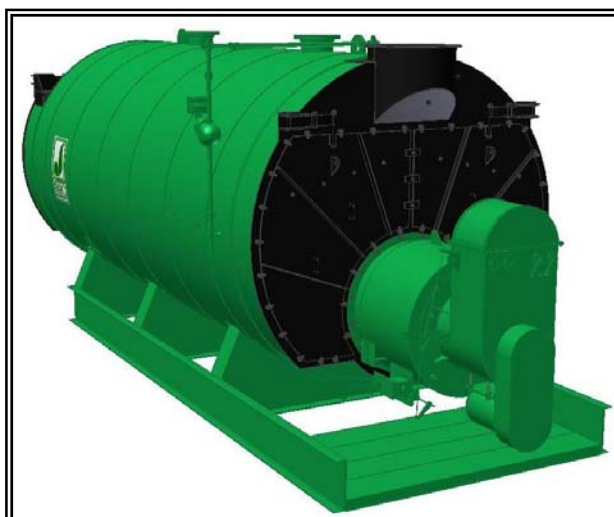


MODEL: PFTA 1500-4

4-Pass Hot Water Packaged Firetube Boiler

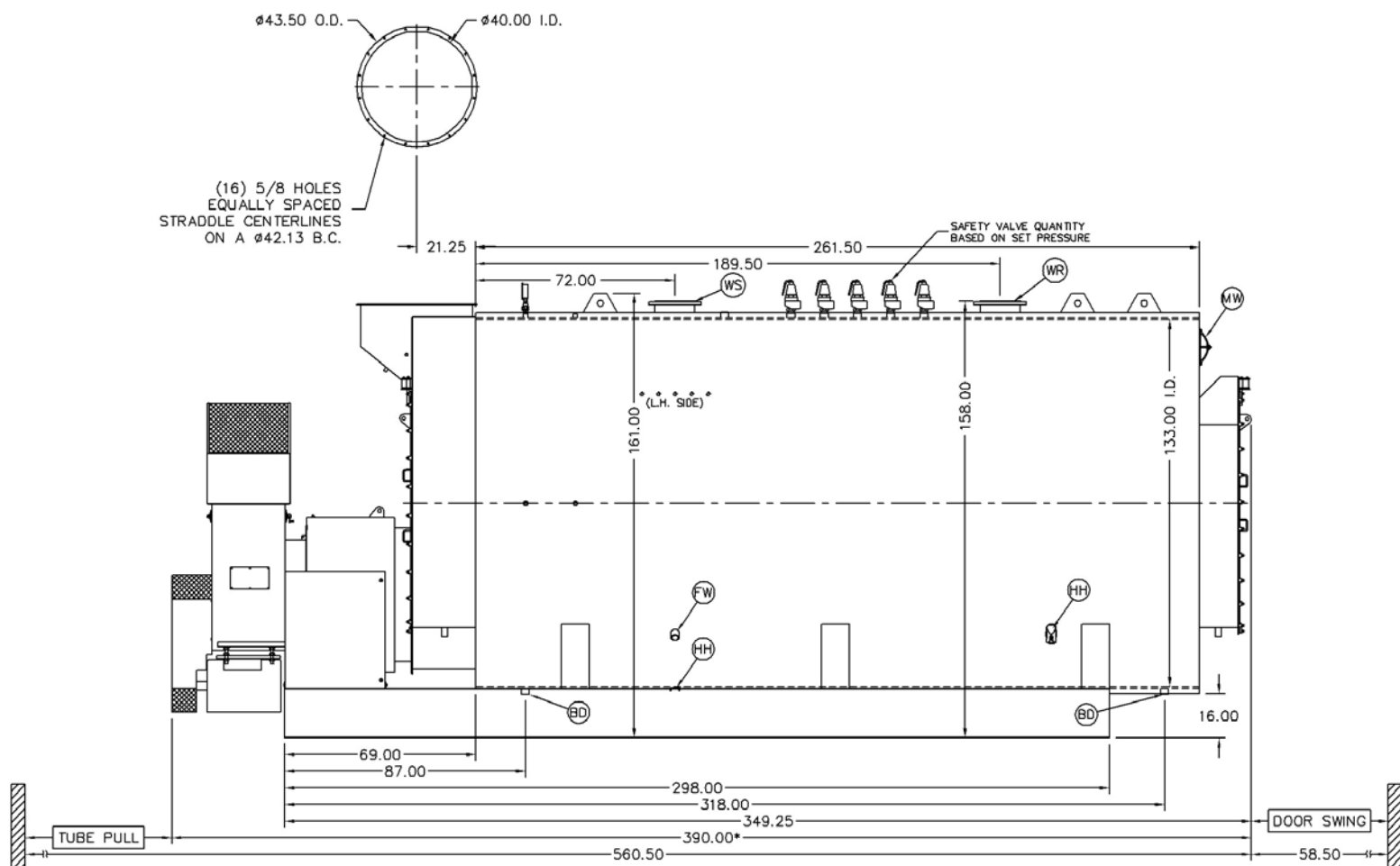
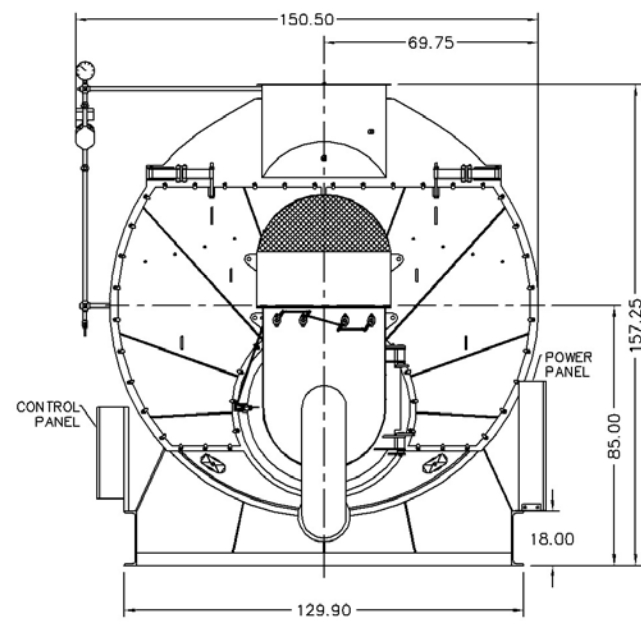


