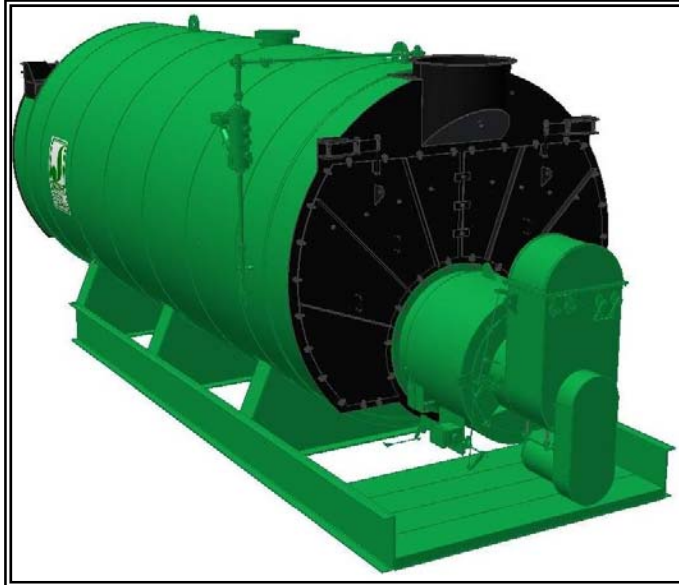




MODEL: PFTA 900-4

4-Pass Steam Packaged Firetube Boiler

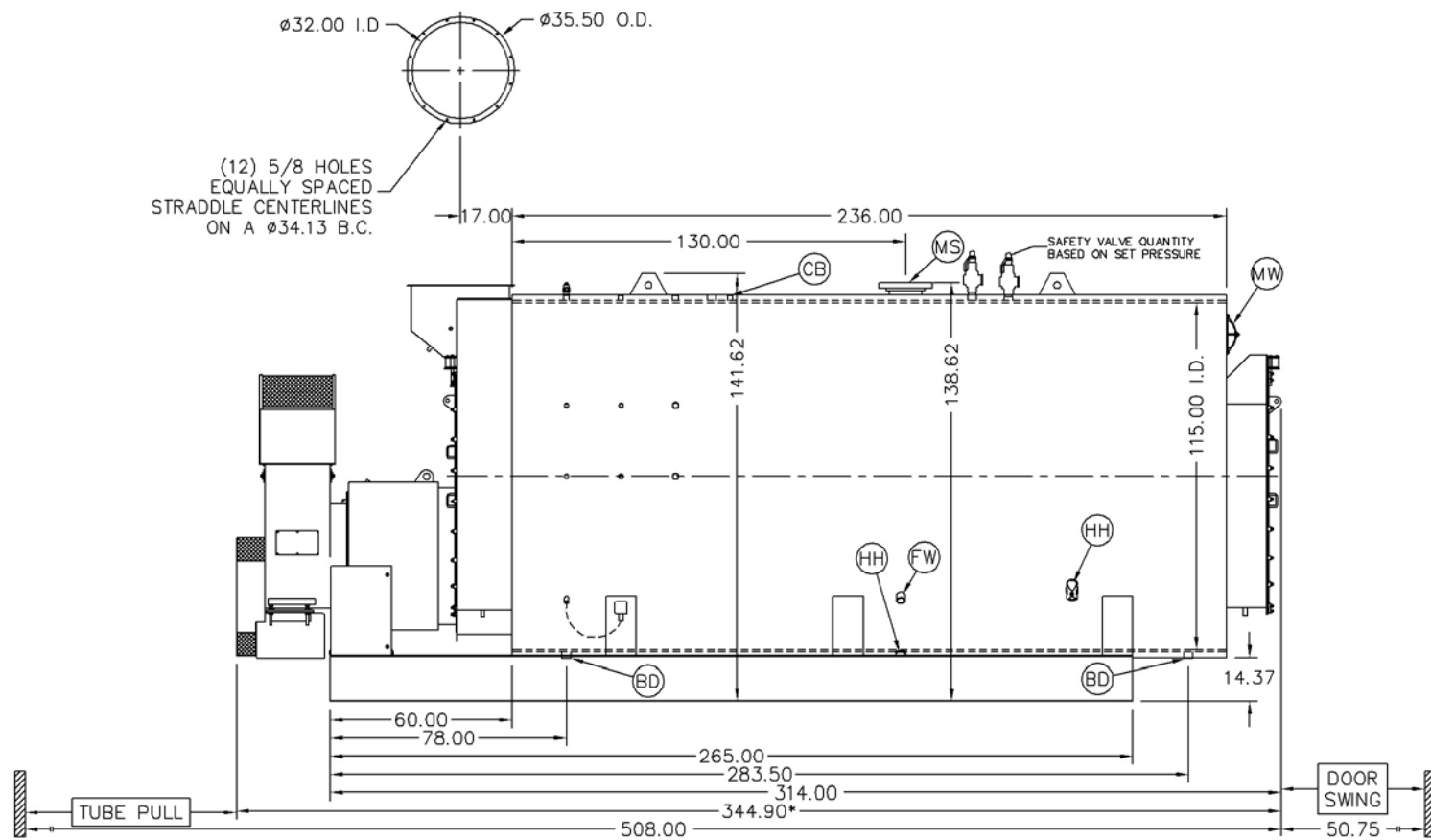
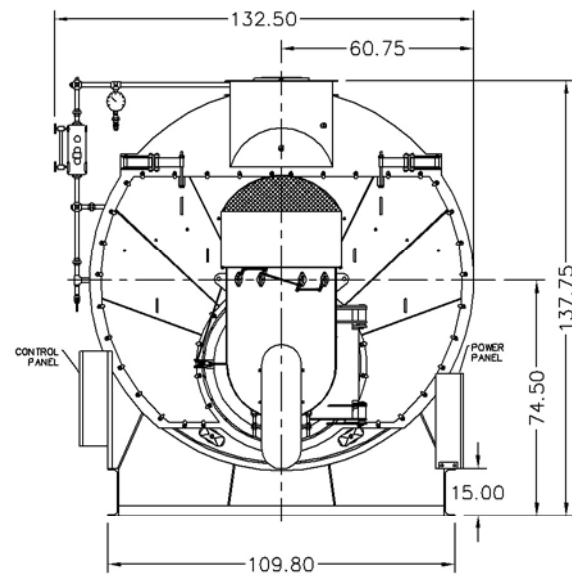


Ratings & Performance Data

Horsepower 900							
Steam Storage, ft ³	179.0	Natural Gas Flow, SCFH (1,000 Btu/ft ³)**	36,198				
Steam Disengaging Area, ft ²	145.2	Combustion Air (15% Excess), SCFM***	6,624				
Total Heating Surface, ft ²	4,556	Flue Gas Flow Rate, lb/hr***	31,566				
Furnace Outside Diameter, in	52.0	Stack Flue Gas Velocity, ft/min***	2,019				
Furnace Heat Release Rate, Btu/ft ³ hr**	155,000	#2 Oil Flow, gal/hr (140,000 BTU/gal)**	249.0				
Total Combustion Volume, ft ³	312.5	#6 Oil Flow, gal/hr (150,000 BTU/gal)**	230.5				
Total Heat Release Rate, Btu/ft ³ hr**	116,000	Flue Gas Side Pressure Drop, in. H ₂ O	7.6				
Water Content N.W.L., gal	4,971	Water Content Flooded, gal.	6,309				
