

SECTION 233300 - AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Backdraft dampers.
 - 2. Manual volume dampers.
 - 3. Constant Air Regulators
 - 4. Fire dampers.
 - 5. Duct accessory hardware.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

2.2 MATERIALS

- A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: **G60 (Z180)**.
 - 2. Exposed-Surface Finish: Mill phosphatized.
- B. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts.
- C. Tie Rods: Galvanized steel, **1/4-inch (6-mm)** minimum diameter for lengths **36 inches (900 mm)** or less; **3/8-inch (10-mm)** minimum diameter for lengths longer than **36 inches (900 mm)**.

2.3 BACKDRAFT DAMPERS

- A. Description: Gravity balanced.
- B. Maximum Air Velocity: 1000 fpm (5.1 m/s) .
- C. Maximum System Pressure: 1-inch wg (0.25 kPa) .
- D. Frame: Hat-shaped, 0.05-inch- (1.3-mm-) thick, galvanized sheet steel, with welded corners or mechanically attached.
- E. Blades: Multiple single-piece blades, end pivoted, maximum 6-inch (150-mm) width, 0.025-inch- (0.6-mm-) thick, roll-formed aluminum with sealed edges.
- F. Blade Action: Parallel.
- G. Blade Seals: Extruded vinyl, mechanically locked.
- H. Blade Axles:
 - 1. Material: Galvanized steel .
 - 2. Diameter: 0.20 inch (5 mm).
- I. Tie Bars and Brackets: Galvanized steel.
- J. Return Spring: Adjustable tension.
- K. Bearings: synthetic pivot bushings.
- L. Accessories:
 - 1. Screen Material: Galvanized steel or Aluminum.
 - 2. Screen Type: Insect.
 - 3. 90-degree stops.

2.4 MANUAL VOLUME DAMPERS

- A. Standard, Steel, Manual Volume Dampers:
 - 1. Standard leakage rating, with linkage outside airstream.
 - 2. Suitable for horizontal or vertical applications.
 - 3. Frames:
 - a. Frame: Hat-shaped, 0.094-inch- (2.4-mm-) thick, galvanized sheet steel .
 - b. Mitered and welded corners.
 - c. Flanges for attaching to walls and flangeless frames for installing in ducts.
 - 4. Blades:
 - a. Multiple or single blade.
 - b. Parallel- or opposed-blade design.
 - c. Stiffen damper blades for stability.

- d. Galvanized -steel, 0.064 inch (1.62 mm) thick.
- 5. Blade Axles: Galvanized steel.
- 6. Bearings:
 - a. Oil-impregnated bronze .
 - b. Dampers in ducts with pressure classes of 3-inch wg (750 Pa) or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
- 7. Tie Bars and Brackets: Galvanized steel.

2.5 CONTROL DAMPERS

A. Constant Air Regulators

- 1. Frames:
 - a. Heavy gauge galvanized steel sleeve designed to accommodate installation of 1.5 hour curtain type fire dampers.
 - b. 0.094-inch- (2.4-mm-) thick, galvanized sheet steel .
 - c. Mitered and welded corners.
- 2. Regulating Bladder:
 - a. UL94V-0 ABS plastic.
 - b. UL 2043 safety listed and labeled for flame and smoke generation.
- 3. Performance:
 - a. The controls airflow accurately to within 10% of rated flow (15% for units 50 cfm or less), throughout the target operating pressure range of 0.2 to 0.8 in. w.g. (50 to 200 Pa).
 - b. The Constant Airflow Regulator is a modulating orifice that automatically regulates airflows in duct systems to constant levels. The passive control element responds to duct pressure, and requires no electric or pneumatic sensors or controls.
 - c. Unit steel sleeve frame shall be designed to accommodate installation of 1.5 hour Dynamic type UL fire damper, as well as standard aluminum or steel louvered return air grille.

B. FIRE DAMPERS

- 1. Type: Dynamic; rated and labeled according to UL 555 by an NRTL.
- 2. Closing rating in ducts up to 4-inch wg (1-kPa) static pressure class and minimum 2000-fpm (10-m/s) velocity.
- 3. Fire Rating: 1-1/2 hours.
- 4. Frame: Curtain type with blades inside airstream ; fabricated with roll-formed, 0.034-inch- (0.85-mm-) thick galvanized steel; with mitered and interlocking corners.

5. Mounting Sleeve: Factory- or field-installed, galvanized sheet steel.
 - a. Minimum Thickness: **0.05 (1.3 mm)** thick, as indicated, and of length to suit application.
 - b. Exception: Omit sleeve where damper-frame width permits direct attachment of perimeter mounting angles on each side of wall or floor; thickness of damper frame must comply with sleeve requirements.
6. Mounting Orientation: Vertical or horizontal as indicated.
7. Blades: Roll-formed, interlocking, **0.024-inch- (0.61-mm)** thick, galvanized sheet steel. In place of interlocking blades, use full-length, **0.034-inch- (0.85-mm-)** thick, galvanized-steel blade connectors.
8. Horizontal Dampers: Include blade lock and stainless-steel closure spring.
9. Heat-Responsive Device: Replaceable, **165 deg F (74 deg C)** rated, fusible links.

2.6 DUCT 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 of length to suit duct-insulation thickness.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116.
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel ducts.
- C. Install backdraft dampers at inlet of roof or sidewall exhaust fans as close as possible to exhaust fan unless otherwise indicated.
- D. Set dampers to fully open position before testing, adjusting, and balancing.
- E. Install test holes at fan inlets and outlets and elsewhere as indicated.
- F. Install fire dampers according to UL listing. Dampers shall be installed adjacent to inlet registers and Constant Air Regulators for maintenance purposes
- G. Fire dampers shall be installed at all penetrations of fire rated walls, partitions and floors assemblies. Units shall be placed near registers or provided with access panels to provide accessibility for maintenance purposes.

- H. Install Constant Air Regulators adjacent inlet registers and according to manufacture's instructions.
- I. Install duct test holes where required for testing and balancing purposes.

3.2 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Operate dampers to verify full range of movement.
 - 2. Operate fire dampers to verify full range of movement and verify that proper heat-response device is installed.
 - 3. Inspect turning vanes for proper and secure installation.

END OF SECTION 233300