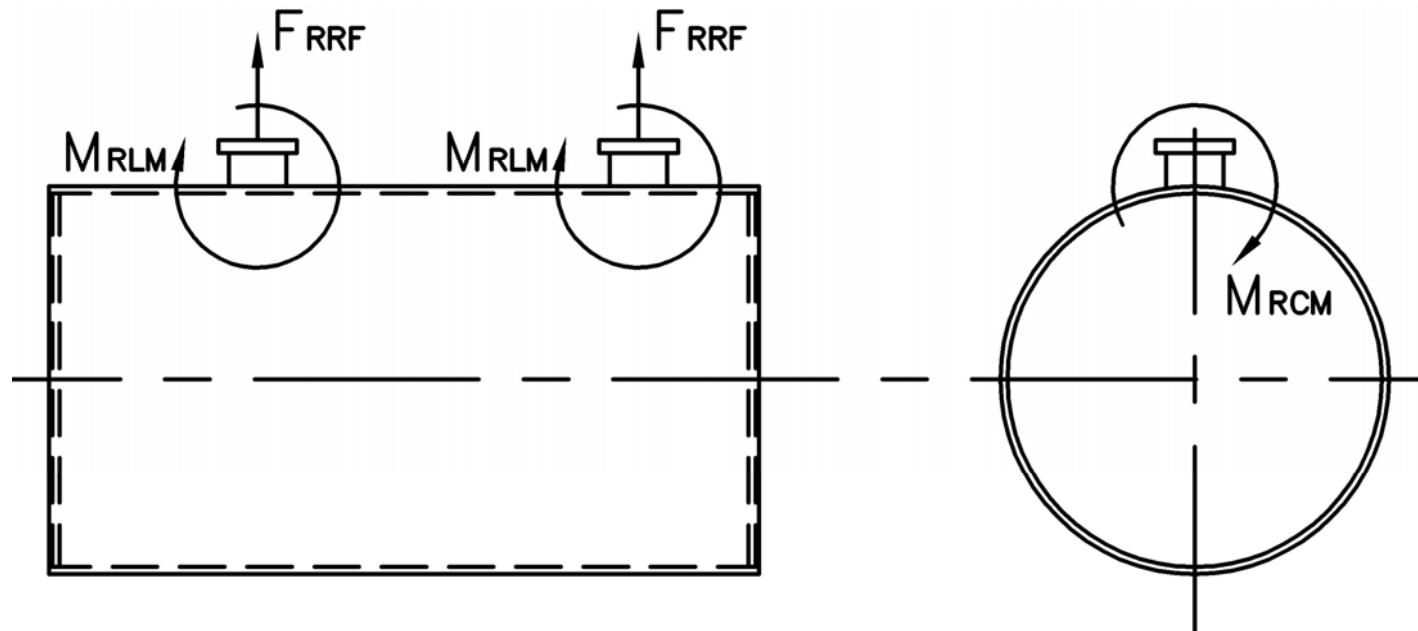


MODEL: PFTJ 50/80-4

Nozzle Loadings

Maximum Allowable Load on Outlet & Return Nozzles				
	30# Design	60# Design	125# Design	160# Design
F_{RRF} , lb	3,130	2,685	1,720	2,185
M_{RCM} , in-lb	9,190	9,190	9,190	15,390
M_{RLM} , in-lb	15,650	13,425	8,605	12,020



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	0.409	1.792
	9	0.011	0.033	0.147
CO	50	0.037	0.11	0.503
CO ₂	2.55 lb/lb fuel	119.76	374	1,639
H ₂ O	2.03 lb/lb fuel	106.16	332	1,453
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	0.525	2.299
CO	50	0.037	0.111	0.485
CO ₂	3.20 lb/lb fuel	168.53	508	2,225
H ₂ O	1.12 lb/lb fuel	71.20	215	940

