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: 2/4/2025
Return Request: 2/14/2025
Project: City Of Sherwood Public Works (Maintenance Building)
Supplier: Dollar Sheet Metal
Manufacturer: Various
Submittal: HVAC Ducts & Casings
Submittal Number: 23 31 00-01
Drawing # and Installation: Mechanical Drawings

ARCHITECT
Cromwell
1300 East 6th Street
Little Rock, AR 72202
501-372-2900

ENGINEER
Cromwell
1300 East 6th Street
Little Rock, AR 72202
501-372-2900

GENERAL CONTRACTOR
Baldwin & Shell
1000 W. Capitol Ave.
Little Rock, AR 72201
501-374-8677

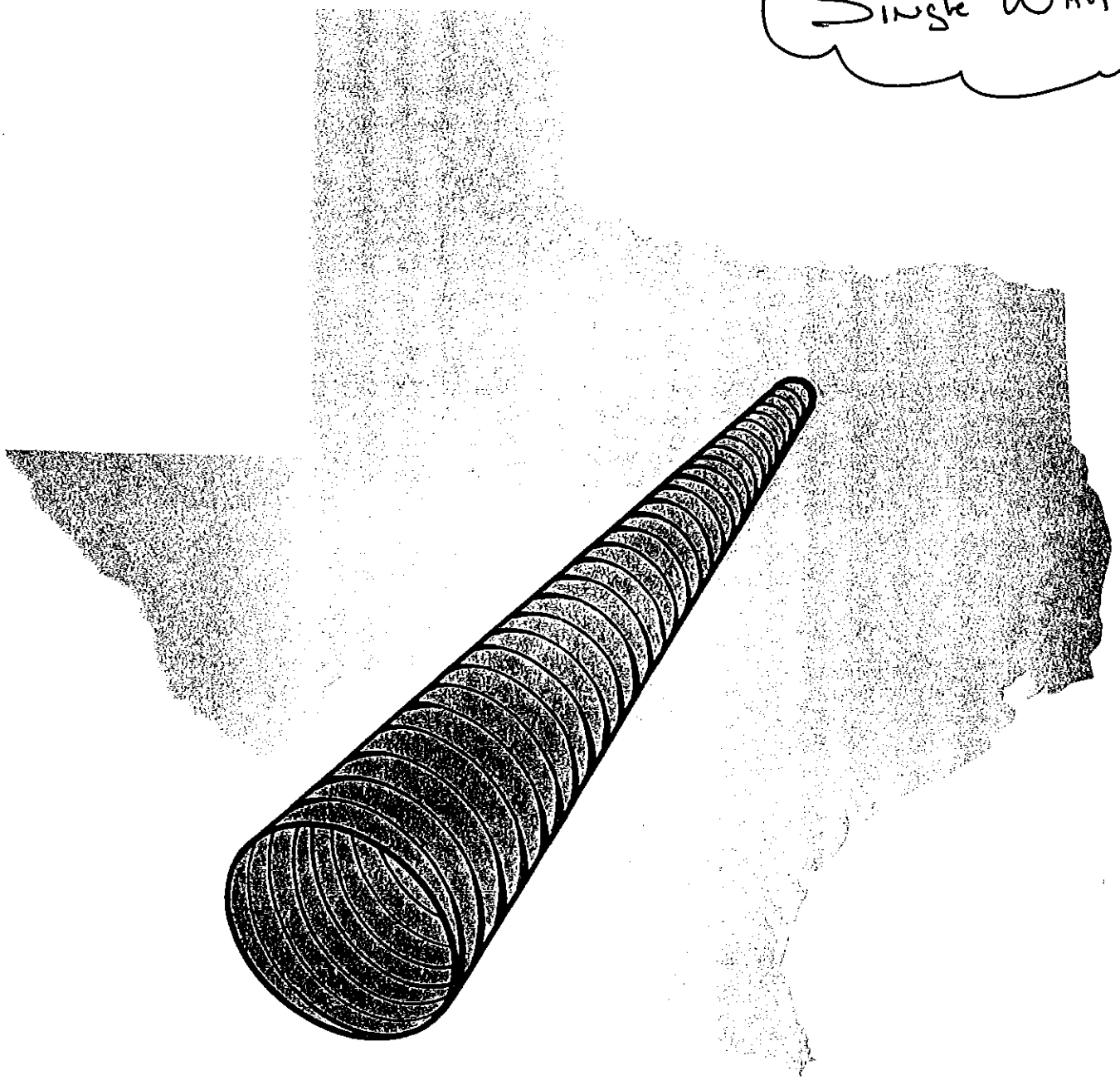
MECHANICAL SUBCONTRACTOR
Comfort Systems USA (Arkansas), Inc.
9924 Landers Rd.
N. Little Rock, AR 72117
501-834-3320

Notes:

CSUSA PROJECT NO.
24-6084
sean@comfortar.com

SPIRAL PIPE
OF TEXAS, INC.

ROUND
SINGLE WALL



FORT WORTH, TEXAS

817-838-6796

Spiral Pipe of Texas, Inc.
Single Wall Round
Standard Gauge Chart

-2 " W.G.

Diameter	Spiral Pipe	Long Seam Pipe	Fittings
3" - 13"	28	26	26
14" - 17"	26	24	24
18" - 20"	24	22	22
21" - 23"	24	20	20
24" - 26"	22	20	20
27" - 30"	22	18	18
31" - 34"	20	18	18
35" - 48"	20	18	18
49" - 60"	18	16	16
61" - 72"	16	14	14

+2 " W.G.

Diameter	Spiral Pipe	Long Seam Pipe	Fittings
3" - 14"	28	26	26
15" - 26"	26	24	24
27" - 36"	24	22	22
37" - 50"	22	20	20
51" - 60"	20	18	18
61" - 84"	18	16	16

+10" W.G.

Diameter	Spiral Pipe	Long Seam Pipe	Fittings
3" - 10"	28	26	26
11" - 14"	26	24	24
15" - 26"	24	22	22
27" - 36"	22	20	20
37" - 50"	20	20	20
51" - 60"	18	18	18
61" - 84"	18	16	16

Spiral Pipe of Texas' Round Ductwork is available in the following materials:
Galvanized G60 and G90
Phosphatized ("Paint-Grip")
304L Stainless Steel
316L Stainless Steel
Polyvinyl Coated
Aluminum

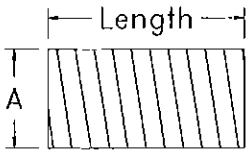
Special materials are available. Please contact your nearest representative for details.

Spiral Pipe of Texas' products are manufactured in accordance with applicable SMACNA, ASHRAE and SPIDA standards.

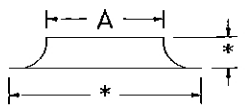
Spiral Pipe of Texas, Inc.

Single Wall Round Spiral Pipe and Fitting Standards

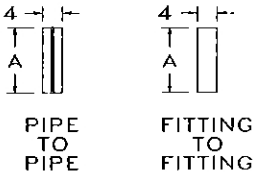
SP — Spiral Pipe



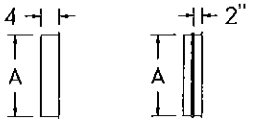
B1 — Bellmouth



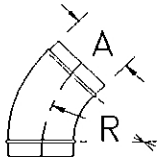
PP / FF — Couplings



EC / EP — Caps & Plugs

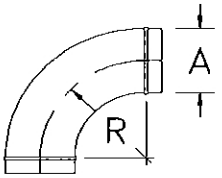


SE45 — Stamped Elbows



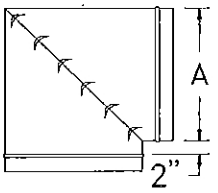
A = 3" Thru 10"

SE90 — Stamped Elbows



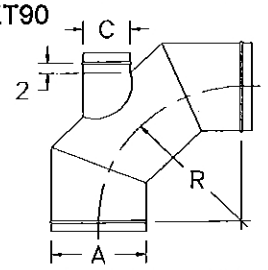
A = 3" Thru 10"

EV90 — Mitered Elbow



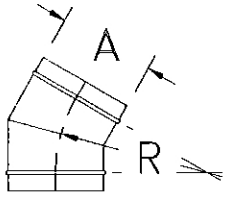
A = 3" Thru 60"

ET90 — Elbow w/Tap

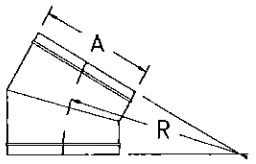


A = 3" Thru 60"

E1 Thru E36 — Stamped Elbows

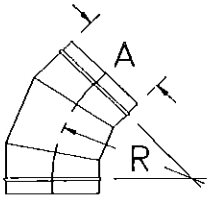


A = 3" Thru 24"



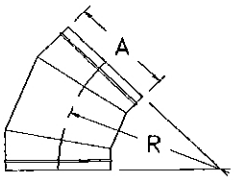
A = Greater than 24"

E37 Thru E71 — Mitered Elbow



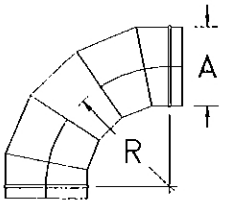
A = 3" Thru 24"

Elbow w/Tap

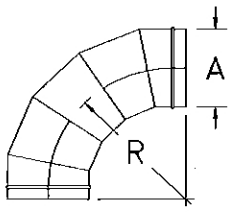


A = Greater than 24"

E72 Thru E90 — 2 Gore Elbows

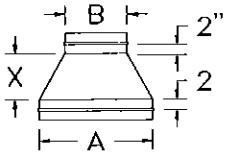


A = 3" Thru 24"

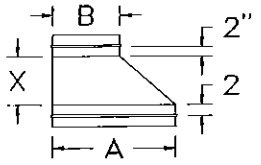


A = Greater than 24"

R1 — 3 Gore Elbows



ER1 — 3 Gore Elbows



5 Gore Elbows

Reducers

Dimensions:

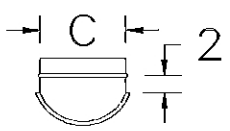
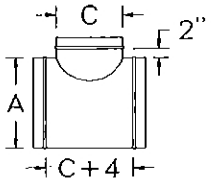
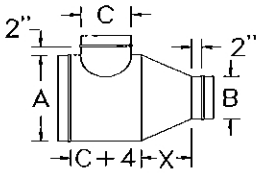
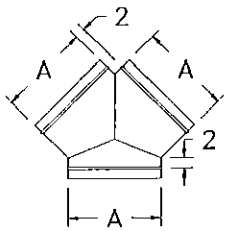
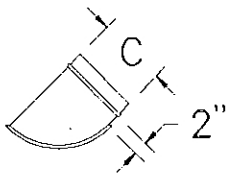
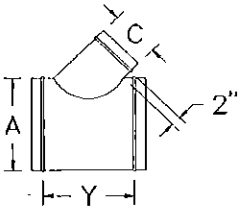
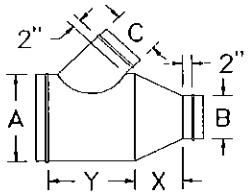
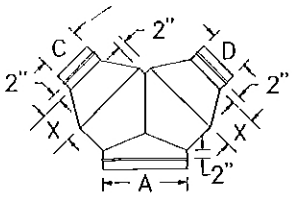
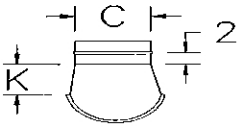
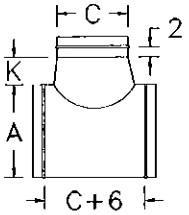
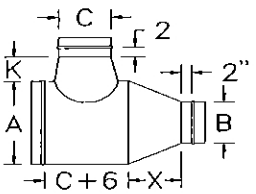
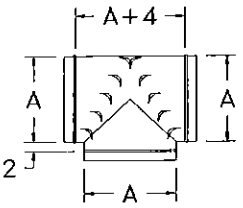
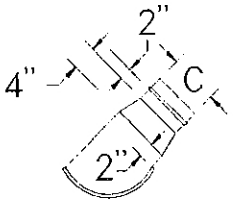
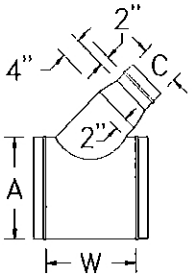
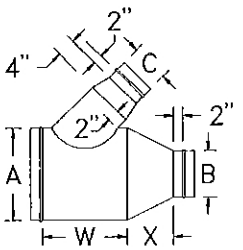
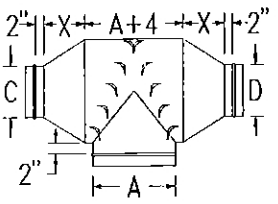
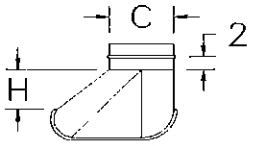
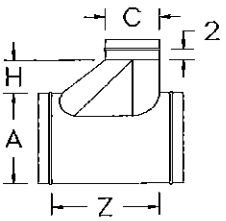
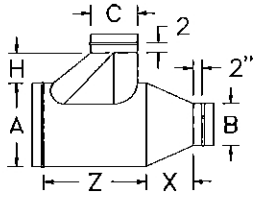
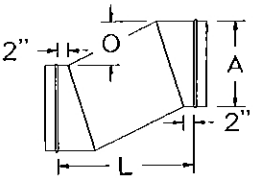
A = Inlet Size
B = Outlet Size
C = Branch Size
D = Branch Size
H = 3" if C = 3" to 8"
6" if C = 9" to 16"
9" if C = 17" to 24"
12" if C = 25" & Up

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

Spiral Pipe of Texas, Inc.

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

SUBMITTAL

Product:	Ductwork (G-90)
Manufacturer:	Dollar Sheet Metal, Inc.
Job Name:	Sherwood Public Works
Location:	N. Little Rock, AR
Date:	January 24, 2025

HVAC DUCT CONSTRUCTION STANDARDS

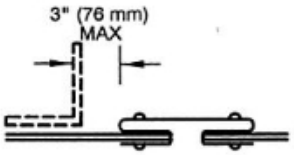
METAL AND FLEXIBLE

ANSI/SMACNA 006–2006

SHEET METAL AND AIR CONDITIONING CONTRACTORS'
NATIONAL ASSOCIATION, INC.
www.smacna.org

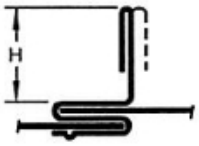
2 in. wg Static Pos. or Neg.	No Reinforcement Required	Reinforcement Code for Duct Gage Number							
Duct Dimension		Reinforcement Spacing Options ↓							
		10 ft	8 ft	6 ft	5 ft	4 ft	3 ft	2½ ft	2 ft
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
10 in. and under	26 ga.	Not Required							
11 – 12 in.	26 ga.								
13 – 14 in.	24 ga.		B-26	B-26	B-26	B-26	B-26	B-26	B-26
15 – 16 in.	24 ga.		C-26	C-26	C-26	C-26	C-26	B-26	B-26
17 – 18 in.	22 ga.		C-26	C-26	C-26	C-26	C-26	C-26	B-26
19 – 20 in.	20 ga.	C-22	C-24	C-26	C-26	C-26	C-26	C-26	C-26
21 – 22 in.	18 ga.	D-22	D-24	D-26	D-26	C-26	C-26	C-26	C-26
23 – 24 in.	18 ga.	E-22	E-24	D-26	D-26	D-26	C-26	C-26	C-26
25 – 26 in.	18 ga.	E-22	E-22	E-24	D-26	D-26	C-26	C-26	C-26
27 – 28 in.	18 ga.	F-20	E-20	E-22	E-24	D-26	D-26	C-26	C-26
29 – 30 in.	18 ga.	F-20	F-20	E-22	E-24	E-26	D-26	D-26	C-26
31 – 36 in.	16 ga.	G-18	G-20	F-22	F-24	E-24	E-26	D-26	D-26
37 – 42 in.	Not Designed	H-16	H-18	G-20	G-22	F-24	E-24	E-26	E-26
43 – 48 in.			I-18	H-20	H-22	G-22	F-24	F-24	E-24
49 – 54 in.			I-16G	I-18G	H-20G	H-20G	G-24	F-24	F-24
55 – 60 in.				I-18G	I-20G	H-20G	G-22	G-24	F-24
61 – 72 in.				J-16H	J-18H	I-20G	H-22G	H-22G	H-24
73 – 84 in.					J-16H	I-20G	I-20G	I-22G	I-22G
85 – 96 in.						J-18H	I-18H	I-20H	I-22H
97 – 108 in.						K-16I	K-18H	J-18H	I-18H
109 – 120 in.							K-16I	K-18I	J-18I

Table 2–3 Rectangular Duct Reinforcement

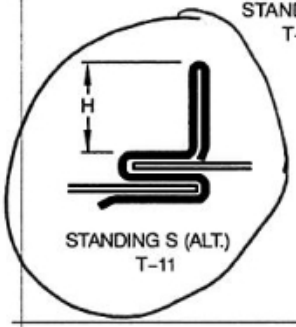


T-8 DOUBLE "S" SLIP
(T-8a REINFORCED)

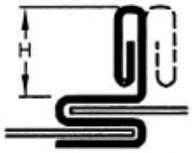
- 24 ga for 30 inch width or less
- 22 ga over 30 inch width
- Fasten to each section of the duct within 2 in. from corners and at 6 in. maximum intervals
- 5/8 in. minimum tabs to close corners



STANDING S
T-10

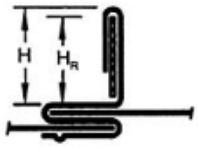


STANDING S (ALT.)
T-11



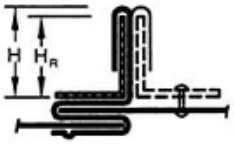
STANDING S (ALT.)
T-12

- 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

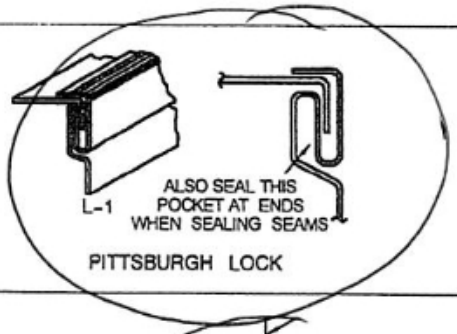
- Fasten as per Joint T-10
- Standing portion as per T-10 or T-11 to hold Flat Bar
- Fasten bar stock to the connector within 2 in. of the corner and at 12 in. maximum intervals
- Any length at 2 in. wg
- 36 in. maximum length at 3 in. wg
- 30 in. maximum length at 4 in. wg
- Not allowed above 4 in.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



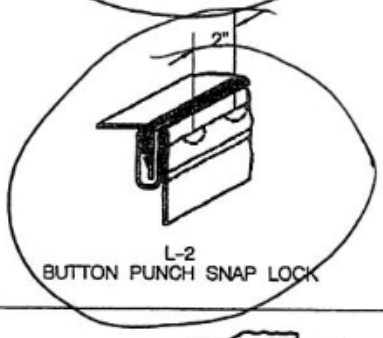
STANDING S
(ANGLE REINFORCED)
T-14

- 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)

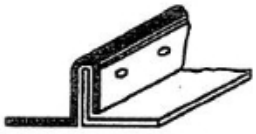


- Pocket depth from ¼ in. to ⅝ in.
- Use on straight duct and fittings
- To ± 10 in. wg

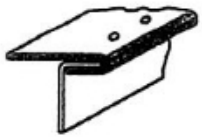


- ⅝ in. pocket depth for 20, 22, and 24 ga
- ½ in. pocket depth for 24 and 26 ga
- To ± 4 in. wg
- Screws must be added at the ends of all duct of 4 in. wg and at the ends of 3 in. wg when the duct is over 48 in. width

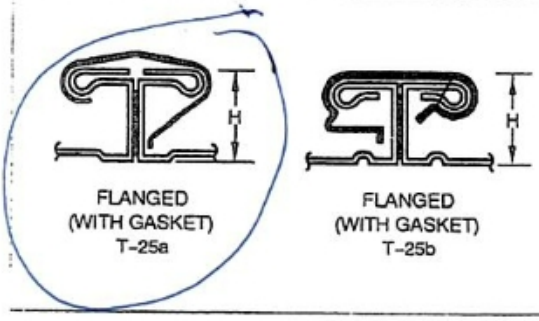
- To ± 10 in. wg



- 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



- To ± 10 in. wg
- Fasten as per L-4



- Assemble per Figure 2-17
- Ratings may be adjusted with EI-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

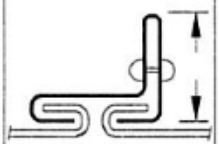
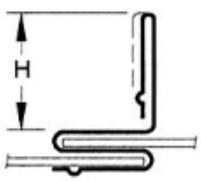
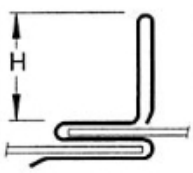
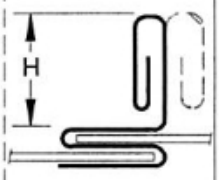
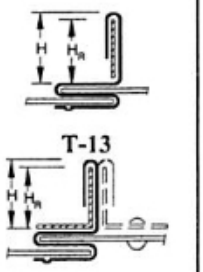
											
