



GrowSpan™ Round Premium Extra Tall High Tunnel Buildings



Photo may show a different but similar model.

©2021 GrowSpan™
All Rights Reserved. Reproduction
is prohibited without permission.



WARNING: Cancer and Reproductive Toxicity - P65Warnings.ca.gov

STK#	DIMENSIONS
PB01750R4	42' W x 15' H x 48' L

Revision date: 11.29.21

GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS



READ THIS DOCUMENT BEFORE YOU BEGIN.

Thank you for purchasing this Growspan™ high tunnel. When properly assembled and maintained, this product will provide years of reliable service. These instructions include helpful hints and important information needed to safely assemble and properly maintain the high tunnel. Please read these instructions **before** you begin.

If you have any questions during the assembly, contact Customer Service for assistance.

SAFETY PRECAUTIONS

- Wear eye protection.
- Wear head protection.
- Wear gloves when handling metal tubes.
- Use a portable GFCI (Ground Fault Circuit Interrupter) when working with power tools and cords.
- Do not climb on the high tunnel or framing during or after construction.
- Do not occupy the high tunnel during high winds, tornadoes, or hurricanes.
- Provide adequate ventilation if the structure is enclosed.
- Do not store hazardous materials in the high tunnel.
- Provide proper ingress and egress to prevent entrapment.

ANCHORING INSTRUCTIONS

Prior to assembling this high tunnel, please read the **MUST READ** document included with the shipment.

⚠️ WARNING: The anchor assembly is an integral part of the high tunnel construction. Improper anchoring may cause high tunnel instability and failure of the structure. Failing to anchor the high tunnel properly *will void the manufacturer's warranty* and may cause serious injury and damage.

LOCATION

Choosing the proper location is an important step before you begin to assemble the structure.

The following suggestions and precautions will help you determine whether your selected location is the best location.

- Never erect the structure under power lines.
- Identify whether underground cables and pipes are present *before* preparing the site or anchoring the structure.
- Location should be away from structures that could cause snow to drift on or around the building.
- Do not position the high tunnel where large loads such as snow and ice, large tree branches, or other overhead obstacles could fall.

SITE

After choosing a location, proper preparation of the site is essential. Follow the information below.

- *A level site is required.* The site must be level to properly and safely erect and anchor the structure.
- For sites that are not concrete or gravel, placing wood blocks or other suitable supports under each rafter leg helps prevent the pipes from sinking or working into the site.
- Drainage: Water draining off the structure and from areas surrounding the site should drain away from the site to prevent damage to the site, the structure, and contents of the structure.

⚠️ WARNING: The individuals assembling this structure are responsible for designing and furnishing all temporary bracing, shoring and support needed during the assembly process. For safety reasons, those who are not familiar with recognized construction methods and techniques must seek the help of a qualified contractor.

ASSEMBLY PROCEDURE

Following the instructions as presented will help ensure the proper assembly of your high tunnel. Failing to follow these steps may result in an improperly assembled and anchored high tunnel and will void all warranty and protection the owner is entitled. The steps outlining the assembly process are as follows:

1. Verify that all parts are included in the shipment. Notify Customer Service for questions or concerns.
2. Read these instructions, the Must Read document, and all additional documentation included with the shipment **before** you begin assembling the high tunnel.
3. Gather the tools, bracing, ladders (and lifts), and assistance needed to assemble the high tunnel.
4. Check the weather **before** you install the roof cover and any panels (if equipped). Do not install covers or panels on a windy or stormy day.
5. Re-evaluate the location and site based on the information and precautions presented in the documentation included with the shipment.
6. Prepare the site (if applicable).
7. Assemble the frame components in the order they are presented in these instructions.
8. Assemble the frame including the struts (if equipped).
9. Consult the MUST READ document and properly anchor the assembled frame.
10. Install, tighten, and secure the end panel and main cover (if equipped). This applies to fabric covers that stretch over the frame assembly. Your shelter may include roof panels or side panels or both.
11. Read the Care and Maintenance information at the end of these instructions.
12. Complete and return all warranty information as instructed.

REQUIRED TOOLS

The following list identifies the main tools needed to assemble the shelter. Additional tools and supports may be needed depending on the structure, location, and application.

- Tape measure or measuring device; fine point marker to mark the location on tubing.
- Variable speed drill and driver (cordless with extra batteries works best)
- Wrench, ratchet and socket (recommended)
- Scissors and metal file.
- Ropes long enough to reach over the frame.
- Hammers and gloves
- Duct tape (supplied by customer)
- Box cutter or utility knife
- Ladders, work platforms, and other machinery for lifting designed to work safely at the height of the frame

UNPACK AND IDENTIFY PARTS

The following steps will ensure that you have all the necessary parts before you begin to assemble the shelter frame.

1. Unpack the contents of the shipment and place where you can easily inventory the parts. Refer to the Bill of Materials/Spec Sheets.
2. Verify that all parts listed on the Bill of Materials/Spec Sheets are present. If anything is missing or you have questions, consult the Pictorial Parts Guide and all diagrams for clarification, or contact Customer Service.

NOTE: At this time, you do not need to open the plastic bags containing smaller parts such as fasteners or washers (if equipped).

GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

CUSTOMER-SUPPLIED MATERIALS — Baseboard, Ribbon Boards, & Wood Screws

Baseboards and ribbon boards are optional, but recommended, for buildings with roll-up sides. Materials for baseboards and ribbon boards are *not included* and are *supplied by customer*.

ATTENTION: Fasteners to secure boards to frame are included. *Recommended* lumber dimensions shown; wider boards can be used if desired.

BASEBOARDS

The baseboard, when installed properly, helps prevent the ground posts from sinking into the ground when anchored. Depending on the building, it also provides a surface to attach struts or other building components.

