

SuperDuct™ Medium Pressure Air Duct Systems

Guide Specifications

I. General

A. Work Included

Rectangular ductwork operating at positive pressures above 2.0 inches (498 Pa) to 4.0 inches (996 Pa) of water gauge, with a maximum air velocity of 6000 feet per minute (30.5 m/s) and/or round ductwork operating to a maximum positive pressure of 8.0 inches of water gauge (1992 Pa), with a maximum air velocity of 6000 feet per minute (30.5 m/s) as indicated in the drawings.

B. Material

- The contractor shall furnish and install any or all of the following:
 - 1" (25 mm) Medium Pressure SuperDuct Type 800;
 - 1½" Medium Pressure SuperDuct Type 800;
 - 1" (25 mm) SuperRound® preformed round duct.
 - 2" (51 mm) Type 800 SuperDuct with butt edges*
 - The 1" (25 mm) thick Medium Pressure SuperDuct Type 800 shall have a Thermal Resistance (R-Value) of 4.3 (RSI 0.76) at 75°F (24°C) mean temperature, and a noise reduction coefficient (NRC) of .70 as tested in accordance with ASTM C 423-90 (Type "A" mounting).
 - The 1½" (38 mm) thick Medium Pressure SuperDuct Type 800 shall have a Thermal Resistance (R-Value) of 6.5 (RSI 1.15) at 75°F (24°C) mean temperature, and a noise reduction coefficient (NRC) of .90 as tested in accordance with ASTM C 423-90 (Type "A" mounting). SuperRound Duct shall have a Thermal Resistance (R-Value) of 4.3 (RSI 0.76) at 75°F (24°C) mean temperature and sound attenuation of 5.7 dB at 1000 Hz. per lineal foot (0.305 lineal meter) of 8 inch (203 mm) diameter duct.
- The SuperDuct and SuperRound products shall meet the requirements of UL 181 and be so identified by a UL label affixed to each section of air duct material as supplied by the manufacturer.
 - All duct materials and accessories used in the fabrication and installation of the duct system shall meet the requirements of NFPA 90A and/or NFPA 90B.

C. Performance Requirements

SuperDuct Medium Pressure System products shall be factory coated with a black acrylic polymer formulated with an immobilized, EPA-registered, protective agent to protect the coating from potential growth of fungus and bacteria, and shall meet the requirements of the following test procedures:

- No detectable fiber loss under electron microscope analysis of isokinetic air sampling at maximum rated velocity, using UL 181 test duct configuration.
- No observed microbial growth based on ASTM G-21 and G-22 tests for fungus and bacteria growth.
- Conformance to the requirements of NFPA 90A and 90B for FHC 25/50 and limited combustibility.
- Conformance to the requirements of the State of Washington Building Services Department requirements for emissions of total volatile organic compounds (TVOC) and formaldehyde (CHOH) in accordance with ASTM D 5116-90.

D. Fabrication and Installation

- All ductwork shall be machine fabricated and installed by a Johns Manville Factory Qualified shop following recommended practice as outlined in the Johns Manville Pocket Installer (AHS-3), Johns Manville submittal sheets, and the NAIMA Fibrous Glass Duct Construction Standards Manual.
- All ductwork shall be fabricated and installed to meet the requirements of C₁ 6 Duct Leakage class as defined by ASHRAE Duct Design Manual (Chapter 23) and the SMACNA HVAC Air Duct Leakage Test Manual.

E. Contractor Qualifications

Fabrication of Medium Pressure SuperDuct Air Duct Board or SuperRound systems shall be performed by a Johns Manville Factory Qualified Shop (Qualified Fabricator and/or Qualified Contractor).

F. References

- The Pocket Installer (AHS-3)
- Johns Manville Submittal Sheets
- ASTM C 518
- ASTM E 84
- ASTM G 21 and ASTM G 22
- NAIMA Fibrous Glass Duct Construction Standards - 2001
- SMACNA Ducted Electric Heat Guide for Air Handling Systems - 2nd Ed., 1994
- SMACNA Fire, Smoke and Radiation Damper Guide for HVAC Systems - 4th Ed., 1992
- SMACNA HVAC Duct Construction Standards - Metal and Flexible, 2nd Ed., 1995
- SMACNA Air Duct Leakage Test Manual, 1st Ed., 1985
- SMACNA HVAC Systems - Testing, Adjusting, and Balancing, 2nd Ed., 1993
- Underwriters Laboratories Standards for Factory-Made Air Ducts and Connectors, UL 181, 1990 Edition
- National Fire Protection Association (NFPA)
 - NFPA Standard for Installation of Air Conditioning and Ventilation Systems - NFPA 90A
 - NFPA Standard for Warm Air Heating and Air Conditioning Systems - NFPA 90B
- ASHRAE 62-01

