

Thank you for selecting a SkeleCore Fabric Tensioning System (FTS). The key to a successful installation is using the Internal Framework System to bring the fabric into complete tension.

Sections of fabric will be labeled, assembled, bagged, and boxed for shipping. Systems will include a drawing detail of the system identifying what is in each package and detailed dimensions of support locations.

Overview

Inventory

Read through this guide thoroughly. Review the components that need to be installed. Review the drawings of the project while reading the guide, including the job-specific drawing detail.

Shipping/Receiving

The internal framework and fabric components may arrive in different shipments.

Each fabric length will be packaged in individual plastic bags and labeled according to size and number of pieces. Be sure you have determined all boxes are accounted for.

Unpacking

Inspect shipment carefully and make sure all components are accounted for by emptying packaging and examining all contents. Note any missing or damaged pieces listed on the Bill of Lading and contact your carrier and DuctSox Representative.

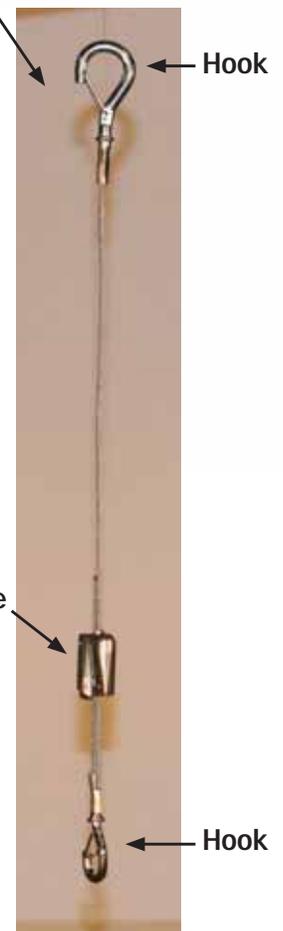
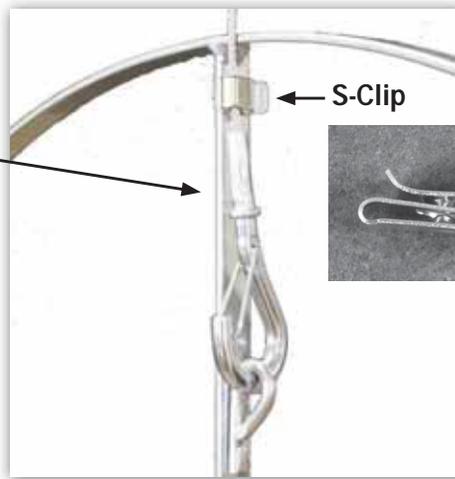
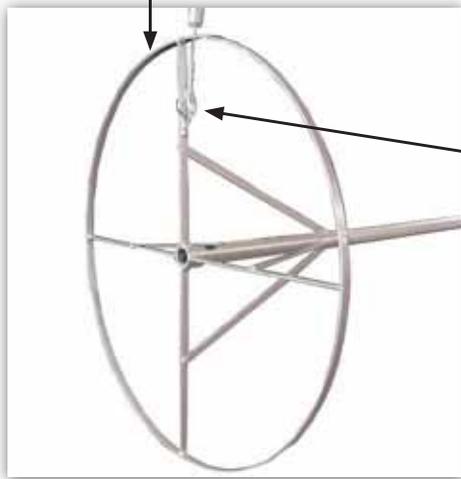
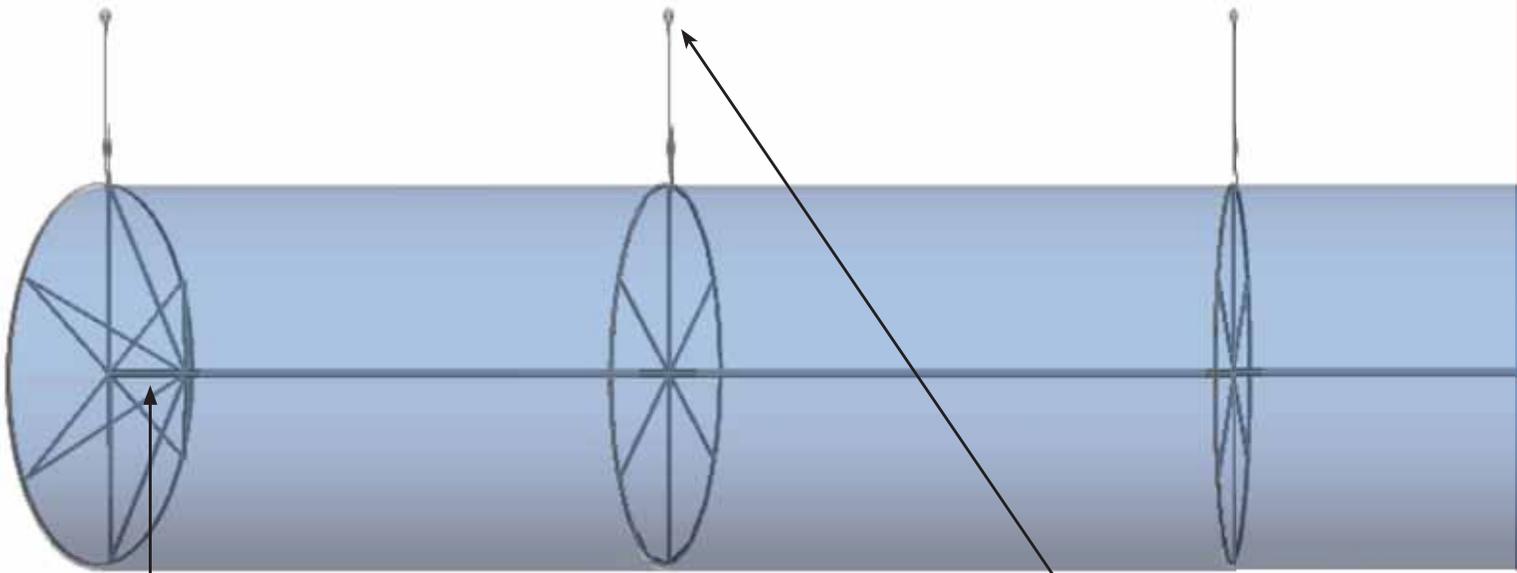
Labeling

Each fabric section will have a tag near any zipper. The tag will include job number, ship date, diameter, section number (if the total length is comprised of more than one fabric section), and total length.

