

SECTION 233300 – AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Manual-volume dampers.
 - 2. Turning vanes.
 - 3. Duct-mounted access doors and panels.
 - 4. Flexible connectors.
 - 5. Flexible ducts.
 - 6. Duct accessory hardware.
 - 7. Motorized Control Dampers.

1.2 SUBMITTALS

- A. Product Data: For each manufactured product indicated, and indicate dimensions, required clearances, method of field assembly, components, location, and size of each field connection.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. NFPA Compliance:
 - 1. NFPA 90A, "Installation of Air Conditioning and Ventilating Systems."
 - 2. NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Galvanized, Sheet Steel: Lock-forming quality; ASTM A 653/A 653M, G90 coating designation; mill-phosphatized finish for surfaces of ducts exposed to view.
- B. Reinforcement Shapes and Plates: Galvanized steel reinforcement where installed on galvanized, sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- C. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for 36-inch length or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.2 DAMPERS

- A. Manual-Volume Dampers: Factory fabricated with required hardware and accessories. Stiffen damper blades for stability. Include locking device to hold single-blade dampers in a fixed position without vibration. Close duct penetrations for damper components to seal duct consistent with pressure class.
 - 1. Standard Volume Dampers: Multiple- or single-blade, parallel- or opposed-blade design as indicated, standard leakage rating, with linkage outside airstream, and suitable for horizontal or vertical applications.
 - 2. Steel Frames: Hat-shaped, galvanized, steel-sheet channels, minimum of 0.064 inch thick, with mitered and welded corners; frames with flanges where indicated for attaching to walls; and flangeless frames where indicated for installing in ducts.
 - 3. Roll-Formed Steel Blades: 0.064-inch- thick, galvanized, sheet steel.
 - 4. Blade Axles: Galvanized steel.
 - 5. Tie Bars and Brackets: Galvanized steel.
 - 6. Jackshaft: 1-inch- diameter, galvanized steel pipe rotating within a pipe-bearing assembly mounted on supports at each mullion and at each end of multiple-damper assemblies.
 - 7. Damper Hardware: Zinc-plated, die-cast core with dial and handle made of 3/32-inch-thick zinc-plated steel, and a 3/4-inch hexagon locking nut. Include center hole to suit damper operating-rod size. Include elevated platform for insulated duct mounting.

2.3 MOTORIZED CONTROL DAMPERS

- A. Frame: 4x1 extruded aluminum hot section with 0.081-inch minimum wall thickness, and mounting flanges.
- B. Blades: 4-inch wide, 6063T5 heavy gage extruded aluminum, airfoil shaped, and with concealed linkage.
- C. Axles: 1/2-inch plated steel hex, molded synthetic bearings.
- D. Seals extruded TPR blade edge seal and flexible metal compression type jamb seals.
- E. Control Shaft: 1/2-inch diameter with jackshaft for field mounted actuator.
- F. Actuator: Belimo.
 - 1. Microprocessor-controlled brushless DC motor.
 - 2. Overload-proof.
 - 3. Built-in mechanical stops.
 - 4. Spring return.
 - 5. Auxiliary switch.
 - 6. Double-insulated, 120 VAC, max 27 VA.
 - 7. Select size and accessories per Belimo selection guide.
 - 8. Multi-function Control: On/off or floating point as required.
- G. Basis-of-Design: Ruskin Model CD40.

2.4 TURNING VANES

- A. Fabricate to comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."
- B. Manufactured Turning Vanes: Fabricate of 1-1/2-inch- wide, curved blades set 3/4 inch o.c.; support with bars perpendicular to blades set 2 inches o.c.; and set into side strips suitable for mounting in ducts.

2.5 DUCT-MOUNTED ACCESS DOORS AND PANELS

- A. Fabricate doors and panels airtight and suitable for duct pressure class.
 - 1. Frame: Galvanized, sheet steel, with bend-over tabs and foam gaskets.
 - 2. Door: Double-wall, galvanized, sheet metal construction with insulation fill and thickness, and number of hinges and locks as indicated for duct pressure class. Include vision panel where indicated. Include 1-by-1-inch butt or piano hinge and cam latches.
 - 3. Seal around frame attachment to duct and door to frame with neoprene or foam rubber.
 - 4. Insulation: 1-inch- thick, fibrous-glass or polystyrene-foam board.

2.6 FLEXIBLE CONNECTORS

- A. Flame-retarded or noncombustible fabrics, coatings, and adhesives complying with UL 181, Class 1.
 - 1. Factory fabricate with a strip of fabric 3-1/2 inches wide attached to two strips of 2-3/4-inch- wide, 0.028-inch- thick, galvanized, sheet steel or 0.032-inch aluminum sheets.
 - 2. Conventional, Indoor System Flexible Connector Fabric: Glass fabric double coated with polychloroprene.
 - a. Minimum Weight: 26 oz./sq. yd..
 - b. Tensile Strength: 480 lbf/inch in the warp, and 360 lbf/inch in the filling.

2.7 FLEXIBLE DUCTS

- A. Uninsulated: Comply with UL 181, Class 1, spiral-wound steel spring with flameproof vinyl sheathing or corrugated aluminum.
 - 1. Pressure Rating: 6-inch wg positive, 1/2-inch wg negative.
- B. Insulated: Factory-fabricated, insulated, round duct, with an outer jacket enclosing 1-1/2-inch-thick, glass-fiber insulation around a continuous inner liner.
 - 1. Reinforcement: Steel-wire helix encapsulated in inner liner.
 - 2. Outer Jacket: Polyethylene film.
 - 3. Inner Liner: Polyethylene film.
 - 4. Pressure Rating: 6-inch wg positive, 1/2-inch wg negative.

2.8 ACCESSORY HARDWARE

- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments, and length to suit duct insulation thickness.
- B. Flexible Duct Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action, in sizes 3 to 18 inches to suit duct size.
- C. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install duct accessories according to applicable details shown in SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."
- B. Install volume dampers in lined duct; avoid damage to and erosion of duct liner.
- C. Provide test holes at fan inlet and outlet and elsewhere as indicated.
- D. Install duct access panels downstream from volume dampers, turning vanes, and equipment.
 - 1. Install duct access panels to allow access to interior of ducts for cleaning, inspecting, adjusting, and maintaining accessories and terminal units.
 - 2. Install access panels on side of duct where adequate clearance is available.
- E. Label access doors.
- F. Install balance dampers on all branch ducts serving diffusers and grilles.
- G. Coordinate installation of roof curbs with general trades.

END OF SECTION 233300