

MODEL CBR BOILERS

125 - 800 HP



Dimensions and Ratings

Figure 1. Model CBR Steam Boiler Ratings

BOILER H.P.	125	150	200	250	300	350	400	500	600	700	800
RATINGS - SEA LEVEL TO 700 FT.											
Rated Capacity (lbs-steam/hr from and at 212 °F)	4313	5175	6900	8625	10350	12075	13800	17250	20700	24150	27600
Btu Output (1000 Btu/hr)	4184	5021	6694	8368	10042	11715	13389	16736	20083	23430	26778
APPROXIMATE FUEL CONSUMPTION AT RATED CAPACITY BASED ON NOMINAL 80% EFFICIENCY											
Light Oil gph (140,000 Btu/gal)	37.4	44.8	59.8	74.7	89.7	104.6	119.5	149.4	179.3	209.2	239.1
Heavy Oil gph (150,000 Btu/gal)	34.9	41.8	55.8	69.7	83.7	97.6	111.6	139.5	167.4	195.3	223.1
Gas CFH (1000 Btu)	5230	6276	8368	10460	12552	14644	16736	20920	25104	29288	33472
Gas (Therm/hr)	52.3	62.8	83.7	104.6	125.5	146.4	167.4	209.2	251.0	292.9	334.7
POWER REQUIREMENTS - SEA LEVEL TO 700 FT. (60 HZ)											
Blower Motor hp (60 ppm) ^A	7 1/2	10	15	7 1/2	15	20	10	15	30	40	50
Blower Motor hp (30 ppm) ^A	10	15	20	15	20	30	15	25	40	60	75
Oil Pump Motor, hp, No. 2 Oil	1/2	1/2	1/2	1/2	3/4	3/4	3/4	3/4	3/4	1	1
Oil Pump Motor, hp, No. 6 Oil	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4	3/4	3/4	3/4
Air Compressor Motor hp	3	3	3	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2
Heavy Oil Heater kW ^B	5	5	5	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2 ^C	7 1/2 ^C	7 1/2 ^C	7 1/2 ^C
BOILER DATA											
Heating Surface sq-ft. (Fireside)	459	459	641	764	966	1238	1226	1374	1794	2535	2535

Notes:

- A. Blower motor size for boiler operating pressures 125 psig and less, contact your local Cleaver-Brooks authorized representative for higher pressures and altitudes.
- B. Oil heater sized as a combination steam-electric heater. For straight electric heaters, contact your local Cleaver-Brooks authorized representative.
- C. 10 KW Oil heater for low pressure.

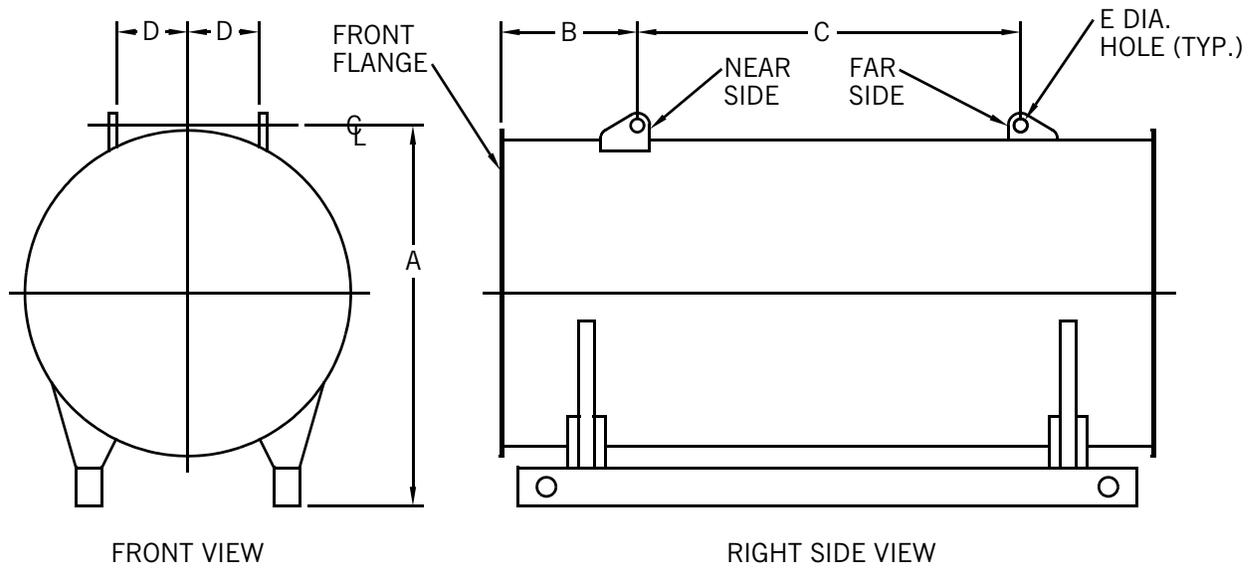
Figure 2. Model CBR Hot Water Boiler Ratings

