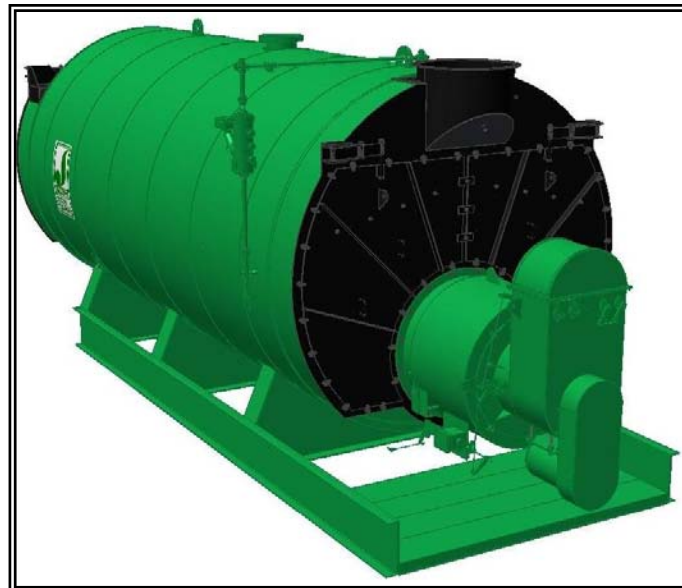


MODEL: PFTA 600-4

4-Pass Steam Packaged Firetube Boiler

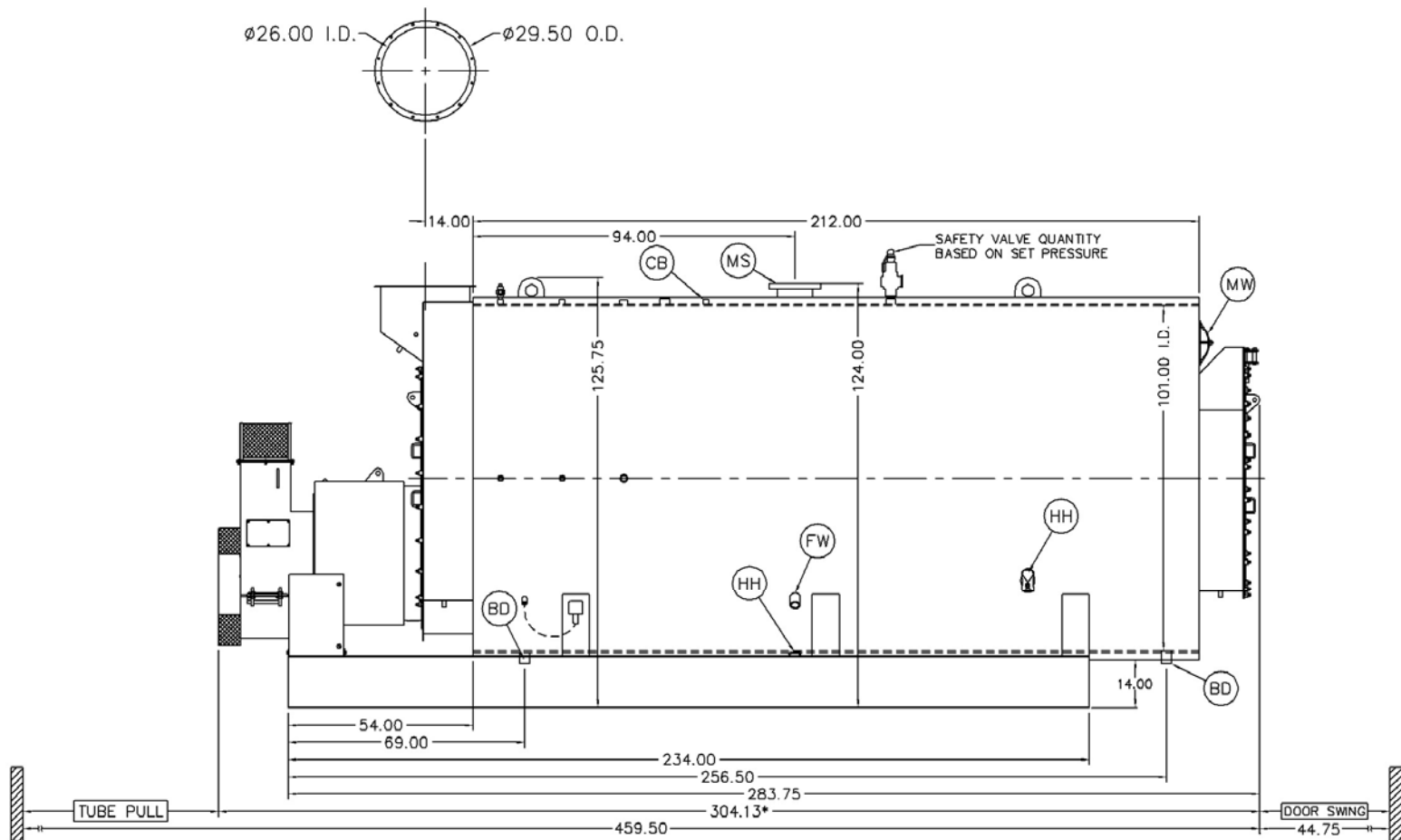
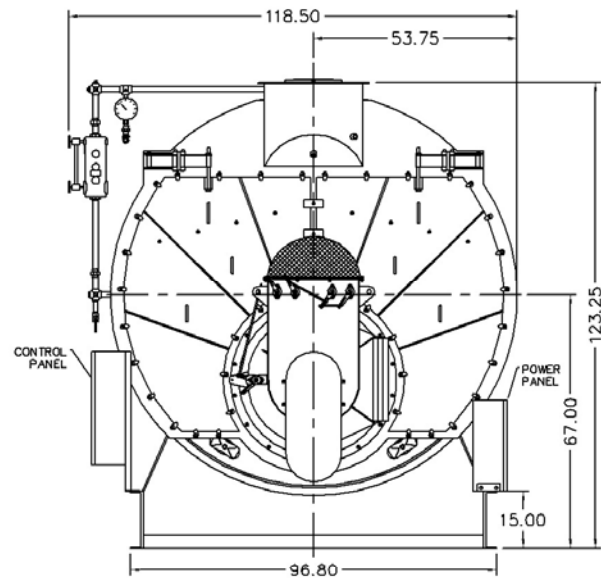


