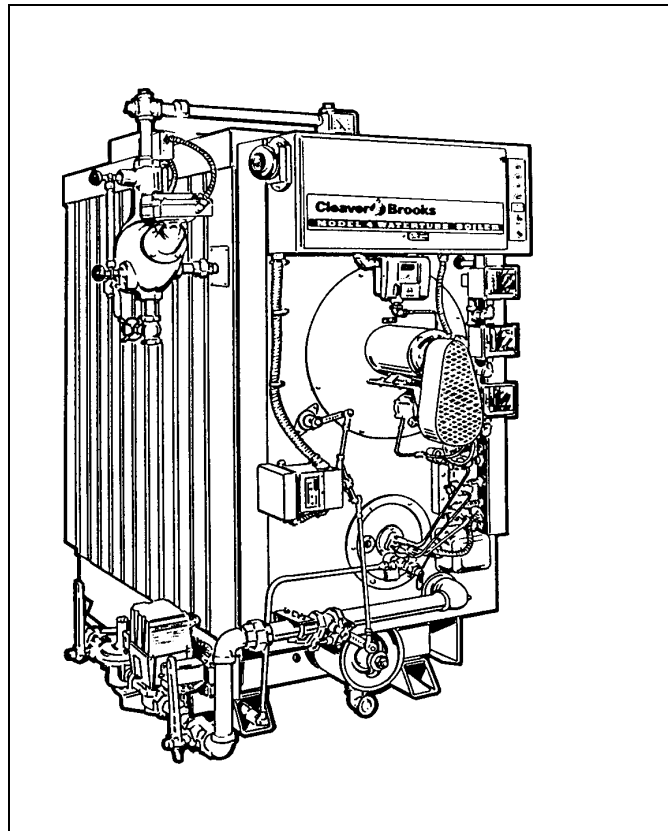


MODEL 5 BOILERS



Dimensions and Ratings

Figure 1a. Model 5 Dimensions (sheet 1 of 2)

