



# CBLE

**Steam or Hot Water  
Firetube Boiler  
50 to 800 HP**



A Clever-Brooks  
Sustainable Solution



# Sustainable for the Environment, Strategic for Your Bottom Line

The CBLE is designed and manufactured for reliability and long life, delivering high-efficiency, low-emissions control worldwide.

The CBLE is the result of 70 years of firetube boiler engineering experience, and our commitment to the four cornerstones of successful plant operation: Safety, Efficiency, Reliability and Sustainability.

## The CBLE firetube boiler:

- » Achieves emissions reduction goals down to <5 ppm NOx with the integral burner design
- » Can burn more types of renewable fuels than others in the market to meet emissions reduction and decarbonization goals
- » Offers a proven history of reliability and safety, providing a low lifecycle cost



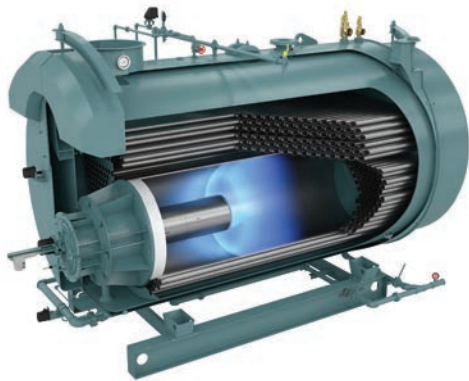
Our CBLE boiler meets the strict performance and sustainability criteria required to earn the Cleaver-Brooks Sustainability Seal. Find out more at [cleaverbrooks.com/sustainability](https://cleaverbrooks.com/sustainability).



# The Most Reliable Boiler Ever

## Dependable Construction

The CBLE is the most robust and reliable pressure vessel on the market. A 4-pass firetube boiler with 5 square feet of heating surface per boiler horsepower will provide years of efficient, trouble-free operation.



## Fuel Flexibility

The result of years of experience, our pressure vessel and smooth bore tube designs, combined with the industry-leading integral burner and advanced Hawk Control, enable Cleaver-Brooks to deliver guaranteed performance while firing a variety of alternate fuels—more than any manufacturer.

## Peace of Mind

Our complete packaged boilers provide the burner, boiler, and controls as a single, engineered solution. Based on a design that Cleaver-Brooks has refined for decades, these boilers operate at peak efficiency and are more reliable than any other.



The quality, durability and serviceability of Cleaver-Brooks is unmatched.

Scott Roman, HVAC Engineer  
Rockville General Hospital

# Hawk Integrated Controls System

The Hawk Control, which serves as the brain of the CBLE model, enables you to run your boiler safely and efficiently.

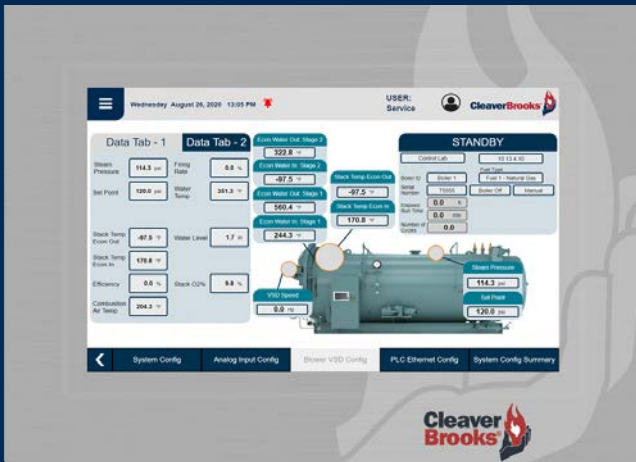
- » Completely integrated boiler/burner control is fully tested during development
- » Automatically tunes boiler for changes in environmental conditions
- » Combustion air fan vibration monitoring
- » Linkageless control eliminates single-point control hysteresis
- » Optional VSD control reduces fan horsepower load
- » Advanced emissions controls with NOx trim option
- » Unlimited options for system customization and optimization
- » NFPA and UL® compliant for maximum safety
  - Return-to-pilot functionality for immediate ignition
  - Hawk water-level control, draft control, third fuel option
  - Integrated deaerator and host panel controls



