MODEL FLX$_{PM}$

FLEXTUBE®

BEST-IN-CLASS COMBUSTION PERFORMANCE WITH LOW EMISSIONS
75 TO 250 HP

Low Emissions Out-of-the-Box

The Cleaver-Brooks Model FLXPM delivers less than 20 ppm NOx and less than 10 ppm CO without flue gas recirculation (FGR). Premix burner technology enables the boiler to achieve these levels as standard on natural gas. The levels are slightly higher on propane. In addition, the modulating burner control automatically adjusts the air/gas mixture for maximum efficiency and optimum turndown.

Quick Response and Quiet Operation

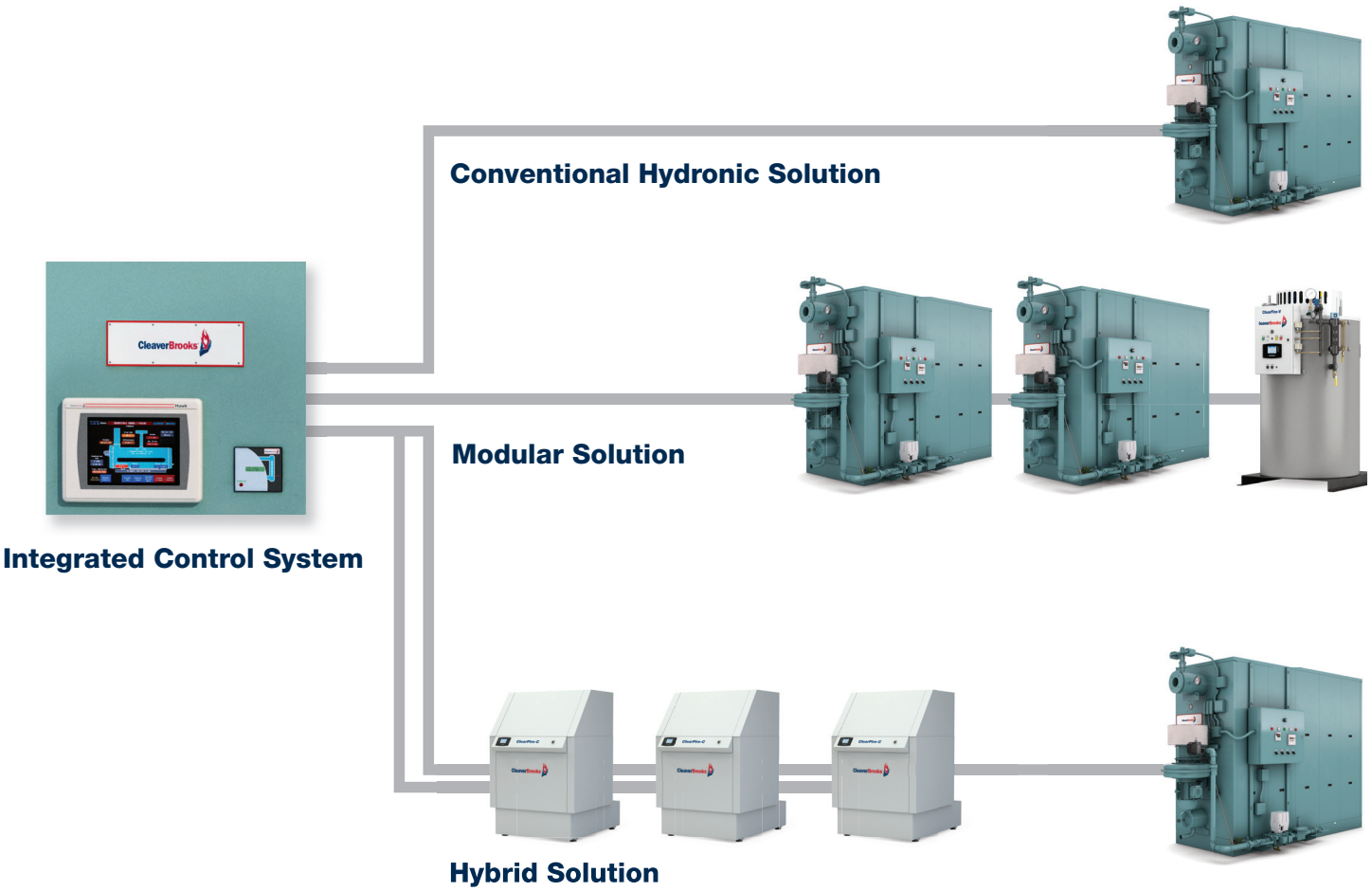
The Model FLXPM meets the quick response needs essential for many industries, including schools, hospitals, medical facilities, office complexes, pharmaceutical and manufacturing processes, and laundry operations.