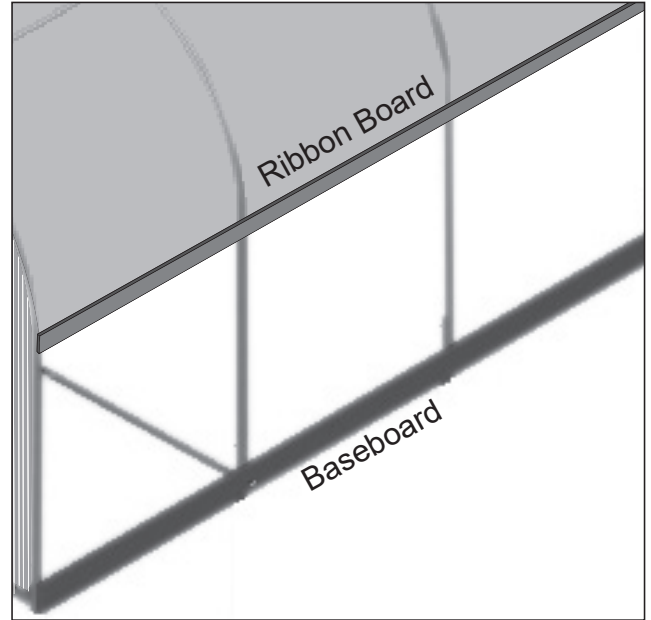
ATTENTION: Baseboards run the frame length along both sides at ground level. Installation of customer-supplied baseboard is described later in this guide.

RIBBON BOARDS

A ribbon board typically runs a few feet above the ground along the sidewall. It serves as a mounting surface for the u-channel that secures the main cover and roll-up portion of the main cover. CUSTOMER SUPPLIES FASTENERS TO SECURE RIBBON BOARD TO RAFTERS. QUARTER (1/4") CARRIAGE BOLTS ARE RECOMMENDED. LENGTH DETERMINED BY BOARD THICKNESS.

MATERIAL DIMENSIONS

- Baseboards: 2" x 6" (minimum)
- Ribbon Boards: 2" x 4" or 2" x 6" (recommended)



Actual frame may differ from example shown.

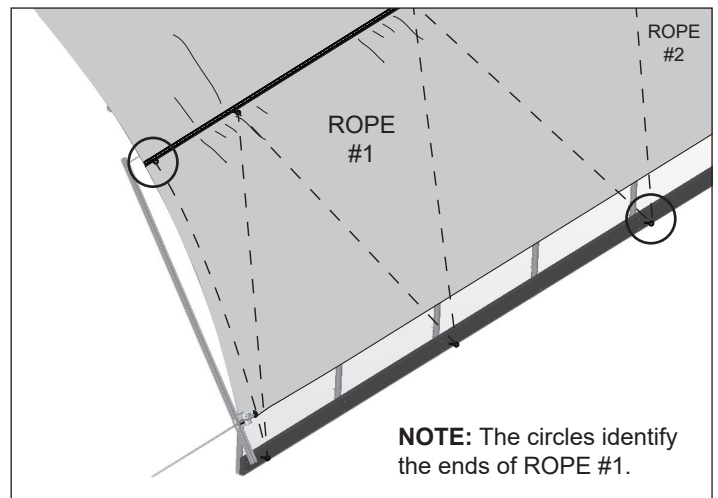
IMPORTANT: IF RIBBON BOARDS ARE USED, PURCHASE WOOD SCREWS TO ATTACH THE U-CHANNEL TO THE INSTALLED RIBBON BOARD.

TEK SCREWS ARE NOT WOOD FASTENERS. NEVER USE TEK SCREWS TO SECURE ANY COMPONENT TO WOOD. THEY WILL NOT HOLD.

ANTI-BILLOW ROPE INSTALLATION

TO PREVENT DAMAGE AND POSSIBLE INJURY, INSTALL THE ANTI-BILLOW ROPES IN SHORT LENGTHS ALONG EACH SIDE OF THE FRAME.

DO NOT INSTALL AS A SINGLE LENGTH TIED AT EACH END OF THE BUILDING. DOING SO WILL RESULT IN A LOOSE SIDE PANEL IF THE SINGLE ROPE BREAKS DURING STRONG WINDS.



NOTE: The circles identify the ends of ROPE #1.



greenhouse structures

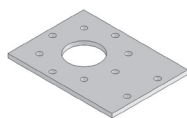
The following graphics and photos will help you identify the different parts and show you how they are used. (Some parts are not shown.)