BOILER H.P.	125	150	200	250	300	350	400	500	600	700	800
RATINGS - SEA LEVEL TO 700 FT.											
Btu Output (1000 Btu/hr)	4184	5021	6694	8368	10042	11715	13389	16736	20083	23430	26778
APPROXIMATE FUEL CONSUMPTION AT RATED CAPACITY BASED ON NOMINAL 80% EFFICIENCY											
Light Oil gph (140,000 Btu/gal)	37.4	44.8	59.8	74.7	89.7	104.6	119.5	149.4	179.3	209.2	239.1
Heavy Oil gph (150,000 Btu/gal)	34.9	41.8	55.8	69.7	83.7	97.6	111.6	139.5	167.4	195.3	223.1
Gas CFH (1000 Btu)	5230	6276	8368	10460	12552	14644	16736	20920	25104	29288	33472
Gas (Therm/hr)	52.3	62.8	83.7	104.6	125.5	146.4	167.4	209.2	251.0	292.9	334.7
POWER REQUIREMENTS - SEA LEVEL TO 700 FT. (60 HZ)											
Blower Motor hp (60 ppm)	7 1/2	10	15	7 1/2	15	20	10	15	30	40	50
Blower Motor hp (30 ppm)	10	15	20	15	20	30	15	25	40	60	75
Oil Pump Motor, hp, No. 2 Oil	1/2	1/2	1/2	1/2	3/4	3/4	3/4	3/4	3/4	1	1
Oil Pump Motor, hp, No. 6 Oil	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4	3/4	3/4	3/4
Air Compressor Motor hp	3	3	3	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2
Heavy Oil Heater kW ^A	5	5	5	7 1/2	7 1/2	7 1/2	10	10	10	10	10
BOILER DATA											
Heating Surface sq-ft. (Fireside)	459	459	641	764	966	1238	1226	1374	1794	2535	2535

Notes:

- A. Oil heater sized as a straight electric heater.

Figure 3. Lifting Lug Locations, Model CBR Boilers



BOILER H.P.		DIMENSIONS (INCHES)				
		A	B	C	D	E
125-150	ALL	80.25"	29.75"	83.5"	10"	3"
200	ALL	80.25"	29.75"	114.5"	10"	3"
250	STEAM	87.12"	36"	84"	10"	3"
	HOT WATER	87.12"	36"	93"	10"	3"
300	STEAM	87.12"	36"	99"	10"	3"
	HOT WATER	87.12"	36"	108"	10"	3"
350	STEAM	87.12"	36"	129"	10"	3"
	HOT WATER	87.12"	36"	138"	10"	3"
400-500	ALL	105.5"	35.75"	99"	11"	3"
600	ALL	105.5"	35.75"	131"	11"	3"
700-800	ALL	105.5"	35.75"	164"	11"	3"

NOTE: A, B, AND C DIMENSIONS MAY VARY BY 1/2".

