



# MODEL M5M

**High-Efficiency Packaged Watertube Boiler  
2.0-6.0 MMBTU**

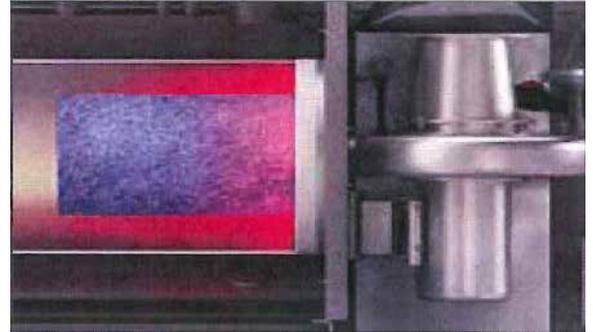
# Low Emissions, High Efficiency

Whether your application is a small batch load for food processing, or you are considering a hybrid heating system, the M5M provides an environmental solution to meet today's energy and emissions standards. Designed for steam application up to 500 psig, hydronic comfort heating to 180° F or process water temperature to 410° F, this watertube boiler delivers big in a compact design, yet does not consume extra real estate in which to reside.

Equipped with a remix surface combustion burner, the M5M is environmentally friendly out of the box. It achieves NOx emissions <20 PPM and CO emissions <10 PPM for natural gas across the firing range.

## PROVEN PREMIX BURNER DESIGN

The modulating premix burner and linkageless control automatically adjust (no linkage or dampers) the air/gas mixture for maximum efficiency and optimum turndown. The burner achieves a symmetrical, 360-degree, even-temperature heat output, providing clean combustion with ultra-low NOx emissions <20 PPM as standard.



## HIGH-PERFORMANCE MEMBRANE-WALL CONSTRUCTION

Energy released during clean combustion flows from the water-cooled furnace into the convection tube banks, a design used by power plants for superior performance. The inner and outer rows of tubes are sealed tightly, and the gas-tight construction is verified with a factory air test that ensures combustion by-products will not leak into the boiler room.



# Compact Packaged Watertube Boiler



## CONSIDER MODEL M5M AS A “STAND-BY”

A boiler that operates at too low a firing rate or frequently cycles wastes energy. Excessive cycling also shortens the lifespan of system components. With the compact Cleaver-Brooks Model M5M, the larger unit(s) can be shut down during periods of low system demand and still maintain peak operating efficiency.

The Model M5M measures just 33 inches wide with the gas train and some trim items removed, so it can easily fit through a 36 inch-wide doorway. The boiler is available in capacities ranging from 36 HP to 143 HP.

## REDUCE BOILER FOOTPRINT

- ▶ Increases boiler room floor space by 50%
- ▶ Sized for quick replacement of old boilers
- ▶ Up to 40% lighter in weight
- ▶ Packaged for quick hook-up

## BURNER GAS TRAIN

The gas train is piped, wired and mounted to the boiler in the factory. Standard components meet the requirements of UL/cUL, ASME CSD-1, XL-GAPS and FM and include the following:

- ▶ Low gas pressure switch, manual reset
- ▶ High gas pressure switch, manual reset
- ▶ Gas pressure regulator
- ▶ Manual shutoff cocks
- ▶ CSD-1 test cocks
- ▶ Safety shutoff valve



The Model M5M is narrow enough to fit through a 36-inch wide doorway.\*

\*Water column and gas train to be removed for 36-inch door passage.

# Intelligent Integrated Controls

The Cleaver-Brooks Falcon is a proven boiler/burner management control that provides an intuitive operator interface featuring integrated burner sequencing, trending, flame safety, modulation, alarms, lockout and much more. It ensures that your boiler system operates at peak efficiency, while providing necessary safety and reliability.

The Cleaver-Brooks Falcon control with integrated lead/lag optimizes the boiler room's operational efficiency while delivering precise temperature control to meet heating demands. The Cleaver-Brooks Falcon can communicate with your building's Energy Management System (EMS), which helps maximize overall system efficiency.