Equipment Required:

- Level
- Tape measure
- Marker or pencil
- Cable cutter

Component Details



Cylindrical Tensioning Ring (CTR): Used at both ends of each tensioned section. Available in diameters from 8" to 60" (203mm to 1,524mm) in 2" (51mm) increments. **NOTE:** CTRs require assembly at the job site. See the orange assembly sheet for instructions.

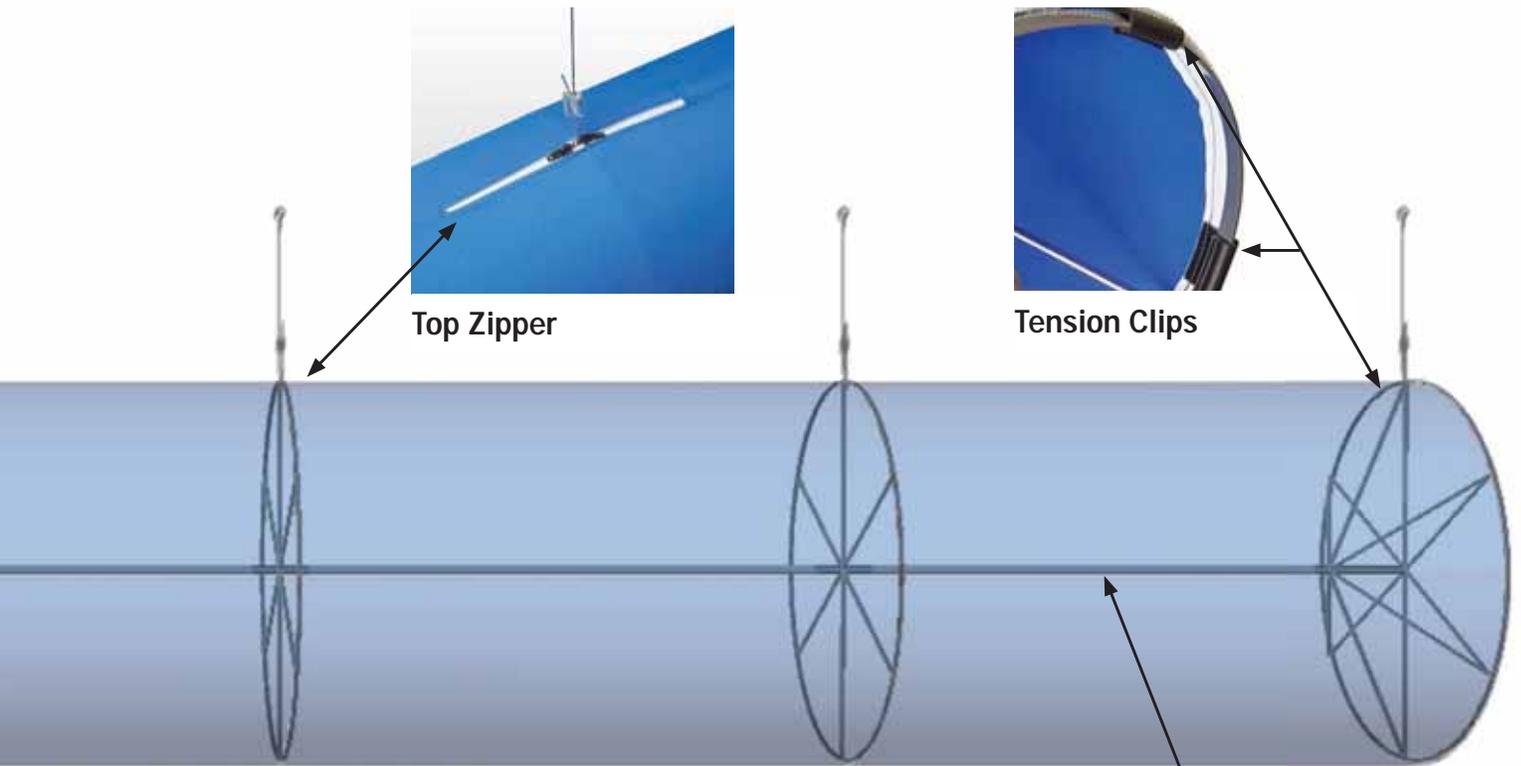
CTR 12:00 Hook Detail with S-Clip



CTR Wrench: Used to adjust the CTR and apply tension to the fabric.

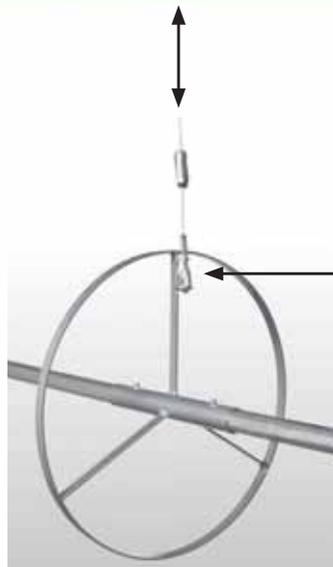
Gripper

Direct Hang Cable Drop

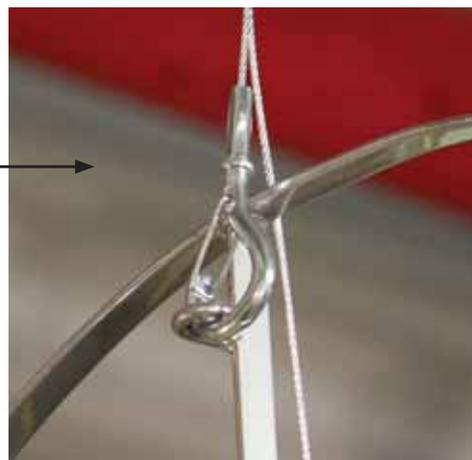


Top Zipper

Tension Clips



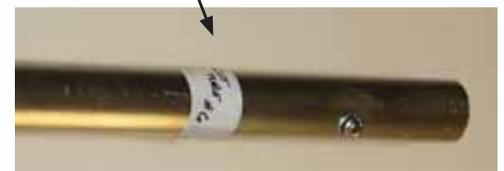
Intermediate Ring (IR): Used at 6' (1,829mm) intervals in the interior of each tensioned section. Available in diameters from 8" to 60" (203mm to 1,524mm) in 2" (51mm) increments.
NOTE: IRs require assembly at the job site. See the orange assembly sheet for instructions.



