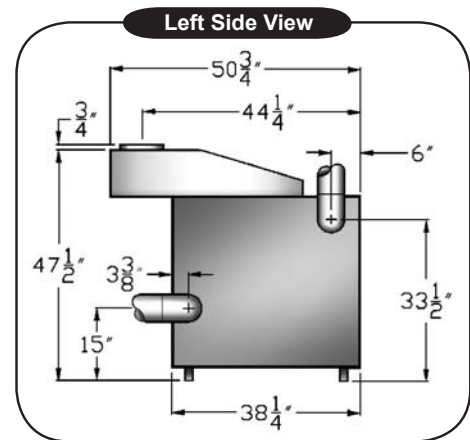
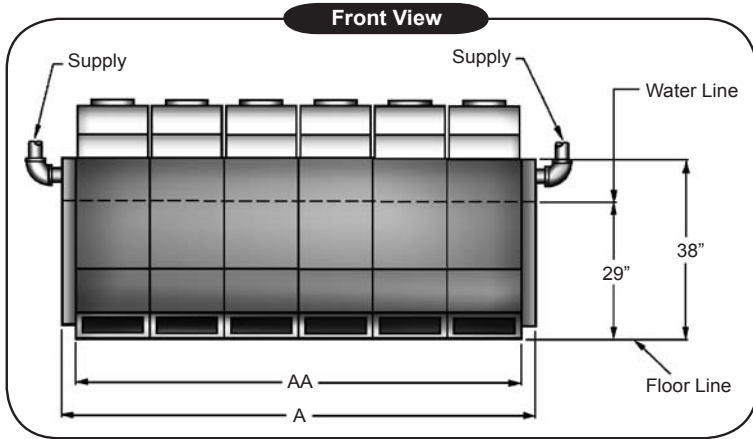


IBR Ratings and Capacities – Chart #1

Boiler Model No.	A.G.A. Input (1)	A.G.A. Output (1)	NET I=B=R Ratings (2)			Fule Outlet No. & Size			Chimney Size (6)	Flue Collector Size to Chimney	Horsepower Gross Output (4)	Pressure Drop Thru Water Boiler (5)	
	Btu Mbh	Btu Mbh	Steam Sq. Ft. (3)	Steam But Mbh	Water Btu Mbh	8"	10"	12"	I.D. x Ht.			GPM	In. Water
D-247 300	300	240	750	180	209	1			8"x20'	8	7.16	18.9 37.8	0.10 0.50
D-247 400	400	320	1000	240	278		1		10"x20'	10	9.55	25.2 50.4	0.27 0.86
D-247 500	500	400	1250	300	348			1	12"x20'	12	11.94	31.5 63.0	0.40 1.20
D-247 600	600	480	1500	360	417	2			12"x20'	12	14.33	37.8 75.6	0.50 1.70
D-247 700	700	560	1750	420	487	1	1		12"x20'	12	16.72	44.1 88.2	0.70 2.50
D-247 800	800	640	2000	480	557		2		14"x20'	14	19.10	50.4 100.8	0.88 2.90
D-247 900	900	720	2250	540	626		1	1	14"x20'	14	21.49	56.7 113.4	1.10 3.80
D-247 1000	1000	800	2500	600	696			2	14"x20'	14	23.88	63.0 126.0	1.30 4.00
D-247 1100	1100	880	2750	660	765	1	2		16"x20'	16	26.27	69.3 138.6	1.50 5.00
D-247 1200	1200	960	3000	720	835		3		16"x20'	16	28.66	75.6 151.2	1.80 6.00
D-247 1300	1300	1040	3250	780	904	1		2	16"x20'	16	31.04	81.9 163.8	2.00 5.60
D-247 1400	1400	1120	3500	840	974		1	2	18"x20'	18	33.43	88.2 176.4	2.40 7.00
D-247 1500	1500	1200	3750	900	1043			3	18"x20'	18	35.82	94.5 189.0	2.60 8.30
D-247 1600	1600	1280	4008	962	1113		4		18"x20'	18	83.21	100.8 201.0	2.80 9.60
D-247 1700	1700	1360	4283	1028	1183	1	1	2	18"x20'	18	40.60	107.1 214.2	3.15 10.30
D-247 1800	1800	1440	4563	1095	1252		2	2	20"x20'	20	42.99	113.4 226.8	3.50 11.00
D-247 1900	1900	1520	4838	1161	1322		1	3	20"x20'	20	45.37	119.7 239.4	4.00 12.50
D-247 2000	2000	1600	5117	1228	1391			4	20"x20'	20	47.76	126.0 252.0	4.50 14.00
D-247 2100	2100	1680	5392	1294	1461	2		3	20"x20'	20	50.15	132.3 264.6	4.95 16.00
D-247 2200	2200	1760	5671	1361	1530		3	2	22"x20'	22	52.54	138.6 277.2	5.40 18.00
D-247 2300	2300	1840	5953	1426	1600		2	3	22"x20'	22	54.93	144.9 289.8	5.70 17.00
D-247 2400	2400	1920	6213	1491	1670		1	4	22"x20'	22	57.31	151.2 302.4	8.00 19.00
D-247 2500	2500	2000	6471	1553	1739			5	22"x20'	22	59.70	157.5 315.0	8.00 20.50
D-247 2600	2600	2080	6729	1615	1809	2		4	22"x20'	22	62.09	163.8 327.6	7.00 24.00
D-247 2700	2700	2160	6988	1677	1878	1	1	4	24"x20'	24	64.48	170.1 340.2	7.50 24.00
D-247 2800	2800	2240	7246	1739	1948		2	4	24"x20'	24	66.87	176.4 352.8	8.00 26.00
D-247 2900	2900	2320	7504	1801	2017		1	5	24"x20'	24	69.25	182.75 365.5	8.50 27.50
D-247 3000	3000	2400	7763	1863	2087			6	24"x20'	24	71.64	189.1 378.2	9.00 9.00

