

OUR PRODUCTS, OUR INNOVATION

DuctSox Products are Fabric Ductwork and Diffuser Systems used for heating, cooling, or ventilating. They are a cost effective, aesthetically attractive alternative to metal ductwork and diffusers. Each DuctSox System is 100% custom made, starting from the engineering design to the manufactured product. DuctSox designs can be simple, straight systems or have very intricate layouts.

DuctSox offers the best products, design, and sales support in our industry. We strive to lead through a commitment to quality, service, and innovation. DuctSox products have also been accepted within key industry organizations such as ASHRAE, Underwriters Laboratories (U.S. & Canada), International Code Council, and many building authorities throughout the world.

2012

2014

2016

INNOVATIONS

1980 Air Permeable Fabrics

1994

1996

1998

2000

2002

2004

2006

08

USDA APPROVAL

Microbe-X High-Throw (Orifices) Fittings

Stainless Steel V-Track

Stat-X First Patent H-Track Mesh Vents

Screen Printing Flow Straightener

Sedona UL-CLASSIFICATION

TufTex ICC-AC-167 (UL-2518)

Sonic Venting DuraTex Verona Gripple Drop Supports

3D Drawings

ADJUSTABLE FLOW DEVICE

Sedona-Xm FinalFilter 10 Year Warranty Coronado (patterns)

3X1 SUSPENSION

Laser Cut Vents

4x2 Suspension LabSox CFD Analysis

CLEANROOM CLASS FABRICS (RX)

Displacement Ventilation UnderFloorSox

ChemSox 4-Color Personalization

SimpleSox U-Track Glider for Cable or Track SkeleCore Energy Study

Fixed Nozzles SKELECORE FTS

Hoops (IHS) KitchenSox

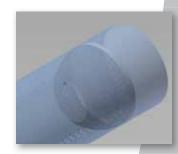
Adjustable Nozzles

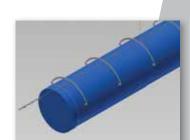
OvalSox SKELECORE PULL-TIGHT

SkeleCore FTS Jumbo Series dBSilencer Fabric Sound Attenuator,













APPLICATIONS

Food Processing

Industrial

Warehousing



Gymnasiums

Grocery



Classrooms

Convention Centers

Stadiums/Arenas

Waterparks



Data Centers

Churches/Auditoriums

LABORATORIES

Pharmaceuticals

Office Settings

Acidic Production

Recording Studios

LARGE OFFICE BUILDINGS

Kitchens

Medical

Aerospace

Crop Science













FABRIC VS. METAL

Considering the many benefits of engineered textile systems over conventional metal duct and diffusers, more and more are considering a DuctSox Air Dispersion System for their open ceiling applications.

Precise Design Control Uniform Air Dispersion Minimal Balancing No Condensation Quiet **Efficient**

Lower Cost Easy to Ship Lightweight **Easy Installation** Flexible Hygienic

Clean Appearance Colorful / Personalization Comfortable Environment Improved Productivity **Available Recycled Content** Performance Guarantee

FABRIC

Custom engineered air dispersion system



Localized diffusers, duct, and dampers

FABRIC IS MORE EFFICIENT THAN METAL

Extensive energy study by Iowa State University confirmed DuctSox with linear vents brought the temperature of the space up 24.5% faster than equivalent metal. For more information, scan:





PRODUCT FAMILIES

OPEN CEILING DUCTSOX



CRITICAL ENVIRONMENTS



UNDERFLOOR AIR DISTRIBUTION





OPEN CEILING DUCTSOX

CONFIGURING A DUCTSOX SYSTEM

There are **FIVE KEY ELEMENTS** to consider when configuring a DuctSox System.

- SHAPE/SUSPENSION/FABRIC RETENTION
- (2) LAYOUT/FITTINGS
- 3 AIR DISPERSION
- 4 FABRIC
- 5 OPTIONS

Further detail on each is explained in the pages that follow.

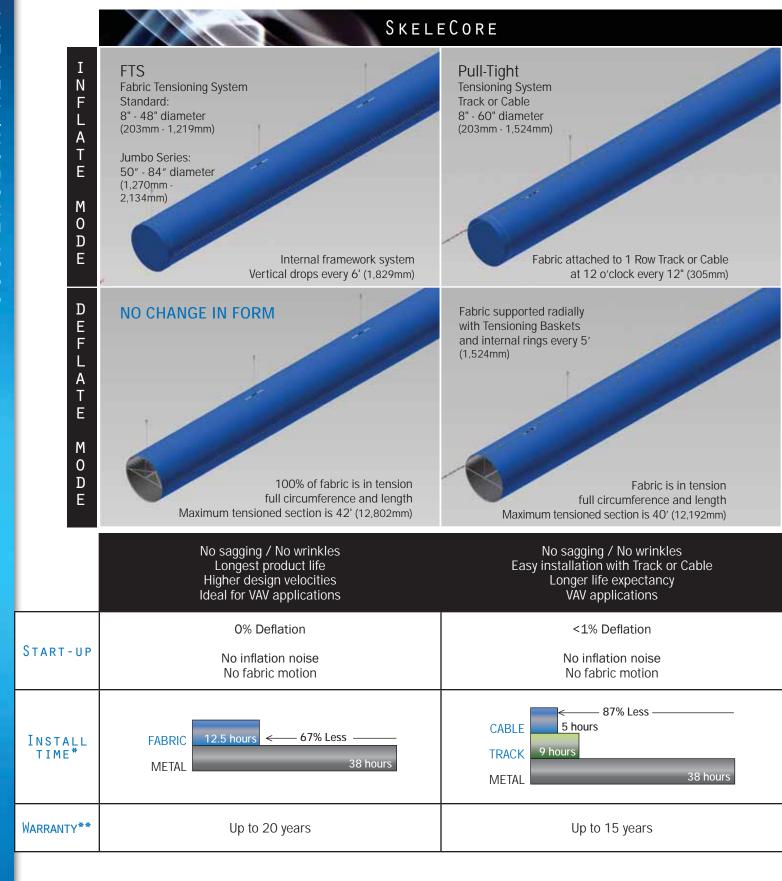
ENGINEERING, DESIGN, AND LAYOUT CRITERIA

