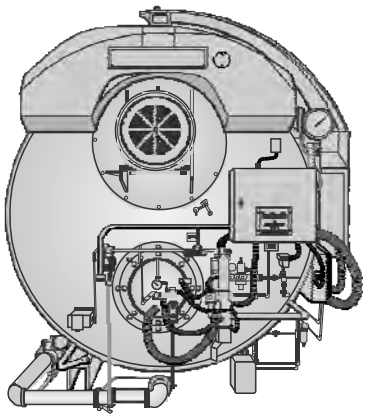
MODEL CB BOILERS 15-100 HP

DIMENSIONS AND RATINGS



- Dimensions and ratings for the Model CB boilers are shown in the following tables and illustrations:
- Table A6-1. Model CB Steam Boiler Ratings (15 thru 100 hp)
- Table A6-2. Model CB Hot Water Boiler Ratings (15 thru 100 hp)
- Table A6-3. Safety Valve Openings
- Table A6-4. Relief Valve Openings
- Figure A6-1. Model CB Steam Boiler Dimensions (15 and 150 lb design pressure) (15 thru 100 hp)
- Figure A6-2 Model CB Hot Water Boiler Dimensions (15 and 150 lb design pressure) (15 thru 100 hp)
- Figure A6-3. Space Required to Open Rear Head on Model CB Boilers Equipped with Davits
- Figure A6-4. Model CB Boiler Mounting PiersL
- Figure A6-5. Lifting Lug Locations, Model CB Boilers

Table A6-1. Model CB Steam Boiler Ratings (15 - 100 hp)

BOILER HP	15[C]	20[C]	30[C]	40[C]	50	60	70	80	100
RATINGS - SEA LEVEL TO 3000 FT									
Rated Cap. (lbs steam/hr @212°F) Btu Output (1000 Btu/hr)	518 502	690 670	1035 1004	1380 1339	1725 1674	2070 2009	2415 2343	2760 2678	3450 3348
APPROXIMATE FUEL CONSUMPTION AT RATED CAPACITY									
Light Oil (gph)[A]	4.5	6.0	9.0	12.0	14.9	17.9	20.9	23.9	29.9
Heavy Oil (gph)[B]	-	-	-	-	13.9	16.7	19.5	22.3	27.9
Gas (cfh) 1000 Btu-Nat Gas (Therm/hr)	628 6.3	837 8.4	1255 12.6	1674 16.7	2092 20.9	2511 25.1	2929 29.3	3348 33.5	4184 41.8
POWER REQUIREMENTS - SEA LEVEL TO 3000 FT, 60 HZ									
Blower Motor hp (except gas)	1	1	1-1/2	2	2	2	2	2[D]	3
Gas Models (only)	1	1	1-1/2	2	2	2	2	2[D]	3
Oil Pump Motor, hp No. 2 Oil	Belt-Driven From Blower				1/3	1/3	1/3	1/3	1/3
Oil Pump Motor, hp No. 6 Oil	-	-	-	-	1/3	1/3	1/3	1/3	1/3
Oil Heater kW No. 6 Oil	-	-	-	-	5	5	5	5	5
Air Compressor Motor hp (Oil firing Only)	Air Compressor Belt-Driven from Blower Motor				2	2	2	2	2

NOTES:
1. For altitudes above 3000 ft, contact your local Cleaver-Brooks authorized representative for verification of blower motor hp.
A. Based on 140,000 Btu/gal.
B. Based on 150,000 Btu/gal.
C. No. 6 Oil not available in 15-40 hp range.
D. 3 hp above 2000 ft.

