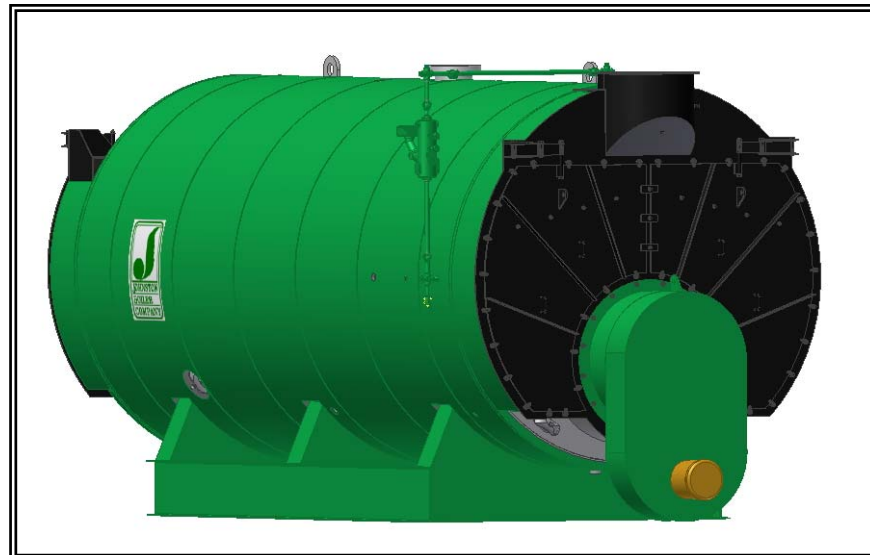




MODEL: PFTJ 50/80-4

4-Pass Steam Packaged Firetube Boiler

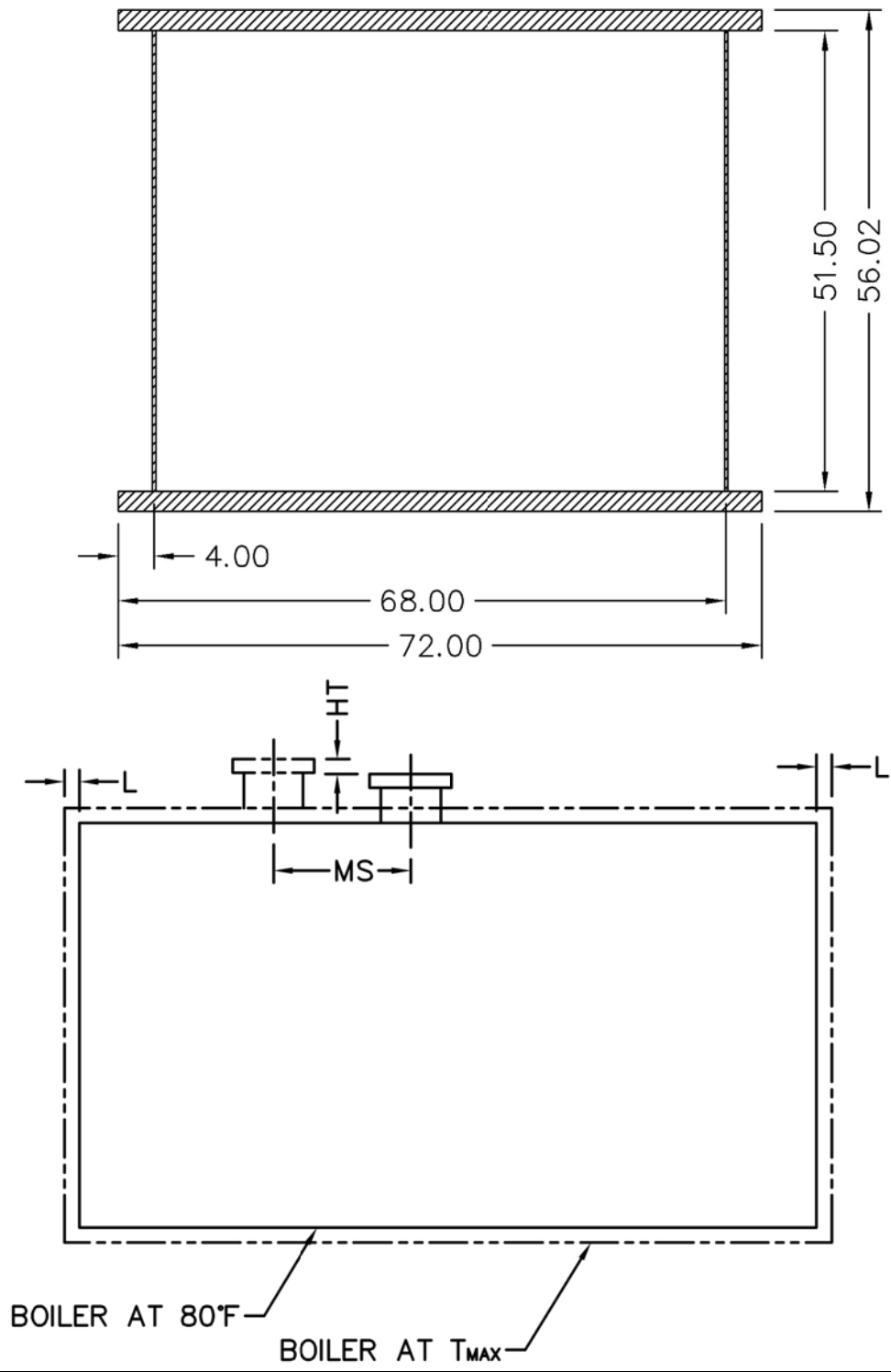


Ratings & Performance Data

Horsepower 50-80					
Steam Storage, ft ³	20.2				
Steam Disengaging Area, ft ²	32.7	Natural Gas Flow, SCFH (1,000 Btu/ft ³)**	3,266		
Total Heating Surface, ft ²	399	Combustion Air (15% Excess), SCFM***	598		
Furnace Outside Diameter, in	24.0	Flue Gas Flow Rate, lb/hr***	2,850		
Furnace Heat Release Rate, Btu/ft ³ hr**	171,000	Stack Flue Gas Velocity, ft/min***	1,360		
Total Combustion Volume, ft ³	32.2	#2 Oil Flow, gal/hr (140,000 Btu/gal)**	22.5		
Total Heat Release Rate, Btu/ft ³ hr**	101,000	Flue Gas Side Pressure Drop, in. H ₂ O	3.0		
Water Content N.W.L., gal	619	Water Content Flooded, gal	770		
Approx. Dry Weight 15#, lb	10,000	Approx. Operating Weight 15#, lb	15,300		
Approx. Dry Weight 150#, lb	10,300	Approx. Operating Weight 150#, lb	15,600		
Approx. Dry Weight 200#, lb	10,900	Approx. Operating Weight 200#, lb	16,200		
Approx. Dry Weight 250#, lb	11,400	Approx. Operating Weight 250#, lb	16,700		
Approx. Dry Weight 300#, lb	12,000	Approx. Operating Weight 300#, lb	17,300		
Performance Data*					
Operating Pressure (psig)	Steam Rate (lb/hr)	Natural Gas		#2 Oil	
		Stack Temp (F)	%Eff	Stack Temp (F)	%Eff
10	2,778	294	84.7	303	87.8
50	2,724	351	83.1	360	86.2
100	2,695	391	82.0	400	85.1
150	2,679	419	81.2	428	84.3
200	2,669	441	80.6	450	83.7
250	2,662	459	80.1	468	83.2
300	2,658	475	79.7	484	82.8
Calculations based on 80 horsepower design					
*Based on 228°F feedwater and 3% O ₂ , ** Values calculated at 100 psi operating pressure, ***Calculated Firing Natural Gas					