- (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) Ratings are based on selection factors recommended by Hydronics Institute for piping and pickup. Net water boiler ratings are based on an allowance of 1.15, and net steam boiler ratings are based on an allowance of 1.33. For water applications with high piping and pickup requirements, use steam rating.
- (3) Ratings in square feet are computed at 240 Btu/square foot for steam boilers.
- (4) Ratings based on 33,500 Btu/h per horsepower.
- (5) Pressure drop based on given flow from a single outlet and returning to a single inlet at the opposite end of the boiler.
- (6) Chimney sizes shown are one option based on a typical venting system as shown in Figure 21, 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 page 16. For further chimney design and sizing information, consult the National Fuel Gas Code, ANSI Z223.1/NFPA 54-latest revision, or ASHRAE-1996 HVAC Systems and Equipment Handbook, Chapter 30, Chimney, Gas Vent, and Fireplace systems, or the Standard for chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances, NFPA 211-latest revision. Follow standard engineering practice.

D-247 CAST IRON COMMERCIAL HOT WATER OR STEAM BOILER

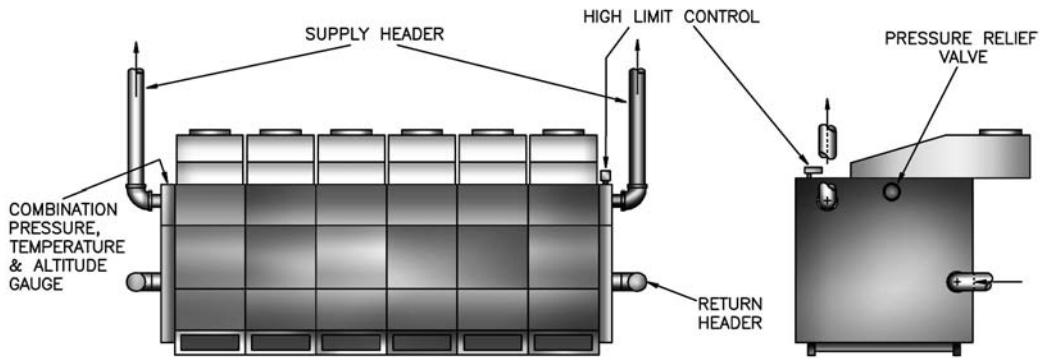


ALL SUPPLY AND RETURN CONNECTIONS ARE 4 INCH

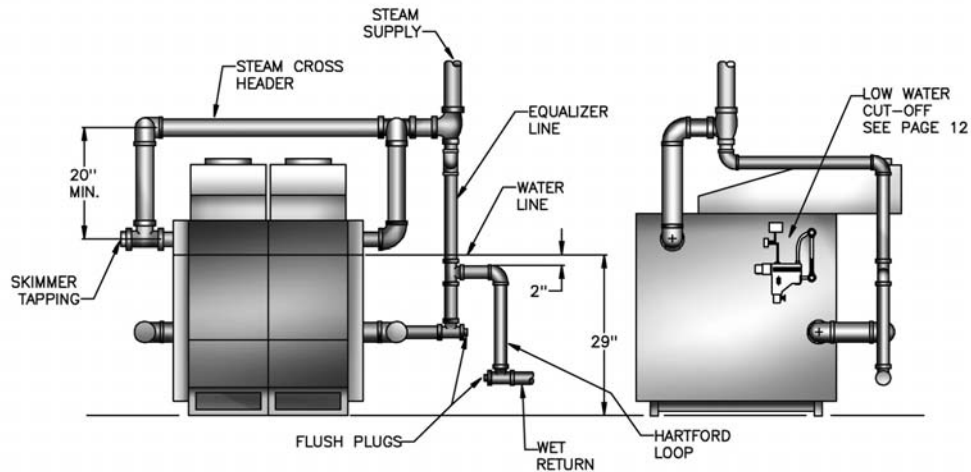
Boiler Model No.	Water Content in Gallons		Shipping Weight Lbs.	A Jacket Width L to R	AA Base & Battery Length	C	D	E	F	G	H	I
	Steam	Water										
D-247 300	20	26	922	18 3/4	16 3/4	9 3/8	-	-	-	-	-	9 3/8
D-247 400	25	33	1133	23	21	11 1/2	-	-	-	-	-	11 1/2
D-247 500	30	40	1344	27 1/4	25 1/4	13 5/8	-	-	-	-	-	13 5/8
D-247 600	35	46	1555	31 1/2	29 1/2	9 3/8	12 3/4	-	-	-	-	9 3/8