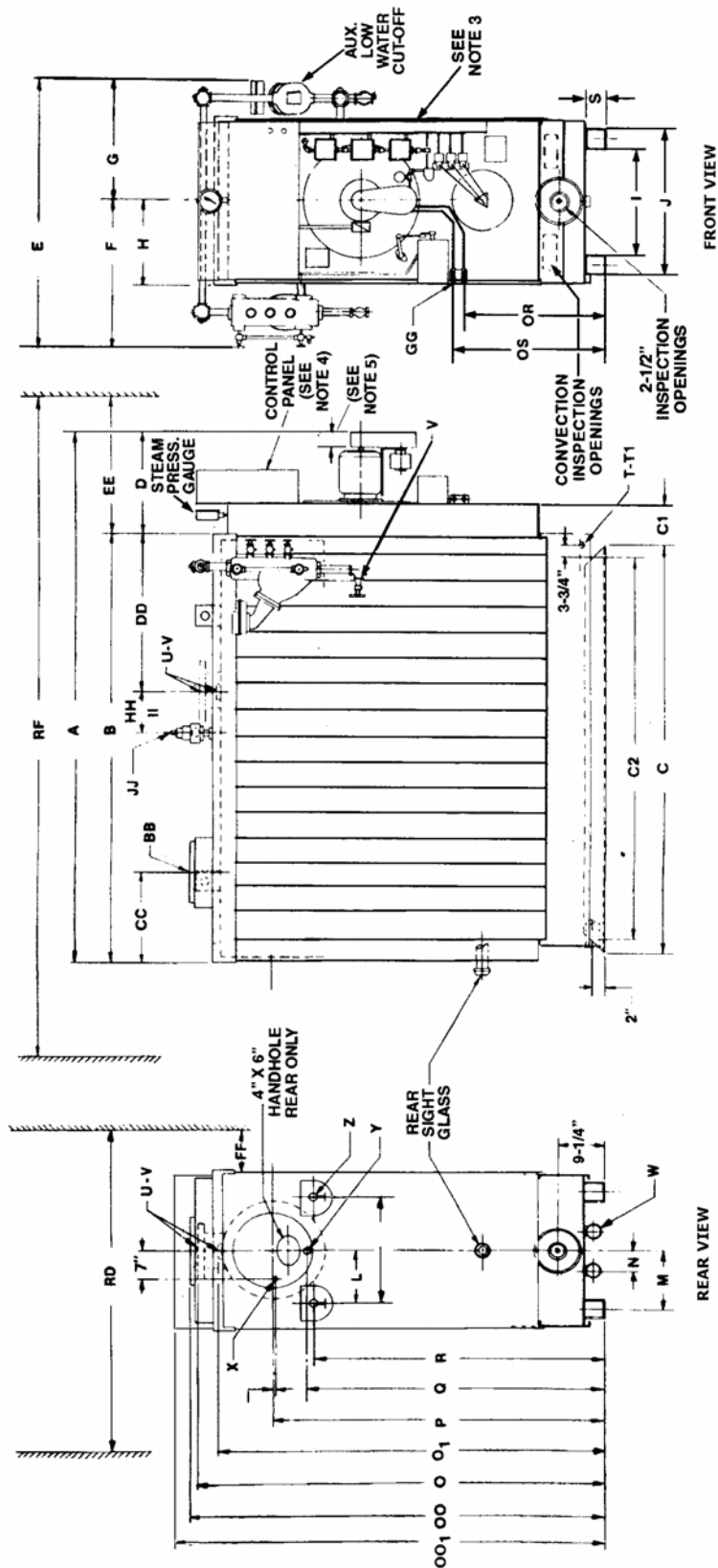


Figure 1b. Model 5 Dimensions (sheet 2 of 2)

		Boiler Size								
Note 1		1500	2000	2500	3000	3500	4000	4500	5000	6000
Lengths		All Dimensions are in Inches								
A	Overall	69.7	69.7	85.8	85.8	104.4	104.4	121.1	121.1	136.7
B	Pressure Vessel w/casing	51.25	51.25	67.375	67.375	83	83	99.625	99.625	115.25
C	Base Frame	45.5	45.5	61.1	61.1	76.75	76.75	92.4	92.4	108
C ₁	Base to Front Head	8	8	8	8	8	8	8	8	8
C ₂	Base Frame Anchor Holes	43	43	58.5	58.5	74.5	74.5	90	90	105.5
CC	Rear Casing to Stack Connection	17.2	17.2	17.7	17.7	17.7	17.7	21.8	21.8	21.8
D	Front Head Extension	13	13	13	13	16	16	16	16	16
DD	Front Casing to Steam Nozzle	16.4	16.4	24.4	24.4	30.1	30.1	36.75	36.75	44.6
HH	Steam Nozzle to Safety Valve 15#	7	7	12	12	11.5	11.5	13	13	17
	Steam Nozzle to Safety Valve 150#	8	8	12	12	17	17	17	17	17
Widths										
E	Overall	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5
F	Center to Water Column	33	33	33	33	33	33	33	33	33
G	Center to Aux. Water Column	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
H	Center to Outside Casing	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
I	Base Frame Inside	20	20	20	20	20	20	20	20	20
J	Base Frame Outside	28	28	28	28	28	28	28	28	28
K	Soot Washers, Center to Center	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
L	Boiler Centerline to Soot Washer	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75
M	Boiler Centerline to Base Centerline	12	12	12	12	12	12	12	12	12
N	Boiler Centerline to Soot Drain	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Heights										
OO	Overall [Base to Stack Connection]	78.25	78.25	78.25	78.25	78.25	78.25	78.25	78.25	78.25
OO ₁	Base to Top of Control Panel	84.5	84.5	84.5	84.5	84.5	84.5	84.5	84.5	84.5
O	Base to Steam Nozzle 15#	73.5	73.5	73.5	73.5	76.5	76.5	76.5	76.5	76.5
O ₁	Base to Steam Nozzle 150#	73.5	73.5	73.5	73.5	73.5	73.5	76.5	76.5	76.5
P	Base to Steam Drum Centerline	62.25	62.25	62.25	62.25	62.25	62.25	62.25	62.25	62.25
P ₁	Drum Centerline To Surface Blowoff, Std. Design & 15# Low Water Volume. [See Note C]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
P ₁	Drum Centerline To Surface Blowoff; High Pressure Design Low Water Volume. [See Note D]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
R	Base to Sootwasher Lance	54	54	54	54	54	54	54	54	54
S	Height of Base	4	4	4	4	4	4	4	4	4
OS	Base to Oil Supply Connection	26.625	26.625	26.625	26.625	26.625	26.625	26.625	26.625	26.625
OR	Base to Oil Return Connection	24.625	24.625	24.625	24.625	24.625	24.625	24.625	24.625	24.625

