HVAC
DUCT CONSTRUCTION STANDARDS

METAL AND FLEXIBLE

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.
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METAL AND FLEXIBLE

THIRD EDITION – 2005

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THIRD EDITION – 2005

FOREWORD

This Third Edition of the SMACNA commercial metal and flexible duct construction standards is another in a long line dating from the 1950s. A quick overview of the changes is provided in the front of this manual.

SMACNA expresses appreciation to the many who have offered suggestions for constructive improvement in the fabrication and installation of duct systems. Suggestions for future improvement are welcome. Special thanks is given to those who volunteered their time, gave special knowledge and struggled with development of a consensus that would reflect the needs for a diversified industry. Although standardization intrinsically involves selection, no intention of discrimination against the use of any product or method that would serve a designer's need equally or better exists.

SHEET METAL AND AIR CONDITIONING CONTRACTORS'
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DUCT CONSTRUCTION

Ductwork and supports shall conform to the *HVAC Duct Construction Standards, Metal and Flexible, Third Edition, 2005*. Where fittings of configurations not shown in the HVAC-DCS are shown on the contract drawings, they shall be constructed as though they were therein.

DUCT DIMENSIONS

Duct dimensions shown in the contract drawings are for airflow area. When ducts are acoustically lined, their dimensions shall be increased as necessary.

DUCT PRESSURE CLASS

Duct pressure classes are to be identified on the contract drawings.

**Schedule the pressure classes here by fan system number, or portion thereof, if they are not shown on the drawings.*

See Section 1.4.

DUCT SEAL CLASS

Ducts shall be sealed as specified in the *HVAC-DCS.*

DUCT LEAKAGE CLASS

**Consult the HVAC-Air Duct Leakage Test Manual and select appropriate allowable leakage. If field leak tests are required, appropriate test pressure and clear scope of testing must be specified.*

DUCT LINER

Metal nosing shall be used on leading edges of each piece of lined duct when the velocity exceeds 4000 fpm (20.3 m/s) otherwise, it shall be used on the leading edge of any lined duct section that is preceded by unlined duct.

**NOTES FOR SPECIFIER*

**See duct liner test and references in the HVAC-DCS and specify the material, thickness, density and performance characteristics desired.*

FLEXIBLE DUCT AND CONNECTOR

Where the specifications for connecting and supporting these in the HVAC-DCS are more stringent or restrictive, they shall supersede.

VIBRATION ISOLATION CONNECTORS

Flexible isolation connectors shall not exceed 10 in. in length in direction of airflow and shall be made of flame-retardant fabric having a flame spread rating not over 25 and a smoke developed rating not over 50.

**Consult the applicable codes, The U.L. Fire Resistance Directory, references in the HVAC-DCS, the Air Diffusion Council's Flexible Air Duct Performance and Installation Standards and identify the products and performance characteristics desired.*

PROPRIETARY PRODUCTS

Description of products from a proprietary or single source manufacturer shall be submitted for approval along with substantiation of fitness for the service conditions that are proposed but not already identified in the project specifications.

PENETRATIONS

All wall penetrations that require special-purpose dampers (fire, smoke, etc.) shall be shown in the contract drawings.

**Consult the SMACNA Fire, Smoke, and Radiation Damper Guide and local codes for obligations to show the location of each barrier penetration protection device on contract drawing. Review the commentary in Section 2.3 of these standards for obligation to show all air volume control devices on the contract drawings when they are not specified to be integral with HVAC units or air terminal units. Also specify the size and location of all access doors and access panels to be used in ductwork.*

LIST OF MAJOR CHANGES FROM THE SECOND EDITION

1. Added Engineering and Design chapter.

2. Added Double Wall construction details.

3. Added New Casing construction details.

4. Included the use of Framing Channel (strut) for use as trapeze supports and duct reinforcement.

5. Narrowscope tables eliminated.

KEY RECTANGULAR DUCT CONSTRUCTION REVISIONS

1. Pressure class tables expanded to include selections previously not designed.

2. Figures added highlighting the conditions of use and limitations for transverse joints, longitudinal seam and reinforcements.

3. Added detailed tables for joints T-25a and T-25b for 4, 5, and 6 ft (1.20, 1.50 and 1.80 mm) stock – coil or sheet.

4. Mid panel tie rod application expanded to include 6 in. wg (1500 Pa) negative pressure and additional panel sizes.

5. Table given for large duct construction [(over 120 in. (3000 mm)].

KEY ROUND AND OVAL DUCT REVISIONS

1. Round construction given to 96 in. (2400 mm) diameter.

2. 6 in. wg (1500 Pa) pressure class added.

3. Detailed tables given for longitudinal and spiral seam ducts for reinforcement spacings of 20, 12, 10, 6, 5 ft (6.00, 3.60, 3.00, 1.80, 1.50 mm) plus unstiffened duct.

4. Added minimum gage table for flat oval duct.

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