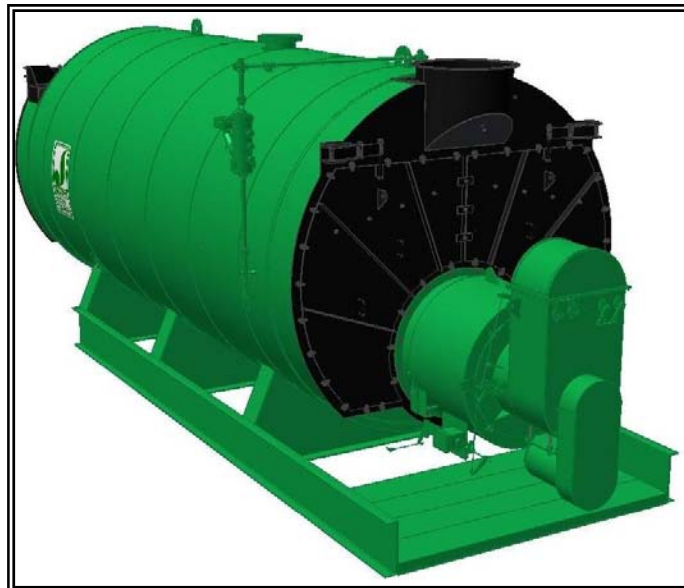




## MODEL: PFTA 1500-4

### 4-Pass Steam Packaged Firetube Boiler

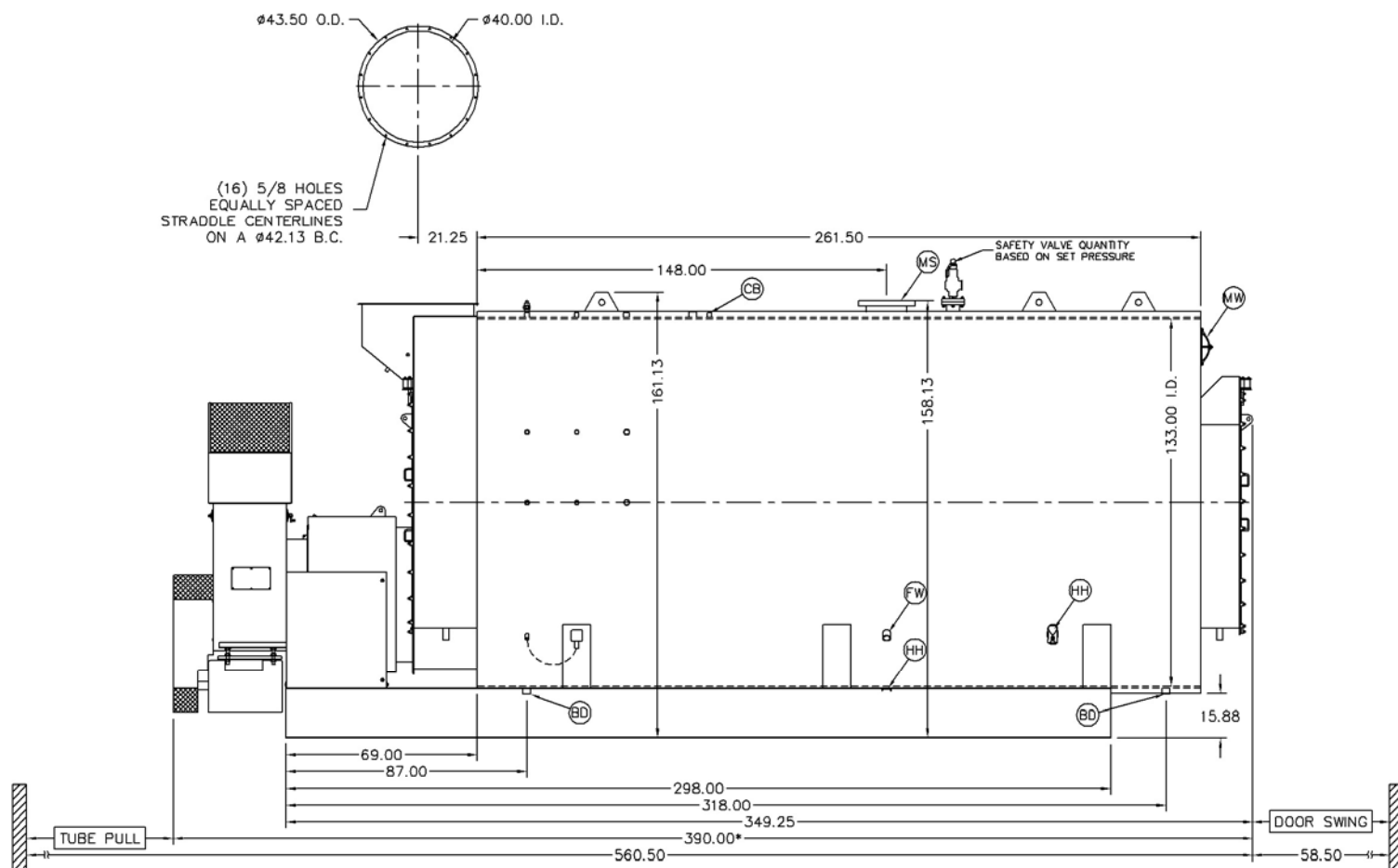
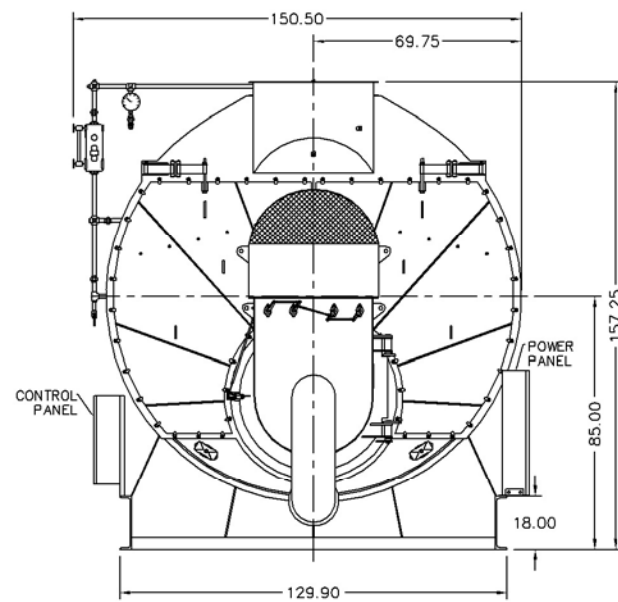