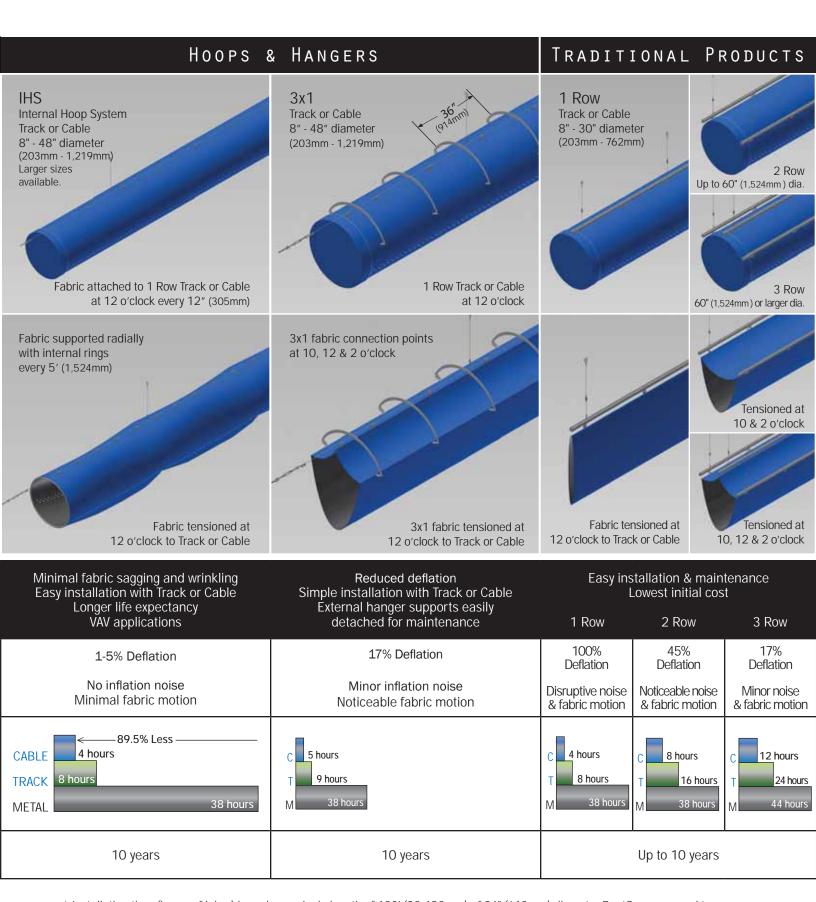
Besides the Key Elements of configuring a DuctSox System, there is additional criteria/information needed to ensure that it is engineered and designed correctly to provide the best performance possible. Typical information required includes the following:

- VOLUME OF AIR AT THE INLET OF THE DUCTSOX
- > STATIC PRESSURE AT THE INLET OF THE DUCTSOX
- ▶ AIR THROW MODELS
- ▶ AIR DISPERSION REQUIREMENTS BASED ON APPLICATION NEEDS
 - Heating, cooling, and ventilation
 - · Supply-side air, air makeup, air destratification, and air displacement
 - · Uniform air dispersion
 - · Spot heating and cooling
 - Versatile and multiple airflow designs
 - Terminal velocity
- **▶** CONDENSATION
- **▶** HANGING HEIGHT
- **▶** DESIGN LAYOUT
- **▶** NOISE
- ▶ INSTALLATION REQUIREMENTS AND LIMITATIONS
- COST

To ensure proper system design, DuctSox Inside Sales and Engineering staff are available for assistance. Or, review the DuctSox Design Manual at www.ductsox.com.

