



MODEL: PFTS 2000-3

3-Pass Hot Water Packaged Firetube Boiler



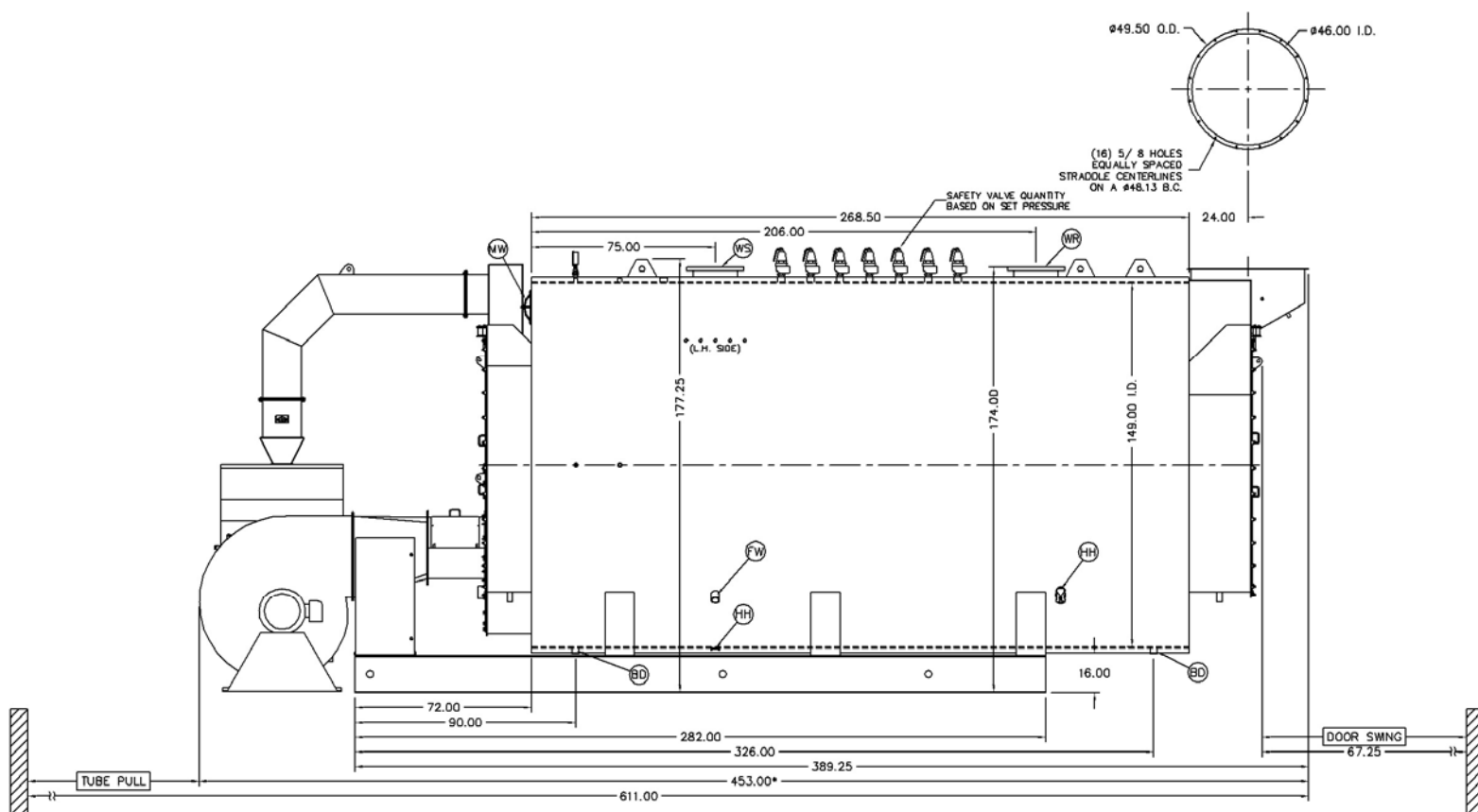
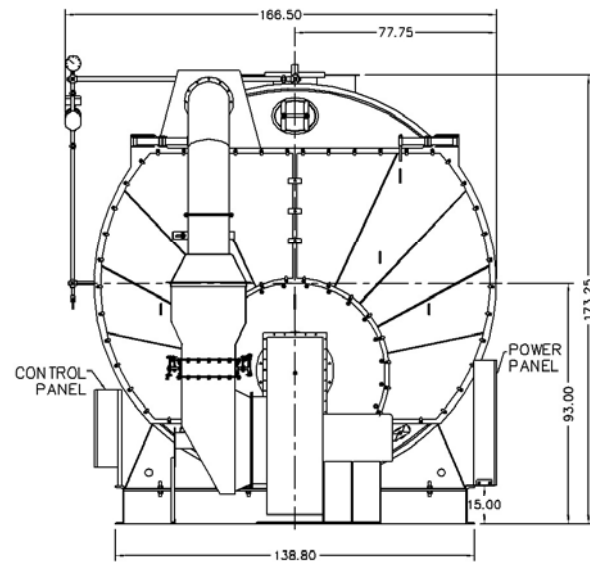
Ratings & Performance Data