Figure 2. Model 5 Connection Sizes/Clearances

Connections										
BB	OD Stack - Sleeve Connection	12	12	12	12	12	12	16	16	16
T	Bottom Drum Blow Down, 15# [one]	1.25	1.25	1.25	1.25	1.5	1.5	1.5	1.5	1.5
T ₁	Bottom Drum Blow Down, 150# [one]	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
U	Steam Nozzle, 15#	4 ^A	4 ^A	4 ^A	4 ^A	6 ^B	6 ^B	6 ^B	6 ^B	6 ^B
V	Steam Nozzle, 150#	2.5 ^A	2.5 ^A	3 ^A	3 ^A	3 ^A	3 ^A	4 ^B	4 ^B	4 ^B
W	Soot Washer Drains [Two]	2	2	2	2	2	2	2	2	2
X	Surface Blow off [One]	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Y	Feedwater Inlet [One]	1	1	1	1	1	1	1	1	1
Z	Soot Washer [Two]	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
GG	Oil Supply and Return	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
JJ	Relief Valve, 15#	1.5	2	2	2	2.5	2.5	2.5	2.5	3
	Relief Valve, 150#	0.75	1	1	1	1.25	1.25	1.25	1.25	1.5
Clearances										
EE	Front Door Swing	33	33	33	33	33	33	33	33	33
FF	Tube removal each side	30	30	30	30	30	30	30	30	30
RF	Allowance for Front Door Swing and 30" Rear Aisle Space.	133	133	149	149	167	167	184	184	200
RD	Allowance for Tube Removal Each Side and Front Door Swing.	94	94	94	94	94	94	94	94	94

NOTES:

1. The above dimensions, while sufficiently accurate for layout purposes must be confirmed for construction via certified prints. For 200 PSIG design pressure and greater, contact Milwaukee Sales for certified prints.
 2. Allow sufficient space at rear of boiler for removal of soot washer lance.
 3. For access to the furnace, a 13" x 21" access door is provided behind the front door.
 4. Control Panel may be larger [up to 4" in height] if certain control options are provided.
- A. Connection is a Female Pipe Thread.
 B. Connection is a 150# Flange, Flat Face.
 C. When optional internal collector pipe is requested, tapping will be 4.5" from drum centerline.
 D. When optional internal collector pipe is requested, tapping will be 6.8" from drum centerline.