SUSPENSION/FABRIC RETENTION SYSTEMS



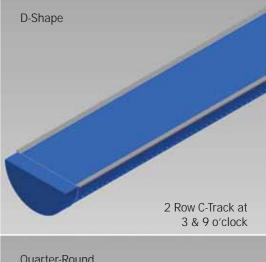


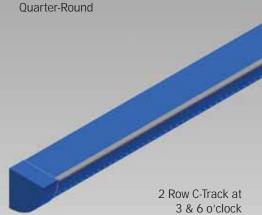
^{*} Installation time (hours of labor) based on a single length of 100' (30,480mm) of 24" (610mm) diameter DuctSox compared to an uninsulated spiral metal duct and diffusers. 3 Row systems are evaluated with 50" (1270mm) diameter. Consult DuctSox Factory for Jumbo FTS installation times.

For more information on installation, please review the DuctSox installation estimator at www.ductsox.com.

^{**} Warranty varies based on fabric selection, suspension/retention, and design criteria.

SURFACE MOUNT





For applications with finished ceilings or specialty airflow requirements

Minimum noise & fabric motion

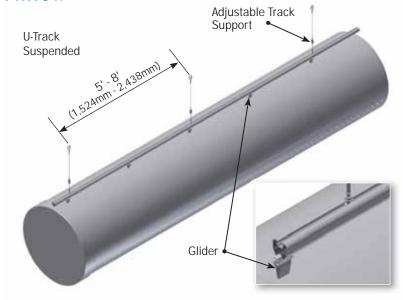
1-5% Deflation

10 hours **FABRIC** METAL

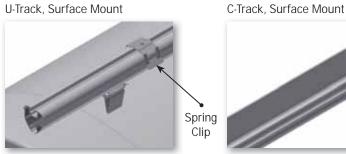
Up to 10 years

SUSPENSION HARDWARE

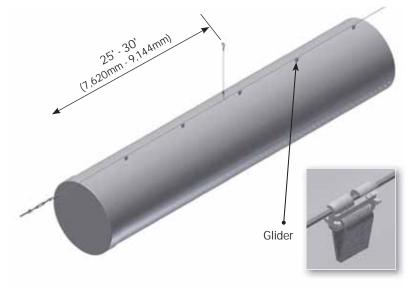
TRACK



U-Track, Surface Mount



TENSION CABLE





Where Form Meets Function

For many years, Textile Air Dispersion Systems excelled at providing superior "Function" features and benefits, but fell short in terms of "Form." SkeleCore technology changes that, providing the ultimate in both Function and Form.

SkeleCore technology has changed the way fabric systems are designed. In the past, designing a fabric duct system began with selecting fabric, color, and ventilation layout. The suspension system was just an afterthought since it offered little aesthetic contribution to the total design. Today, however, it is typically chosen early on and it dictates most of the other design decisions.

- Will the AHU (fan) cycle during times of use?
- Are fabric wrinkles, bunching, and sagging visible in the deflate mode?
- Will the supply airflow be controlled by variable air volume (VAV) equipment?
- Is this a temporary-use application?
- Is fabric noise and movement during start-up tolerable?

With DuctSox, there are a variety of Suspension/Fabric Retention Systems to choose from. You decide what's important: Function, Form, or both.

SHAPE

Before selecting how the DuctSox System will be suspended, the Shape must first be decided. This is based on your application needs. DuctSox are available in Cylindrical, Oval, D-Shape, or Quarter-Round.









Whether horizontal, vertical, or angled, Cylindrical DuctSox are available in a variety of suspension and retention systems. For applications where the DuctSox will be mounted against a flat surface (wall, ceiling, or both), the Surface Mount products feature flexibility for shape, configuration, and inlet position (end, top, back).

SkeleCore is the next generation of Textile Air Dispersion Systems! SkeleCore utilizes an Internal Framework System to provide aesthetic enhancement and improved performance characteristics. There are two SkeleCore models to choose from, including FTS (Fabric Tensioning System) and Pull-Tight. A significant benefit of both is that the fabric system is tensioned the full circumference-360 degrees of tensioning!

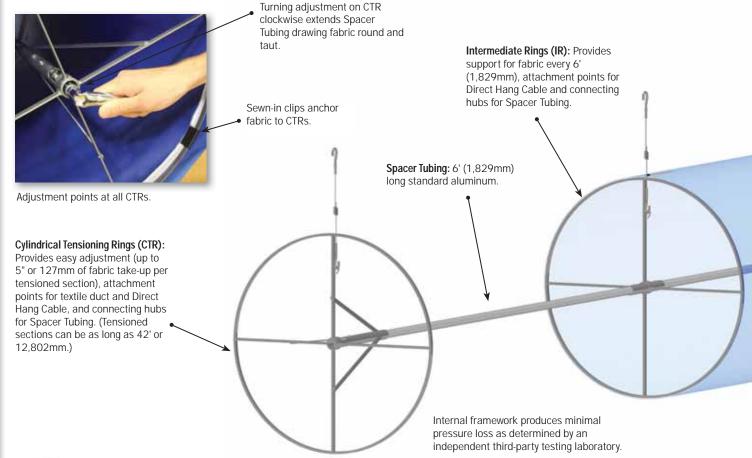
SKELECORE FABRIC TENSIONING SYSTEM FTS

SkeleCore FTS stands alone as the only fabric duct/diffuser system that provides "internal" cylindrical tensioning to keep the fabric round and taut at all times. It maintains the same appearance with or without any air pressure in the duct and improves aesthetics by eliminating fabric sag and wrinkling. SkeleCore FTS is ideal when higher aesthetic value is desired,

when cycling is frequent, or when systems are designed with variable air volume (VAV). It eliminates disruptive tendencies such as motion and noise upon AHU start-up, especially in hard start applications. SkeleCore FTS also features a unique metal-to-metal Direct Hang Cable method which is the SAFEST suspension in textile ducting. Fabric longevity is extended by minimizing system movement. Available from 8" - 48" (203mm - 1,219mm) diameters.

