

## **62" - 100"**

Thank you for selecting a SkeleCore FTS 62"- 100" Series. 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 assembled and 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.

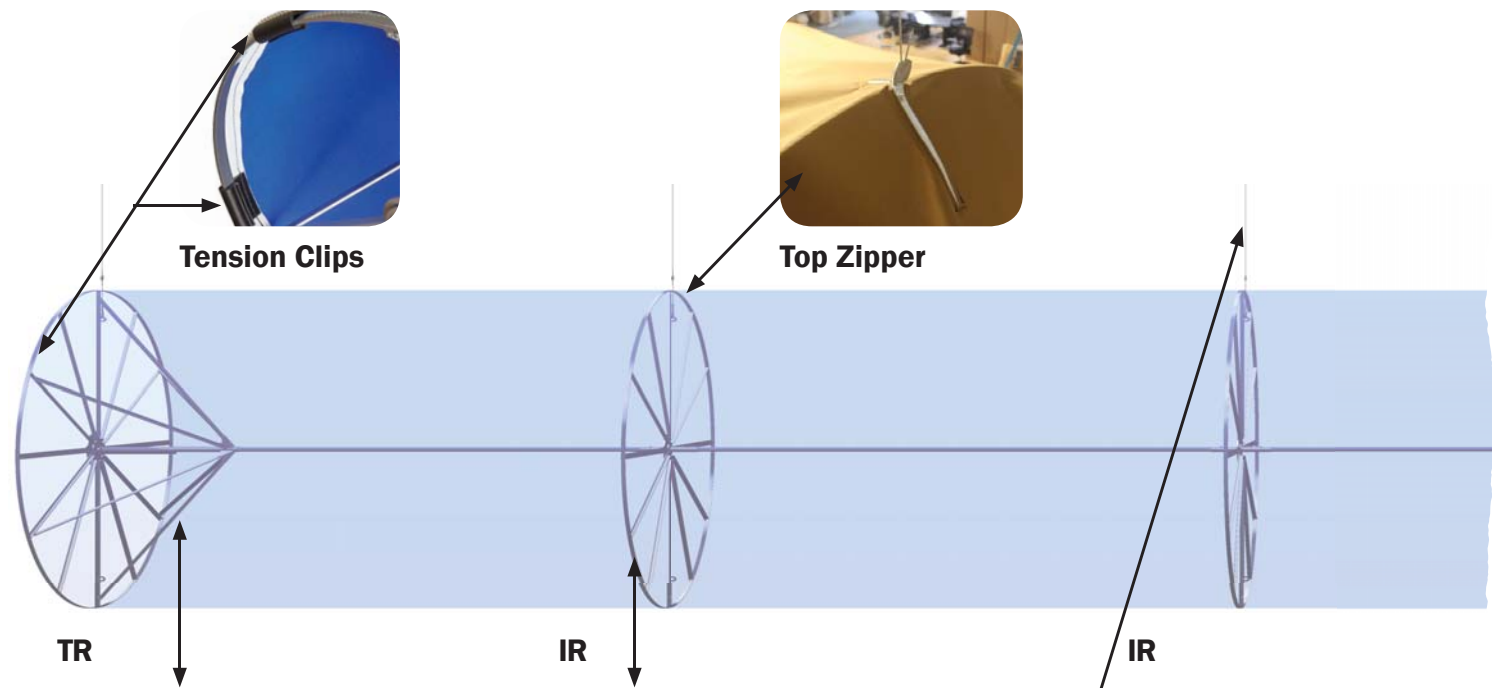
#### **Labeling**

Each fabric section will have a tag near the 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
- Rivet gun- Pneumatic if possible
- 7/16" Deep Socket Ratchet
- Hammer
- Large Standard Screwdriver

# Component Details



**Tension Ring (TR):**  
Used at the inlets and endcaps. Available in diameters from 62" to 100" (1575mm to 2540mm) in 2" (51mm) increments.

**NOTE:** TRs require assembly at the job site. See Step 3 on Page 5 for assembly instructions.

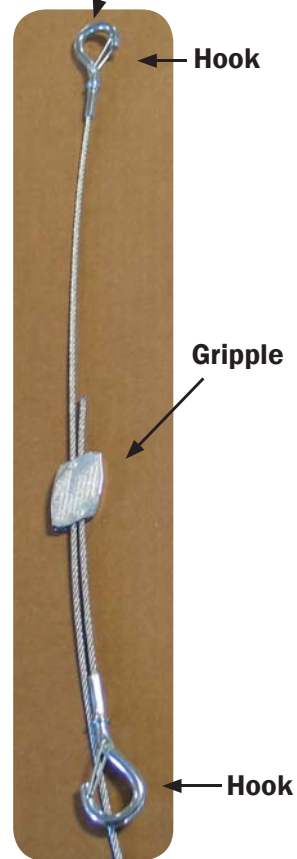


**Intermediate Ring (IR):**  
Used at 6' (1,829mm) intervals in the interior of each tensioned section. Available in diameters from 62" to 100" (1575mm to 2540mm) in 2" (51mm) increments.

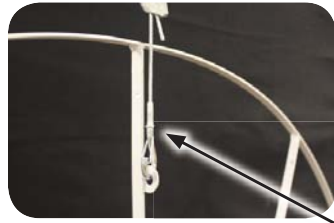
**NOTE:** IRs require assembly at the job site. See Step 3 on Page 5 for assembly instructions.



**TR/ITR Wrench:** Used to adjust the TR / ITR and apply tension to the fabric.



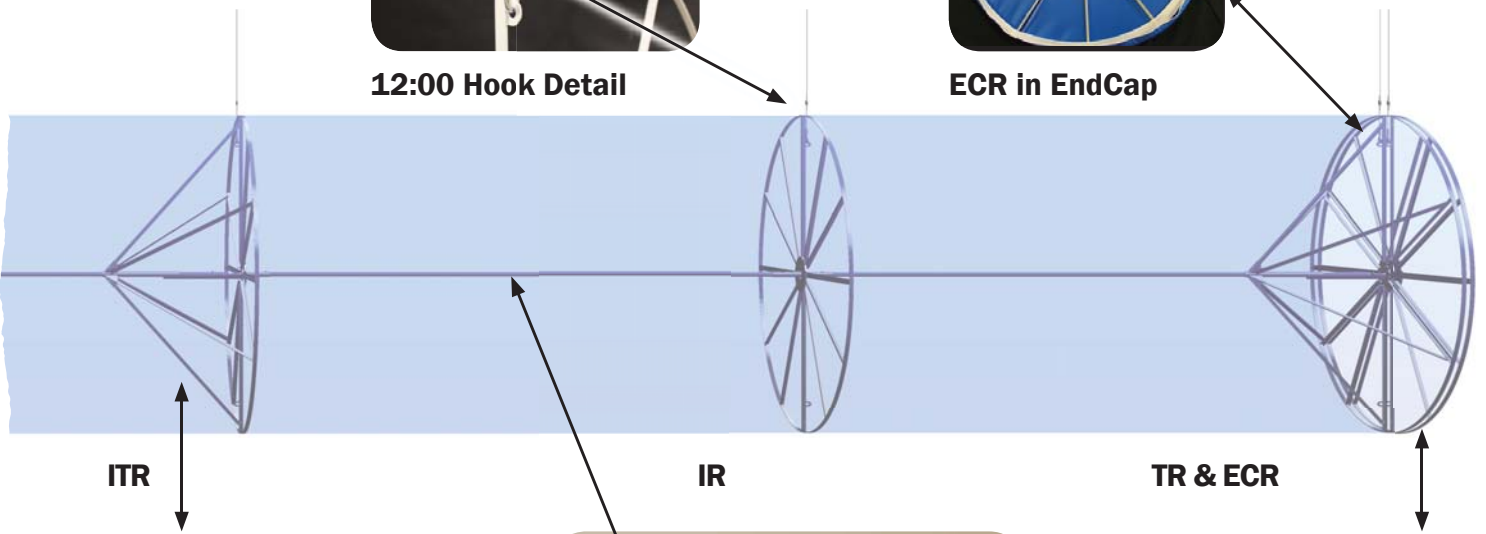
**Direct Hang Cable Drop**



**12:00 Hook Detail**



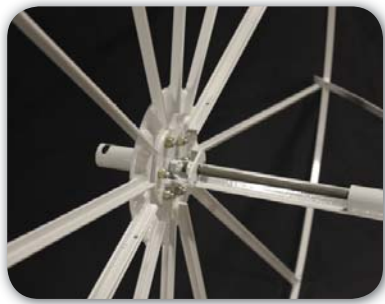
**ECR in EndCap**



**ITR**

**IR**

**TR & ECR**



**Intermediate Tension Ring (ITR):**

Used between individual tensioned sections and fittings. Available in diameters from 62" to 100" (1575mm to 2540mm) in 2" (51mm) increments.

