

Rooftop Ventilator with Packaged Cooling & Heating Models RV and RVE

• Institutional • Commercial • Industrial

- 800 - 13,500 cfm
- 3.0 in. wg External Static Pressure
- Indirect Gas, Hot Water, Electric Heating
- Packaged DX (5-45 tons), Chilled Water, Split DX Cooling with or without Remote Condenser
- Optional Energy Recovery
- Optional Return Air



Product Overview

The models RV and RVE (with energy recovery) are pre-engineered rooftop ventilators specifically designed to condition and deliver mixtures of outdoor and return air to a building. Varying outdoor air conditions and building loads create a serious challenge for any HVAC system. To overcome these challenges, the unit includes value added features such as a factory mounted variable frequency drive (VFD) for supply air volume control, outdoor and return air dampers for mixed air control, and an onboard microprocessor system for precise temperature and humidity control. Pre-engineered features provide semi-custom flexibility while maintaining the quality, consistency and value of a standardized product.



Model RV and RVE Features

- Up to 13,500 cfm and 3 in. wg external static pressure
- 2-inch double-wall construction with R13 foam insulation
- Optional side return intake and side supply discharge for horizontal duct connections
- Direct drive backward-curved plenum fan
- Mounted and wired supply/exhaust fan VFD
- Fan vibration isolation
- Permatector™ coated exterior
- Filter options
 - MERV 8, MERV 13 or MERV 14
 - Combination MERV 8 and 13
- Microprocessor control
 - Stand-alone
 - BACnet® MS/TP or IP
 - LonWorks®
 - Modbus® RTU
- Sloped intake hood
 - Aluminum mesh filters
- Double-sloped, stainless steel, insulated drain pan with cooling option
- Cooling options
 - *Integral air-cooled packaged DX*
 - R410A refrigerant
 - Modulating hot gas reheat
 - Standard low sound condenser fans
 - Variable capacity compressors
 - Optional electronically commutated (EC) motor on lead condenser fan
 - 5 to 45 tons of cooling capacity
 - Service/charging valves
 - Liquid line dryer
 - Sight glass
 - *Split system DX coil with or without remote condenser*
 - *Chilled water coil*
- Heating options
 - *Indirect gas furnace*
 - Stainless steel construction
 - High turndown capacity (up to 16:1)
 - Power venting
 - *Electric heat*
 - SCR control
 - Optional single-point power
 - *Hot water coil*

Product Certifications

Greenheck takes pride in offering a high quality, reliable product. We invest our resources into designing, testing and manufacturing products to ensure customer satisfaction.



ETL Listed for electrical and overall unit safety. Every unit is tested at the factory before it is shipped to the jobsite.



AHRI Certified coils and energy wheels. To guarantee your coil is going to perform as required, check for AHRI Certification.



Energy recovery wheels are certified by the AHRI Air-to-Air Energy Recovery Ventilation Equipment Certification Program in accordance with AHRI Standard 1060. Actual performance in packaged equipment may vary. Certified ratings are available in the Certified Product Directory at www.ahridirectory.org.

The models RV and RVE have been specifically designed to meet the challenges of introducing high percentages of outdoor air into a building. Features included in the units minimize energy consumption, control outdoor air volume, and maintain high levels of indoor air quality - ideal for ventilation applications in which the supply air volume consists of 20% or more outdoor air.

Design Challenge: Conditioning High Percentages of Outdoor Air with Minimal Energy Usage

Solution

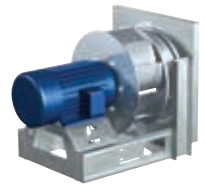
- **High capacity (6-row) cooling coil:** Provides proper dehumidification for a wide range of outdoor air conditions.
- **(optional) Energy recovery wheel to precondition the outdoor air:** Mechanical heating and cooling equipment capacity reduction; reduced mechanical heating and cooling energy consumption.
- **(optional) Modulating hot gas reheat coil:** Reheats dehumidified air to prevent overcooling the space.
- **(optional) Variable capacity compressor:** Modulates DX cooling system to match the required load for precise temperature control and saves operational energy.
- **(optional) High turndown indirect gas-fired furnace:** Provides accurate temperature control during heating operations, seamless modulation to eliminate “dead bands” and decreases furnace cycling.
- **(optional) Modulating head pressure control:** Improves reheat performance at part load conditions.



