

DIVISION 23 HEATING, VENTILATING AND AIR CONDITIONING

Section 23 33 00 – Air Duct Accessories

PART 1: GENERAL

1.01 Scope

- A. This section provides for the furnishing and installation of air distribution devices, including grilles, diffusers, registers, dampers, extractors, terminal boxes and sound attenuators.

1.02 Applicable Provisions

- A. Refer to Section 23 00 00, Heating, Ventilation and Air Conditioning (HVAC).

1.03 Cooperation With Other Trades

- A. Coordinate this work with work under Section 26, Electrical, to ensure that intended functions of lighting and air systems are achieved.

1.04 Submittals

- A. Submit product data for outlets, grilles, registers, control devices, terminal boxes, sound attenuators, and similar equipment.

1.05 Finishes

- A. Paint devices with factory standard white enamel finish.

PART 2: PRODUCTS

2.01 Approved Diffusers Types: Obtain approval from Project Representative on locations within Building.

- A. Louvered. Furnish louvered, fixed-pattern, multiple cone diffusers with removable center cone, frames and white factory finish.
 - 1. Select faces and necks that are circular, rectangular or square, of the size and configuration indicated.
 - 2. Construct diffusers and frames of aluminum.
 - 3. Use a frame compatible with the type of ceiling in which the diffuser is installed.
- B. Perforated. Furnish adjustable-pattern, aluminum diffusers and frames with white factory finish. Frame the diffuser face with a mitered and welded frame fitted with controllers of adjustable pattern.
- C. Dampers. Furnish an opposed-blade damper easily adjustable through the outlet for scheduled diffusers. Furnish operating rod extensions as required for damper adjustment.

2.02 Grilles

- A. Supply. Use double-deflection supply grilles made of aluminum.
 - 1. Furnish vertical face blades and horizontal rear blades. Furnish solid, extruded aluminum blades which are individually adjustable. Space at not more than ¾-inch centers for rear blades and ½-inch centers for face blades and not less than 5/8-inch deep.
 - 2. Employ grille frames of extruded aluminum with welded and mitered corners and mounting gaskets.
- B. Return.
 - 1. For ceiling return, furnish perforated-face or louvered type, with white factory finish. Use construction and frame styles as specified for ceiling diffusers, but without pattern controllers. Use neck sizes as shown.
 - 2. For wall return, furnish a fixed-blade, aluminum grille, essentially sightproof, having curved or angular break, inclined blades. Space the blades at ½-inch centers to achieve sightproof feature. Furnish hemmed or fully rounded leading edges. Furnish extruded aluminum grille frames with welded and mitered corners. Include mounting gaskets.

2.03 Registers

- A. Supply. Furnish double-deflection supply registers with aluminum, vertical face blades and horizontal rear blades. Use an integral, key-operated, opposed blade damper.
 - 1. Furnish solid, extruded aluminum blades which are individually adjustable. Space not more than ¾-inch centers for rear blades and ½-inch centers for face blades and not less than 5/8-inch deep.
 - 2. Employ grille frames of extruded aluminum with welded and mitered corners and mounting gaskets.
- B. Return and Exhaust. Furnish return and exhaust registers identical to return grilles except for the addition of an integral key-operated, opposed-blade damper.

2.04 Accessories

- A. Supply Grille Extractors. Furnish each supply grille with an air control device capable of positively regulating the volume of air extracted from the supply duct.
 - 1. Select extractors similar to Titus Model AG45, tight-closing in the minimum position. Include a key-operated or worm-gear adjusting mechanism to facilitate positioning from the grille opening. Where adjustment is not accessible at the grille opening, furnish a control rod equipped with a locking quadrant.
 - 2. For ductwork control, use Young regulators. Furnish extractors 30 inches and longer with a support rail inside of the duct at the outboard quarter point of the extractor. Construct the support rail of angle or channel members formed of sheet metal fastened securely to the duct. Make the rails 18 inches long, except where duct width prevents the extractor from sagging when moved toward its maximum position.

3. Check extractors thoroughly for freedom of operation. If necessary, oil bearing points before installing.
- B. Mounting Frames. Furnish a companion, all-purpose mounting frame constructed like a grille frame for each grille or register not equipped with a removable core to facilitate installation and removal of the grille or register without marring adjacent mounting surfaces.
 1. Furnish frames with ½-inch-thick sponge rubber gasket to prevent air leakage.
 2. Furnish a frame that neatly fits the grille. Mounting frames will not be required for grilles or registers mounted directly on exposed ductwork.

2.05 Supply Air Sound Attenuators

- A. Construct casings of not less than 22-gage galvanized steel for diameters up to 36 inches, and 18-gage for diameters up to 48 inches. Furnish perforated face sheets over acoustical material of not less than 5.0 pounds per cubic foot of compressed density glass fiber or mineral wool.
- B. Furnish acoustical liners of the same density around the outside perimeter and in the center baffle of the silencer. Use attenuators with capacity to handle air quantities scheduled at no more than 0.50-inch of water pressure drop with acoustic performance as tabulated below:

Octave Pass	63	125	250	500	1000	2000	4000	8000
Bands (Hz)								
Attenuation	4	8	13	25	28	25	20	17 (dB):

2.06 Return Air Sound Attenuators

- A. Construct casings of not less than 22-gage galvanized steel. Furnish perforated face sheets over the acoustical material of not less than 24-gage galvanized steel. Use mineral fiber or organic glass acoustical material. Apply fiberglass cloth between filler material and face sheets.
- B. Coat solid surfaces with vibration-dampening material to assure that equal attenuation will be provided not only in the direction of air flow, but also through duct silencer walls. Furnish attenuators to handle air quantities as scheduled at no more than 0.25-inch of water pressure drop with acoustic performance as tabulated below.

Octave Pass		125	250	500	1000	2000	4000	8000
Bands (Hz)								
Attenuation	3' long:	11	16	23	36	42	34	28
(dB):								
5' long:	16	25	37	45	44	38	22	

2.07 Acceptable Manufacturers

- A. Krueger, Metalaire, Titus, Nailor, Commercial Acoustical, Vibro-Acoustics.

PART 3: EXECUTION

1.06 Inspection

- A. Do not install ceilings adjacent to fixtures until installation of fixtures, air supply assemblies, return air blank-off strips and flexible duct have been properly approved. Remove and reinstall any part of the installation found incorrect.

1.07 Installation

- A. Diffusers. Louvered diffuser outlets mount tight against the ceiling. Fasten outlets securely to ductwork with sheet metal screws. For diffusers, attach the frame assembly by a concealed hinge assembly to an outer frame compatible with the type of ceiling on which the diffuser is installed.
- B. VAV Boxes. Install rigid ductwork, straight length to measure a minimum of 3 diameters, upstream of all boxes. Flexible duct connections at boxes are not allowed. Seal connection at box, as required, to comply with system maximum leakage.

END OF SECTION 23 33 00