**NOTE:** ITRs require assembly at the job site. See Step 3 on Page 5 for assembly instructions.



**Spacer Tube with Push Button:**

Normally 71" (1,803mm) in length to provide 72" (1,829mm) of spacing between TRs, ITRs 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 included by the factory to create the correct length.



**EndCap Ring (ECR):**

Used at the endcaps with final TR. Available in diameters from 62" to 100" (1575mm to 2540mm) in 2" (51mm) increments.

**NOTE:** ECRs require assembly at the job site. See Step 3 on Page 5 for assembly instructions.

## Installation Steps

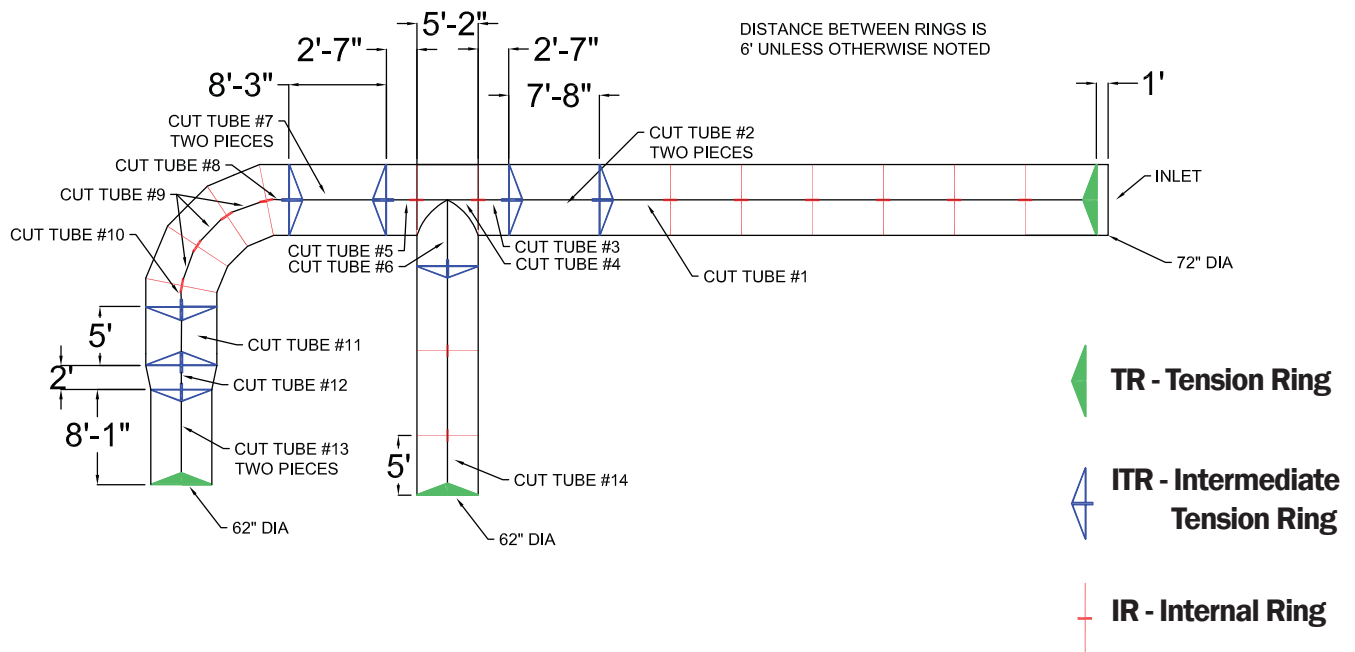
1. Review materials in box, including the CAD drawing and installed location of the DuctSox
2. Prepare metal inlet collar for fabric connection
3. Ring assembly
4. Install FTS framework and fabric
5. Start up AHU
6. Balance airflow

### 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.

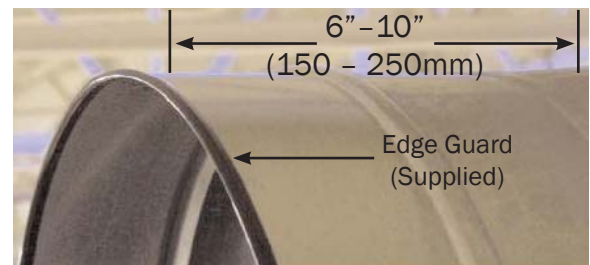
### Example Project-Specific Drawing



### 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

### Assembly of all Rings and Ring Hubs

#### Overview of Step 3:

A. Main Components List: See Project-Specific Drawing for complete ring quantity. Before assembling rings gather components needed for each type of ring according to the components list below.

B. TR, IR and ECR Hub Mounting: Instructions for all rings except ITR. Repeat Step (B) until all ring hubs have been attached.

C. ITR Double Hub Mounting: Instructions only for ITR. Repeat Step (C) until all ITR hubs have been attached.

D. IR and ECR Riveting

E. TR and ITR Riveting

#### A. Main Component list for all Rings\*

\*See Project-Specific Drawing for complete ring qty.

##### Internal Rings (IRs)

- (2) Universal Half Rings
- (1) IR Hub
- (6) Sets of Carriage Bolts and Lock Nuts
- (2) Rivets



**Universal Half Ring**  
SCUR ##



**IR Hub**  
SCURCONHUB

##### Tension Rings (TRs)

- (2) Universal Half Rings
- (1) Tensioning Hub
- (6) Sets of Carriage Bolts and Lock Nuts
- (20) Rivets
- (6) Angle Spokes



**Angle Spoke**  
SCSPOKE ##



**Coupler Hub**  
SCHUBCOUPLER

##### Intermediate Tension Rings (ITRs)

- (2) Universal Half Rings
- (1) Tensioning Hub
- (1) Coupler Hub
- (6) Sets of Carriage Bolts and Lock Nuts
- (20) Rivets
- (6) Angle Spokes



**Tensioning Hub**  
SCT ##



**EndCap Hub**  
SCHUBENDCAP

##### EndCap Rings (ECR)

- (2) Universal Half Rings
- (1) EndCap Hub
- (6) Sets of Carriage Bolts and Lock Nuts
- (2) Rivets



**Carriage Bolt**



**Lock Nut**



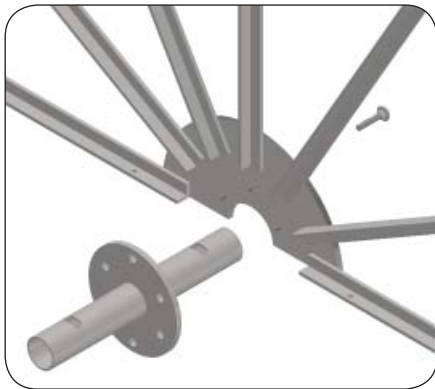
**Rivet**

## B. TR, IR and ECR Hub Mounting

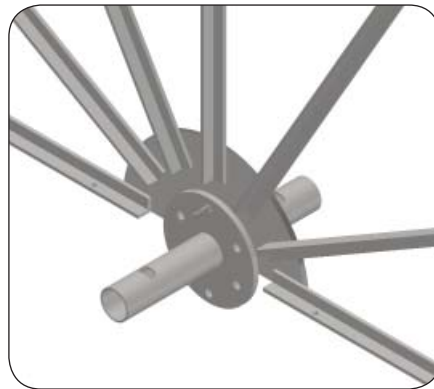
For ALL Ring styles the specific Hub style (TR, IR, or ECR) is mounted to the Universal Half Rings (except for the ITRs) in the same manner.

