Cleaver-Brooks

ClearAir®

Air-to-Water Heat Pump

A Cleaver-Brooks Sustainable Solution

Sustainable Heating for Your Needs

The ClearAir® air-to-water heat pump is designed for high-performance, energy-efficient, hydronic heating. It uses an electrically powered vapor-compression cycle to harness heat energy from outdoor air, amplify it, and transfer it to the system water. This heat pump cycle enables ClearAir to meet hydronic heating demands with far less environmental impact than traditional fossil fuel-fired boilers and more efficiently than gas and electric boilers.

For customers seeking to lower emissions, comply with regulatory requirements, meet corporate sustainability targets, and achieve long-term operational savings, the new ClearAir heat pump is an ideal choice.

ClearAir Air-to-Water Heat Pump:

- Emits no greenhouse gases
- Produces no pollutants
- Consumes no fossil fuels
- Achieves ≥100% efficiency

The ClearAir heat pump expands and complements Cleaver-Brooks' already extensive portfolio of boilers and boiler room solutions. Building on over 70 years of innovation in hydronic technology, this addition ensures Cleaver-Brooks offers the most diverse and comprehensive suite of hydronic heating solutions available today. Plus, the new ClearAir heat pump is supported by Cleaver-Brooks network of sales representatives and factory-trained service professionals, who are ready to help you get started and ensure your project is a long-term success.

The ClearAir Heat Pump meets the strict performance and sustainability criteria required to earn the Cleaver-Brooks Sustainability Seal

Monobloc, Outdoor-Rated Design

Features

Unit Controller & Color Touchscreen Display

Electronic Expansion Valve (EEV)

R-513A, Semi-Hermetic, Reciprocating Compressor

Hot Gas Bypass Solenoid Valve

Twin Axial Fans with EC Motor Control

Copper Tube, Aluminum-Fin Evaporator Coil

Brazed Plate Heat Exchanger

1½" Flanged Water Inlet/Outlet Connections

All components (compressor, fans, expansion valve) are factory-assembled in a single, packaged, outdoor-rated unit that comes pre-charged with refrigerant, simplifying installation, maintenance, and service.

- The only required connections are the electrical and inlet and leaving water: Eliminates refrigerant piping and refrigerant handling on site during installation.
- Pre-charged and -tested at factory: Ensures proper refrigeration pressure on startup and simplifies commissioning.
- Intended and rated for outdoor (on grade or rooftop) installation: Preserves valuable indoor space, keeps sound outside occupied areas, and simplifies installation and service.
- Compact footprint: Conserves space and preserves site aesthetics.

Over 70 Years of Innovation in Hydronic Technology

Optimized for Hydronic Heating

Leveraging decades of expertise in industry-leading hydronic heating solutions, Cleaver-Brooks engineers optimized the ClearAir® heat pump specifically for hydronic heating applications.

Capable of delivering leaving water temperatures up to 176°F (80°C), the ClearAir heat pump is perfect for high temperature-rated coils, radiators, and terminal units found in many existing buildings, enabling efficient system upgrades without costly equipment replacements.

- Maximum leaving water temperature: 176°F (80°C)
- Nominal COP: 2.7
- Nominal Capacity: 350 MBH (102.6 kW)

Environmentally and Service Friendly

The ClearAir heat pump uses R-513A refrigerant, classified as A1 under ASHRAE 34 for lowest toxicity and flammability, requiring no special handling beyond standard refrigerant safety practices.

R-513A has an Ozone Depletion Potential (ODP) of 0, meaning it does not harm the ozone.

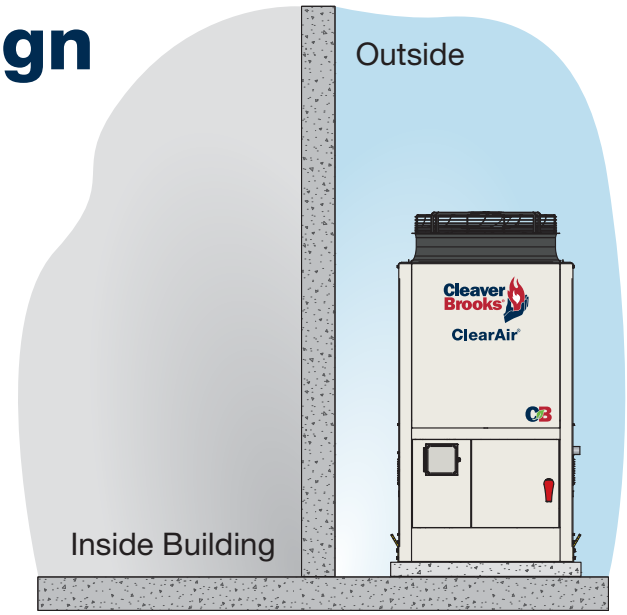
With a Global Warming Potential (GWP) of 573, R-513A delivers a significantly lower climate impact compared to legacy refrigerants and complies with the EPA's 2025 guidelines.