Ratings & Performance Data

Horsepower 1500		Natural Gas Flow, SCFH (1,000 Btu/ft ³)**	57,909			
Total Heating Surface, ft ²	7,577	Combustion Air (15% Excess), SCFM***	10,596			
Furnace Outside Diameter, in	53.5	Flue Gas Flow Rate, lb/hr***	50,499			
Furnace Heat Release Rate, Btu/ft ³ hr**	210,000	Stack Flue Gas Velocity, ft/min***	1,720			
Total Combustion Volume, ft ³	388.8	#2 Oil Flow, gal/hr (140,000 Btu/gal)**	398.9			
Total Heat Release Rate, Btu/ft ³ hr**	149,000	#6 Oil Flow, gal/hr (150,000 Btu/gal)**	369.4			
Water Content Flooded, gal	9,587	Flue Gas Side Pressure Drop, in. H ₂ O	9.7			
Approx. Dry Weight 30#, lb	88,200	Approx. Operating Weight 30#, lb	167,800			
Approx. Dry Weight 60#, lb	88,500	Approx. Operating Weight 60#, lb	168,100			
Approx. Dry Weight 125#, lb	91,500	Approx. Operating Weight 125#, lb	171,100			
Performance Data						
Operating Temperature (F)	Natural Gas		#2 Oil		#6 Oil	
	Stack Temp (F)	%Eff	Stack Temp	%Eff	Stack Temp (F)	%Eff
180	208	87.2	215	90.4	223	91.1
200	228	86.7	235	89.9	243	90.6
220	248	86.2	255	89.4	263	90.1
240	268	85.8	275	88.9	283	89.6
*Based on 20°F difference in supply/return, ** Values calculated at 200°F operating temperature, ***Calculated Firing Natural Gas						

Drawings - 4-Pass Hot Water Packaged Firetube Boiler

Connection & Opening Schedule			
Conn.	Description	Type	Qty
FW	Feedwater Inlet	2.00 FNPT	2
WS	Water Supply	14.00 150#RF	1
WR	Water Return	14.00 150#RF	1
DO	Drain Outlet	2.00 FNPT	2
MW	Manway	12 X 16	1
HH	Hand Hole	4 X 6	7
Supply and return outlets ASME flanged drilling			



Notes:

30# Hot Water design shown, all dimensions given in inches.

