SECTION 23 73 13 - MODULAR INDOOR CENTRAL-STATION AIR-HANDLING UNITS

PART 2 PRODUCTS

1.01 REGULATORY REQUIREMENTS

A. Comply with NFPA 70.

B. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified and indicated.

1.02 CASING CONSTRUCTION

A. Full Perimeter Base Rail:
   2. Provide base rail of sufficient height to raise unit for external trapping of condensate drain pans.

B. Casing:
   1. Construct of one piece, insulated, double wall panels.
   2. Provide mid-span, no through metal, internal thermal break.
   3. Construct outer panels of galvanized steel and inner panels of galvanized steel.
   4. Casing Air Pressure Performance Requirements:
      a. Able to withstand up to 8 inches w.g. (2 kPa) positive or negative static pressure.
      b. Not to exceed 0.0042 inches per inch (0.0042 mm/mm) deflection at 1.5 times design static pressure up to a maximum of plus 8 inches w.g. (2 kPa) in positive pressure sections and minus 8 inches w.g. (2 kPa) in negative pressure sections.

C. Access Doors:
   1. Construction, thermal and air pressure performance same as casing.
   2. Provide surface mounted handles on hinged, swing doors.

D. Outside Air and Exhaust Air Weather Hood:
   1. Fabricate from same material as casing outer panel.
2. Extend hood past perimeter of unit casing opening so as not to instruct airflow path.

3. Paint hoods with same finish as external surface of outdoor units.

4. Provide inlet hood for each fresh air damper with a sine wave moisture eliminator to prevent entrainment of water into the unit from outside air.

5. Provide exhaust hoods for each exhaust air opening.

6. Size each hood for 100 percent of nominal fresh air damper capacities.

7. Protect each hood with bird screen to prevent nesting at intake or exhaust air flow paths.

E. Unit Flooring: Construct with sufficient strength to support expected people and equipment loads associated with maintenance activities.

F. Casing Leakage: Seal joints and provide airtight access doors so that air leakage does not exceed one percent of design flow at the specified casing pressure.

G. Insulation:
   1. Provide minimum thermal thickness of 12 R (2.29 RSI) throughout.
   2. Completely fill panel cavities in each direction to prevent voids and settling.
   3. Comply with NFPA 90A.

H. Drain Pan Construction:
   1. Provide cooling coil and humidifier sections with an insulated, double wall, galvanized steel drain pan complying with ASHRAE Std 62.1 for indoor air quality and sufficiently sized to collect all condensate.
   2. Slope in two planes to promote positive drainage and eliminate stagnate water conditions.
   3. Locate outlet of sufficient diameter at lowest point of pan to prevent overflow at normal operating conditions.
   4. Provide threaded drain connections constructed of drain pan material, extended sufficient distance beyond the base to accommodate field installed, condensate drain trapping.

I. Louvers: Stationary, of galvanized steel, 4 inch (100 mm) deep with plenum, nylon bearings, 1/2 inch (13 mm) mesh, 0.04 inch (1.0 mm) galvanized wire bird screen in
aluminum frame, and bearing AMCA Certified Ratings Seal in accordance with AMCA 500-L. Furnish adjustable louvers with hollow vinyl bulb edging on blades and foam side stops to limit leakage to maximum 2 percent at 4 inch wg (1 kPa) differential pressure when sized for 2000 fpm (10 m/s) face velocity.

J. Finish:
   1. Indoor Units:
      a. Provide exterior, galvanized steel panels without paint.
      b. Color: Manufacturer's standard color.

1.03 FAN SECTION
A. Type: Forward curved, single width, single inlet, centrifugal plug type fan, in compliance with AMCA 99. Refer to Section 23 3413.
B. Performance Ratings: Determined in accordance with AMCA 210 and labeled with AMCA Certified Rating Seal.
C. Sound Ratings: AMCA 301; tested to AMCA 300 and label with AMCA Certified Sound Rating Seal.
D. Bearings: Self-aligning, grease lubricated, with lubrication fittings extended to exterior of casing with plastic tube and grease fitting rigidly attached to casing.
E. External Motor Junction Box: Factory mount NEMA 4 external junction box and connect to extended motor leads from internally mounted motors.
F. Motor Wiring Conduit: Factory wire fan motor wiring to the unit mounted starter-disconnect, variable frequency drive, external motor junction box and [__________].
G. Fan Accessories:
H. Flexible Duct Connections:
   1. For separating fan, coil, and adjacent sections.
I. Drives:
   2. Bearings: Heavy duty pillow block type, ball bearings, with ABMA STD 9 L-10 life at 50,000 hours.
   3. Shafts: Solid, hot rolled steel, ground and polished, with key-way, and protectively coated with lubricating oil.
4. V-Belt Drive: Cast iron or steel sheaves, dynamically balanced, bored to fit shafts, and keyed. Variable and adjustable pitch sheaves for motors 15 hp and under selected so required rpm is obtained with sheaves set at mid-position; fixed sheave for 20 hp and over, matched belts, and drive rated as recommended by manufacturer or minimum 1.5 times nameplate rating of the motor.

5. Belt Guard: Fabricate to SMACNA (DCS); 0.106 inch (2.6 mm) thick, 3/4 inch (20 mm) diamond mesh wire screen welded to steel angle frame or equivalent, prime coated. Secure to fan or fan supports without short circuiting vibration isolation, with provision for adjustment of belt tension, lubrication, and use of tachometer with guard in place.

1.04 COIL SECTION

A. Casing: Provide access to both sides of coils. Enclose coils with headers and return bends exposed outside casing. Slide coils into casing through removable end panel with blank off sheets and sealing collars at connection penetrations.

B. Drain Pans: 24 inch (600 mm) downstream of coil and down spouts for cooling coil banks more than one coil high.

C. Eliminators: Three break of galvanized steel, mounted over drain pan.

D. Air Coils:
   1. Certify capacities, pressure drops, and selection procedures in accordance with AHRI 410.

E. Fabrication:
   1. Tubes: 5/8 inch (16 mm) OD seamless copper expanded into fins, brazed joints.
   2. Fins: Aluminum.
   3. Casing: Die formed channel frame of galvanized steel.

1.05 FILTER AND AIR CLEANER SECTION

A. General: Provide filter sections with filter racks, minimum of one access door for filter removal, and filter block-offs to prevent air bypass.

B. Differential Pressure Gauge:
   1. Provide factory installed dial type differential pressure gauge, flush mounted with casing outer wall, and fully piped to both sides of each filter to indicate status.
2. Maintain plus/minus 5 percent accuracy within operating limits of 20 degrees F (minus 6.7 degrees C) to 120 degrees F (48.9 degrees C).

1.06 DAMPER SECTION

A. Mixing Section: Provide a functional section to support the damper assembly for modulating the volume of outdoor, return, exhaust and [________] air.

B. Damper Blades:
   1. Double-skin airfoil design with metal, compressible jamb seals and extruded-vinyl blade-edge seals on each blade.
   2. Self-lubricating stainless steel or synthetic sleeve bearings.
   3. Comply with ASHRAE Std 90.1 for rated maximum leakage rate.
   4. Provide leakage testing and pressure ratings in compliance with AMCA 500-D test methods.
   5. Arrange in parallel or opposed-blade configuration.

C. Barometric Relief Dampers:
   1. Frame: Roll formed galvanized steel.
   2. Blades: Roll formed galvanized steel.
   4. Material:

END OF SECTION 23 73 13