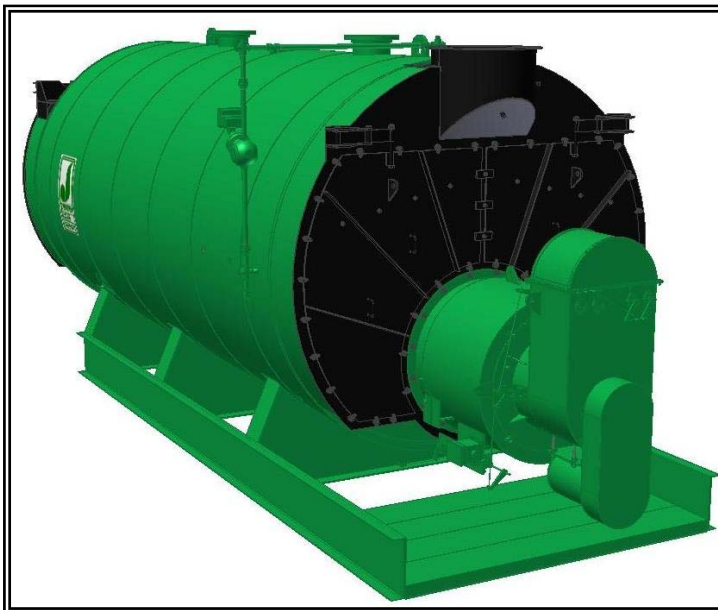




# MODEL: PFTA 500-4

## 4-Pass Hot Water Packaged Firetube Boiler



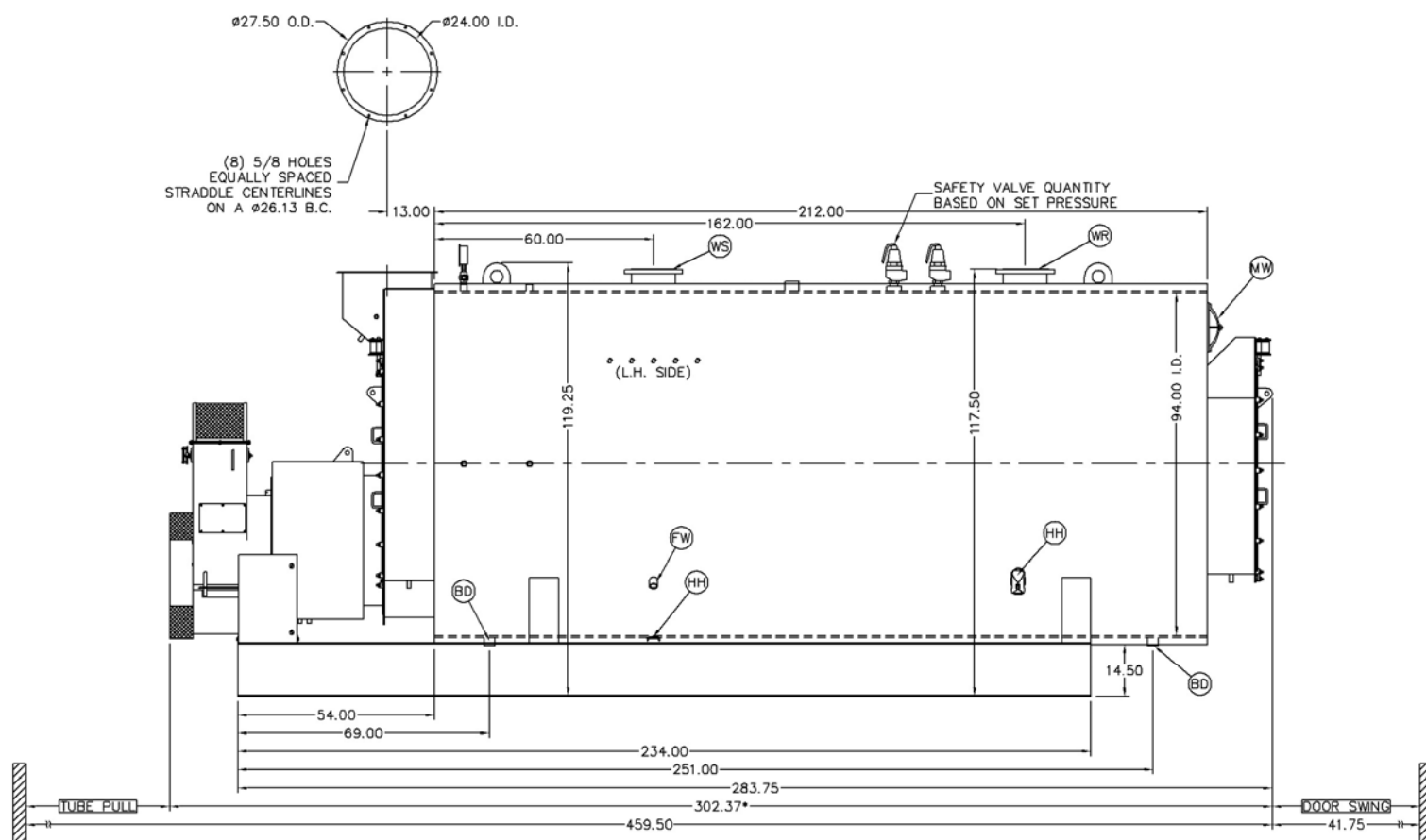
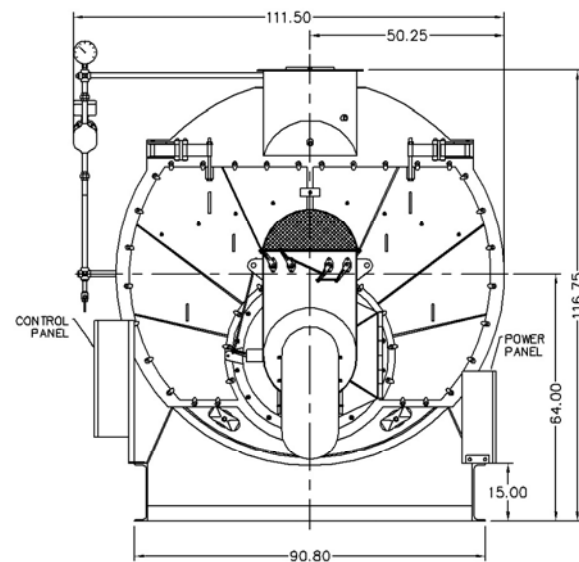
### Ratings & Performance Data