Horsepower 2000		Natural Gas Flow, SCFH (1,000 Btu/ft ³)**	78,185			
Total Heating Surface, ft ²	9,926	Combustion Air (15% Excess), SCFM***	14,307			
Furnace Outside Diameter, in	66.5	Flue Gas Flow Rate, lb/hr***	68,182			
Furnace Heat Release Rate, Btu/ft ³ hr**	179,000	Stack Flue Gas Velocity, ft/min***	1,845			
Total Combustion Volume, ft ³	627.9	#2 Oil Flow, gal/hr (140,000 Btu/gal)**	539.1			
Total Heat Release Rate, Btu/ft ³ hr**	125,000	#6 Oil Flow, gal/hr (150,000 Btu/gal)**	499.4			
Water Content Flooded, gal	11,188	Flue Gas Side Pressure Drop, in. H ₂ O	3.6			
Approx. Dry Weight 30#, lb	107,200	Approx. Operating Weight 30#, lb	202,400			
Approx. Dry Weight 60#, lb	112,000	Approx. Operating Weight 60#, lb	207,200			
Approx. Dry Weight 125#, lb	116,500	Approx. Operating Weight 125#, lb	211,700			
Performance Data						
Operating Temperature (F)	Natural Gas		#2 Oil		#6 Oil	
	Stack Temp (F)	%Eff	Stack Temp	%Eff	Stack Temp (F)	%Eff
180	243	86.1	256	89.2	265	89.8
200	263	85.6	275	88.7	284	89.4
220	282	85.2	294	88.3	303	88.9
240	301	84.7	313	87.8	322	88.5
*Based on 20°F difference in supply/return, ** Values calculated at 200°F operating temperature, ***Calculated Firing Natural Gas						

Drawings - 3-Pass Hot Water Packaged Firetube Boiler

Connection & Opening Schedule			
Conn.	Description	Type	Qty
FW	Feedwater Inlet	2.50 FNPT	2
WS	Water Supply	16.00 150#RF	1
WR	Water Return	16.00 150#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.

