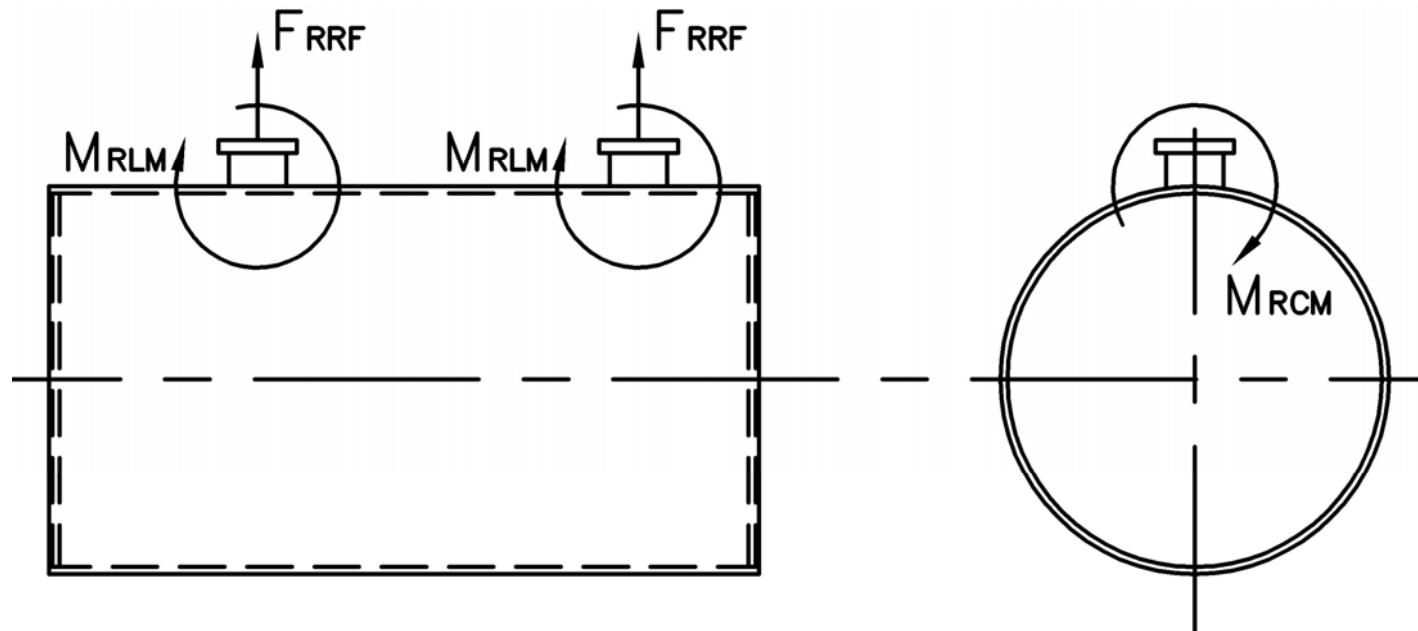


MODEL: PFTA 200-4

Nozzle Loadings

Maximum Allowable Load on Outlet & Return Nozzles				
	30# Design	60# Design	125# Design	160# Design
F_{RRF} , lb	4,595	3,885	2,530	3,490
M_{RCM} , in-lb	23,115	23,115	23,115	33,950
M_{RLM} , in-lb	31,590	26,730	17,415	26,715



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	1.026	4.496
	30	0.036	0.280	1.226
	9	0.011	0.084	0.368
CO	50	0.037	0.29	1.261
CO ₂	2.55 lb/lb fuel	119.76	939	4,112
H ₂ O	2.03 lb/lb fuel	106.16	832	3,645
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO _x	128	0.174	1.318	5.772
CO	50	0.037	0.278	1.218
CO ₂	3.20 lb/lb fuel	168.53	1,276	5,587
H ₂ O	1.12 lb/lb fuel	71.20	539	2,361

