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**CLEARFIRE®**

**HIGH EFFICIENCY, COMPACT HOT WATER BOILER  
400 - 2,400 MBTU**

# High-Efficiency and Low-Emissions Technology

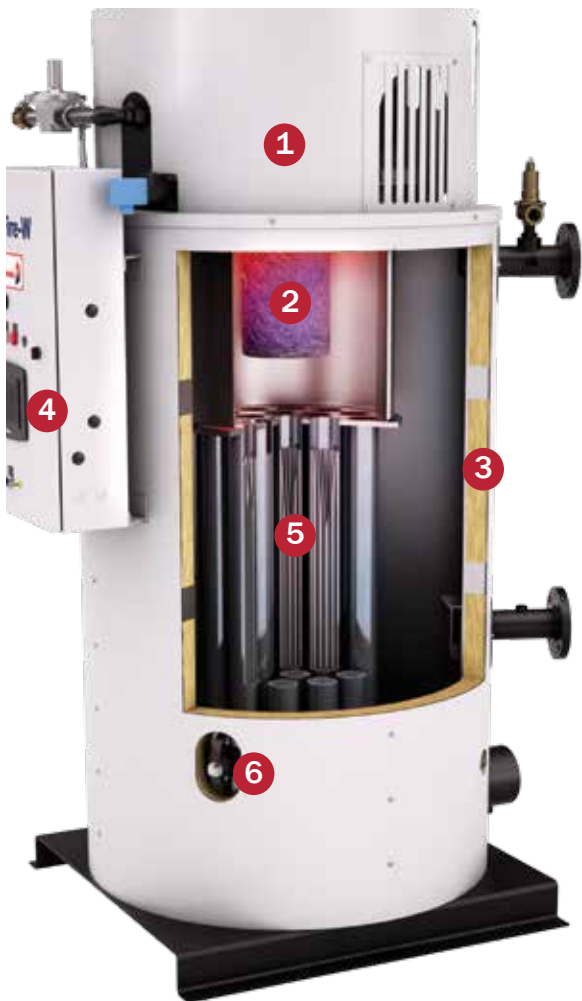
The ClearFire®-W near-condensing commercial hot water boiler satisfies demands for economy and environmental protection. This boiler is the logical choice where condensing performance is unlikely. The advanced heat exchange design is fundamental to the boiler achieving efficiencies up to 88% (non-condensing). The modulating premix burner delivers high turndown with NOx levels less than 20 ppm for natural gas. The CFW is designed for higher temperature central heating or process applications with working pressures up to 125 psig.

## ClearFire-W

400–2,400 MBTU/hr

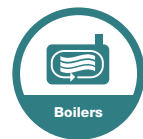
### Features

- Up to 88% efficiency
- Up to 5:1 turndown
- Low NOx emissions to less than 20 PPM
- Patented ALUFER® tubes for maximum heat transfer
- Advanced Falcon control seamlessly integrates up to 8 boilers
- Compact footprint
- Single pass design
- Thermal shock resistance
- ASME Section IV steel construction, 125# design



## Designed for Optimum Efficiency

- 1 Modulating low NOx burner assembly for maximum operating efficiency
- 2 Metal fiber premix burner designed for optimal combustion and lowest emissions
- 3 Thermal insulation with steel casing
- 4 Single power point for electrical and controls
- 5 Patented ALUFER tubes for maximum heat transfer
- 6 Handholes for easy maintenance



# Superior Product Design

## Patented ALUFER® Heat Transfer Technology



Patented ALUFER Tubes

The internationally patented ALUFER tube is the technology behind the advanced heat transfer design. The tube is constructed from an inner (fireside) aluminum alloy finned surface, die-fitted within an outer steel tube, providing exceptional heat exchange characteristics.

- Thermal conductivity of the ALUFER insert is significantly greater than that of carbon steel.
- Internal finned surface of the ALUFER tube enlarges the heat exchange surface three-fold.
- Inner surface of the tube is divided into 10 flow channels to create maximum turbulence and heat transfer.

## Heat Exchanger and Burner

The ClearFire®-W boiler has a high-quality, stainless steel combustion chamber with single-pass ALUFER tubes. The insulated boiler is encased within powder-coated steel panels. A hinged cover provides easy access to the burner and heat exchanger. The counterflow design ensures the maximum heat exchanger effectiveness.

## Thermal Shock Resistance

The single-pass arrangement is designed to inherently minimize thermal stress in the heat exchanger.