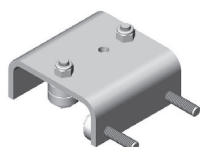
FA4482B
Tek Screw



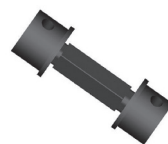
CC6212 &
CC6214
Fabric Clips



103544
Mounting Plate



102569
Bearing



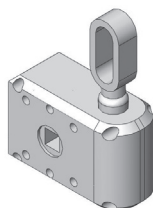
102717
Gearbox Drive



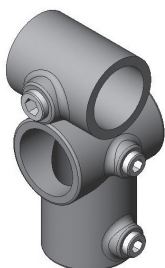
QH1404
Band Clamp



102547
Cross Connector



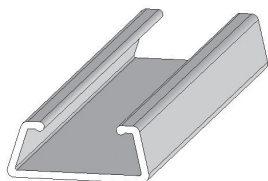
103496
Gear Box



10016108
Combo Tee
Coupler



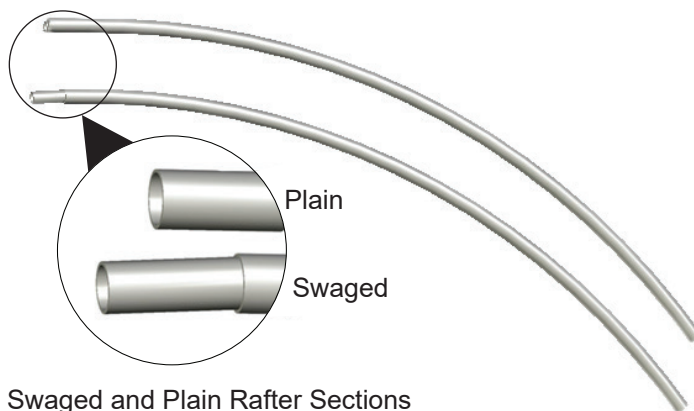
102570
Aluminum Channel



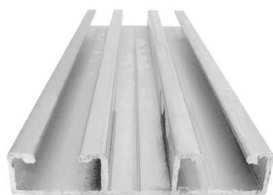
102197
Poly Latch U-Channel



102676
Ground Post



Swaged and Plain Rafter Sections
(some pieces are not shown)



104211
Double U-Channel



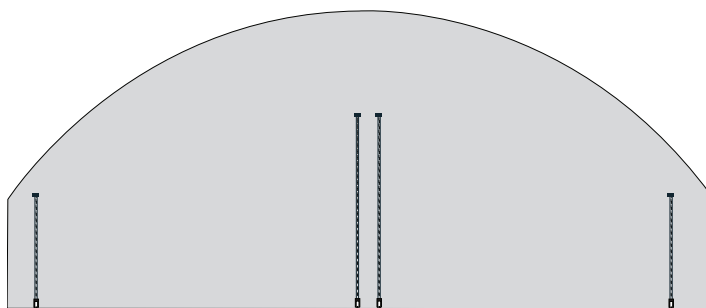
102857
End Clamp



102198
U-Channel Spring



117063 EZ-Snap
Rope Hooks



Zippered End Panel



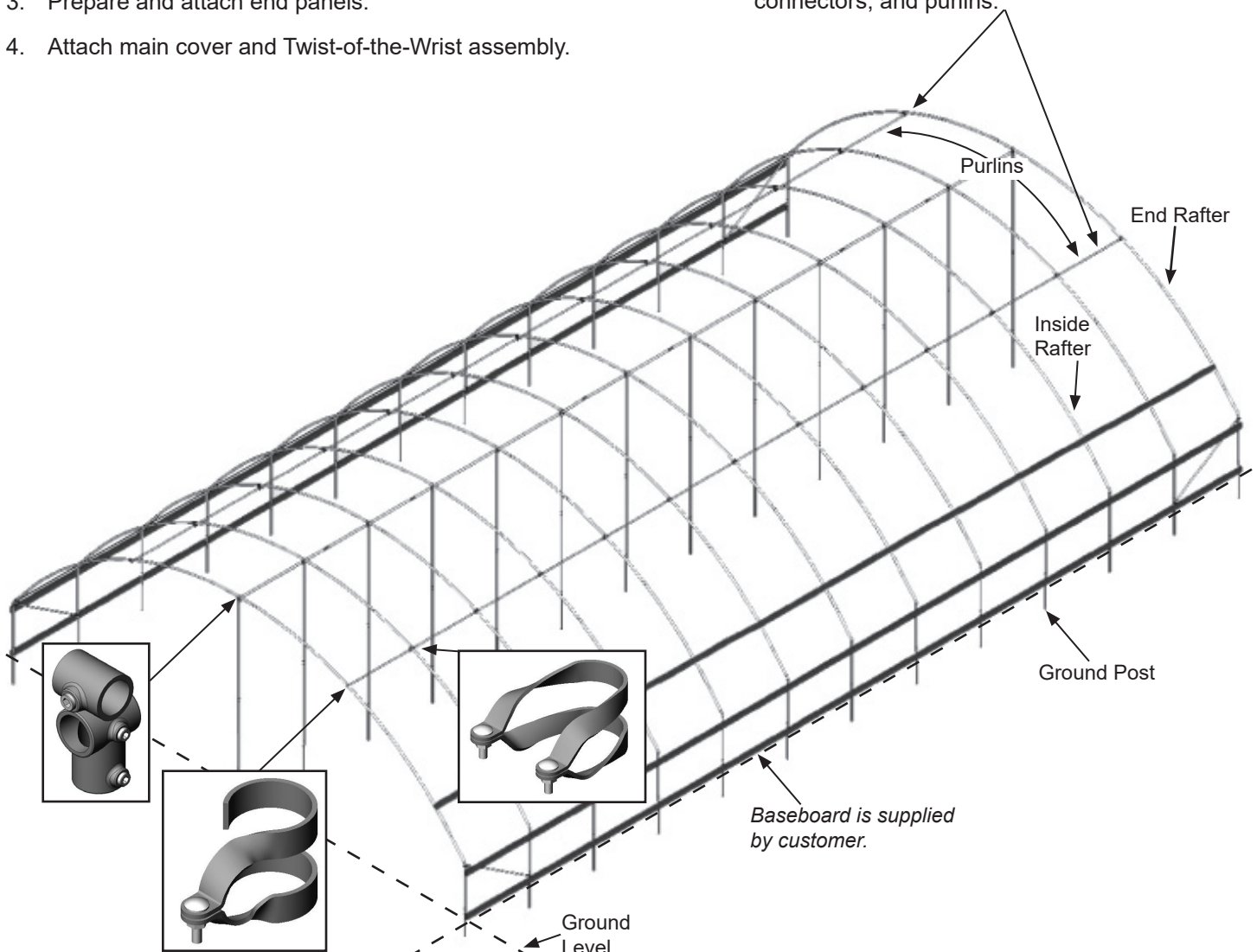
Round Premium Extra Tall High Tunnel

OVERVIEW

This section describes assembling your high tunnel. For additional details, see section Assembling the High Tunnel Components. See illustration below to identify main parts of high tunnel.