### Ratings & Performance Data

Horsepower 1500							
Steam Storage, ft <sup>3</sup>	264.8	Natural Gas Flow, SCFH (1,000 Btu/ft <sup>3</sup> )**	60,243				
Steam Disengaging Area, ft <sup>2</sup>	186.4	Combustion Air (15% Excess), SCFM***	11,024				
Total Heating Surface, ft <sup>2</sup>	7,577	Flue Gas Flow Rate, lb/hr***	52,535				
Furnace Outside Diameter, in	53.5	Stack Flue Gas Velocity, ft/min***	2,148				
Furnace Heat Release Rate, Btu/ft <sup>3</sup> hr**	219,000	#2 Oil Flow, gal/hr (140,000 BTU/gal)**	414.5				
Total Combustion Volume, ft <sup>3</sup>	388.8	#6 Oil Flow, gal/hr (150,000 BTU/gal)**	383.8				
Total Heat Release Rate, Btu/ft <sup>3</sup> hr**	155,000	Flue Gas Side Pressure Drop, in. H <sub>2</sub> O	9.7				
Water Content N.W.L., gal	7,606	Water Content Flooded, gal.	9,587				
Approx. Dry Weight 15#, lb	88,200	Approx. Operating Weight 15#, lb.	151,100				
Approx. Dry Weight 150#, lb	93,600	Approx. Operating Weight 150#, lb.	156,500				
Approx. Dry Weight 200#, lb	99,300	Approx. Operating Weight 200#, lb.	162,200				
Approx. Dry Weight 250#, lb	106,500	Approx. Operating Weight 250#, lb.	169,400				
Approx. Dry Weight 300#, lb	114,300	Approx. Operating Weight 300#, lb.	177,200				
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	52,092	267	85.8	274	89.0	282	89.7
50	51,082	325	84.3	332	87.5	341	88.2
100	50,536	366	83.4	372	86.5	381	87.2
150	50,231	394	82.7	401	85.8	410	86.5
200	50,042	416	82.1	423	85.3	432	86.0
250	49,920	434	81.7	441	84.8	451	85.5
300	49,842	450	81.3	457	84.4	467	85.1
*Based on 228°F feedwater and 3% O <sub>2</sub> , ** 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	12.00 300# 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
*16.00 150#RF Flange on 15 psig Design			