WILL FRICTION LOSS BE AN ISSUE?

Adding SkeleCore FTS structure in the air stream improves system performance as the minor friction loss (measured at 0.04 in w.g. per 100 foot) offsets static regain experienced in a constant diameter system. The pressure balance is taken into account during design to ensure an optimum performing system and does not increase required fan pressure.



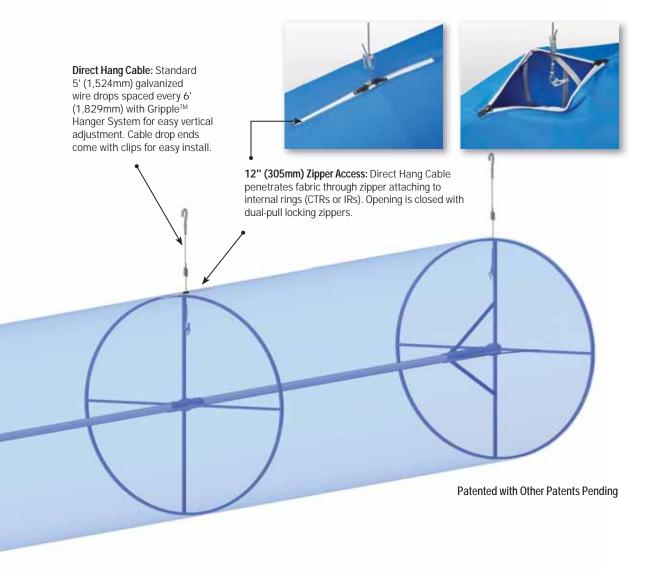
SP

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Jumbo SERIES

The SkeleCore FTS Jumbo Series is a larger-scale version of the patented FTS suspension/retention system. With sizes available from 50" to 84" (1,270mm to 2,134mm), Jumbo FTS is ideal for applications with high bay areas where airflow must be distributed to an extremely large area. Application types include Aircraft Hangars/Maintenance, Convention Centers, Sporting Venues, and Industrial.

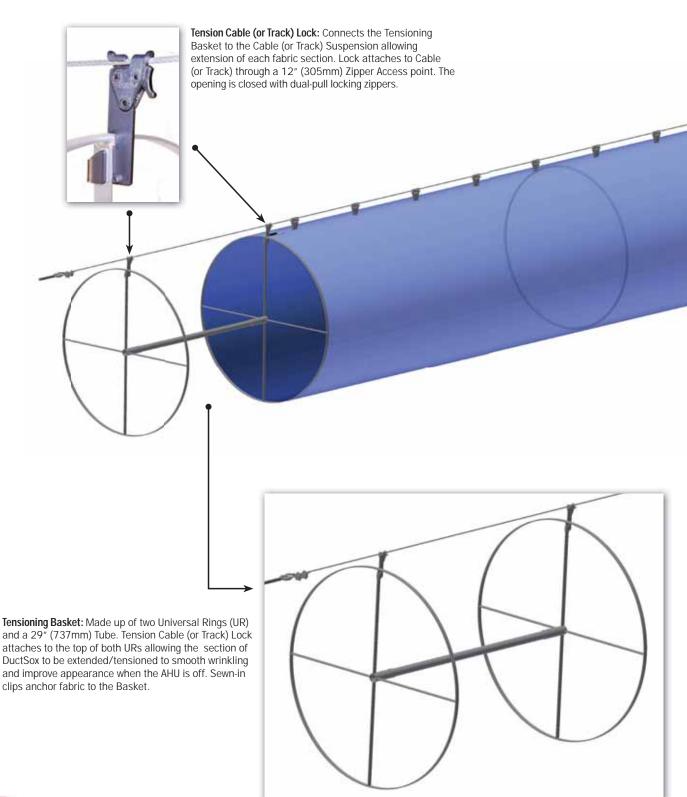


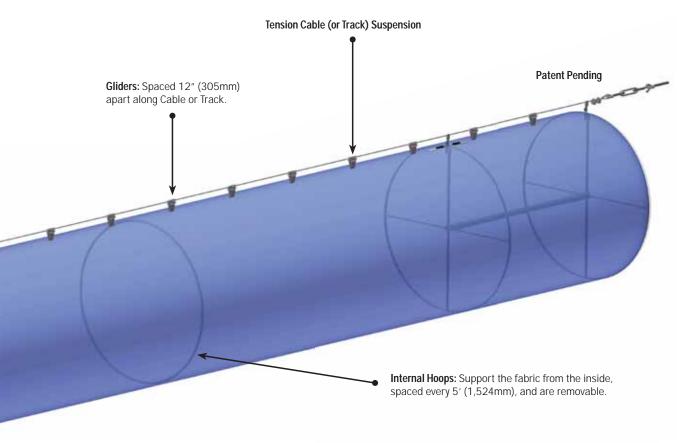


SKELECORE"