Design Challenge: Controlling Outdoor Air Volume

Solution

- **Low leakage outdoor air and recirculated air dampers with modulating actuator:** Provides energy saving control sequences and simplified air balancing.
- **Factory mounted and wired microprocessor controller:** Proven control sequences with easy set point adjustment and seamless integration to BMS systems.
- **Energy efficient control sequences (economizer, demand control ventilation, outdoor airflow monitoring):** Economizer - maximizes free cooling; demand control ventilation - adjusts outdoor airflow to match building occupancy; airflow monitoring - stand-alone monitoring system to ensure proper ventilation and meet LEED requirements.
- **Direct drive backward-curved plenum fan with factory mounted VFD:** Provides precise airflow control via modulating fan speed; fast and simple airflow adjustment; eliminates belt losses and maintenance.



Design Challenge: Critical Sound Applications

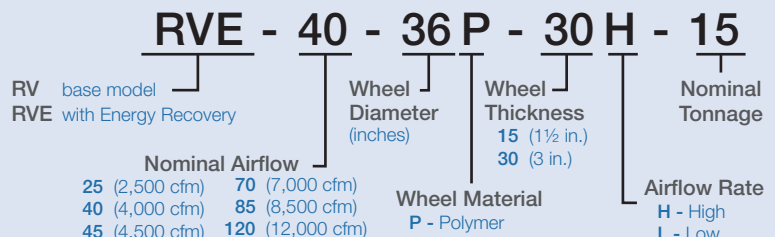
Solution

- **Low sound condenser fans:** Offer a sound power reduction on average of 5-8 decibels when compared to standard condenser fans resulting in perceived sound levels being reduced by up to 50%.
- **(optional) Electronically commutated (EC) motor:** Provides increased system efficiency and provides additional sound power reduction at part load conditions.



Model Number Code

The Model Number Code is designed to completely identify the unit. The correct code letters must be specified to designate the configurations and size.



1 Plenum Supply/Exhaust Fan

- Direct drive backward-curved plenum fan
- Neoprene isolation
- Factory provided variable frequency drive

2 Construction

- 2-inch double-wall construction
- R13 foam insulation thermally broken
- Easy lift-off removable hinged access doors with stainless steel hinges and quarter turn latches.

3 Filters

- Outdoor air and exhaust filters (pre-wheel)
 - 2-inch MERV 8
- Supply filters (pre-coil)
 - 2-inch MERV 8 or MERV 13
 - 4-inch MERV 14
 - Combination of 2-inch MERV 8 and 13