**Check with your Regional Sales Office if your requirements call for greater acoustical or thermal performance.*

Medium Pressure Reinforcement Table

Medium Pressure SuperDuct Type 800 Air Duct Board

Tie Rod System Reinforcement Schedule (Positive Pressure Only).

| Static Pressure Range (inches w.c.) | Maximum Inside Duct Dimension (inches) | Number of Tie Rods (per row) | Maximum Span Spacing (inches) | Maximum Longitudinal Spacing (inches) |
|-------------------------------------|--|------------------------------|-------------------------------|---------------------------------------|
| Over 2.0 through 2.5 | 0-16 | None | ---- | ---- |
| | 17-40 | 1 | ---- | 16 |
| | 41-60 | 2 | 20 | 16 |
| | 61-80 | 3 | 20 | 16 |
| | 81-100 | 4 | 20 | 16 |
| | 101-120 | 5 | 20 | 16 |
| Over 2.5 through 3.0 | 0-14 | None | ---- | ---- |
| | 15-36 | 1 | ---- | 16 |
| | 37-54 | 2 | 18 | 16 |
| | 55-72 | 3 | 18 | 16 |
| | 73-90 | 4 | 18 | 16 |
| | 91-108 | 5 | 18 | 16 |
| | 109-120 | 6 | 18 | 16 |
| Over 3.0 through 3.5 | 0-12 | None | ---- | ---- |
| | 13-32 | 1 | ---- | 16 |
| | 33-48 | 2 | 16 | 16 |
| | 49-64 | 3 | 16 | 16 |
| | 65-80 | 4 | 16 | 16 |
| | 81-96 | 5 | 16 | 16 |
| | 97-112 | 6 | 16 | 16 |
| | 113-120 | 7 | 16 | 16 |
| Over 3.5 through 4.0 | 0-10 | None | ---- | ---- |
| | 11-28 | 1 | ---- | 16 |
| | 29-42 | 2 | 14 | 16 |
| | 43-56 | 3 | 14 | 16 |
| | 57-70 | 4 | 14 | 16 |
| | 71-84 | 5 | 14 | 16 |
| | 85-98 | 6 | 14 | 16 |
| | 99-112 | 7 | 14 | 16 |
| | 113-120 | 8 | 14 | 16 |

Note: The Medium Pressure Type 800 reinforcement table is available in metric format; contact your Johns Manville Territory Manager to order.

G. Limitations and Restrictions

It is recommended that Type 800 Medium Pressure SuperDuct and SuperRound Duct not be used in the following applications:

- For vertical risers serving more than two floors.
- In air duct systems operating normally above 250°F (121°C).
- For kitchen or corrosive fume exhaust ducts.
- To convey solids or corrosive gases.
- To build casings or housings.
- Not closer than 2" (51 mm) to electric heating coils.
- In systems supplying hospital sensitive areas such as surgical suites, maternity wards, intensive care units, and isolation areas where 90% effective (or greater) terminal filtration is not used (per US Department of Health, Education, and Welfare).
- In equipment rooms where severe mechanical abuse can occur.
- In low clearance garages.
- Outdoors.
- For velocities or pressures beyond recommendations.
- Within six feet (1.8 m) of fresh air intakes or outside grilles.
- Bathroom exhaust exposed to sub-freezing temperatures.
- In contact with any HVAC equipment wet surface.

II. Related Work

A. Closure

1. All joints shall be stapled approximately 2" (51mm) on center with minimum 1/2" (13 mm) outward clinching steel staples or, alternately, cross tabbed with minimum 8" (203 mm) long tabs, at least one per side, on maximum 16" (406 mm) centers. Where machine made longitudinal joints exist, no staples should be used. Duct closures shall be made with Fortifiber® Therm-Lock® closure with Automatic Bond Indicator (ABI) dots. Dots shall be darkened by application of heat and pressure during installation. The tape shall be centered on the seam, with a minimum of 1" (25 mm) on each side of the seam.

