

## SECTION 23 37 00

### AIR OUTLETS AND INLETS

#### PART 1 GENERAL

##### 1.01 SUMMARY

###### A. Section Includes:

1. Diffusers.
2. Registers
3. Grilles.
4. Door grilles.
5. Louvers.
6. Goosenecks.

###### B. Related Sections:

1. Division 08 - Louvers: Wall Louvers.
2. Division 09 - Painting and Coating: Execution and product requirements for Painting of ductwork visible behind outlets and inlets specified by this section.
3. Division 23 - Air Duct Accessories: Volume dampers for inlets and outlets.

##### 1.02 REFERENCES

###### A. Air Movement and Control Association International, Inc.:

1. AMCA 500 - Test Methods for Louvers, Dampers, and Shutters.

###### B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:

1. ASHRAE 70 - Method of Testing for Rating the Performance of Air Outlets and Inlets.

###### C. Sheet Metal and Air Conditioning Contractors:

1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

##### 1.03 SUBMITTALS

###### A. Division 01 - Submittal Procedures: Submittal procedures.

###### B. Product Data: Submit sizes, finish, and type of mounting. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

###### C. Test Reports: Rating of air outlet and inlet performance.

###### D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

##### 1.04 CLOSEOUT SUBMITTALS

###### A. Division 01 - Execution and Closeout Requirements: Closeout procedures.

###### B. Project Record Documents: Record actual locations of air outlets and inlets.

1.05 QUALITY ASSURANCE

- A. Test and rate diffuser, register, and grille performance in accordance with ASHRAE 70 and ADC 1062 "Certification, Rating and Test Manual".
- B. Test and rate louver performance in accordance with AMCA 500.
- C. NFPA Compliance: Install air outlets in accordance with NFPA 90A "Standard for the Installation of Air Conditioning and Ventilation Systems".

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

1.07 PRE-INSTALLATION MEETINGS

- A. Division 01 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.08 WARRANTY

- A. Division 01 - Execution and Closeout Requirements: Product warranties and product bonds.

1.09 EXTRA MATERIALS

- A. Division 01 - Execution and Closeout Requirements: Spare parts and maintenance products.

PART 2 PRODUCTS

2.01 CEILING AIR DIFFUSERS, REGISTERS, AND GRILLES

- A. Acceptable Manufacturers:
  - 1. Titus
  - 2. Price
  - 3. Anemostat
  - 4. Krueger
- B. General: Except as otherwise indicated, provide manufacturer's standard ceiling air diffusers where shown; of size, shape, capacity and type indicated; constructed of materials and components as indicated, and as required for complete installation.
- C. Performance: Provide ceiling air diffusers that have, as minimum, temperature and velocity traverses, throw and drop, and noise criteria ratings for each size device as listed in manufacturer's current data.
- D. Ceiling Compatibility: Provide diffusers with border styles that are compatible with adjacent ceiling systems, and that are specifically manufactured to fit into ceiling module with accurate fit and adequate support. Refer to specifications for types of ceiling systems that will contain each type of ceiling air diffuser.
- E. Types: Provide ceiling diffusers of type, capacity, and with accessories and finishes as listed on diffuser schedule. The following requirements shall apply to nomenclature indicated on schedule:
- F. Finishes: Ceiling diffusers, registers and grilles: Semi-gloss white enamel prime finish unless noted otherwise.

- G. Finish of sidewall outlets baked aluminum enamel or electroplated core and factory prime coated frame, as applicable to aluminum and steel respectively; ceiling outlets shall be factory finished white enamel unless otherwise specified. All outlets in shops and toilet rooms' natural anodized aluminum or electroplated frame and core, as applicable to aluminum and steel respectively.
- H. Diffusers and registers shall be provided with opposed blade volume dampers. Opposed blade volume dampers can be eliminated is volume damper is provided at the diffuser branch duct take off from main duct.

## 2.02 EXHAUST CEILING GRILLES

- A. Product: Titus Model 50F
- B. Material: All Aluminum (Stainless steel for high moisture area)
- C. Finish: Baked enamel, White
- D. Face Arrangement: ½ X ½ X ½ Inch Eggcrate Aluminum Core
- E. Frame: 1 ¼" wide
- F. Mounting: Surface mounted or Lay-in.
- G. Note: Provide filler panel when installed in 24" X 24" T-bar ceiling. Panel to match ceiling construction. For 24" x 48" T-bar ceilings, coordinate with ceiling installer for auxiliary tees as required to provide 24" x 24" space. Where full 24" x 24" grid module is not available, surface mount the outlet in center cut to fit ceiling tile.
- H. Damper: None

## 2.03 EXHAUST AND RETURN SIDE WALL GRILLES

- A. Product: Titus Model 355FL
- B. Material: All Aluminum (Stainless steel for high moisture area)
- C. Finish: Baked enamel, White
- D. Face Arrangement: ½ blade spacing, 35 degree Fixed deflection
- E. Frame: 1 ¼" wide
- F. Mounting: Side wall
- G. Damper: None

## 2.04 RETURN CEILING GRILLES

- A. Product: Titus Model PMR.
- B. Material: All steel (Stainless steel for high moisture area) with one piece backpan of stamped heavy gauge steel.
- C. Finish: Baked enamel, White
- D. Face Arrangement: Flush face to match supply diffusers.