4 Control Center

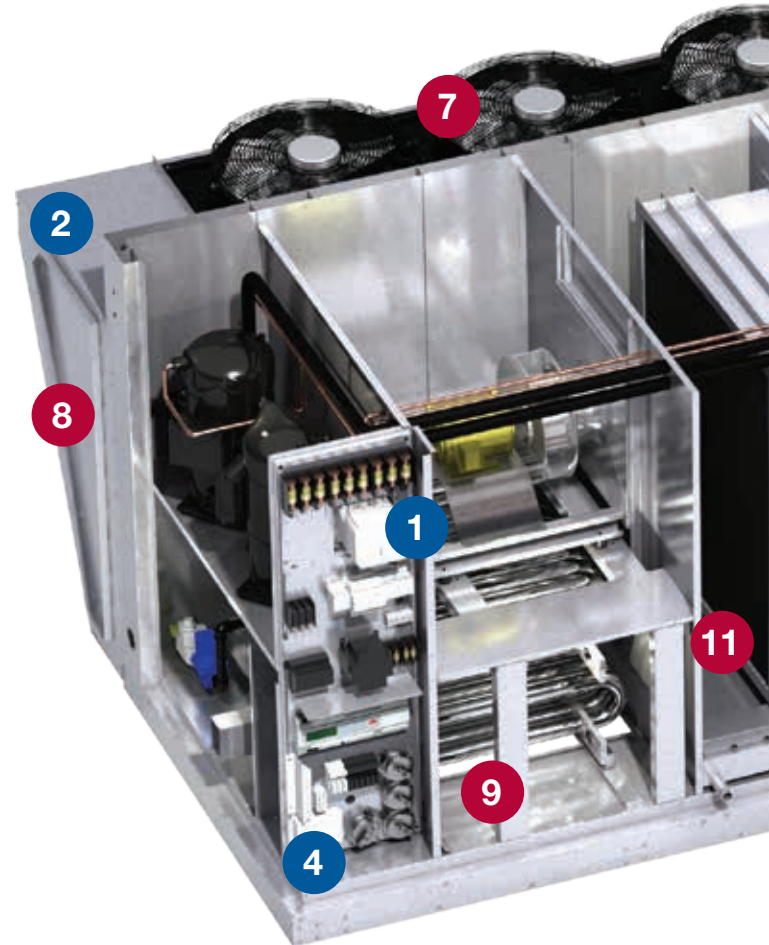
- 24 VAC control voltage
- Control transformer
- Non-fused disconnect switch
- UL Listed, Recognized, or Classified electrical components
- Factory prewired for single point power connection
- Phase and brownout protection (PDX)
- Optional exhaust fan only power

5 Weatherhood

- 2-inch aluminum mesh filters (mist eliminating)
- Downturn intake
- Wind-driven rain prevention

6 Total Energy Wheel (RVE)

- Sensible and latent energy recovery
- Lightweight, segmented wheel for easy cleaning
- L₁₀ rated bearing life in excess of 400,000 hours
- Permanently bonded, silica gel desiccant for latent transfer — long term durability
- Stainless steel housing



