



Sample Specification FV Series, Fresh Air Pre-conditioner

Optional items are shown in RED text. Items in RED should be deleted unless the option is desired.

CASING - Standard panels shall be 20 gauge galvanized steel, lined with 1/2 inch thick neoprene insulation where required. The housing shall be supported by a formed structural base that forms a pan to ensure weather tight construction. Lifting holes shall be provided at the unit base. Units shall have a weatherproof sheet metal roof. The outdoor air intake opening shall be protected by a galvanized steel sheet metal weather hood and include an automatic shutoff damper with electric operator. The exhaust air discharge shall be covered with a gravity back draft damper and weather hood. The exterior of the unit shall be coated with an epoxy primer and a polyurethane enamel painting system for added protection. Painting system shall be rated to meet a 1500-hour salt spray test.

ACCESS - Access to components shall be provided through a large, tightly sealed and easily removable access panel. Access panels shall be constructed of the same materials as the unit casing and use SEMCO's standard hardware. The wheel cassette shall be easily removable from the unit. The roof of the unit shall also be removable for access.

UNIT CONFIGURATION - The supply air inlet and exhaust air outlet must be oriented at opposite ends of the Energy Recovery System to maximize the distance between the two airstreams in order to minimize the risk of short circuiting exhaust air into the supply air intake.

FANS - Fans shall be double width double inlet design with forward curve type wheels. The blades shall be designed for maximum efficiency and quiet operation. Impellers shall be statically and dynamically balanced.

Fans shall be driven by direct drive motors located at the fan inlet or by motors using belts and sheaves. Motors shall be standard NEMA frame with open drip-proof enclosures. V-belt drives shall be designed for a minimum 1.2 service factor.

TOTAL ENERGY WHEEL - The rotor media shall be made of aluminum, which is coated to prohibit corrosion. All surfaces shall be coated with a non-migrating adsorbent specifically developed for the selective transfer of water vapor. The desiccant shall utilize a 3A molecular sieve certified by the manufacturer to have an internal pore diameter distribution which limits adsorption to materials not larger than the critical diameter of a water molecule (2.8 angstroms). Verification in writing shall be presented from the desiccant manufacturer confirming that the internal pore diameter distribution inherent in the desiccant being provided limits adsorption to materials not larger than the critical diameter of a water molecule (2.8 angstroms). In addition, the face of the media shall be coated with an acid resistant coating to provide maximum protection against face oxidation. Equal sensible and latent recovery efficiencies shall be clearly documented through a certification program conducted in accordance with ASHRAE 84 and ARI 1060 standards. The

media shall be cleanable with low temperature steam, hot water or light detergent, without degrading the latent recovery. Dry particles up to 600 microns shall freely pass through the media. Wheel media shall be independently tested and shown to conform to the requirements of NFPA-90A, documenting a flame spread of less than 25 and a smoke generation rating of less than 50.

Manufacturers using wheels with a rotor based on non-aluminum materials (i.e., paper, plastic or Mylar) that require periodic replacement, shall provide the owner with a spare wheel or equivalent wheel segments for future use and storage.

Cross-Contamination: The cross-contamination characteristics of the selected desiccant shall also be certified by an independent third party of good repute. If said certification is not available, the outside air requirement for each specified unit shall be multiplied by a factor given in the table below for each desiccant. It shall be the contractors responsibility to resize the duct work / air conditioning equipment and take responsibility for proper system operation at the higher OA CFM if a desiccant other than 3A is used. This factor has been determined by the research performed at the Georgia Institute of Technology.

		With Purge		
Desiccant	3A*	4A*	Silica Gel	
Ventilation Factor	1.00	1.16	1.40	

		Without Purge		
Desiccant	3A*	4A*	Silica Gel	
Ventilation Factor	1.03	1.20	1.46	

3A* = 3 Angstrom Molecular Sieve

4A* = 4 Angstrom Molecular Sieve

Note: Any desiccant not listed above requires manufacture to contact the engineer for the correct Ventilation Factor.