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

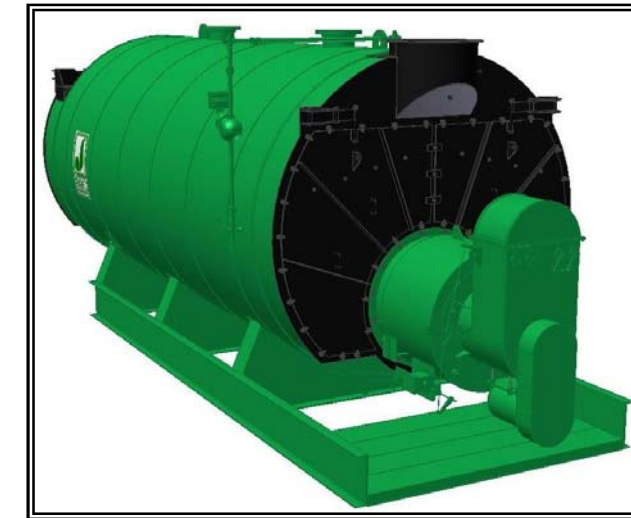
Distributed By:



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

MODEL: PFTA 200-4

4-Pass Hot Water Packaged Firetube Boiler



Ratings & Performance Data

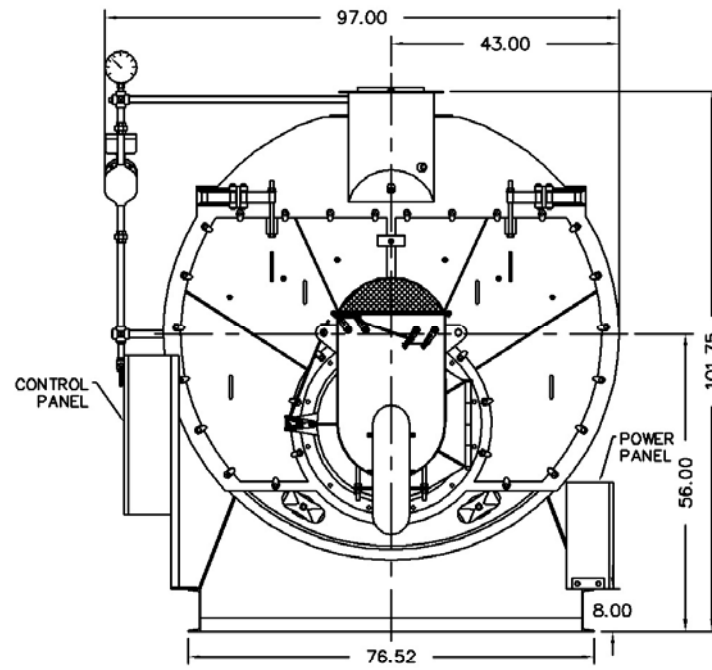
Horsepower 200		Natural Gas Flow, SCFH (1,000 Btu/ft ³)**	7,839
Total Heating Surface, ft ²	1,035	Combustion Air (15% Excess), SCFM***	1,434
Furnace Outside Diameter, in	36.0	Flue Gas Flow Rate, lb/hr***	6,836
Furnace Heat Release Rate, Btu/ft ³ hr**	160,000	Stack Flue Gas Velocity, ft/min***	1,554
Total Combustion Volume, ft ³	77.3	#2 Oil Flow, gal/hr (140,000 Btu/gal)**	54.1
Total Heat Release Rate, Btu/ft ³ hr**	101,000	#6 Oil Flow, gal/hr (150,000 Btu/gal)**	50.1
Water Content Flooded, gal	1,622	Flue Gas Side Pressure Drop, in. H ₂ O	3.1
Approx. Dry Weight 30#, lb	16,900	Approx. Operating Weight 30#, lb	30,800
Approx. Dry Weight 60#, lb	17,000	Approx. Operating Weight 60#, lb	30,900
Approx. Dry Weight 125#, lb	17,500	Approx. Operating Weight 125#, lb	31,400

Performance Data						
Operating Temperature (F)	Natural Gas		#2 Oil		#6 Oil	
	Stack Temp (F)	%Eff	Stack Temp	%Eff	Stack Temp (F)	%Eff
180	255	85.9	268	88.9	275	89.7
200	275	85.4	288	88.5	295	89.2
220	294	84.9	307	88.0	315	88.7
240	314	84.4	326	87.5	335	88.2