1. Pound one bolt into the center hole of one of the universal half rings
2. Line up the top hole of the hub with the bolt and slide the hub into place
3. Place a nut on the bolt. Don't over tighten; the hub will need to be able to move to get the other bolts to line up properly
4. Line up the holes on the universal half ring and hub. Pound bolts into the remaining two holes
5. Place nuts on the remaining bolts and tighten all three nuts
6. Line up the holes on the second universal half ring with the remaining holes on the hub

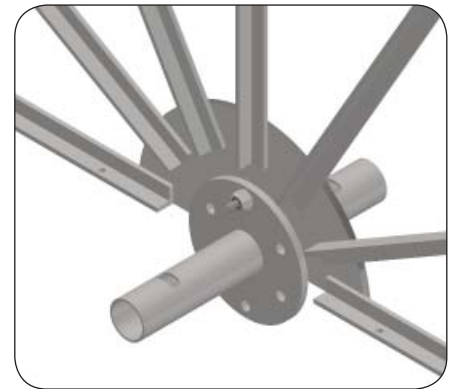
(Instructions Continue to Page 7)



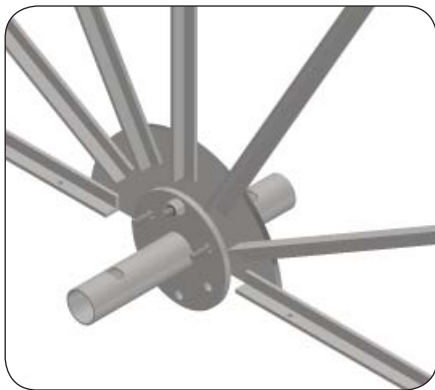
Step 1



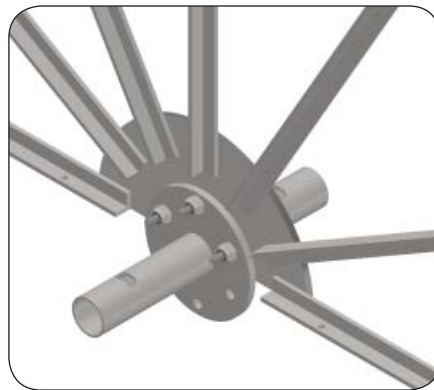
Step 2



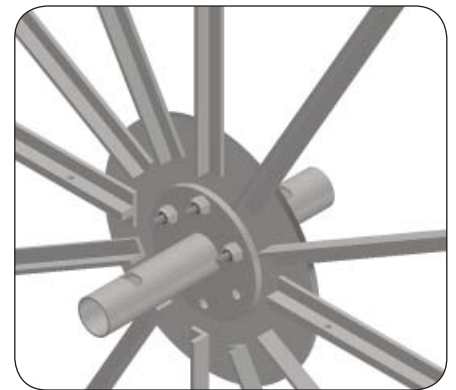
Step 3



Step 4



Step 5



Step 6



7. Pound a bolt through the center hole
8. Place a nut on the bolt. Once again, don't overtighten; the hub will need to be able to move to get the other bolts to line up properly
9. Pound bolts into the remaining holes
10. Place nuts on the remaining bolts and tighten all three nuts



Step 7



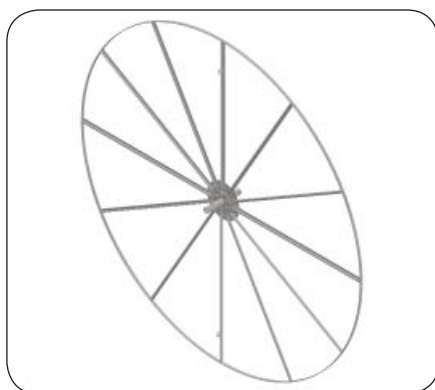
Step 8



Step 9



Step 10



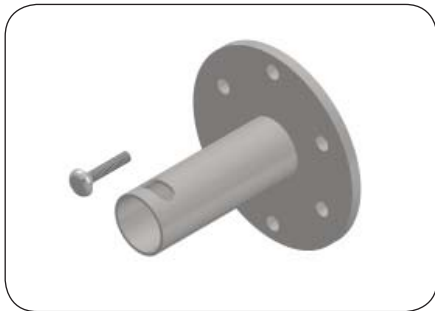
Completed Hub

### C. ITR Double Hub Mounting

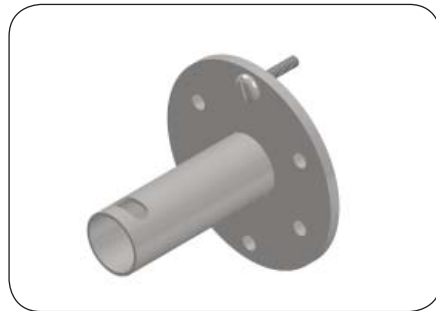
The ITR Rings require two hubs.

1. Line up a bolt with the top hole of the Coupler Hub
2. Pound the bolt into the hub
3. Slide the bolt and hub into the center hole on the back side of a universal half ring
4. Line up the top hole of the Tension Hub with the bolt
5. Slide the Tension Hub onto the bolt
6. Place a nut on the bolt. Don't over tighten; the hubs will need to be able to move to get the other bolts to line up properly
7. Line up the holes on both hubs and the universal half ring and pound bolts through them
8. Place nuts on the bolts and tighten all three nuts
9. Line up the second universal half ring with the gap between the hubs

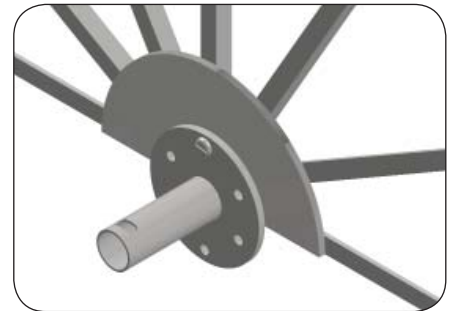
(Instructions Continue to Page 9)



