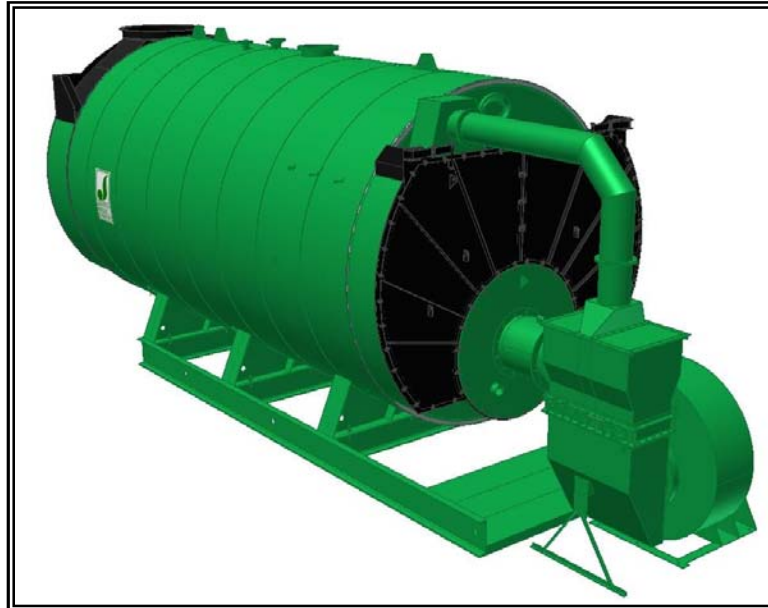




MODEL: PFTS 2500-3

3-Pass Steam Packaged Firetube Boiler

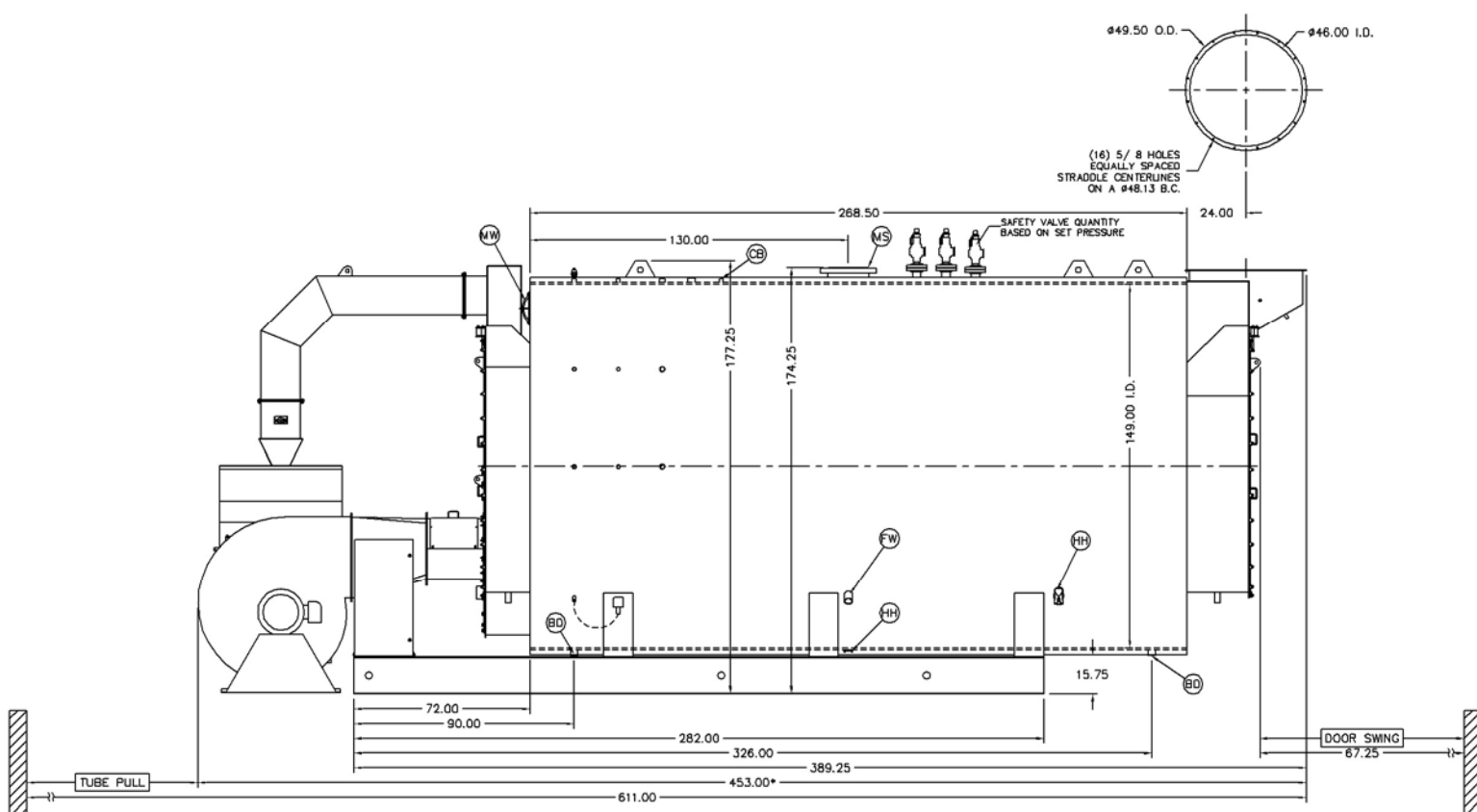
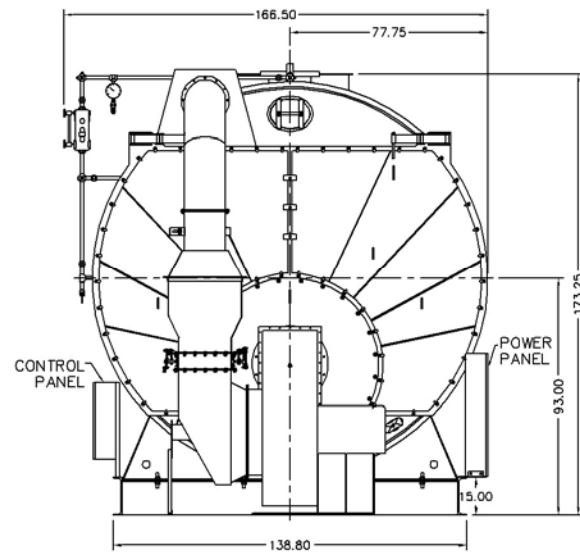