Table A6-2. Model CB Hot Water Boiler Ratings (15 - 100 hp)

BOILER HP	15[C]	20[C]	30[C]	40[C]	50	60	70	80	100
RATINGS - SEA LEVEL TO 3000 FT									
Rated Cap Btu Output (1000 Btu/hr)	502	670	1004	1339	1674	2009	2343	2678	3348
APPROXIMATE FUEL CONSUMPTION AT RATED CAPCITY									
Light Oil (gph)[A]	4.5	6.0	9.0	12.0	14.9	17.9	20.9	23.9	29.9
Heavy Oil (gph)[B]	-	-	-	-	13.9	16.7	19.5	22.3	27.9
Gas (cfh) MBtu- nat Gas (Therm/hr)	628 6.3	837 8.4	1255 12.6	1674 16.7	2092 20.9	2511 25.1	2929 29.3	3348 33.5	4184 41.8
POWER REQUIREMENTS - SEA LEVEL TO 3000 FT, 60 HZ									
Blower Motor hp (except gas)	1	1	1-1/2	2	2	2	2	2[D]	3
Gas Models (only)	1	1	1-1/2	2	2	2	2	2[D]	3
Oil Pump Motor, hp No. 2 Oil	Belt-Driven From Blower				1/3	1/3	1/3	1/3	1/3
Oil Pump Motor, hp No. 6 Oil	-	-	-	-	1/3	1/3	1/3	1/3	1/3
Oil Heater kW No. 6 Oil	-	-	-	-	5	5	5	5	5
Air Compressor Motor hp (Oil firing Only)	Air Compressor Belt-Driven from Blower Motor				2	2	2	2	2

NOTES:
1. For altitudes above 3000 ft, contact your local Cleaver-Brooks authorized representative for verification of blower motor hp.
A. Based on 140,000 Btu/gal.
B. Based on 150,000 Btu/gal.
C. No. 6 Oil not available in 15-40 hp range.
D. 3 hp above 2000 ft.

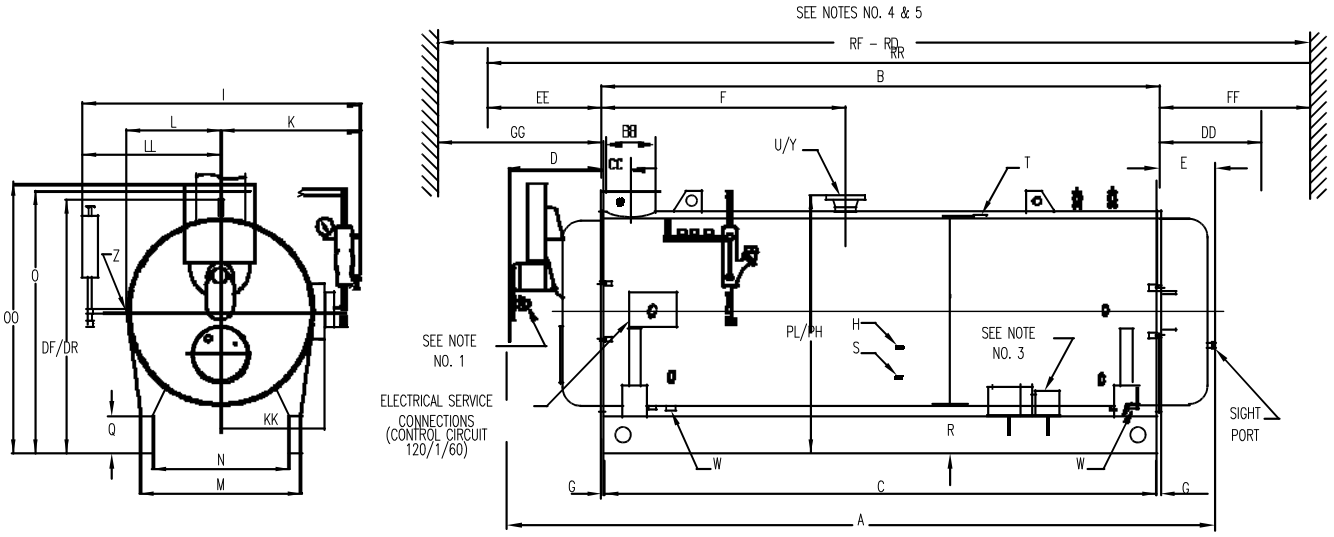
Table A6-3. Steam Boiler Safety Valve Openings