Not only does the FLXPM respond quickly, but it is ultra-quiet when running. The noise level on the 250 HP unit is less than 80 dBA.

Engineering Flexibility in a Small Footprint

To meet today's sustainability requirements, flexibility is often the best strategy. The Model FLXPM is compact, making it easy to fit several units into a boiler room or into a larger hydronic system of condensing or non-condensing boilers. This multi-unit solution helps to divide the load more efficiently in a hydronic system or in a steam process.

Because there is no requirement for FGR piping from the stack to the burner, it is easy to incorporate the FLXPM into a new or existing boiler system.

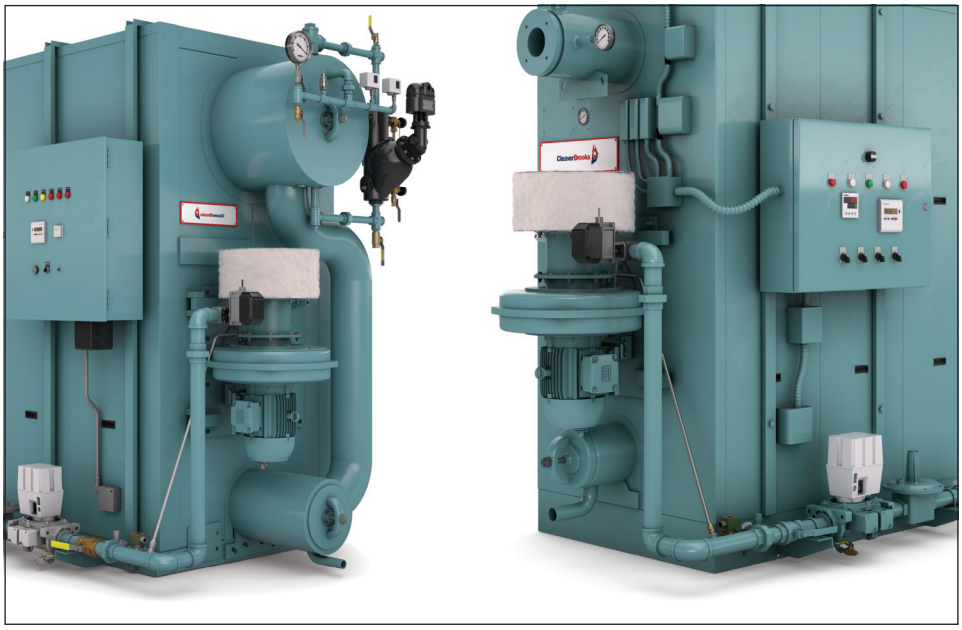


Premix Burner Technology Delivers Superior Combustion With Low Emissions

Boilers

Premix burner technology maintains repeatability in the combustion process for excellent combustion with up to 5:1 turndown. The variable-speed fan modulates to provide only the amount of heat required to the boiler. Full modulation reduces on/off cycling and provides excellent load tracking, resulting in reduced operating costs.

The burner does not require mechanical linkage connections between the fuel-input valve and air control. This method of controlling the fuel-air ratio eliminates slippage due to linkages, minimizes burner maintenance and provides control repeatability.



