

Quality People. Building Solutions.

Comfort Systems USA (Arkansas), Inc.
P.O. Box 16620
Little Rock, AR 72231
Phone 501-834-3320
Fax 501-834-5416

Date: 11/9/2023

Return Request: 11/19/2023

Project: UCA Snow – Fine Arts Center

Supplier: Custom Metals

Manufacturer: Various

Submittal: HVAC Ducts & Casings

Submittal Number: 23 31 00-01

Drawing # and Installation: Mechanical Drawings

ARCHITECT

H+N Architects
1009 Main Street
Conway, AR 72032
501-327-7525

ENGINEER

Pettit & Pettit
201 E. Markham St. #400
Little Rock, AR 72201
501-374-3731

GENERAL CONTRACTOR

Wagner General Contractors
600 W. Race Ave.
Searcy, AR 72143
501-203-0704

MECHANICAL SUBCONTRACTOR

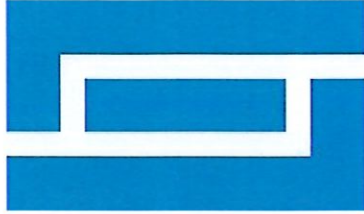
Comfort Systems USA (Arkansas), Inc.
9924 Landers Rd.
N. Little Rock, AR 72117
501-834-3320

Notes:

CSUSA PROJECT NO.

23-2020

chowell@comfortar.com



CUSTOM METALS

A DIVISION OF LEXICON, INC.
P.O. Box 16390, Little Rock, AR 72231
Telephone (501) 490-4400 Fax (501) 490-4422
www.lexicon-inc.com

Job: **UCA Snow Fine Arts Renovation**

Spec Section: **23 31 00 HVAC Ducts & Casings**

Item: **Rectangle Ducts**

Submitted by:

Joe Minton Jr.

HVAC Project Manager

(501) 607-0043

10-30-2023

HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE

THIRD EDITION – 2005



SHEET METAL AND AIR CONDITIONING CONTRACTORS'
NATIONAL ASSOCIATION, INC.
4201 Lafayette Center Drive
Chantilly, VA 20151-1209
www.smacna.org

Project: _____ Job No: _____

Location: _____ Date: _____

Mechanical Contractor: _____

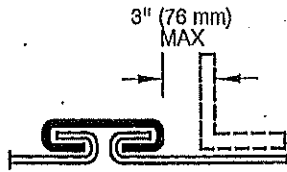
• DWM Rectangular Duct & Fittings are available in the following materials

- Galvanized G60 & G90
- Phosphatized (Paint-Grip)
- 304L Stainless Steel
- 316L Stainless Steel
- Polyvinyl Coated
- Aluminum

• Special materials are available. Please contact representative for more information.

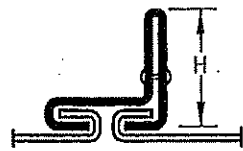
• DWM products are manufactured in accordance with applicable SMACNA, ASHRAE & ASTM A 653 standards.

**RECTANGULAR DUCT
CONSTRUCTION**



T-1 – DRIVE SLIP
T-3 – REINFORCED

- Gage no less than two gages less than duct gage
- 24 ga minimum
- Qualification as reinforcement per Table 2-48
- T-3 – Slip Gage as per T-1
 - Any length at 2 in. wg
 - 36 in. maximum length at 3 in. wg
 - 30 in. maximum length at 4 in. wg
 - Not allowed above 4 in. wg

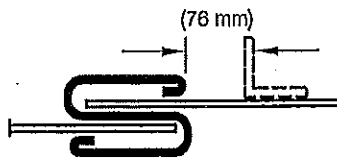


STANDING DRIVE SLIP
T-2

- Fasten standing portions within 2 in. of each end and elsewhere at 8 in. spacing or less
- Any length at 2 in. wg
- 36 in. maximum length at 3 in. wg
- 30 in. maximum length at 4 in. wg
- Not allowed above 4 in. wg

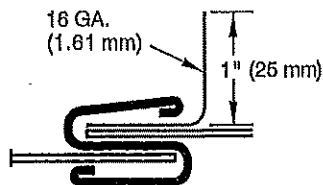


PLAIN "S" SLIP
T-5



T-6 HEMMED "S" SLIP
(T-6a REINFORCED)

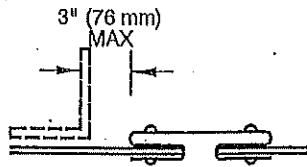
- Not less than two gages less than duct gage
- 24 ga minimum
- When used on all 4 sides, fasten within 2 in. of the corners and at 12 in. maximum intervals
- 2 in. wg maximum pressure



REINFORCED "S" SLIP
T-7

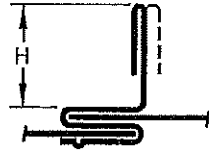
- Use slips conforming to T-6
- Use 16 ga angle of 1 in. height into slip pocket
- Fasten with screws at ends
- Angle used only for A, B, or C rigidity class
- 2 in. wg maximum pressure

FIGURE 2-1 RECTANGULAR DUCT/TRANSVERSE JOINTS

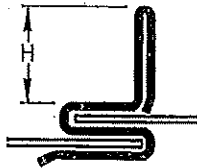


T-8 DOUBLE "S" SLIP
(T-8a REINFORCED)

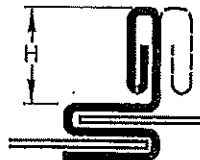
- 24 ga for 30 inch width or less
- 22 ga over 30 inch width
- Fasten to each section of the duct within 2 in. from corners and at 6 in. maximum intervals
- 5/8 in. minimum tabs to close corners



STANDING S
T-10

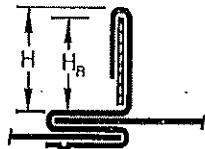


STANDING S (ALT.)
T-11



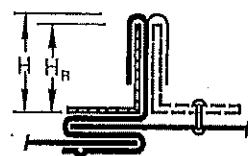
STANDING S (ALT.)
T-12

- When using S on all four sides, fasten slip to duct within 2 in. of the corner and at 12 in. maximum intervals
- Any length at 2 in. wg
- 36 in. maximum length at 3 in. wg
- 30 in. maximum length at 4 in. wg
- Not allowed above 4 in. wg



STANDING S
(BAR REINFORCED)
T-13

- Fasten as per Joint T-10
- Standing portion as per T-10 or T-11 to hold Flat Bar
- Fasten bar stock to the connector within 2 in. of the corner and at 12 in. maximum intervals
- Any length at 2 in. wg
- 36 in. maximum length at 3 in. wg
- 30 in. maximum length at 4 in. wg
- Not allowed above 4 in. wg



STANDING S
(ANGLE REINFORCED)
T-14

- Fasten as per Joint T-10
- Fasten angle to the connector or duct wall within 2 in. of the corner and at 12 in. maximum intervals
- Any length at 2 in. wg
- 36 in. maximum length at 3 in. wg
- 30 in. maximum length at 4 in. wg
- Not allowed above 4 in. wg

FIGURE 2-1 RECTANGULAR DUCT/TRANSVERSE JOINTS (CONTINUED)

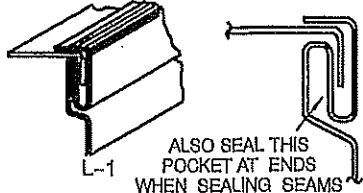
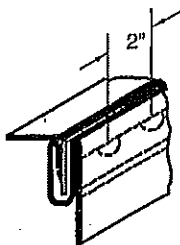

