

SECTION 233400 - HVAC FANS

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Sidewall Propeller Fans

1.2 RELATED WORK

- A. Section 23 05 29 – Hangers and Supports for HVAC Piping and Equipment

1.3 QUALITY ASSURANCE

- A. Conform to AMCA Bulletins regarding construction and testing. Fans shall bear AMCA certified rating seal.

1.4 SUBMITTALS

- A. Submit shop drawings under provisions of Section 01 33 00.
- B. Submit with shop drawings, operating point plotted on curves and sound ratings at operating conditions.
- C. Submit manufacturers' installation instructions under provisions of Section 01 33 00.

1.5 PROJECT CONDITIONS

- A. Do not operate fans for any purpose, temporary or permanent, until ductwork is clean, filters in place, bearings lubricated, and fan has been run under observation.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide and install items as listed in schedule on the drawings.
- B. Equivalent fan selections shall not decrease motor horsepower (wattage), increase noise level, increase tip speed by more than 10 percent, or increase inlet air velocity by more than 20 percent, from that specified.
- C. Fan performance based on sea level conditions.
- D. Ceiling Exhaust Fan
 - 1. Greenheck
 - 2. Loren-Cook
 - 3. Penn-Barry
 - 4. Substitutions: Under provisions of 012500.

2.2 SELECTION AND BALANCING

- A. Fans shall be catalog rated for 10% greater static pressure than specified at the specified air volume and selected with the specified air volume greater than the air volume at the peak of the fan pressure volume curve. Fan shall provide stable operation down to 80% of the design volume operating at the required speed for the specified conditions.
- B. Provide balanced variable sheaves for motors 15 hp and under, and fixed sheaves for 20 hp and over. Provide additional fixed sheaves and belts to meet balance requirements.
- C. Statically and dynamically balance fans to eliminate vibration of noise transmission to occupied areas of the building.
- D. Provide belt guards on belt driven fans to meet OSHA requirements.
- E. Provide safety screen where inlet or outlet is exposed.

2.3 DIRECT DRIVE SIDEWALL MOUNTED PROPELLER FANS

A. General Description:

- 1. Fan arrangement shall be exhaust, see Fan Schedule
- 2. Sidewall mounted applications
- 3. Maximum continuous operating temperature 130 degrees F.
- 4. Each fan shall bear a permanently affixed manufacturer's engraved metal nameplate containing the model number and individual serial number.

B. Propeller

- 1. Propeller shall be aluminum blade riveted to steel hub
- 2. A standard square key and set screw or tapered bushing shall lock the propeller to the motor shaft
- 3. Statically and dynamically balanced in accordance with AMCA Standard 204-05
- 4. The propeller and fan inlet will be matched and shall have precise running tolerances for maximum performance and operating efficiency

C. Motors:

- 1. Motor enclosures: Totally Enclosed Air Over.
- 2. Motors are permanently lubricated, sleeve bearing type to match with the fan load and furnished at the specific voltage and phase
- 3. Accessible for maintenance

D. Drive Frame:

- 1. Drive frame assemblies and fan panels shall be galvanized steel
- 2. Drive frame shall have welded wire or formed channels and fan panels shall have prepunched mounting holes, formed flanges and a deep formed one piece inlet venture.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTALLATION

- A. Compliance: Comply with manufacturer's product data, including technical bulletins, product catalog installation instructions.

3.2 EXAMINATION

- A. Examine areas to receive fans. Notify the Engineer of conditions that would adversely affect installation or subsequent utilization and maintenance of fans. Do not proceed with installation until unsatisfactory conditions are corrected.

- 3.3 PREPARATION
 - A. Ensure roof openings are square, accurately aligned, correctly located, and in tolerance.
 - B. Ensure duct is plumb, sized correctly, and to proper elevation above roof deck. Install duct as specified in Air Distribution (Division 23).
- 3.4 INSTALLATION
 - A. Install fans system as indicated on the Installation, Operation and Maintenance Manual (IOM) and contract drawings.
 - B. Install fans in accordance with manufacturer's instructions.
- 3.5 SYSTEM STARTUP
 - A. Refer to Installation, Operation, and Maintenance Manual (IOM).
- 3.6 ADJUSTING
 - A. Adjust exhaust fans to function properly.
 - B. Adjust Belt Tension.
 - C. Lubricate bearings.
 - D. Adjust drive for final system balancing.
 - E. Check wheel overlap.
- 3.7 CLEANING
 - A. Clean as recommended by manufacturer. Do not use material or methods which may damage finish surface or surrounding construction.
- 3.8 PROTECTION
 - A. Protect installed product and finished surfaces from damage during construction.
 - B. Protect installed exhaust fans to ensure that, except for normal weathering, fans will be without damage or deterioration at time of substantial completion.
- 3.9 FAN SCHEDULE
 - A. See Drawings.

END OF SECTION 233400