



MODEL: PFTA 250-4

4-Pass Hot Water Packaged Firetube Boiler

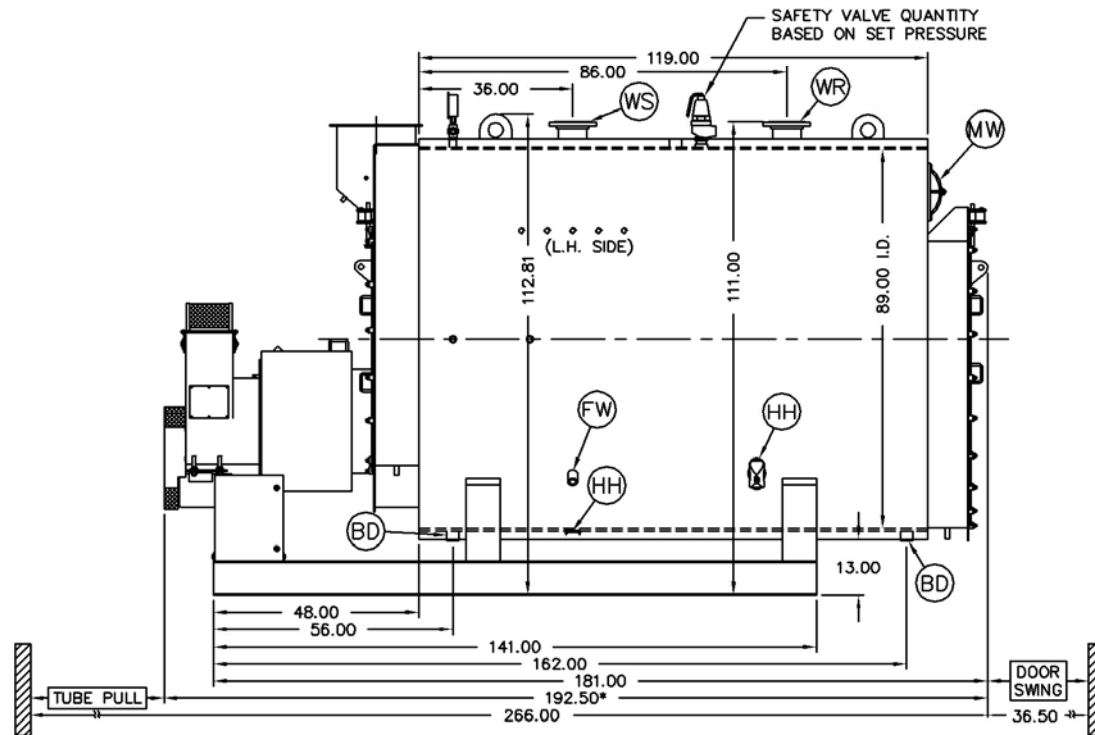
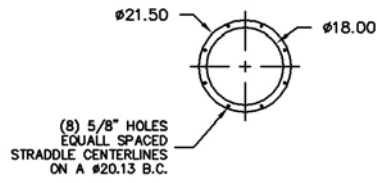
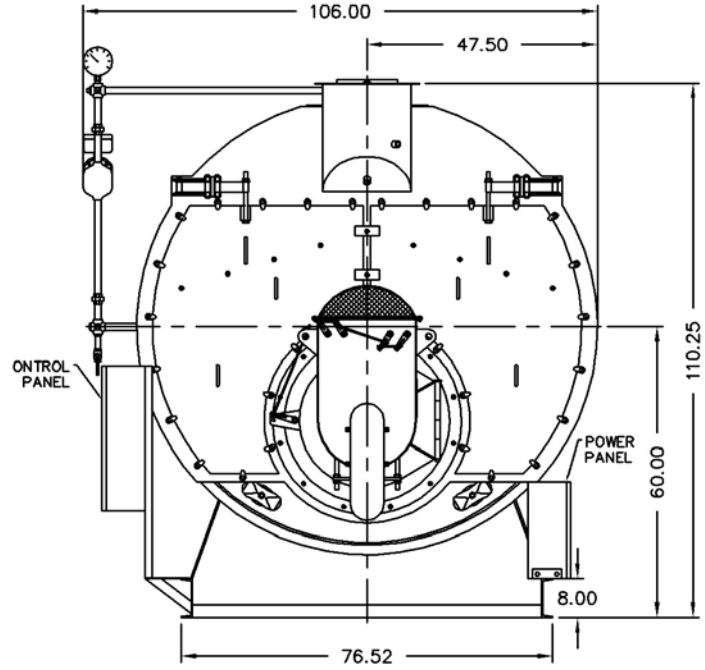