VALVE SETTING	15 PSIG STEAM		100 PSIG STEAM		125 PSIG STEAM		150 PSIG STEAM		200 PSIG STEAM		250 PSIG STEAM	
BOILER HP	NO. OF VALVES-REQ'D	OUTLET SIZE (IN.)	NO. OF VALVES-REQ'D	OUTLET SIZE (IN.)	NO. OF VALVES REQ'D	OUTLET SIZE (IN.)	NO. OF VALVES-REQ'D	OUTLET SIZE (IN.)	NO. OF VALVES-REQ'D	OUTLET SIZE (IN.)	NO. OF VALVES REQ'D	OUTLET SIZE (IN.)
15	1	1-1/2	1	1	1	3/4	1	3/4	1	3/4	1	3/4
20	1	1-1/2	1	1	1	1	1	3/4	1	3/4	1	3/4
25	1	2	1	1	1	1	1	1	1	3/4	1	3/4
30	1	2	1	1-1/4	1	1	1	1	1	3/4	1	3/4
40	1	2-1/2	1	1-1/4	1	1-1/4	1	1	1	1	1	1
50	1	2-1/2	1	1-1/2	1	1-1/2	1	1-1/4	1	1	1	1
60	1	2	1	1-1/2	1	1-1/2	1	1-1/4	1	1-1/4	1	1
70	1	2	1	2	1	1-1/2	1	1-1/2	1	1-1/4	1	1-1/4
80	1	2-1/2	1	2	1	1-1/2	1	1-1/2	1	1-1/4	1	1-1/4
100	1	2-1/2	1	2	1	2	1	1-1/2	1	1-1/2	1	1-1/4

Table A6-4. Hot Water Boiler Relief Valve Openings

VALVE SETTING	30 PSIG HW		60 PSIG HW		100 PSIG HW		125 PSIG HW	
BOILER HP	NO. OF VALVES REQ'D	OUTLET SIZE (IN.)	NO. OF VALVES REQ'D	OUTLET SIZE (IN.)	NO. OF VALVES REQ'D	OUTLET SIZE (IN.)	NO. OF VALVES REQ'D	OUTLET SIZE (IN.)
15	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1
25	1	1-1/4	1	1	1	1	1	1
30	1	1-1/4	1	1	1	1	1	1
40	1	1-1/4	1	1	1	1	1	1
50	1	2	1	1-1/4	1	1	1	1
60	1	2	1	1-1/4	1	1	1	1
70	1	2	1	2	1	1-1/4	1	1
80	1	2	1	2	1	1-1/4	1	1-1/4
100	1	2-1/2	1	2	1	1-1/4	1	1-1/4

NOTES:
1.Hot water relief valves are Kunkle #537.
2. BHP followed by "A" designates hot water boilers furnished in a smaller vessel size with additional tubes in the upper portion of the vessel.