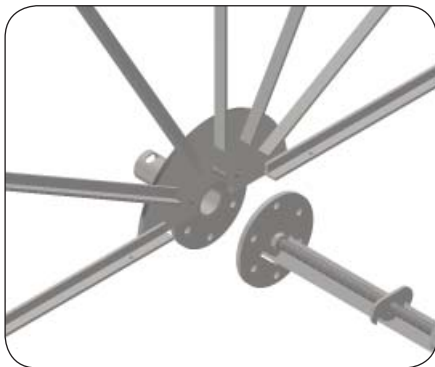
Step 1



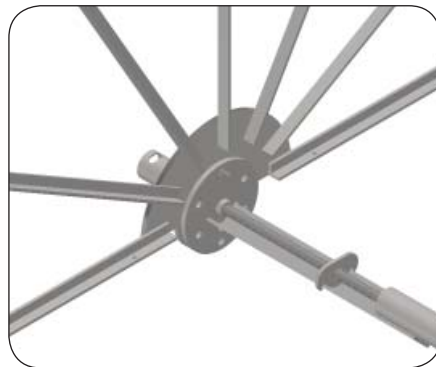
Step 2



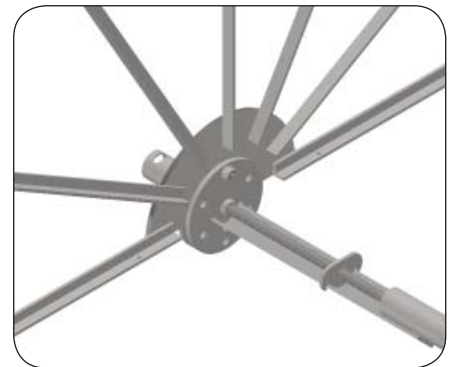
Step 3



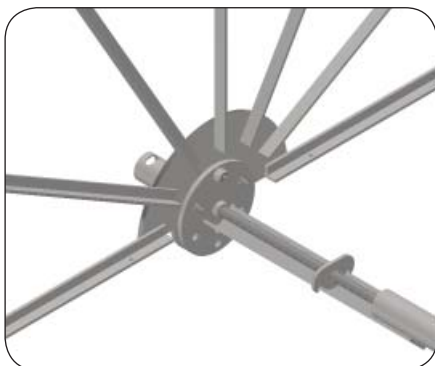
Step 4



Step 5



Step 6



Step 7



Step 8



Step 9



10. Slide the universal half ring between the hubs and line up the center holes
11. Pound a bolt through the center holes
12. Place a nut on the bolt. Once again, don't overtighten; the hub will need to be able to move to get the other bolts to line up properly
13. Line up the remaining holes and pound bolts through them
14. Place nuts on the bolts and tighten all three nuts



Step 10



Step 11



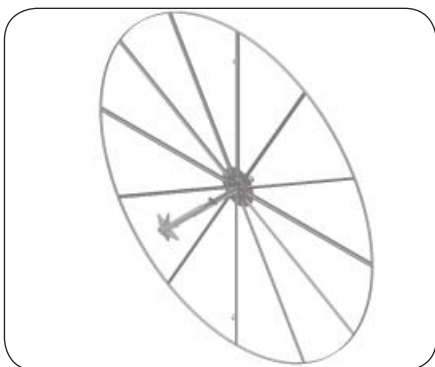
Step 12



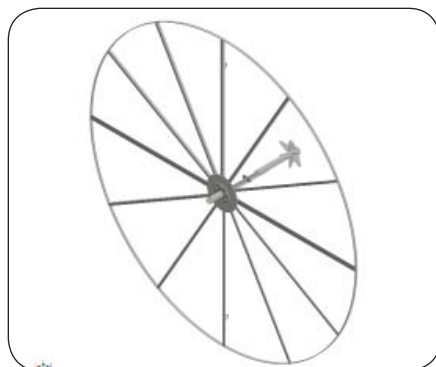
Step 13



Step 14



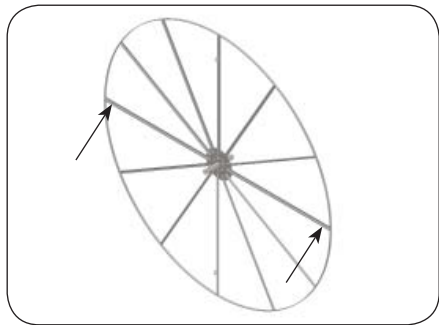
Front of ITR



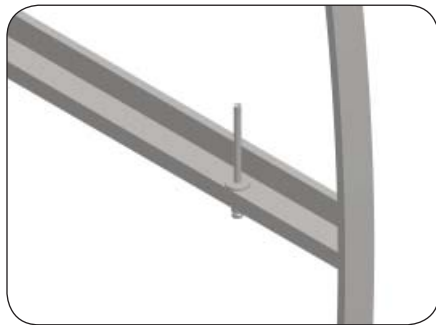
Back of ITR

## D. IR and ECR Riveting

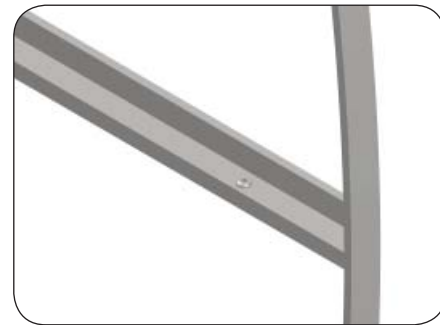
1. Locate the rivet hole near the outer ring
2. Place a rivet through the hole
3. Pop the rivet into place then repeats steps 1-3 for the other side of the ring



Step 1



Step 2

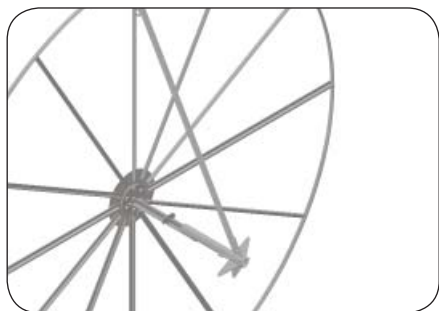


Step 3

## E. TR and ITR Riveting

1. Follow the steps 1-3 of the IR and ECR Riveting Instructions (above) and then continue to create a TR or ITR
2. Locate and Line up an Angle Spoke with the Tension Hub
3. Line up the side with two holes with the two holes on the Tension hub and insert a rivet into the first hole

(Instructions Continue to Page 11)



Step 2



Step 3

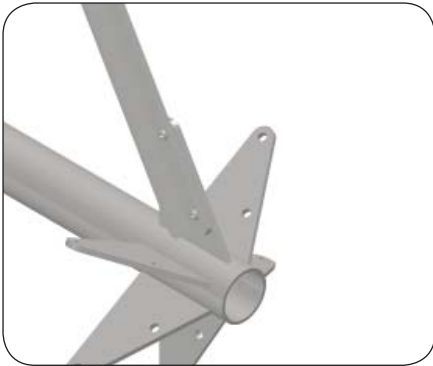
4. Insert a rivet into the second hole and pop both rivets into place

Repeat Steps 2-4 for the remaining Angle Spokes

5. Line up the two holes near the end of the Angle Spoke. It may require some force to get the holes lined up. This is by design as the ring should be in tension with no fabric load

6. Place a rivet through the holes once they are lined up and pop the rivet into place

Repeat Steps 5-6 for the remaining Angle Spokes



Step 4



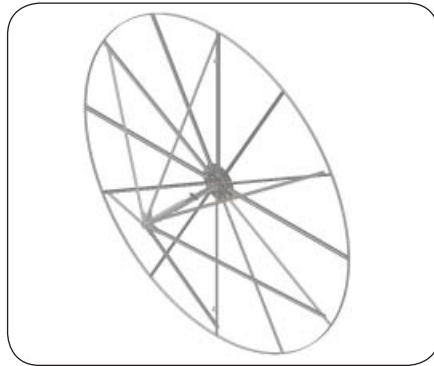
Repeat Steps 2-6 for remaining Angle Spokes



Step 5



Step 6



Repeat Steps 5-6 for remaining Angle Spokes

## STEP 4

**Install FTS Framework and Fabric.** Tensioned Sections must be completed in succession (both fabric and rings) moving away from the Inlet Belt.

### Overview of Step 4:

- A. Install fabric Inlet Belt onto metal collar
- B. Install TR at Inlet Belt
- C. Using Project-Specific Drawing, mark placement of the balance of SkeleCore Rings (TR, ITR, IR, and ECR for straight sections and fittings) identifying where structure needs to be added overhead (where Cable Drops will be secured)
- D. Install SkeleCore FTS TRs, ITRs, IRs, and Spacer Tubes one tensioned section at a time
- E. Install SkeleCore FTS fabric onto installed section
- F. Tension fabric
- G. Repeat Steps D through F for remaining sections
- H. 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. Pull cover up sleeve over the belt to conceal it.



