

## **SECTION 15853 - POWER VENTILATORS**

### **PART 1 GENERAL**

#### **1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### **1.02 SUMMARY**

- A. This Section includes the following:
  - 1. Ceiling-mounted ventilators.

#### **1.03 PERFORMANCE REQUIREMENTS**

- A. Operating Limits: Classify according to AMCA 99.
- B. Fan Unit Schedule: The following information is described in an equipment schedule at the end of this Section.
  - 1. Fan performance data including capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.

#### **1.04 SUBMITTALS**

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data including rated capacities of each unit, weights, furnished specialties, accessories, and the following:
  - 1. Certified fan performance curves with system operating conditions indicated.
  - 2. Certified fan sound power ratings.
  - 3. Motor ratings and electrical characteristics plus motor and electrical accessories.
  - 4. Material gages and finishes, including color charts.
  - 5. Dampers, including housings, linkages, and operators.
- C. Shop Drawings from manufacturer detailing equipment assemblies and indicating dimensions, weights, loadings, required clearances, method of field assembly, components, and location and size of each field connection.
- D. Wiring diagrams detailing wiring for power and control systems and differentiating clearly between manufacturer-installed and field-installed wiring.
- E. Maintenance data for power ventilators to include in the operation and maintenance manual specified in Division 1 and in Division 15 Section "Basic Mechanical Requirements."

#### **1.05 QUALITY ASSURANCE**

- A. Electrical Component Standard: Provide components that comply with NFPA 70 and that are listed and labeled by UL where available.
- B. Listing and Labeling: Provide electrically operated fixtures specified in this Section that are listed and labeled.
  - 1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.
- C. AMCA Compliance: Provide products that meet performance requirements and are licensed to use the AMCA Seal.
- D. NEMA Compliance: Provide components required as part of fans that comply with applicable NEMA standards.

- E. UL Standard: Provide power ventilators that comply with UL 705.

## **1.06 PROJECT CONDITIONS**

- A. Field Measurements: Verify dimensions by field measurements. Verify clearances.
- B. Do not operate fans until ductwork is clean, filters are in place, bearings are lubricated, and fans have been commissioned.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Ceiling-Mounted Ventilators:
    - a. Broan Mfg. Co., Inc.
    - b. Cook (Loren) Co.
    - c. Dayton Electric Mfg. Co.
    - d. Fasco Industries, Inc.
    - e. Nutone
    - f. Greenheck Fan Corp.

### **2.02 CEILING-MOUNTED VENTILATORS**

- A. Description: Centrifugal fans designed for installing in ceiling or wall, or for concealed in-line applications.
- B. Housing: Galvanized steel lined with acoustical insulation.
- C. Fan Wheel: Forward curved type.
- D. Grille: Decorator style, molded plastic.
- E. Accessories: Transition fittings for connection to existing exhaust ductwork.

### **2.03 SOURCE QUALITY CONTROL**

- A. Testing Requirements: The following factory tests are required as indicated:
  - 1. Sound Power Level Ratings: Comply with AMCA 301, "Methods for Calculating Fan Sound Ratings From Laboratory Test Data." Test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Label fans with the AMCA Seal.
  - 2. Fan Performance Ratings: Establish flow rate, pressure, power, air density, speed of rotation, and efficiency by factory tests and ratings according to AMCA 210, "Laboratory Methods of Testing Fans for Rating."

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine areas and conditions for compliance with requirements of installation tolerances and other conditions affecting performance of the power ventilators. Do not proceed with installation until unsatisfactory conditions have been corrected.

### **3.02 INSTALLATION**

- A. Install power ventilators according to manufacturer's written instructions.
  - 1. Ceiling Units: Suspend units from structure using steel wire or metal straps.
- B. Install units with clearances for service and maintenance.

### **3.03 CONNECTIONS**

- A. Duct installation and connection requirements are specified in other Division 15 Sections. Drawings indicate the general arrangement of ducts and duct accessories.
- B. Electrical: Conform to applicable requirements in Division 16 Sections.
- C. Grounding: Ground equipment. Tighten electrical connectors and terminals, including grounding connections, according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

### **3.04 CLEANING**

- A. After completing installation, inspect exposed finish. Remove burrs, dirt, and construction debris, and repair damaged finishes including chips, scratches, and abrasions.
- B. Clean fan interiors to remove foreign material and construction debris. Vacuum clean fan wheel and cabinet.

### **3.05 COMMISSIONING**

- A. Final Checks before Startup: Perform the following operations and checks before startup:
  - 1. Verify that shipping, blocking, and bracing are removed.
  - 2. Verify that unit is secure on mountings and supporting devices and that connections for piping, ducts, and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnects.
  - 3. Perform cleaning and adjusting specified in this Section.
  - 4. Lubricate moving parts with factory-recommended lubricants.
- B. Starting procedures for fans are as follows:
  - 1. Energize motor; verify proper operation of motor, drive system, and fan wheel. Adjust fan to indicated RPM.
  - 2. Measure and record motor voltage and amperage.
- C. Refer to Division 15 Section "Testing, Adjusting, and Balancing" for procedures for air-handling-system testing, adjusting, and balancing.

### **3.06 DEMONSTRATION**

- A. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
- B. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Contract Closeout."
- C. Schedule training with Owner, through Architect, with at least 7 days' advance notice.
- D. Demonstrate operation of power ventilators. Conduct walking tour of the Project. Briefly identify location and describe function, operation, and maintenance of each power ventilator.

**3.07 SCHEDULE**

- A. EF-1: Greenheck SP-7, ceiling exhaust fan, 95 cfm at 0.5" SP, 950 rpm, 80 watts, 120/1/60, 2.7  
sones. Provide with backdraft damper and roof cap (where required).

**END OF SECTION 15853**

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