ROTOR CASSETTE - The rotor cassette shall be a sheet metal framework, which limits the deflection of the rotor due to air pressure. The cassette shall be made of galvanized steel to prevent corrosion. The rotor cassette shall be easily removable from the Energy Recovery Unit to facilitate rigging (if necessary) and ease of service. The wheel cassette design shall use pillow block bearings for long life. A non-adjustable purge sector shall be included in the cassette.

FILTERS - The filters shall be 1 inch thick permanent aluminum washable type mounted in the outside air hood and in the return air plenum. The filters shall be listed by Underwriters' Laboratories as Class 2.

AIRFLOW MONITOR - Unit shall include an integral airflow monitoring station with the ability to read both ventilation and exhaust airflow expressed in CFM. Monitor gauge to be flush mounted on unit exterior and watertight. Monitor shall be SEMCO Model AQFlow or Ruskin Model IAQ50 Integral Monitor/Damper, or approved equal.

ROTATION DETECTOR - Unit shall be equipped with a rotation sensor and controller such that should the energy recovery wheel not rotate during a signaled run period, the controller shall send a 24 volt AC signal suitable for operating a relay to be used as an alarm contact. The controller shall not initiate an alarm during a

stop/jog function. In addition, this controller shall be equipped with an outdoor air temperature sensor such that the energy recovery wheel can be stopped during moderate temperature periods. The controller shall perform a stop/jog function for the wheel long enough to promote the self-cleaning features of the wheel but not long enough to induce energy recovery. This same temperature controller shall allow the energy recovery wheel to be operated in stop/jog mode during very low temperature periods to prevent freezing of the wheel while still delivering outdoor air through the unit

ELECTRIC PREHEAT COIL - Coil shall be of the resistance coil type with elements enclosed in a steel sheath with fins and painted with a baked-on aluminum paint for long life in a 100% fresh air stream. Coil shall include thermal cutout protection with automatic primary protection and a secondary manual reset linear thermal cutout. Coil shall have magnetic safety and backup contactors, main disconnect, fusing, control circuit transformer, airflow interlock switch and SCR controller. Coil shall be UL listed and constructed in accordance with NEC requirements. A temperature controller located in the outdoor air section of the unit shall supply the signal to the SCR controller.

FREEZE PROTECTION THERMOSTAT - Unit shall be equipped with an outdoor air temperature thermostat such that the energy recovery ventilator can be stopped during very low temperature periods. This thermostat shall stop the both the fans and the energy recovery wheel until the outdoor air temperature rises above the set point, then the unit will restart automatically.

ELECTRICAL - Units shall require a single 60-cycle power connection. See schedule for voltage and phase requirements. The electrical panel shall consist of individual motor contactors, short circuit and overload protection and control power transformer. The NEMA 3R electrical panel shall be mounted on the unit exterior for ease of access. Unit shall be ETL listed and labeled.

WARRANTY - SEMCO warrants to Buyer that for a period of eighteen months from the date of shipment by SEMCO the goods to be delivered to Buyer will in all material respects be free from defects in material and workmanship when used in a proper and normal manner. Should any failure to conform to the above appear within eighteen months after the date of shipment by SEMCO (the "Limited Warranty Period"), SEMCO agrees upon prompt notification thereof during the Limited Warranty Period and confirmation to SEMCO's satisfaction that the goods have been stored, installed, operated and maintained properly and in accordance with standard industry practice, to correct the non-conformity at SEMCO's option either by repairing any defective part or parts or by making available at SEMCO's plant a repaired or replacement part.

WHEEL WARRANTY: Manufacturer shall warrant to the buyer for a period of 60 months that the wheel contained in the energy recovery unit in all material respects to be free from defects in material and workmanship when used in a proper and normal manner. For warranty purposes the wheel includes, media, desiccant coating, wheel hub, wheel rim and spokes.