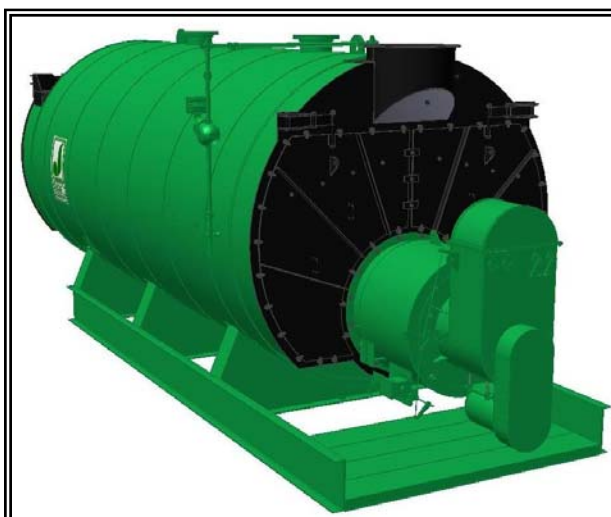




MODEL: PFTA 1000-4

4-Pass Hot Water Packaged Firetube Boiler

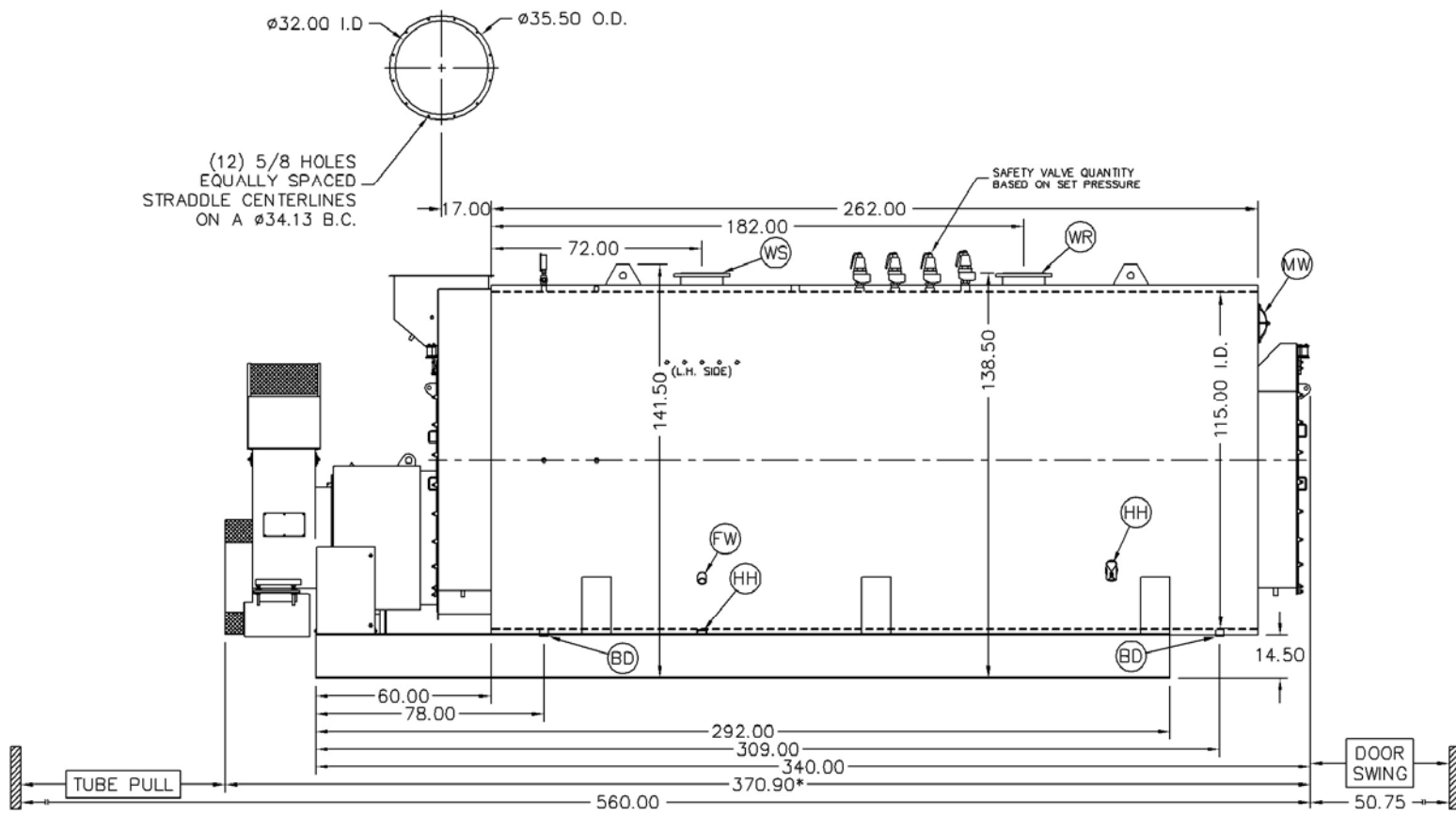
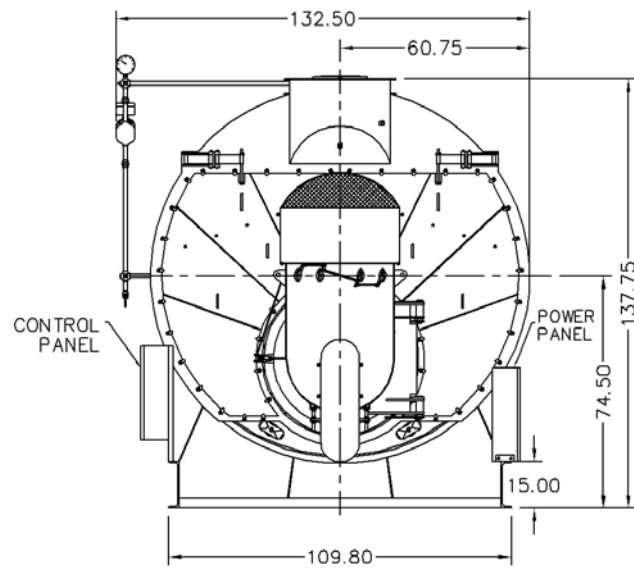