## Industry-Leading Interface

The Hawk is the most powerful boiler control system available in the industry. Its user-friendly interface features:

- » Highest-resolution screen on the market
- » Intuitive navigation
- » Built-in maintenance manual
- » E-mail and text alerts

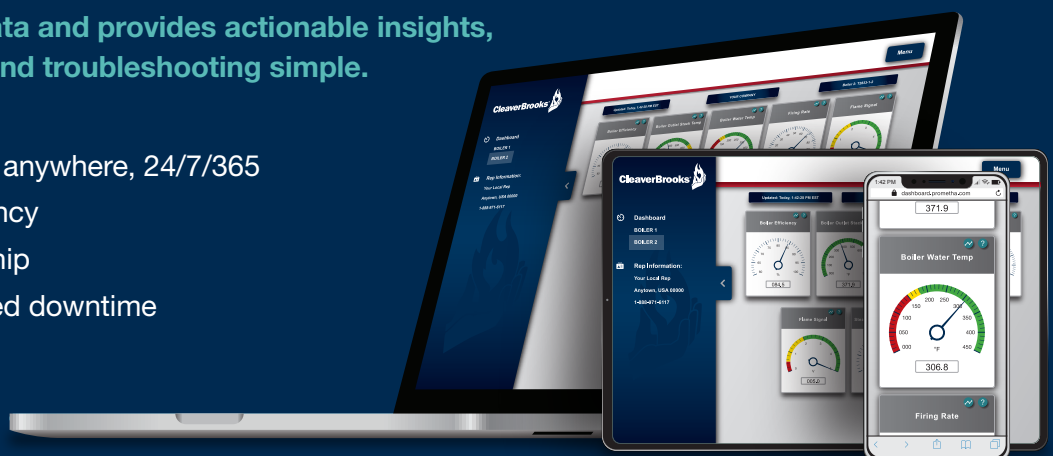


## Prometha® IoT-Connected Boiler Solutions

Prometha collects critical data and provides actionable insights, making boiler optimization and troubleshooting simple.

With Prometha, you can:

- » Access boiler insights from anywhere, 24/7/365
- » Increase operational efficiency
- » Lower total cost of ownership
- » Prevent or reduce unplanned downtime



# Integral Burner Technology

Our experienced team of highly qualified engineers developed the integral burner. This burner design provides years of reliable operation with minimal moving parts and is easy to retrofit if fuel or emissions requirements change.



## 50 to 800 HP Integral Burner

- » High efficiency
- » Quiet operation
- » Small footprint
- » Easy to maintain and install
- » Retrofit options available
- » Ability to burn a variety of fuels

## Lowering Emissions

Minimizing emissions is entirely dependent upon proper burner design and compatible furnace geometry. The CBLE boiler offers NO<sub>x</sub> reduction options of less than 70 ppm NO<sub>x</sub> when burning #2 oil and less than 60, 30, 9 to less than 5 ppm NO<sub>x</sub> when burning natural gas.

Cleaver-Brooks integral burners are matched and tested with the boiler, allowing us to guarantee the lowest possible NO<sub>x</sub> performance.



## A History of Innovation

Integral burner released with "CB" model firetube

**1953**

10:1 high turndown burner introduced

CBLE (low emissions) 30 and 60 ppm NO<sub>x</sub> burners introduced

**1988**

**1991**

NTI 9 ppm NO<sub>x</sub> burner launched

**2003**

Hawk launched with single-point positioning and display

**2004**

Hawk adds base and intermediate levels

**2008**

NTI 5 and 7 ppm NO<sub>x</sub> burners available

**2010**

LNO burner, 5 ppm NO<sub>x</sub> with 3% O<sub>2</sub>, launched

**2016**



# Waterback or Dryback Configurations

The CBLE is offered in either a 4-pass waterback or dryback design, both of which come with an integral burner. This boiler package is designed for:

- » Long life
- » Highest fuel-to-steam/ water efficiency
- » Fuel flexibility
- » Maximum safety
- » Lowest emissions
- » Quiet operation
- » Ease of maintenance
- » Flexibility to add desired options to further enhance the package

## Waterback



- » Longest service life
- » Fully watercooled design reduces stress due to cycling
- » Little to no refractory in rear door
- » Requires front tube pull

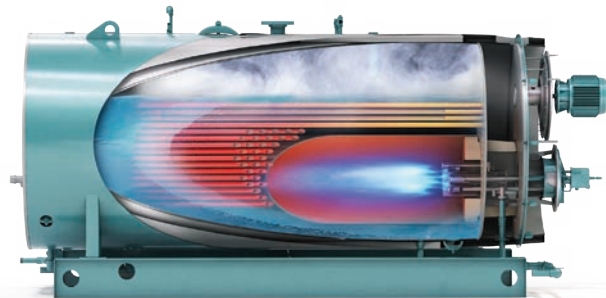
## Dryback



- » Simple vessel design
- » Easy tube access for inspection, cleaning, plugging, re-rolling
- » Tube pull front or back
- » No confined space

## Versatile Vessel Design

The CBLE vessel is engineered for long service life, and the furnace and tube design are ideal for alternative fuels.



## Reliable and Consistent Manufacturing

As a single-source provider, we control the manufacturing process of the burner, boiler, and controls, delivering consistency, reliability, and repeatability in all products.



We enjoy the fact that we have the most reliable and efficient boilers. We're so pleased that we're planning to add another.

Jacob Nagib  
Director of Engineering and Construction  
Halifax Medical Center

## Proven Reliability and Performance

### Decades of experience and evolution

Design engineering and manufacturing excellence are key reasons for the extended life of a Cleaver-Brooks firetube boiler. With over 100,000 units in the field, the average life exceeds 40 years and, in many cases, surpasses 60 years! Therefore, reliability should not be considered an intangible, especially when a single downtime occurrence can result in a production loss that far exceeds the cost of the boiler. The CBLE is the most ruggedly designed, efficient and reliable boiler on the market today.



### Industry Leading Boiler — Backed by Cleaver-Brooks

Only Cleaver-Brooks can offer the performance guarantees and enhanced warranties on every CBLE boiler, because we design, manufacture, and test every part of every boiler to our exacting standards.