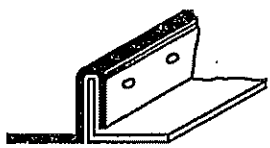
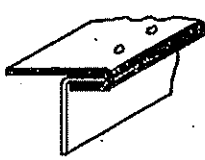
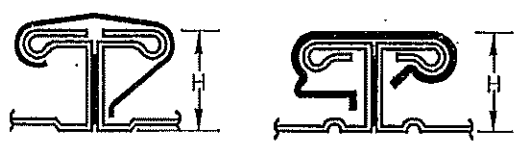
 <p>L-1 ALSO SEAL THIS POCKET AT ENDS WHEN SEALING SEAMS</p> <p>PITTSBURGH LOCK</p>	<ul style="list-style-type: none"> • Pocket depth from ¼ in. to ⅝ in. • Use on straight duct and fittings • To ± 10 in. wg
 <p>L-2 BUTTON PUNCH SNAP LOCK</p>	<ul style="list-style-type: none"> • ⅝ in. pocket depth for 20, 22, and 24 ga • ½ in. pocket depth for 24 and 26 ga • To ± 4 in. wg • Screws must be added at the ends of all duct of 4 in. wg and at the ends of 3 in. wg when the duct is over 48 in. width
 <p>L-3 GROOVED SEAM ALSO CALLED FLAT LOCK AND PIPE LOCK</p>	<ul style="list-style-type: none"> • To ± 10 in. wg
 <p>SEE FIG. 2-7 ALSO</p> <p>L-4 STANDING SEAM</p>	<ul style="list-style-type: none"> • To ± 10 in. wg • 1 in. seam up to duct width of 42 in. • 1 ½ in. seam for larger ducts • May be used on duct interiors • Fasten at 2 in. maximum from ends and at 8 in. maximum intervals
 <p>L-5 SINGLE CORNER SEAM</p>	<ul style="list-style-type: none"> • To ± 10 in. wg • Fasten as per L-4
 <p>FLANGED (WITH GASKET) T-25a</p> <p>FLANGED (WITH GASKET) T-25b</p>	<ul style="list-style-type: none"> • Assemble per Figure 2-17. • Ratings may be adjusted with HI-rated bar stock or members from Tables 2-29 and 2-30 • Supplemental members may be attached to the duct wall on both sides of the joint • Single members may be used if they are fastened through both mating flanges • Gasket to be located to form an effective seal

FIGURE 2-2 RECTANGULAR DUCT/LONGITUDINAL SEAMS

SEE TABLES 2-47 AND 2-48.
 DUCTS WITH FLAT SLIP CONNECTORS
 AND NO REINFORCEMENT
 SEE OTHER FIGURES AND TEXT
 FOR COMPLETE REQUIREMENTS
 AND LIMITATIONS

JOINT OPTIONS



DRIVE SLIP
T-1



PLAIN "S" SLIP
T-5



HEMMED "S" SLIP
T-6



DOUBLE "S" SLIP
T-8

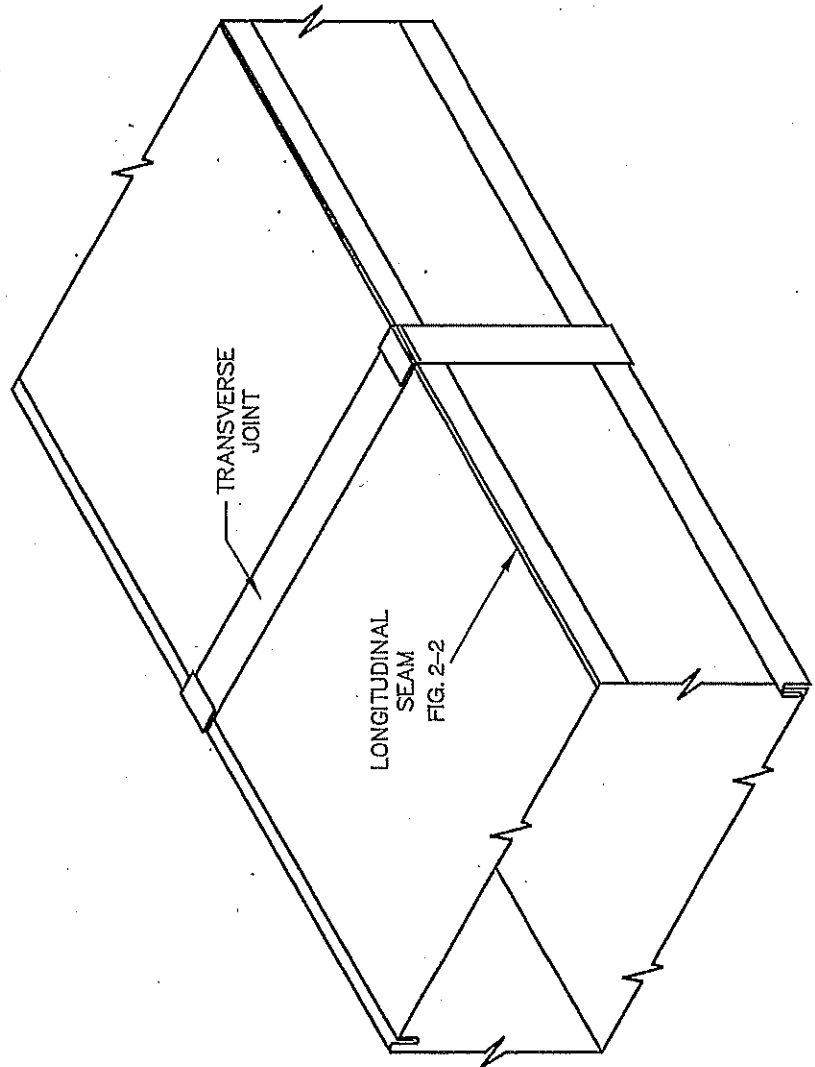
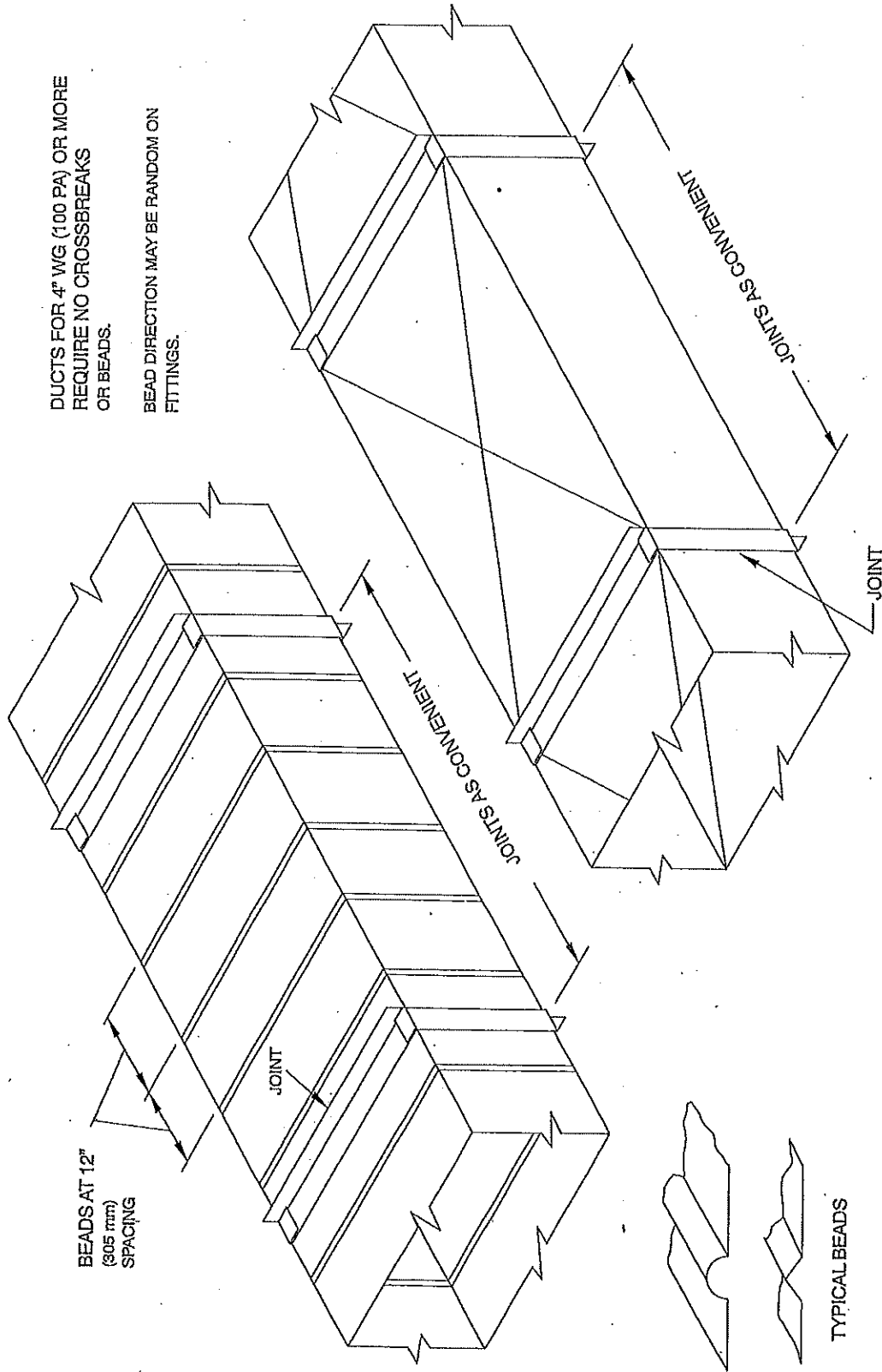


