



C

CLEARFIRE®

**Condensing Firetube Boiler Designed For Maximum Hydronic
System Efficiency
500 TO 3,300 MBTU**

Unmatched Efficiency and Low-NOx Technology in a Condensing Boiler

The ClearFire®-C is a completely integrated solution with firetube heat exchanger, premix burner and boiler management controls. The advanced heat exchange design in the ClearFire-C allows the boiler to achieve efficiencies up to 99%, and the modulating premix burner delivers high turndown and NOx levels to less than 20 ppm. This boiler is ideal for central heating applications and indirect hot water supply for working pressures up to 125 psig.



ClearFire®-C

500–3,300 MBTU/hr

CONDENSING HYDRONIC

Features

- Metal fiber premix modulating burner for ultra-low NOx emissions
- Patented ALUFER® firetube heat exchanger
- Dual temperature returns provide 6+% efficiency gain
- Optional dual gas train for critical backup fuel source
- Fresh air inlet connection for direct vent combustion
- Thermal shock resistance
- Low hydraulic resistance (ideal for primary variable flow applications)
- Capable of handling low-flow situations, meaning no flow switch is required
- High water volume content to reduce cycling, so no buffer tank required
- No minimum temperature requirement
- Easy-access, hinged burner boiler lid to aid burner servicing
- Low-NOx SCAQMD pre-certified
- cULus-listed for natural and propane gas
- Manufactured to ASME section IV
- Low noise with less than 70 dBA at 3 feet
- Dual fuel (natural & propane gas)

Designed for Maximum Efficiency

- 1 Falcon control for boiler modulation, safety and system integration
- 2 Linkageless premix modulating blower assembly
- 3 1:1 fuel-air ratio gas valve control
- 4 Metal fiber premix burner for ultra-low emissions
- 5 Patented ALUFER firetubes for maximum condensing efficiency
- 6 Dual temperature return connections for 6+% efficiency gain
- 7 Flue condensation collection reservoir

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, ensuring your boiler system operates at peak efficiency, while providing necessary safety and reliability.



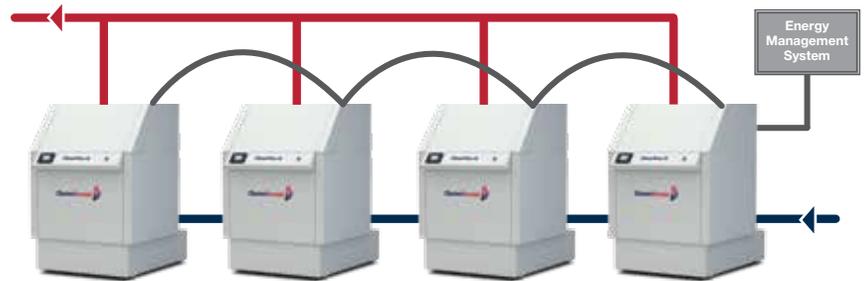
User-friendly Controls

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 with trending
- Multiple-loop PID set point control (central heat, domestic hot water and lead/lag)
- Configurable lead/lag control to match system requirements
- Pump, valve, damper enable/disable
- Outdoor temperature reset
- Post shutdown pump delay
- Remote enable and set point
- ModBus (RS485) Communications (STANDARD)
 - Other communication protocols available via gateway translator

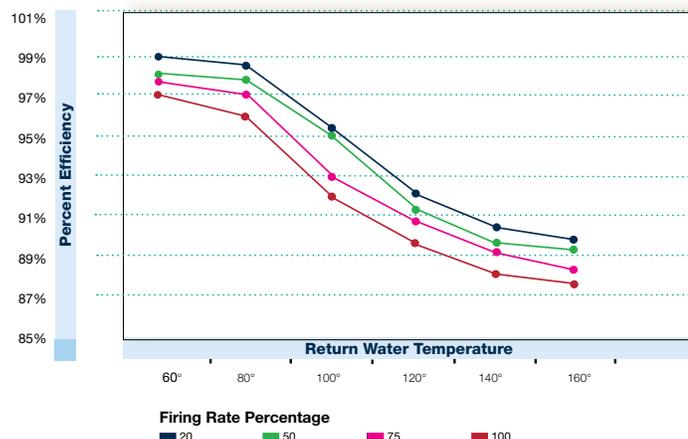
Optimal Hydronic Boiler Room Management

The ClearFire®-C condensing boiler operates most efficiently at reduced firing rates. The Falcon lead/lag control is uniquely capable of taking advantage of the CFC's combustion and thermal performance characteristics to sequence and modulate CFC boilers to maximize system efficiency.



