



**CFR®**

High-Efficiency Boilers



# Advanced, Cost-Effective Drop-In Replacement Boiler

The world's first stainless steel condensing boiler that can be installed in a Category I Vent.

Building on AERCO's industry leadership and expertise, CFR enables building owners and facility managers to upgrade their boiler plants cost-effectively while safely reusing existing Category I / Type B venting. Its StackGuard™ Sensor ensures flue temperatures stay above the dew point, preventing condensation.

All CFR models are complemented with AERCO's Edge® Controller to optimize system efficiency and operation, and easily integrate the CFR boiler with a facility-wide Energy Management or Building Automation System. This makes CFR a perfect retrofit solution in buildings striving for best-in-class system performance and operational excellence.



CFR	Input MBH	Output MBH	Thermal Efficiency, 80F to 180F
1500	1500	1284	85.6%
2000	2000	1704	85.2%
3000	3000	2613	87.1%

**4:1**

Up to 4:1 turndown ratio



Durable 439 stainless steel fire-tube HX



StackGuard Sensor prevents condensation in Cat I vent



Low NOx emission



Easy service access from front and side



Compact footprint to fit through standard doorway



Smart controller for optimized system operation



Easy boiler sequencing maximizes energy efficiency



Industry-best warranty for greater peace of mind

# Innovative Design for Unmatched Reliability & Efficiency

## Superior Energy Efficiency

CFR ensures dry flue gas and up to 87.1% thermal efficiency, exceeding standards and supporting compliance with energy mandates. It achieves this while safely reusing existing Category I / Type B venting, offering a cost-effective retrofit solution.

## Greater Uptime Reliability

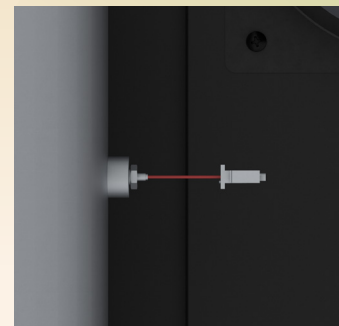
The 439 stainless steel heat exchanger is highly resilient to condensation, ensuring reliable uptime across all applications. Its fire-tube design is built to withstand thermal shock and supports flexible piping configurations, including variable-primary, without the need for secondary or bypass pumps. CFR is an ideal, cost and time-saving drop-in replacement for retrofits.

## Compact, Easy Install and Service

With a compact footprint, CFR maximizes mechanical room space and fits through standard 36" doorways or freight elevators. Installation requires no wall demolition or cranes. It offers front, top, and side servicing, with zero side clearance between units for added space efficiency.

### 10-Year Limited Warranty

The heat exchanger in the CFR boilers has a **10-year** limited warranty, including against condensate corrosion. It is the first boiler in its class to provide such peace of mind to building owners.



### StackGuard Sensor

Monitors flue temperature and prevents condensation by signaling the boiler controls to adjust firing rates, keeping levels above the dew point. This ensures safe, reliable performance in Category I / Type B vent systems.

# Easy Installation and Greater Application Flexibility

The design, construction and compact size of the CFR boiler provide several installation advantages for almost any retrofit project.

## Space-Saving and Ease of Maintenance

The CFR boiler is delivered as a single, fully assembled unit which can be transported via a freight elevator and easily fit through a standard doorway. This can translate into big savings on installation, both in terms of money and time.

CFR can be serviced via the front or top of the boiler, as well as the side. This flexibility allows zero side clearance installation between two units.

## Flexible, Cost-Saving Installation

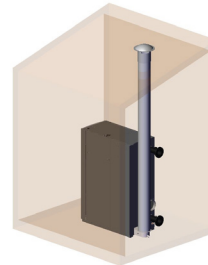
The fire-tube design allows for various piping configurations, including variable-primary. Secondary and bypass pumps are not required for CFR boilers, which can lower installation costs and make it the perfect drop-in replacement in retrofit projects.

## Venting Configurations

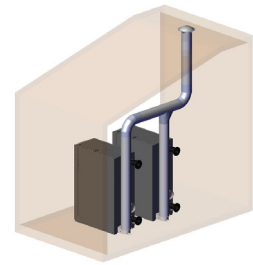
The CFR boilers provide vertical discharge venting and room/air ducted combustion capabilities. They are approved for Category I / Type B venting materials to allow for a cost-friendly installation solution in retrofit projects.