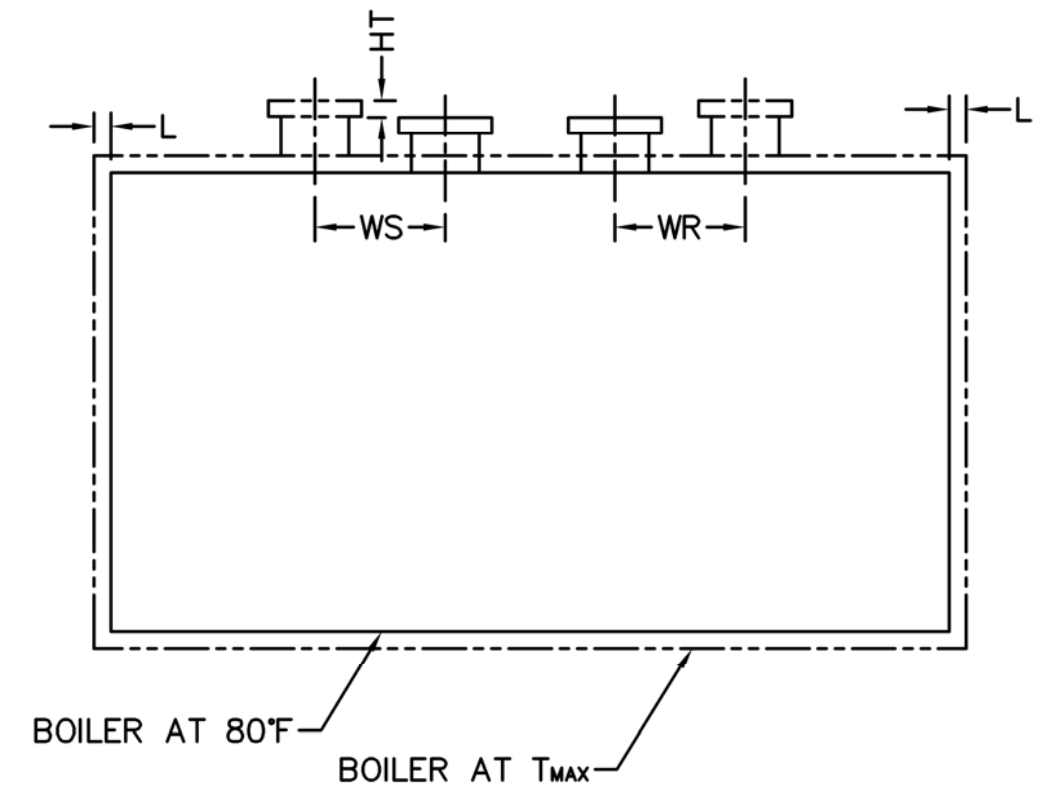
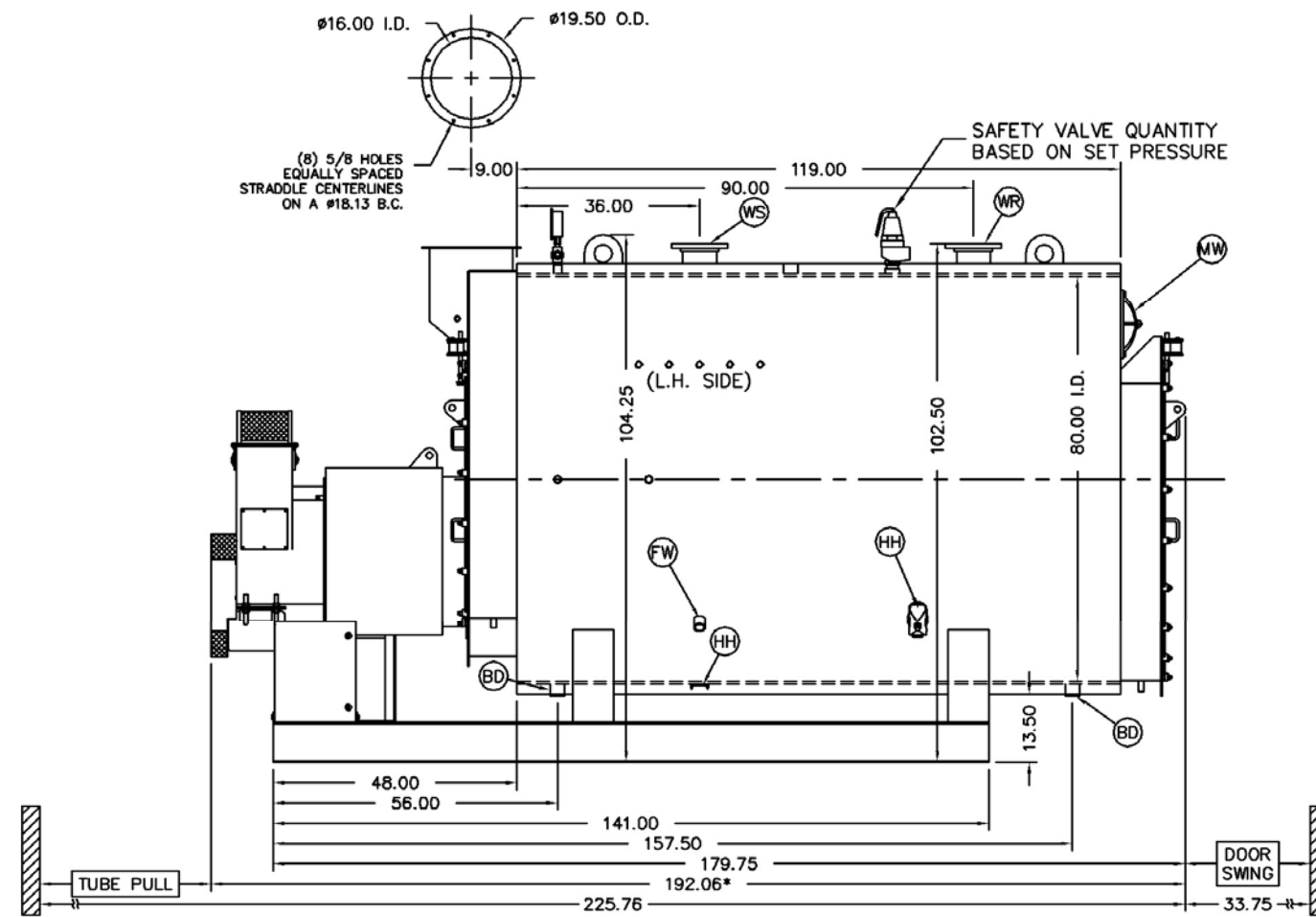
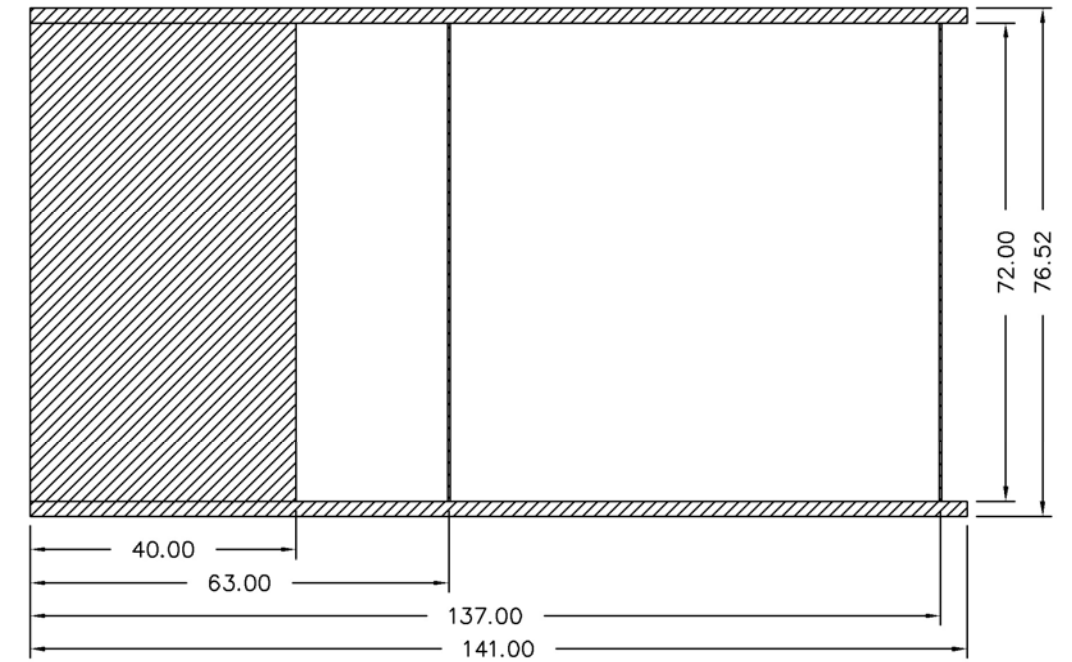
*Based on 20°F difference in supply/return, ** Values calculated at 200°F operating temperature, ***Calculated Firing Natural Gas

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



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)	0.036	0.043	0.050	0.057
WS (in)	0.014	0.017	0.020	0.023
WR (in)	0.018	0.022	0.026	0.029
HT (in)	0.048	0.058	0.068	0.077