The 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 the life and reliability of your boiler system.

Single Return Efficiency as a Function of Temperature



The Latest Boiler Design Technology

The ClearFire®-C, featuring ALUFER® technology, is the best condensing boiler on the market. Designed from the ground up to provide maximum condensing efficiency, the most reliable operation and complete system design flexibility. The dual return advantage provides a 6%+ efficiency gain. The ClearFire-C was designed with the boiler operator in mind; from the hinged burner to the built-in service platform, no other boiler is as easy to maintain.



ALUFER FIRETUBE TECHNOLOGY



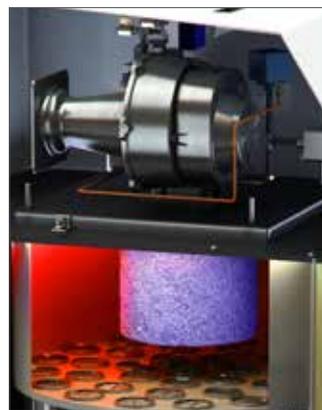
Our heat exchanger features the ALUFER firetube technology and is constructed from an inner (fireside) aluminum alloy-finned surface, die-fitted within an outer duplex stainless steel tube, providing exceptional heat exchange characteristics. The corrosion-resistant properties of the ALUFER firetube assure long life and reliability of the boiler.

- ▶ Thermal conductivity is 10 times greater than stainless alone
- ▶ Fireside is divided into 10 flow channels for maximum heat transfer and condensing performance
- ▶ Provides the maximum effective heating surface where it is needed the most
- ▶ Heating surface up to five times larger than other condensing boilers

HEAT EXCHANGER

Every aspect of the true counterflow design is engineered to ensure the maximum effective heat transfer possible. Our proven firetube arrangement ensures reliability and longevity. The large water volume and low pressure drop inherent in our firetube design make it ideal for variable flow primary pumping applications.

MODULATING PREMIX BURNER



The modulating premix burner and link-ageless control automatically adjust the air/gas mixture for maximum efficiency and optimum turndown. A symmetrical, 360° even-temperature heat output is achieved from the burner, providing clean combustion with ultra-low NOx emissions of less than 20 ppm as standard and less than 9 ppm as optional.

