

**SECTION 23 34 00  
HVAC FANS**

**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. Fans for heating, ventilating and air conditioning.
- B. Product Definitions: AMCA Publication 99, Standard 1-66.

**1.2 RELATED WORK**

- A. Section 01 00 00, GENERAL REQUIREMENTS.
- B. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- C. Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.
- D. Section 23 05 11, COMMON WORK RESULTS FOR HVAC.
- E. Section 23 05 93, TESTING, ADJUSTING, AND BALANCING FOR HVAC.

**1.3 QUALITY ASSURANCE**

- A. Refer to paragraph, QUALITY ASSURANCE, in Section 23 05 11, COMMON WORK RESULTS FOR HVAC.
- B. Fans and power ventilators shall be listed in the current edition of AMCA 261, and shall bear the AMCA performance seal.
- C. Operating Limits for Centrifugal Fans: AMCA 99 (Class I, II, and III).
- D. Fans and power ventilators shall comply with the following standards:
  - 1. Testing and Rating: AMCA 210.
  - 2. Sound Rating: AMCA 300.
- E. Safety Criteria: Provide manufacturer's standard screen on fan inlet and discharge where exposed to operating and maintenance personnel.
- F. Corrosion Protection:
  - 1. All steel shall be mill-galvanized, or phosphatized and coated with minimum two coats, corrosion resistant enamel paint. Manufacturers paint and paint system shall meet the minimum specifications of: ASTM D1735 water fog; ASTM B117 salt spray; ASTM D3359 adhesion; and ASTM G152 and G153 for carbon arc light apparatus for exposure of non-metallic material.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES.
- B. Manufacturers Literature and Data:
  - 1. Fan sections, motors and drives.
  - 2. Centrifugal fans, motors, drives, accessories and coatings.
    - a. Up-blast kitchen hood exhaust fans.
  - 3. Prefabricated roof curbs.

- C. Certified Sound power levels for each fan.
- D. Motor ratings types, electrical characteristics and accessories.
- E. Roof curbs.
- F. Maintenance and Operating manuals in accordance with Section 01 00 00, GENERAL REQUIREMENTS.
- G. Certified fan performance curves for each fan showing cubic feet per minute (CFM) versus static pressure, efficiency, and horsepower for design point of operation.

#### 1.5 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. Air Movement and Control Association International, Inc. (AMCA):
  - 99-86.....Standards Handbook
  - 210-06.....Laboratory Methods of Testing Fans for  
Aerodynamic Performance Rating
  - 261-09.....Directory of Products Licensed to bear the AMCA  
Certified Ratings Seal - Published Annually
  - 300-08.....Reverberant Room Method for Sound Testing of  
Fans
- C. American Society for Testing and Materials (ASTM):
  - B117-07a.....Standard Practice for Operating Salt Spray (Fog)  
Apparatus
  - D1735-08.....Standard Practice for Testing Water Resistance  
of Coatings Using Water Fog Apparatus
  - D3359-08.....Standard Test Methods for Measuring Adhesion by  
Tape Test
  - G152-06.....Standard Practice for Operating Open Flame  
Carbon Arc Light Apparatus for Exposure of Non-  
Metallic Materials
  - G153-04.....Standard Practice for Operating Enclosed Carbon  
Arc Light Apparatus for Exposure of Non-Metallic  
Materials
- D. National Fire Protection Association (NFPA):
  - NFPA 96-08.....Standard for Ventilation Control and Fire  
Protection of Commercial Cooking Operations
- E. National Sanitation Foundation (NSF):
  - 37-07.....Air Curtains for Entrance Ways in Food and Food  
Service Establishments
- F. Underwriters Laboratories, Inc. (UL):

181-2005.....Factory Made Air Ducts and Air Connectors

## **1.6 EXTRA MATERIALS**

- A. Provide one additional set of belts for all belt-driven fans.

## **PART 2 - PRODUCTS**

### **2.1 KITCHEN EXHAUST FAN**

- A. Description: Roof mounted, centrifugal, vertical discharge, fan conforming to UL 762 standard for restaurant grease exhaust systems rated at 400°F.
- B. Construction:
1. Housing: Weather proof spun aluminum with rolled bead for strength, with galvanized base with rigid galvanized steel internal structural supports.
  2. Wheel: Statically and dynamically balanced backward inclined, centrifugal wheel constructed of aluminum. Wheel shall be spark-resistant, non-overloading and be matched to deeply spun venturis.
  3. Motor: Continuous duty, ball bearing design, permanently lubricated. Motor shall be mounted out of the main air stream and furnished at specific voltage, phase and enclosure. Shafts shall be turned, ground and polished. Heavy-duty ball bearings are rated for a minimum L50 life exceeding 200,000 hours. Pulleys shall be adjustable, cast iron, machined, keyed, securely attached and sized for 150% of the horsepower at its maximum rated speed.
- C. Fan shall bear the AMCA Certified Ratings Seal for Air and Sound Performance.
- D. Additional features:
1. Fan shall bear UL 762 Listing rated at 400°F.
  2. NEMA-3R weather-proof junction box, pre-wired by factory from motor to junction box.
  3. Drain connection leading into a grease collection/separator box. Grease collection box mounted to roof curb.
  4. Ventilated mounting curb, complying with NFPA 96.
  5. Hinged sub-base.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install fan, motor and drive in accordance with manufacturer's instructions.
- B. Align fan and motor sheaves to allow belts to run true and straight.
- C. Bolt equipment to curbs with galvanized lag bolts.

**3.2 PRE-OPERATION MAINTENANCE**

- A. Lubricate bearings, pulleys, belts and other moving parts with manufacturer recommended lubricants.
- B. Rotate impeller by hand and check for shifting during shipment and check all bolts, collars, and other parts for tightness.
- C. Clean fan interiors to remove foreign material and construction dirt and dust.

**3.3 START-UP AND INSTRUCTIONS**

- A. Verify operation of motor, drive system and fan wheel according to the drawings and specifications.
- B. Check vibration and correct as necessary for air balance work.

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