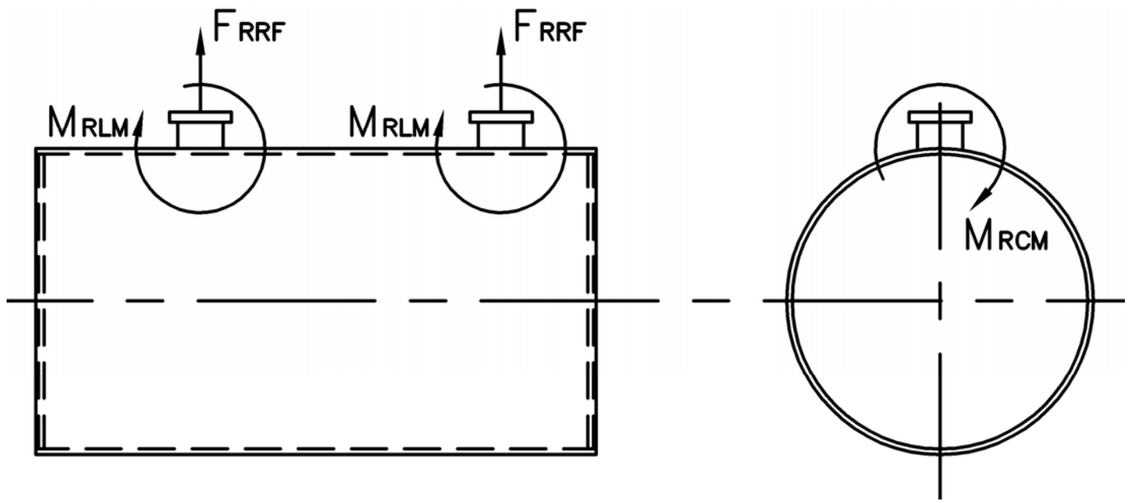
MODEL: PFTA 400-4

Nozzle Loadings

Maximum Allowable Load on Outlet & Return Nozzles				
	30# Design	60# Design	125# Design	160# Design
$F_{RRF,}$ lb	5,487	4,487	3,099	5,495
M_{RCM}, in-lb	32,911	32,911	32,911	60,265
M_{RLM}, in-lb	46,547	38,063	26,293	47,425



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	2.048	8.971
	30	0.036	0.559	2.447
	9	0.011	0.168	0.734
CO	50	0.037	0.57	2.517
CO_2	2.55 lb/lb fuel	119.76	1,873	8,204
H_20	2.03 lb/lb fuel	106.16	1,660	7,273
Stack Emissions-#2 Oil** (140,000 Btu/gal)				
NO_x	128	0.174	2.629	11.517
CO	50	0.037	0.555	2.430
CO_2	3.20 lb/lb fuel	168.53	2,545	11,148
H_20	1.12 lb/lb fuel	71.20	1,075	4,710
* 110 ppm "A" Burner, 30 ppm A-FGR Burner, 9 ppm FIR Burner **0.02% fuel bound Nitrogen				

Distributed By:

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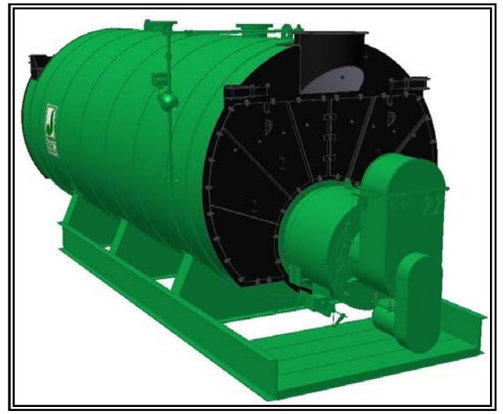
Printed Feb. 2008

MODEL: PFTA 400-4

JOHNSTON BOILER COMPANY

4-Pass Hot Water Packaged Firetube Boiler



Ratings & Performance Data

Horsepower 400		Natural Gas Flow, SCFH (1,000 Btu/ft^3)**	15,641
Total Heating Surface, ft^2	2,026	Combustion Air (15% Excess), SCFM***	2,862
Furnace Outside Diameter, in	42.0	Flue Gas Flow Rate, lb/hr***	13,640
Furnace Heat Release Rate, Btu/ft^3 hr**	154,000	Stack Flue Gas Velocity, ft/min***	1,623
Total Combustion Volume, ft^3	148.0	#2 Oil Flow, gal/hr (140,000 Btu/gal)**	107.9
Total Heat Release Rate, Btu/ft^3 hr**	106,000	#6 Oil Flow, gal/hr (150,000 Btu/gal)**	100.0
Water Content Flooded, gal	2,995	Flue Gas Side Pressure Drop, in. H_2O	3.9
Approx. Dry Weight 30#, lb	27,400	Approx. Operating Weight 30#, lb	52,700
Approx. Dry Weight 60#, lb	27,500	Approx. Operating Weight 60#, lb	52,800
Approx. Dry Weight 125#, lb	29,000	Approx. Operating Weight 125#, lb	54,300