Protected Against Thermal Shock

The design of the Flextube® boiler protects it against thermal stresses, and as such, the Model FLX$_{PM}$ is warranted for 25 years against thermal stress occurrences associated with hydronic heating systems.

Advanced Integrated Controls

The FLXPM integrates a servo-driven, fuel-input control valve with air-input control via a variable-frequency-drive fan for precise fuel/air ratio control. Energy-demand transmitters send a signal to the burner control, managing the burner firing rate throughout the modulating range.

For multi-unit hydronic installations, the boilers can be equipped with the Cleaver-Brooks high-performance Hydronic System Control (HSC) for system energy efficiency.

Model FLXPM 75 to 250 HP Features

- Less than 20 ppm NOx out-of-the-box as standard
- No FGR piping required for NOx control
- Less than 9 ppm NOx as optional
- Zero-to-low CO emissions
- Quiet operation
- Small footprint
- Up to 5:1 turndown
- Natural gas or propane fuel
- Premix burner technology with fiber-mesh head
- 5-year burner warranty
- cUL/UL listed for dual fuels in the United States and Canada
- Available in six sizes, 75 – 250 HP

Cleaver-Brooks Design Advantage

Both the pressure vessel and burner designs are exclusive to Cleaver-Brooks. We develop and manufacture these components to work together, so your system is always operating at peak efficiency and with the lowest possible emissions.

Meet Current and Future Emissions Limits

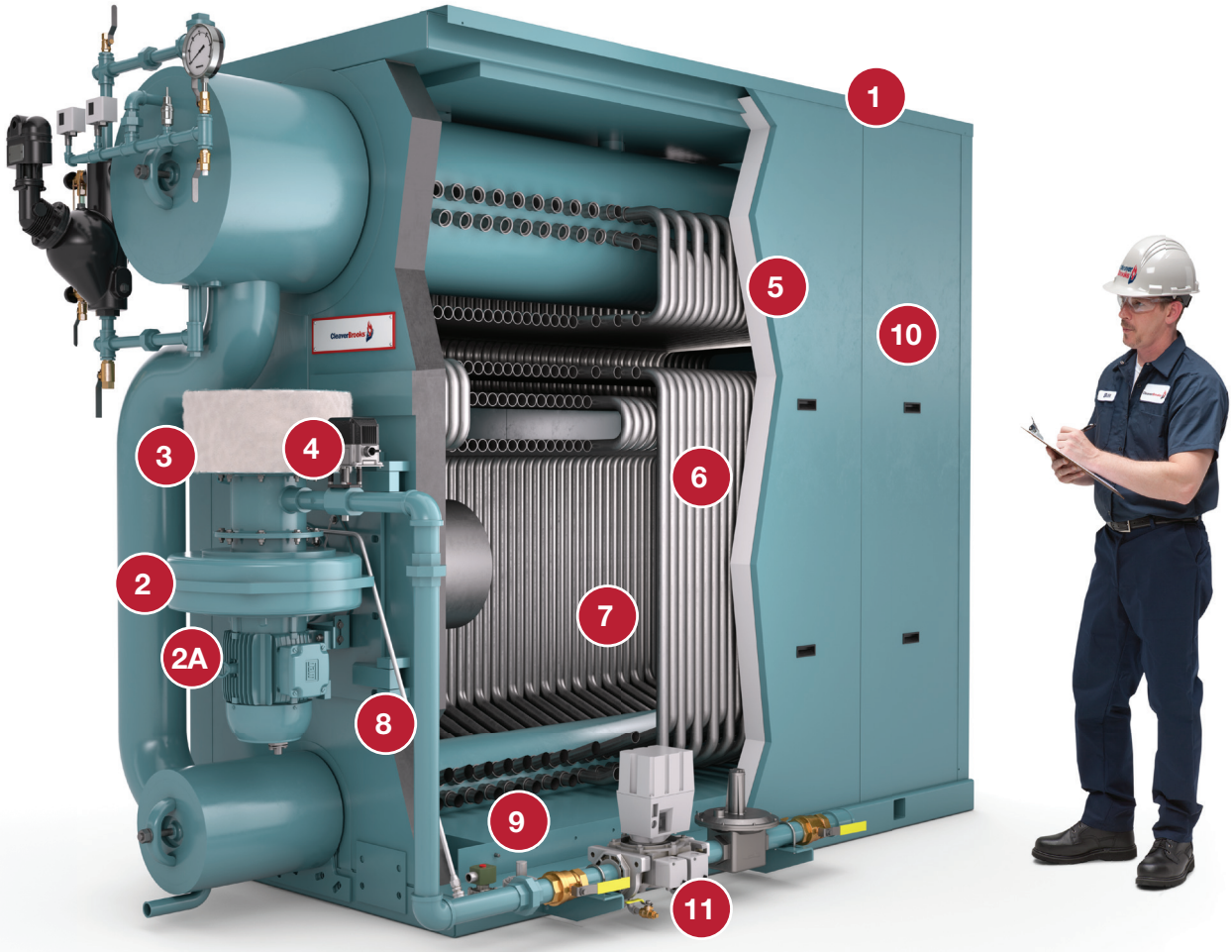
The innovative design of our Model FLXPM enables customers to save on operating costs while reducing emissions to maintain compliance with emissions limits both now and in the future.