*Note: The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. Installers are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.*

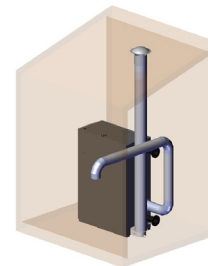
## Vent Configurations



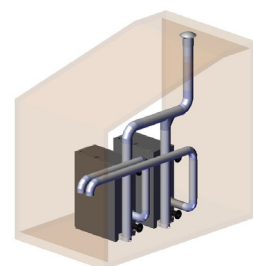
Vertical vent/room air



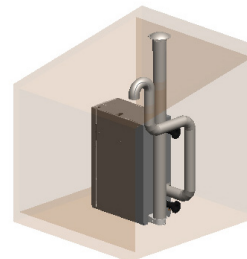
Common vertical vent/room air



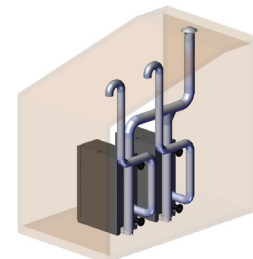
Vertical vent/sidewall air



Common vertical vent/individual sidewall air



Vertical vent/vertical air intake



Common vertical vent/individual vertical air

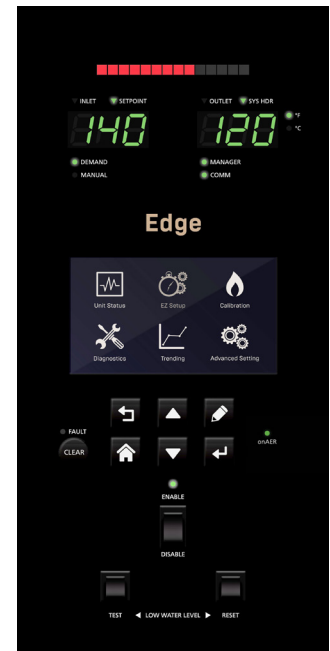
Consult an AERCO representative for additional venting configuration inquiries.

# Smart Control for Optimized Boiler Operation

CFR comes standard with the Edge Controller to optimize the efficiency and operation of the boiler system by combining temperature and operating controls, combustion safeguards and fault enunciator functions – all at your fingertips.

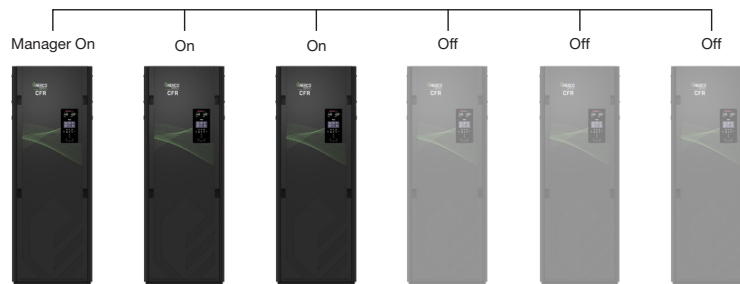
## Features and Benefits

- Effortless boiler startup
- Simplified diagnostic troubleshooting
- User-friendly and intuitive control interface
- Performance trending and reset schedules
- On-board Boiler Sequencing Technology (BST) of up to 16 units
- BACnet IP, BACnet MS/TP, Modbus IP and Modbus RTU communication
- System pump lead-lag rotation
- Variable speed primary pump control
- Domestic Hot Water boiler pump control
- Ensures fail-safe boiler operation (if external building controls fail)
- Communication with AERCO's SmartPlate® indirect water heaters



## Enhanced with Boiler Sequencing Technology

It requires less energy for a group of modulating boilers, each firing at “part load,” to heat a building, than for a single boiler operating at “full fire” to carry the entire workload. That is why the CFR boilers come standard with our Boiler Sequencing Technology (BST) which enables the load to be shared between up to 16 boiler units in order to maximize system energy efficiency.