## Premix Modulating Burner Operation

The premix burner controls automatically adjust the air and gas mixture to the correct proportions before it enters the burner. A symmetrical, 360° even-temperature heat output is achieved from the burner, providing clean combustion with low NOx emissions. Turndown up to 5:1 with standard emissions of less than 20 ppm.

## Burner Gas Train

Standard components meet the requirements of cULus, ASME CSD-1, XL-GAP and FM. These items include:

- Low gas pressure manual reset
- High gas pressure manual reset
- CSD-1 test cocks
- Manual test valve
- Dual safety shutoff valve
- Optional dual gas train (natural and propane gas)

Gas train is factory piped and wired on the burner.

## Boiler Trim and Controls

Boiler trim is in accordance with cULus and ASME CSD-1.

- High limit temperature control — manual reset
- Combustion air proving switch
- Manual reset probe type low water cutoff
- ASME safety relief valve set @ 125 psig (60 psig optional).

# 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.

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.

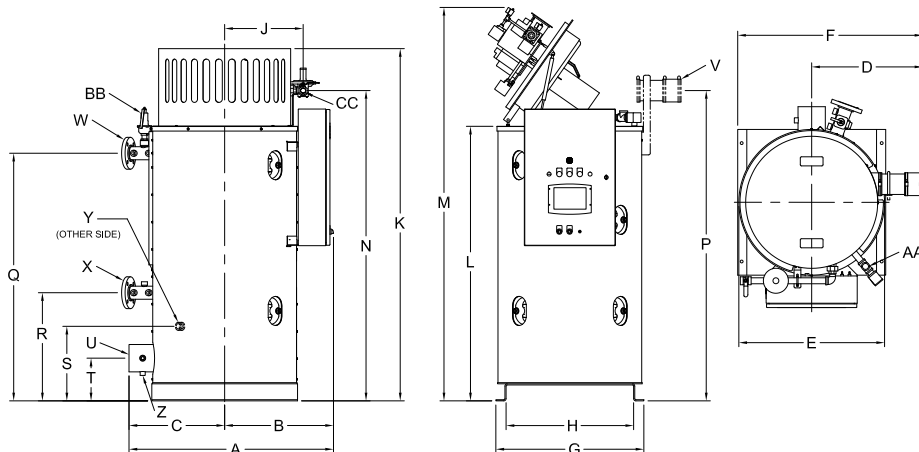
## Features

- Touch screen graphics with trending
- Multiple loop PID set point control (central heat, domestic hot water and lead/lag)
- Configurable lead lag boiler control for pumps, valves and dampers up to eight boilers
- Outdoor temperature reset
- Post shutdown pump delay
- Remote enable and set point
- ModBus (RS485) Communications