Reinf. Class		**T-2 Standing Drive Slip**		**T-10 Standing S**		**T-11 Standing S**		**T-12 Standing S**		**T-14 Standing S**	
	EI*	H × T (mm)	KG LM	H × T (mm)	KG LM	H × T (mm)	KG LM	H × T (mm)	KG LM	H × T + HR (mm)	KG LM
A	0.12	Use B		Use B		12.7 × 0.55	0.74	Use B		Use D	
B	0.29	28.6 × 0.55	0.6	25.x 0.55	0.9	12.7 × 0.85 25 × 0.55	0.9	25 × 0.55	1.0	Use D	
C	0.55	28.6 × 0.85	0.9	25 × 0.85	1.2	25 × 0.85	1.2	25 × 0.70	1.2	Use D	
D	0.78	28.6 × 1.31	1.2	28.6 × 1.00 25 × 0.85 (+)	1.3	25 × 1.00 25 × 0.85 (+)	1.3	Use E	1.5	41.3 × 0.70 38.1 × 3.2 Bar	2.1
E	1.9	NOT GIVEN		28.6 × 1.31	1.5	25 × 1.31 (+)	1.3	25 × 1.31 38.1 × 1.00	1.8	Use F	
F	3.7			Use G		NOT GIVEN		Use G		41.3 × 0.85 38.1 × 3.2 Bar	2.2
G	4.5			41.3 × 1.31	1.9			38.1 × 1.00	1.9	41.3 × 1.00 38.1 × 3.2 Bar	2.6
H	7.6			NOT GIVEN				NOT GIVEN		41.3 × 1.31 38.1 × 3.2 Bar	3.0
I	20									54 × 1.00 51 × 51 × 3.2 Angle	4.3
J	23									54 × 1.00 51 × 51 × 4.76 Angle	5.5
K	30									NOT GIVEN	
L	60										

Table 2–31M Transverse Joint Reinforcement

See Section 2.1.4. *Effective EI is number listed times 10^5 before adjustment for bending moment capacity. T-2 and T-10 through T-14 are restricted to 750 mm length at 1000 Pa, to 914 mm length at 750 Pa and are not recommended for service above 1000 Pa. (+) indicates positive pressure use only.

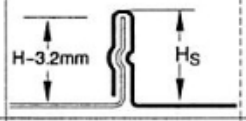
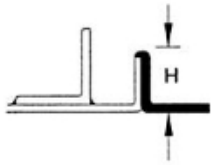
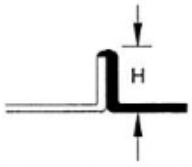
				 T-16			 T-21a				
Minimum Rigidity Class		**T-15 Standing Seam**		**Standing Seam or Welded Flange Reinforced**						**T-21 Welded Flange**	
				0.55 to 0.85 mm Duct			**1.00 to 1.61 mm Duct**				
	E1*	Hs × T (mm)	KG LM	Hs (mm)	Angle HR × T	KG LM	Hs	Hs × T (Min) (mm)	KG LM	Hs × T (mm)	KG LM
A	0.12	12.7 × 0.70	0.3			1.5				12.7 × 0.85	0.1
B	0.29	19.1 × 0.70	0.4			1.5				19.1 × 1.61	0.3
C	0.55	Use D	0.7			1.5				19.1 × 1.31	0.4
D	0.78	19.1 × 1.61 25 × 1.0	0.4	25	25 × 25 × 1.61	1.5				31.8 × 1.31 31.8 × 0.85 (+)	0.6 0.4
E	1.9	25 × 1.61	1.0	25	25 × 3.2	2.1	25	25 × 3.2	2.1	31.8 × 1.61 38.1 × 1.0 (+)	0.7
F	3.7	38.1 × 1.31	1.2		Use G	2.7	31.8	31.8 × 2.8	2.5	38.1 × 1.61 (+)	0.9
G	4.5	38.1 × 1.31 (+)	1.2	38.1	38.1 × 3.2	3.0	38.1	38.1 × 3.2	3.6	**See T-21a And Tie Rod Options**	
H	7.6	**See T-16 And Tie Rod Options**		38.1	51 × 3.2	4.0	38.1	38.1 × 4.8	3.9		
I	20			38.1	51 × 4.8		38.1	51 × 3.2	4.0		
J	23				Use K	5.2	38.1	51 × 4.8	5.2		
K	30			38.1	63.5 × 4.8		38.1	63.5 × 4.8	6.1		
L	60				**Not Given**						

Table 2–33M Transverse Joint Reinforcement

See Section 2.1.4. *Effective EI is number listed times 10^5 before adjustment for bending moment capacity. *See* tie rod options elsewhere. (+) indicates positive pressure use only.