Figure 4a. Model CBR Steam Boiler Dimensions - Sheet 1 of 2

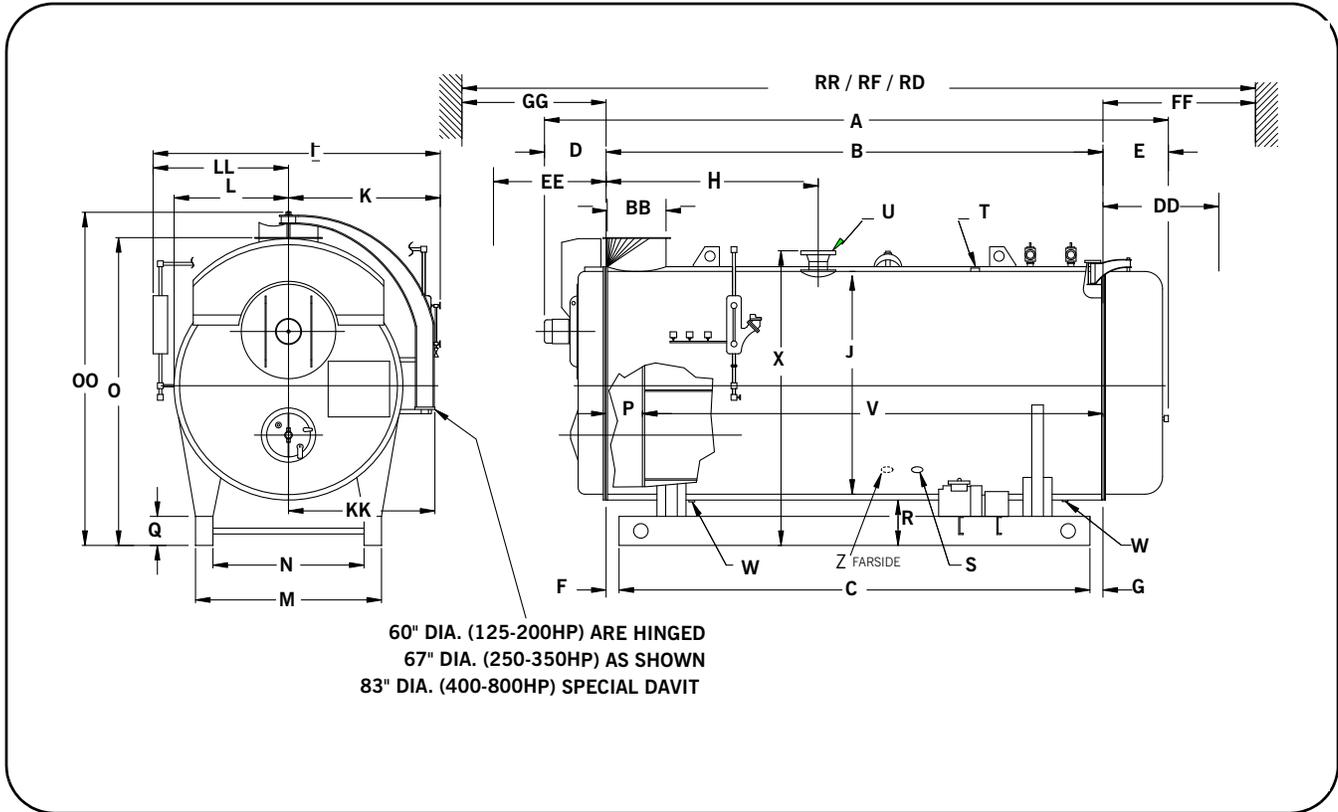


Figure 4b. Model CBR Steam Boiler Dimensions - Sheet 2 of 2

BOILER H.P.	DIM	125	150	200	250	300	350	400	500	600	700	800
LENGTHS												
Overall Length (60 PPM system)	A	196.5	199.5	231.5	207	226	258	224	230	266	300	301
Overall Length (30 PPM system)	A	199.5	200.5	233.5	211	228	260	225	234	267	302	303
Shell	B	149	149	180	156	171	201	163	168	200	233	233
Base Frame	C	136	136	167	143	158	188	150	155	187	220	220
Front Head Extension (60 PPM system)	D	28	31	32	28	32	34	29	30	34	35	36
Front Head Extension (30 PPM system)	D	31	32	34	32	34	36	30	34	35	37	38
Rear Head Extension	E	19.5	19.5	19.5	23	23	23	32	32	32	32	32
Shell Ring Flange to Base	F	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Rear Ring Flange to Base	G	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Shell Flange to Steam Nozzle	H	66	66	78	71.5	73	88	76.25	77.75	96.25	112.75	112.75
Front Shell Extension	P	12	12	12	15	15	15	17	17	17	17	17
Over Tubesheets	V	137	137	168	141	156	186	146	151	183	216	216
WIDTHS												
Overall Width	I	85	85	85	92	92	92	109	109	109	109	109
I.D. Boiler	J	60	60	60	67	67	67	83	83	83	83	83
Center to Water Column	K	45	45	45	48.5	48.5	48.5	56.5	56.5	56.5	56.5	56.5
Center to Outside Davit/Hinge	KK	35	35	35	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5
Center to Lagging	L	33	33	33	36.5	36.5	36.5	44.5	44.5	44.5	44.5	44.5
Center to Auxiliary LWCO	LL	40	40	40	43.5	43.5	43.5	52.5	52.5	52.5	52.5	52.5
Base Outside	M	52.5	52.5	52.5	51	51	51	60	60	60	60	60
Base Inside	N	44.5	44.5	44.5	43	43	43	47	47	47	47	47
HEIGHTS												
Overall Height	OO	86	86	86	102.5	102.5	102.5	120.5	120.5	120.5	120.5	120.5
Base to Vent Outlet	O	85	85	85	94.5	94.5	94.5	112	112	112	112	112
Height of Base Frame	Q	12	12	12	12	12	12	12	12	12	12	12