### Notes:

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

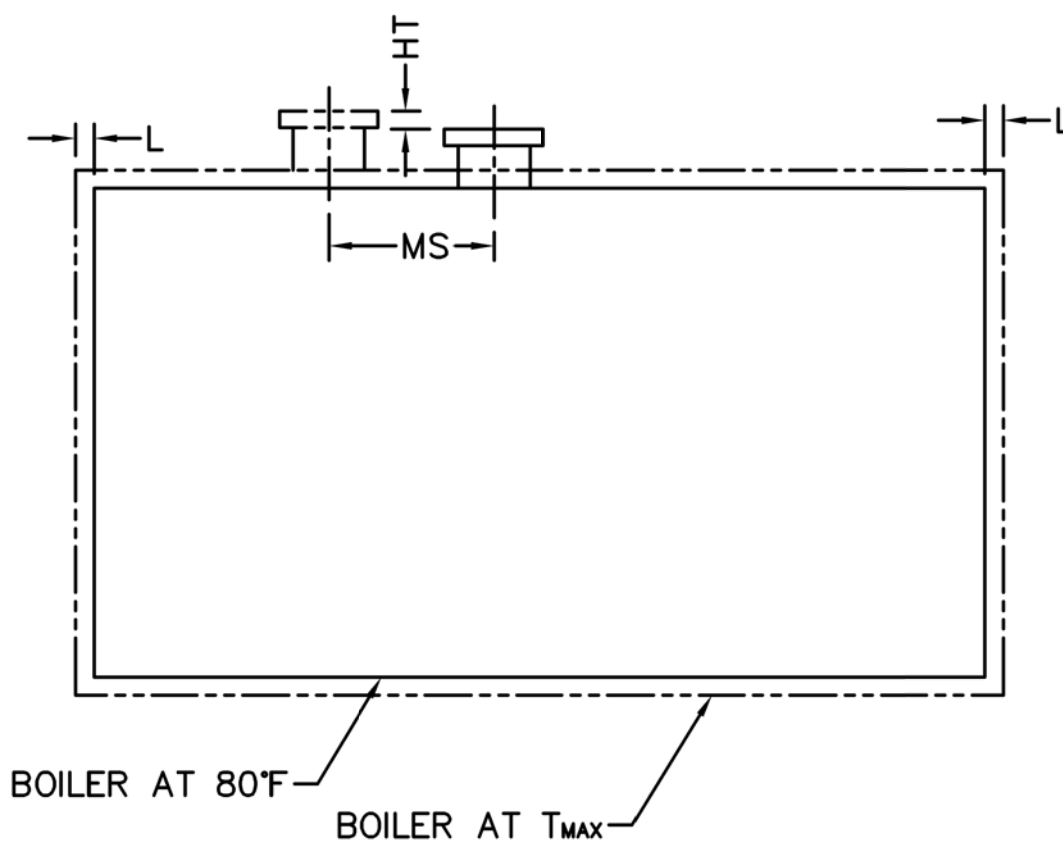
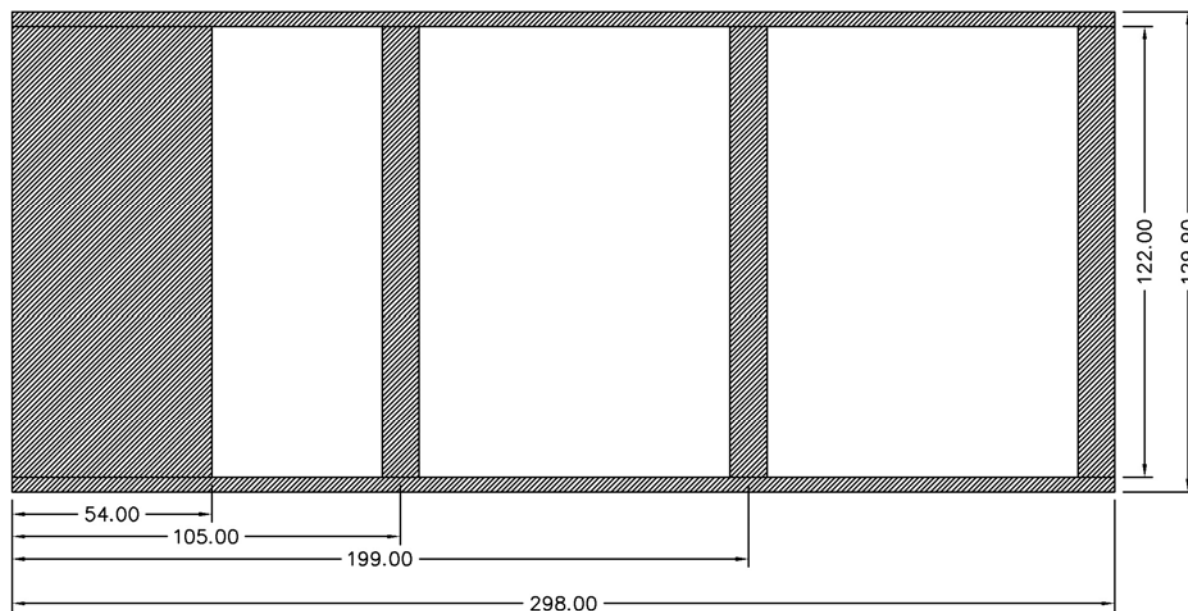
Fuel piping and/or optional boiler trim may increase overall width.