FIGURE 2-8 UNREINFORCED DUCT

DUCT SIZES 19" (483 mm) WIDE AND LARGER WHICH HAVE MORE THAN 10 SQUARE FEET (0.93 SQUARE METER) OF UNBRACED PANEL SHALL BE BEADED OR CROSS BROKEN UNLESS DUCTS WILL HAVE INSULATION COVERING OR ACOUSTICAL LINER. THIS REQUIREMENT IS APPLICABLE TO 20 GAGE (1.00 mm) OR LESS THICKNESS AND 3" WG (750 PA) OR LESS. IT IS UNNECESSARY TO BREAK OR BEAD ALL SIDES UNLESS EACH DUCT DIMENSION REQUIRES IT.

DUCTS FOR 4" WG (100 PA) OR MORE REQUIRE NO CROSSBREAKS OR BEADS.

BEAD DIRECTION MAY BE RANDOM ON FITTINGS.



NOTICE: NEITHER BEADS NOR CROSSBREAKS AFFECT REINFORCEMENT SPACING SCHEDULE

FIGURE 2-9 CROSSBROKEN AND BEADED DUCT

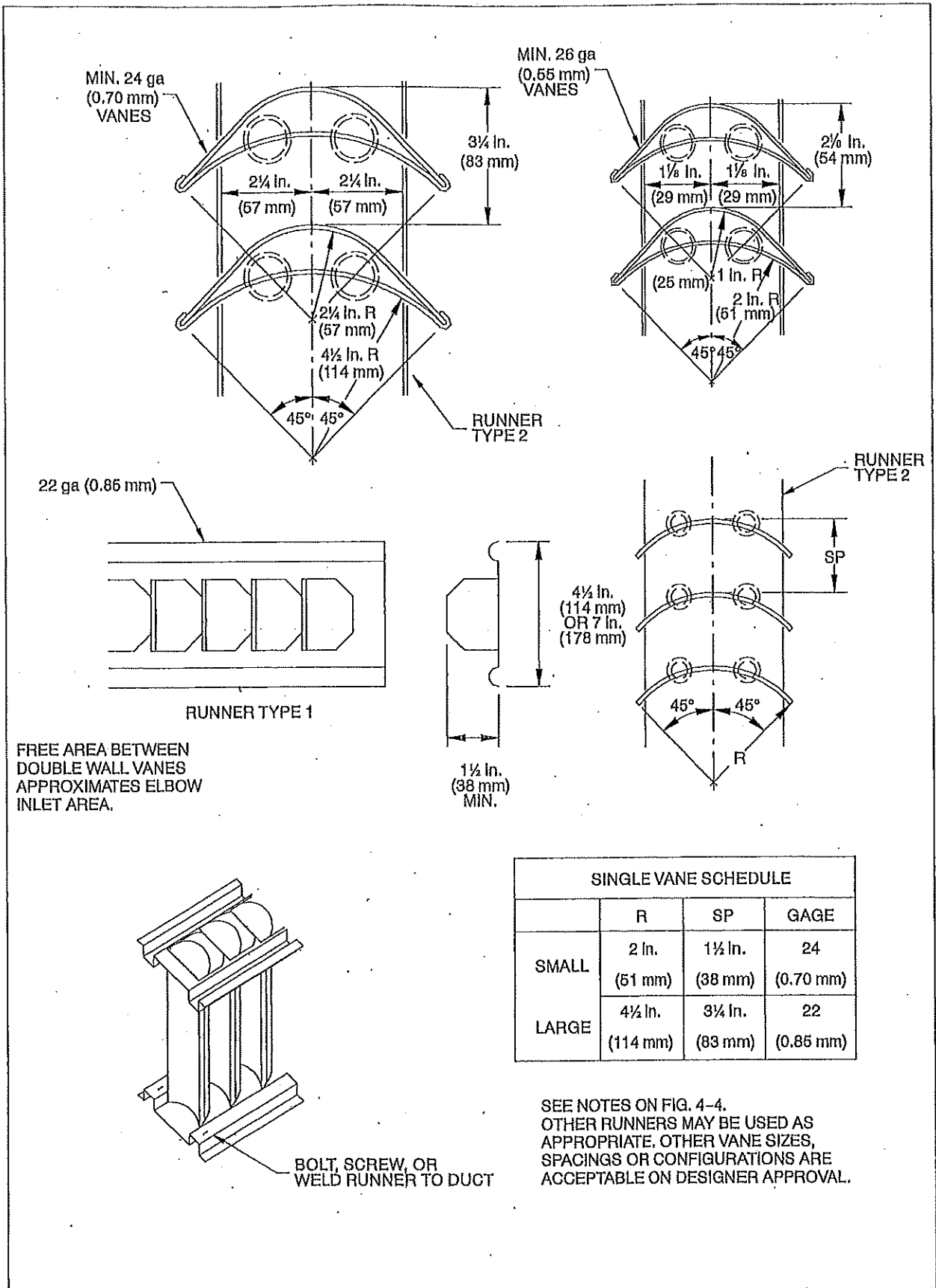


FIGURE 4-3 VANES AND VANE RUNNERS

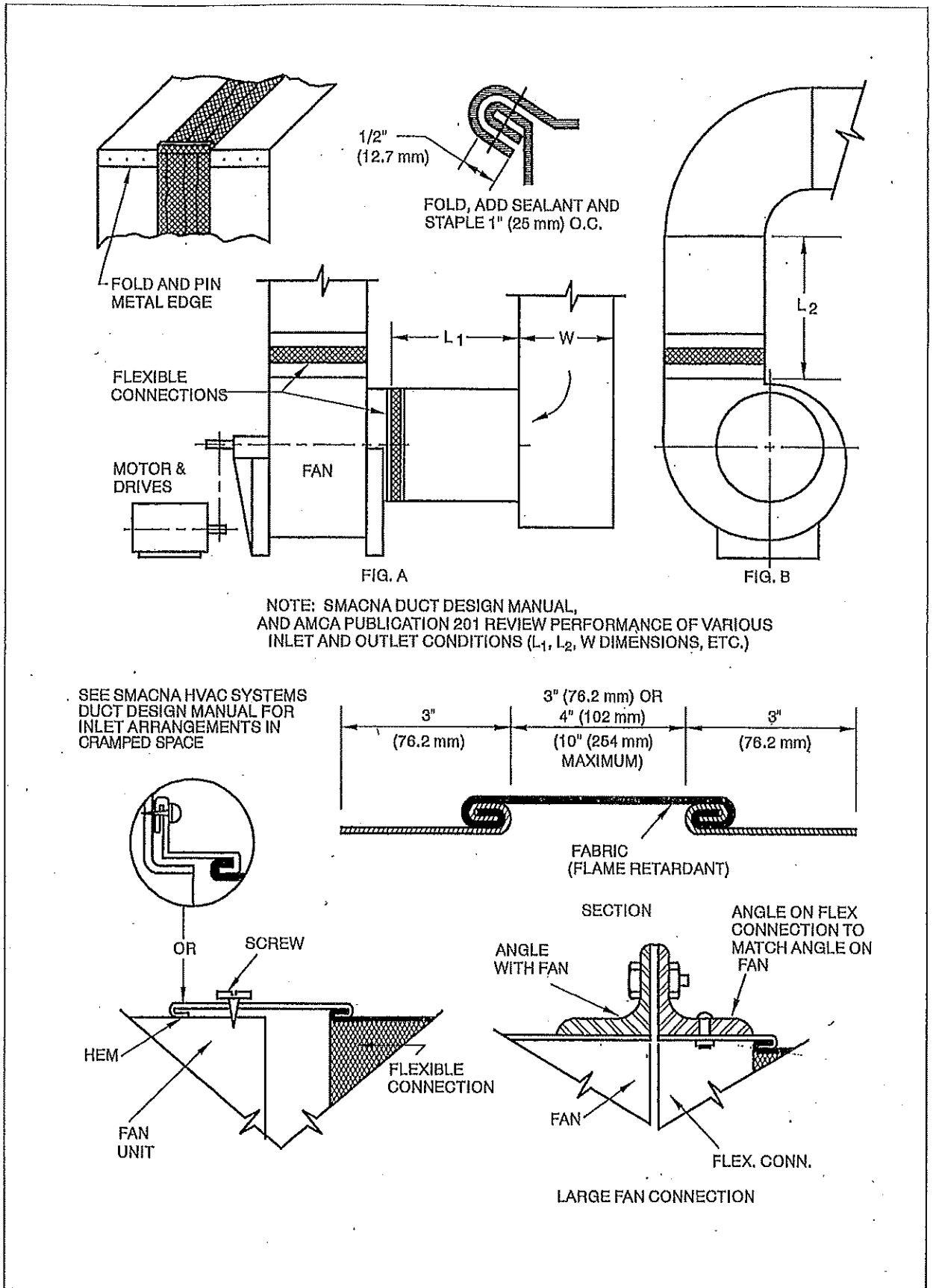


FIGURE 7-8 FLEXIBLE CONNECTIONS AT FAN

SUBMITTAL RECORD

JOB _____
 LOCATION _____
 SUBMITTED TO _____
 SUBMITTAL PREPARED BY _____
 APPROVED BY _____
 DATE _____

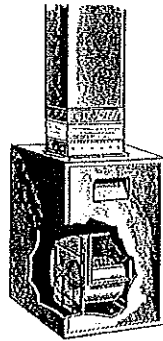


Submittal Form
 DDFDC
 Flexible Duct Connector

DESCRIPTION

All air duct installations for heating, cooling or ventilation are attached to mechanical equipment containing a fan or blower. Vibrations, noises and rattles resulting from operation of the fan or blower are transmitted into the metal ducts which carry the noises throughout the system.

In order to isolate the vibration and noises to the source, an air-tight flexible joint, consisting of a fabric which is attached to sheet metal on both side, must be inserted between the equipment and the ductwork. This vibration isolator is called a "Flexible Duct Connector".

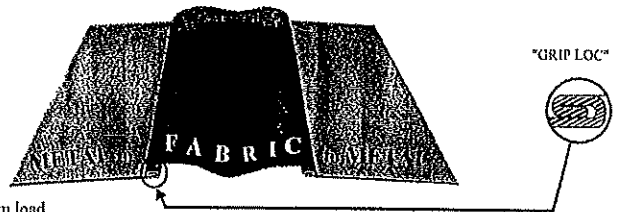


RELATED NFPA 90A & 90B STANDARDS

2-3.2.2 Vibration isolation connectors in duct systems shall be made of an approved flame-retardant fabric or shall consist of sleeve joints with packing of approved material, each having a maximum flame spread index of 25 and a maximum smoke developed index of 50. Exception: Approved flame-retardant fabric having a maximum length of 10 in. (25.4 cm) in the direction of airflow-NFPA No. 90A 1999

2-1.1.1 Exception No. 3: Vibration isolation connectors in duct systems shall be made of approved flame-retardant fabric or shall consist of sleeve joints with packing of approved noncombustible material. The fabric shall not exceed 10 in. (254 mm) in length in direction of airflow-NFPA No. 90B 1999