D-247 700	40	52	1766	35 3/4	34 3/4	9 3/8	14 7/8	-	-	-	-	11 1/2
D-247 800	45	58	1977	40	38	11 1/2	17	-	-	-	-	11 1/2
D-247 900	50	65	2188	44 1/4	42 1/4	11 1/2	19 1/8	-	-	-	-	13 5/8
D-247 1000	55	71	2399	48	46 1/2	13 5/8	21 1/4	-	-	-	-	13 5/8
D-247 1100	60	78	2610	52 3/4	50 3/4	9 3/8	14 7/8	17	-	-	-	11 1/2
D-247 1200	65	84	2821	57	55	11 1/2	17	17	-	-	-	11 1/2
D-247 1300	70	91	3032	61 1/4	59 1/4	9 3/8	17	21 1/4	-	-	-	13 5/8
D-247 1400	75	97	3243	65 1/2	63 1/2	11 1/2	19 1/8	21 1/4	-	-	-	13 5/8
D-247 1500	80	104	3454	69 3/4	67 3/4	13 5/8	21 1/4	21 1/4	-	-	-	13 5/8
D-247 1600	85	110	3665	74	72	11 1/2	17	17	17	-	-	11 1/2
D-247 1700	90	117	3876	78 1/4	76 1/4	9 3/8	14 7/8	19 1/8	21 1/4	-	-	13 5/8
D-247 1800	95	123	4087	82 1/2	80 1/2	11 1/2	17	19 1/8	21 1/4	-	-	13 5/8
D-247 1900	100	130	4298	86 3/4	84 3/4	11 1/2	19 1/8	21 1/4	21 1/4	-	-	13 5/8
D-247 2000	105	136	4509	91	89	13 5/8	21 1/4	21 1/4	21 1/4	-	-	13 5/8
D-247 2100	110	143	4720	95 1/4	93 1/4	9 3/8	12 3/4	17	21 1/4	21 1/4	-	13 5/8
D-247 2200	115	149	4931	99 1/2	97 1/2	11 1/2	17	17	19 1/8	21 1/4	-	13 5/8
D-247 2300	120	156	5142	103 3/4	101 3/4	11 1/2	17	19 1/8	21 1/4	21 1/4	-	13 5/8
D-247 2400	125	162	5353	108	106	11 1/2	19 1/8	21 1/4	21 1/4	21 1/4	-	13 5/8
D-247 2500	130	169	5564	112 1/4	110 1/4	13 5/8	21 1/4	21 1/4	21 1/4	21 1/4	-	13 5/8
D-247 2600	135	175	5775	116 1/2	114 1/2	9 3/8	12 3/4	17	21 1/4	21 1/4	21 1/4	13 5/8
D-247 2700	140	182	5986	120 3/4	118 3/4	9 3/8	14 7/8	19 1/8	21 1/4	21 1/4	21 1/4	13 5/8
D-247 2800	145	188	6197	125	123	11 1/2	17	19 1/8	21 1/4	21 1/4	21 1/4	13 5/8
D-247 2900	150	195	6408	129 1/4	127 1/4	11 1/2	19 1/8	21 1/4	21 1/4	21 1/4	21 1/4	13 5/8
D-247 3000	155	201	6619	133 1/2	131 1/2	13 5/8	21 1/4	21 1/4	21 1/4	21 1/4	21 1/4	13 5/8