Inlet Patch

#### B. Install TR at Inlet Belt.

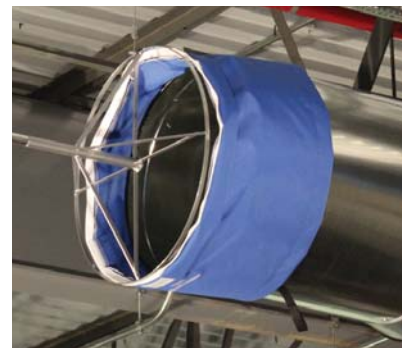
You will need one Cable Drop and an TR.

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

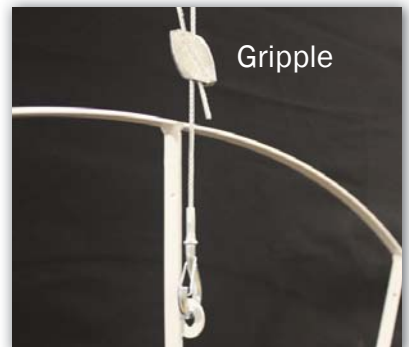
Connect the hook of the Cable Drop to the ring eyelet. Then thread the cable end directly above and into the Gripper.

Connect the cable drop to the Gripper and then to the building structure.

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



FTS Inlet

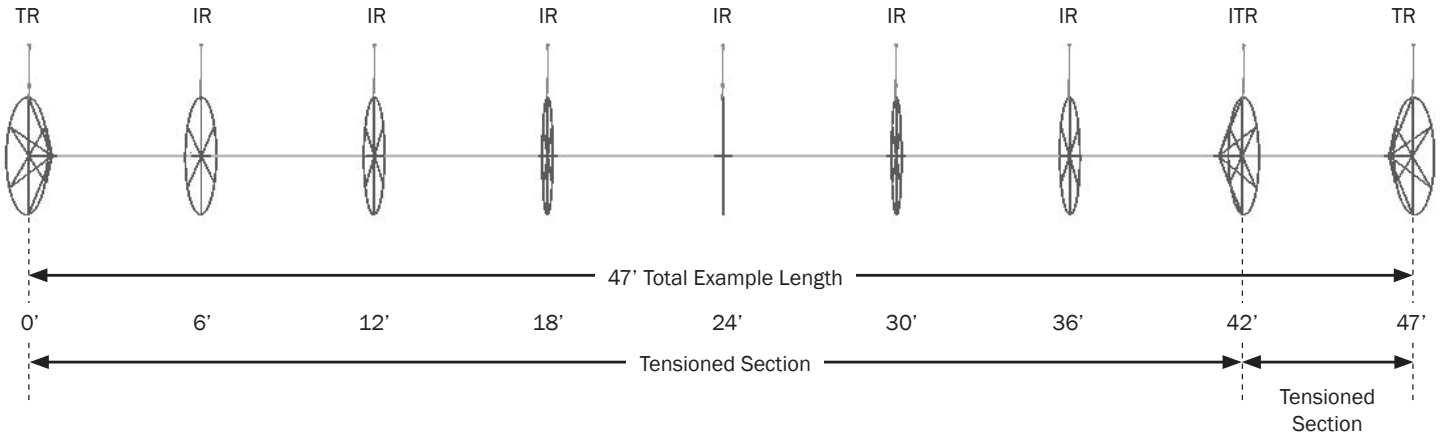


End Tension Ring with Cable Drop attached

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

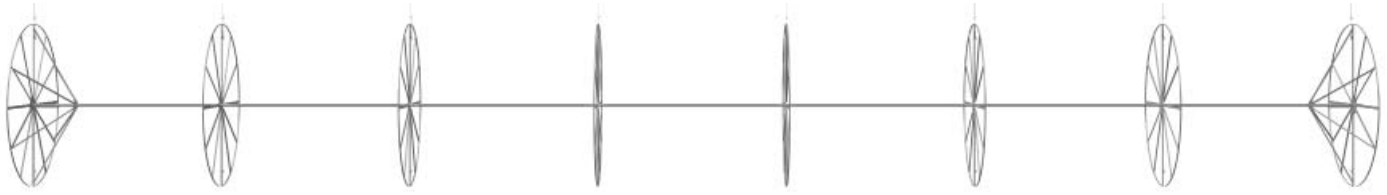
**NOTE:** Last Spacer Tube of a Tensioned Section will most likely be a Cut Tube sized, cut, and labeled from the factory. This may be shorter or longer than 6'. If it is longer than 6' (1,829mm), a Spacer Tube Coupler will be included by the factory to create the correct length.

Tensioned Sections are defined as the areas between a combination of TRs and ITRs.

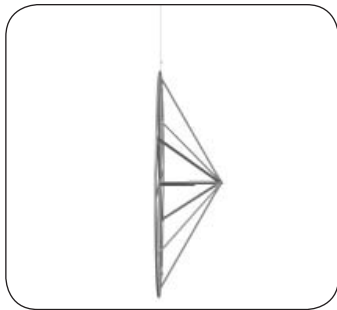


**NOTE:** Hooks should be attached only to the support; do not loop cable back to itself.

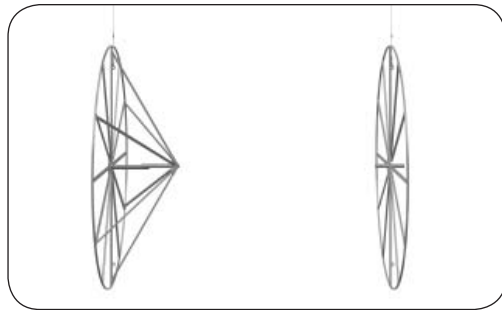
#### D. Install SkeleCore TRs, IRs, and Spacer Tubes.



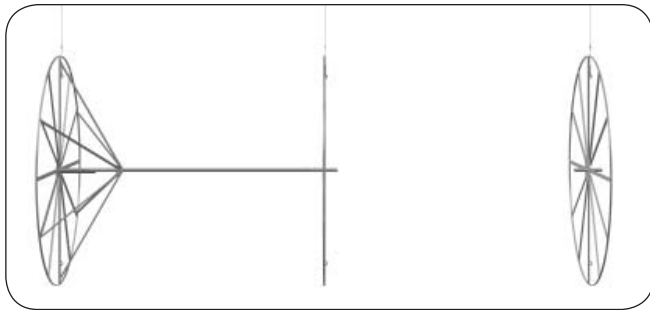
Use the Cable Drops to hang the TRs and IRs from the building structure (See Ring Order instructions Below). Use the Gripper to adjust the Rings to the correct elevation. Snap the Spacer Tubes between the Rings.



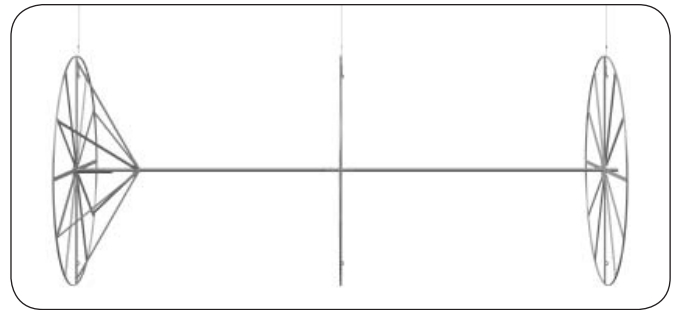
Hang 1st TR



Hang 1st IR



Hang 2nd IR and snap Spacer Tube between IR and TR



Snap the Spacer Tube between 1st and 2nd IR

After installing the framework for a single 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.