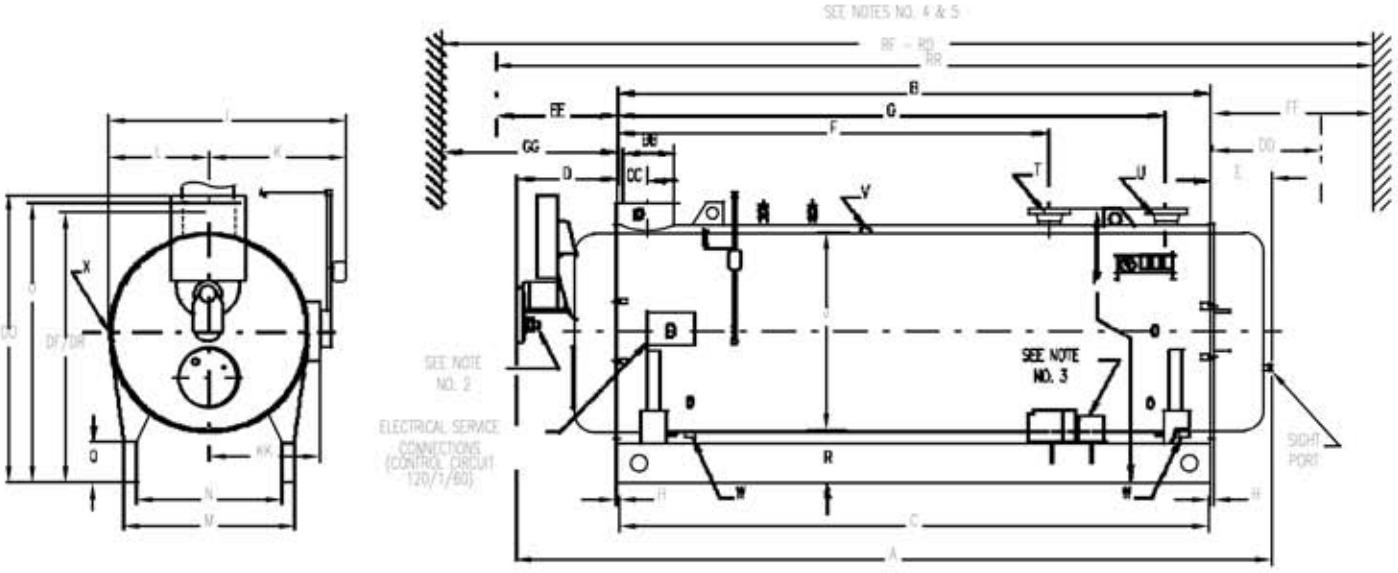
BOILER HP	DIM	15	20	30	40	50	60	70	80	100
LENGTHS										
Overall	A	96-5/8	96-5/8	114-5/8	140-5/8	129	129	168	168	187
Shell	B	62-5/8	62-5/8	80-5/8	106-5/8	92	92	131	131	150
Base Frame	C	59	59	77	103	91	91	130	130	148
Front Head Extension	D	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2
Rear Head Extension	E	15-1/2	15-1/2	15-1/2	15-1/2	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2
Front Ring Flange to Nozzle - 15 psig	F	36	36	45	57	46	46	65-1/2	65-1/2	75
Front Ring Flange to Nozzle - 150 psig	F	36	36	45	57	46	46	72-1/2	72-1/2	82
Ring Flange to Base	G	1-13/16	1-13/16	1-13/16	1-13/16	5/8	1/2	1/2	1/2	1/2
WIDTHS										
Overall	I	61	61	61	61	73	73	73	73	73
ID, Boiler	J	36	36	36	36	48	48	48	48	48
Center to Water Column	K	33	33	33	33	39	39	39	39	39
Center to Outside Hinge	KK	22	22	22	22	29	29	29	29	29
Center to Lagging	L	20	20	20	20	27	27	27	27	27
Center to Auxiliary LWCO	LL	28	28	28	28	34	34	34	34	34
Base, Outside	M	28	28	28	28	37-5/8	37-5/8	37-5/8	37-5/8	37-5/8
Base, Inside	N	22	22	22	22	29-5/8	29-5/8	29-5/8	29-5/8	29-5/8

Figure A6-1. Model CB Steam Boiler Dimensions and Weights (15 and 150 psig Design Pressure - 15 to 100 hp) Sheet 1 of 2