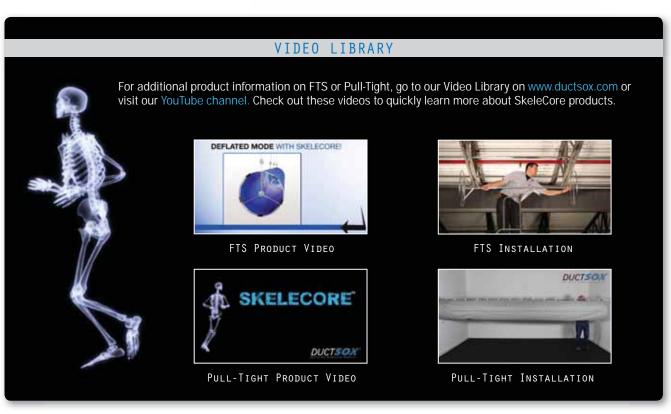
PULL-TIGHT

SkeleCore Pull-Tight utilizes a combination of Internal Hoops and Tensioning Baskets to help maintain fabric shape and retention. Different from FTS, Pull-Tight is suspended from a 1 Row Tension Cable or Track Suspension System and is tensioned "externally" utilizing a Tension Cable (or Track) Lock. Pull-Tight improves start-up performance and aesthetics when compared to multiple row, horizontal suspension systems. Available from 8" - 60" (203mm - 1,524mm) diameters. NOTE: Only one row of Cable or Track is required for ALL sizes.





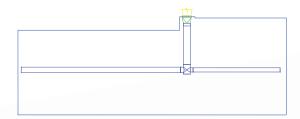




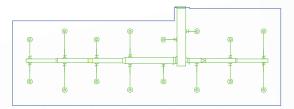
LAYOUT

Because the entire DuctSox System is a diffuser, air dispersion and distribution are combined allowing simple and efficient layouts compared to metal duct systems.

DuctSox

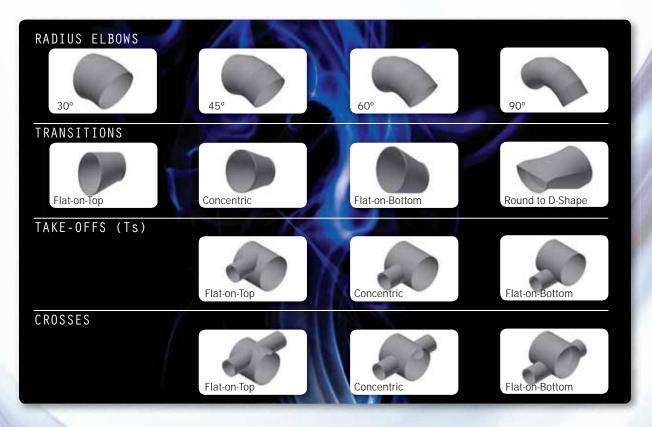


METAL DUCT/DIFFUSERS



FITTINGS

Not every application is a straight line of DuctSox. To accommodate this, we offer a variety of standard fittings *(as shown below)*. We also offer custom fitting configurations.



AIR-POROUS FABRIC

Supply air is delivered exclusively through porous fabric.

Flow rate through fabric controlled by weave and pressure from 1 - 200 FPM (.005 - 1.016 m/s).



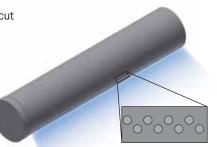


Ideal for cooling only; food processing, displacement, or critical environments.

LINEAR VENTS

- Delivers airflow through precision cut orifice patterns
- Vent size referenced by airflow per linear foot

Unlimited flexibility in designing vent size and location for optimum airflow control.



Airflow throw up to 90 ft. (27,432mm)



Most common method for heating and cooling; high entrainment from outlets provide uniform temperature and less drafts, creating a comfortable environment.

Nozzles

Provides jet-type airflow. Type, location, and quantity based on airflow requirements. Available in a variety of colors.





Airflow throw up to 60 ft. (18,288mm)

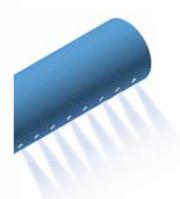




Common choice for spot cooling, heating, or ventilating. Directional Nozzle helpful for airflow control to create a more comfortable environment.