#### Performance Guarantee:

- » Efficiency
- » Emissions
- » Steam Quality
- » Turndown

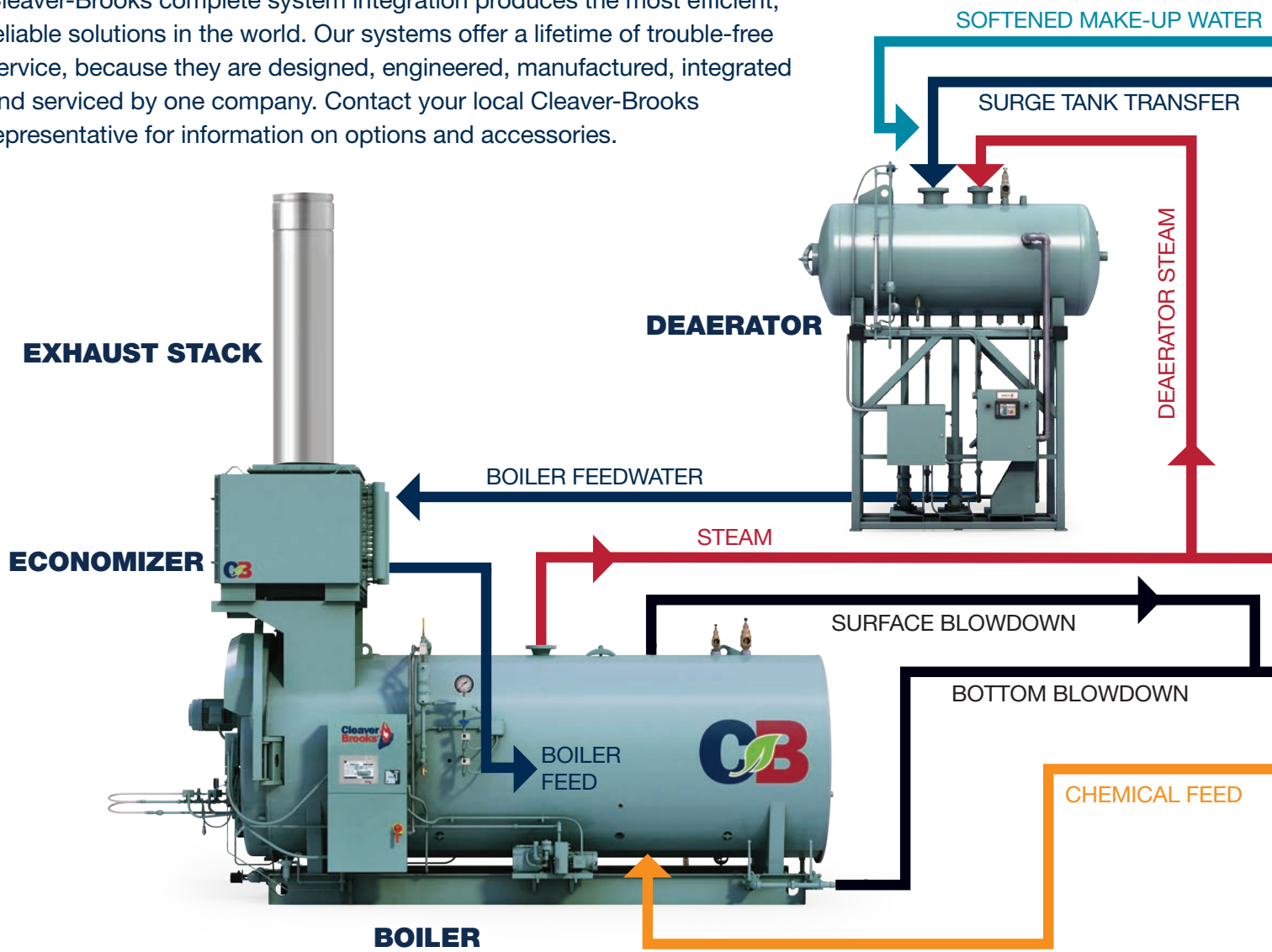
#### Enhanced Warranties:

- » Integral Burner

\*See website or contact your local representative for detailed information

# Take Optimization to the Limit

Cleaver-Brooks complete system integration produces the most efficient, reliable solutions in the world. Our systems offer a lifetime of trouble-free service, because they are designed, engineered, manufactured, integrated and serviced by one company. Contact your local Cleaver-Brooks representative for information on options and accessories.



## Advanced Controls

- » Hawk boiler controls
- » Prometha® IoT Solutions
- » Advanced deaerator controls
- » Host panel

## Exhaust Solutions

- » Draft calculations and design
- » Single-source solution
- » UL-listed products

## Stack Economizers

- » Non-condensing
- » C2X-HE – 94% efficient
- » Condensing

## High-Pressure Condensate Systems

- » Improves overall system efficiency
- » Integrated controls for high-pressure operation