BOILER HP	DIM	15	20	30	40	50	60	70	80	100
HEIGHTS										
Base to Steam Outlet (15 psig only)	PL	50-1/4	50-1/4	50-1/4	50-1/4	70-1/2	70-1/2	70-1/2	70-1/2	70-1/2
Overall	OO	66	66	66	66	78-3/4	78-3/4	78-3/4	78-3/4	78-3/4
Base to Vent Outlet	O	53-1/2	53-1/2	53-1/2	53-1/2	70	70	70	70	70
Base to Steam Outlet (150 psig only)	PH	50-1/4	50-1/4	50-1/4	50-1/4	66-1/2	66-1/2	66-1/2	66-1/2	70-5/16
Height of Base	Q	8	8	8	8	12	12	12	12	12
Base to Bottom of Boiler	R	12	12	12	12	16	16	16	16	16
BOILER CONNECTIONS										
Chemical Feed	H	1	1	1	1	1	1	1	1	1
Feedwater, Right and Left	S	1	1	1	1	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4
Low Pressure (15 psig only) Steam Nozzle Drain, Front and Rear	 U W	 4 1	 4 1	 4 1	 6[A] 1-1/4	 6[A] 1-1/4	 6[A] 1-1/4	 6[A] 1-1/2	 6[A] 1-1/2	 8[A] 1-1/2
High Pressure (150 psig only) Surface Blowoff, Top C_L Steam Nozzle Blowdown, Front and Rear	 T Y W	 1 1-1/2 1	 1 1-1/2 1	 1 2 1	 1 2 1	 1 3 1-1/4	 1 3 1-1/4	 1 3 1-1/4	 1 3 1-1/4	 1 4[B] 1-1/4
VENT STACK										
Diameter (flgd connection)	BB	6	6	8	8	10	10	12	12	12
Front Ring Flange to Vent C_L	CC	4	4	5	5	6	6	7	7	7
MINIMUM CLEARANCES										
Rear Door Swing[C]	DD	44	44	44	44	55	55	55	55	55
Front Door Swing[C]	EE	44	44	44	44	55	55	55	55	55
Tube Removal, Rear	FF	56	56	74	100	84	84	123	123	142
Tube Removal, Front	GG	46	46	64	90	74	74	113	113	132
MINIMUM BOILER ROOM LENGTH ALLOWING FOR DOOR SWING AND TUBE REMOVAL FROM:										
Rear of Boiler	RR	163	163	199	251	231	231	309	309	347
Front of Boiler	RF	153	153	189	241	221	221	299	299	337
Thru Window or Doorway	RD	151	151	169	195	202	202	241	241	260
WEIGHT IN LBS										
Normal Water Capacity		1340	1300	1710	2290	3130	2920	4620	4460	5088
Approx. Ship Wgt - 15 psig		3000	3100	3650	4350	6900	7000	8100	8200	9000
Approx. Ship Wgt - 150 psig		3100	3200	3800	4500	7000	7200	8800	9000	9500
Approx. Ship Wgt - 200 psig		3300	3400	4100	4700	7400	7600	9300	9500	10000

NOTES:
1. Air compressor belt driven from blower motor on sizes 15 thru 40
2. Air compressor module on sizes 50 thru 100 hp.
3. Accompanying dimensions, while sufficiently accurate for layout purposes, must be confirmed for construction by certified dimension prints.
A. ANSI 150 psig flange.
B. ANSI 300 psig flange.
C. 15 thru 100 hp standard hinged door.

Figure A6-1. Model CB Steam Boiler Dimensions and Weights (15 and 150 psig Design Pressure - 15 to 100 hp) Sheet 2 of 2