## How it Works

BST optimizes system performance to increase uptime reliability, the longevity of the boiler units and, ultimately, further improves the ROI. To meet building demand, the BST employs as many boilers as available, each operating at its most efficient firing rate. Because the BST reacts in real-time, users can take a unit offline for maintenance at any time or bring on back-up boilers for extremely cold conditions without a negative impact on system performance. As individual boilers are added or deleted, the energy delivered is automatically adjusted to prevent fluctuations in the header temperature of the plant.

# Accessories and Combination Plant



## AERCO Control System (ACS)

The ACS maximizes heating plant efficiency if your heating plant has more than 16 boilers or if you are designing a combination control system. The ACS relay panel provides additional pump and valve control for several combination control configurations.



## Motorized Valves

The Belimo F6 HDU Series 2-way butterfly valves are designed to meet the needs of HVAC and commercial application requiring bubble tight shut-off for liquids. Typical applications include boiler isolation, chiller isolation, cooling tower isolation, change-over systems, air handler coil control, bypass and process control applications. Valves specifically designed for easy installation on BST configured boiler plants are available as well.



## Condensate Neutralizer Kit

AERCO Condensate Neutralizers are ideal for boilers and furnaces operating on natural gas or propane. The condensate from the heat exchanger is acidic and has the potential to harm the environment and the sewer system. The AERCO Condensate Neutralizer will raise the pH of the condensate to a more neutral level before it is discharged to drain.



## Buffer Tanks

AERCO buffer tanks are ASME certified pressure vessels designed for use with high efficiency, low volume systems that incorporate low-mass condensing boilers. They add thermal mass, dampen fast transitions and minimize boiler cycling that occurs during zero or low domestic load conditions. Available in two and four-port (Primary-Secondary) configurations.



## Use CFR in a Combination Plant

Add AERCO's SmartPlate® EV indirect water heater to the CFR boiler for a smart, powerful combination plant that promotes system-wide energy efficiency in an ultra-compact design without compromising performance.

CFR and SmartPlate EV come with features which enable a direct two-way communication between the units for optimal control and communication as well as enhanced diagnostics and configuration capabilities to help ensure the system operates together at peak performance.\*

*\*AERCO is not responsible for two-way communication failure due to connectivity or power issues.*

# Specifications and Dimensions

	CFR		
	1500	2000	3000
Boiler Category	Category I		
Gas Connections (NPT)	2"		
Max. Gas Pressure	14" w.c.		
Min. Gas Pressure	4" w.c.		
Max. Allowed Working Pressure	160 PSIG		
Electrical Req. 120V/1PH/60Hz <sup>1</sup>	16 FLA	16 FLA	N/A
Electrical Req. 208V/3PH/60Hz <sup>1</sup>	N/A	N/A	10 FLA
Electrical Req. 460V/3PH/60Hz <sup>1</sup>	N/A	N/A	5 FLA
Water Connections	4" - 150# Flg		
Min. Water Flow (GPM)	30	40	55
Max. Water Flow (GPM)	175	225	300
Water Volume Gallons	45	43	61
Water Pressure Drop	0.7 psig @ 150 gpm	0.7 psig @ 150 gpm	1.5 psig @ 200 gpm
Turndown Ratio	2.5:1 (40%)	4:1 (25%)	4:1 (25%)
Vent/Air Intake Connections <sup>2</sup>	8" Vent/6" Air Intake	8" Vent/6" Air Intake	8 inch
Vent Materials	Category I/Type B Venting		
Type of Gas	Natural Gas		
NOx Emissions	<20ppm	<20ppm	<20ppm
Temperature Control Range	140°F to 190°F		
Ambient Temperature Range	0°F to 130°F		
Standard Listings & Approvals	UL, CSD-1, ASME		
Gas Train	FM Compliant		
Sound Rating dbA	70	74	72
Weight (dry) lbs.	1200	1200	1500
Shipping Weight lbs.	1300	1300	1600
Width	28"	28"	28"
Depth	43.6"	43.6"	56"
Height	78"	78"	78"

1. See CFR Electrical Power Guide TAG-0108 for Service Disconnect Switch amperage requirements.

2. Do not use the appliance vent connection size as minimum vent size. Refer to latest edition of NFPA 54/ANSI Z223.1 for sizing Category I venting systems.

Note: The information contained in this technical data sheet is subject to change without notice.





**Heating and Hot Water Solutions**

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