
SECTION 23 33 00
AIR DUCT ACCESSORIES**PART 1 GENERAL****1.1 SECTION INCLUDES**

- A. Air turning devices/extractors.
- B. Backdraft dampers - metal.
- C. Combination fire and smoke dampers.
- D. Duct access doors.
- E. Duct test holes.
- F. Fire dampers.
- G. Flexible duct connectors.
- H. Smoke dampers.
- I. Volume control dampers.
- J. Low leakage (Class 1A) control dampers.
- K. Storm Louvers
- L. Sound Traps (Duct Silencers)

1.2 RELATED REQUIREMENTS

- A. Section 07 84 00 - Firestopping.
- B. Section 23 31 00 - HVAC Ducts and Casings.

1.3 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2021.
- C. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations 2021.
- D. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible 2021.
- E. UL 33 - Safety Heat Responsive Links for Fire-Protection Service Current Edition, Including All Revisions.
- F. UL 555 - Standard for Fire Dampers Current Edition, Including All Revisions.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide for shop fabricated assemblies including volume control dampers, duct access doors, and duct test holes. Include electrical characteristics and connection requirements.
 - 1. Fire Dampers (23 33 00 - 001 - A)
 - 2. Smoke Dampers (23 33 00 - 001 - A)
 - 3. Volume Control Dampers (23 33 00 - 002 - A)
 - 4. Duct Access Doors (23 33 00 - 003 - A)
 - 5. Storm Louvers (23 33 00 - 004 - A)
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
 - 1. Submit under Operation and Maintenance Data books
 - 2. Combination Fire and Smoke Dampers
 - 3. Fire Dampers
 - 4. Smoke Dampers

- 5. Volume Control Dampers
- 6. Duct Access Doors
- D. Project Record Drawings: Record actual locations of access doors and test holes.
 - 1. Record Drawings

1.5 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide 3 year warranty, including parts, materials and labor for defective parts, for the following:
 - 1. Include in Closeout Submittals Book.
 - 2. Combination Fire and Smoke Dampers.
 - 3. Fire Dampers.
 - 4. Smoke Dampers.
 - 5. Volume Control Dampers.
 - 6. Duct Access Doors.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect dampers from damage to operating linkages and blades.

PART 2 PRODUCTS

2.1 AIR TURNING DEVICES/EXTRACTORS

- A. Manufacturers:
 - 1. Carlisle HVAC Products; Dynair Hollow Vane and Rail (Double Wall Vane).
 - 2. Elgen Manufacturing, Inc.
 - 3. Krueger-HVAC, Division of Air System Components.
 - 4. Ruskin Company, a brand of Johnson Controls.
 - 5. Titus HVAC, a brand of Johnson Controls.
 - 6. Ward Industries, a brand of Hart and Cooley, Inc.
 - 7. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Multi-blade device with radius blades attached to pivoting frame and bracket, steel construction, with push-pull operator strap.

2.2 BACKDRAFT DAMPERS - METAL

- A. Manufacturers:
 - 1. Louvers & Dampers, Inc, a brand of Mestek, Inc.
 - 2. Nailor Industries, Inc.
 - 3. Ruskin Company, a brand of Johnson Controls.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Multi-Blade, Parallel Action Gravity Balanced Backdraft Dampers: Galvanized steel, with center pivoted blades of maximum 6 inch width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.
- C. Backdraft dampers to open at 0.03" static pressure.

2.3 BACKDRAFT DAMPERS - FABRIC

2.4 DUCT ACCESS DOORS

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- A. Manufacturers:
 - 1. Ductmate Industries, Inc, a DMI Company; ____: www.ductmate.com/#sle.
 - 2. Nailor Industries, Inc.
 - 3. Ruskin Company, a brand of Johnson Controls.
 - 4. SEMCO LLC.
 - 5. Substitutions: See Section 01 60 00 - Product Requirements.
 - B. Fabrication: Rigid and close-fitting of galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ducts, install minimum 1 inch thick insulation with sheet metal cover.
 - 1. Less Than 12 inches Square: Secure with sash locks.
 - 2. Up to 18 inches Square: Provide two hinges and two sash locks.
 - 3. Up to 24 by 48 inches: Three hinges and two compression latches with outside and inside handles.