Ratings & Performance Data

Horsepower 1000		Natural Gas Flow, SCFH (1,000 Btu/ft ³)**	38,543			
Total Heating Surface, ft ²	5,081	Combustion Air (15% Excess), SCFM***	7,053			
Furnace Outside Diameter, in	52.0	Flue Gas Flow Rate, lb/hr***	33,612			
Furnace Heat Release Rate, Btu/ft ³ hr**	146,000	Stack Flue Gas Velocity, ft/min***	1,770			
Total Combustion Volume, ft ³	343.2	#2 Oil Flow, gal/hr (140,000 Btu/gal)**	265.4			
Total Heat Release Rate, Btu/ft ³ hr**	112,000	#6 Oil Flow, gal/hr (150,000 Btu/gal)**	245.6			
Water Content Flooded, gal	7,031	Flue Gas Side Pressure Drop, in. H ₂ O	9.7			
Approx. Dry Weight 30#, lb	65,400	Approx. Operating Weight 30#, lb	124,300			
Approx. Dry Weight 60#, lb	65,600	Approx. Operating Weight 60#, lb	124,500			
Approx. Dry Weight 125#, lb	67,900	Approx. Operating Weight 125#, lb	126,800			
Performance Data						
Operating Temperature (F)	Natural Gas		#2 Oil		#6 Oil	
	Stack Temp (F)	%Eff	Stack Temp	%Eff	Stack Temp (F)	%Eff
180	202	87.3	207	90.6	212	91.3
200	221	86.9	227	90.1	232	90.9
220	241	86.4	247	89.6	251	90.4
240	261	85.9	267	89.1	271	89.9
*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	2	Qty
FW	Feedwater Inlet	12.00 FNPT	2
WS	Water Supply	12.00 150#RF	1
WR	Water Return	12.00 150#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			

