



MODEL: PFTA 600-4

4-Pass Hot Water Packaged Firetube Boiler



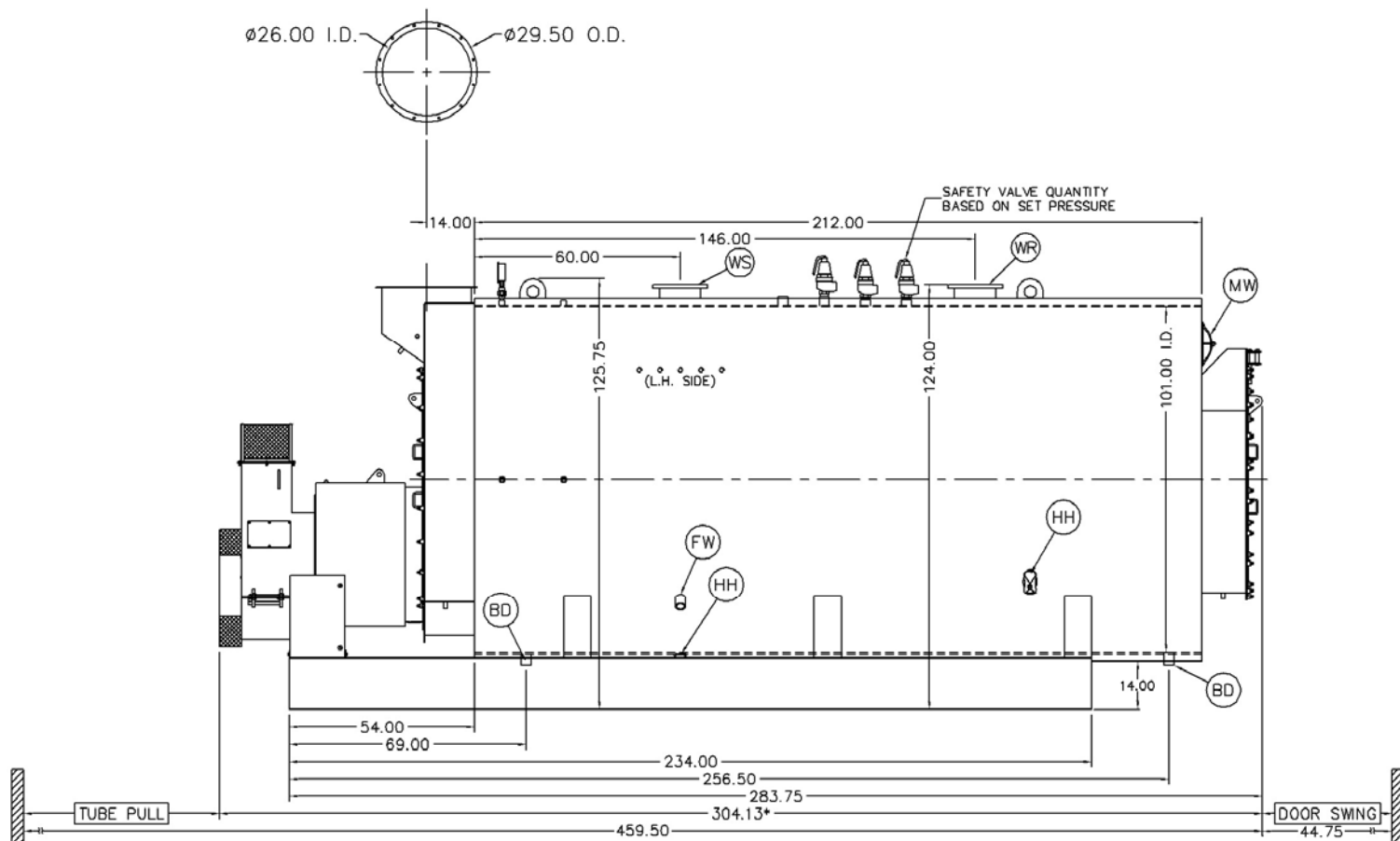
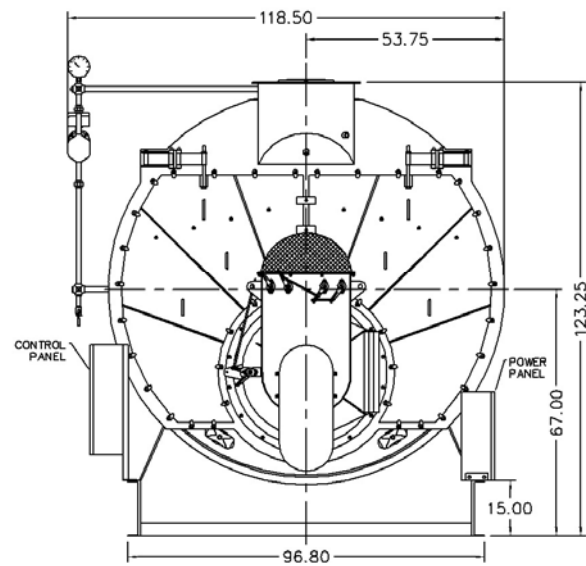
Ratings & Performance Data