Specifications subject to change to incorporate engineering advances.

\*May vary on low-NO<sub>x</sub> designs

# MODEL: PFTA 1500-4

## Base Diagram

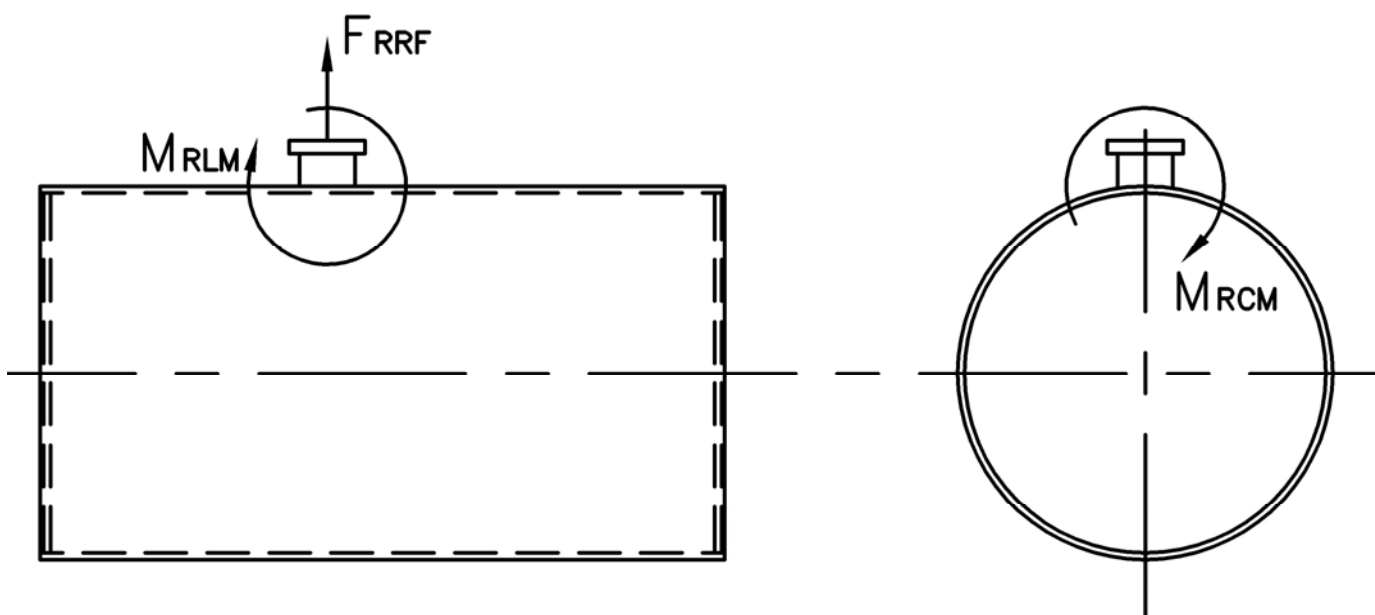


Thermal Expansion					
psig	15	150	200	250	300
Metal T <sub>MAX</sub> (F)	240	366	388	406	421
L (in)	0.133	0.225	0.242	0.256	0.269
MS (in)	0.013	0.022	0.024	0.025	0.027
HT (in)	0.136	0.229	0.247	0.262	0.275

# MODEL: PFTA 1500-4

## Nozzle Loadings

Maximum Allowable Load on Boiler Steam Nozzle					
	15# Design	150# Design	200# Design	250# Design	300# Design
$F_{RRF}$ , lb	7,130	5,185	6,630	9,895	18,450
$M_{RCM}$ , in-lb	71,285	91,165	102,360	192,230	314,810
$M_{RLM}$ , in-lb	103,725	70,780	94,550	158,170	238,145



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300 Pine Street  
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Stack Emissions-Natural Gas (1,000 Btu/CF)				
	PPMv (Corr to 3% O <sub>2</sub> )	lb/MBtu	lb/hr @ Full Rate	Ton/Yr @ Full Rate
NO <sub>x</sub> *	110	0.131	7.889	34.554
	30	0.036	2.152	9.424
	9	0.011	0.645	2.827
CO	50	0.037	2.21	9.694
CO <sub>2</sub>	2.55 lb/lb fuel	119.76	7,215	31,600
H <sub>2</sub> O	2.03 lb/lb fuel	106.16	6,395	28,012
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO <sub>x</sub>	128	0.174	10.103	44.252
CO	50	0.037	2.132	9.338
CO <sub>2</sub>	3.20 lb/lb fuel	168.53	9,780	42,835
H <sub>2</sub> O	1.12 lb/lb fuel	71.20	4,132	18,097

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