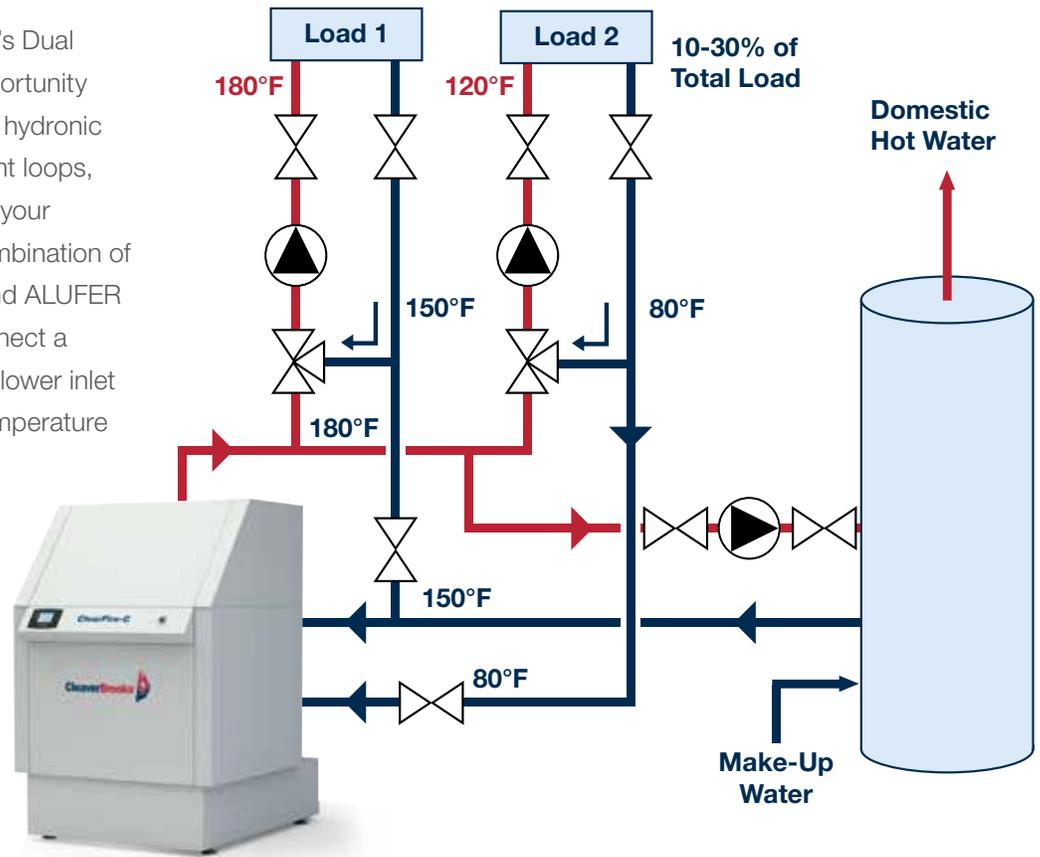
WARRANTY

In addition to the standard warranty, the pressure vessel is warranted (non-prorated) for 20 years against thermal shock and 10 years against fireside condensation corrosion. The burner canister is warranted for five years. Our condensate collection chamber is warranted for 20 years against corrosion.