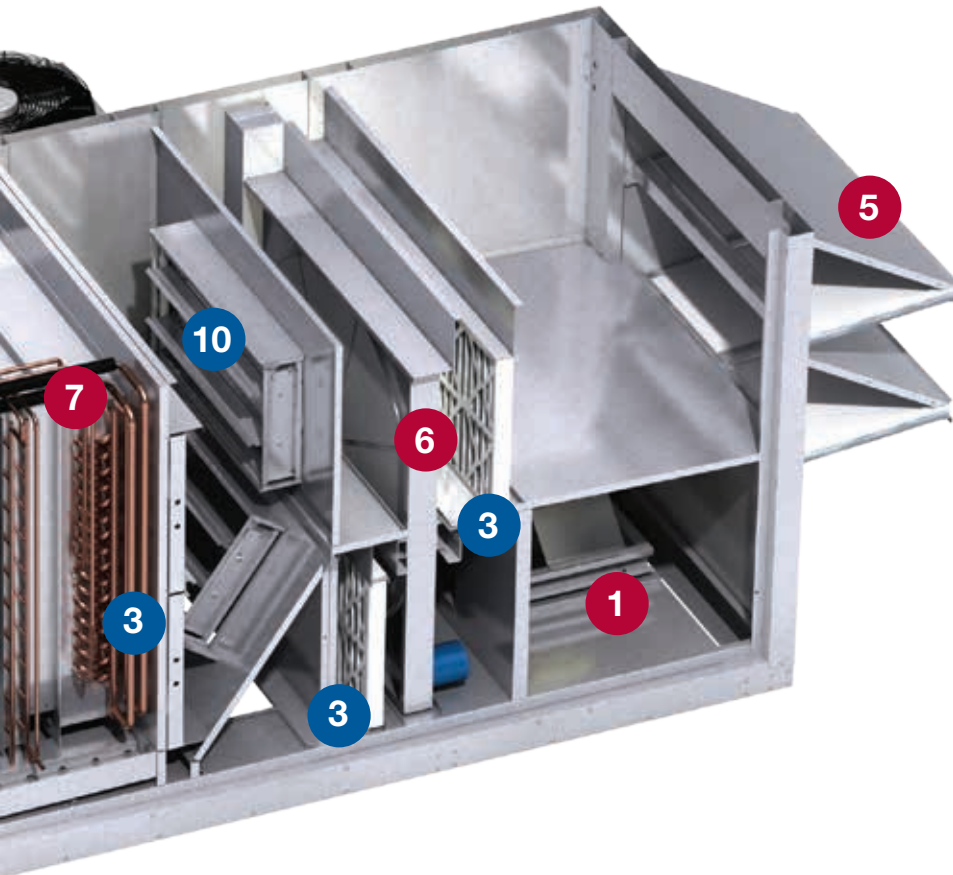
7 Cooling Options

- Packaged direct expansion (PDX)
 - Optional modulating head pressure control (EC motor on lead condenser fan)
 - Optional hot gas reheat
- Chilled water coil
- Split DX coil with or without remote condenser
- All coils with copper tubes and permanently expanded aluminum fins
- Mounted on a stainless steel drain pan

S Standard Feature **O** Optional Feature

8 Compressors

- Quiet operating hermetic, scroll-type
- 5 to 45 tons of mechanical cooling
- 1 circuit up to 10 tons
- 2 circuits 10 tons and over
- 4 circuits (unit size RV-70 and RVE 120 only)
- Optional variable capacity compressor for lead circuit



Optional Accessories

- Building Pressure Sensor
- CO₂ Sensor
- Condenser Hail Guards
- Dirty Filter Sensor
- Duct Pressure Sensor
- Economizer Control
- Energy Wheel Bypass Damper
- Microprocessor Remote Interface
- Outdoor/Exhaust Airflow Monitor
- Roof Curbs
- Room Dehumidistat
- Room Humidity Sensor
- Room Temperature Sensor
- Room Thermostat
- Rotation Sensor
- Service Receptacle
- Smoke Detectors
- Wheel Frost Controls

9 Heating Options

- Indirect gas-fired furnace
 - Optional high turndown furnace (up to 16:1) - *patent pending*
 - Optional stainless steel heat exchanger with optional 5 or 10 year extended warranty
- Electric heater
 - SCR control
- Hot water coil

10 Outdoor Air and Recirculated Air Dampers

- Insulated, low leakage
- Modulating actuator

11 Reheat

- Modulating hot gas reheat
- 6 in. separation between DX and reheat coil components to prevent evaporation of condensate

Microprocessor



The models RV and RVE include a microprocessor controller that is factory programmed, wired and tested prior to shipment. The controller can operate stand-alone or integrate with a Building Management System (BMS) using BACnet® MS/TP or IP, LonWorks® or Modbus® RTU protocols. This controller is responsible for operating the unit in a safe and energy efficient manner while controlling temperature and humidity.

Control Features:

- LCD display
- Built-in keypad for easy set point adjustment
- Integral 7-day time clock
- Night setback option
- Auto changeover based on outdoor air conditions
- Heating and cooling temperature lockouts
- Building freeze protection
- Optional remote interface for service convenience
- Room temperature and humidity control

Optional Control Sequences:

Energy Wheel Frost Control

Prevents frost buildup on the energy wheel in climates that have cold outdoor winter temperatures (typically less than -10°F) and/or moist indoor conditions such as a locker room. Available options are:

- **Timed exhaust** - Cycles supply blower to melt frost with only warm return air.
- **Electric preheat** - Preheats outdoor air to avoid frosting.
- **Modulate wheel** - Reduces the wheel speed to increase the time exposed in the warm, return air.