Ratings & Performance Data

Horsepower 2500							
Steam Storage, ft ³	230.1	Natural Gas Flow, SCFH (1,000 Btu/ft ³)**	101,341				
Steam Disengaging Area, ft ²	191.7	Combustion Air (15% Excess), SCFM***	18,544				
Total Heating Surface, ft ²	9,926	Flue Gas Flow Rate, lb/hr***	88,375				
Furnace Outside Diameter, in	66.5	Stack Flue Gas Velocity, ft/min***	2,872				
Furnace Heat Release Rate, Btu/ft ³ hr**	232,000	#2 Oil Flow, gal/hr (140,000 BTU/gal)**	698.5				
Total Combustion Volume, ft ³	627.9	#6 Oil Flow, gal/hr (150,000 BTU/gal)**	646.8				
Total Heat Release Rate, Btu/ft ³ hr**	161,000	Flue Gas Side Pressure Drop, in. H ₂ O	3.6				
Water Content N.W.L., gal	9,467	Water Content Flooded, gal.	11,188				
Approx. Dry Weight 15#, lb	107,200	Approx. Operating Weight 15#, lb.	187,500				
Approx. Dry Weight 150#, lb	128,100	Approx. Operating Weight 150#, lb.	208,400				
Approx. Dry Weight 200#, lb	141,700	Approx. Operating Weight 200#, lb.	222,000				
Approx. Dry Weight 250#, lb	151,500	Approx. Operating Weight 250#, lb.	231,800				
Approx. Dry Weight 300#, lb	157,000	Approx. Operating Weight 300#, lb.	237,300				
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	86,821	314	84.8	328	87.8	339	88.5
50	85,137	370	83.5	384	86.5	394	87.2
100	84,227	408	82.6	422	85.6	432	86.3
150	83,719	435	81.9	449	85.0	459	85.6
200	83,403	456	81.4	470	84.5	480	85.1
250	83,199	474	81.0	487	84.0	497	84.7
300	83,070	489	80.7	502	83.7	512	84.4
*Based on 228°F feedwater and 3% O ₂ , ** Values calculated at 100 psi operating pressure, ***Calculated Firing Natural Gas							

Drawings - 3-Pass Steam Packaged Firetube Boiler

Connection & Opening Schedule			
Conn.	Description	Type	Qty
FW	Feedwater Inlet	2.50 FNPT	2
MS*	Main Steam	14.00 300# 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
*30.00 150#RF Flange on 15 psig Design			



Notes:

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

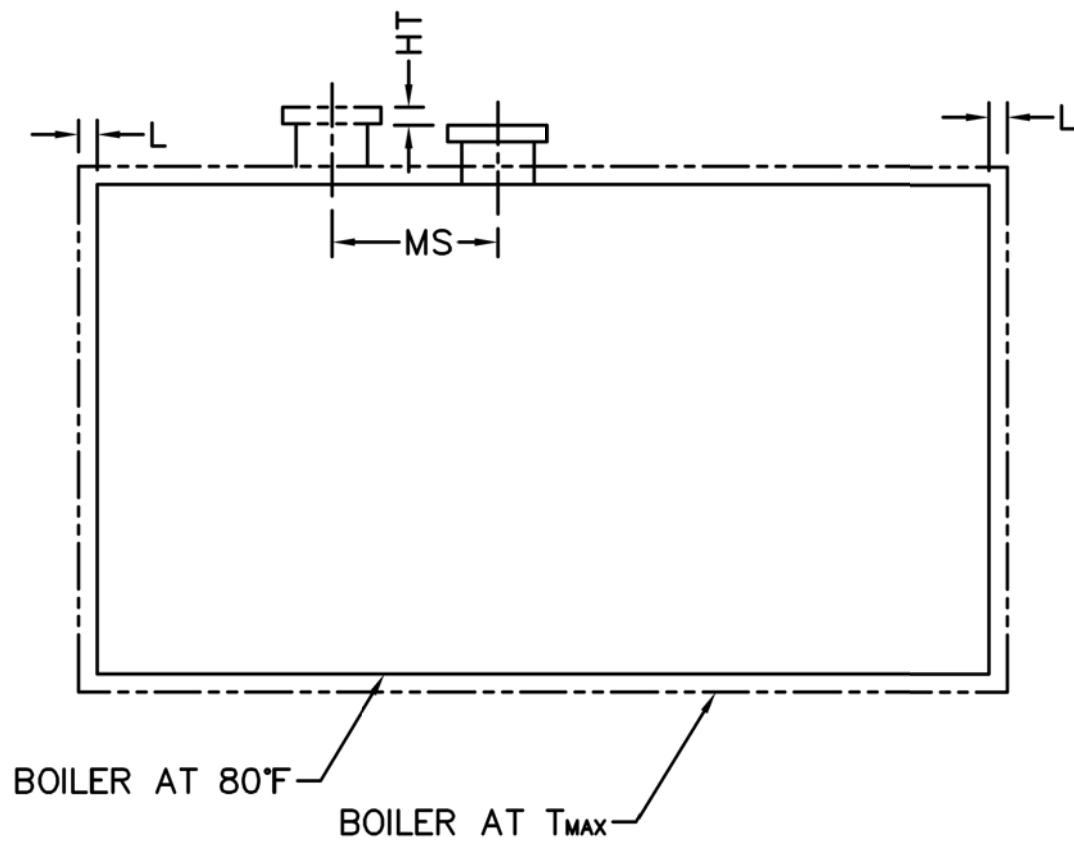
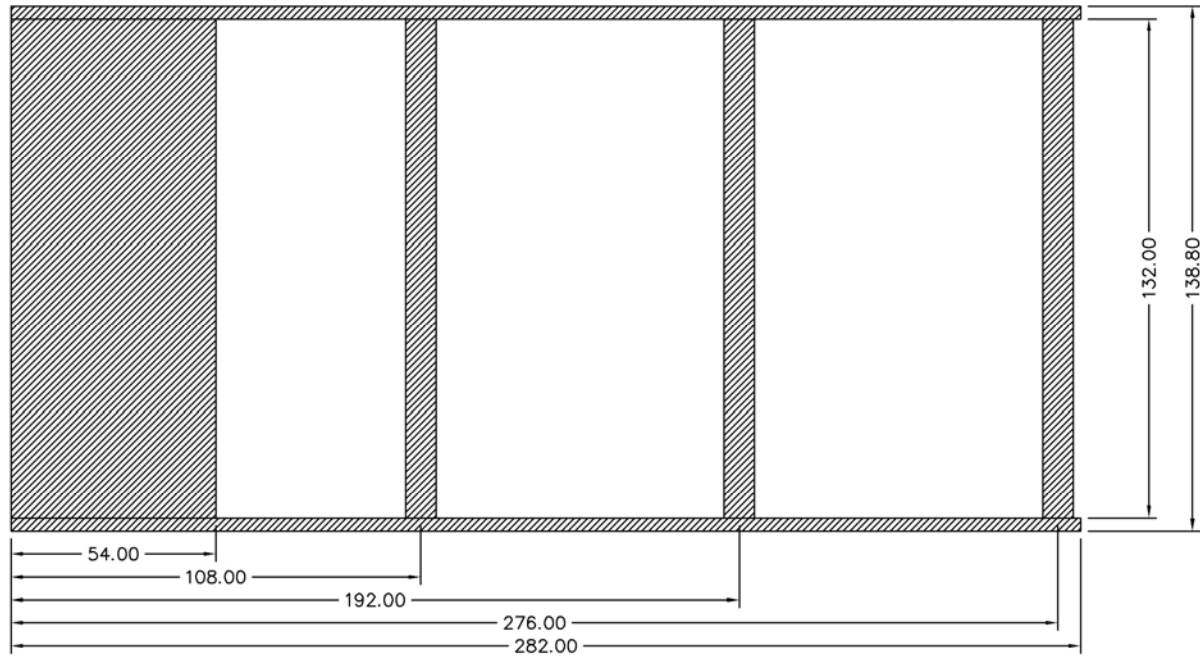
Fuel piping and/or optional boiler trim may increase overall width.