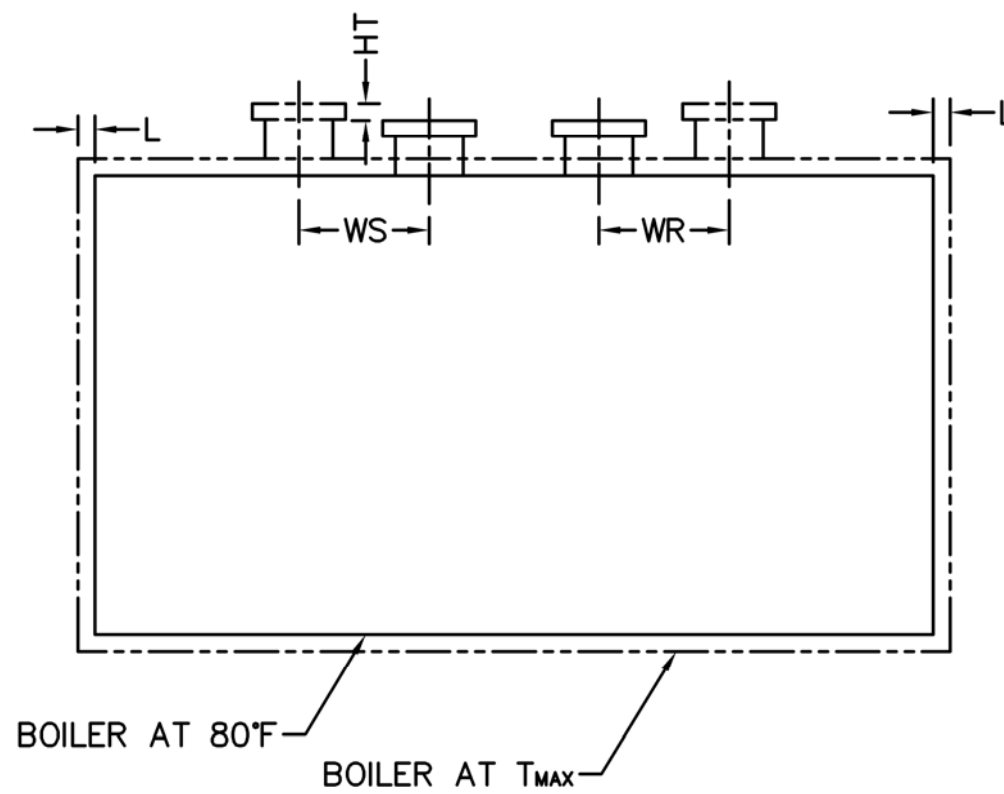
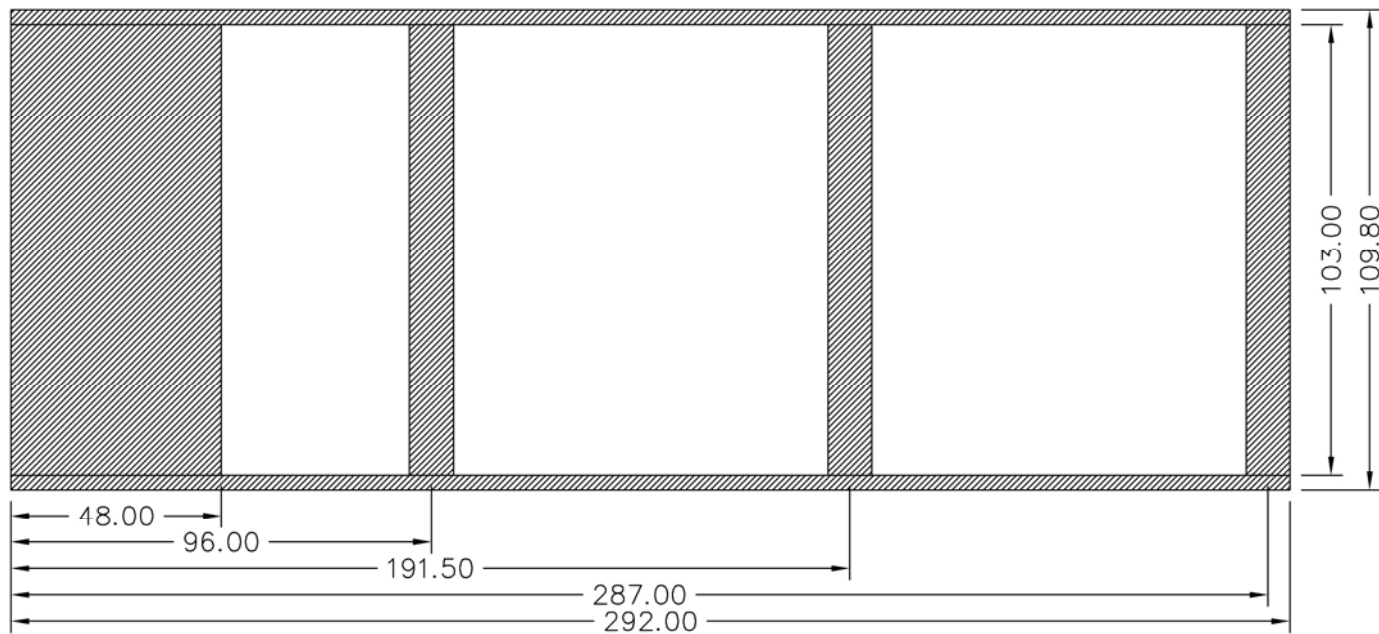