Energy Wheel Economizer Control

When the outdoor air conditions are favorable, the controller will allow for economizer operation. The unit will increase outdoor airflow to achieve free cooling by adjusting the energy wheel operation to:

- **Stop wheel** - Energy wheel rotation will stop and outdoor air can be brought into the building unconditioned.
- **Modulate wheel** - Energy wheel speed will modulate to maintain a leaving wheel temperature of 55°F (adjustable).

Fan Control

- **Constant volume** - Provides a constant volume of supply air to meet the space ventilation requirements.
- **Variable volume** - Varies the supply air to the space via a factory mounted and wired variable frequency drive. The required amount of supply air can be determined by a variety of external factors such as duct pressure.
- **Demand control** - The supply air volume (100% outdoor air application) is modulated based on building occupancy as determined by a factory provided CO₂ sensor.

Weights and Dimensions

Unit Size	Nominal tonnage (tons)	Height (H)	Width (W)	Length (L)	Intake (A)	Condensing Section (B)	Nominal weight (lbs)	Outdoor Intake	Supply Discharge	Return Intake	Exhaust Discharge
RV-25	5-15	59.3	52.5	98.6	22.1	30.1	2700	End	Bottom or Side	Bottom, End** or Side*	End ⁺ or Side*
RV-45	15-30	72.5	68.2	109	27.7	30.1	4500				
RV-70	20-45	90	68	156	22/27 [^]	30	6400				
RVE-40	5-15	59.3	52.5	149.5/180.5 [‡]	22.1	30.1	3400	End	Bottom or Side	Bottom	Side
RVE-85	15-30	72.5	68.2	163.2/197.2 [‡]	27.1	30.1	5100				
RVE-120	20-45	90	68	224	22/27 [^]	30	8300				

All dimensions are shown in inches. Weight is shown in pounds and includes largest supply and exhaust fans, PDX with reheat, largest indirect-gas fired furnace, all dampers and largest energy wheel. Actual weights will vary based on the unit configuration.

* Only available with powered exhaust

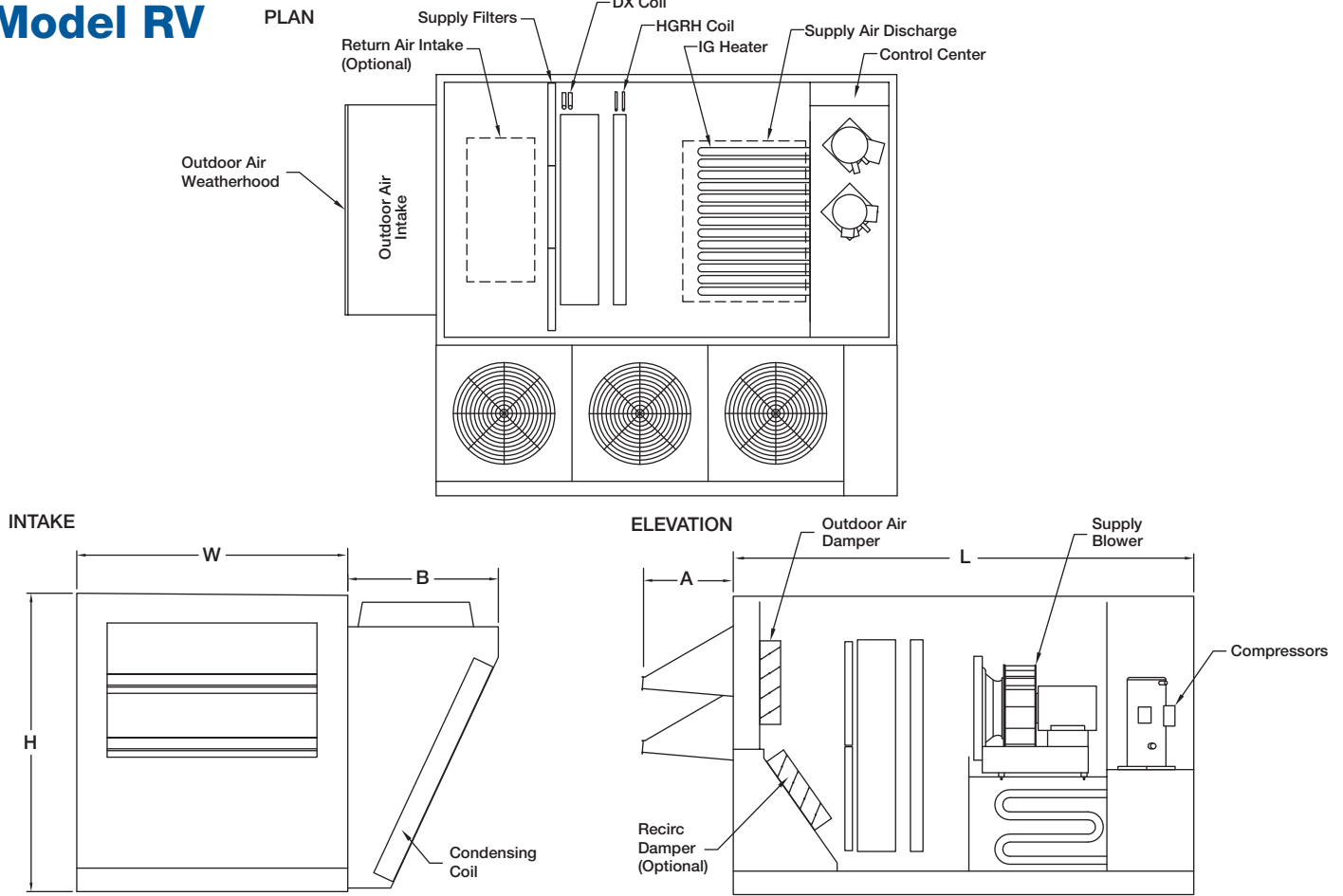
** Only available without barometric relief