B. Reinforcement

1. All rectangular supply air ducts shall be reinforced from the female end of the duct section, to the maximum duct operating static pressure using tie rods in accordance with the schedule listed in this specification. Tie rods shall be made from 12 gauge (2.7 mm) galvanized steel wire. The tie rods shall be terminated using a sealed, beveled, galvanized steel washer, 2 1/2" x 2 1/2" x .028" (64 mm x 64 mm x 0.71 mm) with a 190° or greater bend at each termination. Seal washer to facing using duct seal meeting NFPA or JM recommended medium pressure adhesive.
2. All rectangular supply air duct fittings and branches shall be reinforced in accordance with the NAIMA Fibrous Glass Duct Construction Standard or the Johns Manville Pocket Installer (AHS-3).
3. All rectangular return air duct (not to exceed a **maximum negative pressure of 2 inches water gauge [498 Pa]**) shall be reinforced from the male end of the duct system in accordance with the schedule in The Pocket Installer. Additionally, negative pressure ductwork reinforcement must utilize 1/2" (13 mm) diameter galvanized steel conduit cut to the inside dimension of the duct being reinforced. Additional washers must be placed between the conduit ends and the interior duct surface. See Figure 1.

C. Supports and Hangers

1. All rectangular duct sections shall be supported as shown in The Pocket Installer, or the NAIMA Fibrous Glass Duct Construction Standards, using trapeze hangers made from (minimum) 1" x 2" x 1" (25 x 51 x 25 mm) galvanized 22 gauge (0.85 mm) channel. Support strap must be 1" (25 mm) x 22 gauge (0.85 mm) galvanized (or heavier) material. Rods of 1/4" (6.4 mm) diameter may be used in place of straps, or where local codes permit, 12 gauge (2.7 mm) galvanized steel wire may be substituted for strap or rod as a hanger support.
2. SuperRound duct shall be hung so that the hanger may not damage the duct facing. Straps or saddles in contact with the duct facing must be a minimum 1" (25 mm) wide. Sharp edges and/or burrs should be removed, or faced away from the duct facing. Hangers should be spaced at 6' (1.8 m) (maximum) centers. Where practical, hangers should be located close to the duct section joints.

D. Equipment and Connections

1. Equipment connections or connections to metal ductwork shall be made in accordance with The Pocket Installer or Johns Manville submittal sheets. All joints must use at least one mechanical fastener per side, on maximum 10" (254 mm) centers. The joints shall be sealed with an approved medium pressure adhesive.

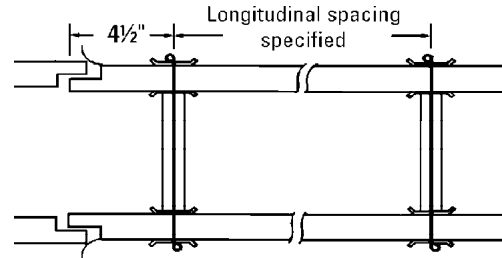


Figure 1. Negative Pressure Detail

E. Accessories

1. Installation of accessories shall be made in accordance with the Johns Manville Submittal sheets, The Pocket Installer, and the NAIMA Fibrous Glass Duct Construction Standards Manual.

F. Pressure Relief Control

1. Systems capable of static pressure surges which exceed the duct reinforcement schedule by more than 0.5 inches of water gauge (125 Pa) shall have a pressure relief system installed.
2. The pressure relief system may consist of the following:
 - a. A pressure relief damper installed in a section of sheet metal ductwork upstream of the fiber glass ductwork. The relief damper must be operated by an independent control unit.
 - b. A fan interrupt control that will immediately shut off or relieve the fan pressure in case of over-pressure in the upstream fiber glass ductwork.

G. Testing and Balancing

1. Testing and balancing shall be conducted in accordance with the SMACNA Testing and Balancing Manual. Leakage testing shall be conducted in accordance with procedure outlined in the SMACNA Leakage Testing Manual.
2. **Leakage test pressure should not exceed the duct reinforcement schedule.** The leakage shall not exceed the leakage given in the SMACNA Leakage Manual for a Class C_L 6 duct at the stated operating pressure.

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III. Limited Warranty

1. Duct fabrication and installation shall meet the warranty requirements specified in the Johns Manville 10 Year Limited Warranty Document.
2. The Johns Manville 10 Year Limited Warranty is available upon written request of the Johns Manville Factory Qualified Shop provided the conditions of the Limited Warranty are met.

ISO 9000 Certification

Johns Manville mechanical insulation products are designed, manufactured and tested in our own facilities, which are certified and registered to stringent ISO 9000 (ANSI/ASQC 90) series quality standards. This certification, along with regular, independent third-party auditing for compliance, is your assurance that Johns Manville products deliver consistent high quality.



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