Horsepower 600		Natural Gas Flow, SCFH (1,000 Btu/ft ³)**	23,247			
Total Heating Surface, ft ²	3,094	Combustion Air (15% Excess), SCFM***	4,254			
Furnace Outside Diameter, in	46.0	Flue Gas Flow Rate, lb/hr***	20,272			
Furnace Heat Release Rate, Btu/ft ³ hr**	146,000	Stack Flue Gas Velocity, ft/min***	1,658			
Total Combustion Volume, ft ³	209.8	#2 Oil Flow, gal/hr (140,000 Btu/gal)**	160.2			
Total Heat Release Rate, Btu/ft ³ hr**	111,000	#6 Oil Flow, gal/hr (150,000 Btu/gal)**	148.2			
Water Content Flooded, gal	4,428	Flue Gas Side Pressure Drop, in. H ₂ O	5.9			
Approx. Dry Weight 30#, lb	41,500	Approx. Operating Weight 30#, lb	76,500			
Approx. Dry Weight 60#, lb	41,700	Approx. Operating Weight 60#, lb	76,700			
Approx. Dry Weight 125#, lb	42,700	Approx. Operating Weight 125#, lb	77,700			
Performance Data						
Operating Temperature (F)	Natural Gas		#2 Oil		#6 Oil	
	Stack Temp (F)	%Eff	Stack Temp (F)	%Eff	Stack Temp (F)	%Eff
180	219	86.9	227	90.1	232	90.8
200	238	86.4	247	89.6	252	90.3
220	258	85.9	267	89.1	272	89.8
240	278	85.4	286	88.6	291	89.3