1. Locate the required parts for each assembly procedure.
2. Assemble the rafters and frame.
3. Prepare and attach end panels.
4. Attach main cover and Twist-of-the-Wrist assembly.

ATTENTION: Position purlins evenly during the frame assembly. Use the rafter pipe joints as guides when installing the end clamps, cross connectors, and purlins.



LAY OUT THE BUILDING SITE

After the site is prepared, lay out the building site.

Taking these steps **before** assembling the shelter saves time and ensures that the structure is positioned as desired.

Ground posts must be driven to the proper depth. Width of the shelter is measured from the center of one ground post to the center of the remaining ground post.

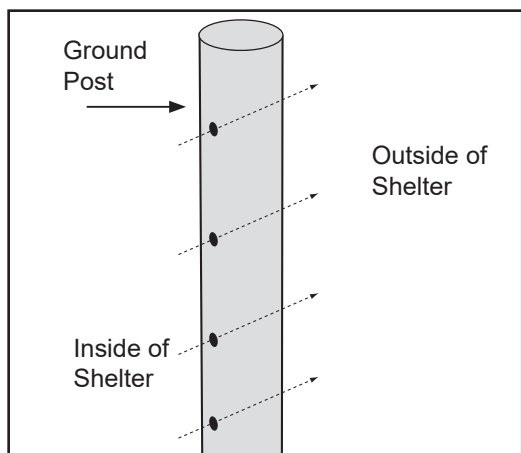
SQUARE THE SITE

Gather the parts:

- Ground posts
- 5/16" x 2-1/2" machine bolts
- 5/16" nuts

1. Identify a corner where a ground post will be positioned and drive the first ground post into the ground.

NOTE: Insert the ground post driver into the top of the ground post to protect the post and drive the post into the ground. *The top of the post will be one (1) foot above the finished grade when properly driven.*



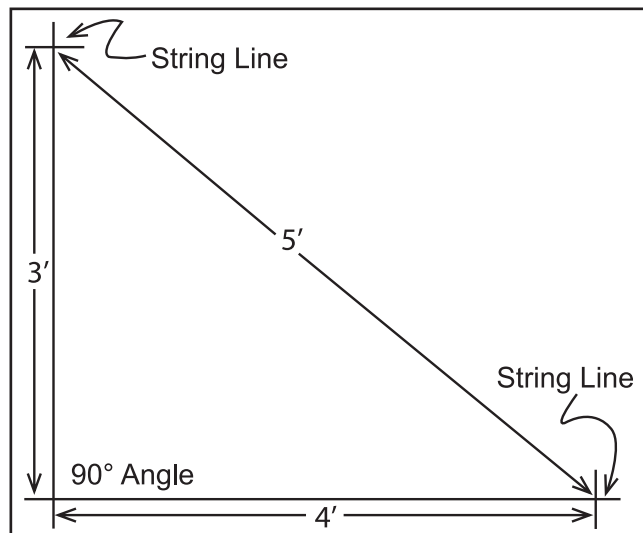
ATTENTION: Position the pre-drilled holes facing to the inside/outside of the shelter so they can be aligned with the bolt holes in the rafter legs.

To align the bolt holes in the ground posts with those in the rafter *after driving the ground posts*, insert a tapered rod or pry bar into a ground post bolt hole and turn the post using the rod or pry bar.

2. After the first corner ground post is in place, string a line the width of the building (center-to-center) and drive the second ground post into the ground just enough to hold it in place.
3. Use a transit or line level to drive the second corner post to the same depth as the first ground post.

4. String a line at least as long as the building from the first stake at 90°.

NOTE: A transit can be used to ensure an accurate 90° angle, or the 3-4-5 rule can be used. Refer to diagram. Using multiples of 3-4-5 such as 6-8-10 or 12-16-20 helps to maintain an accurate 90° angle.



5. After squaring the position of the building, measure the length and drive the next corner ground post.
6. Repeat the same step for the last corner post.

NOTE: The distance measured diagonally between corner posts must be equal for the building to be square.

7. Check all dimensions (and adjust if needed) before driving the remaining posts to the required height.
8. After all corner posts are accurately installed, tie a string line between the tops of the corner ground posts on the same side of the shelter. The string is used to identify the tops of all remaining ground posts. The string must remain tight and level.
9. Use a tape measure to mark the 48" on-center locations of the remaining ground posts.
10. Drive the remaining ground posts into the ground at the required 48" on-center width and the height identified by the string.

NOTE: Verify that the holes in the ground posts are in the proper position and that each post is plumb and driven to the correct depth.

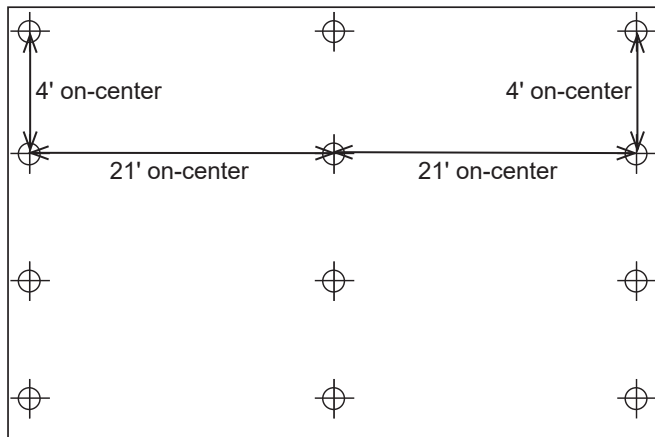
GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

LAY OUT THE BUILDING SITE (CONTINUED)

11. Using the remaining ground posts, drive the center ground posts in the same manner as the side ground posts. Verify on-center dimensions.