FABRIC COMPARISONS	Excelon ⁴	Neoprene ⁵	Duroton	Insulflex ⁴	Thermafab ³	Envirofab	Teflon	Glassel
UL Classified File #	R4462	R4462	R4462	n/a	R4462	R4462	n/a	R4462
Continuous Temp. Range	-40°F. to 180°F.	-40°F. to 200°F.	-40°F. to 250°F.	-40°F. to 180°F.	-65°F. to 500°F.	-40°F. to 200°F.	-150°F. to 500°F.	-40°F. - 180°F.
Color	Black or Spec Chck Orange	Black	White	Black	Grey	Black/White	Grey Outside/ Beige Inside	Grey & Black
Weight Per Square Yard	22	30	26	28 (composite weight)	17	18	16.5	16
Abrasion Resistance ¹	15,000 cycles	600 cycles	500 cycles	500 cycles	125 cycles	15,000 cycles	1,000 cycles	1,400 cycles
Leakage Resistance ²	350	595	250	125	400	350	650	120
Tear Strength ³	100/100	12/12	12/12	8/11	50/40	60/80	50/30	8/9
Tensile Strength ⁴	240/220	500/450	225/300	70/70	200/150	200/190	400/300	90/90
Base Fabric	Woven Nylon/ Polyester Blend	Woven Fiberglass	Woven Fiberglass	Polyester	Woven Fiberglass	Polyester	Fiberglass/ Satin Weave	Woven Fiberglass
Coating	Vinyl	Neoprene	Hypalon	Vinyl	Silicon Rubber	Proprietary Vinyl Blend	Teflon	Vinyl
Features	High Tear Strength High Abrasion Resistance	General Purpose	Excellent Ozone and Weathering Resistance Best Overall Acid Resistance	Low Smoke Emission Insulated 3-4-3 Configuration	Very Low Smoke Emission High Temperature Resistant	"Green" 10% Recycled Content UV Reflective Puncture Resistant	High Temperature Resistant High Corrosion Resistance Excellent Chemical Resistance	Resistant to Acids & Chemical Fumes Resistant to Grease & Alkalies Unaffected By Mildew
Codes								
Metal-Fab 3x3x3 Grip Loc	MBX333 (#10159) MSPX333 (#10263)	MFN333 (#10003)	MFD333 (#10002)	IDC343 (#10173) *Gauge: 28 *Guard Loc	MFT333 (#10005)	MEV333 (#10301)	MCT333 (#10278)	MGL333 (#10004)
Super Metal-Fab 3x6x3 Grip Loc	MB6X363 (#10160) MSP6X363 (#10265)	MF6N363 (#10012)	MFD6D363 (#10011)	Not Available	MF6T363 (#10013)	Not Available	Not Available	MF6G363 (#10016)
TDC/TDF 4x4x4 Grip Loc	MBX444 (#10210) MSPX444 (#10264) MBX464 (#10214)	MFN444 (#10211) MFN464 (#10246)	MFD444 (#10237) MFD464 (#10245)	Not Available	Not Available	MEV444 (#10300)	MCT444 (#10279)	Not Available



All Metal-Fab, Super Metal-Fab and TDC/TDF Flexible Duct Connectors are manufactured with 24 gauge galvanized steel. Other materials are available upon request. Stainless Steel configurations utilize 304 or 316 grade material.