ORIFICES

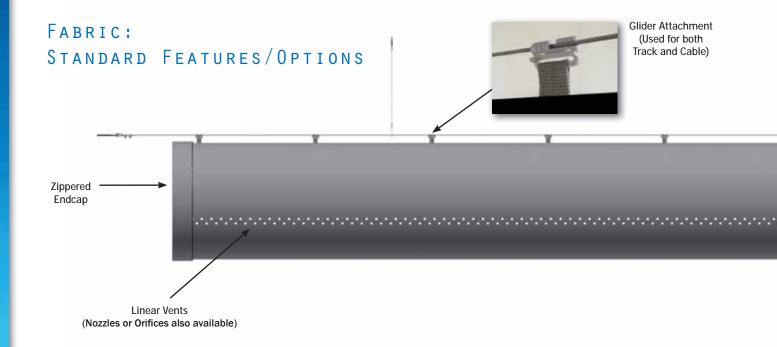
- Orifice sizes: ½" 5" (12.7mm -127mm) diameter/SG outlets 2" or 3" (51mm or 76mm) diameter
- Orifice size and orientation based on required air throw distance



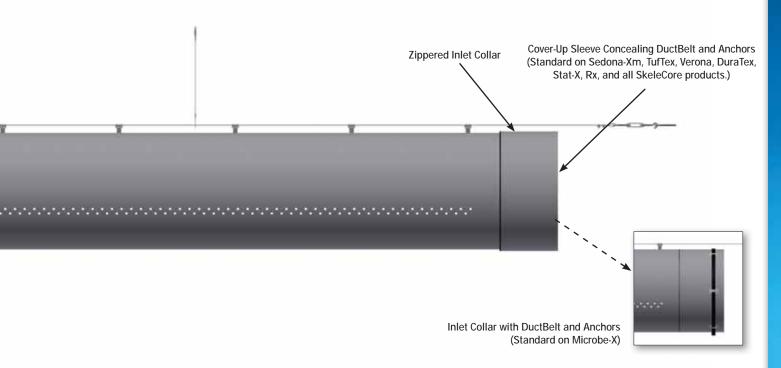
Airflow throw by orifice size & pressure, up to 150 ft. (45,720mm)



For heating and cooling, Orifices are ideal for areas requiring extended and precise throw such as recreation, arenas, convention centers, retail, industrial, warehouses, or spot cooling.

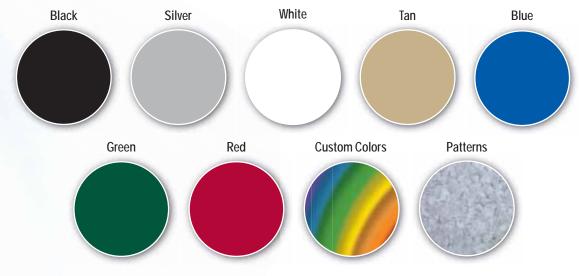


Fabric Type	SPECIFICATIONS	Colors	OTHER
Sedona-Xm™	Weave: Fire Retardant Polyester, Filament/Filament Twill 55% Recycled Content (available upon request) Weight: 6.8 oz/yd² (231g/m²) Porosity: 2 CFM/ft² @ 0.5° w.g. (10.2L/s/m² @ 125Pa) Classified by Underwriters Laboratories in accordance with the requirements of NFPA 90A and UL 2518		Air Porous Premium Fabric Active Antimicrobial (up to 30 washes) Linear Vents, Nozzles, or Orifices
TufTex™	Weave: Fire Retardant Polyester, Plain Weave, Coated Weight: 8.2 oz/yd² (278g/m²) Porosity: None Classified by Underwriters Laboratories in accordance with the requirements of NFPA 90A and UL 2518		Non-Porous Premium Fabric Linear Vents or Orifices
Verona™	Weave: Fire Retardant Polyester, Filament/Filament Twill Weight: 6.8 oz/yd² (231g/m²) Porosity: 2 CFM/ft² @ 0.5" w.g. (10.2L/s/m² @ 125Pa) Classified by Underwriters Laboratories in accordance with the requirements of NFPA 90A and UL 2518; UL-C (Canada); BS 5867 Part 2, 1980; GB8624-2006; DIN 4102-1		Air Porous Commercial Fabric Linear Vents, Nozzles, or Orifices
DuraTex™	Weave: Fire Retardant Polyester, Plain Weave, Coated Weight: 5.5 oz/yd² (186g/m²) Porosity: None Classified by Underwriters Laboratories in accordance with the requirements of NFPA 90A and UL 2518; also available (by request only) to meet BS 5867 Part 2, 1980		Non-Porous Commercial Fabric Linear Vents, Nozzles, or Orifices
Microbe-X™	Weave: Fire Retardant Polyester, Filament/Filament Twill Weight: 6 & 13: 6.9 oz/yd² (234g/m²) 29: 6.2 oz/yd² (210g/m²) Porosity: 6, 13, 29 CFM/ft² @ 0.5" w.g. (30.5, 66, 147L/s/m² @ 125Pa) Classified by Underwriters Laboratories in accordance with the requirements of NFPA 90A and UL 2518		Air Porous Specialty Fabric Active Antimicrobial (up to 30 washes) Linear Vents
Stat-X™	Weave: Filament Polyester with Interwoven ESD Yarns Weight: 2.9 oz/yd² (98g/m²) Porosity: 2.5 CFM/ft² @ 0.5" w.g. (12.7L/s/m² @ 125Pa) Classified by Underwriters Laboratories in accordance with the requirements of NFPA 90A and UL 2518; UL-C (Canada)		Air Porous Static Dissipative Specialty Fabric Linear Vents or Nozzles
Rx™	Fabric: Rx2 TM , Rx6 TM , Rx15 TM , Rx25 TM , Rx50 TM , Rx100 TM , Rx200 TM Weave: Fire Retardant Polyester, Filament, Non-Linting Up to 50% Recycled Content Weight: Varies by Air Permeability: 5.4-7.1 oz/yd² (183-241 g/m²) Classified by Underwriters Laboratories in accordance with the requirements of NFPA 90A and UL 2518		Air Porous Specialty Fabric LabSox: D-Fuser or Traditional Models Active Antimicrobial Surround Flow or Select Flow Linear Vents



