

**SECTION 23 34 23  
POWER VENTILATORS**

**PART 1 GENERAL**

**THE CONTRACTOR IS REFERRED TO THE “SPECIAL NOTICE TO CONTRACTORS SUMMARY FORM “THE “FORM OF PROPOSAL””; THE “FORM OF BID BOND””; “DIVISION 01 – GENERAL REQUIREMENTS” OF THE “CONTRACT SPECIFICATIONS””; THE “CONTRACT DRAWINGS” AND ALL AMENDMENTS AND ADDENDA THERETO; ALL OF WHICH GOVERN THE WORK OF THIS SECTION.**

**1.01 SECTION INCLUDES**

- A. KITCHEN HOOD UPBLAST ROOF EXHAUSTERS.

**1.02 RELATED REQUIREMENTS**

- A. Section 23 05 13 - Common Motor Requirements for HVAC Equipment.
- B. Section 23 05 48 - Vibration and Seismic Controls for HVAC Piping and Equipment.

**1.03 REFERENCE STANDARDS**

- A. AMCA (DIR)- (Directory of) Products Licensed Under AMCA International Certified Ratings Program; <http://www.amca.org/certified/search/company.aspx>.
- B. [AMCA 99](#) - Standards Handbook; 2010.
- C. [AMCA 204](#) - Balance Quality and Vibration Levels for Fans; 2005.
- D. [AMCA 210](#) - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating; 2007.
- E. [AMCA 300](#) - Reverberant Room Method for Sound Testing of Fans; 2014.
- F. [AMCA 301](#) - Methods for Calculating Fan Sound Ratings from Laboratory Test Data; 2014.
- G. [NEMA MG 1](#) - Motors and Generators; 2014.
- H. [NEMA EN 10250](#) - Enclosures for Electrical Equipment (1000 Volts Maximum); 2014.
- I. [NFPA 96](#) - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations; 2014.
- J. [UL 705](#) - Power Ventilators; Current Edition, Including All Revisions.
- K. [UL 762](#) - Outline of Investigation for Power Roof Ventilators for Restaurant Exhaust Appliances; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate the installation with size, location and installation of service utilities.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- C. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.

- C. Manufacturer's Instructions: Indicate installation instructions.
- D. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. 1.Extra Fan Belts: One set for each individual fan.

## 1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

## 1.07 FIELD CONDITIONS

- A. Permanent ventilators may not be used for ventilation during construction.

## PART 2 PRODUCTS

### 2.01 OWNER-FURNISHED PRODUCTS

### 2.02 MANUFACTURERS

- A. Greenheck: [www.greenheck.com](http://www.greenheck.com).
- B. Loren Cook Company: [www.lorencook.com](http://www.lorencook.com).
- C. CaptiveAire: [www.captiveaire.com](http://www.captiveaire.com).
- D. or approved equal.

### 2.03 POWER VENTILATORS - GENERAL

- A. Static and Dynamically Balanced: [AMCA 204](#) - Balance Quality and Vibration Levels for Fans.
- B. Performance Ratings: Determined in accordance with [AMCA 210](#) and bearing the AMCA Certified Rating Seal.
- C. Sound Ratings: [AMCA 301](#), tested to [AMCA 300](#) and bearing AMCA Certified Sound Rating Seal.
- D. Fabrication: Conform to [AMCA 99](#).
- E. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- F. Kitchen Hood Exhaust Fans: Comply with requirements of [NFPA 96](#) and [UL 762](#).

### 2.04 KITCHEN HOOD UPBLAST ROOF EXHAUSTERS

- A. Performance Ratings: As specified on the drawing.
  - 1. Air Flow: \_\_\_\_\_ cfm.
  - 2. Static Pressure: \_\_\_\_\_ inches wg.
  - 3. Power: \_\_\_\_\_ bhp.
  - 4. Fan RPM: \_\_\_\_\_.
  - 5. Electrical Characteristics:
    - a. \_\_\_\_\_ hp.
    - b. \_\_\_\_\_ volts, three phase, 60 Hz.
  - 6. Motor:
    - a. Comply with [NEMA MG 1](#).

