



CLASSROOM ENERGY RECOVERY UNIT VENTILATOR

Specifications

Overview:

Temspec's Energy Recovery Unit Ventilators (VER) incorporates the industry leading design features of Temspec's classroom Unit Ventilators with the economic advantages of energy recovery technology.

A pioneer in the development of vertical classroom unit ventilators for single zone air conditioning, Temspec's Energy Recovery Unit Ventilator are available with 100% economizer mode as well as numerous environmentally preferred features including an energy recovery ventilator package and optional ECM motors and MERV 13 filters. These unitary energy recovery unit ventilators provide for easy installation and maintenance.

General Specification:

The energy recovery ventilator shall be a vertical design with a small footprint. The unit shall be ducted or freeblow through a top acoustical plenum. The unit shall be available with optional 100% economizer and 100% powered exhaust as well as hot gas reheat coil for enhanced dehumidification.

The unit shall be fully assembled and tested prior to shipment. It shall comply with ASHRAE 90.1 – 2010 and 62.1 – 2010 and be constructed in accordance with UL 1995 / CSA C22.2 No. 236 Standard (Heating and Cooling Equipment). A label shall be affixed to the unit listing the product code under which it is registered.

Cabinet:

The unit cabinet shall be 14ga, formed unibody construction for rigidity. The finish shall be a durable powder coat – textured finish, color as per the Architect's instruction. The cabinet shall be fully lined with 1 " closed cell insulation. The return air grille shall be heavy duty steel. The unit shall have a draw through configuration. For easy maintenance, access to the internal components shall be through the front of the unit.

Hot Water Heating Coil:

A hot water heating coil shall be installed inside of the unit. The coil shall have 1/2" OD copper tube with aluminum fins. The coil supply and return headers shall be copper pipe, stubbed out for sweat connection. The coil shall be factory pressure tested at not less than 350 p.s.i. A manual air vent and drain cock shall be factory installed. The coil capacity shall be as shown in the equipment schedule. *A hot water coil mounted in a plenum that is field installed above the unit is not acceptable.*

**Electric Heating:**

The electric heating coil shall have wire nickel-chrome elements carried in floating ceramic bushings. Auto-reset high limit switches shall be factory installed and a higher switching point manual reset high limit shall also be provided within the unit. The coil shall be rated for ____ kW (up to 18 kW) at a supply voltage ____ Volts ____ phase. Each coil stage shall have an electromagnetic contactor to energize the coil and shall have an SSR control (optional) or maximum 2 stage capability. *An electric heating coil mounted in a plenum that is field installed above the unit is not acceptable.*

Chilled Water Cooling Coil:

The coil shall have 1/2" copper tube of minimum wall thickness 0.016" and shall have aluminum fins. The coil supply and return headers shall be copper pipe, stubbed out for sweat connection. The coil shall be factory pressure tested at not less than 350 p.s.i. A manual air vent shall be factory installed and ball valves fitted. The coil capacity shall be as shown in the schedule.

Direct Expansion (DX) Evaporator Cooling Coil:

The DX evaporator coil shall be designed for R410A refrigerant, formed with 3/8" copper tube and mechanically bonded to aluminum fins. Field connections shall be brazed under nitrogen. The mechanical contractor shall properly charge the refrigeration system with R410A refrigerant after installation and ensure that the cooling system is operating correctly. The coil capacities shall be as shown in the equipment submittals.

Drain Pan:

For all units with cooling coils an acrylic coated galvanized steel (optional stainless steel), double sloped drain pan shall be provided. The drain pan shall be insulated on the underside with 1/2" closed cell insulation. A "P" trap will be included below the drain pan.

Supply Air Fans/Motors:

The internal supply fan assembly shall include two direct drive electronically commutated motors (ECM) and blowers (one blower for units <1200 c.f.m.) mounted on rubber isolation grommets. The ECM motors shall be programmed for high efficiency and low audible sound. The motors shall consist of a brushless, permanently lubricated ball bearing construction for maintenance free operation. Permanent split capacitor (PSC) motors are available.

Filter:

The filters shall be of the manufacturer's standard 1" disposable type (optional 2") and shall have a MERV (minimum efficiency reporting value) rating of 8. MERV 11 and 13 filters are available.

Access Panels:

Internal components shall be easily accessible through front access panels which shall either be side hinged or removable. The hinge shall not protrude beyond the front surface of the unit and the hinged panel shall be securely closed with two fast lead captive fasteners. The removable access panel shall have four fast lead captive fasteners. The fast lead captive fasteners shall ensure a tight air seal for the access panels.