⁺ Only available with barometric relief

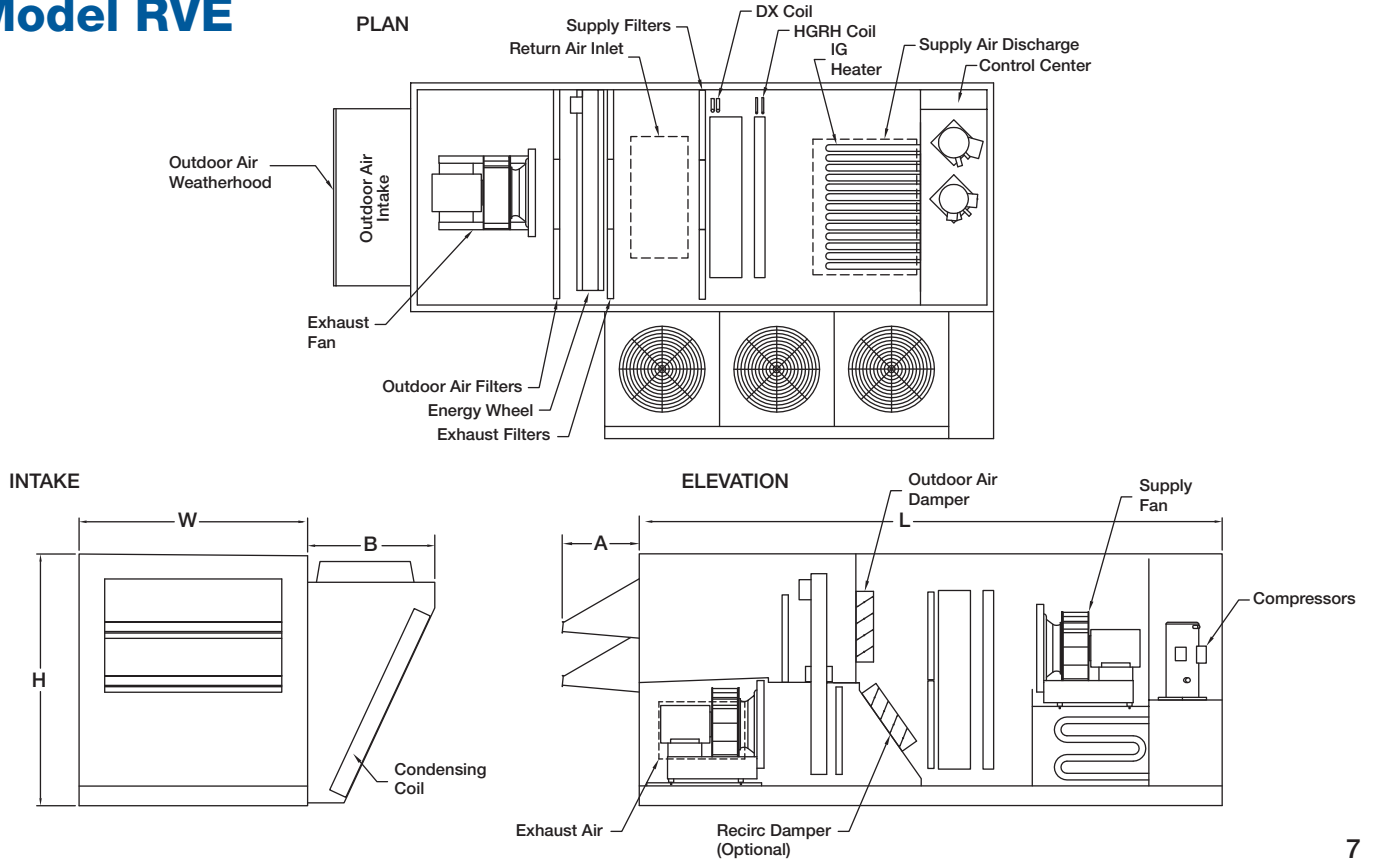
[^] Above 12,000 cfm

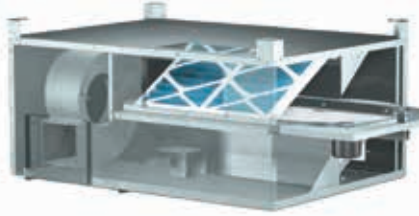
[‡] Length with side return

Model RV



Model RVE





Model MiniVent

A low-profile preconditioner designed for compact indoor installations requiring 150 to 850 cfm and may be floor mounted or ceiling hung.



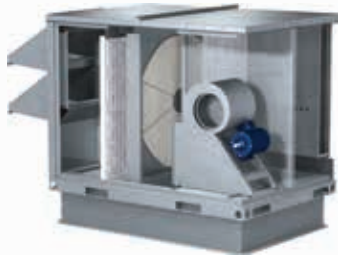
Model MiniCore

This preconditioner utilizes an energy recovery core for indoor installations ranging from 300 to 1,000 cfm. Designed to be mounted vertically or horizontally with optional intake and discharge connections configurable on site.



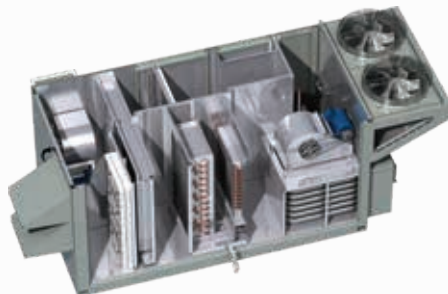
Model ERV

This reliable preconditioner provides total energy recovery primarily designed for indoor applications requiring 500 to 12,000 cfm.



Model ERVe

This preconditioner provides total energy recovery for outdoor applications requiring 1,000 to 6,000 cfm.



Model ERCH

This dedicated outdoor air unit combines the benefits of total energy recovery with supplemental heating and cooling in applications designed to supply 100% outdoor air. Airflow capacities range from 1,000 to 10,000 cfm.



Our Commitment

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.

Specific Greenheck product warranties are located on greenheck.com within the product area tabs and in the Library under Warranties.

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Prepared to Support
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