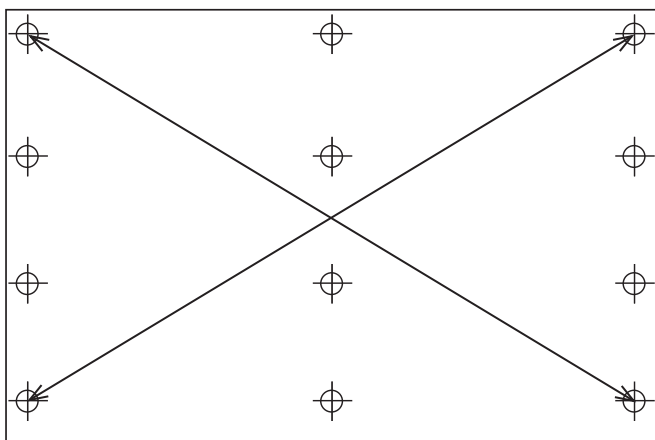


Space below is reserved for customer notes.



NOTE: Ground post layout shown above may differ from your shelter. Diagram used for illustration purposes only.

12. Verify that the on-center width of the frame is uniform between the corner ground posts.



NOTE: The frame is square when the two diagonal measurements are the same.

After the rafters have been assembled, the rafter ends are secured to the ground post using the upper hole.

The second and third holes on the ground post are used for the baseboard along the building base.

13. Continue with the **Rafter Assembly** steps that follow.

ASSEMBLING THE ROUND STYLE STORAGE MASTER FRAME COMPONENTS

NOTE: Assistance is required to assemble the frame.

INTERIOR RAFTER ASSEMBLY

This section is an overview of the process for assembling your interior rafters. The illustration below identifies main parts of the assembly.

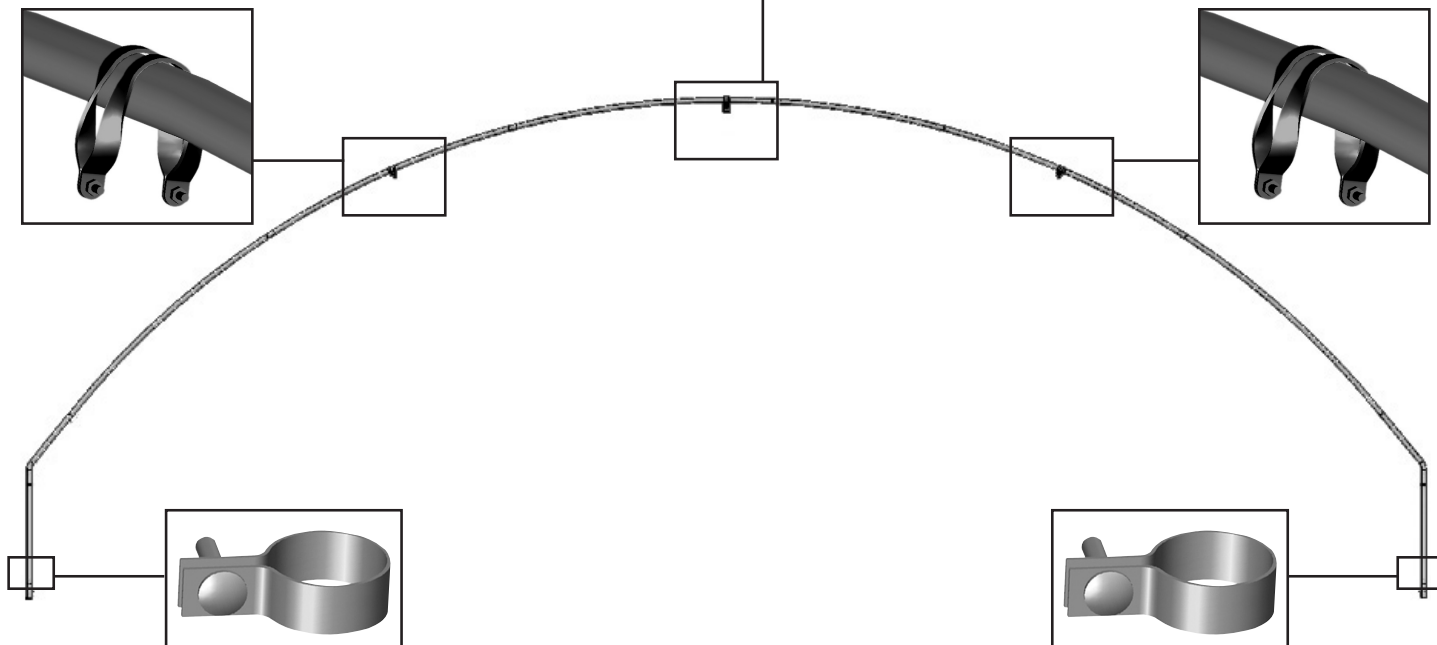
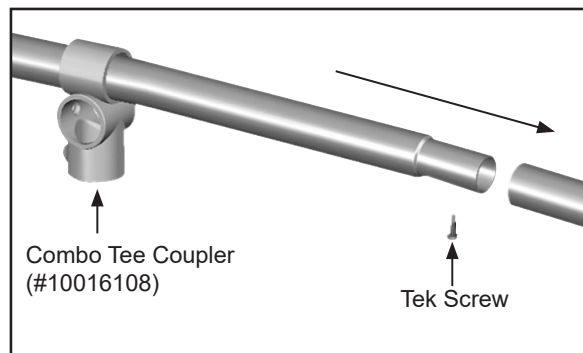
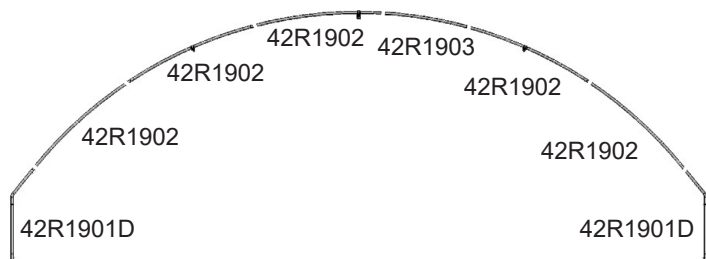
1. Locate the required cross connectors, couplers, band clamps and pipes: six (6) curved rafter pipes, and two (2) leg pipes with drilled ends.
2. Assemble eleven (11) interior rafter assemblies as shown below.