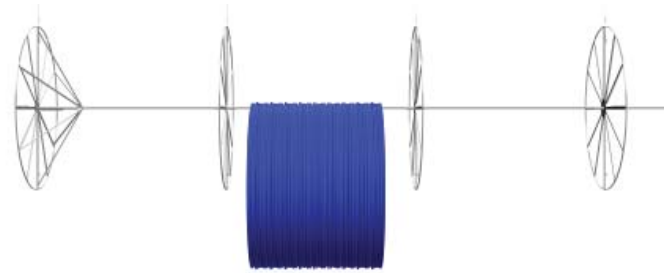
### E. Install SkeleCore FTS fabric onto installed framework.

Locate the midpoint of the tensioned section 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.**

1. Handle the section of fabric by gathering the fabric over your arm, making sure that the Top Zippers are at the top while handling.
2. 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, unzip the AFD and reinstall it after the fabric section is in place.
3. 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 TR at the Inlet Belt.

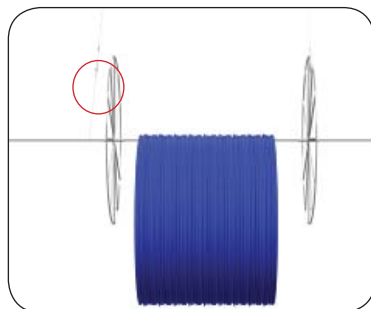


Fabric Located at Midpoint of Tensioned Sections

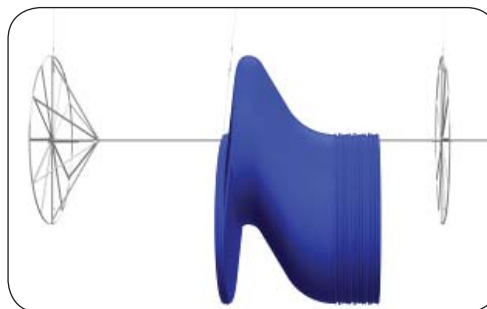


Fabric Placed on the Spacer Tube

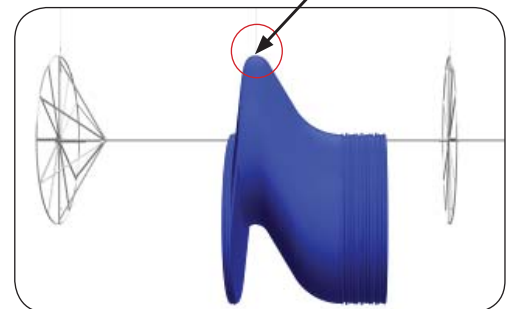
NOTE: Keep the Top Zipper fully open until all fabric is in place.



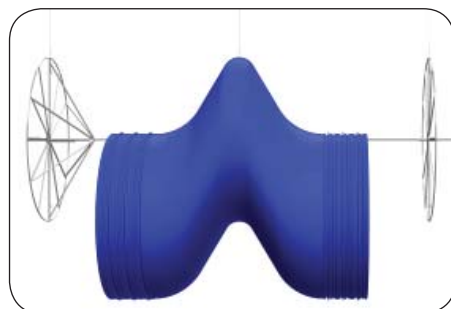
Disengage the Hook on the Cable Drop from the IR



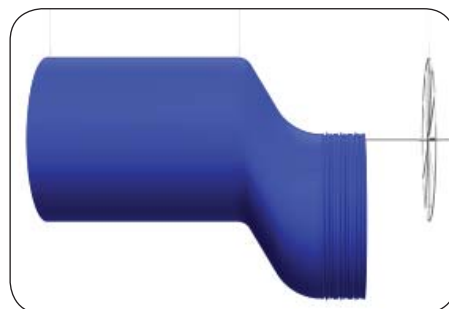
Pull the fabric over the IR until the top Zipper aligns with the Cable Drop



Pass the Cable Drop through the Zipper and attach it back to the IR



Advance the Fabric until you reach the First TR



Fabric over the TR



Advance the Fabric now in the opposite direction over then next IR

4. Attach the Tension Clips of the fabric to the TR. Complete the connection by zippering the duct to the Inlet Belt.
5. 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 TR or ITR clockwise. Note the amount of travel the Spacer Tube makes in the center of the TR or ITR 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 eliminate binding and 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 (as overtightening may damage the TR or ITR Tensioner threads).



Interior Section TR  
Tensioning



TR Tension Detail



Interior Section ITR  
Tensioning



ITR Tension Detail



Before Tensioning

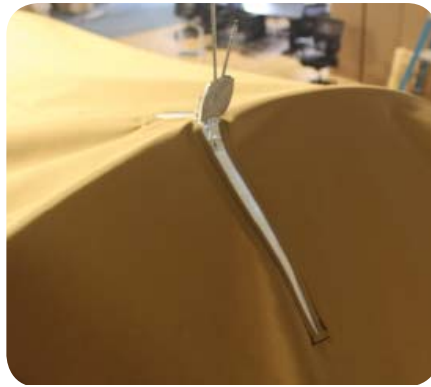


After Tensioning

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

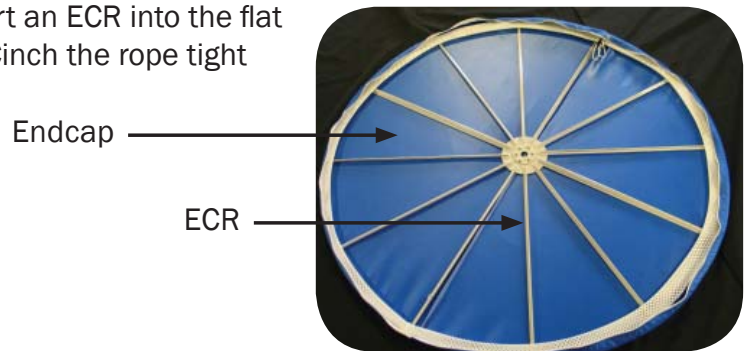


Top Zipper Closed

### EndCap Installation

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

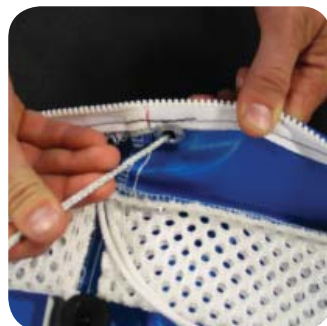
**IMPORTANT:** Before installing the Endcap, insert an ECR into the flat of the Endcap. Tuck the ECR under the mesh. Cinch the rope tight and lock.



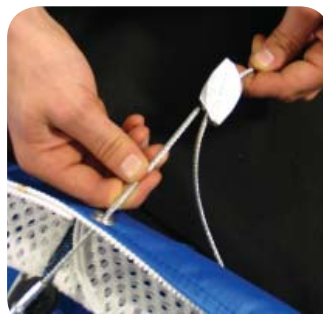
Take the Endcap and install it on the corresponding TR. At 12:00, the Gripper will need to be released from the lower cable. The lower cable is then threaded through the Endcap at 12:00 and reconnected to the Gripper. The Endcap is then zipped to the fabric section.