User-friendly Interface

# ClearFire-W Boiler Dimensions and Ratings



| ITEM        | DIMENSIONS                                  | BOILER MODEL |         |         |           |           |           |           |
|-------------|---|--------------|---------|---------|-----------|-----------|-----------|-----------|
|             |   | 400          | 500     | 750     | 1000      | 1500      | 2000      | 2400      |
|             | BTU/HR MAXIMUM INPUT @ SEA LEVEL TO 2000'   | 400,000      | 500,000 | 750,000 | 1,000,000 | 1,500,000 | 2,000,000 | 2,400,000 |
| A           | OVERALL LENGTH                              | 45"          | 45"     | 52 1/2" | 52 1/2"   | 54"       | 60 1/2"   | 60 1/2"   |
| B           | CENTERLINE TO BOILER FRONT                  | 24"          | 24"     | 27 3/4" | 27 3/4"   | 29"       | 32"       | 32"       |
| C           | CENTERLINE TO STACK OUTLET                  | 21"          | 21"     | 24 3/4" | 24 3/4"   | 25 1/2"   | 28 1/2"   | 28 1/2"   |
| D           | CENTERLINE COMBUSTION AIR INLET             | 24 1/2"      | 24 1/2" | 24 1/2" | 24 1/2"   | 27"       | 37 1/4"   | 37 1/4"   |
| E           | BOILER O.D.                                 | 32"          | 32"     | 39"     | 39"       | 41"       | 47"       | 47"       |
| F           | OVERALL WIDTH                               | 40 1/2"      | 40 1/2" | 44"     | 44"       | 47 1/2"   | 60 3/4"   | 60 3/4"   |
| G           | OUTSIDE WIDTH OF BASE                       | 32 1/2"      | 32 1/2" | 39 1/2" | 39 1/2"   | 41 1/2"   | 48"       | 48"       |
| H           | INSIDE WIDTH OF BASE                        | 28"          | 28"     | 35"     | 35"       | 37"       | 43 1/2"   | 43 1/2"   |
| J           | CENTERLINE TO GAS INLET                     | 17 1/4"      | 17 1/4" | 19 1/4" | 19 1/4"   | 20 1/4"   | 22"       | 22"       |
| K           | OVERALL HEIGHT                              | 77"          | 83"     | 77"     | 83"       | 89"       | 89"       | 95"       |
| L           | VESSEL HEIGHT                               | 60"          | 66"     | 60"     | 66"       | 71"       | 68"       | 74"       |
| M           | BURNER DOOR CLEARANCE (OPEN)                | 85 1/2"      | 92"     | 85 1/2" | 91 1/2"   | 101"      | 102"      | 108"      |
| N           | FLOOR TO GAS INLET                          | 68"          | 74"     | 68"     | 74"       | 80 1/2"   | 80"       | 86"       |
| P           | FLOOR TO AIR INLET                          | 68"          | 74"     | 68"     | 74"       | 80 1/2"   | 80"       | 86"       |
| Q           | FLOOR TO SUPPLY CONNECTION                  | 54"          | 60"     | 55"     | 61"       | 66"       | 62"       | 68"       |
| R           | FLOOR TO RETURN CONNECTION                  | 24"          | 31"     | 26"     | 26"       | 33"       | 32 1/2"   | 35 1/2"   |
| S           | FLOOR TO DRAIN                              | 16"          | 16"     | 15"     | 15"       | 18"       | 20 1/2"   | 20 1/2"   |
| T           | FLOOR TO STACK OUTLET                       | 9"           | 9"      | 9"      | 9"        | 10"       | 11"       | 11"       |
| CONNECTIONS |   |              |         |         |           |           |           |           |
| U           | FLUE/STACK, NOMINAL OD                      | 6"           | 6"      | 6"      | 6"        | 8"        | 10"       | 10"       |
| V           | SEALED COMBUSTION, AIR                      | 4"           | 4"      | 4"      | 4"        | 6"        | 8"        | 8"        |
| W           | SUPPLY WATER, FLANGE                        | 2 1/2"       | 2 1/2"  | 2 1/2"  | 2 1/2"    | 3"        | 4"        | 4"        |
| X           | RETURN WATER, FLANGE                        | 2 1/2"       | 2 1/2"  | 2 1/2"  | 2 1/2"    | 3"        | 4"        | 4"        |
| Y           | BOILER DRAIN                                | 1"           | 1"      | 1"      | 1"        | 1"        | 1 1/4"    | 1 1/4"    |
| Z           | CONDENSATE DRAIN                            | 1/2"         | 1/2"    | 1/2"    | 1/2"      | 1/2"      | 1/2"      | 1/2"      |
| AA          | AIR VENT                                    | 1"           | 1"      | 1"      | 1"        | 1"        | 1"        | 1"        |
| BB          | SAFETY VALVE, 125 PSIG                      | 1"           | 1"      | 1"      | 1"        | 1"        | 1"        | 1"        |
| CC          | GAS TRAIN                                   | 1"           | 1"      | 1"      | 1"        | 1 1/2"    | 1 1/2"    | 1 1/2"    |
| WEIGHTS-LBS |   |              |         |         |           |           |           |           |
|             | SHIPPING WEIGHT (125#)                      | 1550         | 1700    | 2100    | 2300      | 2900      | 3400      | 3800      |
|             | OPERATING WEIGHT (125#)                     | 2205         | 2460    | 3260    | 3630      | 4330      | 5105      | 5780      |
| RATINGS     |   |              |         |         |           |           |           |           |
|             | *BTU/HR OUTPUT @ SEA LEVEL TO 2000'         | 344,000      | 430,000 | 645,000 | 860,000   | 1,290,000 | 1,720,000 | 2,064,000 |
|             | MAX. AMP DRAW FAN @ 115/1/60                | 4.0          | 4.0     | 4.0     | 4.0       | 8.5       | 12.0      | 12.0      |
|             | BLOWER MOTOR SIZE (WATTS)                   | 335          | 335     | 335     | 335       | 750       | 1,200     | 1,200     |
|             | FIRESIDE HEATING SURFACE (FT <sup>2</sup> ) | 86           | 105     | 133     | 164       | 263       | 319       | 395       |

Notes:

\* Output based on return water temperature at 80°F

\*\* AMP draw @ 230V/3PH



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