

Suggested Specifications

Price Flat Faced Displacement Diffusers

Division 23 – Heating, Ventilating, and Air Conditioning

Section 23 37 13 – Diffusers, Registers, and Grilles

PART 1 – GENERAL

1.01 Section includes:

- A. Exposed Displacement Diffuser: DFE

1.02 Related Requirements

- A. Section 01 30 00 – Administrative Requirements
- B. Section 01 40 00 – Quality Requirements
- C. Section 01 60 00 – Product Requirements
- D. Section 01 74 19 – Construction/Demolition Waste Management and Disposal
- E. Section 01 78 00 – Closeout Submittals
- F. Section 01 79 00 – Demonstration and Training
- G. Section 23 31 00 – HVAC Ducts and Casings
- H. Section 23 32 00 – Air Plenums and Chases

1.03 Reference Standards

- A. All referenced standards and recommended practices in this section pertain to the most recent publication thereof, including all addenda and errata, unless otherwise noted.
- B. ASHRAE 55 – Standard for Thermal Environmental Conditions for Human Occupancy; 2004
- C. ASHRAE 70 – Standard Method of Testing the Performance of Air Outlets and Air Inlets
- D. ASHRAE 170 – Standard for Ventilation of Health Care Facilities
- E. ASTM D610 – Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces
- F. ASTM D714 – Standard Test Method for Evaluating Degree of Blistering of Paints
- G. ASTM D1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
- H. ASTM D4752 – Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub

1.04 Administrative Requirements

- A. Pre-installation Meeting: Conduct a pre-installation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and efficient manner.

1.05 Submittals

- A. See Section 01 30 00 – Administrative Requirements for submittal procedures.
- B. Product Data: Provide data indicating configuration, general assembly, and materials used in fabrication. Include catalog performance ratings that indicate airflow, static pressure, and sound power levels for each of the second through sixth octave bands in dBA.
- C. Shop Drawings: Indicate configuration, general assembly, and materials used in fabrication.
- D. Certificates: Certify that air capacities, pressure drops, and selection procedures meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Indicate support details, installation instructions, recommendations, and service clearances required.
- F. Project Record Documents: Record actual locations of units and control components.
- G. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts lists.
- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

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.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 Warranty

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide 12 month manufacturer warranty from date of shipment for displacement diffusers.

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PART 2 – PRODUCTS

2.01 Flat Faced Displacement Diffusers

- A. Basis of Design: Price Industries, Inc.
 - 1. Exposed Displacement Diffuser: Model DFE
- B. Performance:
 - 1. The diffuser manufacturer shall provide sound and pressure drop data derived from tests in accordance with ASHRAE 70.
 - 2. Performance data for Draft Rate (%DR) shall be provided based on tests in accordance with ASHRAE 55-2004.
 - 3. A software program shall be available to aid in performance assessment by allowing room comfort evaluation for specific operating conditions and diffuser locations.
 - a. If evaluation software is not available, the manufacturer shall supply, free of charge, a CFD model of the representative spaces completed by a modeling contractor who has demonstrable qualifications to model such a space.
 - b. The qualifications shall include no less than 10 years of experience in the modeling of displacement ventilation systems, thorough validation of the code through comparison to empirical data, as well as a list of references.

2.02 Exposed Displacement Diffuser

- A. General:
 - 1. Furnish and install Price Model DFE rectangular one-way/three-way displacement diffuser with the sizes, capacities, and options as indicated on the plans and air outlet schedule.
 - 2. The displacement diffuser shall deliver air to the occupied space at low noise levels, with uniform, low velocity across the diffuser face in all ducting configurations without the use of nozzles.
- B. Construction:
 - 1. The exposed displacement diffuser shall be constructed with an aluminum equalization baffle behind each perforated diffuser face for uniform, low velocity distribution of supply air. Both the equalization baffle and the face shall be securely retained in the diffuser frames.
 - 2. The plenum material shall be 20 gauge steel. The diffuser frames shall be constructed of high strength aluminum extrusion for rigidity and protection of the operative face and side panels. The perforated front panel shall be constructed of 16 gauge perforated steel.
 - 3. The diffuser front panel shall be secured to the plenum through the wall with factory provided fasteners.
 - 4. The diffuser inlet shall be available for duct connection at the [top] and [rear].
 - 5. Plastic nozzle arrays or any plastic components shall be unacceptable.
- C. Diffuser finish shall be (**select one**):
 - 1. All steel components shall have B12 White baked-on powder coat finish. Epoxies and their derivatives shall not be acceptable. Visible non-metallic components shall not be acceptable.
 - a. The paint finish must demonstrate no degradation when tested in accordance with ASTM D1308 (covered and spot immersion) and ASTM D4752 (MEK double rub) paint durability tests.
 - b. The paint film thickness shall be a minimum of 2.0 mils.
 - c. The finish shall have a hardness of 2H.
 - d. The finish shall withstand a minimum salt spray exposure of 500 hours with no measurable creep in accordance with ASTM D1654, and 1000 hours of exposure with no rusting or blistering as per ASTM D610 and ASTM D714.
 - e. The finish shall have an impact resistance of 80 inch-pounds.
 - 2. All stainless steel components shall have #4 polished finish on exposed surfaces.
- D. Mounting/Fastening:
 - 1. The diffuser shall fasten to the wall with a rail mounting system with metal cover strips to conceal all visible fasteners. Puncturing the diffuser shall not be required for installation.
- E. Options:
 - 1. Diffuser Base:
 - a. The diffuser shall be provided with a base which is inset half an inch from the face of the diffuser in a specified finish to match the surrounding décor.
 - b. The diffuser base shall be [two inches], [four inches], **or** [six inches] high.
 - 2. Duct Cover:
 - a. The diffuser shall be supplied with an 18 gauge [solid steel] or [perforated steel] duct cover to conceal ductwork leading to the diffuser for increased architectural appeal. The duct cover shall be installed with a factory supplied rail-mounting system.
 - 3. Adjustable Flow Sensing Device (AFSD)
 - a. The AFSD can be ordered separately.
 - b. Features both a manually adjustable damper for volume control and a multipoint sensor for accurate pressure measurement.
 - c. Can be provided with gauge taps for flow measurement.
 - d. Can include a damper-locking mechanism to ensure quick and accurate balancing of each diffuser during the balancing process.

Suggested Specifications

PART 3 – EXECUTION

3.01 Examination

- A. Verify that conditions are suitable for installation.
- B. Verify that field measurements are as shown on the drawings.

3.02 Installation

- A. Install in accordance with manufacturer's instructions.
- B. See drawings for the size(s) and locations of displacement diffusers.
- C. Connect to ductwork in accordance with Section 23 31 00.

3.03 Adjusting

- A. Ensure supply air to the displacement diffusers by performing pitot traverse of the main supply duct.
- B. Balance outlets according to manufacturer's recommendations.
- C. Verify that field measurements are as shown on the drawings.

3.04 Field Quality Control

- A. See Section 01 40 00 – Quality Requirements for additional requirements.

3.05 Cleaning

- A. See Section 01 74 19 – Construction Waste Management and Disposal for additional requirements.

3.06 Closeout Activities

- A. See Section 01 78 00 – Closeout Submittals for closeout documentation requirements.
- B. See Section 01 79 00 – Demonstration and Training for additional requirements.