NOTE: Band clamps (#QH1404) are only attached to two (2) interior rafter assemblies.

Use a piece of duct tape (if desired) to keep each clamp from sliding when the rafter is lifted into position.

3. With the rafter pipes seated at each joint and the rafter positioned on a flat surface, secure each joint with a single self-tapping Tek screw. Position Tek screw approximately 1" from pipe joint.

ATTENTION: Install the screws so they will not touch the cover once it is installed. This is typically on the backside of the rafter, which will be the surface visible from the *inside* of the shelter once the frame is assembled.

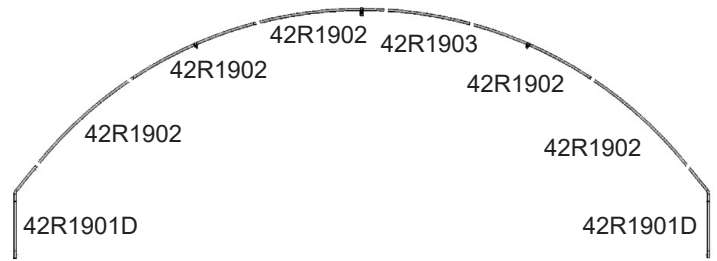


GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

END RAFTER ASSEMBLY

Complete the following steps for the two (2) end rafters only.

1. Select the required couplers, clamps and pipes needed to assemble an end rafter. Arrange these on a flat surface and assemble rafter as shown below.
2. Position all clamps as shown. (Do not secure the clamps to the rafter at this time. These clamps will be repositioned during the frame assembly when the purlins are added.)



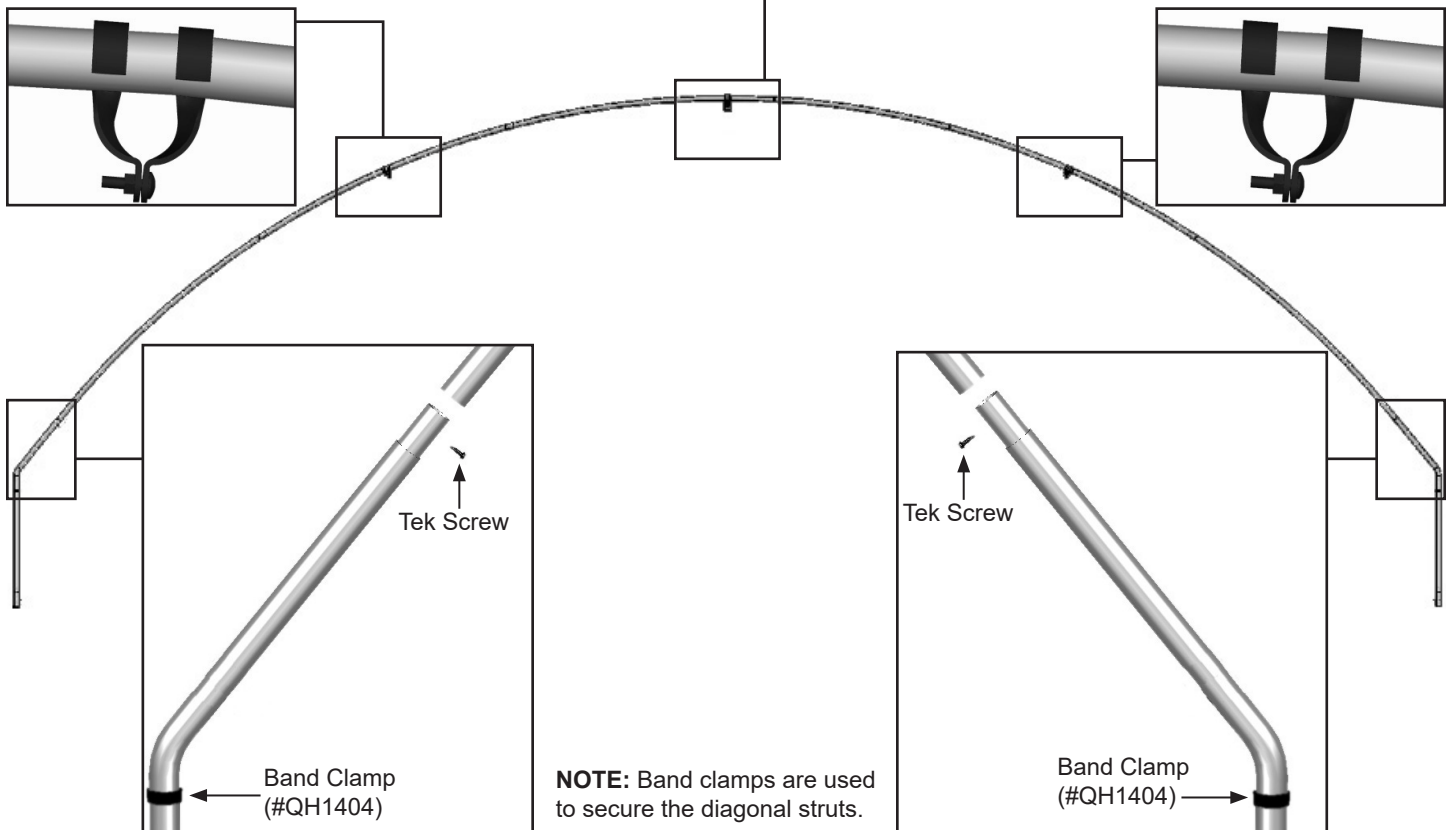
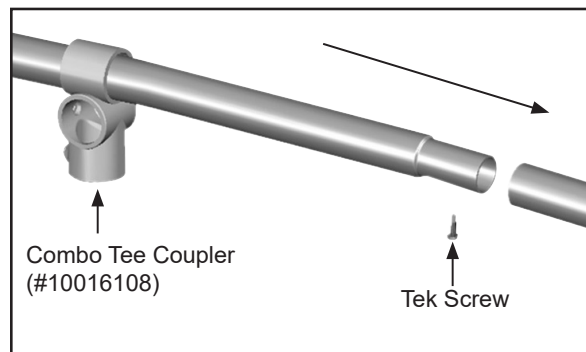
NOTE: Use a piece of duct tape (if desired) to keep each clamp from sliding when the rafter is lifted into position.