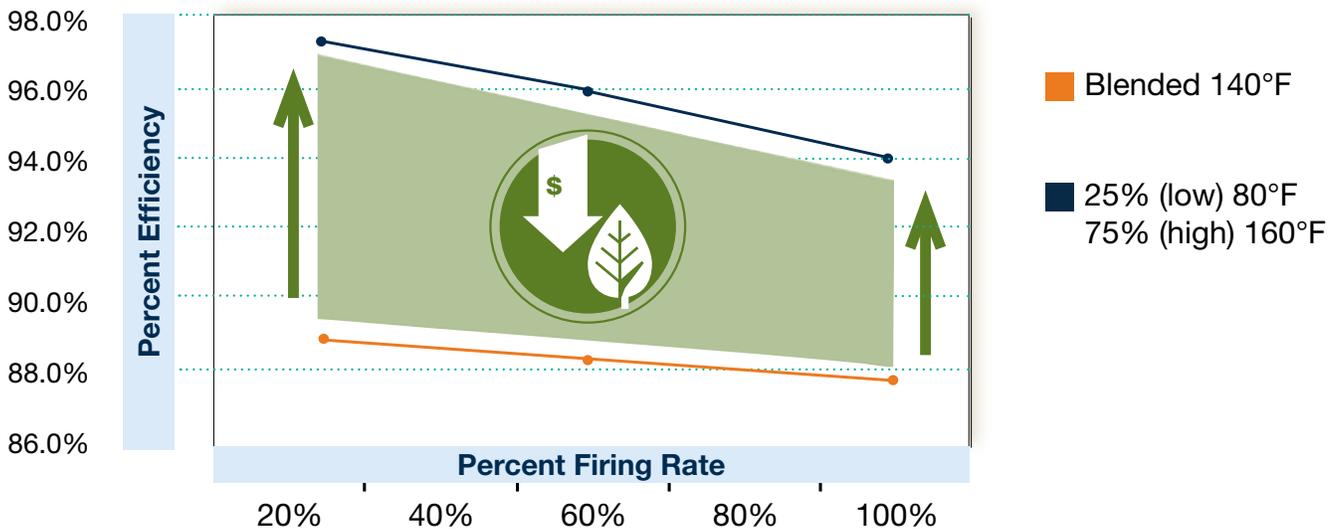


Dual Return Advantage

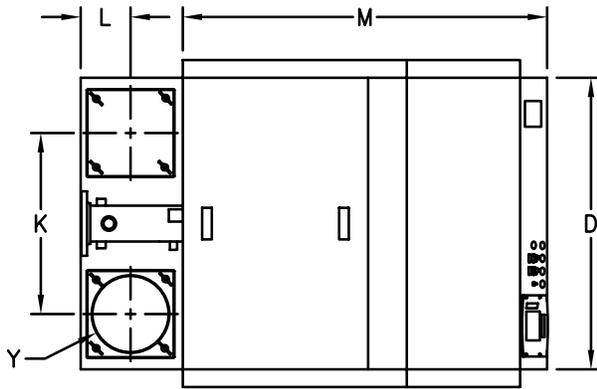
The ClearFire®-C and ClearFire-LC's Dual Return Advantage offers more opportunity to improve system efficiency. Most hydronic systems blend returns from different loops, compromising the performance of your condensing boiler system. The combination of our counterflow heat exchanger and ALUFER firetubes is what allows you to connect a cold (less than 130°F) return to the lower inlet connection and connect a high-temperature (greater than 140°F) return to the upper inlet connection, realizing a 6+% gain in efficiency by achieving true condensing performance even in applications with high-pressure heating loops.



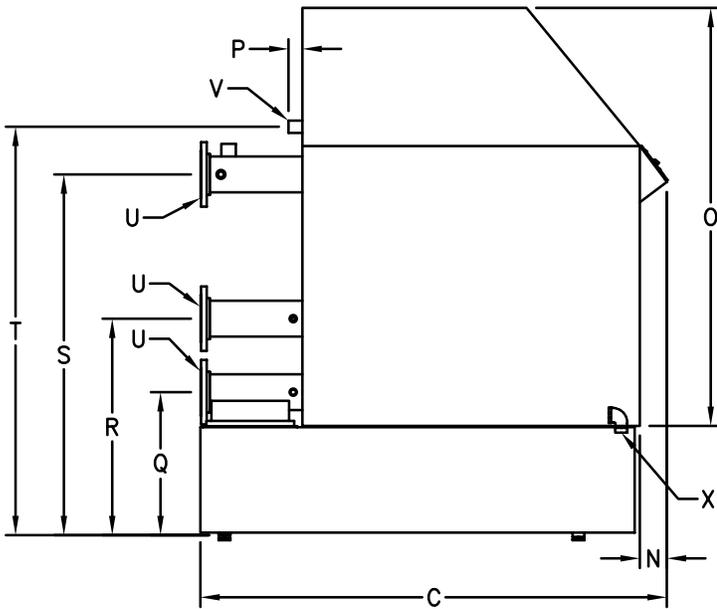
Dual-Return High-Efficiency as a Function of Low-Temperature Return Flow



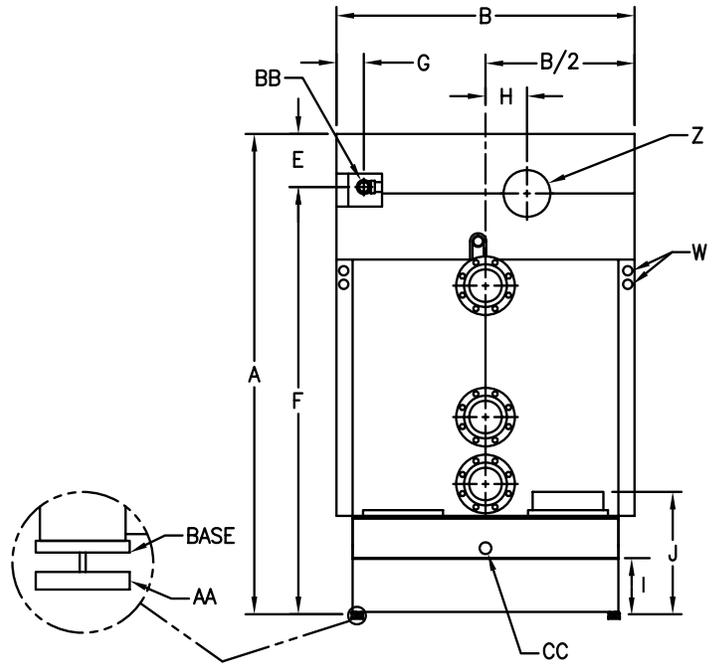
ClearFire[®]-C Boiler Dimensions and Ratings