2.5 DUCT TEST HOLES

- A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

2.6 FIRE DAMPERS

- A. Manufacturers:
 - 1. Louvers & Dampers, Inc, a brand of Mestek, Inc.
 - 2. Nailor Industries, Inc.
 - 3. Ruskin Company, a brand of Johnson Controls.
 - 4. Ward Industries, a brand of Hart and Cooley, Inc.
 - 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Fabricate in accordance with NFPA 90A and UL 555, and as indicated, 2000 fpm and 4" pressure class, 3 hour rated.
- C. Horizontal Dampers: Galvanized steel, frame, stainless steel closure spring, and lightweight, heat retardant non-asbestos fabric blanket.
- D. Curtain Type Dampers: Galvanized steel with interlocking blades. Provide stainless steel closure springs and latches for horizontal installations. Configure with blades out of air stream.
- E. Fusible Links: UL 33, separate at 160 degrees F with adjustable link straps for combination fire/balancing dampers.

2.7 FLEXIBLE DUCT CONNECTIONS

- A. Manufacturers:
 - 1. Carlisle HVAC Products; Dynair Connector Plus G90 Steel Offset Seam Neoprene Fabric.
 - 2. Elgen Manufacturing, Inc.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Fabricate in accordance with SMACNA (DCS) and as indicated.
- C. Flexible Duct Connections: Fabric crimped into metal edging strip.
 - 1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz per sq yd.
 - a. Net Fabric Width: Approximately 2 inches wide.
 - 2. Metal: 3 inches wide, 24 gauge, 0.0239 inch thick galvanized steel.

2.8 SMOKE DAMPERS

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- A. Manufacturers:
 - 1. Louvers & Dampers, Inc, a brand of Mestek, Inc.
 - 2. Nailor Industries, Inc.
 - 3. Ruskin Company, a brand of Johnson Controls Model SD36.
 - B. Fabricate in accordance with NFPA 90A and UL 555S, and as indicated.
 - C. Provide with actuator and auxiliary switch package SP100, two position indicator switch linked directly to damper blade to remotely indicate damper position.

2.9 VOLUME CONTROL DAMPERS

- A. Manufacturers:
 - 1. Louvers & Dampers, Inc, a brand of Mestek, Inc.
 - 2. Nailor Industries, Inc.
 - 3. Ruskin Company, a brand of Johnson Controls.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Fabricate in accordance with SMACNA (DCS) and as indicated.
- C. Splitter Dampers:
 - 1. Material: Same gauge as duct to 24 inches size in either direction, and two gauges heavier for sizes over 24 inches.
 - 2. Blade: Fabricate of single thickness sheet metal to streamline shape, secured with continuous hinge or rod.
 - 3. Operator: Minimum 1/4 inch diameter rod in self aligning, universal joint action, flanged bushing with set screw.
- D. Single Blade Dampers:
 - 1. Fabricate for duct sizes up to 6 by 30 inch.
 - 2. Blade: 24 gauge, 0.0239 inch, minimum.
- E. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 by 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.
 - 1. Blade: 18 gauge, 0.0478 inch, minimum.
- F. End Bearings: Except in round ducts 12 inches and smaller, provide end bearings. On multiple blade dampers, provide oil-impregnated nylon, thermoplastic elastomer, or sintered bronze bearings.
 - 1. Manufacturers:
 - a. Carlisle HVAC Products; Dynair End Bearing Leak Resistant Sets.
 - b. Elgen Manufacturing Company, Inc; Snap-in Bushing.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

2.10 LOW LEAKAGE (CLASS 1A) CONTROL DAMPERS

- A. Manufacturers:
 - 1. Ruskin Company; CD50: www.ruskin.com/#sle.
 - B. Frame:
 - 1. Material: 12 gauge galvanized steel.
 - 2. Free-area: Single cross section.
 - 3. Blanked-off: Split frame into two free-area sections to allow a smaller free-area to be used for a minimum airflow intake or exhaust application and secondary free-area fully blanked-off.
 - C. Blade:
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1. Type: Single-blade rectangle shape.
2. Operation: Opposed type.
3. Maximum Individual Blade Height: 8 inches.
4. Material: 12 gauge galvanized steel.
5. Authority: Opposed type, 5 to 50 percent (typically 10 percent).