*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

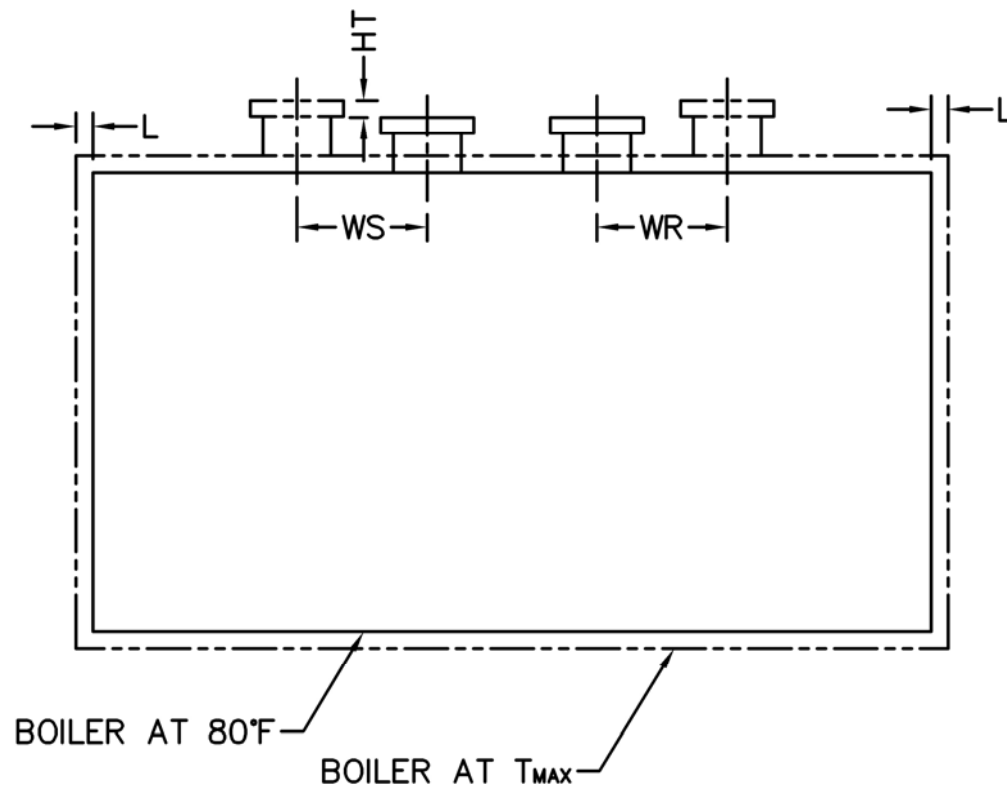
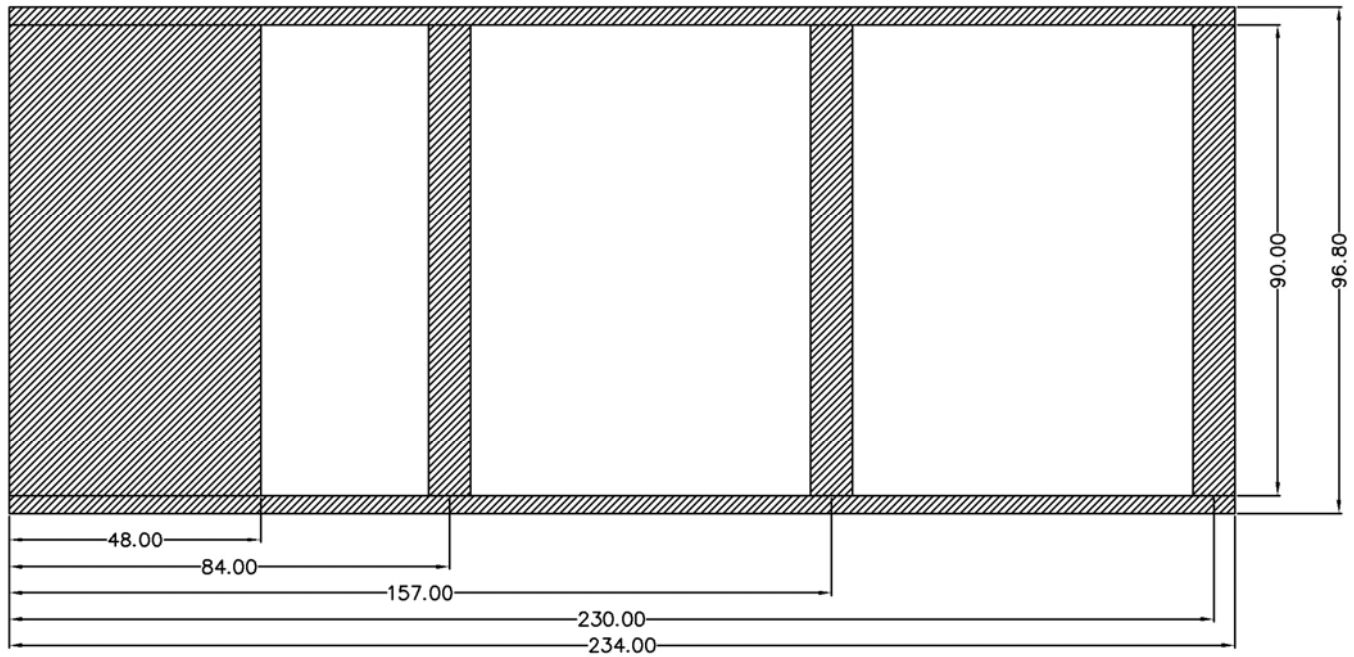
Connection & Opening Schedule			
Conn.	Description	Type	Qty
FW	Feedwater Inlet	2.00 FNPT	2
WS	Water Supply	10.00 150#RF	1
WR	Water Return	10.00 150#RF	1
DO	Drain Outlet	2.00 FNPT	2
MW	Manway	12 X 16	1
HH	Hand Hole	4 X 6	7
Supply and return outlets ASME flanged drilling			



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.