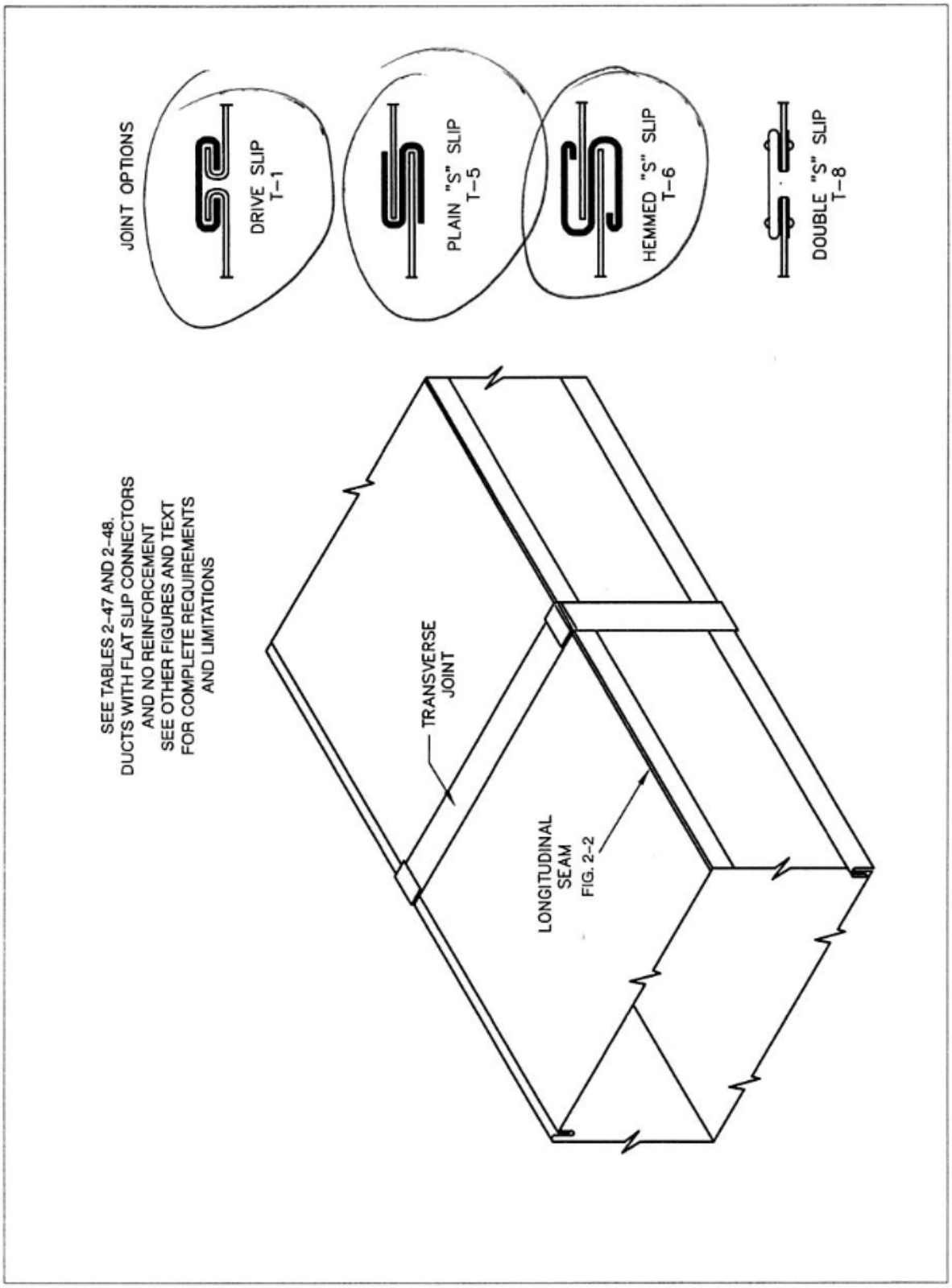


FIGURE 2-8 UNREINFORCED DUCT

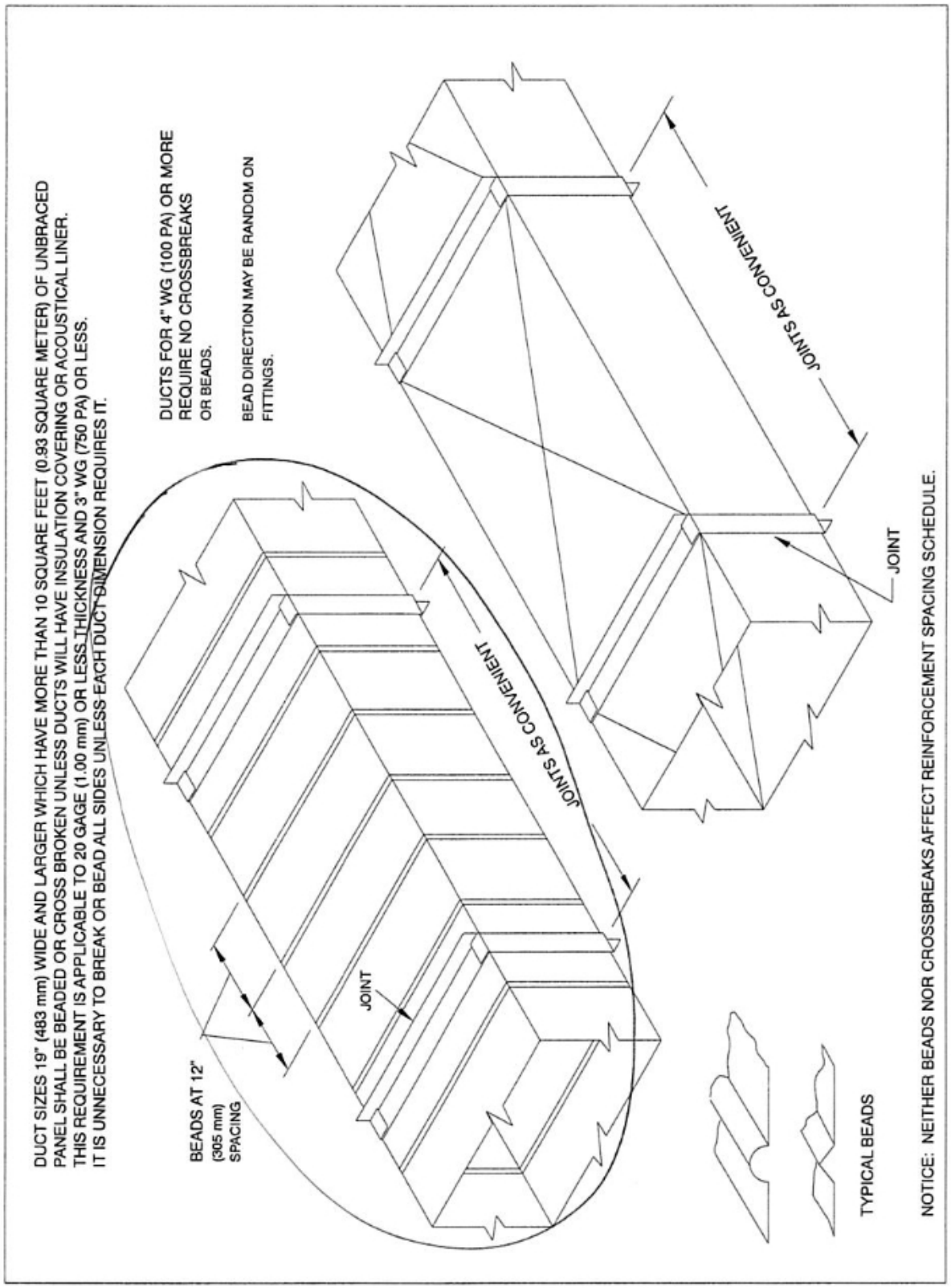


FIGURE 2–9 CROSSBROKEN AND BEADED DUCT

SUBMITTAL

Product:	Duct Sealant and Tape
Manufacturer:	Hardcast, Inc.
Job Name:	Sherwood Public Works
Location:	N. Little Rock, AR
Date:	January 24, 2025

HARDCAST
DUCT SEALANTS & INSULATION ADHESIVES

Foil-Grip™ 1402

Indoor/Outdoor Rolled Mastic Sealant
The Only True Zero VOC

OVERVIEW

Foil-Grip 1402 is a pressure-sensitive, 40-year cycle, duct joint and general purpose rolled mastic sealant. It provides an instant water-resistant air-tight grip to most surfaces including sheet metal, flex duct, and PVC-coated duct. Foil-Grip 1402 is suitable for subgrade application on PVC-coated duct and is ideal for replacement applications.

PART NUMBERS

304093	1 Case w/ (24) 2" x 100' Rolls (Non-printed)
304094	1 Case w/ (16) 3" x 100' Rolls (Non-printed)
304095	1 Case w/ (12) 4" x 100' Rolls (Non-printed)
304096	1 Case w/ (8) 6" x 100' Rolls (Non-printed)
304083	1 Roll 36" x 100' (Non-printed)
304099	1 Case w/ (24) 2" x 100' Rolls (Printed)
304100	1 Case w/ (16) 3" x 100' Rolls (Printed)

FEATURES AND BENEFITS

- Instant Adhesion
- Indoor/Outdoor
- True Zero VOC
- Metal & Subgrade PVC Ductwork
- All Pressure Classes Up To 20 inches W.C.
- 17-Mil Thickness

SPECIFICATIONS/STANDARDS COMPLIANCE

Property	Method	Results
Color	Visual	Mil Finish Aluminum Printed/Non-Printed With Gray Butyl Sealant
Backing	Visual	2 mils Aluminum
Thickness	ASTM D3652	17 mils nominal
Peel Strength	ASTM D3330-83	>10 llbs/linear inch
Tensile Strength	ASTM D412	955 psi avg.
Elongation	ASTM D412	500%
Flexibility	ASTM C765	Excellent/No Cracking
Water Resistance	CSTM. RA 8.0	Pass
VOC	EPA Method # 2	0 g/l
Flame	ASTM E84/UL 723	20
Smoke	ASTM E84/UL 723	40
Service Temperature	ASTM D2485/D2243	-20°F to 200°F (-28.8°C to 93.3°C)
Pressure Test	Independent 24 Hour Test up to 5/8-inch Diameter	20 inch w.c.
Weather Resistance	ASTM G53	Passes 2,000 QUV
Bond Time		Immediate/Full Bond: 15 Minutes
UL Rating	UL 723	Passes/Classified
VOC Limitation	SCAQMD Rule 1168	Pass
NFPA	90A & 90B	Class 1

STORAGE

Temperature	35°F to 110°F (1.7°C to 44°C) DO NOT FREEZE
Shelf Life	24 months
Flammability	Non-flammable

HARDCAST
A CARLISLE COMPANY

USA: 900 Hensley Lane, Wylie, TX 75098 • (877) 495-4822
Canada: 205 Brunswick Boulevard, Suite 300, Pointe-Claire, QC H9R 1A5 • (800) 544-5535
www.hardcast.com

HARDCAST
DUCT SEALANTS & INSULATION ADHESIVES

Foil-Grip 1402

Indoor/Outdoor Rolled Mastic Sealant
The Only True Zero VOC

APPLICATION

Temperature	35°F to 110°F (1.7°C to 44°C)
Preparation	Surface must be dry and free of dirt, oil and grease.
Method	Cut desired length, peel off release liner, apply. Removal or repositioning may damage Foil-Grip 1402 and surface. Overlap at ends. Use squeegee with heavy pressure to assure complete contact.
Clean Up	UN-TACK™ or Solvent (Use safe handling practices.)
Painting	Use paint appropriate for aluminum

PRECAUTIONS

Surfaces must be clean and free of moisture and contamination. Do not apply this product in areas where temperatures will exceed 200°F. Keep out of the reach of children. DO NOT use where acidic or alkaline chemicals are present (ie., lab fume hood, vents, etc.).

For Industrial Professional Use Only.

LEED

Post-industrial Recycled Content	0%
Pre-consumer Recycled Content	0%
VOC Content	0 g/L
Manufacturing Location(s)	Wylie, TX

CLASSIFIED c UL us

UNDERWRITERS LABORATORIES INC.®
CLASSIFIED
GENERAL USE TAPES

SURFACE BURNING CHARACTERISTICS
*Applied to inorganic reinforced Cement Board
7735

FLAME SPREAD 20
SMOKE DEVELOPED 40

*Tested in two 3-inch (76 mm)-wide longitudinal strips 9-inches (229 mm) on center. (Tape coverage: 30% of the exposed test sample area.)

Contributes to LEED® Credit Requirements

True Zero VOC

MADE IN USA

HARDCAST
A CARLISLE COMPANY

USA: 900 Hensley Lane, Wylie, TX 75098 • (877) 495-4822
Canada: 205 Brunswick Boulevard, Suite 300, Pointe-Claire, QC H9R 1A5 • (800) 544-5535
www.hardcast.com

P/N 601245 - FOIL-GRIP 1402 TDS - 02.02.18

HARDCAST
DUCT SEALANTS & INSULATION ADHESIVES

Contributes to LEED® Credit Requirements

CCWI-181

Indoor/Outdoor
Water Based Duct Sealant

PART NUMBERS

304142	1 Case w/ (25) 11 oz. Cartridges (White)
304146	1 Case w/ (25) 11 oz. Cartridges (Gray)
304144	1 Case w/ (4) 1-Gallon Pails (White)
304148	1 Case w/ (4) 1-Gallon Pails (Gray)
304143	1 - 2-Gallon Pail (White)
304147	1 - 2-Gallon Pail (Gray)
304145	1 - 5-Gallon Pail (White)

TECHNICAL DATA

Color	White & Gray
Consistency	Heavy textured
Base	Synthetic latex
Solvent	Water
Weight per Gallon	11.6 lbs.
Solids Content	73.4%
Viscosity	Thixotropic
Coverage (UL 181 A-M)	Apply 18 mil, scrim, addt. 18 mil
Coverage (UL 181 B-M)	Approximately 214 to 320 lin. ft. per gal. at 20 to 30 mil wet film thickness at 3" width
Shore A Hardness	> 20
Flexibility	Passes ¼ inch mandrel bend
Time to Test	48 hours*
Service Temperature	-20°F to 200°F
Mildew Resistance	Mold & Mildew resistant
VOC	Exempt: 0 g/l Non Exempt: 38 g/l (less water)
Surface Burning	Flame Spread - 0, Smoke Developed - 0 (When tested in accordance with ASTM E84, UL 723)
Pressure Classes	SMACNA ½ , 1, 2, 3, 4, 6 and 10 inches w.g.
Seal Class	Meets Seal Class A
Packaging	11 oz. cart.; 1, 2 & 5 gal. pails
Freeze/Thaw Stability	Passed 5 Cycles

*May vary according to temperature and humidity

SPECIFICATION/STANDARDS COMPLIANCE

Property	Method	Results
Freeze Thaw & Heat Cycling	ASTM C-731	Pass
Slump Test	ASTM D-2202	Pass
VOC Limitation	SCAQMD Rule 1168	Pass
	USDA	Pass
	FDA	Pass
	EPA	Pass
	City of Los Angeles Approval RR#8427	Pass

A versatile, all purpose duct sealant for use on all types of metal duct, fiberglass duct board, duct fabric and flex duct. CCWI- 181 incorporates a built-in polyester reinforcement for exceptional strength, with UV inhibitors for outdoor use. UL 181A-M listed / UL 181B-M listed.

APPLICATION

Temperature	35°F to 110°F (1.7°C to 44°C)
Method	Brush, putty knife, caulk gun
Preparation	Surface must be dry, dirt, oil, and grease free.
Rate (UL 181 A-M)	Apply 18 mil, scrim and 18 mil over scrim.
Rate (UL 181 B-M)	Approx. 214 to 320 lin. ft. per gal. at 20 to 30 mil wet film thickness at 3" width.
Clean Up Wet	Soap and water
Clean Up Dry	UN-TACK™ or Solvent (Use safe handling practices.)
Painting	Only latex or epoxy paints
Ductboard	Scrim required for UL 181A-M

STORAGE

Temperature	35°F to 110°F (1.7°C to 44°C) DO NOT FREEZE
Shelf Life	One year (unopened)
Flammability	Non-flammable

Underwriters Laboratories Inc.®
LISTED
17NF
UL 181A-M
FOR USE WITH U.L. LISTED RIGID FIBERGLASS AIR DUCTS OR CONNECTORS.
UL 181B-M
FOR USE WITH U.L. LISTED FLEXIBLE AIR DUCTS OR CONNECTORS

PRECAUTIONS

Surface must be clean and free of moisture, contamination and foreign matter. Do not allow this product to freeze. Apply when temperatures will not fall below freezing for at least 36–48 hours, depending on temperature and humidity. Do not apply this product where temperatures will exceed 200°F. Keep out of the reach of children. Review MSDS for complete safety information prior to use. DO NOT use where acidic or alkaline chemicals are present (ie., lab fume hood, vents, etc.)