Notes:

1. Abrasion resistance as per Federal Test Standard 191 Method #5306 using CS 17 wheel with 250 Gram load.
2. Leakage resistance as per Federal Test Standard 191 Method #5512. Results in P.S.I. (To convert inches of water multiply P.S.I. x 27.176.)
3. Tear strength in tongue pounds as per Federal Test Standard 191 Method #5134.1 (wrap/fill).
4. Tensile strength in grnb pounds as per Federal Test Standard 191 Method #5100 (wrap/fill).
5. Standard Excelon is not LA city approved. Use Excelon-LA when LA city approval is necessary. (See Specification Form Excelon-LA - 203)

All Duro Dyne Flexible Duct Connector Products are suitable for pressures of -10 to +15 w.c. Duro Dyne standard single fold metal to fabric grip has been tested by an independent testing laboratory to withstand a negative pressure of -10" WC and a positive pressure of +17.25" WC with no tearing or visible separation.

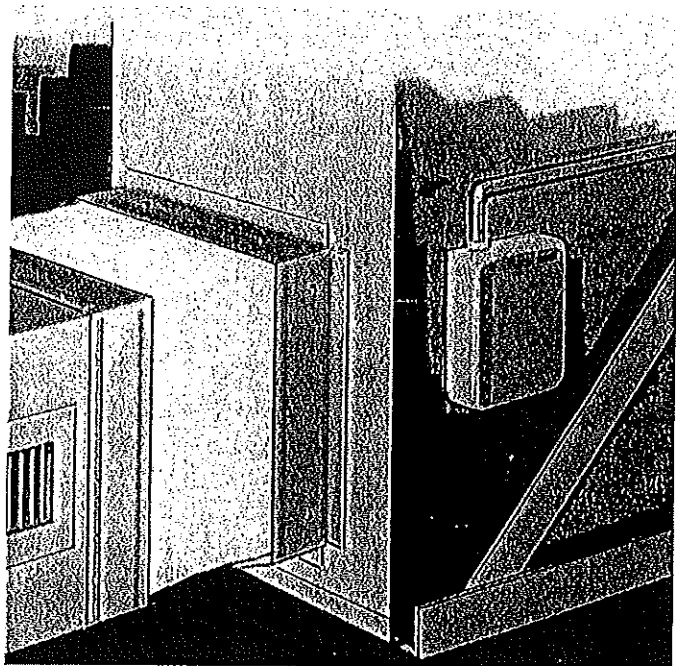
SUGGESTED SPECIFICATION

Vibration Isolating Flexible Duct Connector For Heating, Cooling & Exhaust Supplies & Returns.

At the inlet and discharge of all air handling equipment(unless otherwise noted) furnish and install vibration isolators. Vibration isolators shall be a coated woven fabric named _____ and shall be "Underwriters Laboratories Classified".

Vibration isolators shall have a tear strength of not less than _____, and a continuous temperature range of _____. Vibration isolators shall be preassembled metal to exposed fabric to metal. Fabric and metal shall be joined by means of a double lock seam.

Vibration isolators shall be code _____ (called Flexible Duct Connectors) as manufactured by Duro Dyne Corporation, Bay Shore, N.Y.



DURO DYNE[®]

Specifications

All Listed Duro Dyne Flexible Duct Connector Fabrics are designed to meet the following specifications:

1. MIL-C-20696B Para. 4.4.3. (Oil Resistance).
2. MIL-C-20696B Para. 4.4.4. (Hydro Carbon Resistance).
3. NFPA 90A Installation of Air Conditioning and Ventilating Systems Para. 4.3.2.2 2012 Edition.
4. NFPA 90B Warm air heating and air conditioning systems. Para. 4.1.1.3.1 2012 Edition. (*See note 1 below)
5. NFPA701 Tests for Flame Propagation of Fabrics and film.
6. California State Fire Marshal Approved.
7. Los Angeles City Approved, (*See note 2 below)
8. Denver City Approved.

All Duro Dyne Flexible Duct Connectors utilize galvanized steel meeting ASTM-A-525 G 60 or better.

Duro Dyne Flexible Duct Connectors are also available with 300 series stainless steel or 3003 aluminum upon request.

*Note 1 - Standard Excelcon does not currently meet NFPA 90B 2012 but does meet all previous editions. Use Excelcon-LA if NFPA 90B 2012 approval is necessary.

**Note 2 - Standard Excelcon is not LA city approved. Use Excelcon-LA when LA city approval is necessary. (See Submittal Form for Excelcon-LA)

CHEMICAL RESISTANCE

(X = Extremely Resistant)

(NR = Not Recommended)

(O = No Data Available)

Chemical	Excelcon								Chemical	Excelcon							
	Neoprene	Duroton	Insulflex	Thermafab	Envirofab	Teflon	Classical	Neoprene		Duroton	Insulflex	Thermafab	Envirofab	Teflon	Classical		
Acetic Acid	NR	X	X	NR	NR	NR	X	NR	Hydrofluoric Acid (100%)	NR	X	X	NR	NR	NR	X	NR
Aluminum Chloride	X	X	X	X	X	X	X	X	Hydrogen Peroxide	X	NR	X	X	X	X	X	X
Aluminum Sulfate	X	X	X	X	X	X	X	X	Hydrogen Sulfide	X	X	X	X	O	X	X	X
Ammonia (Anhyd)	X	X	X	X	X	X	X	X	Lactic Acid	NR	X	X	NR	O	NR	X	NR
Ammonium Hydroxide	X	X	X	X	X	X	X	X	Linseed Oil	NR	X	X	NR	X	NR	O	NR
Ammonium Sulfate	X	X	X	X	X	X	X	X	Magnesium Chloride	NR	X	X	NR	NR	NR	X	NR
Barium Sulfide	X	X	X	X	O	X	X	X	Maleic Acid	X	NR	X	X	X	X	O	X
Black Sulfate Liquor	X	X	X	X	NR	X	X	X	Methyl Alcohol	NR	X	X	NR	NR	NR	X	NR
Boric Acid	X	X	X	X	X	X	X	X	Methyl Cellosolve	NR	X	X	NR	NR	NR	O	NR
Butyl Alcohol	NR	X	X	NR	NR	NR	X	NR	Mineral Oil	X	X	X	X	NR	X	X	X
Cadmium Plating Solution	X	NR	NR	NR	O	X	O	X	Naptha	NR	NR	NR	NR	X	NR	X	NR
Calcium Chloride	X	X	X	X	X	X	X	X	Nickel Chloride	X	X	X	X	O	X	X	X
Calcium Hypochlorite	X	NR	X	X	O	X	X	X	Nickel Sulfate	X	X	X	X	X	X	X	X
Chlorine Water	X	NR	NR	X	NR	X	O	X	Nitric Acid (40%)	X	NR	X	X	NR	X	X	X
Chromic Acid	X	NR	X	X	O	X	X	X	Nitric Acid	X	NR	NR	X	NR	X	X	X
Chromium Plating Solution	X	O	O	NR	O	X	O	X	Oleum	NR	NR	X	NR	O	NR	X	NR
Citric Acid	X	X	X	X	X	X	X	X	Oxalic Acid	X	X	X	X	X	X	X	X
Copper Chloride	X	X	X	X	O	X	X	X	Phosphoric Acid (85%)	NR	X	X	NR	X	NR	X	NR
Copper Sulfate	X	X	X	X	O	X	X	X	Pickling Solution	X	NR	X	X	O	X	O	X
Cottonseed Oil	X	X	X	X	X	X	O	X	Potassium Chloride	X	X	X	X	O	X	O	X
Diacetone Alcohol	NR	X	X	NR	O	NR	O	NR	Potassium Cyanide	X	X	X	X	O	X	X	X
Disodium Phosphate	X	NR	NR	X	O	X	O	X	Potassium Dichromate	X	X	X	X	O	X	X	X
Ethyl Alcohol	NR	X	X	NR	NR	NR	X	NR	Potassium Hydroxide (40%)	X	X	X	NR	X	X	X	X
Ethylene Glycol	NR	X	X	NR	X	NR	X	NR	Potassium Sulfate	X	X	X	X	O	X	X	X
Ferric Chloride	X	X	X	X	X	X	X	X	Propyl Alcohol	NR	X	X	NR	NR	NR	O	NR
Ferric Sulfate	X	X	X	X	X	X	X	X	Sodium Chloride	X	X	X	X	X	X	X	X
Fluoroboric Acid	X	X	X	NR	O	X	O	X	Sodium Hydroxide (40%)	NR	X	X	NR	X	NR	X	NR
Formaldehyde (40%)	X	X	X	X	O	X	X	X	Sodium Hypochlorite	NR	NR	X	NR	NR	NR	X	NR
Formic Acid	X	X	X	X	O	X	X	X	Steam	NR	X	NR	NR	O	NR	X	NR
Glucose	X	X	X	X	X	X	X	X	Sulfur Dioxide (Liquid)	NR	X	X	NR	X	NR	X	NR
Glycerine	NR	X	X	NR	X	NR	X	NR	Sulfuric Acid (50%)	X	NR	X	NR	NR	X	X	X
Heptane	NR	X	X	NR	O	NR	X	NR	Sulfuric Acid (over 50%)	NR	NR	X	NR	NR	NR	X	NR
Hexane	NR	X	X	NR	O	NR	X	NR	Tannic Acid	X	X	X	X	O	X	X	X
Hydrobromic Acid (40%)	NR	X	X	NR	O	NR	X	NR	Vinegar	X	X	X	X	X	X	X	X
Hydrochloric Acid (conc)	NR	X	X	NR	NR	NR	X	NR									