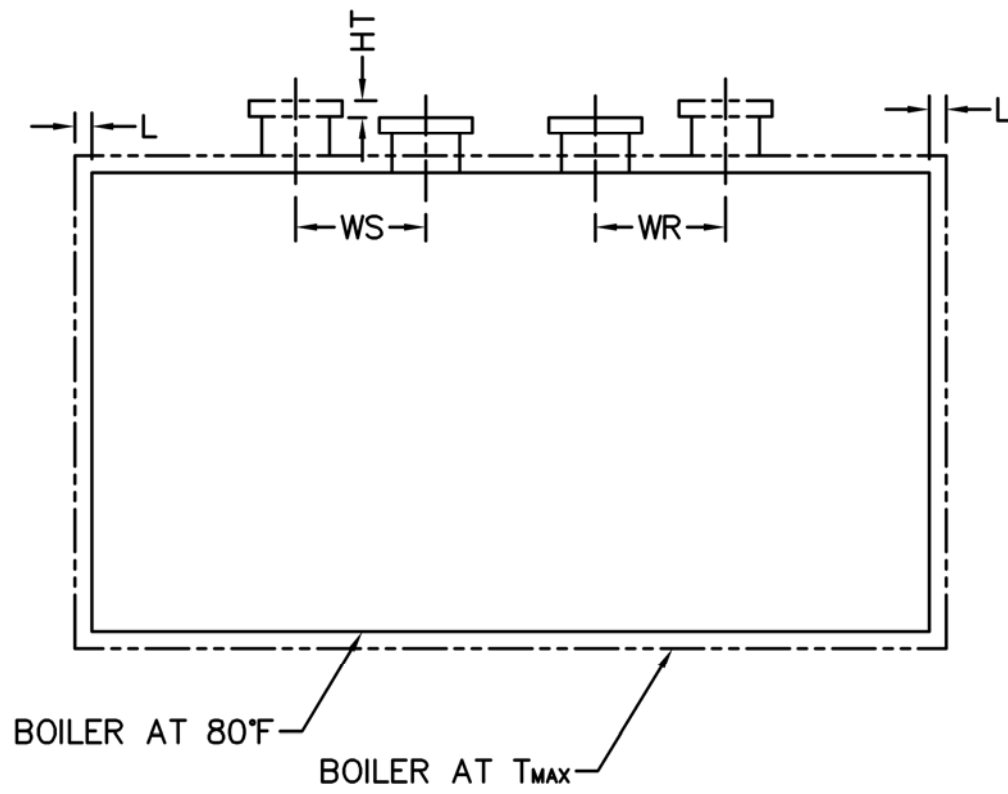
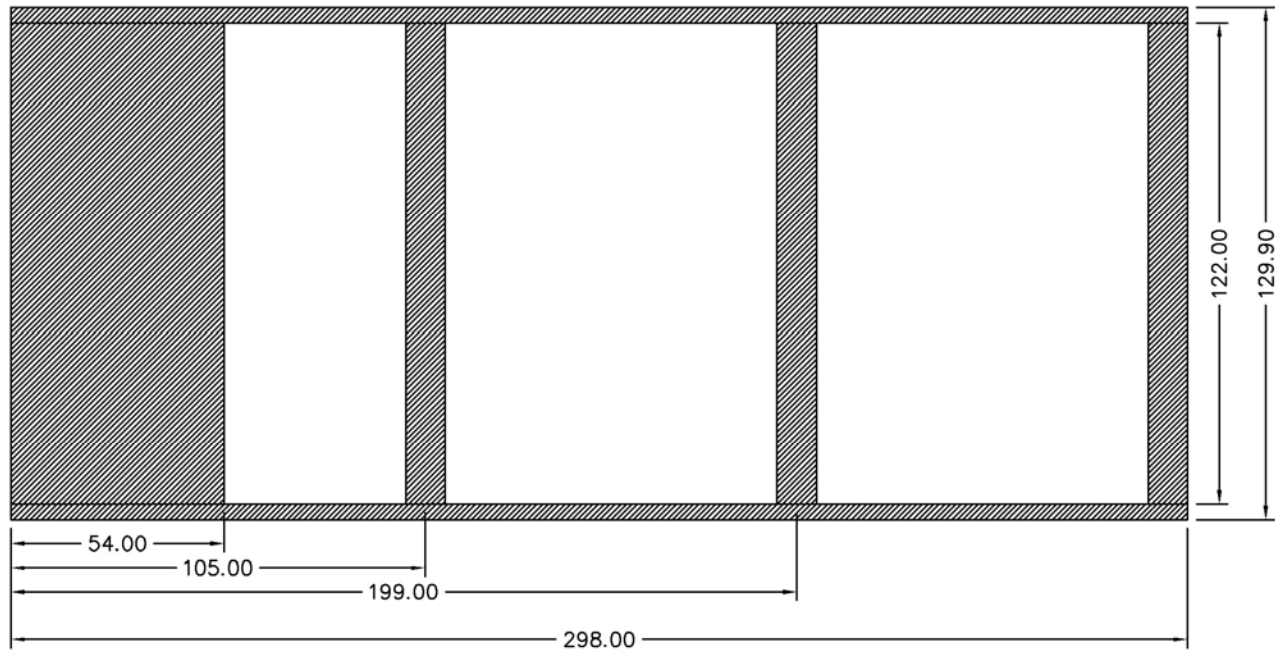
Fuel piping and/or optional boiler trim may increase overall width.