Base to Bottom of Boiler	R	16	16	16	14	14	14	16	16	16	16	16
Base to Steam Outlet	X	82.375	82.375	82.375	90.25	90.25	90.25	108	108	108	108	108
BOILER CONNECTIONS												
Feedwater Inlet (Both Sides)	S	1.5	1.5	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5
Surface Blowoff (150 lb only)	T	1	1	1	1	1	1	1	1	1	1	1
Steam Nozzle 15 lb (See Note "A")	U	8	8	10	10	12	12	12	12	12	12	12
Steam Nozzle 150 lb (See Note "B")	U	4	4	4	6	6	6	6	8	8	8	8
Blowdown-Front & Rear (15 lb)	W	1.5	1.5	2	2	2	2	2	2	2	2	2
Blowdown-Front & Rear (150 lb)	W	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2
Chemical Feed	Z	1	1	1	1	1	1	1	1	1	1	1
VENT STACK												
Vent Stack Diameter (Flanged)	BB	16	16	16	20	20	20	24	24	24	24	24
MINIMUM CLEARANCES												
Rear Door Swing	DD	32	32	32	36	36	36	45	45	45	45	45
Front Door Swing	EE	67	67	67	75	75	75	80	80	80	80	80
Tube Removal - Rear	FF	139	139	170	143	157	187	147	152	184	217	217
Tube Removal - Front	GG	127	127	158	128	142	172	130	135	167	200	200
MINIMUM BOILER ROOM LENGTH ALLOWING FOR DOOR SWING AND TUBE REMOVAL FROM:												
Thru Window or Door	RD	248	248	279	267	282	312	288	293	325	358	358
Front of Boiler	RF	308	308	370	320	349	409	338	348	412	478	478
Rear of Boiler	RR	355	355	417	374	403	463	390	400	464	530	530
WEIGHTS IN LBS												
Normal Water Weight		6,950	6,950	8,350	8,400	9,050	10,550	11,650	11,900	14,150	15,700	15,700
Approx. Shipping Weight - (15 psig)		11,850	11,850	13,550	15,400	17,550	19,750	26,450	27,100	30,700	35,700	35,700
Approx. Shipping Weight - (150 psig)		13,000	13,000	14,850	18,100	19,300	20,750	29,050	29,750	32,400	37,600	37,600
Approx. Shipping Weight - (200 psig)		13,200	13,200	15,100	19,250	20,300	23,300	29,800	30,150	34,850	38,800	38,800

NOTES:

Accompanying dimensions, while sufficiently accurate for layout purposes, must be confirmed for construction by certified dimension diagram/drawing.