Ratings & Performance Data

Horsepower 250		Natural Gas Flow, SCFH (1,000 Btu/ft ³)**		9,814		
Total Heating Surface, ft ²	1,295	Combustion Air (15% Excess), SCFM***		1,796		
Furnace Outside Diameter, in	40.5	Flue Gas Flow Rate, lb/hr***		8,559		
Furnace Heat Release Rate, Btu/ft ³ hr**	157,000	Stack Flue Gas Velocity, ft/min***		1,548		
Total Combustion Volume, ft ³	97.4	#2 Oil Flow, gal/hr (140,000 Btu/gal)**		67.7		
Total Heat Release Rate, Btu/ft ³ hr**	101,000	#6 Oil Flow, gal/hr (150,000 Btu/gal)**		62.7		
Water Content Flooded, gal	1,988	Flue Gas Side Pressure Drop, in. H ₂ O		3.0		
Approx. Dry Weight 30#, lb	21,200	Approx. Operating Weight 30#, lb		36,200		
Approx. Dry Weight 60#, lb	21,300	Approx. Operating Weight 60#, lb		36,300		
Approx. Dry Weight 125#, lb	22,000	Approx. Operating Weight 125#, lb		37,000		
Performance Data						
Operating Temperature (F)	Natural Gas		#2 Oil		#6 Oil	
	Stack Temp (F)	%Eff	Stack Temp	%Eff	Stack Temp (F)	%Eff
180	261	85.8	275	88.8	283	89.5
200	280	85.3	294	88.3	303	89.0
220	300	84.8	314	87.8	323	88.5
240	319	84.3	333	87.3	343	88.0
*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