Specifications subject to change to incorporate engineering advances.

*May vary on low-NO_x designs

MODEL: PFTS 2500-3

Base Diagram

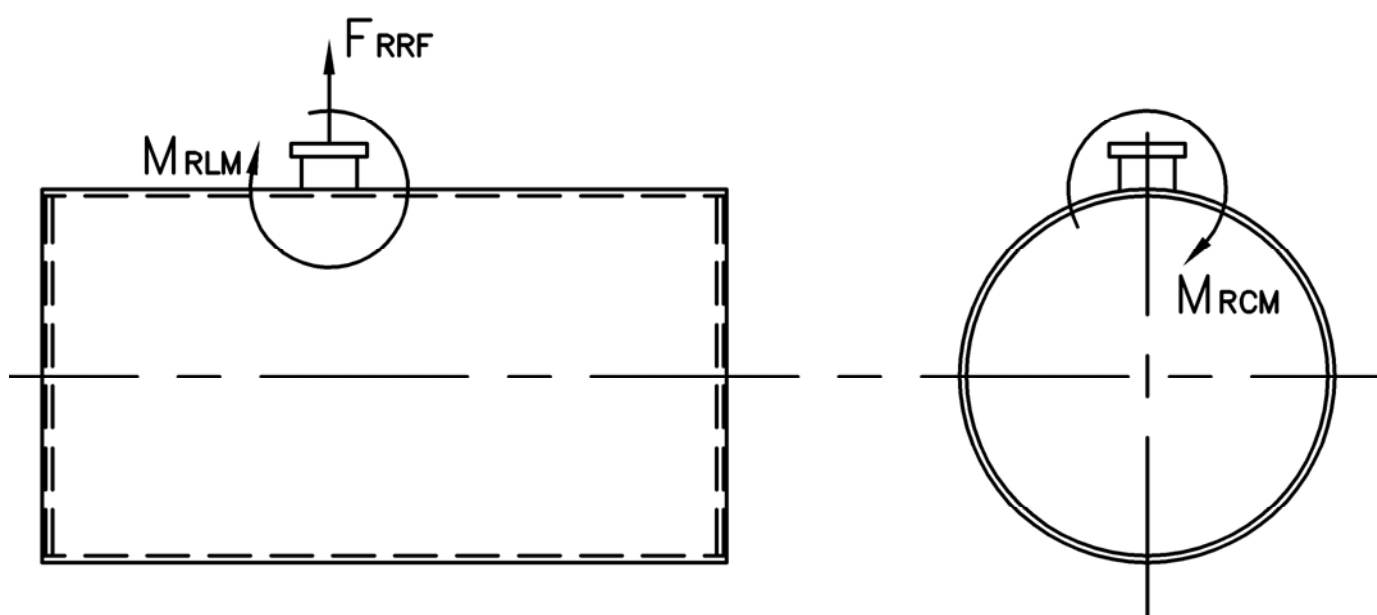


Thermal Expansion					
psig	15	150	200	250	300
Metal T_{MAX} (F)	250	366	388	406	422
L (in)	0.137	0.230	0.248	0.263	0.275
MS (in)	0.038	0.063	0.068	0.072	0.076
HT (in)	0.153	0.257	0.277	0.293	0.307

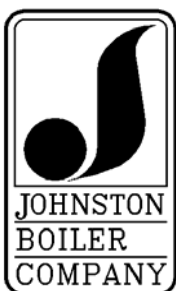
MODEL: PFTS 2500-3

Nozzle Loadings

Maximum Allowable Load on Boiler Steam Nozzle			
	15# Design	150# Design	200# Design
F_{RRF} , lb	20,970	7,140	11,515
M_{RCM} , in-lb	226,295	140,857	233,345
M_{RLM} , in-lb	571,720	112,160	169,885



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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	13.271	58.126
	30	0.036	3.619	15.853
	9	0.011	1.086	4.756
CO	50	0.037	3.72	16.307
CO ₂	2.55 lb/lb fuel	119.76	12,137	53,158
H ₂ O	2.03 lb/lb fuel	106.16	10,758	47,122
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	17.026	74.572
CO	50	0.037	3.593	15.735
CO ₂	3.20 lb/lb fuel	168.53	16,480	72,184
H ₂ O	1.12 lb/lb fuel	71.20	6,963	30,496

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