Approx. Dry Weight 15#, lb	58,400	Approx. Operating Weight 15#, lb.	100,300				
Approx. Dry Weight 150#, lb	63,400	Approx. Operating Weight 150#, lb.	105,300				
Approx. Dry Weight 200#, lb	71,300	Approx. Operating Weight 200#, lb.	113,200				
Approx. Dry Weight 250#, lb	79,600	Approx. Operating Weight 250#, lb.	121,500				
Approx. Dry Weight 300#, lb	88,200	Approx. Operating Weight 300#, lb.	130,100				
Performance Data							
Operating Pressure (psig)	Steam Rate (lb/hr)	Natural Gas		#2 Oil		#6 Oil	
		Stack Temp (F)	%Eff	Stack Temp (F)	%Eff	Stack Temp (F)	%Eff
10	31,255	269	85.7	277	88.8	282	89.6
50	30,649	327	84.2	334	87.4	340	88.2
100	30,322	367	83.2	374	86.4	381	87.2
150	30,139	395	82.5	402	85.7	409	86.5
200	30,025	417	82.0	424	85.2	431	85.9
250	29,952	435	81.5	442	84.7	450	85.4
300	29,905	451	81.1	458	84.3	466	85.0
*Based on 228°F feedwater and 3% O ₂ , ** Values calculated at 100 psi operating pressure, ***Calculated Firing Natural Gas							