MODEL: PFTJ 50/80-4

Base Diagram

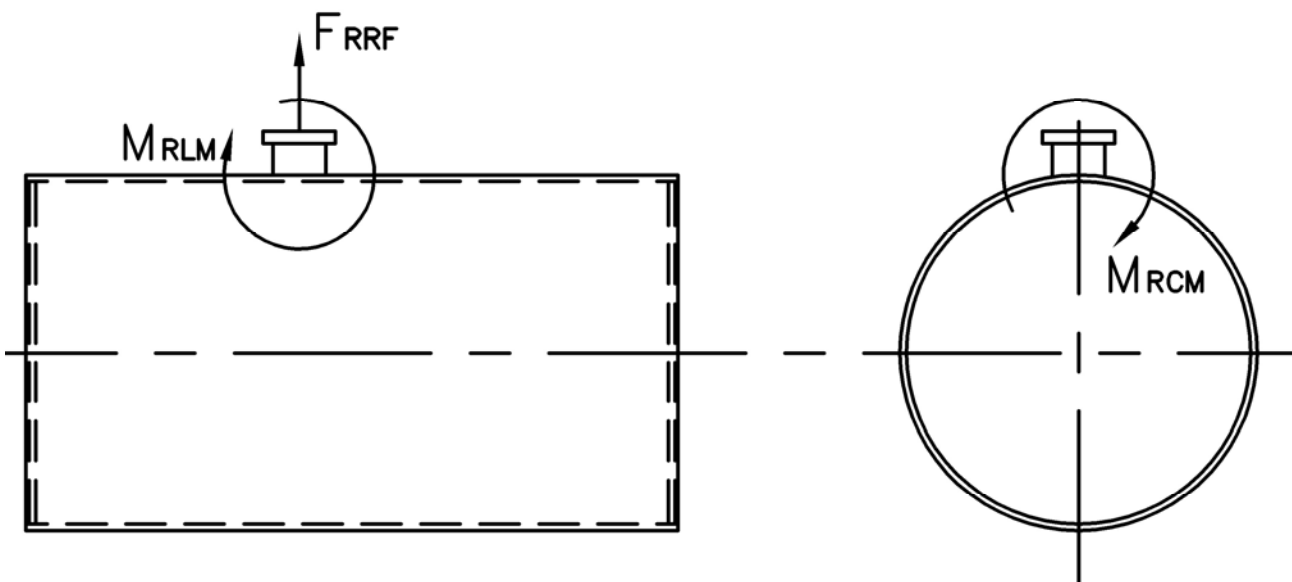


Thermal Expansion					
psig	15	150	200	250	300
Metal T_{MAX} (F)	240	366	388	406	421
L (in)	0.055	0.093	0.101	0.107	0.112
MS (in)	0.004	0.006	0.006	0.007	0.007
HT (in)	0.057	0.097	0.104	0.111	0.116

MODEL: PFTJ 50/80-4

Nozzle Loadings

Maximum Allowable Load on Boiler Steam Nozzle					
	15# Design	150# Design	200# Design	250# Design	300# Design
F_{RRF} , lb	4,785	1,705	1,705	2,140	2,870
M_{RCM} , in-lb	19,895	9,194	9,190	15,390	18,035
M_{RLM} , in-lb	36,145	8,540	8,540	11,875	15,510



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	0.428	1.873
	9	0.011	0.035	0.153
CO	50	0.037	0.12	0.526
CO ₂	2.55 lb/lb fuel	119.76	391	1,713
H ₂ O	2.03 lb/lb fuel	106.16	347	1,519
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	0.548	2.399
CO	50	0.037	0.116	0.506
CO ₂	3.20 lb/lb fuel	168.53	530	2,322
H ₂ O	1.12 lb/lb fuel	71.20	224	981

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



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