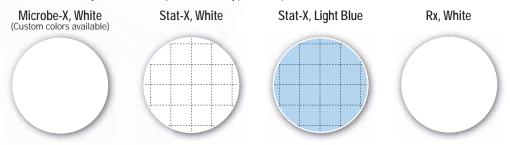
STANDARD FABRIC COLORS

DuctSox offers seven standard colors for Sedona-Xm, TufTex, and Verona. DuraTex is also available in these colors except green and red. Custom Colors and Patterns are available on some fabrics, but may require a premium charge and additional lead time.



SPECIALTY FABRIC COLORS

These fabrics are only available in specific color types and patterns.



NOTE: Colors may vary based on texture of fabric or dye lot.

ADJUSTABLE FLOW DEVICE (AFD)



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

AFD devices come standard with Sedona-Xm and TufTex Systems. The AFD is an option with other fabrics.

Except at the inlet, all AFD's are pre-set from the factory and should not require field balancing. The inlet AFD can be adjusted for airflow turbulence.

PLENUM

Direct airflow into branch take-offs where velocity is over 1,200 FPM (6.01m/s).

INLET

Cinch to use as flow straightener or balance airflow. All systems with >1,200 FPM (6.01m/s) inlet velocity.

MIDDLE

Balances static regain. All systems with an intermediate zipper over 40' (12,192mm) and >1,200 FPM (6.01m/s) inlet velocity.

No Pop

Reduces inflation pop. Single AFD located in last 30% of long run, included for all systems over 100' (30,480mm) and over 5,000 CFM (2,360L/s).

(Typically, systems should not include more than two AFDs in sequence to an endcap.)

PERSONALIZE IT!

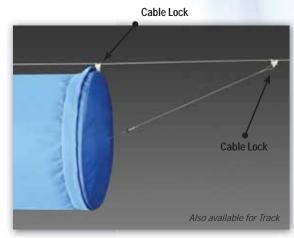
Personalize your DuctSox System with a logo, school name, company name, or slogan. For more information go to www.ductsox.com.



TENSIONED ENDCAP

To improve the aesthetics of a simple 1 row system, a Tensioned Endcap upgrade is available for 8"-30" (203-762mm) diameter and systems

less than 50 feet. Note: Availability is limited to standard cable or track applications.





Noise Control Using DuctSox Technology

DuctSox continues to be the leader and innovator in the fabric ductwork/diffuser industry. The dBSilencer™ is a Fabric Sound Attenuator that was developed to address one factor for fabric duct—noise from the air handling unit. Textile air dispersion systems can be designed to be quiet, but noise entering the system from air handling units, volume control dampers, or fan-powered boxes can create an uncomfortably noisy environment.

DuctSox's latest innovation is the first of its kind silencer made out of fabric! The concept utilizes several other innovations, such as our patented SkeleCore Technology for structure. The dBSilencer can be used in place of a metal silencer or acoustically-lined ducting to absorb or prevent incoming noise from reaching the occupied space.

Many applications leave little, or no, mechanical space to place sound attenuators. The dBSilencer is installed in the occupied space, offering an aesthetically pleasing appearance that can be customized to match your DuctSox System's fabric type and color.

Depending on noise absorption required, the dBSilencer is available with or without an internal bullet and available in diameters 12" to 30".

For more information, see the dBSilencer brochure on www.ductsox.com.

APPLICATIONS

Retail
Libraries
Office Space
Education
Lecture Halls
Auditoriums
Churches
Yoga Studios
Testing Facilities
and more





Designed specifically for critical environments, LabSox products combine airflow design with specialized permeable fabrics and precisely shaped panels.

- Uniform, low velocity, radially diverging air patterns with minimum turbulence
- ▶ Can be easily retrofitted to resolve airflow issues in existing facilities
- ▶ Fabric faced products offer noise levels at least 10 NC quieter than metal
- ▶ Highly permeable, antimicrobial treated fabrics
- ▶ Modular D-Fuser available in MetalPan or All-Fabric models
- ▶ Also available in Round, D-Shape, or Quarter-Round

APPLICATIONS INCLUDE

Chemistry Labs Microscopy (TEM, SEM, FIB) Vivariums

Pharmaceutical Education **Paint Facilities**

Cleanrooms Laser Research Displacement Ventilation



Kitchen 50X°

KitchenSox offer better air dispersion alternatives for food preparation environments.