For Industrial Professional Use Only.

CARLISLE HVAC PRODUCTS

USA: 900 Hensley Lane, Wylie, TX 75098 • (877) 495-4822
Canada: 2100 Remembrance Road, Lachine, QC H8S 1X3 • (800) 544-5535
www.carlislehvac.com

PHP SYSTEMS/DESIGN
BUILD IT RIGHT.

PHP Systems/Design
5534 Harvey Wilson Drive
Houston, TX 77020

(800) 797-6585

info@phpsd.com

PHP-D

SPECIFICATION & TECHNICAL INFORMATION SHEET

DESCRIPTION:

The PHP-D, is designed to support ducting, cable tray and piping at any specified height or width. The support is designed for installation without roof penetrations, flashings, or damage to the roofing material. The support can be used for virtually any roofing system from flat roofs to roofs sloped up to 2 in 12. The supports should be spaced according to the specifications. Seismic and High-Wind applications are available for the system.

INSTALLATION PROCEDURE:

1. Layout isolation pads, (provided by contractor), according to the design and layout.
2. Place bases on isolation pads.
3. Insert the legs of the duct support into bases and attach with 2-1/2" bolt and 1/2" nut).
4. Space out pipe supports according to specifications. This should be done before any weight is supported.
5. **IF BRACING IS REQUIRED**, attach horizontal bracing to legs of pipe supports, (approximately 3/4 of the way up the height of the support), with 3" bolts and 1/2" nut.
   NOTE: If double or triple bracing is required, designated locations will be marked on support legs.
6. Adjust width up to bottom of ducting.
7. Make sure supports are level, vertically and horizontally, and proper spacing is maintained per design specifications.
8. Check that the weight of the duct is distributed evenly throughout the system.

STORAGE:

Store in the original, unopened containers, under cover, until needed for installation.

LEED INFORMATION:

Frame/Steel
Post Consumer Recycled Content: 0%
Post Industrial Recycled Content: 25%

BASE MATERIAL:

Post Consumer Recycled Content: 80%
Post Industrial Recycled Content: 20%
Manufacturing Location: Houston, TX

PRODUCT DATA:

Property:	Minimum Performance:
Base:	
Size:	18" x 18" x 3" or 18" round
Base Weight:	7 lbs and 10-1/2 lbs
Base Material:	Injection molded high density/high impact polypropylene with UV-inhibitors and Antioxidants
Base Color:	Black
Base Density:	55.8 lb/cu ft (894 kg/cu m)
Carbon Steel and 304 Stainless Steel Framing:	
Channel Types:	1-5/8" (41.3 mm) or 1-7/8" (47.6 mm) as required by loading
Form:	Roll-formed 3-sided tubular shape, perforated with 9/16" (14.3 mm) holes at 1-7/8" (47.6 mm) centers on three sides
Thickness:	12 gauge (2.7 mm)
Carbon Steel Finish:	Hot dip galvanized per ASTM A 123
Stainless Steel Finish:	Mill Finish
Hardware:	
Nuts and Washers:	Hot Dip Galvanized or 304 Stainless Steel

DUCTSOX®
Textile Air Dispersion Products

WARRANTY REGISTRATION SHEET

Please fill out the information below regarding where the DuctSox product will be installed. Fax the completed form to 866-398-1646 or 563-588-5330.

All information is REQUIRED and needed for Warranty purposes.

End User Information:

Date:

Project/Reference:

End User Name:

Street Address:

City:

State/Country:

Zip:

Rep Name:

Additional Information (Optional):

DUCTSOX®
Textile Air Dispersion Products

SUBMITTAL DOCUMENTS

City of Sherwood-Public Works
12.11.2024

This document includes details on proposed products supplied by:

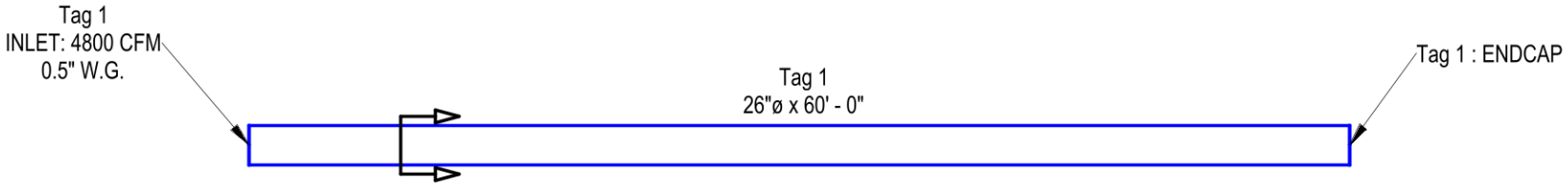
DuctSox Corporation
4343 Chavenelle Road
Dubuque, IA 52002

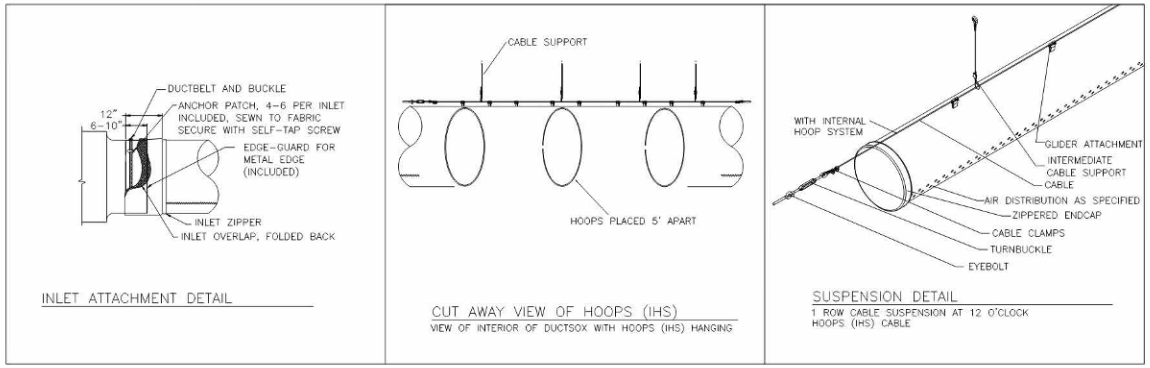
Ph: 563-588-5300 or 866-382-8769
Fx: 563-588-5330 or 866-398-1646

sales@ductsox.com
www.ductsox.com

Airetech Corp

QUANTITY OF 3





Dispersion Information (Velocity of 150, 100, 50 FPM)

Tag #	CFM Dispersed	Dispersion Type	Dispersion Set 1	Dispersion Set 2
1	4800	Orifice	Size 1.5 at 4:30 - 12' 18' 29'	Size 1.5 at 7:30 - 12' 18' 29'

DUCTSOX®
TEXTILE AIR DISPERSION PRODUCTS
4343 Chavenelle Rd. PH: 866-382-8769
Dubuque, IA 52002 www.ductsox.com

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN FEET AND INCHES
LENGTH TOLERANCES: (+/-) 3" PER INITIAL 10'. (+/-) 1" EVERY 10' AFTER

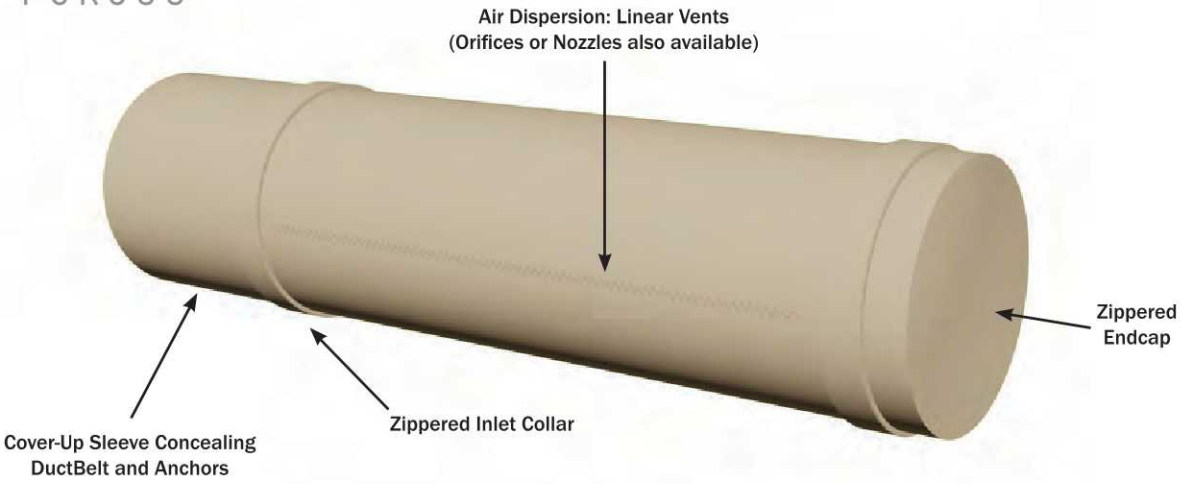
DRAWING TITLE	DUCTSOX PLAN VIEW
PROJECT NAME	CITY OF SHERWOOD-VEHICLE MAINTENANCE
REPRESENTATIVE	AIRETECH CORP
DRAWING NUMBER	DS24-1763
DRAWN BY	SJS
DATE	11/7/24

FABRIC	VERONA	COLOR	NOT SPECIFIED
SUSPENSION	IHS	HARDWARE	GALV CABLE
HANG HEIGHT	UNKNOWN	FITTING ALIGNMENT	N/A
REVISION		SCALE	NTS
PAGE NUMBER	1 OF 1		

REV	DESCRIPTION	BY	DATE
1	REVISED DIAMETER	MW	11/15/2024
REV	DESCRIPTION	BY	DATE
REV	DESCRIPTION	BY	DATE

VERONA™

AIR POROUS



FABRIC

The all purpose Verona is a woven, air permeable commercial grade fabric that offers best-in-class performance and features. Features include finished seam construction, a positive inlet anchoring system with cover-up sleeve, zippered endcaps, and a zippered inlet collar for a DuctSox Final Filter or AFD. Verona comes in seven popular colors, including black, silver, white, tan, green, blue, and red. Also available in custom colors. Verona is machine washable and available with all DuctSox suspension systems.

APPLICATION

Ideal for any aesthetically-attractive environment. Common uses include retail, commercial, education, and community applications. Ideal if condensation is a concern.