Figure 3a. Model 5 Low Volume Dimension Diagram

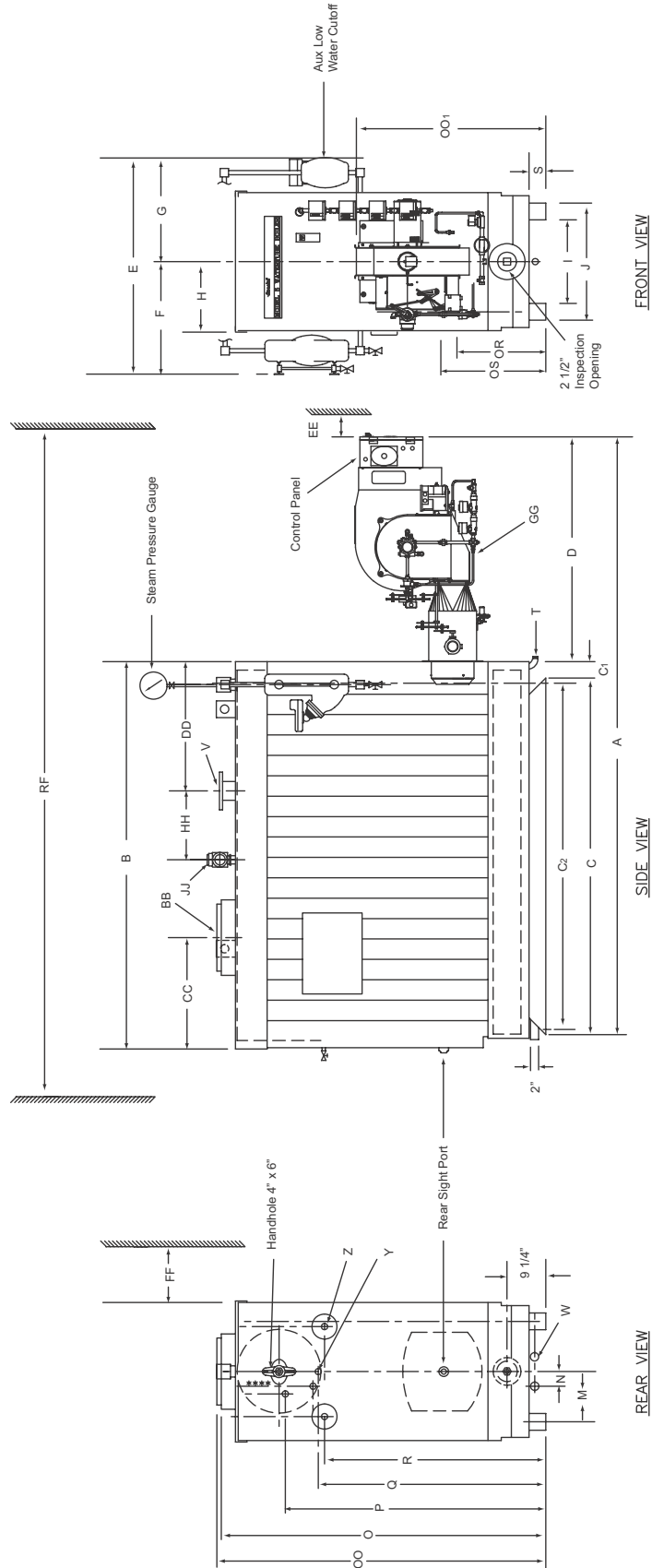


Figure 3b. Model 5 Low Water Volume dimensions

Note 1		Boiler Size	
		7500	8000
All Dimensions are in Inches			
<u>Lengths</u>			
A	Overall	190.1	190.1
B	Pressure Vessel w/casing	138.7	138.7
C	Base Frame	117.4	129.9
C ₁	Base to Front	6	6
C ₂	Base Frame Anchor Holes	112.4	127.4
CC	Rear Casing to Stack Connection	21.8	21.8
D	Burner Extension	56.5	56.5
DD	Front Casing to Steam Nozzle	63	63
II	Steam Nozzle to Safety Valve 150#	17	17
<u>Widths</u>			
E	Overall	57.5	57.5
F	Center to Water Column	33	33
G	Center to Aux. Water Column	23.5	23.5
H	Center to Outside Casing	16.5	16.5
I	Base Frame Inside	20	20
J	Base Frame Outside	28	28
K	Soot Washers, Center to Center	21.5	21.5
L	Boiler Centerline to Soot Washer	10.75	10.75
M	Boiler Centerline to Base Centerline	12	12
N	Boiler Centerline to Soot Drain	3.5	3.5
<u>Heights</u>			
OO	Overall [Base to Stack Connection]	78.25	78.25
OO ₁	Base to Top of Control Panel	84.5	84.5
O ₁	Base to Steam Nozzle 150#	73.25	73.25
P	Base to Surface Blowoff	58.5	58.5
Q	Base to Feedwater Inlet	55.75	55.75
R	Base to Sootwasher Lance	54	54
S	Height of Base	4	4
OS	Base to Oil Supply Connection	26.625	26.625
OR	Base to Oil Return Connection	24.625	24.625