BOILER HP	DIM	15	20	30	40	50	60	70	80	100
LENGTHS										
Overall	A	97	97	114-5/8	140-5/8	129	129	168	168	187
Shell	B	62-5/8	62-5/8	80-5/8	106-5/8	92	92	131	131	150
Base Frame	C	59	59	77	103	91	91	130	130	148
Front Head Ext.	D	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2
Rear Head Ext.	E	15-1/2	15-1/2	15-1/2	15-1/2	18-1/2	18-1/2	18-1/2	18-1/2	18-1/2
Front Ring Flange to Return	F	43-5/8	43-5/8	62	81	69	69	108	108	127
Front Ring Flange to Outlet	G	55-1/8	55-1/8	73-1/8	98-1/2	84-5/8	84-5/8	123-5/8	123-5/8	142-5/8
Ring Flange to Base	H	1-13/16	1-13/16	1-13/16	1-13/16	5/8	5/8	5/8	5/8	1
WIDTHS										
Overall	I	48-3/4	48-3/4	48-3/4	48-3/4	63	63	63	63	63
ID, Boiler	J	36	36	36	36	48	48	48	48	48
Center to Entrance Box	K	28-3/4	28-3/4	28-3/4	28-3/4	36	36	36	36	36
Center to Outside Hinge	KK	22	22	22	22	29	29	29	29	29
Center to Lagging	L	20	20	20	20	27	27	27	27	27
Base, Outside	M	28	28	28	28	37-5/8	37-5/8	37-5/8	37-5/8	37-5/8
Base, Inside	N	22	22	22	22	29-5/8	29-5/8	29-5/8	29-5/8	29-5/8

Figure A6-2. Model CB Hot Water Boiler Dimensions (30 psig and 125 psig Design Press. - 15 to 100 hp) Sheet 1 of 2

BOILER HP	DIM	15	20	30	40	50	60	70	80	100
HEIGHTS										
Overall	OO	66	66	66	66	72-5/8	72-5/8	72-5/8	72-5/8	72-5/8
Base to Vent Outlet	O	53-1/2	53-1/2	53-1/2	53-1/2	70	70	70	70	70
Base to Return and outlet	P	50	50	50	50	70-1/2	70-1/2	70-1/2	70-1/2	70-1/2
Davit (Front)	DF	-	-	-	-	-	-	-	-	-
Davit (Rear)	DR	-	-	-	-	-	-	-	-	-
Height of Base	Q	8	8	8	8	12	12	12	12	12
Base to bottom of boiler	R	12	12	12	12	16	16	16	16	16
BOILER CONNECTIONS										
Water Return[A]	T	2-1/2	2-1/2	3	3	4	4	4	4	4
Water Outlet[A] -dip tube included	U	2-1/2	2-1/2	3	3	4	4	4	4	4
Air Vent	v	1	1	1	1	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4
Drain, Front and Rear	W	1	1	1	1-1/4	1-1/4	1-1/4	1-1/2	1-1/2	1-1/2
Auxiliary Connection	X	1	1	1	1	1	1	1	1	1
VENT STACK										
Diameter (flgd. connection)	BB	6	6	8	8	10	10	12	12	12
Front Ring Flange to vent C_L	CC	4	4	5	5	6	6	7	7	7
MINIMUM CLEARANCES										
Rear Door Swing	DD	44	44	44	44	55	55	55	55	55
Front Door Swing	EE	44	44	44	44	55	55	55	55	55
Tube Removal, Rear	FF	56	56	74	100	84	84	123	123	142
Tube, Removal, Front	GG	46	46	64	90	74	74	113	113	132
MINIMUM BOLER ROOM LENGTH ALLOWING FOR DOOR SWING AND TUBE REMOVAL FROM:										
Rear of Boiler	RR	163	163	199	251	231	231	309	309	347
Front of Boiler	RF	153	153	189	241	221	221	299	299	337
Thru Window or Doorway	RD	151	151	169	195	202	202	241	241	260
WEIGHT IN LBS										
Water Capacity Flooded		1500	1460	1915	2585	3665	3500	5420	5250	5960
Approx. Ship. Wgt. – 30 psig Approx. Ship. Wgt. – 125 psig		3000 3300	3100 3400	3650 3880	4350 4580	6800 7100	7000 7300	8000 8350	8100 8450	8800 9150

NOTES:

1. Accompanying dimensions and ratings while sufficiently accurate for layout purposes, must be confirmed for construction by certified dimension prints.
2. Air compressor belt driven from blower motor on sizes 15 thru 40 hp.
3. Air compressor module on sizes 50 thru 100 hp.
4. 15 - 100 hp, hinged door standard.
5. Add 370 lbs to the 80 hp ship weight for 100A and 485 lbs to the 100 hp ship weight for the 125A.