Ratings & Performance Data

Horsepower 600							
Steam Storage, ft ³	100.3	Natural Gas Flow, SCFH (1,000 Btu/ft ³)**		24,199			
Steam Disengaging Area, ft ²	108.0	Combustion Air (15% Excess), SCFM***		4,428			
Total Heating Surface, ft ²	3,094	Flue Gas Flow Rate, lb/hr***		21,103			
Furnace Outside Diameter, in	46.0	Stack Flue Gas Velocity, ft/min***		2,064			
Furnace Heat Release Rate, Btu/ft ³ hr**	152,000	#2 Oil Flow, gal/hr (140,000 BTU/gal)**		166.5			
Total Combustion Volume, ft ³	209.8	#6 Oil Flow, gal/hr (150,000 BTU/gal)**		154.1			
Total Heat Release Rate, Btu/ft ³ hr**	115,000	Flue Gas Side Pressure Drop, in. H ₂ O		5.9			
Water Content N.W.L., gal	3,677	Water Content Flooded, gal.		4,428			
Approx. Dry Weight 15#, lb	41,500	Approx. Operating Weight 15#, lb.		70,300			
Approx. Dry Weight 150#, lb	45,400	Approx. Operating Weight 150#, lb.		74,200			
Approx. Dry Weight 200#, lb	51,800	Approx. Operating Weight 200#, lb.		80,600			
Approx. Dry Weight 250#, lb	58,200	Approx. Operating Weight 250#, lb.		87,000			
Approx. Dry Weight 300#, lb	65,300	Approx. Operating Weight 300#, lb.		94,100			
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	20,837	277	85.4	286	88.6	291	89.4
50	20,433	335	84.0	343	87.2	349	87.9
100	20,214	375	83.0	383	86.1	389	86.9
150	20,092	403	82.3	411	85.4	418	86.2
200	20,017	424	81.7	433	84.9	440	85.6
250	19,968	443	81.3	451	84.4	459	85.2
300	19,937	458	80.9	467	84.0	475	84.7
*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	8.00 300# 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
*12.00 150#RF Flange on 15 psig Design			