Specifications subject to change to incorporate engineering advances.

*May vary on low-NO_x designs.

MODEL: PFTA 1500-4

Base Diagram

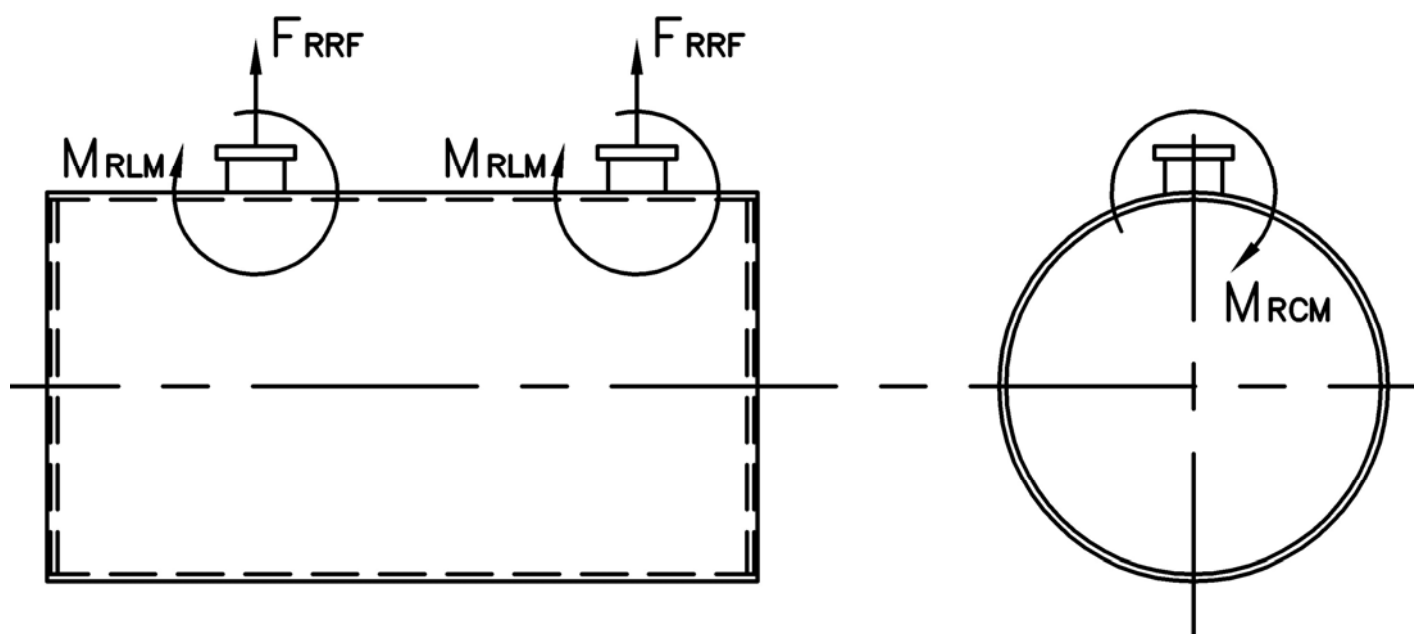


Thermal Expansion				
Metal T_{MAX} (F)	180	200	220	240
L (in)	0.079	0.094	0.110	0.126
WS (in)	0.028	0.034	0.039	0.045
WR (in)	0.059	0.071	0.083	0.095
HT (in)	0.080	0.096	0.112	0.128

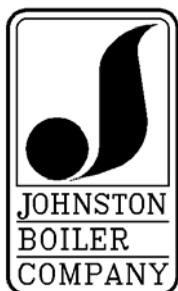
MODEL: PFTA 1500-4

Nozzle Loadings

Maximum Allowable Load on Outlet & Return Nozzles				
	30# Design	60# Design	125# Design	160# Design
F_{RRF} , lb	5,675	4,055	7,120	10,155
M_{RCM} , in-lb	67,535	67,535	123,845	208,520
M_{RLM} , in-lb	96,035	68,680	102,560	162,545



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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	7.583	33.215
	30	0.036	2.068	9.059
	9	0.011	0.620	2.718
CO	50	0.037	2.13	9.318
CO ₂	2.55 lb/lb fuel	119.76	6,935	30,376
H ₂ O	2.03 lb/lb fuel	106.16	6,148	26,926
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	9.722	42.584
CO	50	0.037	2.051	8.985
CO ₂	3.20 lb/lb fuel	168.53	9,411	41,220
H ₂ O	1.12 lb/lb fuel	71.20	3,976	17,414

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