View of the end rafter and clamps as shown from the *outside* when the frame is assembled.

3. With the rafter pipes seated at each joint and the rafter positioned on a flat surface, secure each joint with a single self-tapping Tek screw.

ATTENTION: Install the screws so they will not touch the cover once it is installed. This is typically on the backside of the rafter, which will be the surface visible from the *inside* of the high tunnel once the frame is assembled.

4. Repeat the same procedure for the final end rafter.
5. Continue with the **Frame Assembly** instructions that follow.



ASSEMBLE AND PRE-MARK THE PURLINS

Pre-marking the purlins speeds the assembly process and eliminates the need to measure each purlin as it is installed. In addition, these steps ensure that an accurate spacing of the rafter assemblies is achieved.

ATTENTION: Do not assemble the upper purlin (1.90") at this time. Assemble only the two (2) purlins that use 1.315" diameter pipe.

Required Pipe:

- 1.315" x 75" swaged pipe (#131S075)
- 1.315" x 73.5" plain pipe (#131P0735)

NOTE: Purlins are part of the assembled frame and run perpendicular to the rafter assemblies.

The purlins consists of seven (7) 1.315" x 75" (#131S075) swaged pipes and one (1) 1.315" x 73.5" (#131P0735) plain pipe.

1. Select the required pipe sections for one purlin and connect these by inserting the swaged ends of the pipes into the plain ends until the entire purlin is assembled.

NOTE: Assemble the purlins in a location that is accessible during the assembly of the frame, but will not interfere with the process of lifting and setting the rafters.

2. Verify that each pipe joint is properly seated.

NOTE: These pipes are taken apart during the assembly procedure. Do not fasten them together at this time.

3. For the 48" rafter spacing, measure 48-3/4" from the short plain pipe, used to complete each purlin run, of the assembled purlin, and mark the distance on the pipe.

NOTE: This first measurement is three-quarters (3/4) of an inch longer than the on-center rafter spacing to account for the length of purlin pipe that extends through the end purlin clamp of the first end rafter.

4. From the location marked in the previous step, measure forty-eight inches (48") and make another mark.
5. Continue to mark the purlin in 48" intervals until all locations are marked. These marks help to maintain the 48" on-center rafter spacing of the shelter during assembly.

6. Repeat this procedure until all assembled purlins are marked.
7. After assembling all rafters and pre-marking the purlins, continue with assembling the frame.

FRAME ASSEMBLY

Gather the parts

- All rafter assemblies
- 1.315" pre-marked purlins
- Pipe 1.90" x 99" swaged (#190S099)
- Pipe 1.90" x 96" plain (#190P096)
- Stuts - 5' (#QH1304)
- 5/16" x 2-1/2" machine bolts and 5/16" nuts
- Lifts, ladders, and assistants

Frame Assembly Procedure:

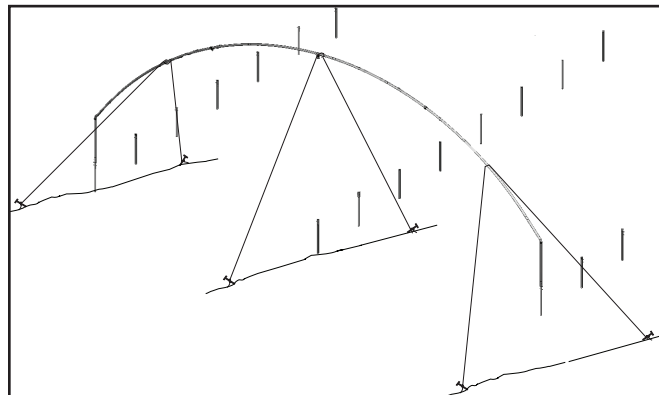
NOTE: The top purlin consists of five (5) 1.90" x 99" (#190S099) swaged pipes and one (1) 1.90" x 96" (#190P096) plain pipe.

After all rafters are constructed and placed in an orderly fashion for frame assembly, proceed with standing the first end rafter.

Forklifts and personnel booms are recommended for lifting and setting the rafters. Consult a construction professional if you are not familiar with construction techniques and erecting similar structures.

ATTENTION: Use the proper lifts. Rafter assemblies are heavy and awkward to handle.

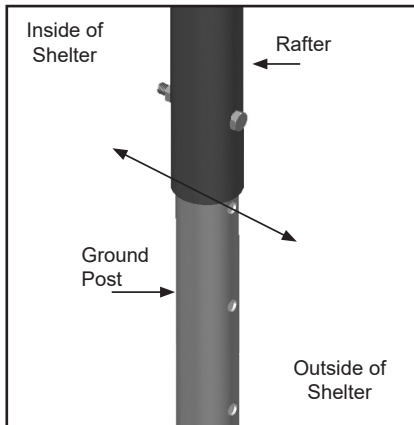
1. Using the proper lifts and with assistance, carefully stand the first end rafter assembly and place the leg pipes over the first set of ground posts.
2. Brace the first rafter using rope, cable, or some other form of temporary bracing to hold the rafter in position. Use a level (or other leveling device) to plumb the end rafter.