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

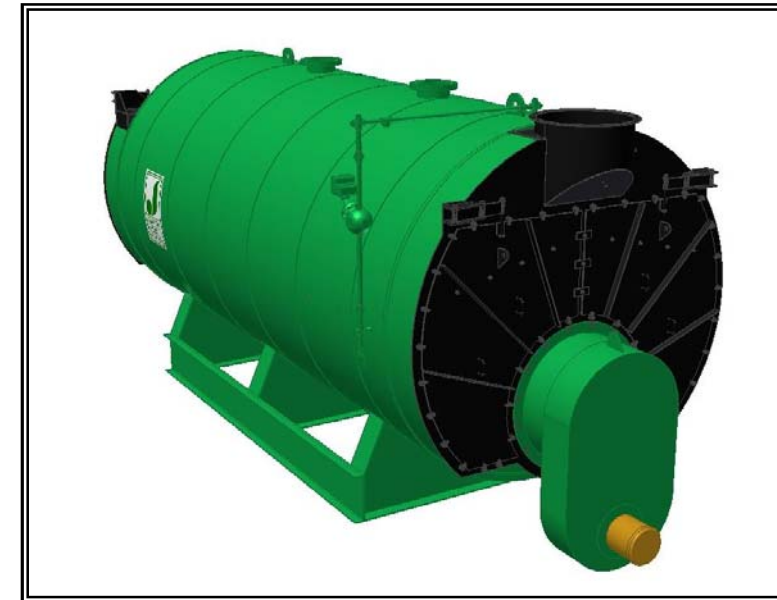
Distributed By:



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

MODEL: PFTJ 50/80-4

4-Pass Hot Water Packaged Firetube Boiler



Ratings & Performance Data

Horsepower 50-80			
Total Heating Surface, ft ²	399	Natural Gas Flow, SCFH (1,000 Btu/ft ³)**	3,125
Furnace Outside Diameter, in	24.0	Combustion Air (15% Excess), SCFM***	572
Furnace Heat Release Rate, Btu/ft ³ hr**	164,000	Flue Gas Flow Rate, lb/hr***	1,144
Total Combustion Volume, ft ³	32.2	Stack Flue Gas Velocity, ft/min***	1,340
Total Heat Release Rate, Btu/ft ³ hr**	97,000	#2 Oil Flow, gal/hr (140,000 Btu/gal)**	21.5
Water Content Flooded, gal	770	Flue Gas Side Pressure Drop, in. H ₂ O	3.0
Approx. Dry Weight 30#, lb	10,000	Approx. Operating Weight 30#, lb	16,500
Approx. Dry Weight 60#, lb	10,200	Approx. Operating Weight 60#, lb	16,700
Approx. Dry Weight 125#, lb	10,500	Approx. Operating Weight 125#, lb	17,000

Performance Data*				
Operating Temperature (F)	Natural Gas		#2 Oil	
	Stack Temp (F)	%Eff	Stack Temp (F)	%Eff
180	236	86.2	245	89.4
200	255	85.7	265	88.8
220	275	85.2	284	88.3
240	294	84.7	304	87.8

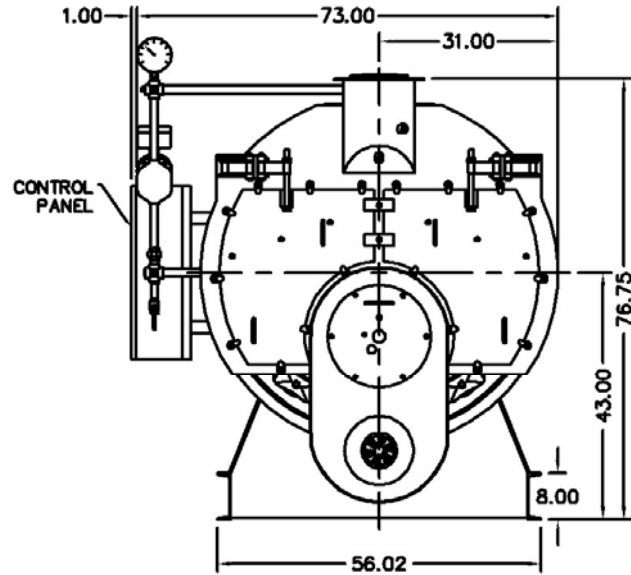
Calculations based on 80 horsepower design
 *Based on 20°F difference in supply/return, ** Values calculated at 200°F operating temperature, ***Calculated Firing Natural Gas