- ▶ Touch-screen graphics
- ▶ PID setpoint control (single boiler and lead/lag)
- ▶ Configurable lead/lag control up to eight boilers
- ▶ Comprehensive diagnostics/fault history
- ▶ Combustion air/draft control interlock
- ▶ Night setback
- ▶ Hot standby
- ▶ ModBus (RS485) Communications



## THE MODEL M5M IS AN IDEAL SOLUTION FOR BOTH HEATING AND PROCESS APPLICATIONS

The Falcon lead/lag control is uniquely capable of optimizing the M5M's combustion and thermal performance characteristics to sequence and modulate the boiler to maximize system efficiency. The Cleaver-Brooks Falcon lead/lag control uses the common base load firing rate method to sequence and modulate a multiple-boiler system. This approach optimizes the boilers' operating efficiency while minimizing energy-wasting short cycling. The elimination of short cycling minimizes purge and standby losses, while extending life and reliability of your boiler system.

# Model M5M Advantage



- 1** Operating and high-limit controls
- 2** Single-point connection for electrical and controls
- 3** Surface blowoff
- 4** Modulating low-NOx burner assembly for maximum operating
- 5** 2-pass watertube design
- 6** Fiber mesh burner designed to premix air and fuel for optimal combustion
- 7** CSD-1, XL GAP gas train
- 8** Small stack outlet
- 9** Steam outlet or water supply
- 10** Large steam volume, better steam quality
- 11** Water return for hot-water boiler
- 12** Furnace access at rear

# Maximize Steam Efficiency with an Economizer

Capture the energy in the stack gases and decrease your fuel use. By adding a C-B Economizer, you may realize increased efficiency of 3-5% or more, depending upon the temperature of the condensate and cold water makeup.

## CCE ECONOMIZER FEATURES

- ▶ Compact and lightweight
- ▶ High-performance BTU recovery
- ▶ Hinged stainless steel access doors
- ▶ Stainless steel internal exhaust gas bypass
- ▶ ASME construction ensures high-quality design and manufacturing standards



# Single-Source Skid-Package Solutions

Looking for a turnkey steam solution? Cleaver-Brooks offers standard and complete steam boiler system skid-mounted packages in gas and propane fuels. The package includes the steam boiler, feed system and blowdown separator with optional chemical feed system and water softener. This complete package saves you installation time because all that is required is a single-power, gas, steam and water connection.



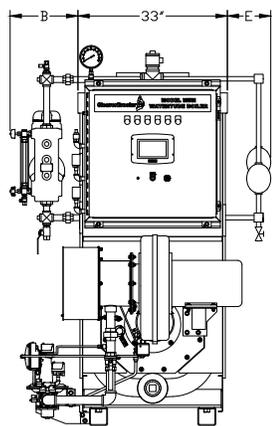
## FEATURES

- ▶ Single-source responsibility
- ▶ Plug and play, reduced installation cost
- ▶ Standard skid solutions to meet your needs
- ▶ Eliminate field piping and wiring errors