A. 15-40 HP are threaded connection; 50-100 HP are 150# flange.

Figure A6-2. Model CB Hot Water Boiler Dimensions (30 psig Design Pressure - 15 to 100 hp) - Sheet 2 of 2

BOILER HP	DIMENSION (INCHES)				
	A	B	C	D	E
15 - 40	20	36	28	45	20
50 - 100	27	48	38	60	26

NOTE:
1. Dimensions in inches.
2. 15 - 100 hp (100A & 125A) boilers are standardly equipped with hinges. Davit available as an option.

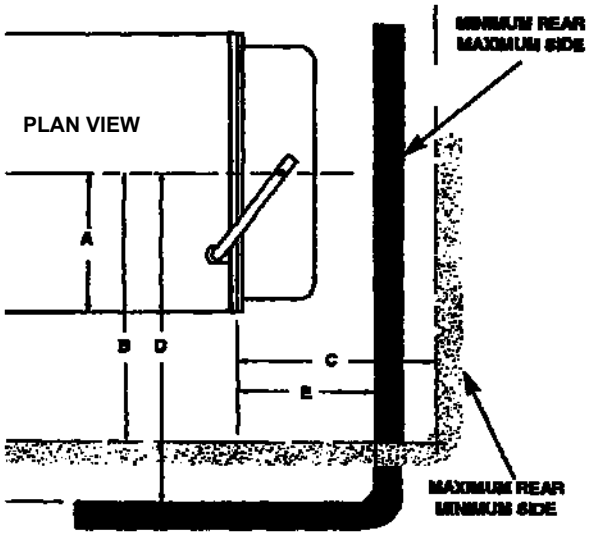
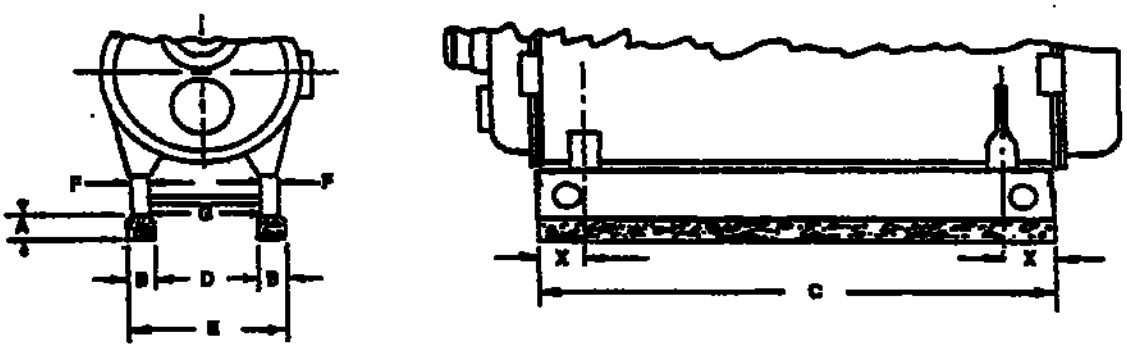