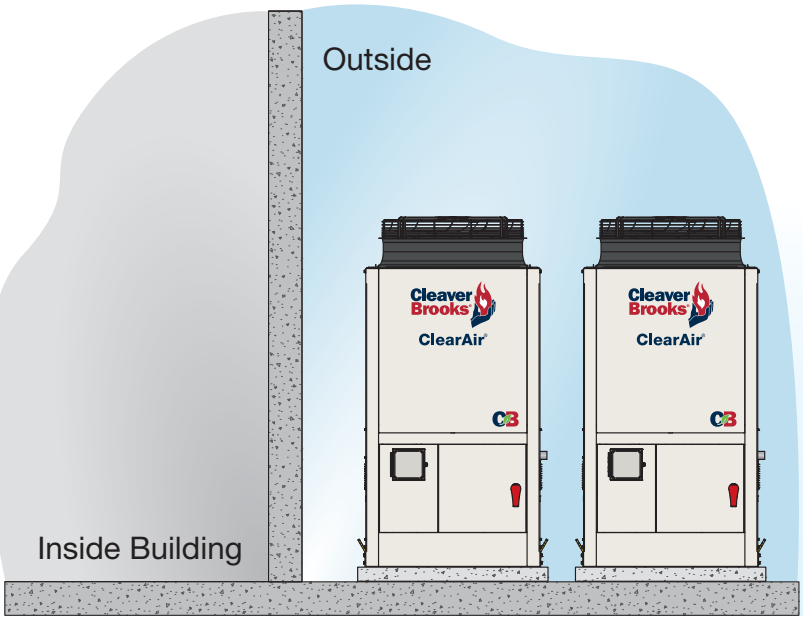
R-513A is a Low Global Warming Potential (GWP) Refrigerant

Simple, Scalable Design

Single-Unit

- Simple and cost-effective entry point
- Compact design with minimal installation needs
- Ideal for smaller loads or dedicated applications



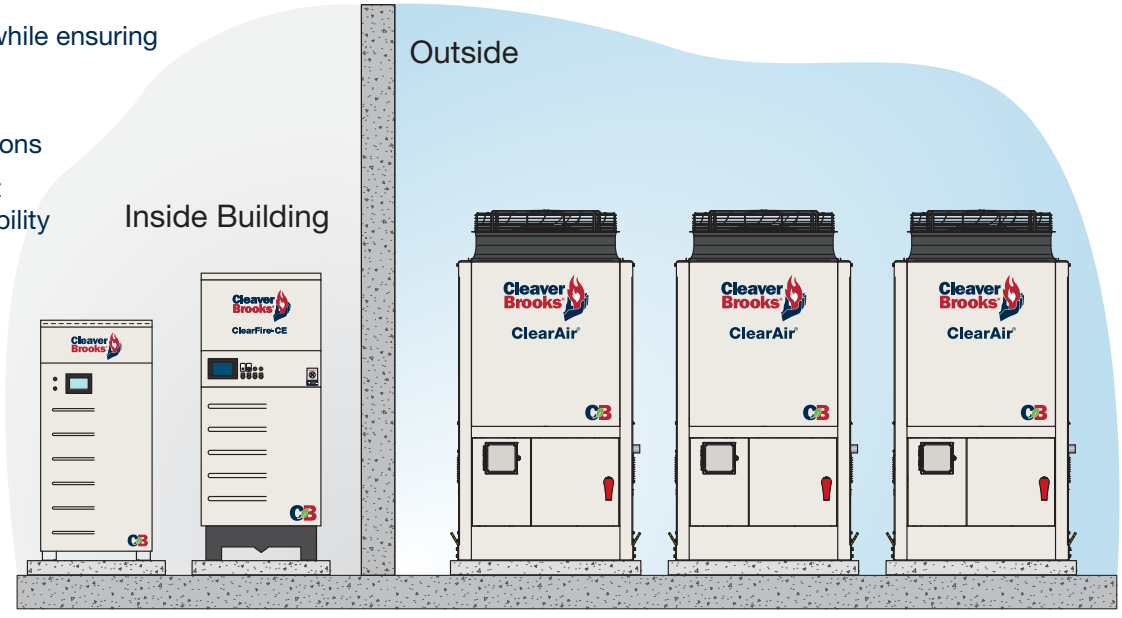


Multi-Unit

- Scalable capacity for larger buildings
- Built-in redundancy improves reliability and equalizes runtime
- Optimized load sharing for higher efficiency

