

SECTION 23 34 23

POWER VENTILATORS

TAG: Utility Sets

PART 1 - GENERAL

1.1 SUMMARY

- A. Fan shall be aluminized and galvanized steel, roof mounted, direct driven, centrifugal up blast restaurant utility exhaust ventilator.
- B. Centrifugal up blast restaurant utility exhaust ventilators are engineered to discharge grease laden vapors, fumes and other contaminants vertically away from the building.
- C. Specifically intended for high temperature and heavy grease applications.

1.2 SUBMITTALS

- A. The manufacturer assumes no liability for the use or results of use of this document. This specification is to be reviewed by the engineer to confirm requirements of the project and building codes are met.
- B. As the manufacturer continues product development, it reserves the right to change design and specifications without notice.

1.3 QUALITY ASSURANCE

- A. ETL Listed and complies with UL705 (electrical) Standards and CSA Std C22.2, No 113.
- B. Fan shall bear the AMCA certified rating seal for air performance.
- C. The fan wheel shall be centrifugal backward inclined and non-overloading. Wheels shall be balanced in two planes and done in accordance with AMCA standard 204-96, Balance Quality and Vibration Levels for Fans.
- D. Miami-Dade Certification.

1.4 WARRANTY

- A. All units are provided with the following 2-year standard warranty from date of shipment.
- B. 3-year Extended Motor Warranty (Optional).
- C. This warranty shall not apply if:
 - 1. The equipment is not installed by a qualified installer per the manufacturer's installation instructions shipped with the product.
 - 2. The equipment is not installed in accordance with Federal, State, and Local codes and regulations.
 - 3. The equipment is misused, neglected, or not maintained per the manufacturer's maintenance instructions.
 - 4. The equipment is not operated within its published capacity.
 - 5. The invoice is not paid within the terms of the sales agreement.
- D. The manufacturer shall not be liable for incidental and consequential losses and damages potentially attributable to malfunctioning equipment. Should any part of the equipment prove to be defective in material or workmanship within the 2-year warranty period, upon examination by the manufacturer, such part will be repaired or replaced by

the manufacturer at no charge. The buyer shall pay all labor costs incurred in connection with such repair or replacement. Equipment shall not be returned without manufacturer's prior authorization. All returned equipment shall be shipped by the buyer, freight prepaid to a destination determined by the manufacturer.

PART 2 - PRODUCTS

2.1 GENERAL ASSEMBLY

- A. The fan shall be factory assembled, tested, and shipped as a complete unit.
- B. The following specifications, delivering all capacities scheduled and conforming to the design indicated herein. Alternate layouts or dimensional changes will not be accepted.

2.2 CONSTRUCTION

- A. The base shall be constructed of heavy gauge galvanized steel with pre-punched mounting holes for fasteners.
- B. Base corners shall be welded and painted to provide strength and support for hinging and cleaning and to prevent leakage into the building.
- C. Fan scroll shall be continuously sealed with a list intumescent to prevent grease leakage.
- D. The fan discharge scoop shall be fully welded and have a 2" fully welded drain to prevent grease leakage and blockage of the drain.
- E. Fan shall include integral hinge at the base of the fan power pack to allow the wheel to tilt out of the fan housing for easy cleaning of the duct.
- F. Hinge shall be designed to limit the amount of travel and be self-locking with manual release.
- G. The hinged section of the fan shall be provided with heavy gauge, oversized handle in place to allow safe, fast and easy opening.
- H. A safety disconnect switch shall be standard on all USBI units with open drip proof motors. Switches shall be installed in a NEMA3R enclosure and mounted to exterior of the fan for easy access
- I. The unit shall be factory tested after assembly.

2.3 WHEEL

- A. The wheel blades shall be aerodynamically designed to minimize turbulence, increase efficiency and reduce noise.
- B. The wheel shall be heavy gauge welded aluminum. In the event that balancing weights are required they shall be riveted or welded to the blades or wheel.
- C. The wheel inlet shall overlap the fan base inlet for maximum performance and efficiency.
- D. The wheel shall be firmly attached to the motor shaft with set screws.

2.4 MOTOR

- A. Motor Type: Totally Enclosed Air Over Electronically Commutated Motor (TEAO-ECM).
- B. Motor Type: Open Drip Proof (ODP).