IR 12:00 Hook Detail



Hook Coupler: Used to connect a Spacer Tube to the non-adjustable side of the CTR.



Spacer Tube with Push Button: Normally 71" (1,803mm) in length to provide 72" (1,829mm) of spacing between CTRs and IRs. When this spacing is different, tubes are factory cut and labeled as Cut Spacer Tubes. End of tube with push-button is shown.



Spacer Tube Coupler: When the last Spacer Tube of a Tensioned Section is longer than 6' (1,829mm), a Spacer Tube Coupler will be installed by the factory to create the correct length.

Installation Steps

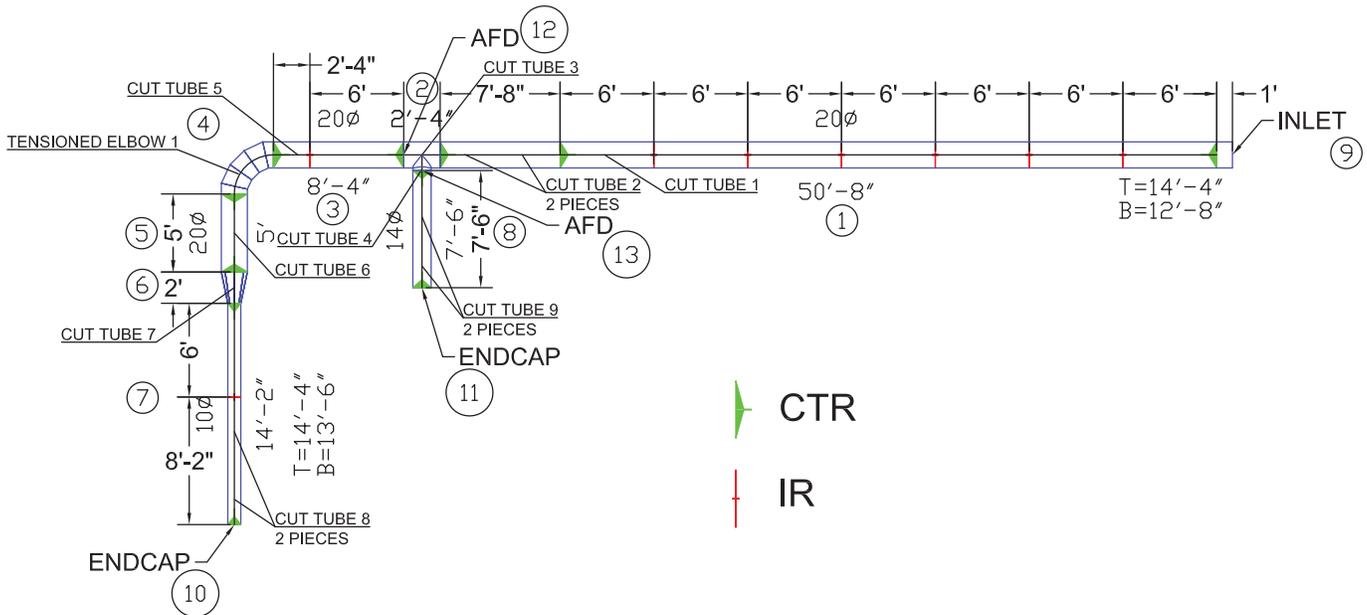
1. Review materials in box, including the CAD drawing and installed location of the DuctSox
2. Prepare metal inlet collar for fabric connection
3. Install FTS framework and fabric
4. Start up AHU
5. Balance airflow

Step 1

Review materials in box, including the project-specific drawing and installed location of the DuctSox. The Project-Specific Drawings detail the specific locations of Cable Drops/Rings using the Inlet Belt as the main reference point.

READ INSTRUCTIONS THOROUGHLY BEFORE BEGINNING.

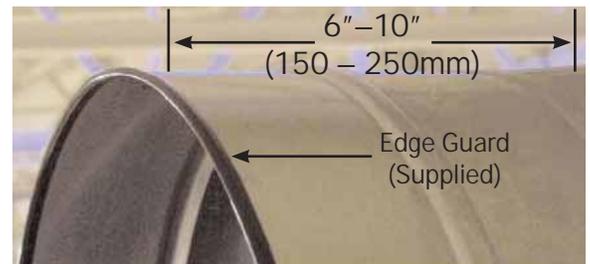
Example Project-Specific Drawing



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 250mm) 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.



Metal Inlet Collar

STEP 3

Install FTS Framework and Fabric. It is recommended (but not required) that each tension section (both fabric and rings) be completed before moving onto the next Tension Section. Tensioned Sections must be completed in succession moving away from the Inlet Belt.

Overview of Step 3:

- A. Install fabric Inlet Belt onto metal collar
- B. Install CTR at Inlet Belt
- C. Using Project-Specific Drawing, mark placement of the balance of SkeleCore Rings (CTR and IR for straight sections and fittings) identifying where structure needs to be added (where Cable Drops will be secured)
- D. Install SkeleCore FTS CTRs, IRs, Cable Drops, Hook Couplers, and Spacer Tubes
- E. Install SkeleCore FTS fabric onto installed framework
- F. Tension fabric
- G. Fitting considerations

A. Install fabric Inlet Belt onto metal collar.

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.



Inlet Patch

B. Install CTR at Inlet Belt.

You will need one Cable Drop and a CTR.

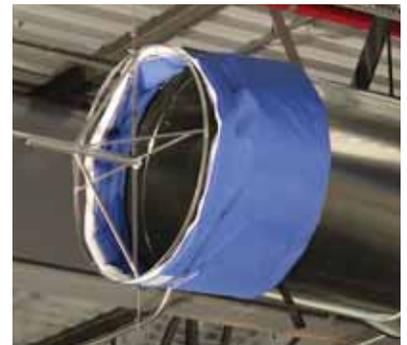
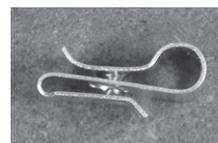
From the 12:00 position of the Inlet Belt zipper, plumb directly to the building structure to locate and mark where the first CTR will be supported.