Ease of Maintenance

The burner in the Model FLXPM is designed for automatic, unattended operation, except for periodic inspection and maintenance. The burner can be password-protected, so you can rest assured that the parameters you set at start-up will be maintained.

The linkageless burner in the FLXPM provides less opportunity for mechanical failure and reduced need to replace parts down the road.

With the HMI operator interface, you can monitor and control processes, giving you maximum flexibility for troubleshooting issues. Most problems can be solved over the phone with a service technician, getting your system back on track quickly.

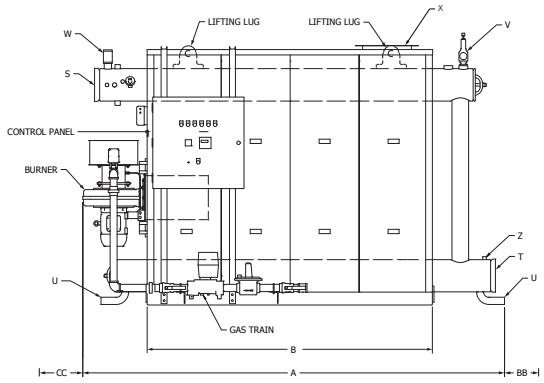


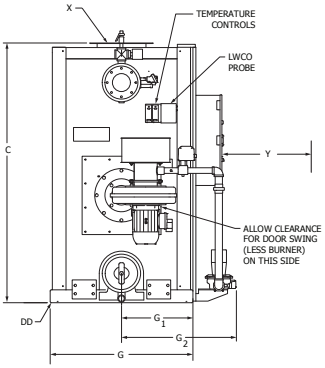
Components

1. Exhaust connection
2. Premix burner, gas
2A. Fan motor
3. Combustion air intake
4. Parallel positioning servo motors eliminate linkage loss; tighter fuel-to-air control for maximum combustion efficiency
5. Central control panel is hinged to swing away from boiler side to permit access to boiler internals
6. Tangent tube construction features full water-wall design for maximum heat transfer in the furnace chamber
7. Five-pass gas travel — cross flow for maximum heat transfer efficiency; furnace is fully water cooled
8. Hinged burner door for easy access to burner internals for inspection and maintenance
9. Rugged base frame with minimum 3 in.-pour refractory floor to minimize heat loss and firm foundation setting
10. Removable side inner and outer access panels to tubes; inner panels are insulated to provide a cooler outer surface reducing standby losses
11. Pre-piped and wired gas train per UL standards