- E. Mounting: Surface mounted or Lay-in.

Note: 24" X 24" module for T-bar ceiling installation. Panel to match ceiling construction. For 24" x 48" T-bar ceilings, coordinate with ceiling installer for auxiliary tees as required to provide 24" x 24" space. Where full 24" x 24" grid module is not available, surface mount the outlet in center cut to fit ceiling tile.

- F. Damper: None

#### 2.05 CEILING SUPPLY DIFFUSERS

- A. Product: Titus Model PMC perforated modular core flush face.
- B. Material: All Steel (Stainless steel for high moisture area) with one piece backpan of stamped heavy gauge steel.
- C. Finish: Baked enamel, White
- D. Face Arrangement: Flush face with four insert module for adjustable throw pattern.
- E. Pattern: Adjustable form 1-4 way throw.
- F. Mounting: Surface mounted or Lay-in.

Note: 24" X 24" module for T-bar ceiling installation. Panel to match ceiling construction. For 24" x 48" T-bar ceilings, coordinate with ceiling installer for auxiliary tees as required to provide 24" x 24" space. Where full 24" x 24" grid module is not available, surface mount the outlet in center cut to fit ceiling tile.

- G. Damper: None

#### 2.06 SUPPLY SIDE WALL GRILLES

- A. Product: Titus Model 272 FS
- B. Material: All Aluminum (Stainless steel for high moisture area)
- C. Finish: Baked enamel, White
- D. Face Arrangement:  $\frac{3}{4}$  blade spacing Double Deflection Adjustable Airfoil Blades
- E. Frame: 1  $\frac{1}{4}$ " wide
- F. Mounting: Side wall
- G. Damper: None

#### 2.07 LINEAR SLOT SUPPLY AND RETURN CEILING DIFFUSERS

- A. Products: Titus: Linear Slot ML (Supply) MLR (Return)
- B. Material: Aluminum.
- C. Finish: White, baked enamel.
- D. Size: Refer to the floor plans for number and size of the slots.
- E. Plenum: 12-inch tall with external insulation and vapor barrier.

- F. Blank-Offs: Provide blank off panels where diffuser is not activated
  - G. Mounting: Lay-in or surface mounted
  - H. Filter Mount: None
  - I. Pattern: Full 180 degree pattern controller (Adjustable)
  - J. Damper: Integral.
- 2.08 DIRECT SPIRAL DUCT MOUNTED SUPPLY GRILLES (For exposed ducts in the mechanical and electrical rooms)
- A. Products: Titus S300FS
  - B. Material: Aluminum.
  - C. Finish: White, baked enamel.
  - D. Blade:  $\frac{3}{4}$ " Blade spacing
  - E. Mounting: Duct mounted on spiral duct
  - F. Filter Mount: None
  - G. Pattern: Double deflection
  - H. Damper: Air scoop damper/ extractor.
- 2.09 DIRECT SPIRAL DUCT MOUNTED PERFORATED RETURN GRILLES (For exposed ducts in the mechanical and electrical rooms)
- A. Products: Titus US8F
  - B. Material: Aluminum.
  - C. Finish: White, baked enamel.
  - D. Face: Perforated Grille
  - E. Mounting: Duct mounted on spiral duct
  - F. Filter Mount: None
  - G. Pattern: Fixed
  - H. Damper: None
- 2.10 LOUVERS
- A. Louvers: As specified in Division 08.
- 2.11 GOOSENECKS
- A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards – Metal and Flexible, of minimum 18 gage galvanized steel.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Division 01 - Administrative Requirements: Coordination and project conditions.
- B. Verify inlet and outlet locations.
- C. Verify ceiling and wall systems are ready for installation.

### 3.02 INSTALLATION

- A. Install diffusers to ductwork with airtight connection.
- B. Install balancing dampers on duct take-off to diffusers, grilles, and registers, whether or not dampers are furnished as part of diffuser, grille, and register assembly. Refer to Division 23.
- C. Paint visible portion of ductwork behind air outlets and inlets matte black. Refer to Division 09.

### 3.03 INTERFACE WITH OTHER PRODUCTS

- A. Check location of outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

END OF SECTION