Horsepower 500		Natural Gas Flow, SCFH (1,000 Btu/ft <sup>3</sup> )**		19,379		
Total Heating Surface, ft <sup>2</sup>	2,556	Combustion Air (15% Excess), SCFM***		3,546		
Furnace Outside Diameter, in	42.0	Flue Gas Flow Rate, lb/hr***		16,899		
Furnace Heat Release Rate, Btu/ft <sup>3</sup> hr**	149,000	Stack Flue Gas Velocity, ft/min***		1,624		
Total Combustion Volume, ft <sup>3</sup>	179.8	#2 Oil Flow, gal/hr (140,000 Btu/gal)**		133.5		
Total Heat Release Rate, Btu/ft <sup>3</sup> hr**	108,000	#6 Oil Flow, gal/hr (150,000 Btu/gal)**		123.7		
Water Content Flooded, gal	3,895	Flue Gas Side Pressure Drop, in. H <sub>2</sub> O		6.1		
Approx. Dry Weight 30#, lb	38,200	Approx. Operating Weight 30#, lb		70,300		
Approx. Dry Weight 60#, lb	38,400	Approx. Operating Weight 60#, lb		70,500		
Approx. Dry Weight 125#, lb	40,100	Approx. Operating Weight 125#, lb		72,200		
<b>Performance Data</b>						
Operating Temperature (F)	Natural Gas		#2 Oil		#6 Oil	
	Stack Temp (F)	%Eff	Stack Temp	%Eff	Stack Temp (F)	%Eff
180	219	86.9	228	90.0	237	90.7
200	239	86.4	247	89.5	257	90.2
220	259	85.9	267	89.0	277	89.7
240	279	85.4	287	88.5	297	89.2
*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.