- B. Belt Drive Fan:
  - 1. Fan Wheel:
    - Type: Non-overloading, backward inclined centrifugal.
    - Material: Aluminum.
  - 2. Statically and dynamically balanced.
  - 3. Motors:
    - a. Open drip-proof (ODP).
    - b. Heavy duty ball bearing type.
    - c. Mount on vibration isolators or resilient cradle mounts, out of air stream.
    - d. Fully accessible for maintenance.
  - 4. Housing:
    - a. Construct of heavy gage aluminum including curb cap, windband, and motor compartment.
    - b. Rigid internal support structure.
    - c. One-piece fabricated or fully welded curb-cap base to windband for leak proof construction.
    - d. Construct drive frame assembly of heavy gage steel, mounted on vibration isolators.
    - e. Provide breather tube for fresh air motor cooling and wiring.
- C. Shafts and Bearings:
  - 1. Fan Shaft:
    - a. Ground and polished steel with anti-corrosive coating.
    - b. First critical speed at least 25 percent over maximum cataloged operating speed.
  - 2. Bearings:
    - a. Permanently sealed or pillow block type.
    - b. Minimum L10 life in excess of 100,000 hours (equivalent to L50 average life of 500,000 hours), at maximum cataloged operating speed.
    - c. 100 percent factory tested.
- D. Drive Assembly:
  - 1. Belts, pulleys, and keys oversized for a minimum of 150 percent of driven horsepower.
  - 2. Belts: Static free and oil resistant.
  - 3. Fully machined cast iron type, keyed and securely attached to the wheel and motor shafts.
  - 4. Motor pulley adjustable for final system balancing.
  - 5. Readily accessible for maintenance.
- E. Disconnect Switches:
  - 1. Factory mounted and wired.
  - 2. Environment Type per [NEMA EN 10250](#): Unless otherwise indicated, as specified for the following installation locations:
  - 3. Finish for Painted Steel Enclosures: Provide manufacturer's standard, factory applied gray, unless otherwise indicated.
  - 4. Positive electrical shutoff.
  - 5. Wired from fan motor to junction box installed within motor compartment.
- F. Mounting Rails for fastening the fan to the roof structure.
- G. Drain Trough: Allows for single-point drainage of water, grease, and other residues.
- H. Options/Accessories:
  - 1. Automatic Belt Tensioner: Automatic device that adjusts for correct belt tension for single drives.
  - 2. Clean Out Port: Removable grease repellent compression rubber plug allows access for cleaning wheel through windband.
  - 3. Drain Connection:
    - a. Aluminum construction.
    - b. Allows single-point drainage of grease, water, or other residues.

4. Grease Trap:
  - a. Includes drain connection.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Secure roof exhausters with cadmium plated steel lag screws to the roof structure.
- C. Provide sheaves required for final air balance.

#### **3.02 SCHEDULES**

- A. Drawing Code:
- B. Manufacturer:
- C. Model:
- D. Fan Type:
- E. Hood/Housing:
- F. Air Flow Capacity:
- G. Static Pressure:
- H. Drive:
- I. Fan Tip Speed:
- J. Fan RPM:
- K. Motor hp:
  1. Electrical Characteristics:
- L. Sound (Sones):
- M. Sound Power:
  1. 1st Octave:
  2. 2nd Octave:
  3. 3rd Octave:
  4. 4th Octave:
  5. 5th Octave:
  6. 6th Octave:
  7. 7th Octave:
  8. 8th Octave:
- N. Accessories:
  1. T Guard
  2. Local Disconnect
  3. Vibration Isolators
  4. Grease Cup
  5. Quick Opening Access Door
  6. Extended Lub. Lines
  7. Painted Steel Housing
  8. Upblast Discharge
  9. Listed for Grease Removal (UL /CUL752)
  10. Weather Hood
  11. Threaded Drain Connection
  12. Flanged Inlet & Outlet
  13. Mounting Rails with Isolators.

**END OF SECTION 23 34 23 23 34 23**