Connect the hook of the Cable Drop to the interior eyelet. Connect the cable drop to the spoke with an S-Clip. Then thread the cable end directly above and into the Gripper.

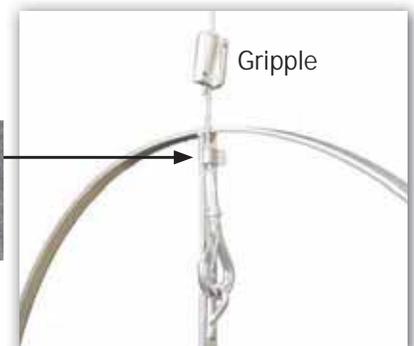
Connect the cable of the Large Hook to the Gripper and then to the building structure.

Adjust the Gripper so the CTR is at the proper elevation.

S-Clip



FTS Inlet

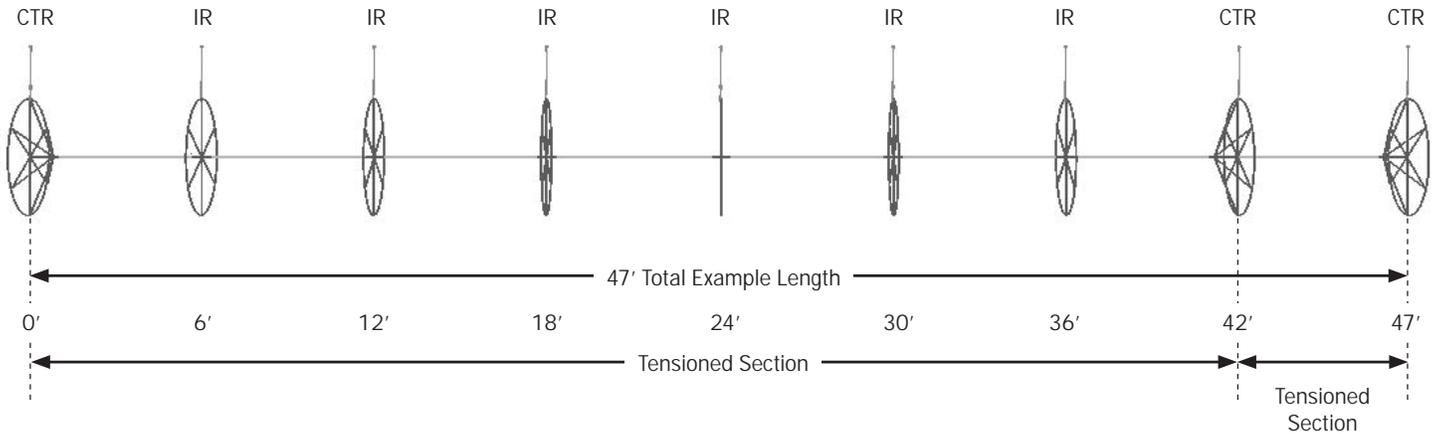


Cylindrical Tensioning Ring with Cable Drop attached by S-Clip

C. Using Project-Specific Drawings, mark placement of the balance of SkeleCore Rings (CTR and IR for straight sections and fittings) identifying where structure needs to be added (where Cable Drops will be secured).

NOTE: Last Spacer Tube of a Tensioned Section will most likely be a Cut Tube sized, cut, and labeled from the factory. This may be shorter or longer than 6'. If it is longer than 6' (1,829mm), a Spacer Tube Coupler will be installed by the factory to create the correct length.

Tensioned Sections are defined as the areas between CTRs.

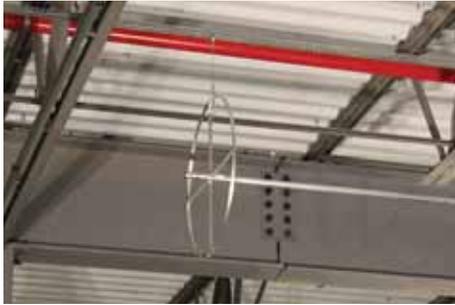


Beam Clip Example



Perforated Angle Example

D. Install SkeleCore CTRs, IRs, Cable Drops, Hook Couplers, and Spacer Tubes.



IR Hanging



CTR Hanging



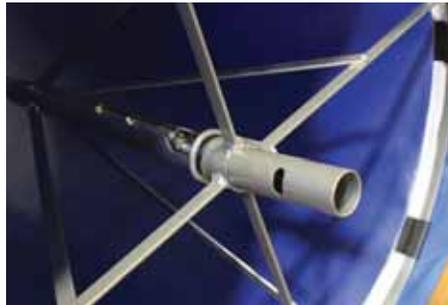
Attach to Ceiling

Use the Cable Drops to hang the CTRs and IRs from the building structure. Use the Gripper to adjust the Rings to the correct elevation. Snap the Spacer Tubes between the Rings.

After installing the framework for a Tensioned Section it is suggested to move on to Step E to install and tension the fabric for that section. Then, come back to Step D and install the subsequent framework for the next Tensioned Section.



Hook Coupler



Attach Hook Coupler



Snap Reducer Spacer Tube into Hook Coupler

E. Install SkeleCore FTS fabric onto installed framework.

Locate the midpoint and which section of fabric you are going to install first. We would recommend that you install the section that connects to the inlet collar. BE SURE HANDS ARE CLEAN WHEN HANDLING FABRIC.

Handle the section of fabric by gathering the fabric over your arm, making sure that you have the correct orientation so as you string the fabric over the rings the Top Zippers will be properly located.

Detach the Spacer Tube from one of the IRs in the middle of your framework section, just enough to transfer the fabric onto the Spacer Tube, then re-snap the Spacer Tube. (If your section has an AFD Fitting, start installing your fabric section from this end instead of the middle.)