Performance Data

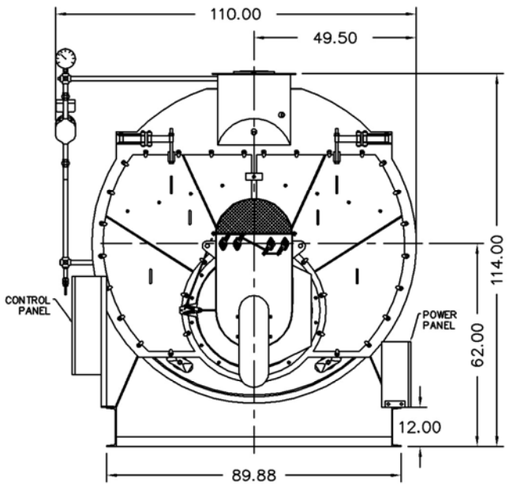
Operating Temperature (F)	Natural Gas		#2 Oil		#6 Oil	
	Stack Temp (F)	%Eff	Stack Temp	%Eff	Stack Temp (F)	%Eff
180	249	86.1	262	89.2	275	89.7
200	267	85.6	282	88.7	295	89.2
220	288	85.1	301	88.2	315	88.7
240	308	84.6	321	87.7	335	88.2

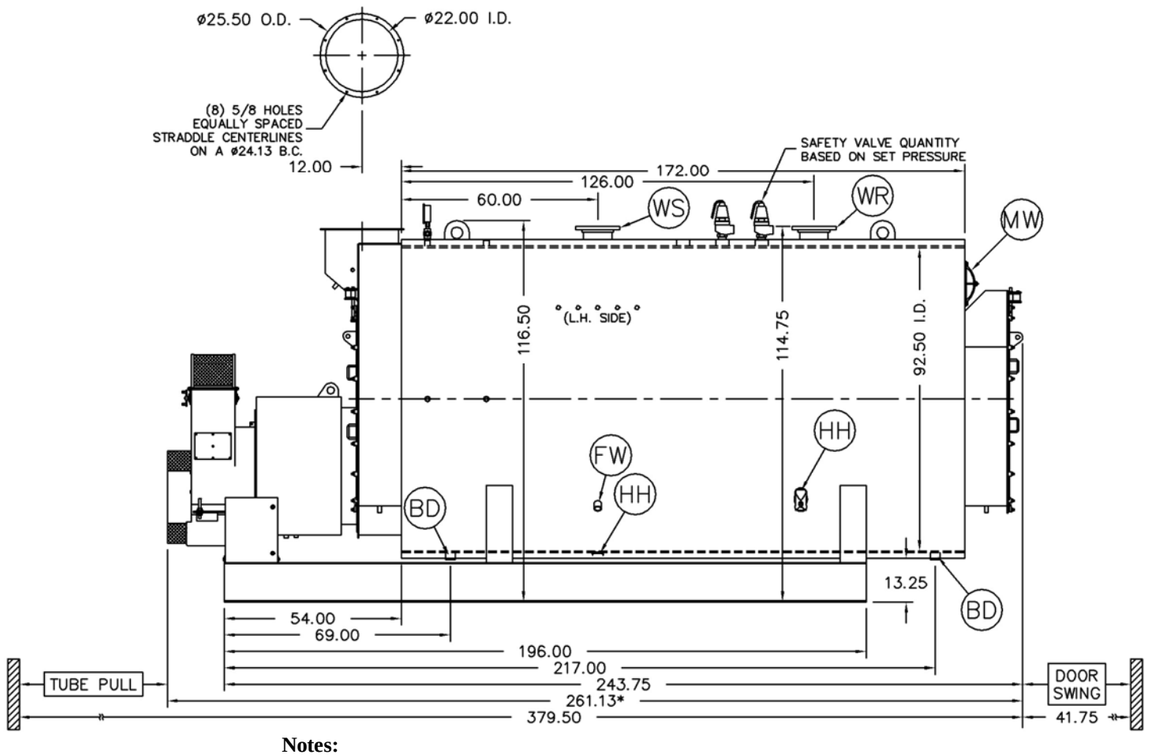
*Based on 20°F difference in supply/return, ** Values calculated at 200°F operating temperature, ***Calculated Firing Natural Gas