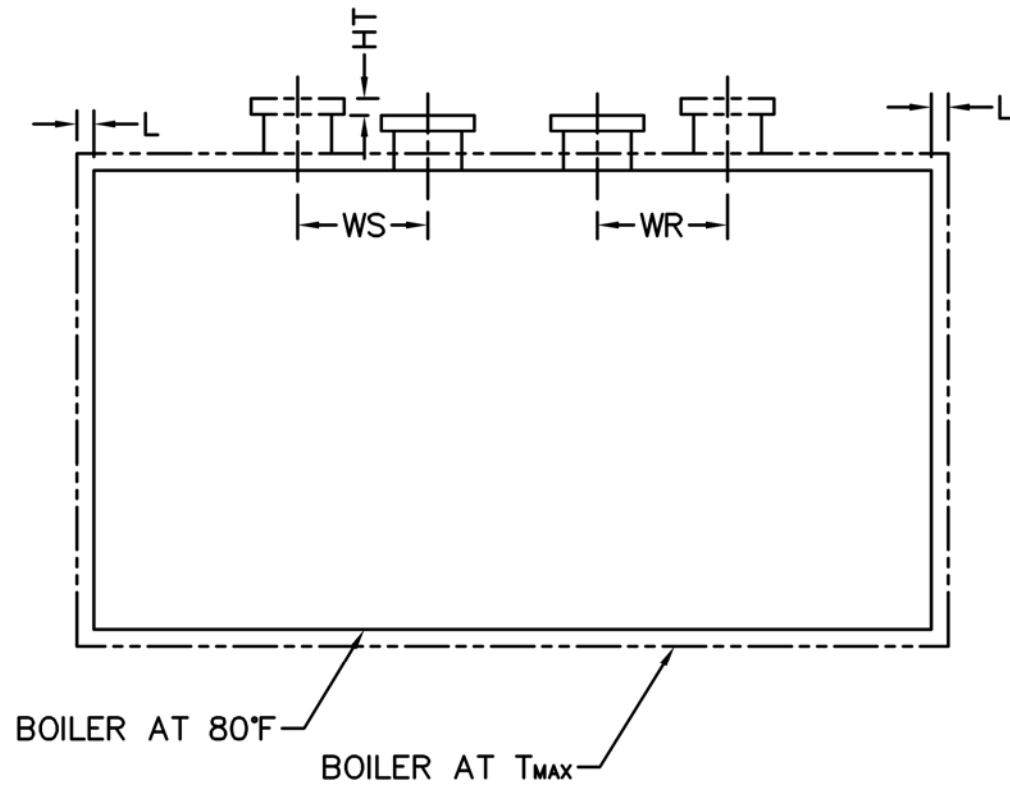
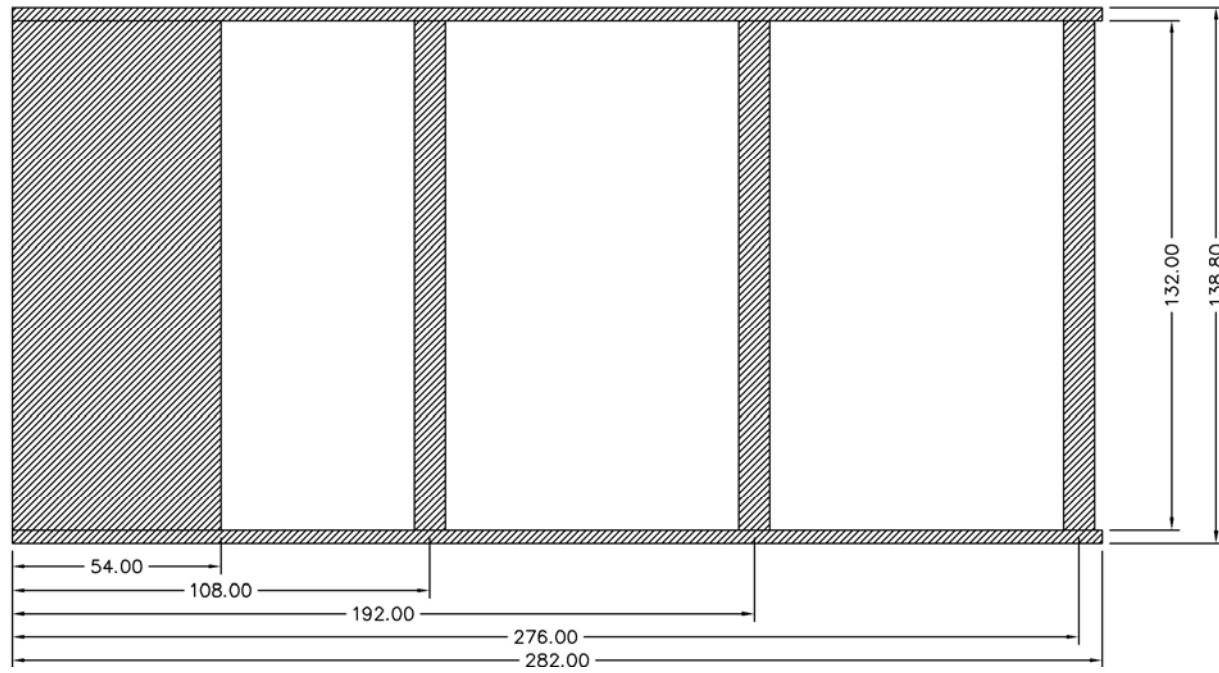
Fuel piping and/or optional boiler trim may increase overall width.