SPECIFICATIONS

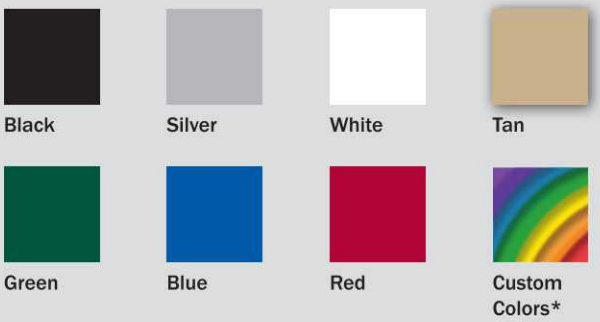
Weave: Fire Retardant Polyester Filament/Filament Twill

Weight: 6.8 oz/yd^2 (231g/m^2)

Porosity: 2 CFM/ft^2 at 0.5" w.g. (10.2L/s/m^2 @ 125Pa)

Codes:
- Classified by Underwriters Laboratories in accordance with the requirements of:
  - NFPA 90A
  - UL 2518
- UL-C (Canada)
- BS 5867 Part 2, 1980
- GB8624-2006
- DIN 4102-1

COLOR OPTIONS



Custom colors available, but requires a premium charge and additional lead time.

Note: Colors may vary. No two dye lots are the exact same color.

CLASSIFIED UL®
File R18856

	Warranty Period (in years)*					
	SkeleCore FTS	SkeleCore Pull-Tight	Hoops (IHS)	Hangers	1,2,or 3 Row	Surface Mount
Sedona-Xm, TufTex	20 (pro-rated 11-20)	15 (pro-rated 11-15)	10	10	10	10
Verona, DuraTex	15 (pro-rated 11-15)	10	10	10	10 (pro-rated 8-10)	10 (pro-rated 8-10)
UFSox, Stat-X	5 (pro-rated 2.5-5)					
Rx, Microbe-X, LabSox, KitchenSox, ChemSox	1					
OvalSox	5 (1 year for Food Processing)					

**Application Requirements: Airflow and static pressure per original DuctSox design in accordance with published requirements. Warranty is based on inlet velocities up to 1600 FPM (8.12m/s). For SkeleCore FTS, a 10 year warranty is available for inlet velocities up to 2000 FPM (10.16m/s). Some exceptions may apply.*

Design & Performance Warranty

DuctSox Systems that are designed within our performance criteria, based on DuctSox submittal documents, are covered by a 1 year Design & Performance Warranty. We want to ensure the product performs consistently through the entire heating and cooling cycle for the first year of operation. To ensure a DuctSox System is designed correctly, our Inside Sales and Engineering group are available to provide design assistance. Our Design Manual is also available on **www.ductsox.com/media-library**.

Product Warranty

Our Product Warranty is for replacement or repair credit based on the amount of the warranty period remaining. The warranty is not available in the form of a cash payment, only as credit towards repair or replacement. The DuctSox Warranty covers materials, fabrication, and performance of the fabric portion of the DuctSox System only. Warranty coverage begins at the time of shipment.

Both the Design & Performance Warranty and the Product Warranty exclude damage to the fabric from improper installation, poor maintenance, abuse, abrasion, caustic chemicals, exposure to high temperature (over 180 degrees Fahrenheit, 82 degrees Celsius), fabric discoloration and shrinkage, or any unauthorized modifications to the DuctSox System. It also does not cover labor, equipment rental, or freight charges incurred as a result of executing the warranty.

The DuctSox Product Warranty is non-transferable.

VENTILATION

Airflow is delivered through a DuctSox system by pressure difference between the inside and outside of the system. Designed as a closed system, this “ineternal” pressure is calculated using:

SP_1 = Static Pressure
VP = Velocity Pressure = (Velocity/4005)2
FL = Frictional Pressure Loss, use metal equivalents.

Typical design standards suggest a ½” w.g. Static Pressure (SP) supplied at the inlet location.

Velocity Pressure (VP) according to extended testing and research, approximately 65% of VP is regained within the closed system as static pressure. To ensure proper inflation at the inlet, static pressure must be at least 30% higher than the velocity pressure

Static Pressure (SP) > VP x 1.3

Frictional Loss (FL) in most DuctSox systems is low due to inlet velocity and few diameter reductions.

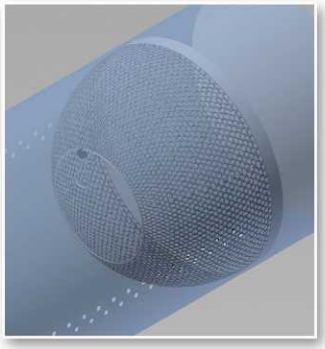
Average Pressure (AP) is the summation of these pressures acting on the system:

AP = SP + ((0.65 x VP - FL) / 1/414) (inch H2O)

Fabric Airflow
If the design includes a porous fabric, this airflow can be calculated using the following equations:

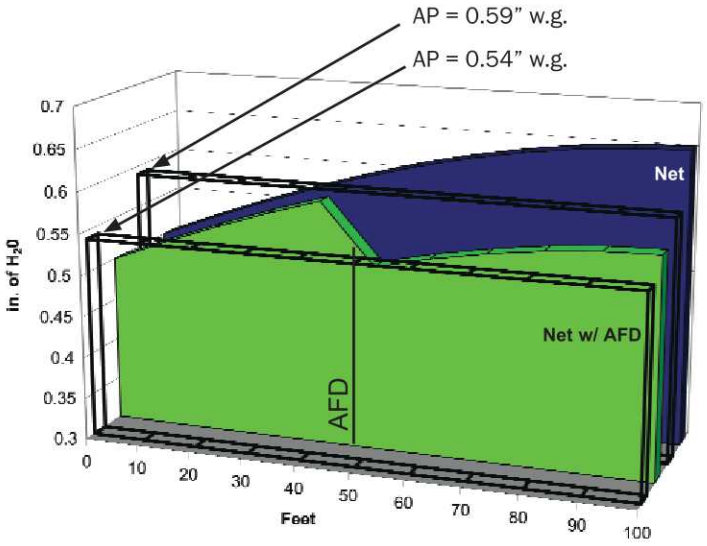
Q_{fabric} = FP x SA x √ (AP/.5) (CFM)

FP = Fabric Porosity (rated) (CFM/ft^2)
SA = Surface Area (all fabric) (ft^2)
AP = Average Pressure (inch/w.g.)

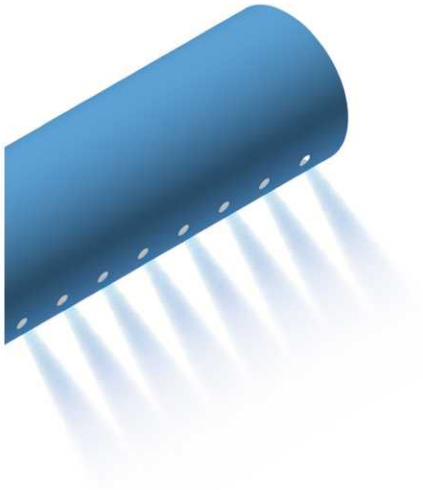


ADJUSTABLE FLOW DEVICE *(IF APPLICABLE)*

Airflow control is critical in HVAC air dispersion. The zip-in Adjustable Flow Device (AFD) offers variable resistance to balance static regain, balance airflow to branches reduce turbulence and reduce abrupt start-ups.



Orifices



Orifices throw air further distances with jet-type air flow. Used in large spaces where airflow requires higher velocities, such as warehouses or manufacturing facilities.

Vent Size and Airflow

Select orifice size and orientation based on throw that best fits the environment. Lower pressures result in improved efficiency, lower noise and extended service life.

Use the following equation to calculate total number of orifices (TO):

TO = AV / Airflow per orifice

ORIFICE SPACING

Typically, orifice spacing is determined by evenly spacing orifices the length of the duct. All systems include a standard 4 foot void (no orifices) near inlet or after any fitting to reduce potential for wear.

If there are too many orifices to fit within the length, then an alternating pattern may be recommended.

If custom orifice spacing is required for your application, the information should be provided at the time of quotation in order to complete the prliminary design.

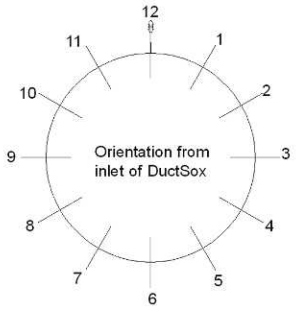
Orifice Location

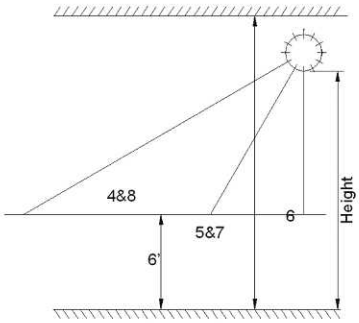
DuctSox Systems are 100% custom made, leaving room for unlimited flexibility for the locations of the Orifices. Some of the considerations when designing outlet orientation are:

11&1, 10&2 AND 3&9 O'CLOCK: Throw requirements focus on reaching exterior walls or filling gaps between parallel runs.

4&8, 5&7 AND 6 O'CLOCK: Throw requirements can be critical in these locations because air is delivered towards the occupied space in most cases. To calculate the throw, use the distance between the bottom of the DuctSox System and the distance above the floor using the following equations:

4&8 o'clock: (Height - 6) x 2.00 = Throw required
5&7 o'clock: (Height - 6) x 1.16 = Throw required
6 o'clock: (Height - 6) x 1.00 = Throw required





Required Maintenance

There are three different areas to consider for maintaining your DuctSox Products.

Performance:

DuctSox products have been refined to reduce or eliminate required maintenance. Over years of use, extensive dirt build up will have little, if any, effect on the air dispersion performance of our products.

Aesthetics:

Keeping the exterior of your DuctSox looking clean may be very important to you. If this is the case, your maintenance schedule should be no different than with metal duct. Although, keeping your DuctSox looking clean can be much easier and less expensive than keeping your metal duct clean. There are a few things that may help reduce the exterior dusting of a DuctSox, including selecting a porous fabric or cycling the system once daily. The most common options for cleaning your DuctSox include vacuuming and/or using compressed air, or it can be easily removed and laundered.

Hygienic:

Over its lifetime, the interior of a duct system will collect dust and/or other micro-organisms that have been known to contribute to sick building syndrome. DuctSox has a distinct advantage over metal—you can completely launder your fabric duct system. This allows you to clean both the inside and outside of your HVAC system helping to eliminate the contributors of sick building syndrome.

Overall, the laundry requirements for each space varies based on the quality of the filters in the air handling unit, the amount of dirt entrainment entering the space (on people's shoes and/or clothing), and other location related issues (e.g. near farmland). Based on our experience, average commercial spaces with relatively high traffic and 50% efficient filters may choose to launder their DuctSox after five to seven years. If your fabric is white, a more frequent schedule may be necessary.