All Connections are Threaded Unless Otherwise Indicated:

Note "A": ANSI 150 psig Flange

Note "B": ANSI 300 psig Flange



Figure 5b. Model CBR Hot Water Boiler Dimensions - Sheet 2 of 2

BOILER H.P.	DIM	125	150	200	250	300	350	400	500	600	700	800
LENGTHS												
Overall Length (60 PPM system)	A	196.5	199.5	231.5	207	226	258	224	230	266	300	301
Overall Length (30 PPM system)	A	199.5	200.5	233.5	211	228	260	225	234	267	302	303
Shell	B	149	149	180	156	171	201	163	168	200	233	233
Base Frame	C	136	136	167	143	158	188	150	155	187	220	220
Front Head Extension (60 PPM system)	D	28	31	32	28	32	34	29	30	34	35	36
Front Head Extension (30 PPM system)	D	31	32	34	32	34	36	30	34	35	37	38
Rear Head Extension	E	19.5	19.5	19.5	23	23	23	32	32	32	32	32
Shell Ring Flange to Base	F	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Rear Ring Flange to Base	G	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Shell Flange to Return	H	102	102	131	115.5	130	160	120	125	151.1	185	185
Shell Flange to Outlet	HH	136	136	167	143	158	188	155.5	156.5	182.5	216.5	216.5
Front Shell Extension	P	12	12	12	15	15	15	17	17	17	17	17
Over Tubesheets	V	137	137	168	141	156	186	146	151	183	216	216
WIDTHS												
Overall Width	I	75.5	75.5	75.5	82	82	82	100	100	100	100	100
I.D. Boiler	J	60	60	60	67	67	67	83	83	83	83	83
Center to Entrance Box	K	42.5	42.5	42.5	45.5	45.5	45.5	55.5	55.5	55.5	55.5	55.5
Center to Outside Davit/Hinge	KK	35	35	35	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5
Center to Lagging	L	33	33	33	36.5	36.5	36.5	44.5	44.5	44.5	44.5	44.5
Base Outside	M	52.5	52.5	52.5	51	51	51	60	60	60	60	60
Base Inside	N	44.5	44.5	44.5	43	43	43	47	47	47	47	47
HEIGHTS												
Overall Height	OO	86	86	86	102.5	102.5	102.5	120.5	120.5	120.5	120.5	120.5
Base to Vent Outlet	O	85	85	85	94.5	94.5	94.5	112	112	112	112	112
Height of Base Frame	Q	12	12	12	12	12	12	12	12	12	12	12
Base to Bottom of Boiler	R	16	16	16	14	14	14	16	16	16	16	16
Base to Return & Outlet	X	82.375	82.375	82.375	90.25	90.25	90.25	108	108	108	108	108
BOILER CONNECTIONS												
Water Return (See Note "A")	T	6	6	6	8	8	8	10	10	12	12	12
Water Outlet (See Notes "A & B")	U	6	6	6	8	8	8	10	10	12	12	12
Drain-Front & Rear	W	1.5	1.5	2	2	2	2	2	2	2	2	2
Air Vent	Y	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2
VENT STACK												
Vent Stack Diameter (Flanged)	BB	16	16	16	20	20	20	24	24	24	24	24
MINIMUM CLEARANCES												
Rear Door Swing	DD	32	32	32	36	36	36	45	45	45	45	45
Front Door Swing	EE	67	67	67	75	75	75	80	80	80	80	80
Tube Removal - Rear	FF	139	139	170	143	157	187	147	152	184	217	217
Tube Removal - Front	GG	127	127	158	128	142	172	130	135	167	200	200
MINIMUM BOILER ROOM LENGTH ALLOWING												
Thru Window or Door	RD	248	248	279	267	282	312	288	293	325	358	358
Front of Boiler	RF	308	308	370	320	349	409	338	348	412	478	478
Rear of Boiler	RR	355	355	417	374	403	463	390	400	464	530	530
WEIGHTS IN LBS												
Normal Water Weight		10,800	10,800	13,050	11,750	12,750	15,000	16,900	17,150	20,500	23,250	23,250
Approx. Shipping Weight - (30 psig)		11,850	11,850	13,550	15,400	17,550	19,750	26,400	27,100	30,700	35,700	35,700
Approx. Shipping Weight - (125 psig)		13,200	13,200	15,100	18,350	18,400	20,700	29,400	28,150	31,900	37,050	37,050

NOTES:

Accompanying dimensions, while sufficiently accurate for layout purposes, must be confirmed for construction by certified dimension diagram/drawing.

All Connections are Threaded Unless Otherwise Indicated:

Note "A": ANSI 150 psig Flange

Note "B": Water Outlet includes 2" Dip Tube





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