Lower Cable Connected to the ECR



Lower Cable Threaded Through EndCap



Lower Cable Reconnected to Gripper



Completed EndCap with Cable Gripper

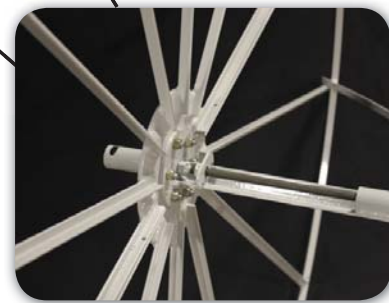
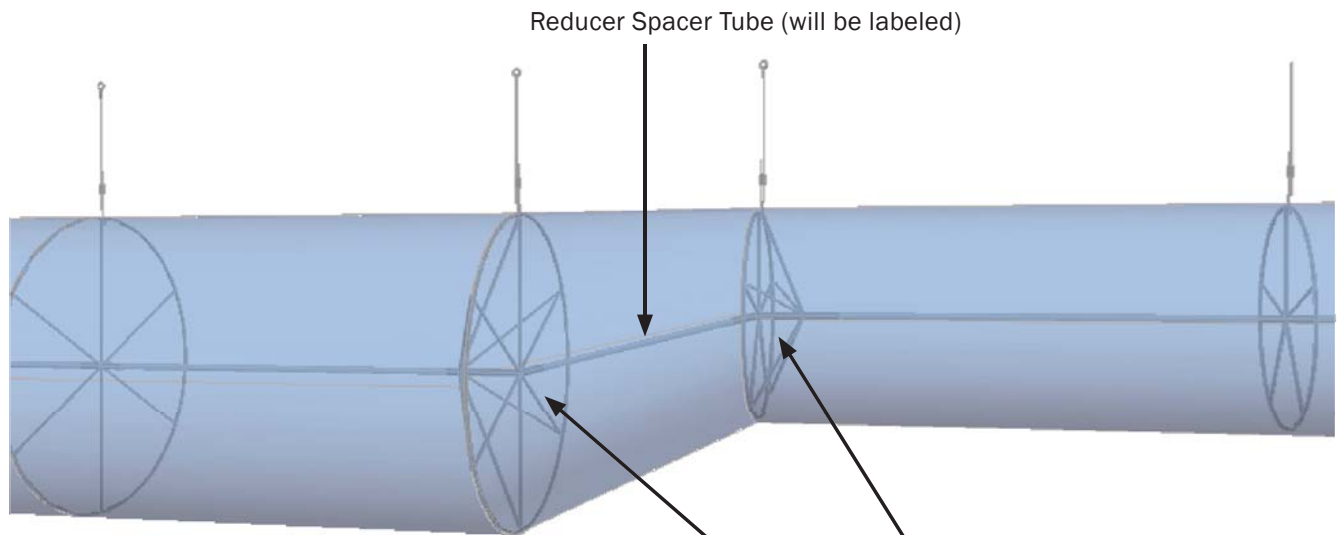
**NOTE:** You will have two cable drops at the EndCap

### G-1. Fitting Considerations: Reducer.

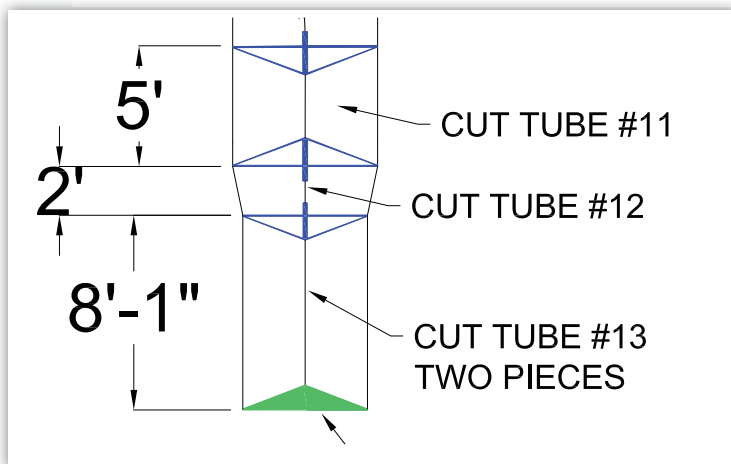
Reducer Fitting is placed between two Tensioned Sections.

1. Locate your Reducer Spacer Tube.
2. Reference the drawing to determine important dimensions for installation of Reducer ITRs.
3. Measure and place the downstream ITR.
4. Snap one end of your Reducer Spacer Tube into the upstream ITR.
5. Slide your fabric fitting onto the Reducer Spacer Tube and snap the other end of your tube into the downstream ITR
6. Zip fabric fitting in place after adjacent fabric sections are tensioned.

#### Reducer Illustrated View



**ITRs**  
(Intermediate Tension Rings)



Example Drawing Detail



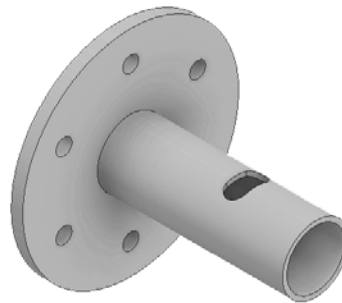
## G-2. Fitting Considerations: Tee/Cross.

Tee/Cross Fitting is placed between 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 ITRs.
2. Measure and install the downstream ITR.
3. Snap one end of your Main Tee Spacer Tube into the upstream ITR.
4. Slide your Tee Fitting Coupler and Tee fabric onto the Main Tee Spacer Tube.
5. Snap the other end of your Main Tee Spacer Tube into the downstream ITR.
6. Snap one end of your Branch Tee Spacer Tube into the Tee Fitting Coupler.
7. Measure and place the ITR of the branch.
8. Snap the free end of the Branch Tee Spacer Tube into the ITR.
9. Zip fabric fitting in place after adjacent fabric sections are tensioned.