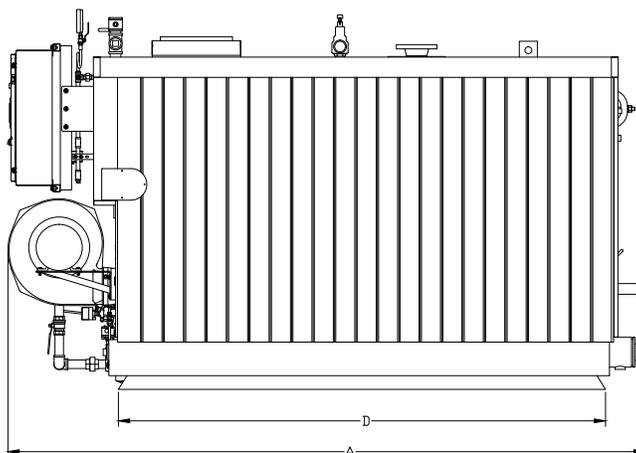
## SPECIFICATIONS

MODEL SIZE	INPUT BTU/HR	OUTPUT BTU/HR	EDR Water Gr. Sq. Ft.	EDR Steam 15 psi Gr. Sq. Ft.	OUTPUT* LBS/HR Steam	EQUIV. HP
2000	2,000,000	1,600,000	10,667	5,667	1,649	47
2500	2,500,000	2,000,000	13,333	7,083	2,062	59
3000	3,000,000	2,400,000	16,000	8,500	2,474	71
3500	3,500,000	2,800,000	18,667	9,917	2,887	83
4000	4,000,000	3,200,000	21,333	11,333	3,299	95
4500	4,500,000	3,600,000	24,000	15,000	3,711	107
5000	5,000,000	4,000,000	26,667	16,667	4,124	119
6000	6,000,000	4,800,000	32,000	20,000	4,949	143

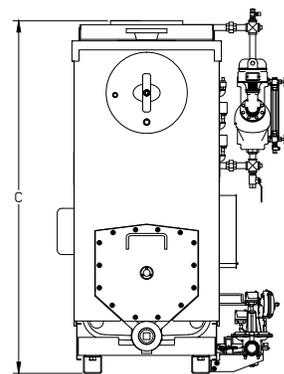
- Steam to 150 psig std., pressure to 500 psig available.



FRONT VIEW



SIDE VIEW



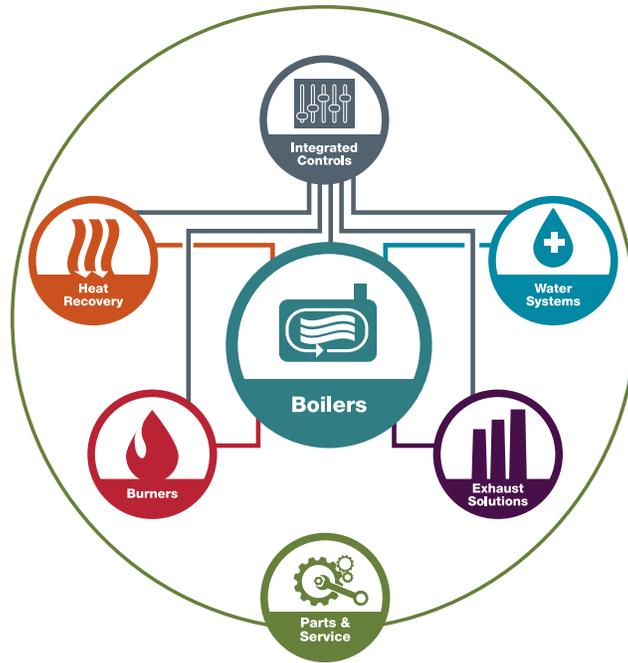
REAR VIEW

## DIMENSIONS ALL DIMENSIONS IN INCHES

	HOT WATER 140 psi				STEAM 15 psi & 150 psi				
	A†	B††	C	D	A†	B††	C	D	E††
2000	79	7	79	54	79	17 1/2	79	54	7
2500	94 5/8	7	79	69 5/8	94 5/8	17 1/2	79	69 5/8	7
3000	94 5/8	7	79	69 5/8	94 5/8	17 1/2	79	69 5/8	7
3500	110 1/4	7	79	85 1/4	100 1/4	17 1/2	79	85 1/4	7
4000	110 1/4	7	79	85 1/4	110 1/4	17 1/2	79	85 1/4	7
4500	126	7	79	101	126	17 1/2	79	101	7
5000	126	7	79	101	126	17 1/2	79	101	7
6000	141 1/2	7	79	116 1/2	141 1/2	17 1/2	79	116 1/2	7

† Includes nipple extension for water inlet.

†† Low water cut-off or water column dimension includes union connection for ease of disassembly.  
Specifications subject to change without notice.



## Total Integration goes far beyond boilers.

For more than 80 years, Cleaver-Brooks has built a reputation for innovation in the boiler solutions industry. We remain committed to introducing technology and products that enable a more energy-efficient and environmentally friendly generation of steam and hot water.

When you come to us for boilers, you can know that each element is created to the highest standards and all will work together seamlessly to give you a highly efficient and reliable solution. To learn more, please call or visit us online.



### **Packaged Boiler Systems**

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