- C. Motor Type: Open Drip Proof Electronically Commutated Motor (ODP-ECM).
- D. Motor Type: Totally Enclosed Fan Cooled (TEFC) motor driven by a Variable Frequency Drive.
- E. Motor Type: Explosion Proof
- F. Motors shall be heavy duty ball bearing type, mounted out of the airstream and furnished at the specified voltage, phase and enclosure.
- G. Motor mounting plate shall be constructed of heavy gauge steel and isolated from the fan structure with vibration isolators or gasket material.
- H. The motor compartment shall be cooled by outside air drawn through louvers in the motor cover. The motor compartment shall be completely removable to provide unobstructed access to the motor and drives.
- I. The fan shall have a tilt open top cover assembly that allows the wheel to be tilted back for easy access during cleaning and maintenance.
- J. The motor cover assembly shall have wing bolts to secure the assembly to the housing.
- K. Shafts shall be precision ground and polished.
- L. Heavy duty, pre-lubricated bearings shall be selected for a minimum life (L10) in excess of 200,000 hours of operation at registered operating speed.
- M. Shafts shall be designed and individually tested specifically for use in air handling applications.

2.5 ECM EXHAUST WIRING PACKAGES

- A. ECM Wiring Package - Exhaust - Manual or 0-10VDC Reference Speed Control -MSC-(NIDEC)
- B. ECM Wiring Package - Exhaust - Manual or 0-10VDC Reference Speed Control -MSC-(TELCO), CCW Rotation
- C. ECM Wiring Package - Exhaust - MODBUS Control -MSC- (NIDEC)
- D. ECM Wiring Package - Exhaust - MODBUS Control -MSC- (TELCO), CCW Rotation
- E. ECM Wiring Package - Manual or 0-10VDC Reference Speed Control (TELCO Motor), CCW Rotation
- F. ECM Wiring Package - PWM Signal from ECPM03 Prewire (TELCO Motor), CCW Rotation
- G. ECM Wiring Package-Exhaust - Manual or 0-10VDC Reference Speed Control (NIDEC Motor)
- H. ECM Wiring Package-Exhaust - PWM Signal from ECPM03 Prewire (NIDEC Motor)

2.6 CONTROL OPTIONS

- A. Current Sensor Mounted in Exhaust Fan for use with Prewire Proving.

2.7 VFD OPTIONS

- A. VAV Package with Manual Control (VFD included).
- B. VAV Package with Static Pressure Control (VFD included).
- C. VAV Package with Preset or Reference Speeds (VFD included).

- D. Line Reactor Mounted in Fan.
- E. Line Reactor Mounting Bracket for Direct Drive Fans.
- F. Load Reactor Mounted in Fan.
- G. VFD unit mounted.
- H. VFD factory mounted and wired in exhaust fan.
- I. VFD Mounting Bracket.

2.8 OPTIONS AND ACCESSORIES

- A. Upblast Fan Wheel Access Port.
- B. Utility Set Grease Cup.
- C. Class B Spark Resistant construction for USBI, CASRE, and DU/DR fans.
- D. Class C Spark Resistant construction for PRVs.
- E. Fan Base Ceramic Seal.
- F. High Temperature Heat and Smoke Option.
- G. Fire Stat (360 Degree) mounted in Exhaust Fan. For SIF fans, mount stat on back post opposite the disconnect, above the cooling tube.
- H. Fire Stat (600 Degree) mounted in Exhaust Fan.
- I. Inlet Service Duct Connection. Used to connect to standard Grease Duct or Field Welded Duct. Includes (2) 7" risers bolted to standard inlet riser.
- J. Inlet Connection Standard 24" Flanged Grease Duct.
- K. Inlet Ring Used To Connect Non-Factory Duct.
- L. Rubber Vibration Isolators for BI Utility Sets (set of 8).
- M. Utility Set - Spring Vibration Isolators - Indoor/Outdoor use.
- N. Motor Grounding Kit – Shaft Grounding Ring. Epoxy mounted to face of motor.
- O. Disconnect switch mounted on left side.
- P. Tan Enamel Coating.
- Q. Pollution Control Unit Options. See PCU Specification, if applicable.

2.9 DISCHARGE OPTION

- A. Discharge Extension Assembly with Hardware.
- B. Rain Cap Assembly - Includes Hardware and Gasket.
- C. Backdraft Damper - USBI 24
- D. 24" Discharge Adapter.
- E. 24" Discharge Extension.
- F. Discharge Screen.

2.10 DISCHARGE ORIENTATION

- A. Discharge Orientation Horizontal Lower Left - CW Inlet Side.
- B. Discharge Orientation Horizontal Upper Right - CW Inlet Side.

- C. Discharge Orientation Upper Left 45 Degree - CW Inlet Side.
- D. Discharge Orientation Upper Right 45 Degree - CW Inlet Side.
- E. Discharge Orientation Vertical Upper Left - CW Inlet Side.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine all areas and conditions under which package(s) are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 INSTALLATION

- A. Install the package in accordance with manufacturer's instructions, drawings, written specifications, manufacturer's installation manual, and all applicable building codes.

3.3 CONNECTIONS

- A. Electrical connections conform to applicable requirements in Division 26 Sections.

3.4 SYSTEM START-UP

- A. System start-up is performed by a factory-trained Service Technician.