Plan view



Side view



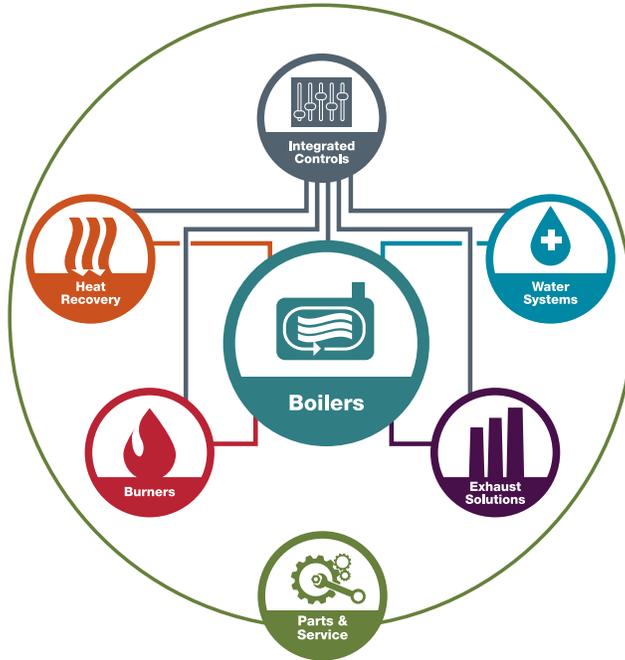
Rear view



ITEM	DIMENSIONS	BOILER MODEL						
		500	750	1000	1500	1800	2500	3300
	MAXIMUM INPUT (BTU/HR)	500,000	750,000	1,000,000	1,500,000	1,800,000	2,500,000	3,300,000
A	OVERALL HEIGHT	71.9"	71.9"	75.4"	81.5"	81.5"	81.9"	85"
B	OVERALL WIDTH	32.3"	32.3"	36.6"	43.7"	43.7"	50.8"	61.3"
C	OVERALL DEPTH	48.9"	48.9"	64.0"	65.6"	65.6"	72.3"	86.3"
D	WIDTH LESS CASING	26.8"	26.8"	31.1"	38.2"	38.2"	45.3"	55.5"
E	GAS CONNECTION TO TOP OF CASING	7.8"	7.8"	9.2"	9.5"	9.5"	9.4"	10"
F	GAS CONNECTION TO FLOOR	64.1"	64.1"	66.2"	72"	72"	72.5"	75"
G	SIDE OF CASING TO GAS CONNECTION	2.5"	2.5"	3.8"	4.9"	4.3"	5.2"	5.1"
H	BOILER CENTERLINE TO AIR INLET	4.3"	4.3"	3.9"	7.0"	7.0"	7.0"	7.1"
I	FLOOR TO BOTTOM OF BASE	10.3"	10.3"	10.3"	10.3"	10.3"	10.3"	10.3"
J	FLOOR TO TOP OF STACK CONNECTION	18.6"	18.6"	18.1"	19.1"	19.1"	20.9"	21.4"
K	CENTERLINE TO CENTERLINE OF STACK STUB	15.4"	15.4"	16.9"	21.0"	21.0"	28.1"	35.8"
L	REAR OF BOILER TO CENTERLINE OF STACK STUB	5.4"	5.4"	7.5"	8.1"	8.1"	8.6"	10.0"
M	FRONT OF BOILER TO REAR OF CASING	38.8"	38.8"	49.6"	49.4"	49.4"	56.5"	67"
N	CONTROL PANEL PROJECTION	4.1"	4.1"	4.1"	4.1"	4.1"	4.1"	4.3"
O	CASING HEIGHT	56.2"	56.2"	60"	65.4"	65.4"	65.4"	67"
P	AIR VENT LINE PROJECTION	7.8"	7.8"	7.3"	8.1"	8.1"	8.7"	4.7"
Q	FLOOR TO CENTERLINE OF LOWER RETURN CONNECTION	19.7"	19.7"	20"	21.1"	22"	23"	24.1"
R	FLOOR TO CENTERLINE OF UPPER RETURN CONNECTION	28.5"	28.5"	29"	31"	33"	34.5"	35.5"
S	FLOOR TO CENTERLINE OF SUPPLY CONNECTION	54.4"	54.4"	56.6"	57.5"	56.9"	56.8"	59.1"
T	FLOOR TO CENTERLINE OF AIR VENT	59.9"	59.9"	62"	62.9"	62.9"	64.8"	66.4"
AA	BOILER ADJUSTMENT FOOT HEIGHT	2.5"	2.5"	2.5"	2.5"	2.5"	2.5"	2.5"
AB	HEIGHT ABOVE BOILER FOR BURNER SERVICE	14"	14"	14"	14"	14"	14"	18"
CONNECTIONS								