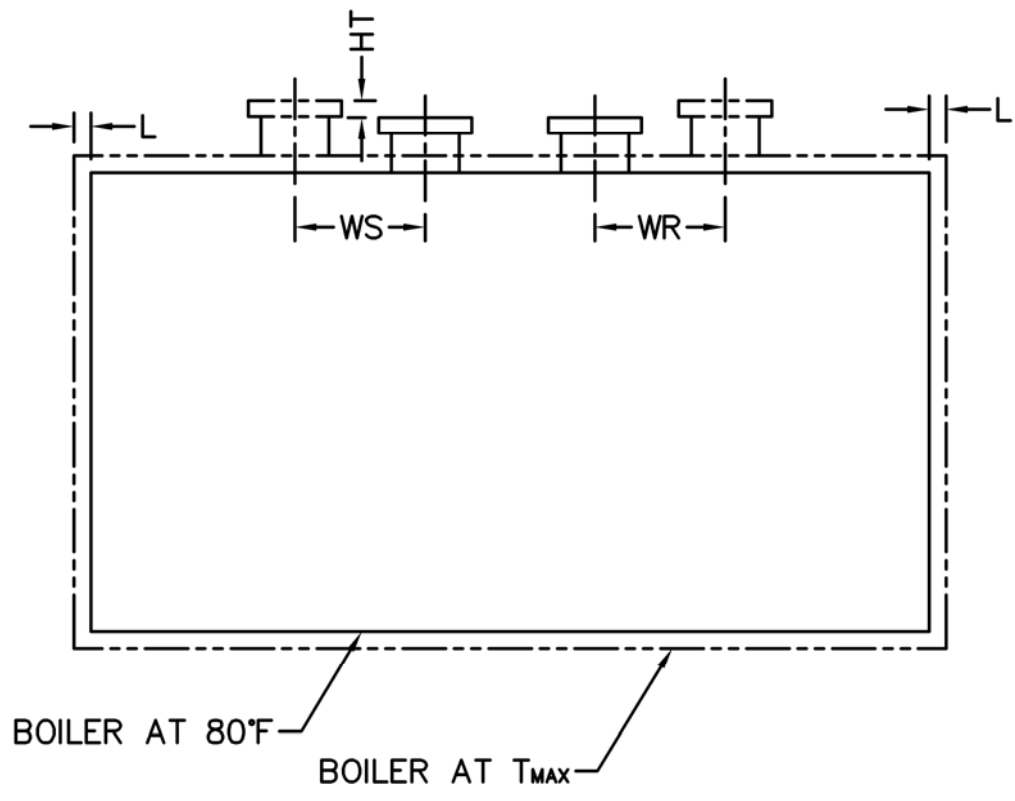
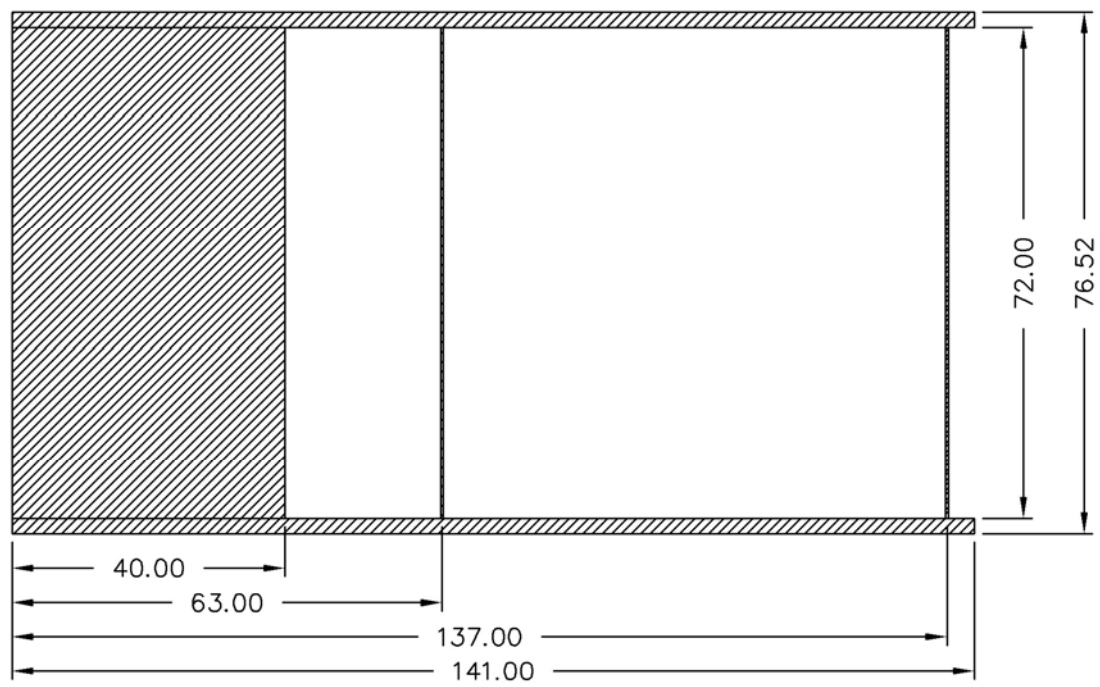
Connection & Opening Schedule			
Conn.	Description	Type	Qty
FW	Feedwater Inlet	1.50 FNPT	2
WS	Water Supply	6.00 150#RF	1
WR	Water Return	6.00 150#RF	1
DO	Drain Outlet	2.00 FNPT	2
MW	Manway	12 X 16	1
HH	Hand Hole	4 X 6	6
Supply and return outlets ASME flanged drilling			