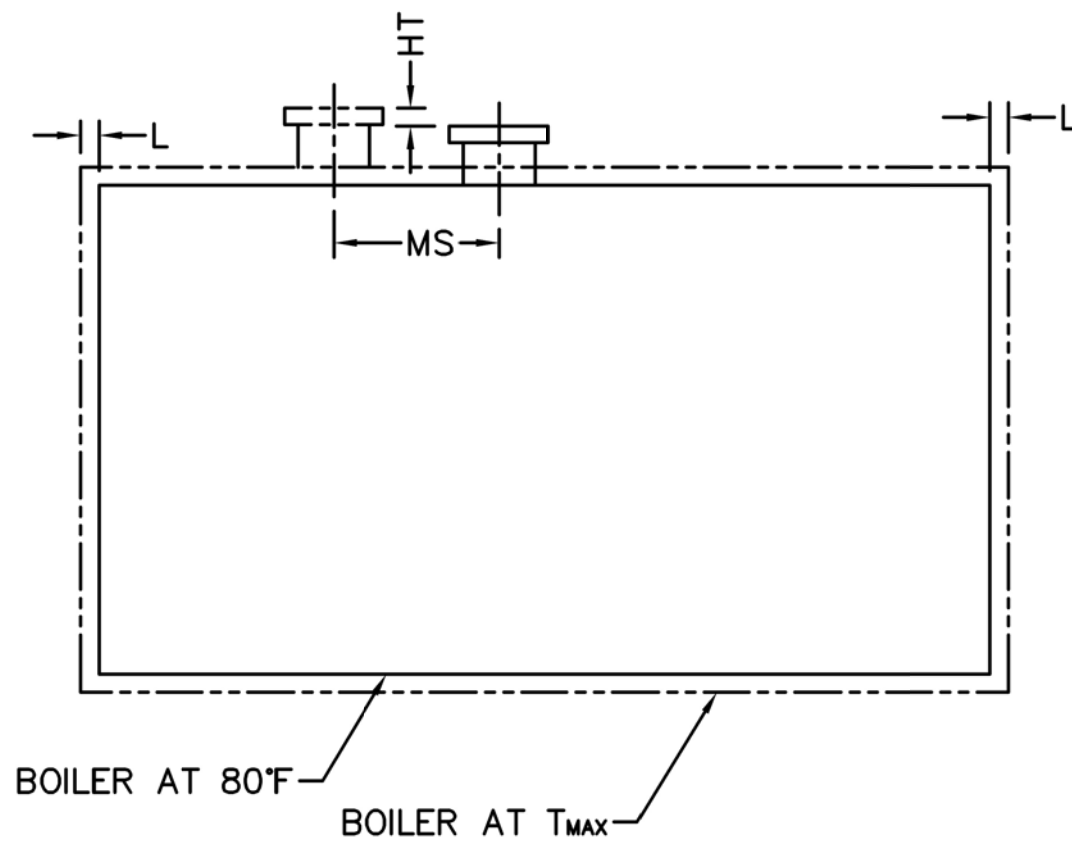
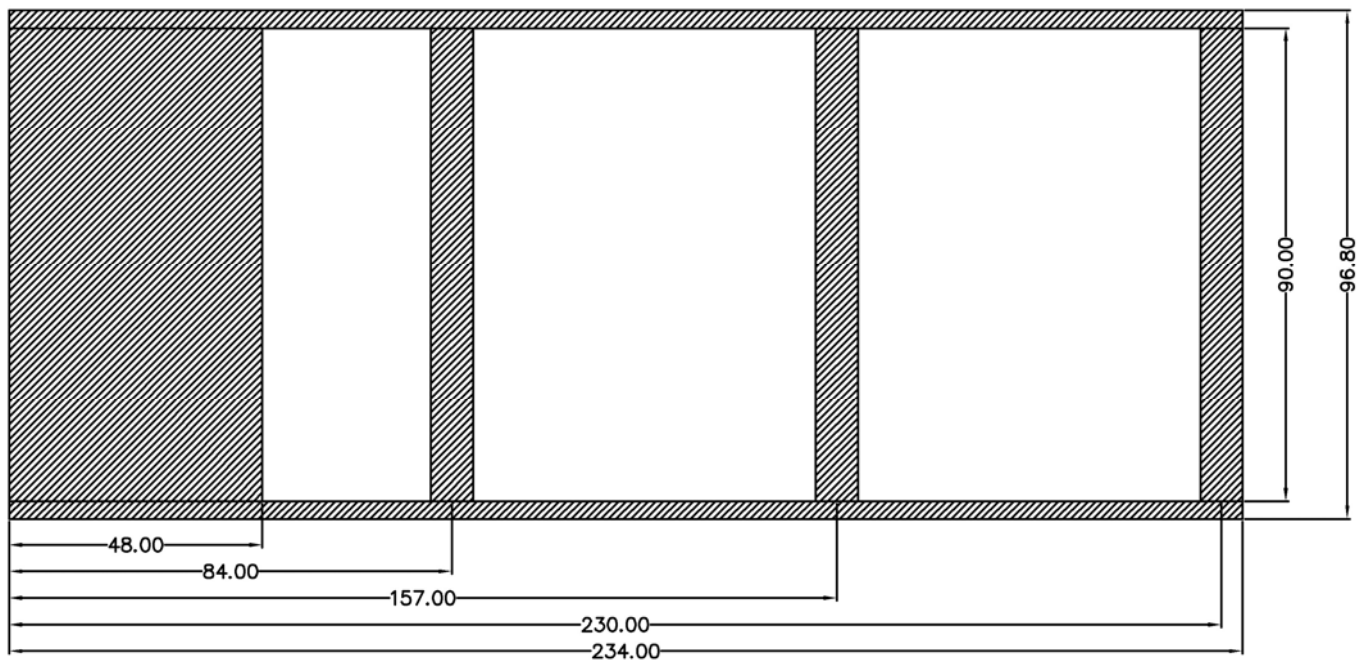