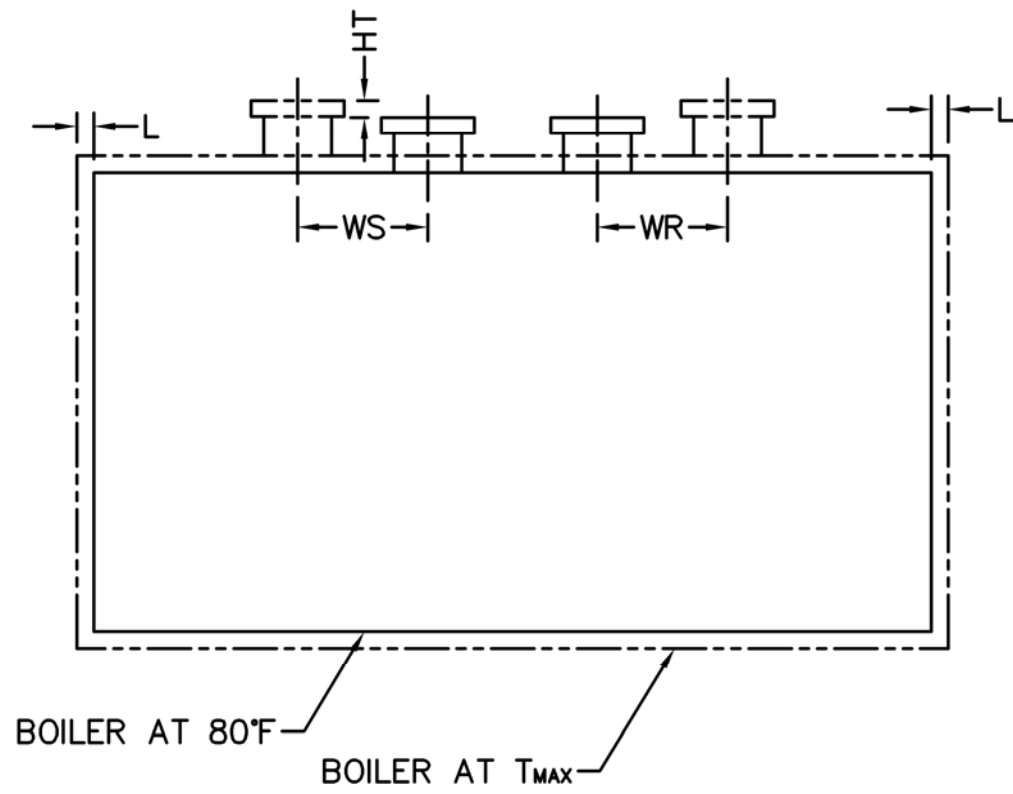
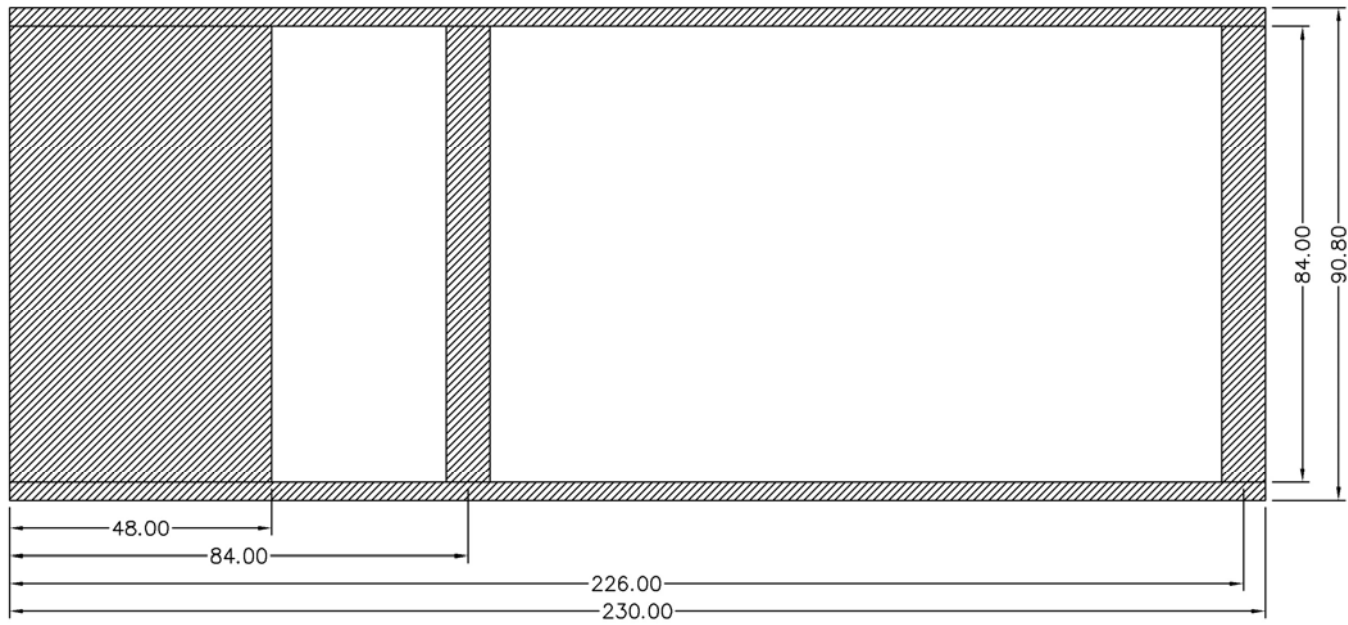
Fuel piping and/or optional boiler trim may increase overall width.