Laundering Instructions

- Remove the DuctSox fabric from your system, being sure to unzip all sections. Take care in recording where each section was installed.
- Turn soiled side out, soak in cold water for 30 minutes.
- Any commercial washer with mild detergent should be suitable for laundering your DuctSox.
- Wash cold on a gentle cycle.
- Rinse thoroughly (repeat cycle if water/DuctSox still soiled).
- Line dry or no-heat tumble dry.

If the system becomes dirty/soiled during installation, please coordinate a proper cleaning prior to completion.

Exterior surface dirt can, most frequently, be blown off using a combination of a brush and compressed air.

NOTE: For PolyTex, the above laundering instructions do not apply. PolyTex can be sprayed with water to remove dust and dirt particles. Wash with soapy water and rinse clean, if needed.

DUCTSOX®
Redefining Air Dispersion

Installation Guide
Hoops (IHS) Cable

Thank you for selecting a DuctSox System. This guide will be helpful for the installation of a Hoops (IHS) Cable System. Sections of fabric will be labeled, assembled, bagged, and boxed for shipping. More complicated systems will include a CAD detail of the system identifying what is in each package. NOTE: The DuctSox cable attachment (Glider) is built for 1/8" (3mm) cable only.

Overview

Inventory
The first step on any installation project is to read through this guide thoroughly and review the components that need to be installed. The best way to do this is to review the drawings of the project while reading the guide, including the CAD detail if applicable.

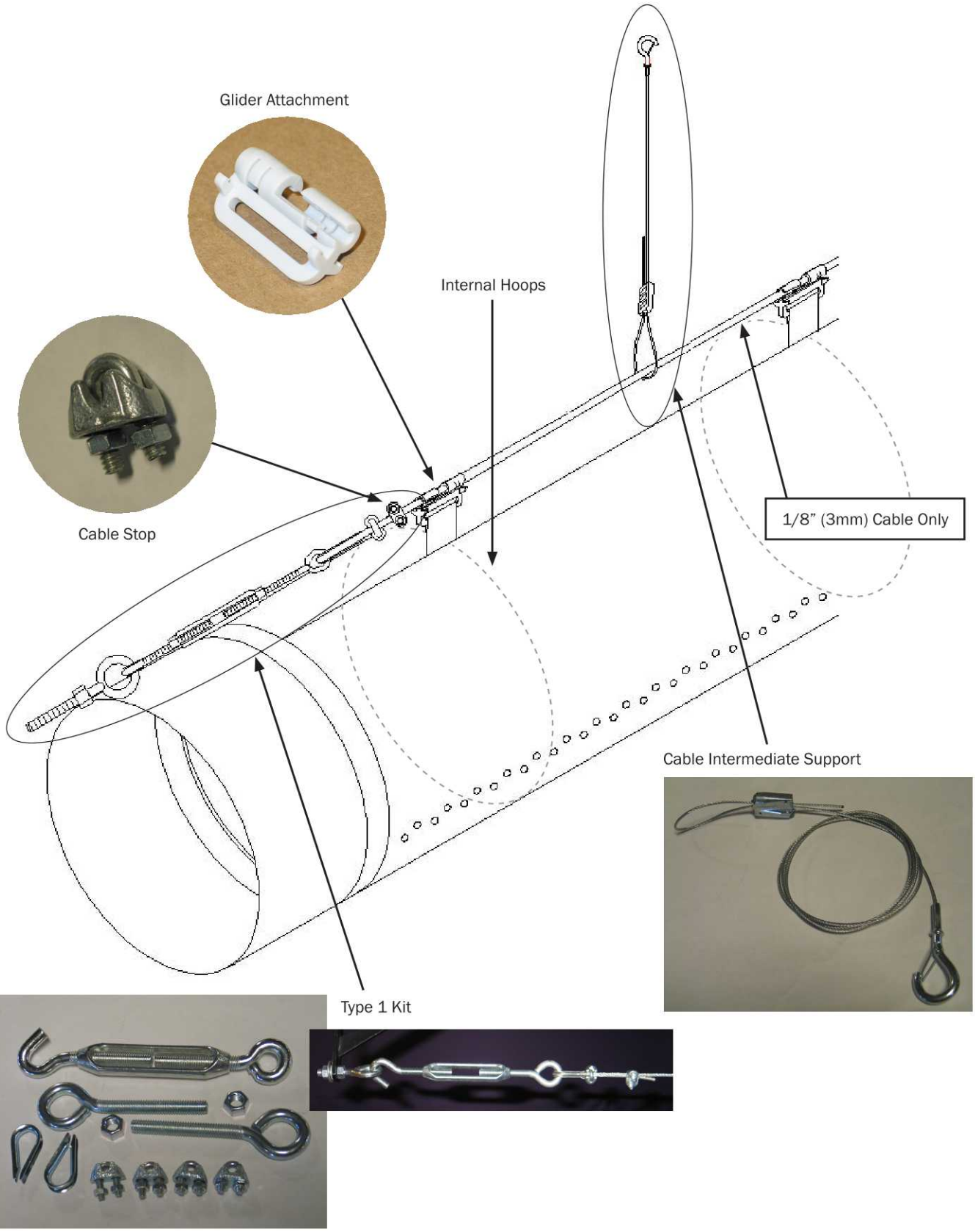
Shipping/Receiving
In some cases the DuctSox support system is delivered to the job site ahead of the DuctSox fabric sections. Depending on the size of a project or order, a DuctSox system will be shipped by common courier in a single brown box or several boxes. Larger orders will be shipped in crates by a common freight courier. Each DuctSox length should be packaged into individual plastic bags and labeled according to size and number of pieces. Other markings or labeling may also be incorporated for larger or more complicated systems. Be sure you have determined all boxes are accounted for.

Unpacking
Inspect shipment carefully and make sure all pieces are accounted for. Account for everything by emptying the box and examining all contents. Note any missing or damaged pieces listed on the Bill of Lading.

Labeling
Each DuctSox section will be marked with the size and section number either inside the belt of the inlet or on a tag inside the DuctSox near the zipper. The marking shall be the diameter, section length and total length. If custom labeling has been used, locate an identification sheet that will be included with the delivery.

Equipment Required:
- Drill
- Level
- Tape measure
- Marker or pencil
- Wrenches for cable clamps and eye bolts (5/16" and 9/16")
- Flat (standard) screwdriver
- Cable cutter

Component Details



Installation Steps

1. Review materials in box, including the CAD drawing and installed location of the DuctSox
2. Prepare metal inlet collar for fabric connection
3. Mark placement and install cable.
4. Install and assemble DuctSox components
5. Start up AHU
6. Balance airflow

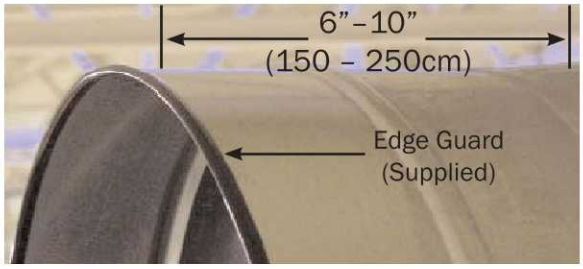
Step 1

Review materials in box, including the CAD drawing and installed location of the DuctSox. READ INSTRUCTIONS THOROUGHLY BEFORE BEGINNING.

Step 2

Prepare metal inlet collar for fabric connection.

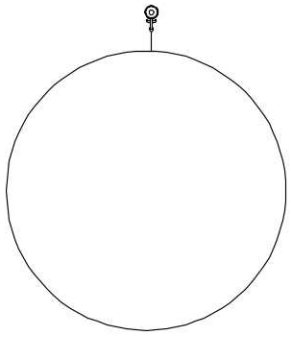
- Confirm inlet air supply location.
- Confirm inlet air supply size.
- DuctSox inlets are manufactured 1/2" (12mm) larger than specified to fit over metal inlet collar.
- Metal collar length should be 6"–10" (150 to 250cm) for secure fabric attachment.
- Edge Guard (provided) should be installed on the edge of the metal collar to reduce fabric wear from the metal edge.



Step 3

Mark Placement and Install Cable.

Step 3 – 1 Row Style



The following details are used for ALL styles.

Type 1 and Type 2 Kits

Type 1 and Type 2 kits are for straight runs of cable:

- Type 1: 50 feet (15250mm) or less
- Type 2: 50 to 100 feet (15250mm to 30500mm)
- For systems over 100 feet (30500mm), a combination of the kits should be used.

These kits include one 6" (153mm) turnbuckle (two for Type 2), two eyebolts, two cable thimbles, and four cable clamps.

Eye bolts must be fastened into the structure of the building by others (this could include knee braces).

Cable is fastened directly to an eyebolt with a thimble and two cable clamps. Take the cable end and thread two cable clamps onto it. Now hook the thimble onto the eyebolt. Next, thread the cable onto the thimble and through the eyebolts (cable clamps are still on the cable). Now thread the cable back into the cable clamps and tighten them.

Cable is then fastened directly to the turnbuckle with a thimble and two cable clamps. Slack in the cable is taken up by the turnbuckle. If cable is still too loose after tightening the turnbuckle, loosen the cable, re-fasten cable to turnbuckle at a tighter position, and re-tighten the turnbuckle. Do not over-tighten the turnbuckle, we recommend no more than 100 lbs (445 Newtons) of tensile force.

Intermediate Support Cable

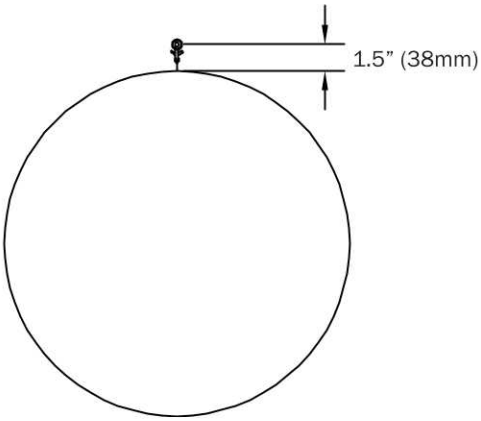
Installed every 12.5 feet (3810mm) or less to keep the DuctSox installed at a consistent elevation (reduces sag of the cable).