Specifications subject to change to incorporate engineering advances.

*May vary on low-NO_x designs.

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Base Diagram

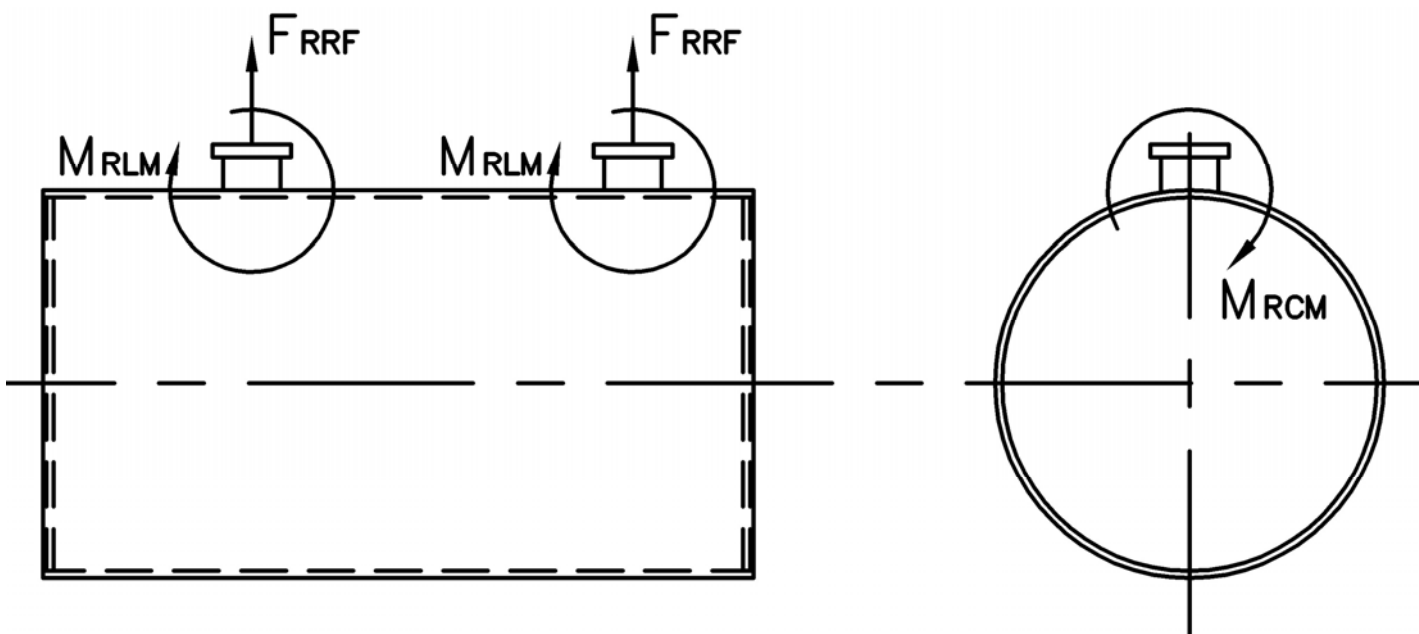


Thermal Expansion				
Metal T_{MAX} (F)	180	200	220	240
L (in)	0.081	0.097	0.113	0.129
WS (in)	0.011	0.013	0.015	0.017
WR (in)	0.068	0.081	0.095	0.108
HT (in)	0.090	0.108	0.126	0.144

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Nozzle Loadings

Maximum Allowable Load on Outlet & Return Nozzles				
	30# Design	60# Design	125# Design	160# Design
FRRF, lb	6,570	4,400	11,495	24,695
MRCM, in-lb	73,145	73,145	252,720	352,760
MRLM, in-lb	104,275	69,825	208,555	451,605



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	10.239	44.845
	30	0.036	2.792	12.230
	9	0.011	0.838	3.669
CO	50	0.037	2.87	12.581
CO ₂	2.55 lb/lb fuel	119.76	9,363	41,012
H ₂ O	2.03 lb/lb fuel	106.16	8,300	36,355
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	13.141	57.559
CO	50	0.037	2.773	12.145
CO ₂	3.20 lb/lb fuel	168.53	12,721	55,716
H ₂ O	1.12 lb/lb fuel	71.20	5,374	23,539

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