D-247 CAST IRON COMMERCIAL HOT WATER OR STEAM BOILER DIMENSIONS AND SPECIFICATIONS

Hot Water Boiler Piping

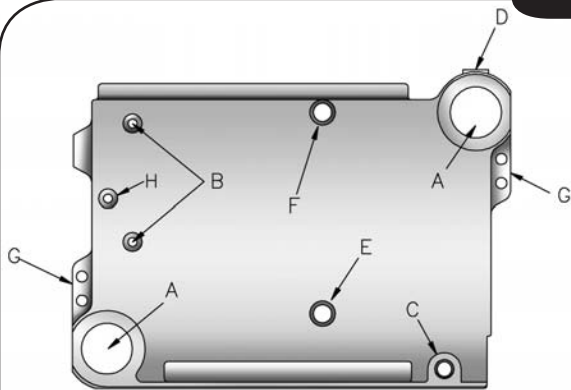


Steam Boiler Piping



Pop Safety Valve should be field installed as close as possible to boiler

End Section Tappings



End Section

Tappings are the same in both Right and Left End Sections, except for the drain valve tapping which is 1 1/2" Left End, and 3/4" Right End.

Opening	Size	Steam	Water
A	4"	Supply and Return	Supply and Return
B	1/2"	Primary LWCO and Gauge Glass Set	Plugged
C	1 1/2"	Drain, Left End	Drain, Left End
C	3/4"	Drain, Right End	Drain, Right End
D	1/2"	Plugged	Limit Control
E	1"	Accessories	Accessories
F	1"	Pop Safety Valve	Pressure Relief Valve
G	-	Tie Rod Holes	Tie Rod Holes
H	3/4"	Plugged or Secondary (Probe Type) LWCO	Plugged



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