SECTION 23 34 23

POWER VENTILATORS

TAG: Direct Drive Inline Fan

PART 1 - GENERAL

1.1 SUMMARY

A. Fan(s) shall be of the "Square Inline" type with a square inlet and outlet.

B. Fan(s) shall be designed for floor mount or hung installations inline with ducting, and have a direct driven centrifugal or mixed flow wheel.

C. Fan(s) shall be a corrosion resistant steel, direct driven, square inline blower.

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. Vertical units only.

B. ETL Listed and complies with UL762 and ULC-S645 Standards.

C. Fan(s) shall bear the AMCA certified rating seal for air performance.

D. Backward inclined non-overloading, all-aluminum wheel. Balanced in accordance with AMCA standard 204-96, *Balance Quality and Vibration Levels for Fans*.

1.4 WARRANTY

A. All units are provided with the following 2-year standard warranty from date of shipment.

B. 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.

C. 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. Fan(s) 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. Square Inline Duct Blower(s) shall be constructed of galvanized steel and/or stainless steel.

B. A removable cover shall provide blower motor access, and drive access shall be provided on both sides through removable panels.

C. Blowers shall be direct driven; centrifugal or mixed flow backward inclined.

D. The blower shell shall be constructed of heavy-gauge galvanized steel.

E. The blower shell shall be constructed of heavy-gauge stainless steel for UL762 listed fans.

F. Side panels shall be hinged & removable for service access.

G. The fan shall bear a permanently attached nameplate displaying model and serial number of unit for future identification.

H. The grease spout shall be made of aluminum tubing, welded to the fan housing. The weld shall be factory tested to ensure no leaks.

I. The unit shall be factory tested after assembly.

2.3 WHEEL

A. The fan wheel shall be centrifugal backward inclined and non-overloading.

B. The wheel blades shall be aerodynamically designed to minimize turbulence, increase efficiency and reduce noise.

C. The wheel blades shall be welded to the wheel inlet cone.

D. If balancing weights are required, they shall be riveted to the blades or wheel.

E. The wheel inlet shall overlap the fan base inlet for maximum performance and efficiency.

F. The wheel shall be firmly attached to the motor shaft with two 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: Totally Enclosed Fan Cooled (TEFC) motor driven by a Variable Frequency Drive.

D. Motor shall be permanently lubricated and rated for continuous duty.

E. Furnished at the specified voltage, phase, and enclosure. Motor speed shall be variable,

controlled using an integrated speed controller.

F. Motors shall be mounted out of the airstream and furnished at the specified voltage, phase, and enclosure.

G. Motor mounting plate shall be constructed of heavy gauge galvanized steel.

H. The motor compartment shall be cooled by outside air drawn through an extruded aluminum conduit tube.

I. An integral electrical conduit running from the fan base to the motor compartment is provided for ease of installation.

J. The conduit tube passage shall be sealed to prevent noise. Silicone rubber grommets shall isolate the conduit tube from the fan housing.

K. The motor compartment shall be a two-piece construction. The cap has quick-release clips to provide fast and easy access to the motor compartment.

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. Load Reactor Mounted on SIF.

E. VFD unit mounted.

F. VFD factory mounted and wired in exhaust fan.

G. VFD Mounting Plate.

2.8 OPTIONS AND ACCESSORIES

A. Hanging Spring Vibration Isolators (Set of 4), For Indoor or Outdoor use with Square

Inline fans.

B. Hanging Spring Vibration Isolators for Square Inline Fans with Filter Bank. Contains six Hanging Isolators.

C. Fan Back Draft Damper Motorized I BDD 120/240V.

D. Fan Back Draft Damper Motorized I BDD 24V.

E. Fan Back Draft Damper Motorized I BDD 460V.

F. Motor Grounding Kit – Shaft Grounding Ring. Epoxy mounted to face of motor.

G. Class B Spark Resistant construction for Direct Drive Inline Fans.

H. Class C Spark Resistant construction for Inline Fans.

I. Thermostat Control.

J. Fire Stat (360 Degree) mounted in Exhaust Fan. For SIF fans, mount stat on back post opposite the disconnect, above the cooling tube.

K. Gravity Back Draft Damper (I BDD).

L. Painted Coatings: Tan enamel coating.

M. Painted Coatings: White epoxy coating.

N. Discharge Screen.

O. Inlet Screen.

P. Floor Spring Vibration Isolators (Set of 4).

Q. Rubber Vibration Isolators (set of 4).

R. Utility Set - Floor Spring Vibration Isolators - Equivalent Sized Utility Set/SIF with Filter Bank- Indoor/Outdoor use.

S. Opposite Side Controls.

2.9 DISCHARGE CONFIGURATION

A. Low SP Straight Discharge- Square to Round Discharge Adapter.

B. Straight discharge. Square Duct Connection.

C. Side Discharge door for SIF. Left side from inlet. Outlet Ring Duct Connection.

D. Side Discharge door for SIF. Left side from inlet. Square Duct Connection.

E. Side Discharge door for SIF. Left side from inlet. Standard Duct Connection.

F. Side Discharge door for SIF. Right side from inlet. Outlet Ring Duct Connection.

G. Side Discharge door for SIF. Right side from inlet. Square Duct Connection.

H. Side Discharge door for SIF. Right side from inlet. Standard Duct Connection.

I. Straight discharge. Standard Duct Connection.

J. Straight discharge. Outlet Ring Duct Connection.

2.10 FILTER BOX

A. Filter Box with 2 inch Merv 13 Filter.

B. Filter Box with 2 inch Merv 8 & Merv 13 Filters.

C. Filter Box with 2 inch Merv 8 Filter.

D. Filter Box with 2 inch Mesh Filter.

E. Filter Box with 4 inch HEPA Filter.

F. Filter Box with 4 inch Merv 15 Filter.

2.11 INLET CONFIGURATION

A. Inlet - Square Duct Connection.

B. Inlet - Standard Duct Connection.

C. FB Inlet - Standard Duct Connection for Filter Bank.

D. FB Inlet - Ring Duct Connection for Filter Bank.

E. Inlet Ring Duct Connection.

2.12 MOUNT CONFIGURATION

A. Horizontal Floor Mount - Pre-Installed Mounts.

B. SIF - Horizontal Overhead Mount - Pre-Installed Mounts.

C. SIF - Mounting Brackets Shipped Loose.

D. SIF - Vertical Floor Mount - Pre-Installed Mounts.

E. SIF - Vertical Overhead Mount - Pre-Installed Mounts.

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.