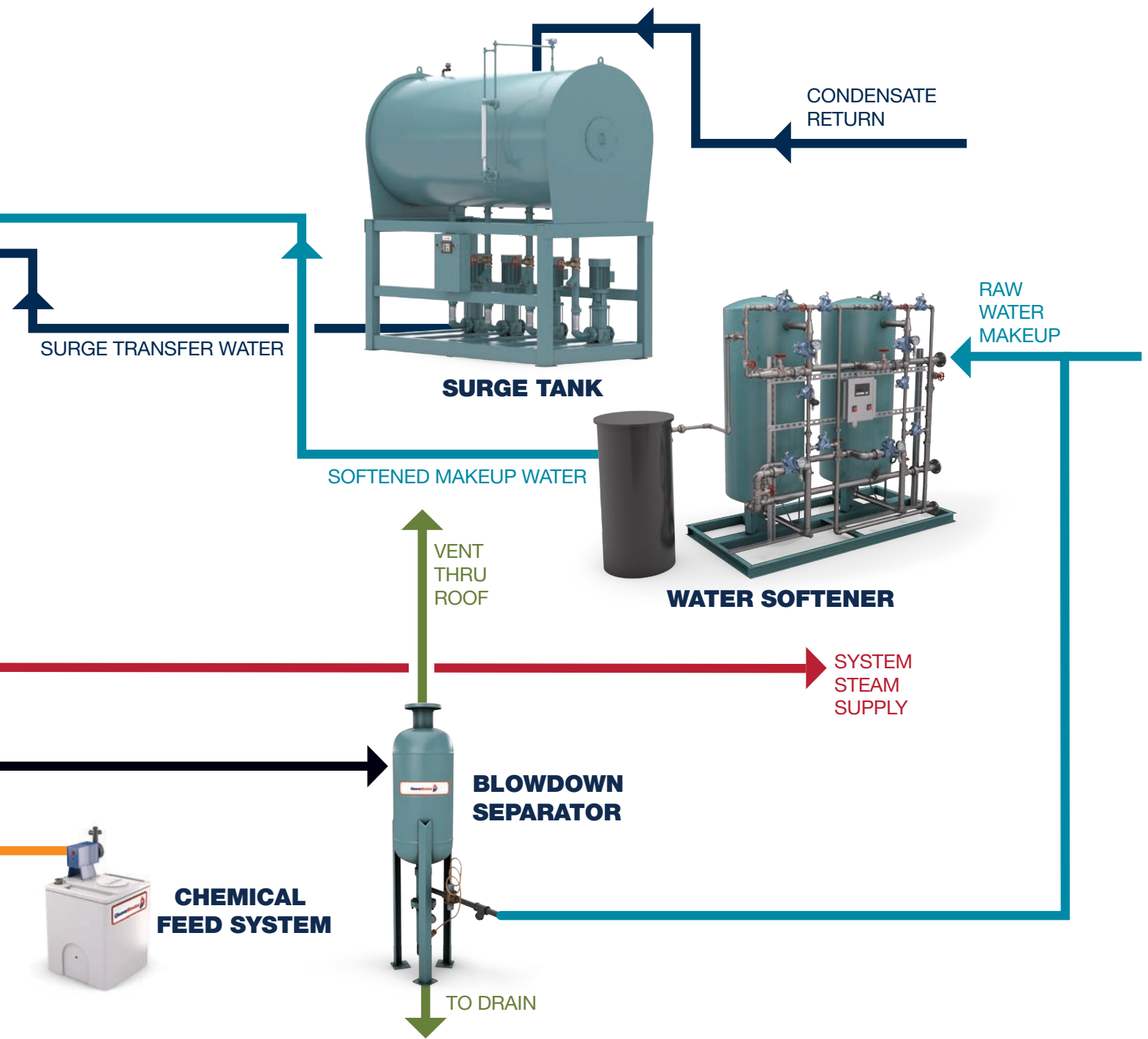
## Deaerators

- » Pre-heats boiler feedwater
- » Removes dissolved gases
- » Improves lifespan and efficiency of boilers

## Surge Tanks

- » Collects and stores condensate
- » Reduces makeup water and chemical usage





### Chemical Feed Systems

- » Chemicals treat the boiler system to maintain peak efficiency and reliability
- » Variety of options available depending on system specifics

### Duo Tank Systems

- » Combines spray-type deaerator and surge tank
- » Simplifies installation

### Water Softeners

- » Removes minerals that will create scale within boilers
- » Ensures long equipment life

### Blowdown Separators and Tanks

- » Cools blowdown water to safe temperature for discharge to drain
- » Required by code for most steam systems