Specifications subject to change to incorporate engineering advances.

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

# MODEL: PFTA 500-4

## Base Diagram

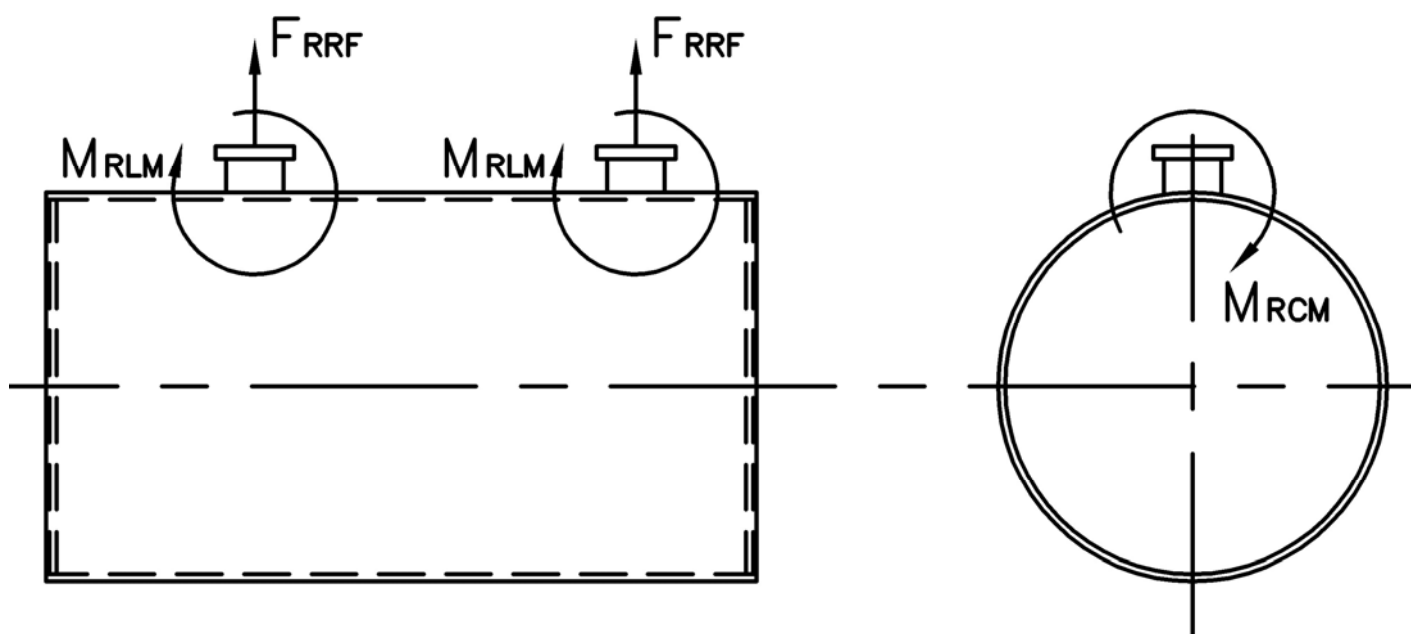


Thermal Expansion				
Metal $T_{MAX}$ (F)	180	200	220	240
L (in)	0.064	0.076	0.089	0.102
WS (in)	0.028	0.033	0.039	0.044
WR (in)	0.034	0.040	0.047	0.054
HT (in)	0.057	0.068	0.079	0.091

# MODEL: PFTA 500-4

## Nozzle Loadings

Maximum Allowable Load on Outlet & Return Nozzles				
	30# Design	60# Design	125# Design	160# Design
$F_{RRF}$ , lb	5,210	4,245	4,935	7,605
$M_{RCM}$ , in-lb	36,000	36,000	69,860	94,410
$M_{RLM}$ , in-lb	56,925	46,350	57,485	76,655



Distributed By:



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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	2.538	11.115
	30	0.036	0.692	3.031
	9	0.011	0.208	0.909
CO	50	0.037	0.71	3.118
CO <sub>2</sub>	2.55 lb/lb fuel	119.76	2,321	10,165
H <sub>2</sub> O	2.03 lb/lb fuel	106.16	2,057	9,011
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO <sub>x</sub>	128	0.174	3.255	14.255
CO	50	0.037	0.687	3.008
CO <sub>2</sub>	3.20 lb/lb fuel	168.53	3,150	13,798
H <sub>2</sub> O	1.12 lb/lb fuel	71.20	1,331	5,829

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