U	WATER SUPPLY, 150 RF FLG	2 1/2"	2 1/2"	2 1/2"	3"	4"	5"	5"
V	BOILER AIR VENT, NPT	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
W	ELECTRICAL CONDUIT, LEFT OR RIGHT	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"
X	BOILER DRAIN, NPT	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
Y	FLUE GAS NOMINAL OD, LEFT OR RIGHT OPTION	6"	6"	8"	10"	12"	12"	12"
Z	COMBUSTION AIR OPTION	4" or 6"	4" or 6"	4" or 6"	6" or 8"	6" or 8"	8"	8"
BB	GAS CONNECTION, NPT	1"	1"	1"	1 1/2"	1 1/2"	1 1/2"	2"
CC	CONDENSATE DRAIN, NPT	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"
DD	WATER RETURN (UPPER) RF FLANGE	2 1/2"	2 1/2"	2 1/2"	3"	4"	5"	5"
EE	WATER RETURN (LOWER) RF FLANGE	2 1/2"	2 1/2"	2 1/2"	3"	4"	5"	5"
	RELIEF VALVE OUTLET (125# SETTING)	1"	1"	1"	1"	1"	1"	1"
	VOLTAGE FAN MOTOR	115/1	115/1	115/1	115/1	115/1	115/1	208-240/3
	VOLTAGE CONTROL CIRCUIT	115/1	115/1	115/1	115/1	115/1	115/1	115/1
RATINGS								
	BTU/HR OUTPUT @ SEA LEVEL TO 2000' NAT GAS*	480,000	697,000	940,000	1,410,000	1,690,000	2,412,500	3,184,500
	SHIPPING WEIGHT, LBS.	1,160	1,160	1,795	2,225	2,505	3,640	4,835
	OPERATING WEIGHT, LBS.	1,585	1,585	2,545	3,165	3,325	4,685	6,570
	INLET GAS PRESSURE, "W.C.	6.8	6.8	6.8	4	4	4	6.8
	MAX. AMP DRAW FAN @ 115V/1PH	4.0	4.0	4.0	8.5	12.0	12.0	6.9**
	AMP DRAW CONTROL CIRCUIT	1.3	1.3	1.5	1.5	2.0	2.0	2.3
	FIRESIDE HEATING SURFACE	185	185	307	445	596	937	1,258

Notes:
 * Output based on return water temperature at 80°F
 ** AMP draw @ 208V/3PH





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 a condensing boiler solution, 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 for protecting your boiler system. To learn more, please call or visit us online.



Packaged Boiler Systems
 221 Law Street • Thomasville, GA 31792 USA
 800-250-5883 • info@cleaverbrooks.com
cleaverbrooks.com