Hybrid

- Extends heat pump use while ensuring backup at peak demand
- Balances efficiency with performance in all conditions
- Reduces carbon footprint and ensures heating reliability



Unified by Smart Controls

The ClearAir® heat pump comes equipped with a factory-installed, pre-programmed unit controller with a 4.3-inch color touchscreen to ease initial setup and configuration, regular operation, and troubleshooting and service actions.

No additional controls are necessary to achieve the intended unit or system-wide operation.

- **Single Unit Control:** Manages the unit's compressor, evaporator fans, expansion valve, and other internal components to deliver the desired hot water temperature with maximum efficiency and minimal wear. A hot gas bypass defrost mode melts frost and protects the evaporator coils, with minimal impact on efficiency
- **Multi-Unit Control:** Coordinates lead-lag sequencing across the entire bank of heat pumps, to spread out wear and provide redundancy.
- **Hybrid System Control:** Automatically starts the backup boiler(s) when outdoor temperatures drop below the optimal range for heat pump operation.
- **Broader System-Level Integration:** Supports integration with a Building Management System via BACnet or Modbus® network connections or remote monitoring using Prometha.

Adaptable to Your Application

The ClearAir heat pump is engineered for versatility across a wide range of building types. From schools and universities to offices, hospitals, and multi-family housing, it delivers consistent performance for projects of every scale. Whether serving a single facility or a large campus, the system adapts to the heating demands of each application.

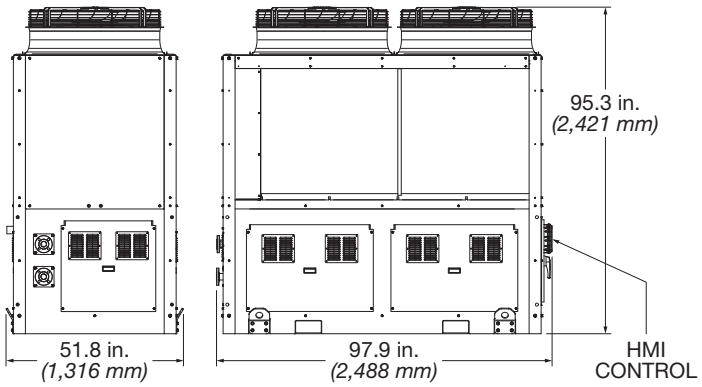
Well suited for both new construction and retrofit installations, the ClearAir heat pump integrates seamlessly into existing hydronic systems or new designs. Its compact, modular, scalable and integrating design ensures owners, contractors, and engineers can rely on a single platform to meet diverse project needs.


K-12 School Systems


Office Buildings


Manufacturing Processes

Specifications



Load (Water-Side) Heat Exchanger	
Fluid volume	3 gallons (11.4 liters)
Number of circuits	1
Leaving water temperature range	86°F (30°C) to 176°F (80°C)
Minimum/maximum operating pressure	5 psi(g) / 150 psi(g)
Maximum entering water temperature	160°F (71.1°C)
Pressure drop	18 ft. H_2O (53.8 Pa) @ 50 gpm (189 l/m)
Source (Air-Side) Heat Exchanger	
Airflow	40,000 cfm (67,960 m^3/h)
Minimum operating outside air temperature	20°F (-6.7°C)
Minimum outside air temperature exposure	-22°F (-30°C)
Heating Performance	
Nominal test conditions	45°F (7.2°C) dry bulb air temperature 90°F (32.2°C) entering water temperature 105°F (40.6°C) leaving water temperature
Nominal capacity	350 MBH (102.6 kW)
Input power	38.2 kW
Nominal COP	2.7
Electrical Characteristics	
Voltage / Phase / Frequency	460V / 3-phase / 60-Hz
LRA	436 A
MCA	135 A
RLA	108 A
SCCR	5 kA
Dimensions and Weight	
Length	97.9 in. (2,488 mm)
Width	51.8 in. (1,316 mm)
Height	95.3 in. (2,421 mm)
Minimum side clearances	36 in. (914 mm)
Shipping weight	4,200 lbs. (1,905 kg)
Operating weight	3,675 lbs. (1,667 kg)

The power of total integration®

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

Use this QR code to access more resources and info on the ClearAir® Heat Pump.

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