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Base Diagram

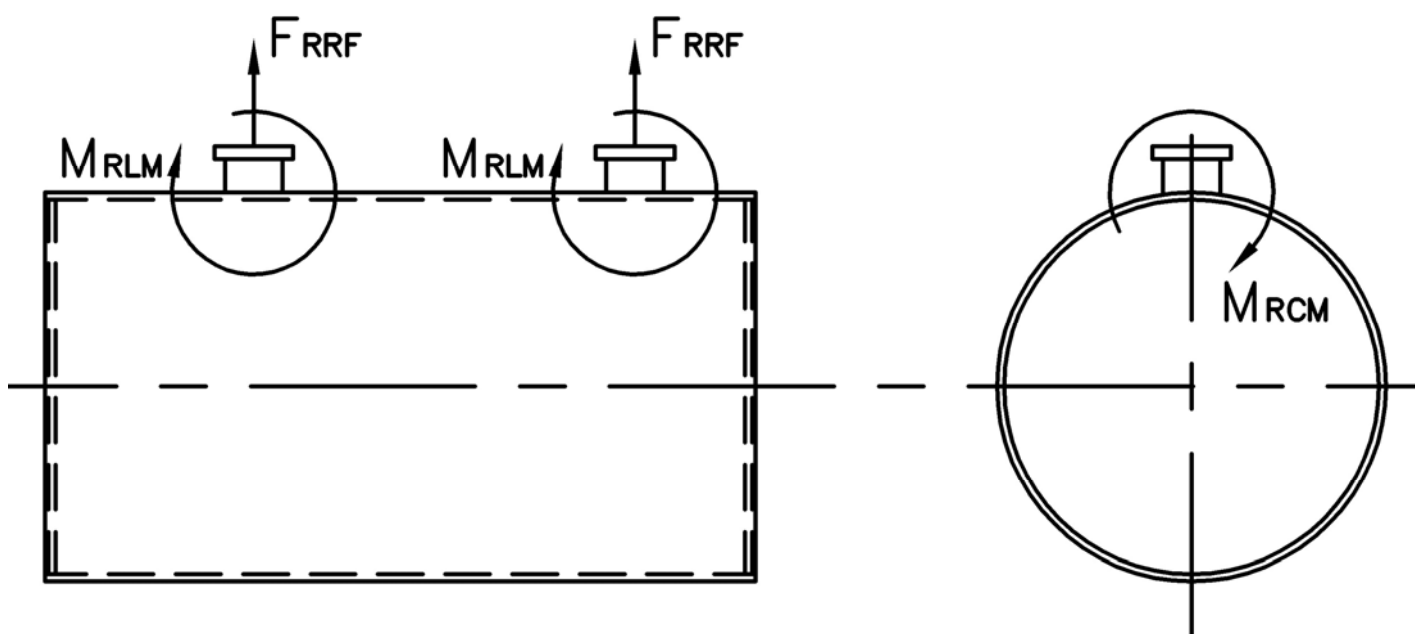


Thermal Expansion				
Metal T _{MAX} (F)	180	200	220	240
L (in)	0.064	0.076	0.089	0.102
WS (in)	0.028	0.033	0.039	0.044
WR (in)	0.024	0.029	0.034	0.038
HT (in)	0.061	0.073	0.085	0.098

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Nozzle Loadings

Maximum Allowable Load on Outlet & Return Nozzles				
	30# Design	60# Design	125# Design	160# Design
F_{RRF} , lb	5,508	4,390	4,934	7,675
M_{RCM} , in-lb	40,850	40,850	64,050	113,824
M_{RLM} , in-lb	59,211	47,225	49,729	79,761



Distributed By:



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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	3.044	13.334
	30	0.036	0.830	3.636
	9	0.011	0.249	1.091
CO	50	0.037	0.85	3.741
CO ₂	2.55 lb/lb fuel	119.76	2,784	12,194
H ₂ O	2.03 lb/lb fuel	106.16	2,468	10,809
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	3.905	17.102
CO	50	0.037	0.824	3.609
CO ₂	3.20 lb/lb fuel	168.53	3,780	16,554
H ₂ O	1.12 lb/lb fuel	71.20	1,597	6,994

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