2.11 SOUND TRAPS (DUCT SILENCERS)

- A. Sound Traps shall be manufactured by Ruskin or approved equal.
- B. Sound traps shall be rated shall be rated 25 flame-spread and 50 smoke development.
- C. Fabricate outer casing with 0.034 inch solid galvanized steel. Fabricate interior casing with 0.034 galvanized steel with 1/8" perforations.
- D. Fill material to be inert fibrous material with polymer film enclosing fill material.

2.12 STORM LOUVERS

- A. Greenheck Model EDK-402, 4" stationary louver or approved equal.
- B. Frame and Blade Construction: 0.125 inch thick extruded aluminum, 6063-T5 alloy, welded construction.
- C. Provide with 1/2" aluminum mesh, 0.063 inch, birdscreen.
- D. Provide custom color finish, PPG Duranar 2 coat system. Color to be selected by Architect.

PART 3 EXECUTION

3.1 INTERFACE WITH WORK OF OTHER SECTIONS

- A. Confirm framing and support members.
- B. Confirm rough-in and framing of walls and partitions with supports for equipment and accessories.
- C. Confirm rough-in locations and power requirements before rough-in installation. Refer to Section 26 27 17 - Equipment Wiring.
- D. Confirm rough-in location and signals before rough-in installation. refer to section 23 09 13 - Instrumentation and Control Devices for HVAC.

3.2 EXAMINATION

- A. Verify that surfaces are suitable for installation.
 - B. Examine areas to receive equipment for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - C. Verify that piping and equipment are ready to receive work.
 - D. Verify field measurements are as shown on shop drawings.
 - E. Electrical:
 1. Verify electrical power, voltage, phase and current is available and of the correct characteristics.
 2. Verify rough-in for electrical connections to verify actual locations before installing.
 3. Verify motor type and VFD or disconnect type for compatibility prior to ordering equipment.
 - F. Controls:
 1. Verify signal power, voltage, phase and current is available and of the correct characteristics.
 2. Verify rough-in for control connections to verify actual locations before installing.
 3. Verify motor type and VFD or disconnect type for compatibility with control sequence and control devices prior to ordering equipment.
 - G. Maintain clearances to combustibles and service clearances.
 - H. Proceed with installation only after unsatisfactory conditions have been corrected.
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3.3 INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 23 31 00 for duct construction and pressure class.
- B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
- C. Provide duct access doors. Review locations prior to fabrication.
 - 1. Provide access doors with a minimum size as indicated.
 - a. In ducts 12 inches or smaller, 8 inches x 8 inches size for hand access.
 - b. In ducts 30 inches or smaller, access door shall be 2" less than the interior duct dimension and square in shape.
 - c. In ducts over 30 inches, 28 inches x 28 inches.
 - 2. Provide access doors for inspection and cleaning at the following locations:
 - a. Before and after filters.
 - b. Before and after coils.
 - c. Fans.
 - d. Automatic Dampers.
 - e. Fire Dampers.
 - f. Combinations Fire and Smoke Dampers.
 - g. Smoke Dampers.
 - h. Elbows.
 - i. Every 25 linear feet for duct cleaning.
 - j. Provide for cleaning kitchen exhaust ducts in accordance with NFPA 96.
- D. Provide fire dampers, combination fire and smoke dampers, and smoke dampers at locations indicated, where ducts and outlets pass through fire rated components, and where required by authorities having jurisdiction.
 - 1. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
 - 2. Install per UL and FM listing to maintain fire rated assembly listed rating.
- E. Flexible Duct Connections:
 - 1. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
 - 2. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment. Refer to Section 20 05 48 - Supports for Piping, Ductwork and Equipment.
 - 3. For fans developing static pressures of 5.0 inches and over, cover flexible connections with leaded vinyl sheet, held in place with metal straps.
- F. Balancing Dampers:
 - 1. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing.
 - 2. Install minimum 2 duct widths from duct take-off.
 - 3. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

END OF SECTION 23 33 00