Drawings - 4-Pass Steam Packaged Firetube Boiler

Connection & Opening Schedule			
Conn.	Description	Type	Qty
FW	Feedwater Inlet	2.00 FNPT	2
MS*	Main Steam	10.00 300# RF	1
CB	Continuous Blowoff	1.00 FNPT	1
BD	Blowdown Outlet	2.00 FNPT	2
MW	Manway	12 X 16	1
HH	Hand Hole	4 X 6	7
*14.00 150#RF Flange on 15 psig Design			



Notes:

150# Steam design shown, all dimensions given in inches.

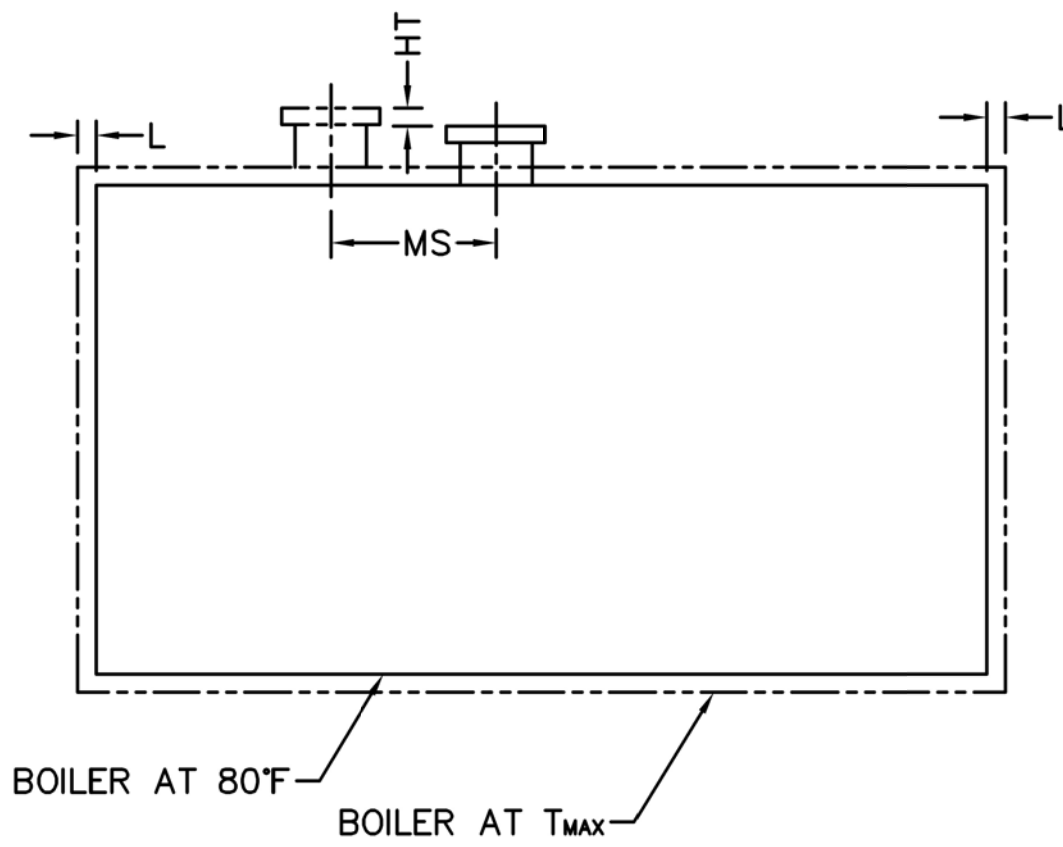
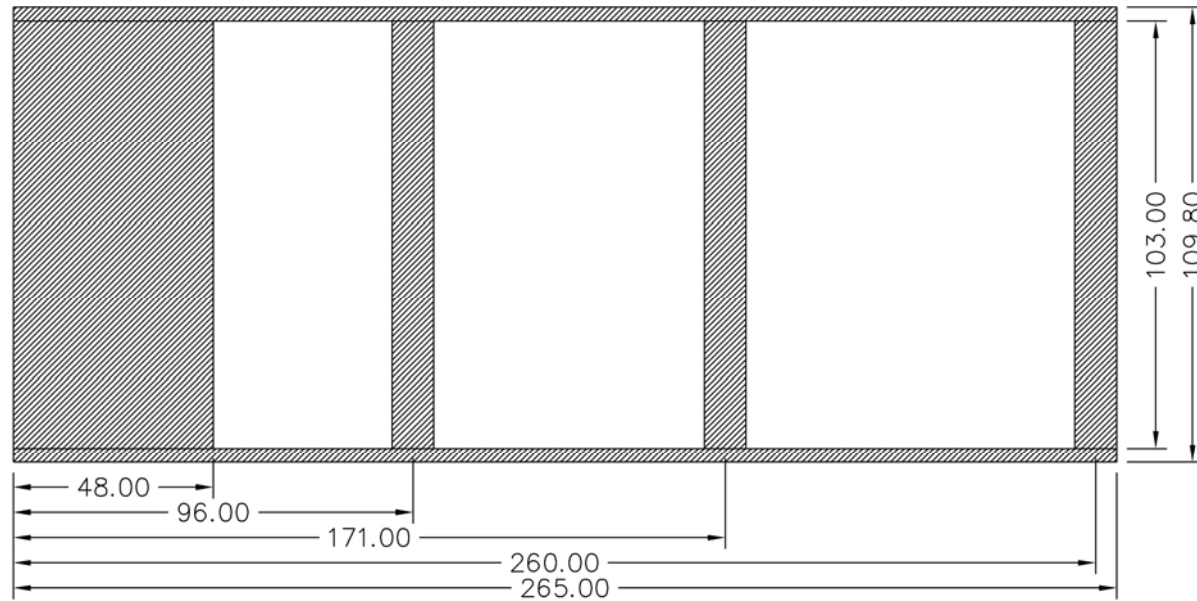
Fuel piping and/or optional boiler trim may increase overall width.

Specifications subject to change to incorporate engineering advances.