# CBLE Dimensions and Ratings

## CBLE Waterback: 100 to 800 HP

Boiler Output (HP)	100	125	150	200	250	300	350
Boiler Output (pph @ 212 °F)	3,450	4,313	5,175	6,900	8,625	10,350	12,075
	3,348	4,184	5,021	6,695	8,369	10,043	11,716
Overall Length (60 PPM System)	161.63	185.63	175	208	200	220.13	223.5
Overall Length (30 PPM System)	161.63	185.63	175	208	200	220.13	223.5
Overall Width	90.25	90.25	94.38	94.38	107	107	114
Overall Height	87	87	101.75	101.75	115	115	123.5
Steam Outlet (125 psig OP, 300# fig.)	4	4	4	4	6	6	6
SRV Outlet (150 psig)	1@ 1.5"	1@1.25", 1@1.5"	1@1.25", 1@1.5"	2@1.5"	1@1.5", 1@2"	1@1.5", 1@2"	2@2"
Flue Outlet	16	16	16	16	20	20	24
Shipping Weight (lbs)	12,500	13,900	15,200	17,700	22,640	24,200	28,000
Operating Weight (lbs)	18,370	21,210	22,825	27,700	35,230	39,048	44,025
Flooded Weight (lbs)	19,388	22,469	24,057	29,290	37,386	41,568	47,212

## CBLE Dryback: 50 to 800 HP

Boiler Output (HP)	50	60	70	80	100	125	150
Boiler Output (pph @ 212 °F)	1,725	2,070	2,415	2,760	3,450	4,313	5,175
	1,674	2,009	2,343	2,678	3,348	4,184	5,021
Overall Length (30 PPM System)	129	129	168	168	187	187	196.5
Overall Width	73	73	73	73	73	89.88	89.875
Overall Height	78.75	78.75	78.75	78.75	78.75	87	87
Steam Outlet (125 psig OP, 300# fig.)	3	3	3	3	4	4	4
SRV Outlet (150 psig)	1@1.25"	1@1.25"	1@1.5"	1@1.5"	1@1.5"	1@1.5", 1@1.25"	1@1.5", 1@1.25"
Flue Outlet	10	10	12	12	12	16	16
Shipping Weight (lbs)	7,000	7,200	8,800	9,000	9,500	12,400	13,500
Operating Weight (lbs)	9,920	10,330	13,260	13,620	14,588	18,150	20,750
Flooded Weight (lbs)	10,500	10,865	14,050	14,420	15,460	20,070	22,795



400	500	600	700	800
13,800	17,250	20,700	24,150	27,600
13,390	16,738	20,085	23,433	26,780
238.75	245.75	282.75	270.75	297.75
247	253.5	287.25	276.75	303.75
114	124.75	124.75	134.68	134.68
123.5	134	134	145.5	145.5
6	8	8	8	8
1@2.5", 1@2"	1@2.5", 1@2"	2@2.5"	2@2.5", 1@2"	2@2.5", 1@2"
24	24	24	24	24
30,400	36,700	39,580	45,940	50,480
48,360	57,755	64,935	74,640	83,250
51,907	62,954	71,151	81,818	91,410



200	250	300	350	400	500	600	700	800
6,900	8,625	10,350	12,075	13,800	17,250	20,700	24,150	27,600
6,695	8,369	10,043	11,716	13,390	16,738	20,085	23,433	26,780
228.5	191.5	220	250	205.75	227.75	259.75	298.75	298.75
90.5	106.5	106.5	108.75	124	124.25	124	124	124
87	115	115	115	134	134	134	134	134
4	6	6	6	6	8	8	8	8
2@1.5"	1@2", 1@1.5"	1@2", 1@1.5"	2@2"	1@2.5", 1@2"	1@2.5", 1@2"	2@2.5"	2@2.5", 1@2"	2@2.5", 1@2"
16	20	20	20	24	24	24	24	24
15,600	22,800	25,200	27,800	36,570	39,970	45,025	52,050	52,150
24,225	33,470	38,200	43,265	51,380	55,920	64,295	75,050	75,150
26,730	36,680	42,040	47,890	56,585	63,270	73,285	85,410	85,510





## The power of total integration.

The **Power of Total Integration** is how Cleaver-Brooks delivers the world's broadest range of integrated, sustainable boiler plant solutions. In addition to our products, this includes our global representative and service network, training resources, and trusted expertise that add significant value to your Cleaver-Brooks investment.



Click or scan the QR code with a smartphone camera to access CBLE resources



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