Tee Fitting Coupler

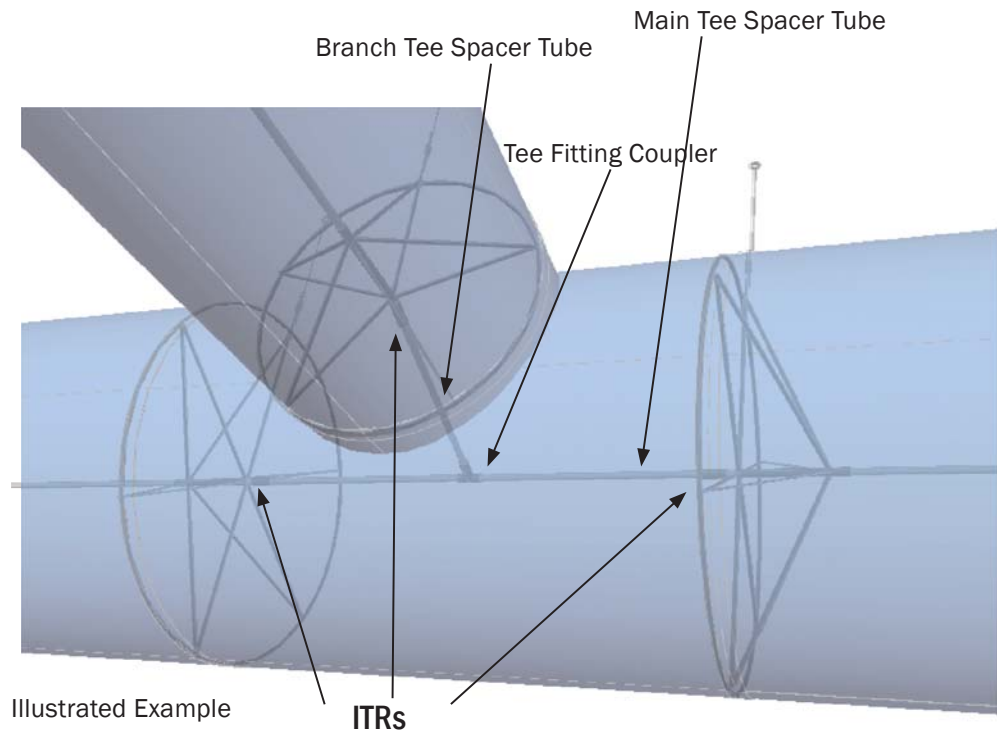


Hub Coupler

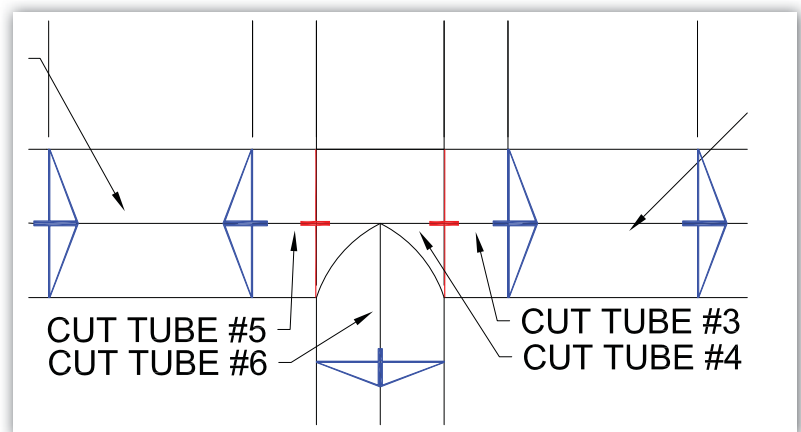


Tee Fitting Coupler Installed

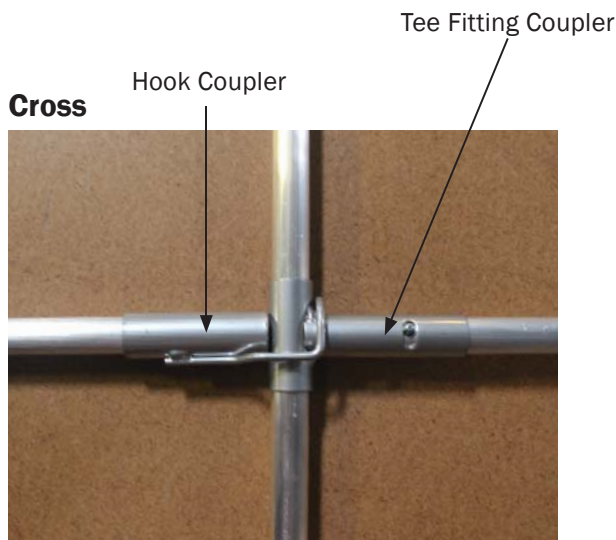
**Tee**



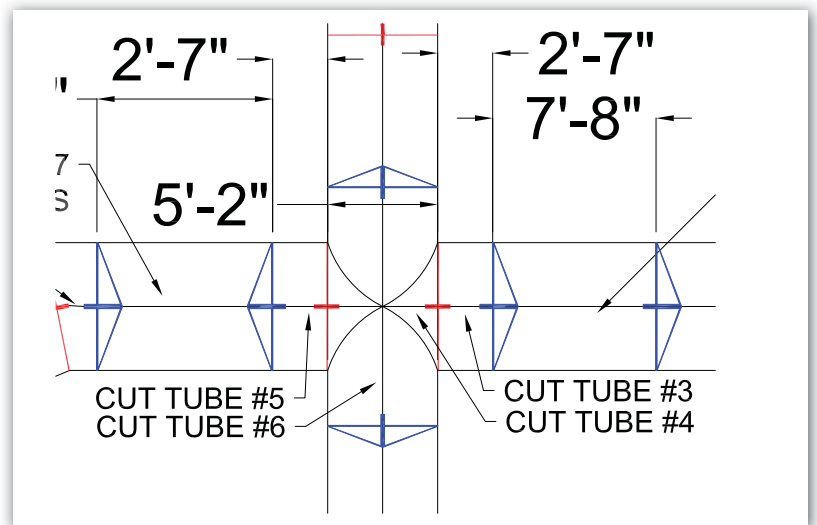
Illustrated Example



Example Drawing Detail



Hook Coupler Installed



Example Drawing Detail



### G-3. Fitting Considerations: Elbow.

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



Fabric Elbow



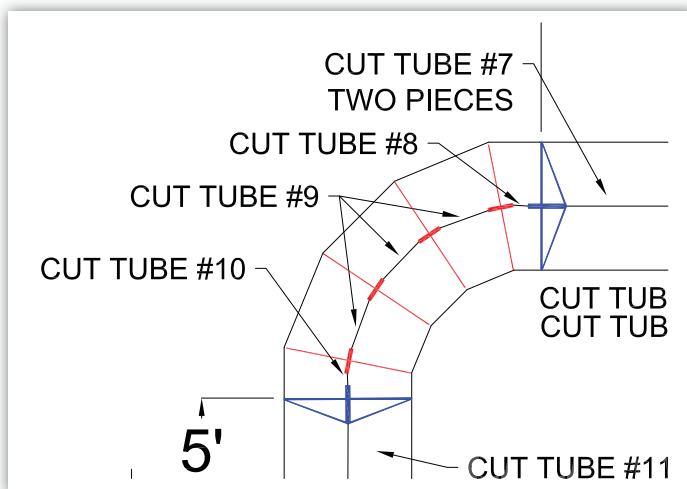
IR



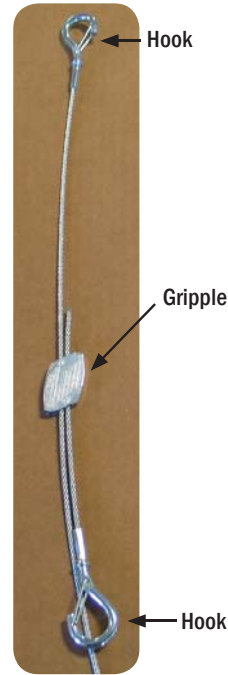
#### Elbow Spacer Tubes:

Preformed Aluminum tubes to match the needed angle of the elbow.

2. Based on the project specific drawings determine the placement and number of the IRs needed according to the number of gores in the elbow.

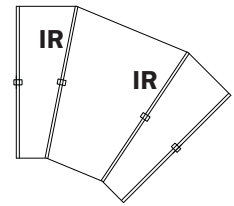


Example Drawing Detail

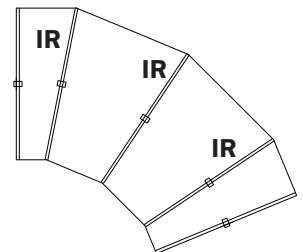


Direct Hang Cable Drop

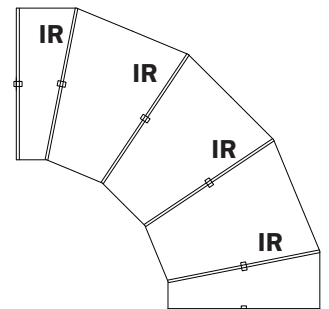
**3 GORE**  
30° to 45°



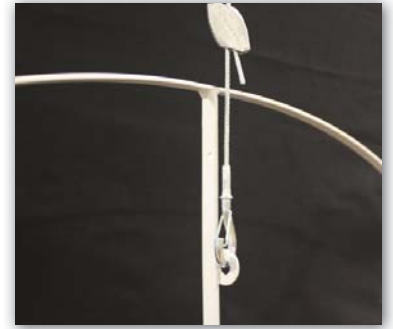
**4 GORE**  
46° to 59°



**5 GORE**  
60° to 90°



3.
  - a. Secure the Direct Hang Cable Drops. Reference the Project Specific Drawings for the locations of the Cable Drops as identified in Step 2 and hang the corresponding IRs.
  - b. Once the rings have been secured to the building structure by the direct hang cable drops, install the Elbow Spacer Tubes.



IR with Cable Drop attached

4.
  - a. Install the fabric onto the elbow frame in similar fashion to installing fabric onto a tensioned section in step E.
  - b. At the ends of the elbow, the Direct Hang Cable Drop should be inserted into the grommet located at the 12:00 position.
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.



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



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

#### **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 Jumbo Series, contact us.

**866-382-8769 or 563-588-5300**

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