

SECTION 235113.11 - DRAFT CONTROL FANS

TIPS:

To view non-printing **Editor's Notes** that provide guidance for editing, click on Masterworks/Single-File Formatting/Toggle/Editor's Notes.

To read **detailed research, technical information about products and materials, and coordination checklists**, click on Masterworks/Supporting Information.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Draft inducer fans.
2. Venturi-draft inducer fans.
3. Mechanical-draft vent fans.
4. Vent exhaust fans.
5. Combustion-air fans.

B. Related Requirements:

1. Section 235113.16 "Vent Dampers" for barometric dampers and vent dampers.
2. Section 235116 "Fabricated Breechings and Accessories" for listed, refractory-lined metal breechings and field-fabricated metal breechings.
3. Section 235123 "Gas Vents" for Type B and BW vents, Type L vents, and listed special gas vents.
4. Section 235133 "Insulated Sectional Chimneys" for listed chimney liners; listed building-heating-appliance chimneys; listed, refractory-lined metal chimneys; and field-fabricated chimneys.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of product.
 1. Include plans, elevations, sections, and attachment details.

2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Detail fabrication and assembly of hangers and seismic restraints.
4. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For draft control fans to include in emergency, operation, and maintenance manuals.

1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of [**draft inducer fans**] [**venturi-draft inducer fans**] [**mechanical-draft vent fans**] [**vent exhaust fans**] [**combustion-air fans**] that fail in materials or workmanship within specified warranty period.
 1. Failure includes failure of the fan due to corrosion.
 2. Warranty Period: [**Two**] [**10**] **<Insert number>** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 DRAFT INDUCER FANS

- A. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- B. Fan Construction: [**Galvanized**] [**Aluminized**]-steel housing and radial-blade centrifugal fan.
 1. Fan Motor: Permanent-split-capacitor type.
- C. Controls:
 1. Draft-proving switch.
 2. Control kit to cycle fan with gas flow to a single burner.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 VENTURI-DRAFT INDUCER FANS

- A. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)

- B. Fan Construction: Enameled-steel venturi tube for vents **20 inches (508 mm)** in diameter and smaller and ASTM A 666, Type 304, stainless-steel venturi tube for vents **22 to 48 inches (559 to 1219 mm)** in diameter. **[Galvanized]** **[ENAMELED]**-steel fan housing with radial-blade centrifugal wheel.
 - 1. Fan Motor: Permanent-split-capacitor type.
- C. Controls:
 - 1. Draft-proving switch.
 - 2. Control kit to cycle fan with gas flow to a single burner.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.3 MECHANICAL-DRAFT VENT FANS

- A. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- B. Fan Construction: Forward-curved centrifugal fan and scroll fabricated of **[aluminized]** **[galvanized]** steel; direct-drive, ball-bearing motor lubricated with synthetic oil; internal cooling fan; stainless-steel shaft; and integral pressure-sensing switch.
 - 1. Fan Motor: Permanent-split-capacitor type.
- C. Controls:
 - 1. Draft-proving switch.
 - 2. Control kit to cycle fan with gas flow to **[single]** **[multiple]** burner(s).
- D. Accessories:
 - 1. **[Aluminized]** **[Stainless]**-steel, wall-vent hood.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.4 VENT EXHAUST FANS

- A. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- B. General: Centrifugal fan with **[variable]** **[constant]**-speed control mounted at end of **[sidewall]** **[vertical]** vent.
- C. Test Standard: UL 378.
- D. Fan Construction:
 - 1. **[Cast-aluminum]** **[Galvanized-steel]** **[Stainless-steel]** housing **[painted manufacturer's standard color of baked enamel]**.

2. [Galvanized] [Stainless]-steel vent.
 3. [Cast-aluminum] [Stainless-steel] wheel.
 4. Backward-inclined centrifugal or axial fan wheel statically and dynamically balanced.
 5. Access panel at the discharge area.
 6. Concentric makeup air-inlet duct surrounding the vent to allow zero clearance to combustibles.
- E. Motor: Fully enclosed,[**variable-speed duty**,] permanent-split capacitor, out of the airstream, with prelubricated and sealed ball bearings.
- F. Constant-Speed Controls: Boiler interlock relay starts fan when burner control cycles on. Pressure switch permits burner operation via interlock with boiler. Fan-proving switch is adjustable between **minus 0.07- and minus 0.15-inch wg (minus 17 and minus 37 Pa)**.
- G. Variable-Speed Controls: Boiler interlock relay starts fan when burner control cycles on. Pressure controller, control transformer, and miscellaneous controls for automatic modulation of fan speed to maintain preset negative pressure between **zero- and minus 1.0-inch wg (zero and minus 249 Pa)**. Include controller with indicator lights, pressure-differential transmitter, chimney pressure-sensor probe, and fan-proving switch adjustable between **minus 0.07- and minus 0.15-inch wg (minus 17 and minus 37 Pa)**. Include tubing.
- H. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.5 COMBUSTION-AIR FANS

- A. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- B. Fan Construction: [Galvanized] [Aluminized]-steel housing; steel forward-curved fan and scroll; direct-drive, totally enclosed, fan-cooled motor with ball bearings; stainless-steel shaft; and integral pressure-sensing switch.
1. Internal bypass to temper supply-air temperature to room.
- C. Controls:
1. Fan-proving switch to permit burner operation when combustion-air fan is operating.
 2. Multiple-appliance control starts fan with operation of any one of [**three**] [**four**] appliances.
 3. Modulating combustion-air fan speed to control pressure differential in room with respect to outdoors.
 4. Manual-reset, high-limit switch stops operation with **160 deg F (71 deg C)** room temperature.
 5. Optional Controls:
 - a. Alarm circuit.
 - b. Excessive negative pressure limit.
 - c. Interface relay for vent exhaust fan, draft inducer fan, or mechanical-draft vent fan.
 - d. [Galvanized-steel] [Aluminum] intake hood.

- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.6 MOTORS

- A. Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."

2.7 CAPACITIES AND CHARACTERISTICS

A. Fan:

1. Manufacturer: <Insert manufacturer>.
2. Model No.: <Insert number>.
3. Rated Appliance Input: <Insert Btu/h (kW)>.
4. Airflow: <Insert cfm (L/s)>.
5. Speed: <Insert value> rpm.
6. Static Pressure: <Insert inches wg (Pa)>.
7. Electrical Characteristics:
 - a. Motor Horsepower: <Insert value>.
 - b. Volts: [115] [208] [230] [460] <Insert value>.
 - c. Phase: [Single] [Three].
 - d. Hertz: 60.
 - e. Full-Load Amperes: <Insert value>.
 - f. Minimum Circuit Ampacity: <Insert value>.
 - g. Maximum Overcurrent Protection: <Insert amperage>.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install listed components in a manner complying with the listing.
- B. Install draft inducer fans in single-wall vent section that is designed to couple with other vent materials.
- C. Secure draft inducer fans to appliances, breechings, or stacks with hardware compatible with connected materials.
- D. Install draft inducer fans with clearances for service and maintenance.
- E. Install[PVC] intake duct that is sized according to manufacturer's written instructions.

3.2 CONNECTIONS

- A. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

END OF SECTION 235113.11