Duro Dyne East Division, Bay Shore, NY
 Duro Dyne Midwest Division, Fairfield, OH
 Duro Dyne West Division, Fontana, CA
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631-249-9000 Fax: 631-249-8346
 513-870-6000 Fax: 513-870-6005
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 514-422-9760 Fax: 514-636-0328

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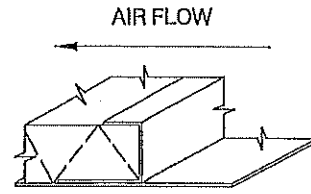


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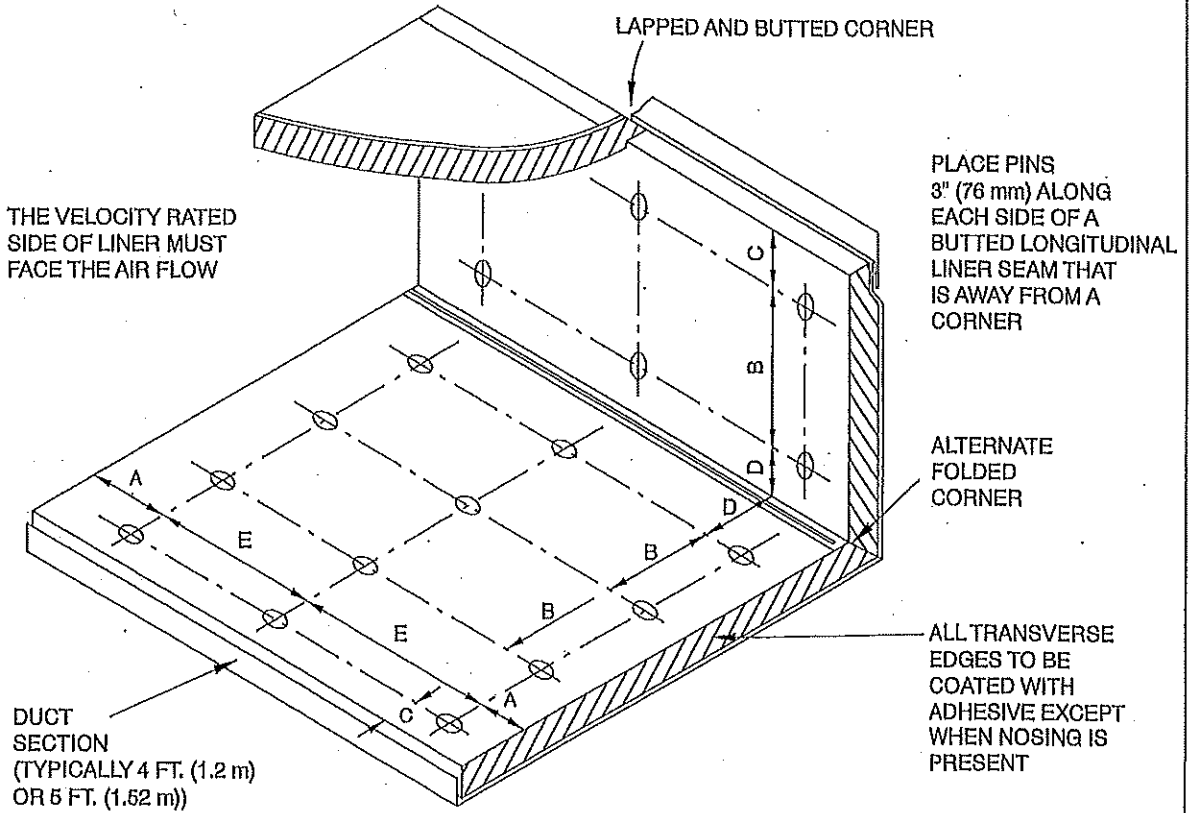
SEE TYPICAL DUCT BRANCH ENTRY CONDITION IN FIG. 4-6.

METAL NOSING MUST BE USED WHEREVER LINER IS PRECEDED BY UNLINED METAL; OTHERWISE WHEN VELOCITY EXCEEDS 4000 FPM (20.3 MPS) USE METAL NOSING ON EVERY LEADING EDGE. NOSING MAY BE FORMED ON DUCT OR BE CHANNEL OR ZEE ATTACHED BY SCREWS, RIVETS OR WELDS.



DETAIL - A
METAL NOSING
CHANNEL OR ZEE

INTERIOR WIDTH OF 8" (200 mm) AND LESS DOES NOT REQUIRE PINS.



MAXIMUM SPACING FOR FASTENERS.
ACTUAL INTERVALS ARE APPROXIMATE.

"A" PIN ROW MAY BE OMITTED WHEN METAL NOSING IS USED. "E" THEN STARTS FROM THE NOSING.

LINER ADHERED TO THE DUCT WITH 90% MIN. AREA COVERAGE OF ADHESIVE

Velocity *	Dimensions				
	A	B	C	D	E
0 - 2500 FPM (0 - 12.7 MPS)	3" (76.2)	12" (305)	4" (102)	6" (152)	18" (457)
2501 - 6000 FPM (12.7 - 30.5 MPS)	3" (76.2)	6" (152)	4" (102)	6" (152)	16" (406)

* UNLESS A LOWER LEVEL IS SET BY MANUFACTURER OR LISTING AGENCY

FIGURE 7-11 FLEXIBLE DUCT LINER INSTALLATION





Johns Manville

Air Handling Systems

Linacoustic® RC

Fiber Glass Duct Liner with Reinforced Coating System

Description

Linacoustic® RC insulation is a flexible duct liner made from strong glass fibers bonded with a thermosetting resin. The airstream surface is protected with JM's exclusive Reinforced Coating system, which combines our state-of-the-art Permacote® acrylic coating with a flexible glass mat reinforcement to provide a smooth airstream surface.

Factory-Applied Edge Coating

Edge coating is factory applied to the edges of the liner core, ensuring coverage of the leading edges per NAIMA/SMACNA requirements. Shop fabrication cuts may be coated with SuperSeal® edge treatment (refer to publication AHS-202).

Uses

Linacoustic RC insulation is specifically designed for lining sheet metal ducts in air conditioning, heating and ventilating systems, providing superior acoustical and thermal performance.