- Airflow through textile eliminates drafts and condensation
- Introduce more supply airflow near hood while maintaining capture
- Reduces dirt deposits on diffuser and adjacent ceiling tiles
- Antimicrobial treated, highly porous textile offers secondary filtration
- ▶ Fabric face can be easily removed for laundering
- Modular D-Fuser available in MetalPan or All-Fabric models
- ▶ Also available in Round, D-Shape, or Quarter-Round



Lhem **SOX**

ChemSox was developed for chemically harsh environments such as metal plating, chemical processing, battery manufacturing, and other highly corrosive and caustic industries.

- Recyclable and inert, high density polyethylene (HDPE) fabric to combat brittleness/cracking
- ▶ Up to 50% less expensive (materials/installation) than typical ductwork used (metal, aluminum, or stainless)

GROWING FACILITIES

Plants require water, nutrients, light, and proper air movement to grow and thrive. The quantity and quality of each may vary by stage of growth and type of plant. In nature, weather patterns drive air movement and can be highly unpredictable. DuctSox engineers work closely with designers and growers to ensure the air dispersion is matched to the space and requirements of the plants.

These types include:

- Critical Growth: Lower velocity for young or sensitive plants
- Overhead: Controlled drafts for more durable plants
- Under Table: Displacement for efficient cooling to plant height
- Growth Chambers: Precise air dispersion for confined spaces



DATA CENTERS

With the demand for data storage and retrieval increasing, the need to provide energy efficient cooling solutions is following the same path. DuctSox has developed a product for mission critical facilities with a focus on properly managing airflow in the cold aisles of data centers.

- Provides targeted, uniform velocities along entire length of aisles to allow for maximum efficiency of equipment within the aisles
- Ability to field adjust airflow to accommodate differences in equipment from rack to rack
- Use of anti-static and highly porous materials
- Great for retrofit applications due to its light weight and ease of install

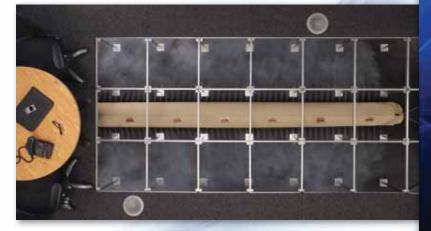


under floor

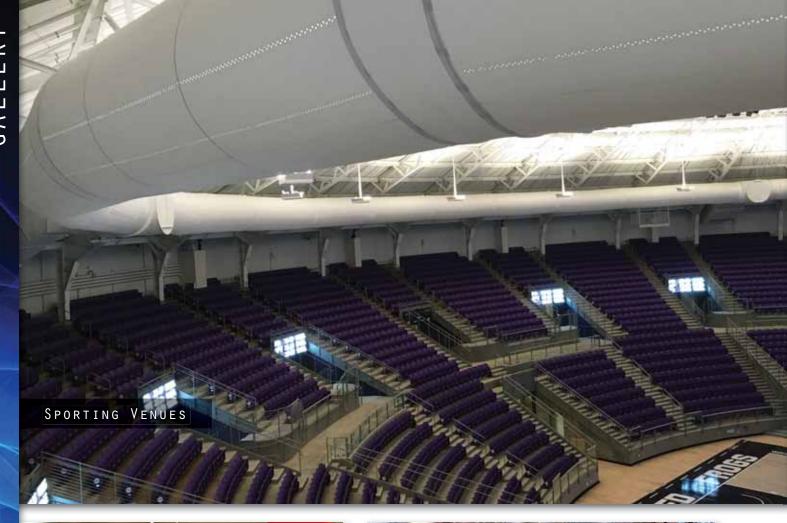
UnderFloorSox (UFSox) have been developed specifically to distribute and disperse air within the plenum for Underfloor Air Distribution (UFAD) Systems, easily fitting into standard raised access floor systems.

- Lightweight, easy to ship, handle, and install
- Modular, zip-together sections and fittings
- ▶ Easily reconfigured for future changes
- Placed on the floor, secured with retention cables

Air dispersion through engineered venting and variable endcaps improve thermal distribution of supply air within the plenum.



- ▶ Deliver cool air to perimeter zones reducing effects of unintended temperature rise
- Low noise. Venting in fabric reduces noise generation within the plenum

































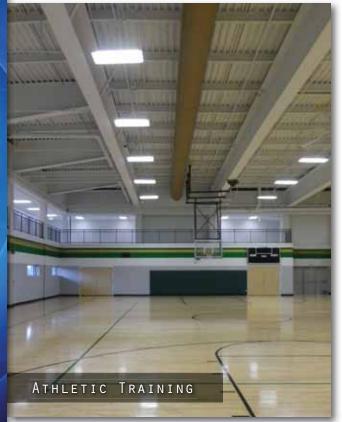




























Product Warranty

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 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.

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. DuctSox Product Warranty is non-transferable.

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.

DUCTSOX CORPORATION

- ▶ Leading manufacturer of textile air dispersion products
- ▶ Global manufacturing and distribution
- ▶ Design and installation support





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Products may be covered by one or more of the following patents: 6565430, 6558250, 5769708, 6425417, 6626754, 6280320, 6960130, 6958011, 6953396, 8434526, 8676545, 8808075, and 8844578. Other patents pending.