Drawings - 4-Pass Hot Water Packaged Firetube Boiler

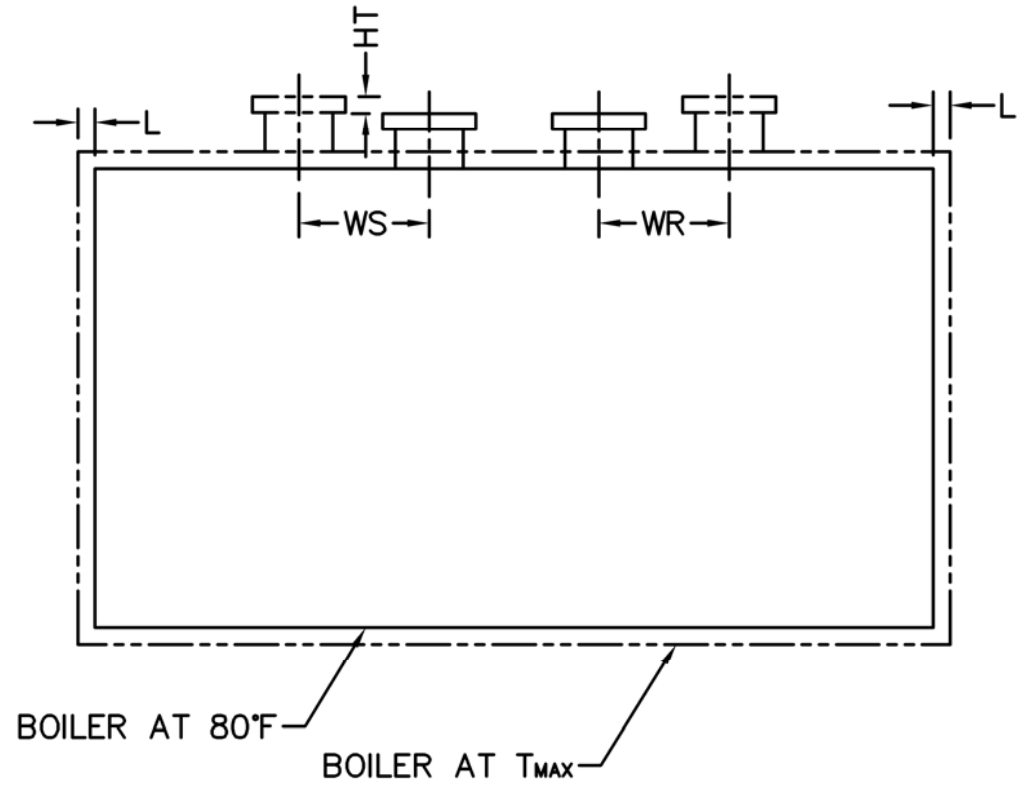
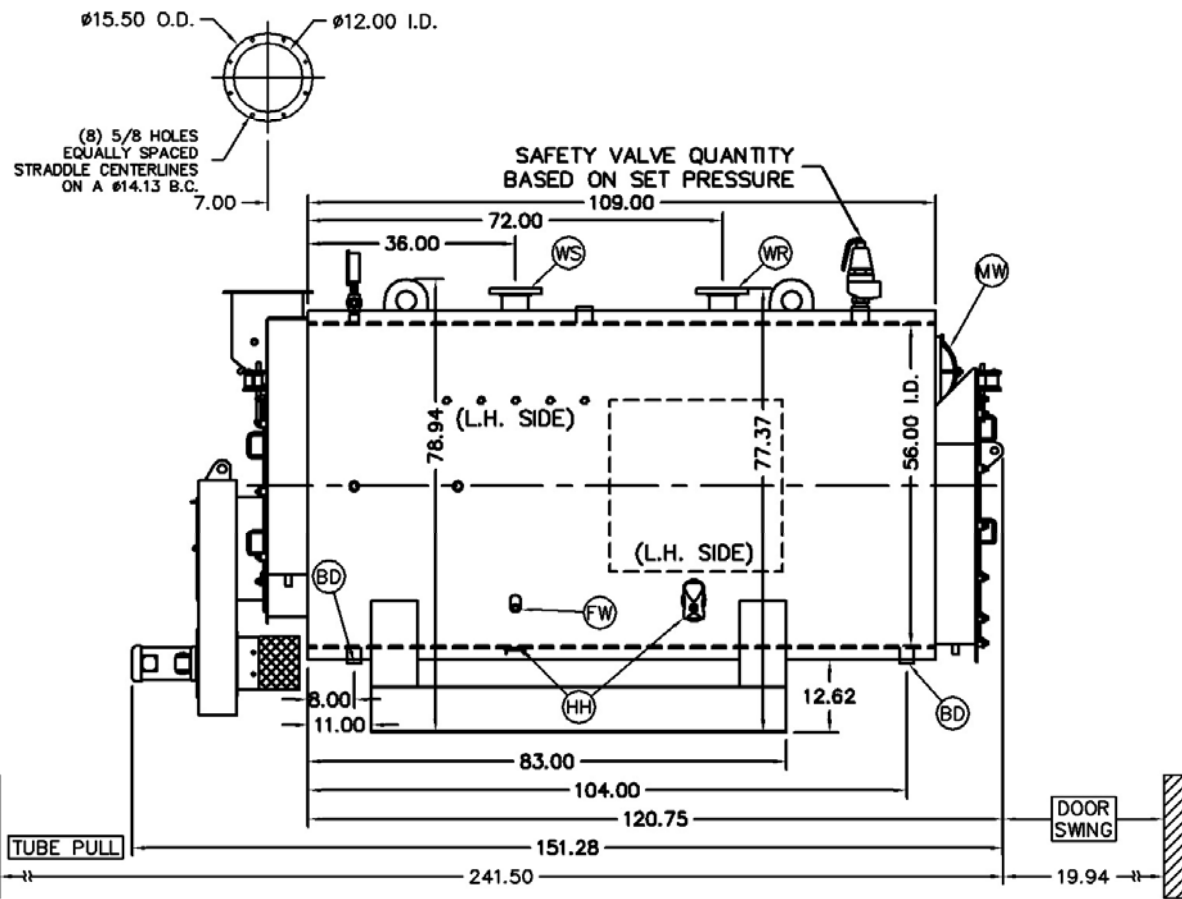
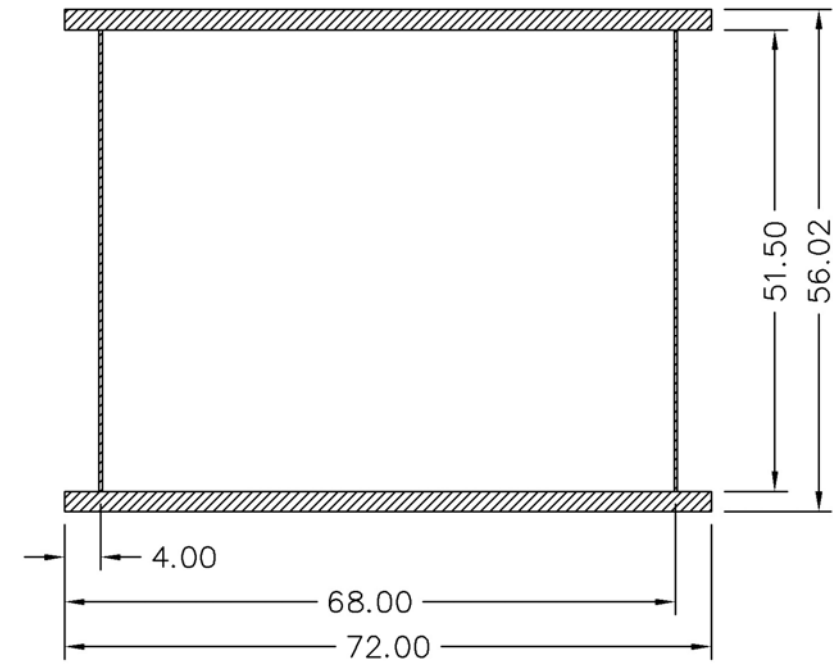
MODEL: PFTJ 50/80-4

Connection & Opening Schedule			
Conn.	Description	Type	Qty
FW	Feedwater Inlet	1.00 FNPT	2
WS	Water Supply	4.00 150#RF	1
WR	Water Return	4.00 150#RF	1
DO	Drain Outlet	1.50 FNPT	2
MW	Manway	12 X 16	1
HH	Hand Hole	4 X 6	6

Supply and return outlets ASME flanged drilling



Base Diagram



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.

Thermal Expansion				
Metal T _{MAX} (F)	180	200	220	240
L (in)	0.033	0.039	0.046	0.052
WS (in)	0.011	0.013	0.016	0.018
WR (in)	0.011	0.013	0.015	0.017
HT (in)	0.034	0.041	0.047	0.054