General Properties

Operating temperature (max.) – ASTM C411	250°F (121°C)
Air velocity (max.) – ASTM C1071	6,000 fpm (30.5 m/sec)
Water repellency – INDA IST 80.6	≥6
Fungi resistance – ASTM C1338	Does not breed or promote
Fungi resistance – ASTM G21	No growth
Bacteria resistance – ASTM G22	No growth

Standard Thicknesses and Packaging

Thickness	Roll Length		Roll Widths for All Thicknesses*	
	in	mm	lineal feet	lineal meters
½	13	100, 150, 200	31, 46, 61	34 to 36 864 to 914
1	25	50, 100, 150, 200	15, 31, 46, 61	44 to 48 1118 to 1219
1½	38	50, 100	15, 31	56 to 60 1422 to 1524
2	51	50	15	66 to 72 1676 to 1829

*Available in ¼" (6.4 mm) increment.

Contact your Regional Sales Office for stock items and availability of special sizes.

Surface Burning Characteristics

Linacoustic RC duct liner meets the Surface Burning Characteristics and Limited Combustibility of the following standards:

Standard/Test Method

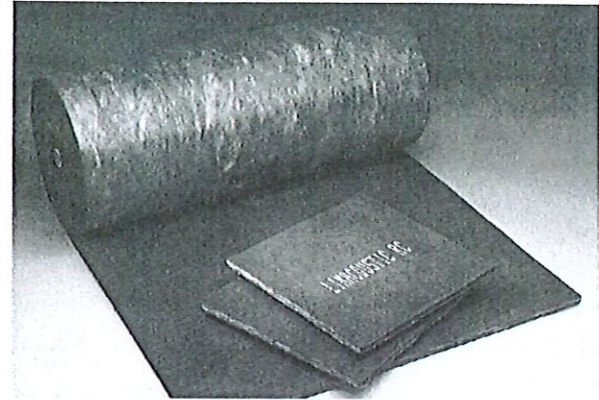
- ASTM E84
- UL 723
- NFPA 255
- NFPA 90A and 90B
- NFPA 259
- CAN/ULC S102-M88

Maximum Flame Spread Index	25
Maximum Smoke Developed Index	50

UL labels supplied on packages when requested on order.

Specification Compliance

- ASTM C1071, Type I
- ICC Compliant
- California Title 24
- MEA #353-93-M
- Conforms to ASHRAE 62
- SMACNA Application Standards for Duct Liners
- NAIMA Fibrous Glass Duct Liner Installation Standard
- Canada: CGSB 51-GP-11M and CAN/CGSB 51.11



Advantages

Improves Indoor Building Environment. Linacoustic RC duct liner improves indoor environmental quality by helping to control both temperature and sound.

Resistant to Dust and Dirt. The tough acrylic polymer Permacote coating helps guard against the incursion of dust or dirt into the substrate, minimizing the potential for biological growth.

Will Not Support Microbial Growth. Permacote coating is formulated with an immobilized EPA-registered protective agent to protect the coating from potential growth of fungi and bacteria.

Linacoustic RC duct liner meets all requirements for fungi and bacterial resistance. Tests were conducted in accordance with ASTM C1338 and ASTM G21 (fungi testing) and ASTM G22 (bacteria resistance testing). Detailed information is available in Johns Manville fact sheet HSE-103FS.

Note: As with any type of surface, microbial growth may occur in accumulated duct system dirt, given certain conditions. This risk is minimized with proper design, filtration, maintenance and operation of the HVAC system.

Cleanability. If HVAC system cleaning is required, the Reinforced Coating airstream surface may be cleaned with industry-recognized dry methods. See the North American Insulation Manufacturers Association (NAIMA) "Cleaning Fibrous Glass Insulated Air Duct Systems."

Highly Resistant to Water. The reinforced coating surface provides superior resistance to penetration of incidental water into the fiber glass wool core.

Green Building Attributes

GREENGUARD® certification is not intended for residential environments. Instead, the certification is intended only for buildings meeting ASHRAE 62.1-2007 commercial building ventilation rates. This certification is proof that the product meets the GREENGUARD Environmental Institute's indoor air quality standards and product emission standards for VOCs.



Linacoustic® RC

Fiber Glass Duct Liner with Reinforced Coating System

Installation

Linacoustic RC duct liner installation must be performed in accordance with the requirements of the NAIMA Fibrous Glass Duct Liner Standards or SMACNA HVAC Duct Construction Standard. All transverse edges, or any edges exposed to airflow, must be coated with an approved duct liner coating material, such as Johns Manville SuperSeal products.

Minimizes Pre-installation Damage. Linacoustic RC duct liner's Reinforced Coating System is highly resistant to damage that can occur during in-shop handling, fabrication, jobsite shipping and installation.

Easy to Fabricate. Linacoustic RC duct liner is lightweight and easy to handle. Clean, even edges can be accurately cut with regular shop tools.

Thermal Performance

Thickness		R-value		Conductance	
in	mm	(hr•ft ² •°F)/Btu	m ² •°C/W	Btu/(hr•ft ² •°F)	W/m ² •°C
½	13	2.2	0.39	0.46	2.61
1	25	4.2	0.74	0.24	1.36
1½	38	6.3	1.11	0.16	0.91
2	51	8.0	1.41	0.13	0.74

R-value and conductance are calculated from the material thermal conductivity tested in accordance with ASTM C518 at 75°F (24°C) mean temperature.

Sound Absorption Coefficients (Type "A" Mounting)

Thickness		Sound Absorption Coefficient at Frequency (Cycles per Second) of						
in	mm	125	250	500	1000	2000	4000	NRC
½	13	0.07	0.20	0.44	0.66	0.84	0.93	0.55
1	25	0.08	0.31	0.64	0.84	0.97	1.03	0.70
1½	38	0.10	0.47	0.85	1.01	1.02	0.99	0.85
2	51	0.25	0.66	1.00	1.05	1.02	1.01	0.95

Coefficients were tested in accordance with ASTM C423 and ASTM E795.

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.



717 17th St.
Denver, CO 80202
1-800-654-3103
www.JM.com

North American Sales Offices, Insulation Systems

Eastern Region & Canada
P.O. Box 158
Defiance, OH 43512
(800) 334-2399
Fax: (419) 784-7866

**Western Region & Outside
North America**
P.O. Box 5108
Denver, CO 80217
(800) 368-4431
Fax: (303) 978-4661

The physical and chemical properties of the Linacoustic® RC Fiber Glass Duct Liner with Reinforced Coating System listed herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Numerical flame spread and smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions. Check with the Regional Sales Office nearest you to ensure current information.

All Johns Manville products are sold subject to Johns Manville's standard Terms and Conditions, including Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville standard Terms and Conditions, Limited Warranty and Limitation of Remedy, and information on other Johns Manville thermal insulation and systems, call (800) 654-3103.



CUSTOM METALS

A DIVISION OF LEXICON, INC.
P.O. Box 16390, Little Rock, AR 72231
Telephone (501) 490-4400 Fax (501) 490-4422
www.lexicon-inc.com

Job: **UCA Snow Fine Arts Renovation**

Spec Section: **23 31 00 HVAC Ducts & Casings**

Item: **Spiral Pipe**

Submitted by:

Joe Minton Jr.

HVAC Project Manager

(501) 607-0043

10-30-2023

Single Wall Round - Positive Pressure to 10"

Standard Gauge Chart

Concealed Duct

Diameter	Spiral Pipe	Spiral Profile	Long Seam Pipe / Fittings	Standard Length
3" - 9"	26	Flat	24	10'-0"
10" - 15"	26	Flat	24	10'-0"
16" - 28"	26	Flat	24	10'-0"
30" - 46"	24	Corrugated	22	10'-0"
48" - 64"	22	Corrugated	20	10'-0"
66" - 92"	20	Corrugated	18	10'-0"

Exposed Duct

Diameter	Spiral Pipe	Spiral Profile	Long Seam Pipe / Fittings	Standard Length
3" - 9"	26	Flat	24	8'-0"
10" - 15"	26	Corrugated	24	8'-0"
16" - 28"	26	Corrugated	24	8'-0"
30" - 46"	24	Corrugated	22	8'-0"
48" - 64"	22	Corrugated	20	8'-0"
66" - 92"	20	Corrugated	18	8'-0"

Standard fittings to be spot welded and sealed. Continuously welded seam fittings are available if specified.
All PCD and SPOT Agion fittings are riveted and sealed.

