

SECTION 233423 - HVAC POWER VENTILATORS

PART 1 - GENERAL

1.1 SUBMITTAL REQUIREMENTS

A. Product Data

1. For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories.
2. Certified fan performance curves with system operating conditions indicated.
3. Certified fan sound-power ratings.
4. Motor ratings and electrical characteristics, plus motor and electrical accessories.
5. Material thickness and finishes, including color charts.
6. Dampers, including housings, linkages, and operators.
7. Roof curbs.
8. Fan speed controllers.

B. Shop Drawings

1. Include plans, elevations, sections, details, and attachments to other work.
2. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Wiring Diagrams: For power, signal, and control wiring.

PART 2 - PRODUCTS

2.1 GENERAL

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Acme Engineering & Mfg. Corp.
2. Greenheck Fan Corporation.
3. Loren Cook Company.
4. Twin City Fan Companies.

B. Project Altitude: Base fan-performance ratings on actual Project site elevations.

C. Operating Limits: Classify according to AMCA 99.

D. Power ventilators for use for restaurant kitchen exhaust shall also comply with UL 762.

E. Prelubricated and Sealed Shaft Bearings:

1. Self-aligning, pillow-block-type bearings.

2. Ball-Bearing Rating Life: ABMA 9, L10 at 80,000 hours.
3. Roller-Bearing Rating Life: ABMA 11, L10 at 80,000 hours.

F. Grease-Lubricated Shaft Bearings:

1. Self-aligning, pillow-block-type, tapered roller bearings with double-locking collars and two-piece, cast-iron housing.
2. Ball-Bearing Rating Life: ABMA 9, L10 at 80,000 hours.
3. Roller-Bearing Rating Life: ABMA 11, L10 at 80,000 hours.

G. Roof Curbs: Provide factory fabricated insulated roof curb by the same manufacturer as the equipment. Roof curb to be insulated.

2.2 CENTRIFUGAL ROOF VENTILATORS

A. Housing: Provide the Following Types of Housing Design:

1. Spun-aluminum, dome top and outlet baffle.

B. Hinged Subbase: Galvanized-steel hinged arrangement permitting service and maintenance.

C. Curb Seal: Provide rubber seal between fan and curb to assure proper sealing when attached to curb.

D. Fan Wheels: Aluminum hub and wheel with backward-inclined blades.

E. Accessories:

1. Variable-Speed Controller (direct drive fans): Solid-state control to reduce speed from 100 to less than 50 percent.
2. Bird Screens: Removable, 1/2-inch mesh, aluminum wire.
3. Dampers: Parallel-blade dampers mounted in curb base with electric actuator; wired to close when fan stops. Damper motor shall be 120V/1 phase unless otherwise noted.

2.3 CENTRIFUGAL WALL VENTILATORS

A. Housing: Heavy-gage, removable, spun-aluminum, dome top and outlet baffle; venturi inlet cone.

B. Fan Wheel: Aluminum hub and wheel with backward-inclined blades.

C. Accessories:

1. Variable-Speed Controller (direct drive fans): Solid-state control to reduce speed from 100 to less than 50 percent.
2. Bird Screens: Removable, 1/2-inch mesh, aluminum wire.
3. Wall Grille: Ring type for flush mounting.

4. Dampers: Parallel-blade dampers mounted in curb base with electric actuator; wired to close when fan stops. Damper motor shall be 120V/1 phase unless otherwise noted. Provide local disconnect switch.
5. Kitchen Exhaust: Provide UL listed fan with grease cup and drain.

2.4 CEILING-MOUNTED VENTILATORS

- A. Housing: Steel, lined with acoustical insulation.
- B. Fan Wheel: Centrifugal wheels directly mounted on motor shaft. Fan shrouds, motor, and fan wheel shall be removable for service.
- C. Grille: Aluminum, louvered grille with flange on intake and thumbscrew attachment to fan housing.
- D. Outlet Damper: Exhaust fan shall have back draft damper at outlet of exhaust.
- E. Accessories:
 1. Variable-Speed Controller: Solid-state control to reduce speed from 100 to less than 50 percent.
 2. Isolation: Rubber-in-shear vibration isolators.

2.5 MOTORS

- A. Motors with Variable Frequency Drives: All fan motors shall be of highest efficiency possible, either Premium or High Efficiency rating. All fan motors with VFD's must be inverter duty rated and fan manufacturer shall factory inverter balance the fan motor through the entire operating range. A/C motors shall be rated for both constant and variable speed applications.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fan(s) shall be installed a minimum of 10'-0" from any roof edge regardless of location indicated on plans, unless a screen wall or railing is installed per the local building code. See the architectural plans for coordination.
- B. Provide high static pressure switch in the ductwork downstream of exhaust fans greater than 3 hp. Fan shall shutdown upon detection of static pressure in excess of 2" wc.. Provide manual reset.
- C. Equipment Mounting: Install fans on cast-in-place concrete equipment base(s) using restrained spring isolators.
 1. Minimum Deflection: 1 inch.

- D. Curb Support: Install insulated, manufacturer's insulated roof curb on roof structure, level and secure, according to "The NRCA Roofing and Waterproofing Manual," Low-Slope Membrane Roofing Construction Details Section, Illustration "Raised Curb Detail for Rooftop Air Handling Units and Ducts." Install and secure centrifugal fans on curbs, and coordinate roof penetrations and flashing with roof construction. Secure units to curb support with anchor bolts.
- E. Isolation Curb Support: Install centrifugal fans on isolation curbs and install flexible duct connectors and vibration isolation and seismic-control devices.
- F. Ceiling Units: Suspend units from structure; use steel wire or metal straps.

END OF SECTION 233423