NOTES:

1. The above dimensions, while sufficiently accurate for layout purposes, must be confirmed for construction via certified prints. For 200 PSIG design pressure and greater, contact Milwaukee Sales for certified prints.
2. Allow sufficient space at rear of boiler for removal of soot washer lance.
3. For access to the furnace, a 13" x 21" access door is provided behind the front door.
4. Control Panel may be larger [up to 4" in height] if certain control options are provided.

Figure 4. Model 5 Low Water Volume connection sizes and clearances

<u>Connections</u>			
BB.	OD Stack - Sleeve Connection	18	18
T ₁	Bottom Drum Blow Down, 150# [one]	1.25	1.25
V	Steam Nozzle, 150#	6	6
W	Soot Washer Drains [Two]	2	2
X	Surface Blow off [One]	0.75	0.75
Y	Feedwater Inlet [One]	1	1
Z	Soot Washer [Two]	0.25	0.25
GG	Oil Supply and Return	0.5	0.5
JJ	Relief Valve, 150#	2	2
<u>Clearances</u>			
EE	Clearance from Control Panel	36	36
FF	Tube removal each side	30	30
RF	Allowance for Front Burner Removal and 30" Rear Aisle Space.	220	220

NOTES:

1. The above dimensions, while sufficiently accurate for layout purposes, must be confirmed for construction via certified prints. For 200 PSIG design pressure and greater, contact Milwaukee Sales for certified prints.
2. Allow sufficient space at rear of boiler for removal of soot washer lance.
3. For access to the furnace, a 13" x 21" access door is provided behind the front door.
4. Control Panel may be larger [up to 4" in height] if certain control options are provided.