Model FLX$_{PM}$ Boiler Dimensions and Weights

HW Dimension Diagram

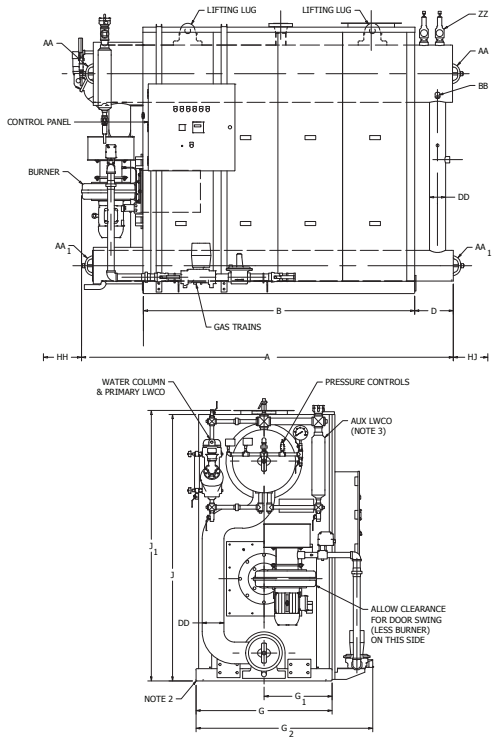




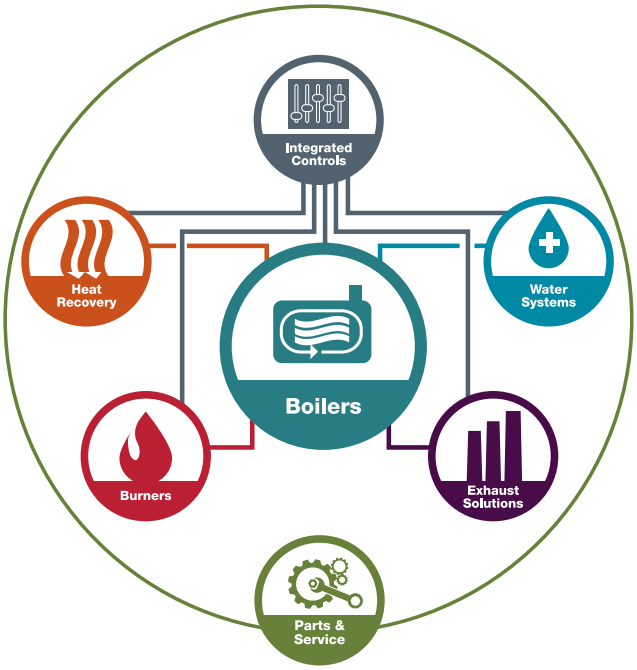
ITEM	DIMENSIONS (Inches)	Boiler Size - Hot Water					
		FLX$_{PM}$ 315	FLX$_{PM}$ 420	FLX$_{PM}$ 540	FLX$_{PM}$ 630	FLX$_{PM}$ 840	FLX$_{PM}$ 1050
	Input Rating (BTU/hr)	3,150,000	4,200,000	5,400,000	6,300,000	8,400,000	10,500,000
A	Overall Length	113	137	144	163	163	195
B	Boiler Base Length	74	95	95	116	116	140
C	Overall Height (Base to Stack)	82	86	86	95	95	95
D	Base Width	46	48	48	54	54	54
D1	Base Center to Casing	23	24	24	27	27	27
D2	Overall width with Gas Train	35	36	36	39	39	39
	CONNECTIOINS (Inches)						
S	Supply Water (150# FF Flange)	4	6	6	6	6	8
T	Return Water (150# FF Flange)	4	6	6	6	6	8
U	Boiler Drain	1-1/2	2 @ 2	2 @ 2	2 @ 2	2 @ 2	2 @ 2
V	Relief Valve @160# Setting	3/4	1-1/4	1-1/4	1-1/2	1-1/2	1-1/2
W	Air Vent	1	1	1	1	1	1
X	Stack ID	12	16	16	18	18	24
Z	Optional Tap for transmitter	1/2	1/2	1/2	1/2	1/2	1/2
	CLEARANCES						
Y	Min Aisle Space from Panel @ 460V	42	42	42	42	42	42
Y	Min Aisle Space from Panel @ 380V	36	36	36	36	36	36
BB	Clearance at rear of boiler	24	24	24	24	24	24
CC	Clearance at front of boiler	24	24	26	29	36	44
DD	Side clearance tube removal each side	32	34	34	40	40	40
	RATINGS						
MAWP	Max Design Pressure (PSIG)	160	160	160	160	160	160
MAWT	Max Operating Temp (F)	239	239	239	239	239	239
Weight	Shipping (lbs)	5,000	6,100	6,100	8,500	8,500	10,000
Weight	Operating (lbs)	5,900	7,600	7,600	10,500	10,500	12,300