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

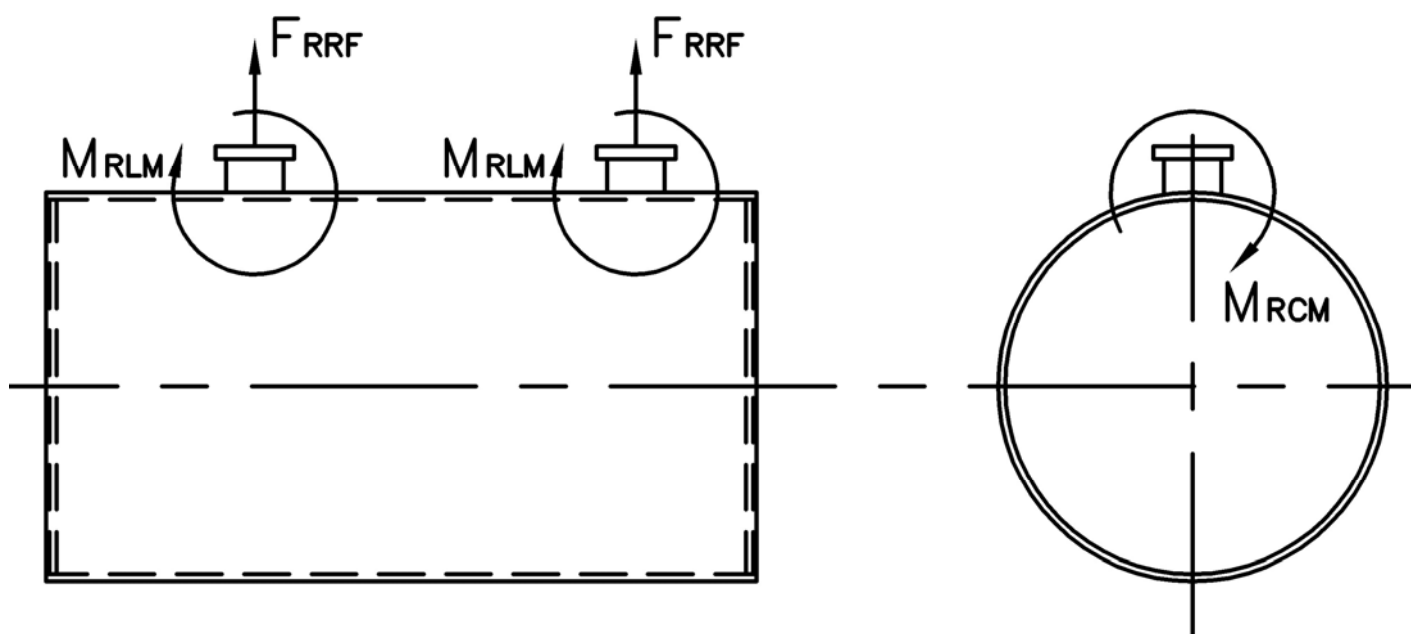


Thermal Expansion				
Metal T_{MAX} (F)	180	200	220	240
L (in)	0.036	0.043	0.050	0.057
WS (in)	0.014	0.017	0.020	0.023
WR (in)	0.016	0.019	0.022	0.025
HT (in)	0.054	0.064	0.075	0.086

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Nozzle Loadings

Maximum Allowable Load on Outlet & Return Nozzles				
	30# Design	60# Design	125# Design	160# Design
F_{RRF} , lb	4,385	3,620	2,460	4,110
M_{RCM} , in-lb	21,710	21,710	22,115	37,415
M_{RLM} , in-lb	29,900	24,700	17,095	30,105



Distributed By:

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	1.285	5.629
	30	0.036	0.351	1.535
	9	0.011	0.105	0.461
CO	50	0.037	0.36	1.579
CO ₂	2.55 lb/lb fuel	119.76	1,175	5,148
H ₂ O	2.03 lb/lb fuel	106.16	1,042	4,564
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	1.650	7.227
CO	50	0.037	0.348	1.525
CO ₂	3.20 lb/lb fuel	168.53	1,597	6,996
H ₂ O	1.12 lb/lb fuel	71.20	675	2,956
* 110 ppm "A" Burner, 30 ppm A-FGR Burner, 9 ppm FIR Burner				
**0.02% fuel bound Nitrogen				



300 Pine Street
P.O. Box 300
Ferrysburg, MI 49409-0300
Telephone: (616) 842-5050
Net: www.johnstonboiler.com