Advance the fabric one ring at a time by disengaging the Hook on the Cable Drop from the IR and pulling all of the fabric over the ring until the Top Zipper (12:00) aligns with the Cable Drop. Pass the Cable Drop through the zipper and attach it back to the IR. Keep the Top Zipper fully open and continue to advance the fabric until you reach the first CTR at the Inlet Belt.



Open Spacer Tube



Put Fabric on Tube



String Fabric Over IR

Keep Top Zipper Open



Top Zipper

Attach the Tension Clips of the fabric to the CTR. Complete the connection by zipping the duct to the Inlet Belt.

To complete the first Tensioned Section, repeat the process going in the other direction, after you zipper the two sections of fabric together.



Tension Clips

F. Tension Fabric.

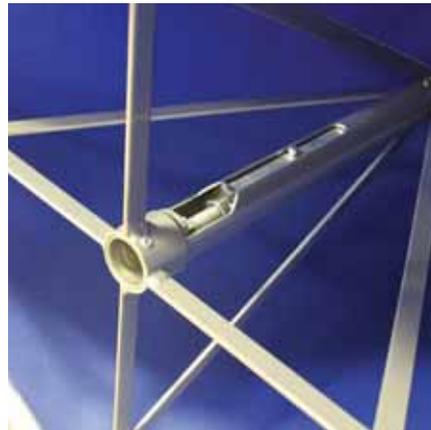
Using the Tension Wrench, turn the nut on the CTR clockwise. Note the amount of travel the Spacer Tube makes in the center of the CTR as the nut is rotated.

The amount of take-up will vary based on the length of the Tensioned Section. As Tensioning Wrench is used, wiggle your DuctSox to evenly distribute fabric tensioning over entire length. Tension the fabric until the desired roundness and tautness of the fabric is achieved.

DO NOT use powered drivers to replace supplied Tension Wrench. Tension Wrench is used to help restrict the occurrence of over-tightening.



Interior Section CTR Tensioning



CTR Tension Detail



Before Tensioning

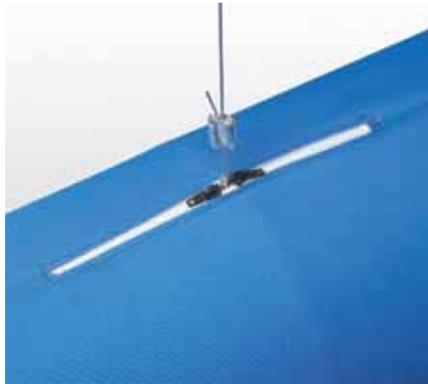


After Tensioning

The final step after tensioning a fabric section is to go back and close all Top Zippers of this section. Trim excess cable.



Top Zipper Open

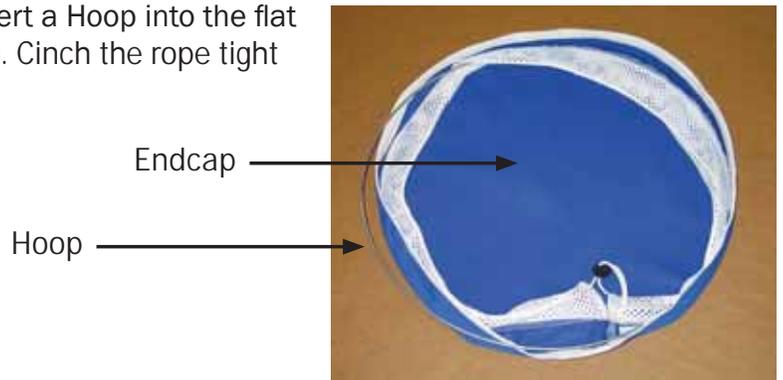


Top Zipper Closed

Endcap Installation

If your section ends with an Endcap, follow these additional instructions.

IMPORTANT: Before installing the Endcap, insert a Hoop into the flat of the Endcap. Tuck the Hoop under the mesh. Cinch the rope tight and lock.



Take the Endcap and install it on the corresponding CTR. At 12:00, the Gripper will need to be released from the lower cable. The lower cable is then threaded through the Endcap at 12:00 and reconnected to the Gripper. The Endcap is then zipped to the fabric section.



Lower Cable Threaded through Endcap



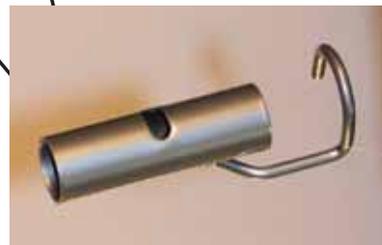
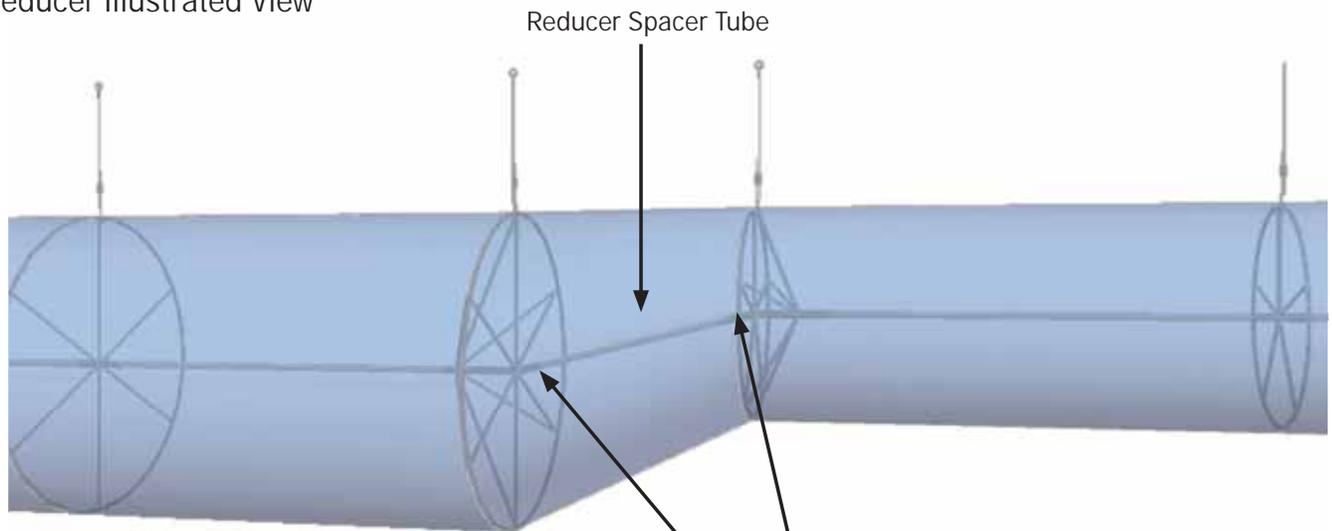
Lower Cable Reconnected to Gripper

G-1. Fitting Considerations: Reducer.