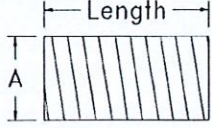
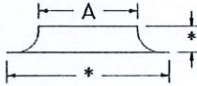
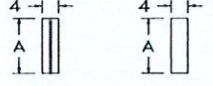
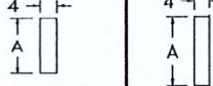
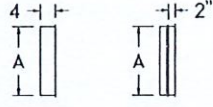
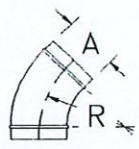
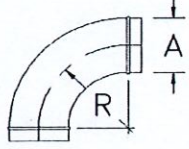
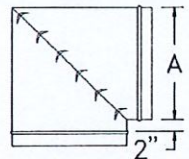
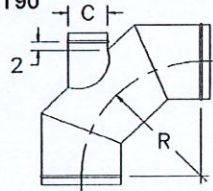
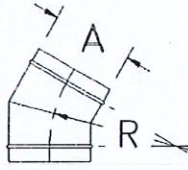
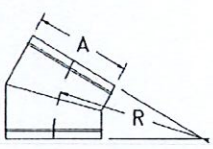
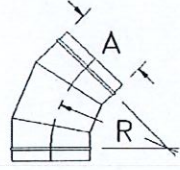
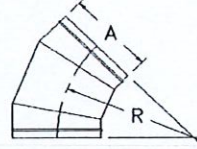
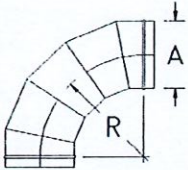
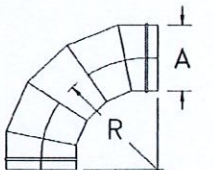
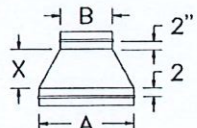
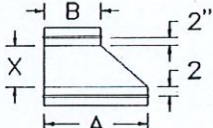
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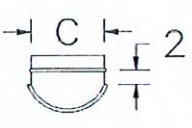
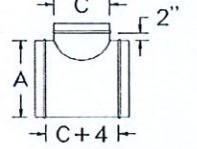
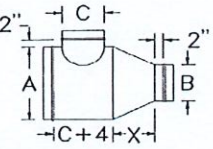
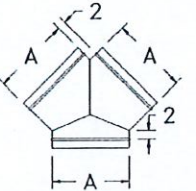
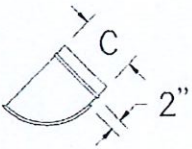
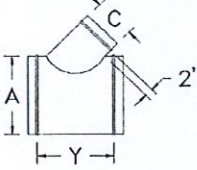
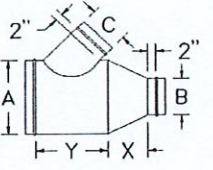
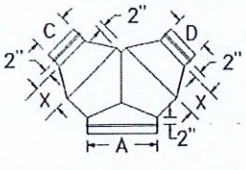
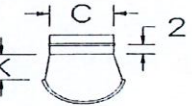
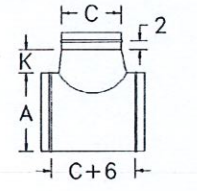
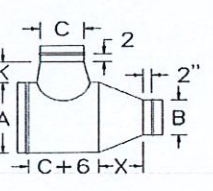
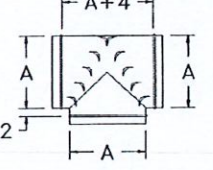
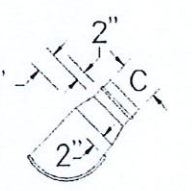
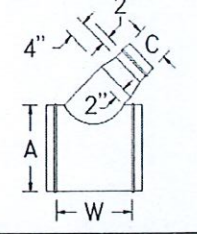
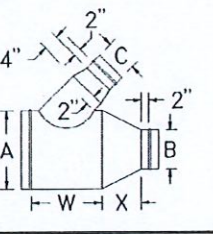
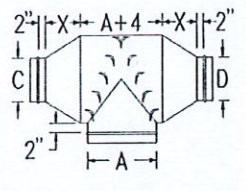
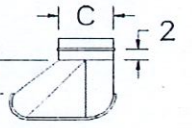
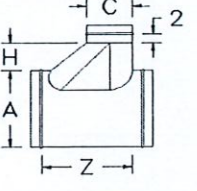
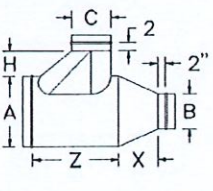
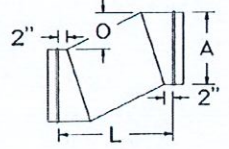
- ▶ Galvanized G60 and G90
- ▶ Phosphatized (Paint Grip)
- ▶ 304L Stainless Steel
- ▶ 316L Stainless Steel
- ▶ Polyvinyl Cated (PCD)
- ▶ 3003 Aluminum
- ▶ SPOT Agion (Anti-Microbial)
- ▶ Black Iron

Connectors

- ▶ Standard Slip-fit / Couplings
- ▶ SPOT Flange
- ▶ Angle Rings
- ▶ Long Seam Weld Flange

Special materials may be available. Please contact your nearest representative for specific details.

Single Wall Round Spiral Pipe and Fitting Standards					
SP	B1	PP	FF	EC	EP
					
Spiral Pipe	Bellmouth	Couplings		Caps & Plugs	
SE45	SE90	EV90		ET90	
					
A = 3" Thru 10"	A = 3" Thru 10"	A = 3" Thru 60"		A = 3" Thru 60"	
Stamped Elbows		Mitered Elbow		Elbow w/Tap	
E1 Thru E36		E37 Thru E71			
					
A = 3" Thru 24"	A = Greater than 24"	A = 3" Thru 24"	A = Greater than 24"		
2 Gore Elbows		3 Gore Elbows			
E72 Thru E90		R1	ER1		
					
A = 3" Thru 24"	A = Greater than 24"				
5 Gore Elbows		Reducers			
Dimensions: A = Inlet Size B = Outlet Size C = Branch Size D = Branch Size H = 3" if C = 3" to 8" 6" if C = 9" to 16" 9" if C = 17" to 24" 12" if C = 25" & Up K = 5 1/4" L = Offset Length O = Offsetting Amount R = 1.5 x A S = 2 T = A/4+2 U = Ax2+2 V = (A/2x1.414)+((C+2)/2)+6 W = (C+2)x1.414+4 X = A - B (with 4" minimum) Y = (1.414xC) + 4 Z = C+H+4 * = Consult Factory					

Single Wall Round Spiral Pipe and Fitting Standards			
LT 	T1 	T1R 	Y2 
Straight 90 Degree Tees			"Y" Fittings
LL 	L1 	L1R 	Y2R 
45 Degree Laterals			Reducing "Y" Fittings
LCT 	CT1 	CT1R 	BT 
Conical 90 Degree Tees			Bullhead Tee
LCL 	CL1 	CL1R 	BTR 
Conical 45 Degree Lateral Tees			Reducing Bullhead
LLL 	LL1 	LL1R 	SET 
Low Loss 90 Degree Tees			Offset

Available Spiral Profiles



STANDARD (FLAT) SPIRAL SEAM PIPE



CORRUGATED SPIRAL SEAM PIPE

Spiral Pipe of Texas' products are manufactured in accordance with the latest SMACNA, ASHRAE and SPIDA standards. In an on-going effort to improve our products, Spiral Pipe of Texas reserves the right to revise the design and/or specifications of its products as technology advances or applicable standards change.