**Line Voltage:**

All internal line voltage wiring shall be by the unit manufacturer with a single power connection point. A single suitably rated unfused service disconnect switch shall be factory installed within the unit. Voltages include 115V/60 Hz 1 phase, 208-230 V/60Hz 1 or 3 phase or 480 V/60Hz/3 phase + Neutral. A suitably rated remote circuit breaker shall be provided and installed by the electrical contractor.

Control Panel:

A control panel (without the controller) shall be factory provided and installed. It shall be located at eye height (approximately 5.5 ft) behind the front access panel for easy maintenance and service and shall include a 24-volt transformer with the required contactors, relays and circuit protection.

Outdoor / Return Air Mixing Dampers, ERV Dampers, Exhaust Dampers:

The outdoor air (OA) and exhaust air (EA) dampers shall have airfoil section extruded aluminum blades with flexible seal blade tips and jamb seals. Leakage shall not exceed 4 c.f.m. per sq. ft. at 3" W.G. differential pressure as determined by a recognized testing laboratory. The return air damper shall modulate and balance the airflow through the unit. Flap dampers exposed to outside air are NOT acceptable.

Energy Recovery Module: The ER module shall include an AHRI certified energy recovery enthalpy wheel with a desiccant coating for energy efficiency and dehumidification. Supply and exhaust fans shall provide up to a nominal 600 c.f.m. of fresh air. OA and EA disposable filters shall be removable from the front of the unit. Also included are a set of actuated aluminum dampers that close when the wheel is not active to ensure air leakage does not occur between the building exterior and interior of the cabinet.

Factory Installed Controls:

Control items shall be furnished by the controls contractor for factory mounting and shall function as described in the controls specifications. Controls are to arrive at the factory well before scheduled production and are to be freight, duty and customs pre-paid by the controls contractor.

Factory Supplied Controls (Optional):

The control system shall be a stand alone, seven day programmable thermostat with economizer feature.

100 % Power Exhaust (Optional):

A powered exhaust module with actuated damper, direct drive fan and ECM motor shall be incorporated and shall operate in tandem with the outdoor air damper to be able to provide up to 100 % power exhaust.

Hot Gas Reheat (Optional):

A hot gas reheat coil and solenoid valve shall be provided and factory installed. Available for DX units requiring higher dehumidification capabilities.

Hot Gas Bypass (Optional):

For DX units an optional hot gas bypass device shall be factory installed for capacity unloading in cooling mode.

**Condensate Pump (Optional):**

A condensate pump shall be factory installed within the unit. The head capacity of the pump shall be a minimum of ____ ft.

Water Control Valve (Optional):

Two or three way floating point or modulating motorized valves can be factory provided and mounted upon request. Factory mounting of valves provided by others is also available.

Piping Options (Optional):

Piping options shall be fitted inside the unit by the factory and easily accessible from the front of the unit. May include one or all of the following:

- Automatic flow control valve with P/T ports and ball valve (shut off)
- Strainer with P/T ports, blow down valve and ball valve (shut off)
- Flexible, stainless steel braided hose kit with 1" pipe connections

Exterior Wall Louver & Sleeve (Optional):

The louver shall have aluminum extruded 45 degree blades. The louver shall have a 1/2" bird-screen attached to the inner face. The louver shall be mill finished or selected from manufacturer's standard color chart. The manufacturer shall provide a wall sleeve to suit the wall thickness, including an air flow separator to prevent mixing of the fresh air intake and exhaust air. If louver to be provided by the contractor the dimensions and location shall be coordinated with manufacturer.

Top Extension (Optional):

The unit manufacturer shall provide a color matched top extension for the cabinet, size to suit the ceiling height.

Top acoustical plenum / elbow for ducted applications (optional)

The unit manufacturer shall provide a color matched top plenum extension for the unit, size to suite the ceiling height. The plenum shall have an internal perforated elbow and shall be acoustical lined.

Top acoustical plenum for free blow applications (optional)

The unit manufacturer shall provide a minimum 20 inch tall acoustical plenum with double deflection supply air grilles. For superior sound attenuation, the acoustical plenum shall incorporate a perforated core and transition piece along with acoustically lined internal deflectors.

Raised Base (Optional):

The unit manufacturer shall provide a color matched raised base, height as shown on the plans.

Side Pipe Cover (Optional):

The unit manufacturer shall provide a pipe cover assembly, color matched to the unit. The cover shall be the depth of the unit, height to suit.

Replacement Filters (Optional):

One set of replacement filters shall be supplied for each unit.



Installation:

The unit ventilator shall be installed plumb. Foam sealing tape shall be installed around the perimeter of the opening in the back of the unit before moving the unit into position against the wall. The exterior louver shall be caulked.