

SECTION 15820
DUCT ACCESSORIES

PART 1 - GENERAL

1.01 PROVISIONS INCLUDED

- A. The general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 General Requirements, apply to work specified in this Section.
- B. Requirements of Section 15050, "Basic Mechanical Materials and Methods," apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Backdraft dampers.
 - 2. Manual volume dampers.
 - 3. Fire dampers.
 - 4. Full length.
 - 5. Splitter vanes.
 - 6. Duct-mounted access doors and panels.
 - 7. Flexible connectors.
 - 8. Flexible ducts.
 - 9. Accessories.
- B. Related Work Specified in Other Sections:
 - 1. Ceiling- and wall-mounted access panels and doors: Section 08305, "Access Panels".
 - 2. Louvers installed in walls, connected to duct systems: Section 10200, "Louvers".
 - 3. Diffusers, registers, and grilles: Section 15850, "Diffusers, Registers and Grilles".
 - 4. Constant and variable air volume units: Section 15840, "Air Terminals Units."
 - 5. Damper actuators: Section 15910 "Control Systems".
 - 6. Duct-mounted smoke detectors: Section 16720, "Fire Alarm Systems."

1.03 SUBMITTALS

- A. Product data including details for materials, dimensions of individual components, profiles, and finishes for the following items:
 - 1. Backdraft dampers.
 - 2. Manual volume control dampers.
 - 3. Fire dampers.
 - 4. Duct-mounted access panels and doors.
 - 5. Full length
 - 6. Turning vanes splitter vanes
 - 7. Flexible ducts.
 - 8. Flexible connectors

- B. Shop drawings from manufacturer detailing assemblies. Include dimensions, weights, loadings, required clearances, method of field assembly, components, and location and size of each field connection. Detail the following:
 - 1. Special fittings and volume control damper installation details.
 - 2. Fire damper installations, including sleeves and duct-mounted access door and panel installations.

1.04 QUALITY ASSURANCE

- A. NFPA Compliance: Comply with the following NFPA Standards:
 - 1. NFPA 90A, "Standard for the Installation of Air Conditioning and Ventilating Systems."
 - 2. NFPA 90B, "Standard for the Installation of Warm Air Heating and Air Conditioning Systems."

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Volume Dampers: Subject to compliance with requirements, provide products of one of the following:
 - 1. Buckley Air Products, Inc.
 - 2. Ruskin Mfg. Co.
 - 3. United McGill Corporation
- B. Fire Dampers: Subject to compliance with requirements, provide products of one of the following:
 - 1. Air Balance, Inc.
 - 2. Prefco Products, Inc.
 - 3. Ruskin Mfg. Co.
- C. Full Length Splitter Vanes:
 - 1. Custom fabricated in accordance with SMACNA "HVAC Duct Construction Standards".
- E. Flexible Connectors: Subject to compliance with requirements, provide products of one of the following:
 - 1. Duro Dyne Corporation
 - 2. Ventfabrics, Inc.
- F. Flexible Ducts: Subject to compliance with requirements, provide products of one of the following:
 - 1. Flexmaster, Buckley Associates, Inc.
 - 2. Thermaflex
- G. Back Draft Dampers: Subject to compliance with requirements, provide products of one of the following:
 - 1. Buckley Air Products, Inc.
 - 2. Ruskin Mfg. Co.

3. United McGill Corporation

2.02 BACKDRAFT DAMPERS

- A. Description: Suitable for horizontal or vertical installation.
- B. Frame: 18-gage galvanized steel, with welded corners and mounting flange.
- C. Blades: 0.025-inch-thick roll-formed aluminum.
- D. Blade Seals: Neoprene.
- E. Blade Axles: Galvanized steel.
- F. Tie Bars and Brackets: Galvanized steel.
- G. Return Spring: Adjustable tension.

2.02 MANUAL VOLUME DAMPERS

- A. General: Factory-fabricated with required hardware and accessories. Stiffen damper blades for stability. Provide 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. Pressure Classifications of 3-inch w.g. or Higher: End bearings or other seals for ducts. Axles full length of damper blades and provide bearings at both ends of operating shaft. Identify dampers on dwg as "standard", "low leakage", or "high performance". Otherwise, spec only one type of damper.
- B. Provide volume dampers at all low pressure branch take-offs for return, exhaust or supply and at each register, grill or diffuser.
- C. Standard Volume Dampers: Multiple- or single-blade, parallel- or opposed-blade design as indicated, standard leakage rating, with linkage outside of air stream, and suitable for horizontal or vertical applications.
- D. Low-Leakage Volume Dampers: Multiple- or single-blade, parallel- or opposed-blade design as indicated, low-leakage rating, with linkage outside of air stream, and suitable for horizontal or vertical applications.
- E. 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. Provide appropriate length and number of mountings to connect linkage of each damper of a multiple damper assembly.
- F. 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. Provide center hole to suit damper operating rod size. Provide elevated platform for insulated duct mounting.