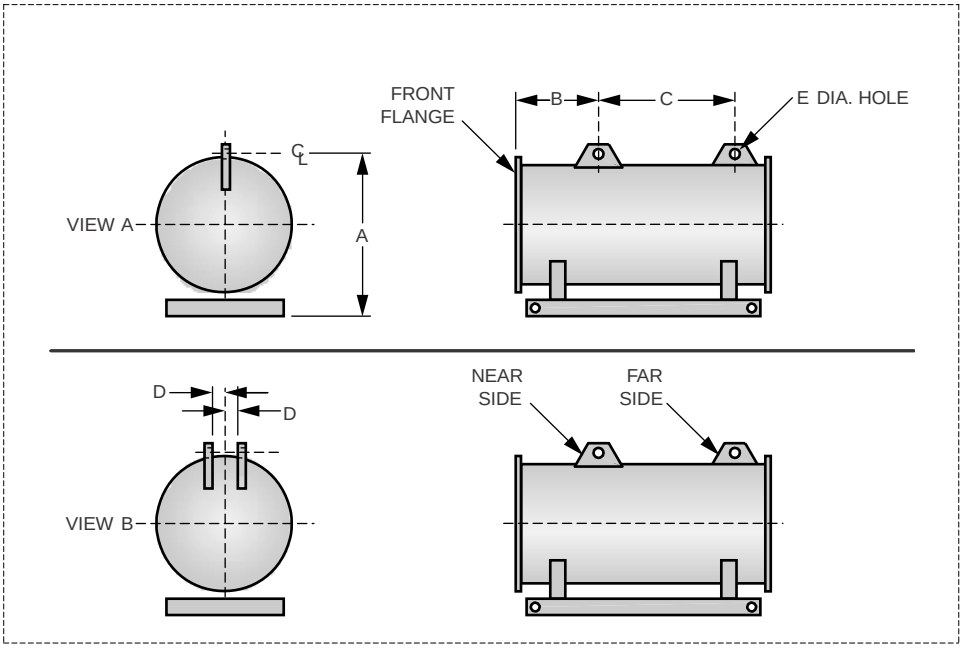
Figure A6-3. Space Required to Open Rear Head on Model CB Boilers Equipped with Davits



BOILER HP	A	B	C	D	E	F	G	X1	X2
15-20	6	8	59	17	33	3	22	9-3/4	9-3/4
25-30	6	8	77	17	33	3	22	9-3/4	9-3/4
40	6	8	103	17	33	3	22	9-3/4	9-3/4
50-60	6	8	91	26	42	4	29-5/8	8-1/4	8-1/4
70-80	6	8	130	26	42	4	29-5/8	8-1/4	8-1/4
100	6	8	148	26	42	4	29-5/8	8-1/4	8-1/4

NOTE:
1. All numbers in table are in inches.
2. 6-inch high mounting piers recommended for use beneath the boiler base frame. The use of these piers provides increased inspection accessibility to the piping beneath the boiler and added height for washing down the area beneath the boiler.

Figure A6-4. Model CB Boiler Mounting Piers



BOILER HP		VIEW	ALL DIMENSIONS IN INCHES				
			A	B	C	D	E
15	Steam	A	51-3/4	12	38-3/4	-	2-1/2
	Hot Water	B	50-1/2	12	38-3/4	6	2-1/2
20	Steam	A	51-3/4	12	38-3/4	-	2-1/2
	Hot Water	B	50-1/2	12	38-3/4	6	2-1/2
25	Steam	A	51-3/4	12	56-3/4	-	2-1/2
	Hot Water	B	50-1/2	12	56-3/4	6	2-1/2
30	Steam	A	51-3/4	12	56-3/4	-	2-1/2
	Hot Water	B	50-1/2	12	56-3/4	6	2-1/2
40	Steam	A	51-3/4	12	82-3/4	-	2-1/2
	Hot Water	B	50-1/2	12	82-3/4	6	2-1/2
50	All	B	68	18	57	10	2-1/2
60	All	B	68	18	57	10	2-1/2
70	All	B	68	27	67	10	2-1/2
80	All	B	68	27	67	10	2-1/2
100	All	B	68	27	86	10	2-1/2

NOTE:
1. A, B and C Dimensions may vary by 1/2 inch.
2. BHP followed by "A" designates hot water boilers furnished in a smaller vessel size with additional tubes in upper portion of vessel.

Figure A6-5. Lifting Lug Locations, Model CB Boilers