Notes:

- 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 1000-4

Base Diagram

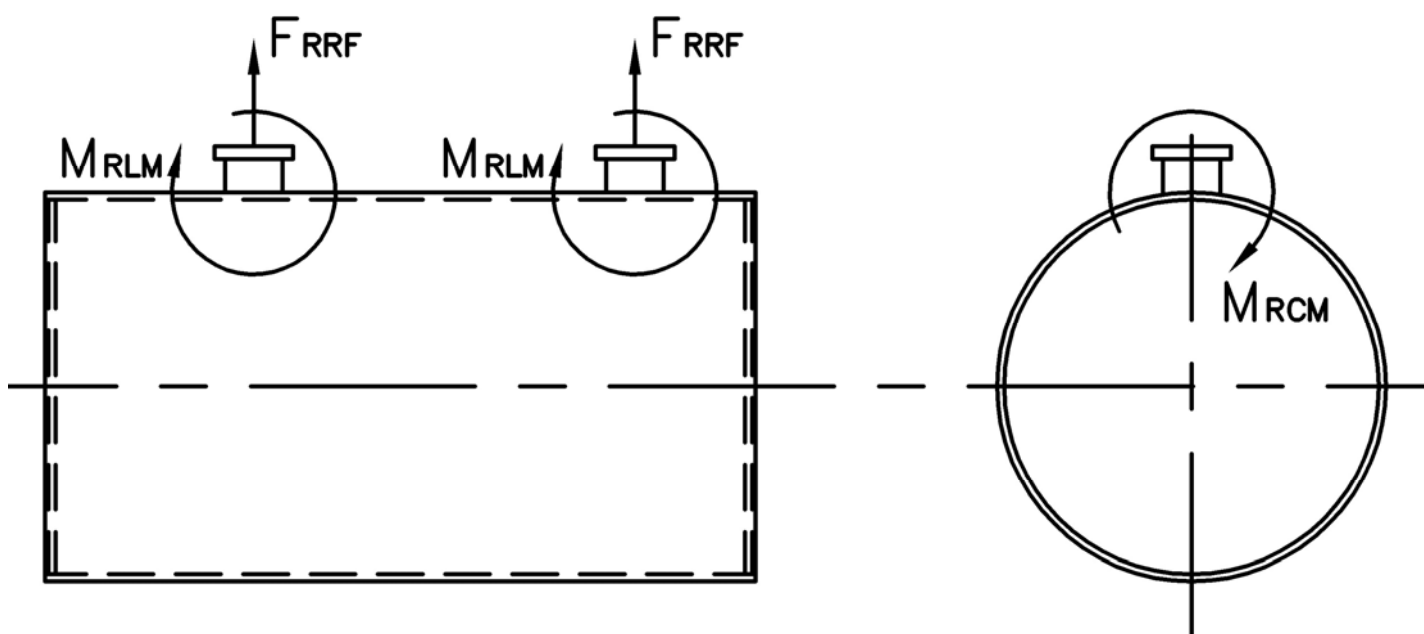


Thermal Expansion				
Metal T _{MAX} (F)	180	200	220	240
L (in)	0.079	0.094	0.110	0.126
WS (in)	0.035	0.042	0.050	0.057
WR (in)	0.031	0.037	0.043	0.049
HT (in)	0.069	0.083	0.097	0.111

MODEL: PFTA 1000-4

Nozzle Loadings

Maximum Allowable Load on Outlet & Return Nozzles				
	30# Design	60# Design	125# Design	160# Design
F_{RRF} , lb	4,850	3,700	4,790	7,595
M_{RCM} , in-lb	40,330	40,330	64,670	115,985
M_{RLM} , in-lb	52,165	39,795	51,500	86,200



Distributed By:



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Telephone: (616) 842-5050
Net: www.johnstonboiler.com

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	5.047	22.107
	30	0.036	1.377	6.029
	9	0.011	0.413	1.809
CO	50	0.037	1.42	6.202
CO ₂	2.55 lb/lb fuel	119.76	4,616	20,218
H ₂ O	2.03 lb/lb fuel	106.16	4,092	17,922
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	6.470	28.339
CO	50	0.037	1.365	5.980
CO ₂	3.20 lb/lb fuel	168.53	6,263	27,431
H ₂ O	1.12 lb/lb fuel	71.20	2,646	11,589

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

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