2.03 FIRE DAMPERS

- A. General: Dynamic fire dampers, UL labeled to UL Standard 555 "Standard for Fire Dampers."
- B. Fire Rating: 1-1/2 hours for use in one and two hour walls; 3 hours, for use in 3 hour walls.
- C. Frame: Type B with blades out of airstream; fabricated with roll-formed, 21-gage, galvanized-steel; with mitered and interlocking corners.
- D. Mounting Sleeve: Factory or field-installed galvanized, sheet steel.
 - 1. Minimum Thickness: 0.056-inch (16-gage) or 0.138-inch (10-gage) thick as indicated, and length to suit application.
 - 2. Exceptions: Omit sleeve where damper frame width permits direct attachment of perimeter mounting angles on each side of the wall or floor, and thickness of damper frame meets sleeve requirements.
- E. Mounting Orientation: Vertical or horizontal as indicated.
- F. Blades: Roll-formed, interlocking, 21-gage galvanized, sheet steel. In place of interlocking blades, provide full-length, 21-gage, galvanized-steel blade connectors.
- G. Horizontal Dampers: Include a blade lock and stainless steel negator closure spring.
- H. Fusible Link: Replaceable, 165 deg F .

2.05 FULL LENGTH SPLITTER VANES

- A. Fabricate Splitter Vanes: Provide fabricated full length splitter vanes, constructed in accordance with SMACNA "HVAC Duct Construction Standards" and as shown on drawing.
- B. Turning vanes will not be acceptable in place of full radius elbows or short radius elbows with full length splitter vanes.

2.06 DUCT-MOUNTED ACCESS DOORS AND PANELS

- A. General: Fabricate doors and panels airtight and suitable for duct pressure class.
- B. Frame: Galvanized, sheet steel, with bend-over tabs and foam gaskets.
- C. Door: Double-wall, galvanized sheet metal construction with insulation fill and thickness, number of hinges and locks as indicated in SMACNA "HVAC Duct Construction Standards - Metal and Flexible," 1995 Edition, (two locks minimum) for duct pressure class. Provide vision panel where indicated. Provide 1-inch by 1-inch butt hinge or piano hinge and cam latches.
- D. Seal around frame attachment to duct and door to frame with neoprene or foam rubber.
- E. Insulation: 1-inch thick fiber glass or polystyrene foam board.

2.07 FLEXIBLE CONNECTORS

- A. General: Flame-retarded or noncombustible fabrics, coatings, and adhesives complying with UL 181, Class 1.
- B. Standard Metal-Edged Connectors: Factory-fabricated with a strip of fabric 3-1/2 inches wide attached to two strips of 2-3/4-inch-wide, 24-gage, galvanized sheet steel or 22-gage aluminum sheets. Select metal compatible with connected ducts.
- C. Conventional, Indoor System Flexible Connector Fabric: Glass fabric double coated with polychloroprene.
 - 1. Minimum Weight: 26 oz. per sq yd.
 - 2. Tensile Strength: 480 lb per inch in the warp and 360 lb per inch in the filling.
- D. High-Temperature System Flexible Connectors: Glass fabric coated with silicone rubber and having a minimum weight of 16 oz. per sq yd and tensile strength of 285 lb per inch in the warp, and 185 lb per inch in the filling.
- E. High-Corrosive-Environment System Flexible Connectors: Glass fabric coated with a chemical-resistant coating.
 - 1. Minimum Weight: 14 oz. per sq yd.
 - 2. Tensile Strength: 450 lb per inch in the warp and 340 lb per inch in the filling.

2.08 FLEXIBLE DUCTS

- A. Provide Underwriters Laboratory listed (UL 181 Class 1) insulated metal duct constructed in accordance with NFPA Standards 90A with a smoke/flame rating of 50/25.
- B. Factory-fabricated, insulated, round duct, with an outer jacket enclosing glass fiber insulation, inner jacket around aluminum perforated corrugated spiral duct.
 - 1. Acoustical triple lock low-pressure aluminum flexible duct shall be comprised of an inner perforated core with an open area 20% to 25%. The perforated inner duct shall be sheathed in a UL approved seamless polyethylene jacket. A 1 1/2 inch thick fiber glass insulation having a density of 1/2 LB shall be totally encapsulated and sealed at each end to maintain a thermal barrier and prevent entrainment of particulate into the air stream. The outer jacket shall consist of a black fire-retardant polyethylene.
- C. Pressure Rating: 2-inch w.g. positive, 1-inch w.g. negative.

2.09 ACCESSORIES

- 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, 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, 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

3.01 EXAMINATION

- A. Examine areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of duct accessories. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install duct accessories according to manufacturer's installation instructions and applicable details shown in SMACNA "HVAC Duct Construction Standards – Metal and Flexible," 1995 edition, for metal ducts and NAIMA's "Fibrous Glass Duct Construction Standards" for fibrous-glass ducts.
- B. Install Hospital Grade Acoustical flexible duct throughout. Minimum installation length equal to 5 feet.
- C. Install volume control dampers in lined duct with methods to avoid damage to and erosion of duct liner.
- D. Provide test holes at fan inlet and outlet and elsewhere as indicated.
- E. Install fire dampers according to the manufacturer's UL-approved printed instructions.
 - 1. Install fusible links in fire dampers.
- F. Install duct access panels for panels for access to both sides of duct mounted coils. Install duct access panels downstream of volume dampers, fire 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.
- G. Label access doors according to Section 15075, "Mechanical Identification."

3.03 ADJUSTING

- A. Adjust duct accessories for proper settings.
- B. Adjust fire dampers for proper action.
- C. Final positioning of manual dampers is specified in Section 15950 "Testing, Adjusting, and Balancing."

END OF SECTION 15820