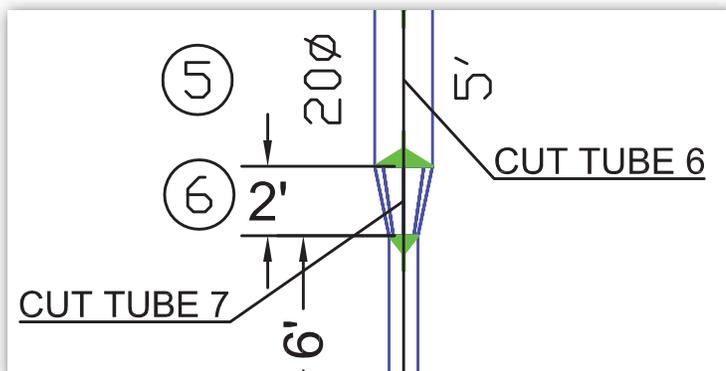
Reducer Fitting is placed between two Tensioned Sections.

1. Locate your Reducer Fitting Kit. It should include 2 Hook Couplers and a Reducer Spacer Tube.
2. Reference the drawing to determine important dimensions for installation of Reducer CTRs.
3. Measure and place the downstream CTR.
4. Attach one Hook Coupler onto the upstream CTR.
5. Snap one end of your Reducer Spacer Tube into this Hook Coupler.
6. Attach another Hook Coupler to the other CTR.
7. Slide your fabric fitting onto the Reducer Spacer Tube and snap the other end of your tube into this Hook Coupler.
8. Zip fabric fitting in place after adjacent fabric sections are tensioned.

Reducer Illustrated View



Hook Coupler



Drawing Detail

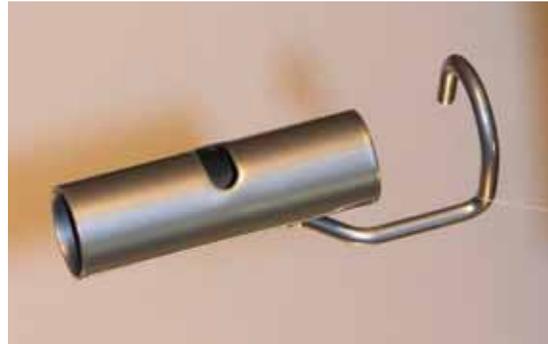
G-2. Fitting Considerations: Tee/Cross.

Tee/Cross Fitting is placed between two Tensioned Sections.

1. Locate your Tee/Cross fitting parts (Spacer Tubes will be labeled). Reference the drawing to determine important dimensions for installation of fitting CTRs.
2. Measure and install the downstream CTR.
3. Attach one Hook Coupler onto the upstream CTR.
4. Snap one end of your Main Tee Spacer Tube into this Hook Coupler.
5. Slide your Tee Fitting Coupler and Tee fabric onto the Main Tee Spacer Tube.
6. Attach another Hook Coupler to the other large CTR.
7. Snap the other end of your Main Tee Spacer Tube into this Hook Coupler.
8. Snap one end of your Branch Tee Spacer Tube into the Tee Fitting Coupler, if it isn't already.
9. Measure and place the CTR of the branch.
10. Attach the third Hook Coupler to the branch CTR.
11. Snap the free end of the Branch Tee Spacer Tube into this Hook Coupler.
12. Zip fabric fitting in place after adjacent fabric sections are tensioned.



Tee Fitting Coupler



Hook Coupler

Main Tee
Spacer Tube



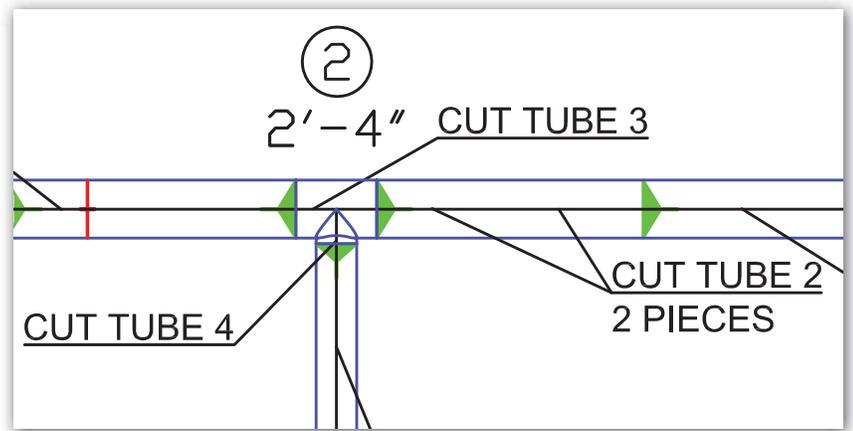
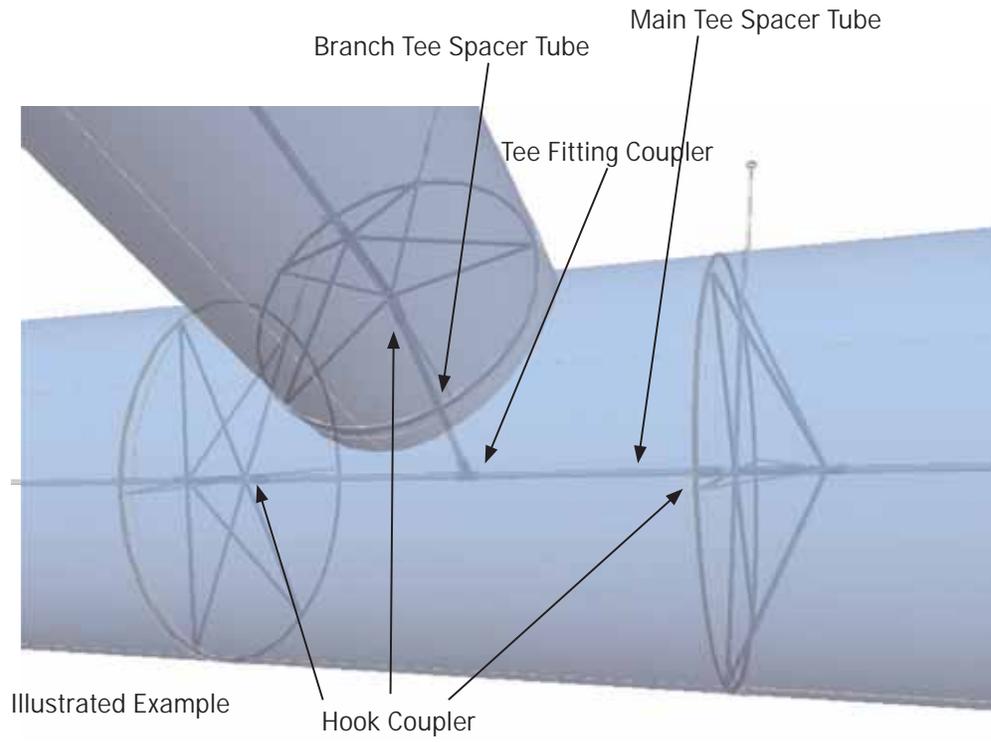
Tee Fitting Coupler Installed