*May vary on low-NO_x designs

MODEL: PFTA 900-4

Base Diagram

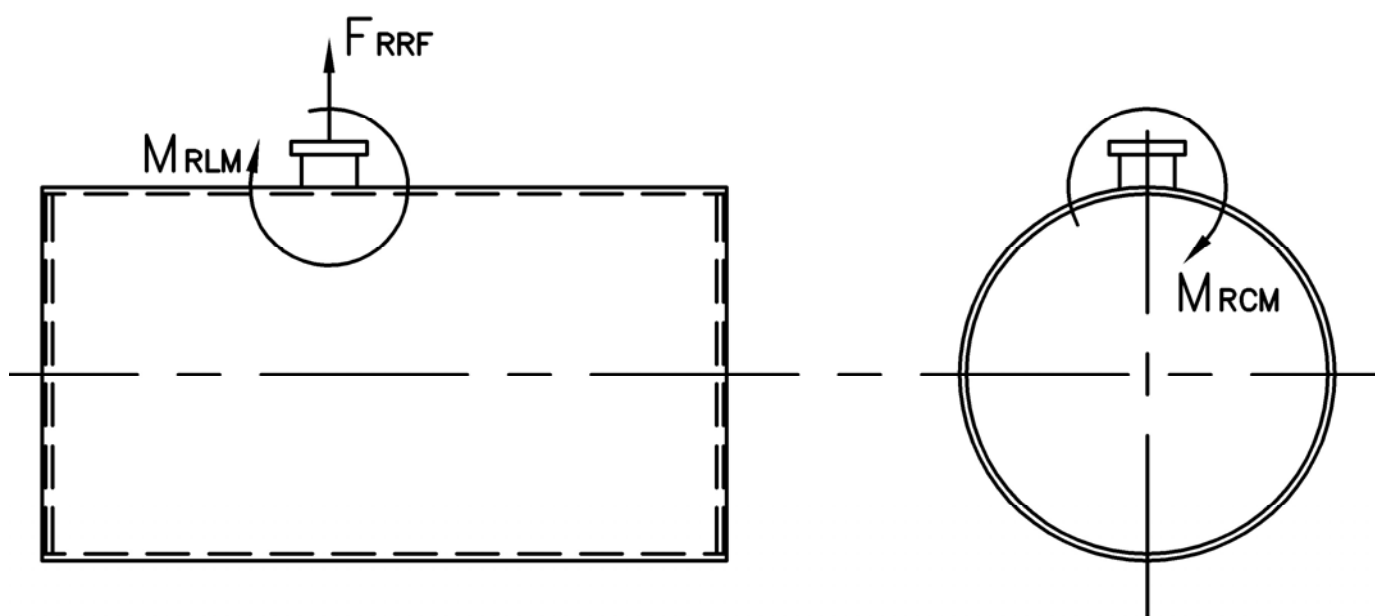


Thermal Expansion					
psig	15	150	200	250	300
Metal T_{MAX} (F)	240	366	388	406	421
L (in)	0.120	0.202	0.217	0.230	0.241
MS (in)	0.013	0.021	0.023	0.024	0.026
HT (in)	0.118	0.198	0.214	0.227	0.238

MODEL: PFTA 900-4

Nozzle Loadings

Maximum Allowable Load on Boiler Steam Nozzle					
	15# Design	150# Design	200# Design	250# Design	300# Design
F_{RRF} , lb	7,755	5,320	7,580	9,620	10,375
M_{RCM} , in-lb	60,030	77,500	113,600	158,920	194,790
M_{RLM} , in-lb	94,985	64,800	95,705	121,485	186,135



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300 Pine Street
P.O. Box 300
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Telephone: (616) 842-5050
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Stack Emissions-Natural Gas (1,000 Btu/CF)				
	PPMv (Corr to 3% O ₂)	lb/MBtu	lb/hr @ Full Rate	Ton/Yr @ Full Rate
NO _x *	110	0.131	4.740	20.762
	30	0.036	1.293	5.662
	9	0.011	0.388	1.699
CO	50	0.037	1.33	5.825
CO ₂	2.55 lb/lb fuel	119.76	4,335	18,988
H ₂ O	2.03 lb/lb fuel	106.16	3,843	16,831
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	6.070	26.588
CO	50	0.037	1.281	5.610
CO ₂	3.20 lb/lb fuel	168.53	5,876	25,737
H ₂ O	1.12 lb/lb fuel	71.20	2,482	10,873

* 110 ppm "A" Burner, 30 ppm A-FGR Burner, 9 ppm FIR Burner
**0.02% fuel bound Nitrogen