Figure 5. Model 5 Steam Boiler Ratings

Boiler SIZE	1500	2000	2500	3000	3500	4000	4500	5000	6000	7500 LWV	8000 LWV
Ratings [Note A]											
Rated Capacity - Steam (lbs. steam/hr from & at 212° F.)	1,237	1,649	2,062	2,474	2,887	3,299	3,711	4,124	4,949	6,186	6,600
Rated Steam Capacity [kg/hr from and at 100 C]	561.0	748.0	935.0	1,122.0	1,309.0	1,496.0	1,683	1,871.0	1,847.2	2,806	2,993.7
Output Btu/hr [1,000 Btu/h]	1,200	1,600	2,000	2,400	2,800	3,200	3,600	4,000	4,800	6,000	6,400
Output Kcal/Hr [1,000 Kcal/h]	302	403	504	605	706	806	907	1,007	1,210	1,512	1,613
Output KW	348	464	580	696	812	928	1,044	1,160	1,392	1,740	1,856
Approximate Fuel Consumption At Rated Capacity [Input - Note B]											
Natural Gas [ft ³ /hr] - 15# Steam	1,465	2,000	2,450	2,952	3,456	3,950	4,444	4,938	5,925	NA	NA
Natural Gas [ft ³ /hr] - 150# Steam	1,538	2,077	2,564	3,117	3,590	4,155	4,657	5,194	6,233	7594	8205
Natural Gas [m ³ /hr] - 15# Steam	41.5	56.6	69.4	80.8	97.9	111.9	125.8	139.8	167.7	NA	NA
Natural Gas [m ³ /hr] - 150# Steam	43.5	58.8	72.6	88.3	101.6	117.6	131.8	147.0	176.5	215	232.4
Propane Gas [ft ³ /hr] - 15# Steam	586	800	980	1,181	1,382	1,580	1,778	1,975	2,370	NA	NA
Propane Gas [ft ³ /hr] - 150# Steam	615	831	1,026	1,247	1,436	1,662	1,863	2,078	2,493	3038	3282
Propane Gas [m ³ /hr] - 15# Steam	16.6	22.6	27.7	33.4	39.1	44.7	50.3	55.9	67.1	NA	NA
Propane Gas [m ³ /hr] - 150# Steam	17.4	23.5	29.1	35.3	40.7	47.1	52.7	58.8	70.6	86	92.9
No.2 Oil Fuel - 15# Steam, gph	10	14	17	21	24	28	31	35	42	NA	NA
No.2 Oil Fuel - 150# Steam, gph	11	15	18	22	25	28.9	32	36	43	54	59
No.2 Oil Fuel - 15# Steam, lph	38	53	64	79	91	106	117	132	159	NA	NA
No.2 Oil Fuel - 150# Steam, lph	41	56	68	82	95	109	121	136	163	204	223
Power Requirements - 3 Phase 60 Hz Standard [Note C]											
Blower Motor HP - Gas Firing	2	2	2	2	2	3	3	3	5	7.5	7.5
Blower Motor HP - Oil or Comb.	2	2	2	2	3	5	3	3	5	7.5	7.5
Oil Pump for Oil or Combination	← Belt Driven from the Blower Motor →									Direct Drive from Fan Motor	
Minimum Ampacity											
Blower Motor - Gas, 230V	6	6	6	6	6	9	9	9	15	22	22
Blower Motor - Gas, 460 V	3	3	3	3	3	4.5	4.5	4.5	7.5	11	11
Blower Motor - Oil or Comb, 230 V	6	6	6	6	9	15	9	9	15	22	22
Blower Motor - Oil or Comb., 460V	3	3	3	3	4.5	7.5	4.5	4.5	7.5	11	11
Blower Motor - Gas, 575 V	1.6	1.6	1.6	1.6	1.6	2.4	2.4	2.4	4.1	6.1	6.1
Blower Motor - Oil or Comb., 575V	1.6	1.6	1.6	1.6	2.4	4.1	2.4	2.4	4.1	6.1	6.1
Control Circuit	1.7	1.7	1.7	1.9	1.9	1.9	2.4	2.4	2.4	2.5	2.5
Weights											
Operating Weight, lbs.	3,643	3,643	4,445	4,445	5,040	5,040	5,858	5,858	6,753	6,920	6,920
Operating Weight, kg	1,652	1,652	2,016	2,016	2,286	2,286	2,657	2,657	3,063	3,139	3,139
Water Content Normal, Imp.gals	54.4	54.4	74.9	74.9	94	94	116.1	116.1	135.7	71.1	71.1
Water Content Normal, liters	248	248	340	340	428	428	528	528	617	324.7	324.7
Water Content Flooded, Imp. gals	79.94	79.94	109.08	109.08	135.7	135.7	166.5	166.5	194.01		
Water Content Flooded, liters	363.4	363.4	459.9	459.9	616.9	616.9	756.9	756.9	881.99		
Shipping Weight, approximate lbs.	3,100	3,100	3,700	3,700	4,100	4,100	4,700	4,700	5,400	6,200	6,200
Shipping Weight, approximate kg	1,406	1,406	1,678	1,678	1,860	1,860	2,132	2,132	2,449	2,812	2,812

Notes:

- A. Ratings shown for elevation to 1000 Feet. For ratings above 1000 Feet, contact your local Cleaver-Brooks Representative.
- B. Input calculated with Nat. Gas @ 1000 Btu/ft³. Propane @ 2500 Btu/ft³. and Oil @ 140,000Btu/gal.
- C. For altitudes above 1000 Feet, contact your local Cleaver-Brooks authorized representative for verification of capacity rating.