Standard

Pools

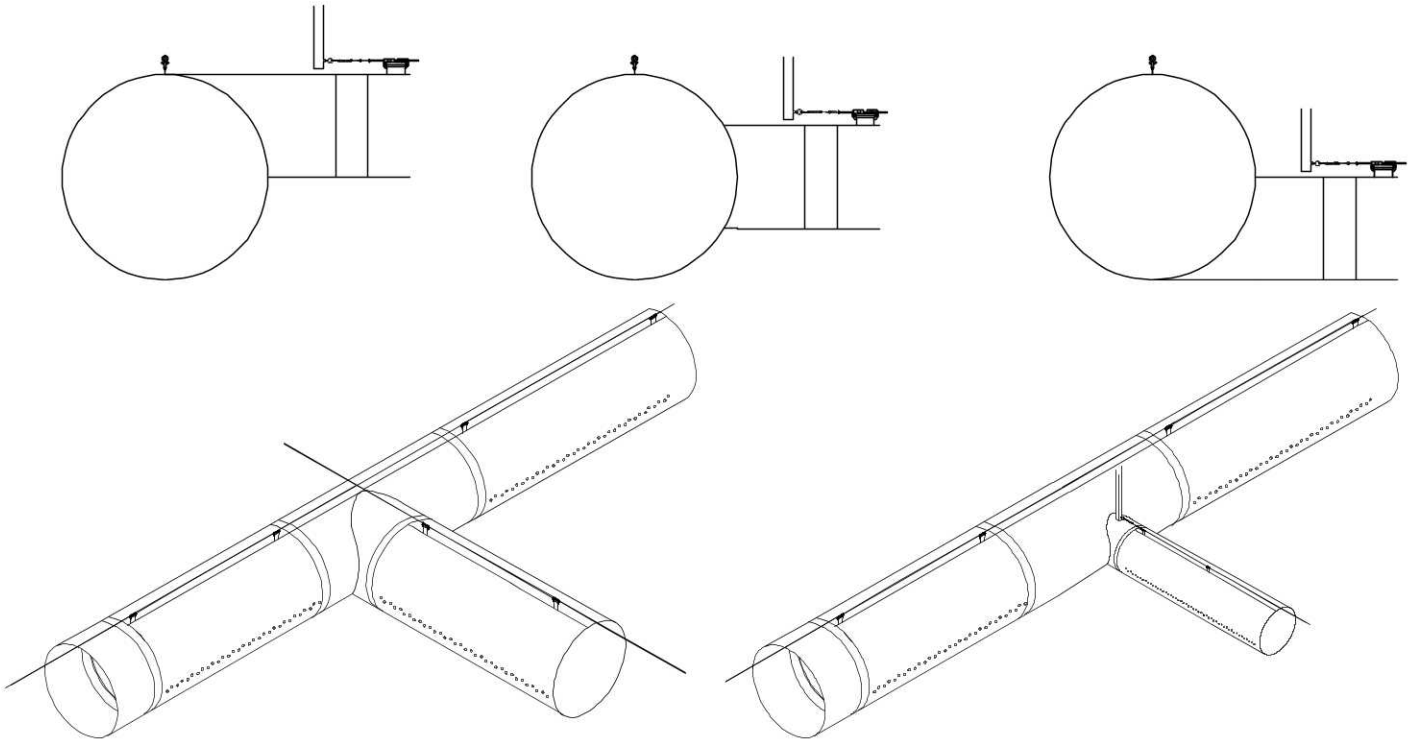
Step 3

Determine placement of cable (both cable path and elevation). The cable must be mounted 1.5” (38mm) above the 12:00 location of the DuctSox. Intermediate Cable supports are spaced no more than 30ft (9150mm).



T’s

There should be roughly 12” (305mm) from sidewall of DuctSox to the closest edge of any knee-bracing. Structure too close to the main run may cause premature failure due to abrasion from the structure.
NOTE: Offset distance of branch knee-brace from main trunk is approximately half of the main trunk diameter plus 12” (305mm).



Elbows

Extended straps on heels of elbows are provided for support to cable suspension (Figure A). Vertical elbows are also supported by extended straps (Figure B).

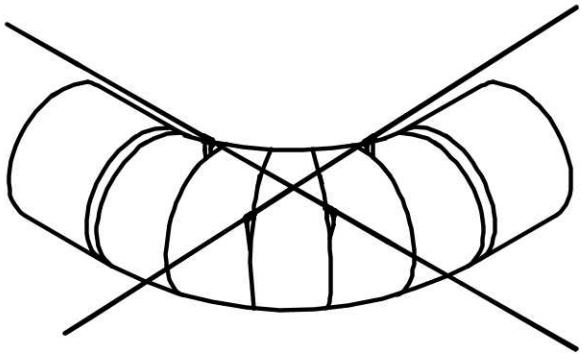


Figure A

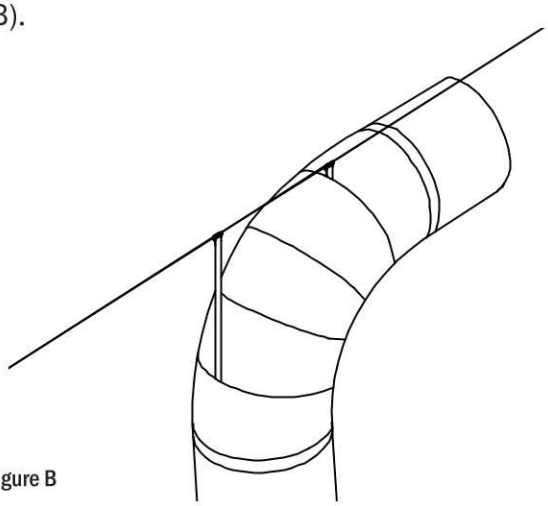
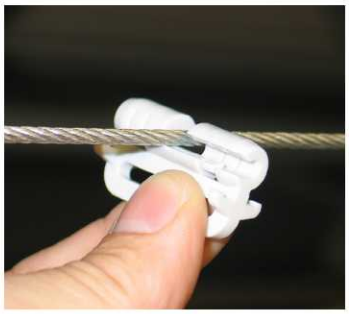


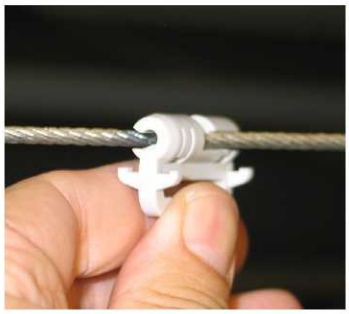
Figure B

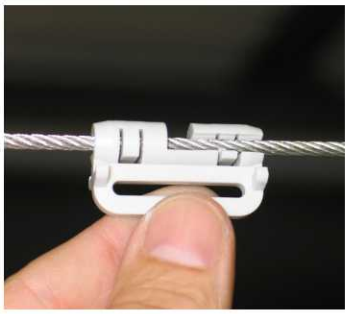
Step 4

Install DuctSox Fabric. DuctSox Inlet must be attached to the metal collar using screws (not included) through plastic patches on the Inlet Belt. Be sure to locate the zipper start and seam at the 12:00 orientation for proper alignment.

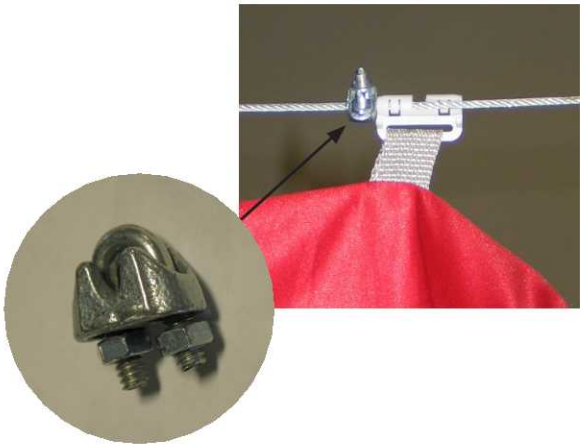
Twist and snap the Glider attachments of the DuctSox onto the cable (pliers may be helpful for installation and removal of Gliders). Unzip fittings and slide them in place independently of the straight sections. Cable Stops are installed at the Endcap Glider, at the Inlet Glider, and at each Glider immediately adjacent to all fittings. Leave them installed loose until Step 5 is complete. Close all zipper connections before moving to Step 5.







The Cable Stop is used to keep sections of DuctSox from moving lengthwise on the cable. They also are used to put a slight tension on straight sections of DuctSox (straight sections may consist of more than one zippered section of DuctSox). Nuts are tightened to lock the stop at locations where Gliders are to be locked in place (see Step 5).



Step 5

Start Up AHU. Turn on the AHU and inflate the DuctSox System. Check all Gliders and sections to ensure system is inflating properly. If required, move Gliders to eliminate puckering at binding locations. If lengths do not fit properly, double check all field measurements and compare to drawings. If all measurements are correct, contact your DuctSox factory rep to discuss options.

Once system is properly adjusted, inflate the system, pull the last Glider in each straight section (including straight sections between fittings), and secure tension using Track Stop Screws. Also, be sure to install a Track Stop Screw into the U-Track at the Endcap Glider, at the Inlet Glider, and at each Glider immediately adjacent to all fittings.

The Track Stop Screw is used to keep sections of DuctSox from moving lengthwise in the U-track. They also are used to put a slight tension on straight sections of DuctSox (straight sections may consist of more than one zippered section of DuctSox). The screw is tightened into the bottom channel to lock the stop at locations where Gliders are to be locked in place.

If the system includes elbows or T's, secure Gliders before and after these fittings. Failure to install DuctSox Systems correctly may void warranty.

Step 6

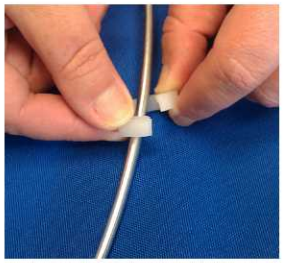
Air Balancing. System must be balanced to design CFM and static pressure immediately after installation. Most DuctSox Systems include a zipper at the inlet location for easy access to monitor flow.

If the fabric is fluttering after balancing, please contact your factory rep immediately. Solutions to the fluttering include adjusting the Adjustable Flow Device (AFD), adding AFDs, or other solutions that would result in a less turbulent airflow.

Laundering Instructions

Sedona-Xm, TufTex, Verona, DuraTex, Microbe-X, Rx, and Stat-X fabrics:

- Remove the DuctSox fabric from your system, being sure to unzip all sections. Take care in recording where each section was installed.
- Remove the hoops from the DuctSox system by simply twisting the attachment sideways. *Note: the hoop attachment only slides one way.*
- Turn soiled side out and soak in cold water for 30 minutes.
- Wash cold, gentle cycle.
- Rinse thoroughly (repeat cycle if water/DuctSox still soiled).
- Drip dry or no-heat tumble dry.



If any questions arise regarding the installation of your Hoops (IHS) Cable System, contact us.

866-382-8769 or 563-588-5300

DUCTSOX®
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4343 Chavenelle Rd. ■ Dubuque, IA 52002
Ph: 866-382-8769 or 563-588-5300 ■ Fax: 563-588-5330
www.ductsox.com

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