Drawings - 4-Pass Hot Water Packaged Firetube Boiler

MODEL: PFTA 400-4

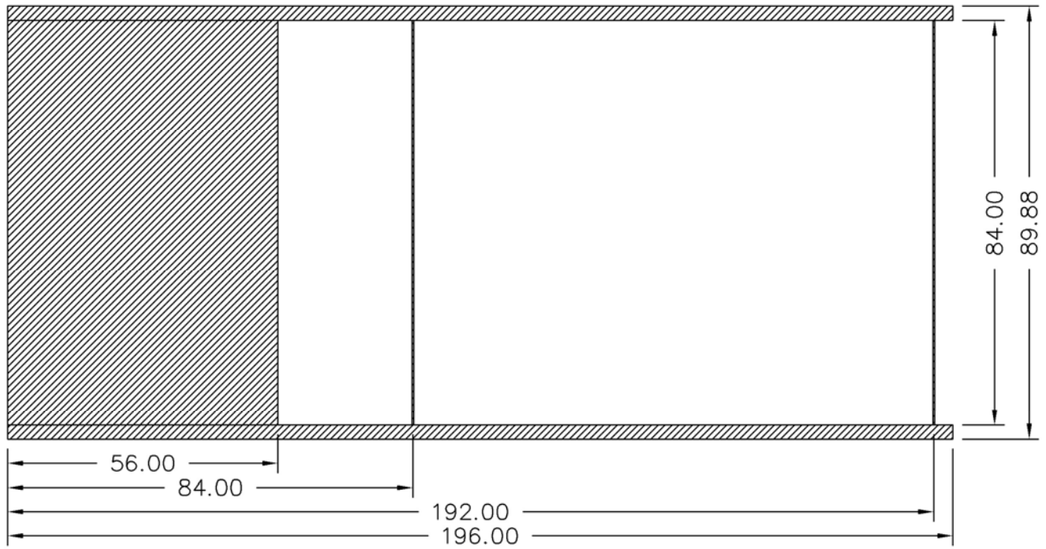
Connection & Opening Schedule			
Conn.	Description	Type	Qty
FW	Feedwater Inlet	2.00 FNPT	2
WS	Water Supply	8.00 150#RF	1
WR	Water Return	8.00 150#RF	1
DO	Drain Outlet	2.00 FNPT	2
MW	Manway	12 X 16	1
HH	Hand Hole	4 X 6	7
Supply and return outlets ASME flanged drilling			

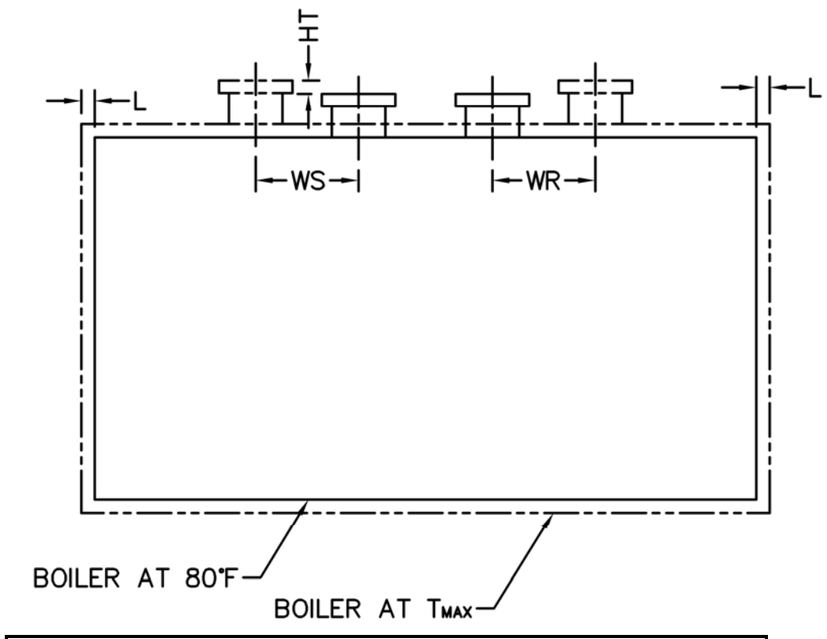




Notes:
30# Hot Water design shown, all dimensions given in inches.
Fuel piping and/or optional boiler trim may increase overall width.
Specifications subject to change to incorporate engineering advances.
***May vary on low-NO_x designs.**

Base Diagram





Thermal Expansion				
Metal T_{MAX} (F)	180	200	220	240
L (in)	0.052	0.062	0.072	0.083
WS (in)	0.016	0.019	0.022	0.025
WR (in)	0.024	0.029	0.034	0.038
HT (in)	0.056	0.067	0.078	0.089