Branch Tee
Spacer Tube

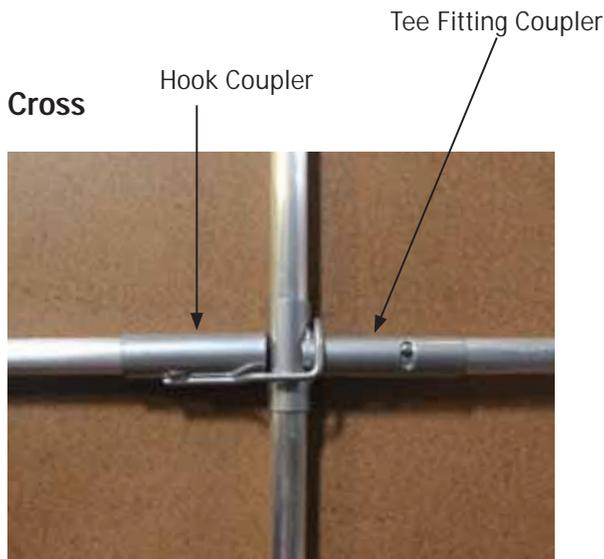


Hook Coupler Installed

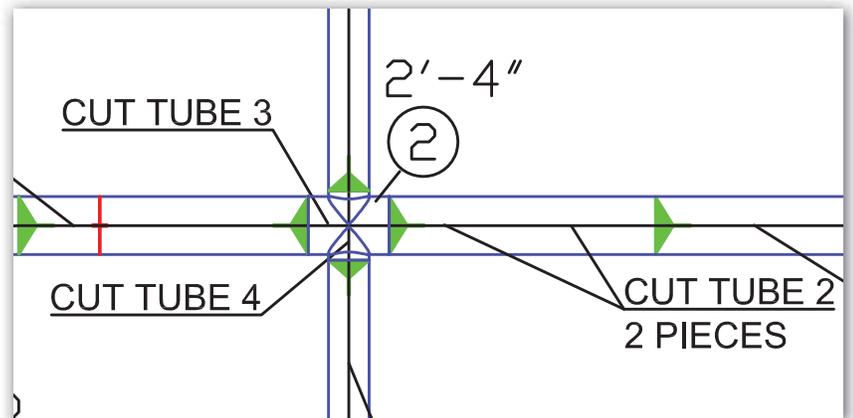
Tee



Drawing Detail



Hook Coupler Installed



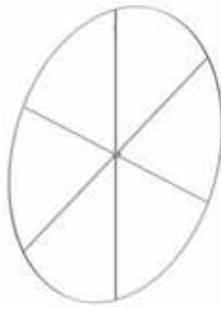
Drawing Detail

G-3. Fitting Considerations: Elbow.

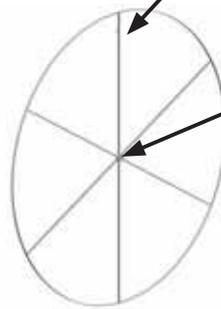
1. Locate your Elbow fitting parts, including the following:



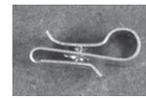
Fabric Elbow



Universal Rings with Hollow Center



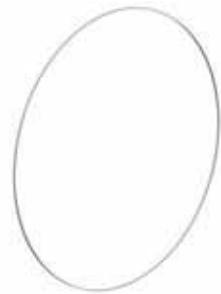
Universal Rings with Rod Stops



S-Clip



Rod Stop



Internal Hoops



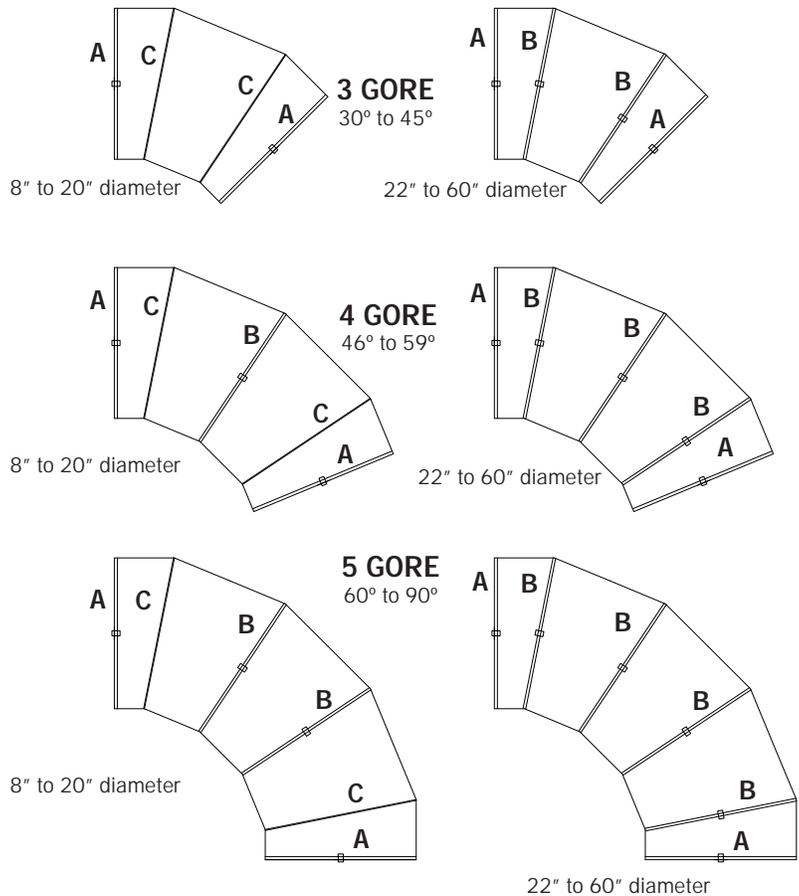
Rod Clamps

Direct Hang Cable Components



Fiberglass Rods
(Typically 1 long, 1 short. There could be an additional rod if the elbow has a significantly long radius.)

2. Based on the drawings on the right, determine the placement and number of rings and hoops needed according to the diameter and number of gores in the elbow.

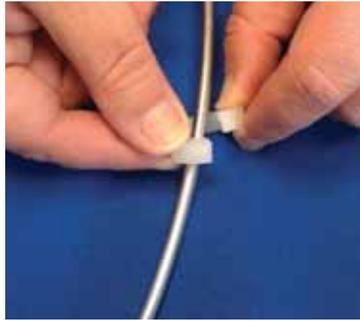


KEY:

- A** = Universal Ring with Rod Stop
- B** = Universal Ring with Hollow Center
- C** = Internal Hoop

3. Prior to hanging, assemble the elbow on a flat surface. (Larger sized elbows may need to be installed in place rather than on a flat surface.)

a. As identified in Step 2, install the corresponding Universal Rings with Hollow Centers and Internal Hoops, beginning from the middle of the elbow working outwards. Attach the Rings to the white Clips on the inside of the sox. One Ring attaches to five Clips that are located in-line with each other on a single sewn seam.



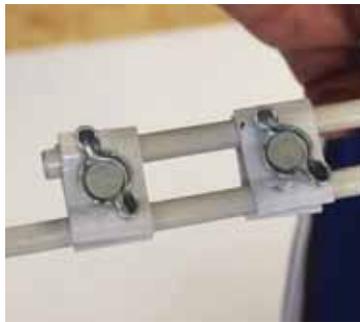
Attach Rings to Clips



Attach Universal Rings with Rod Stops to the Sewn-In Anchor Clips

b. Once the rings have been secured by the clips, install the Universal Rings with Rod Stops. Position both of these rings at the ends of the elbow, and connect the Sewn-In Anchor Clips to both of the Rings.

c. Insert the long and small Fiberglass Rods into the elbow and through the centers of the Universal Rings with hollow centers (where applicable). Determine the approximate tautness that you desire. Align the Fiberglass Rods and attach the Rod Clamps. You may want to remove the fiberglass rods from the elbow so they can be locked together more easily.



Align Fiberglass Rods and attach Rod Clamps



Bend Rod and secure in place

d. When this is completed insert the Fiberglass Rod back into the elbow. Make sure it slides through all of the hollow center tubes. Bend the rod. Both ends of the rod should be in contact with the Rod Stops on the ends of the elbow. NOTE: For longer radius elbows, there may be three fiberglass rods that need to be clamped together.

4. Raise the elbow up and secure the Direct Hang Cable Drops. Reference the Project Specific Drawings for the locations of the Cable Drops.

a. For the center of the elbow, if there are one or more zippers located at the 12:00 position, hook one end to the ceiling and the other end to the corresponding ring.



Attach Direct Hang Cable Drops to assembled elbow.

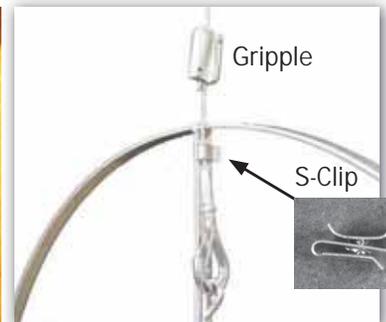


12:00 top zipper of the Elbow to insert the Direct Hang Cable Drop

b. At the ends of the elbow, the Direct Hang Cable Drop should be inserted into the small slit located at the 12:00 position. Attach the hook to the eyelet on the ring. The cable should be attached to the ring spoke with an S-clip and inserted into the Gripple Lock. The other end of the Cable Drop should be hung from the ceiling.



Slit at the end of the Elbow to insert the Direct Hang Cable Drop



CTR with Cable Drop attached by S-Clip

5. With the elbow secured, simply zipper the end of the elbow with the previously installed runs of fabric duct.

6. For the next section of sox, install as described in previous sections of this installation guide. Attach the straight runs to the other end of the elbow and zipper the two ends together.

G-4. Fitting Considerations: Fitting-to-Fitting Connection

Fitting-to-fitting connections will be detailed on the Project-Specific Drawings. Use these details for this installation.

Step 5

Start Up AHU. Turn on the AHU and inflate the DuctSox System. Check all Cable Drops for plumbness. Check Top Zippers and sections to ensure system is inflating properly. If required, adjust Top Zippers 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 Representative to discuss options.

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. A zipper at the inlet location provides easy access to monitor airflow.

If the fabric is fluttering after balancing, please contact your DuctSox Representative 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.
- See the specific wash instructions for your fabric on the internal system tags or use the following wash instructions that are safe for all DuctSox fabrics.
- Turn soiled side out and soak in cold water for 30 minutes.
- Wash cold in gentle cycle.
- Rinse thoroughly (repeat cycle if rinse water is dirty or DuctSox are still soiled).
- Drip dry or no-heat tumble dry.



If any questions arise regarding the installation of your SkeleCore FTS, contact us.

866-382-8769 or 563-588-5300



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