Note: Optional Design to 250 PSIG @ 355 F operating temperature.

Steam Dimension Diagram



ITEM	DIMENSIONS (Inches)	Boiler Size - Steam					
		FLX$_{PM}$ 315	FLX$_{PM}$ 420	FLX$_{PM}$ 540	FLX$_{PM}$ 630	FLX$_{PM}$ 840	FLX$_{PM}$ 1050
	Boiler Horsepower	75	100	125	150	200	250
	Steam Capacity (F/A 212 F, PPH)	2,587	3,450	4,313	5,175	6,900	8,625
A	Overall Length	107	130	134	157	157	189
B	Boiler Base Length	74	94	94	116	116	140
C	Overall Height (Base to Stack)	90	95	95	109	109	109
D	Base Width	46	48	48	54	54	54
D1	Base Center to Casing	23	24	24	27	27	27
D2	Overall width with Gas Train	58	60	60	66	66	66
	CONNECTIOINS (Inches)						
S	Steam Nozzle 15 PSIG Boiler	6” Flg	6 Flg	6 Flg	8 Flg	8 Flg	10 Flg
T	Steam Nozzle 150 PSIG Boiler	2-1/2 MPT	3 Flg	3 Flg	4 Flg	4 Flg	6 Flg
U	Boiler Drain, 15 PSIG	1-1/2	2	2	2	2	2
V	Boiler Bottom Blowdown 150 PSIG	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4
W	Safety Valve 15 PSIG	1 @ 2-1/2	1 @ 3	1 @ 3	2 @ 2-1/2	2 @ 2-1/2	2 @ 3
X	Safety Valve 150 PSIG	1 @ 1-1/2	2 @ 1-1/4	2 @ 1-1/4	2 @ 1-1/2	2 @ 1-1/2	2 @ 2
Y	Stack ID	12	16	16	18	18	24
Z	Feedwater	1-1/4	1-1/4	1-1/4	1-1/2	1-1/2	2
	CLEARANCES						
E	Min Aisle Space from Panel 460V	42	42	42	42	42	42
E	Min Aisle Space from Panel 380V	36	36	36	36	36	36
F	Clearance at rear of boiler	24	24	24	24	24	24
G	Clearance at front of boiler	24	24	26	29	36	44
H	Side clearance tube removal each side	32	34	34	40	40	40
	RATINGS						
Weight	Shipping (lbs)	6200	7900	7900	10200	10200	12000
Weight	Operating (lbs)	7200	9200	9200	12500	12500	14100



Providing energy-efficient, environmentally friendly boiler room solutions

Cleaver-Brooks is one of only a few boiler room solutions providers in the world to operate a dedicated research and development facility. Having pioneered several industry-leading technologies, we remain just as committed today to introducing technology and products that enable a more energy-efficient and environmentally friendly generation of steam and hot water.

We distribute our products through the Cleaver-Brooks Representatives Association, or CBRA, an alliance of independently owned and operated companies that provide boiler room products and service. CBRA companies can be counted on to provide Cleaver-Brooks products and parts, engineering support, customer training, technical service and system maintenance. To find a CBRA representative near you, please visit cleaverbrooks.com/reps.

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