Notes:

- 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 600-4

Base Diagram

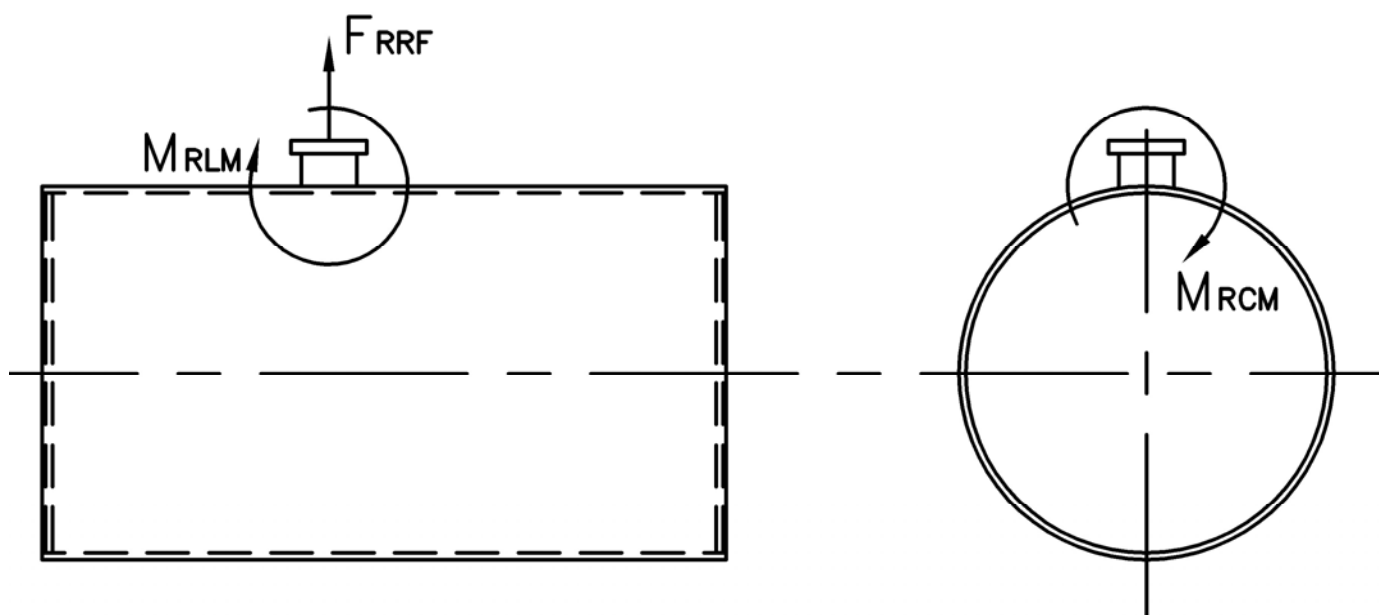


Thermal Expansion					
psig	15	150	200	250	300
Metal T_{MAX} (F)	240	366	388	406	421
L (in)	0.108	0.182	0.196	0.207	0.217
MS (in)	0.012	0.021	0.022	0.023	0.025
HT (in)	0.103	0.174	0.188	0.199	0.209

MODEL: PFTA 600-4

Nozzle Loadings

Maximum Allowable Load on Boiler Steam Nozzle					
	15# Design	150# Design	200# Design	250# Design	300# Design
F_{RRF} , lb	7,075	3,160	4,825	8,260	10,165
M_{RCM} , in-lb	50,955	38,950	62,675	119,675	137,110
M_{RLM} , in-lb	82,020	31,530	47,415	84,710	104,215



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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	3.169	13.880
	30	0.036	0.864	3.785
	9	0.011	0.259	1.136
CO	50	0.037	0.89	3.894
CO ₂	2.55 lb/lb fuel	119.76	2,898	12,693
H ₂ O	2.03 lb/lb fuel	106.16	2,569	11,252
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	4.060	17.781
CO	50	0.037	0.857	3.752
CO ₂	3.20 lb/lb fuel	168.53	3,930	17,211
H ₂ O	1.12 lb/lb fuel	71.20	1,660	7,271

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