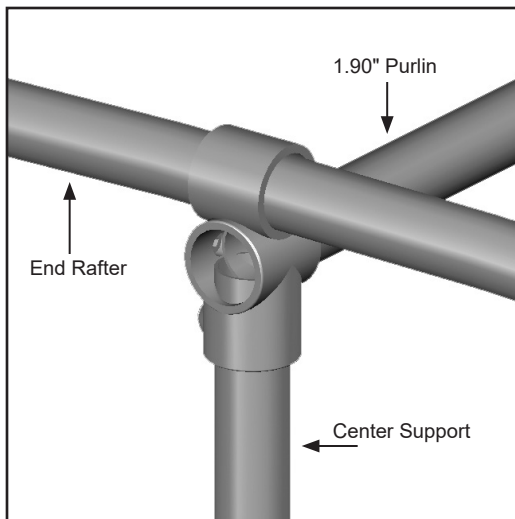
GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

FRAME ASSEMBLY (CONTINUED)

- Secure the leg pipes to the *ground posts top hole* using 5/16" x 2-1/2" machine bolts and nuts as shown below.



- Assemble the center support by inserting the swaged end of one 99" pipe into the non-drilled end of the 82" pipe and secure the joint with a Tek screw.
- Once the support is assembled, place the drilled end over the first center ground post and slide the upper end into the combo socket fitting at the top of the end rafter.

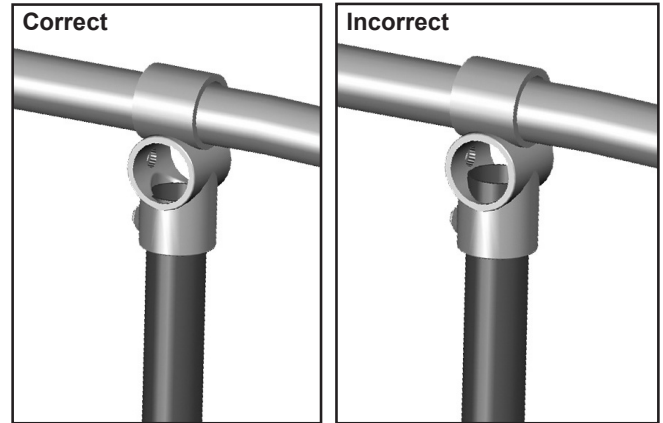


NOTE: It may be necessary to align the socket fitting with the center support during these steps.

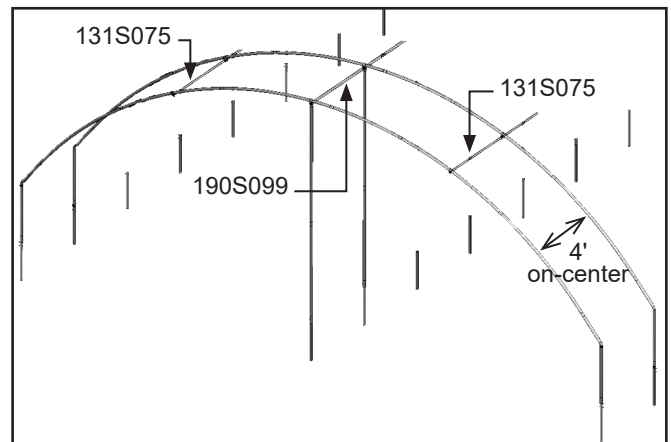
- With the upper end of the support in the socket fitting, align the drilled holes in the center support with the holes in the ground post and secure using the 5/16" bolts (FAG336B) and nuts (FALB02B).
- Once the support is anchored to the ground post, secure it to the socket fitting at the top of the rafter using an Allen wrench and the set screw.

DO NOT SECURE THE SOCKET FITTING TO THE RAFTER AT THIS TIME.

ATTENTION: Do not allow the center support pipe to extend into the opening that remains for the upper purlin.



- Place the first interior rafter assembly (with QH1404 band clamps) into a second set of ground posts. Secure the leg pipes to the ground posts as previously described.
- Assemble another center support and secure the support to the first interior rafter.
- Position two (2) cross connectors near the top of the interior rafter assembly.
- Take two (2) swaged 75" purlin sections and insert each through each end clamp on the end rafter and through the cross connectors on the interior (or second) rafter.
- Insert one (1) swaged 99" purlin into the coupler at the top of the end rafter and through the coupler on the second rafter as shown.



- Verify that both rafters are plumb and properly spaced (4' on center).

FRAME ASSEMBLY (CONTINUED)

14. Tighten the cross connectors and end clamps on the rafters to secure the first purlin pipes.
15. Continued adding rafters, center supports and purlins until the frame is assembled.
16. Finish each upper purlin run using the plain, shorter 1.315" pipe (#131P0735) and the center purlin with the shorter 1.90" plain pipe (#190P096).

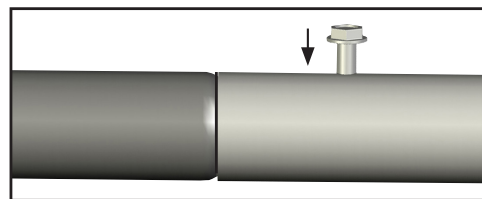
NOTE: Use the last interior rafter with band clamps for the second to last rafter. The band clamps are used to secure the diagonal struts.

If the last end rafter is plumb and the purlin runs extends beyond the end of the rafter, cut the last section of purlin pipes to the required length.

Typically purlin pipes do not require cutting. Verify that you have the correct plain pipes before you decide to cut any pipe to complete the purlin runs.

⚠ CAUTION: To prevent cover damage, the ends of the purlins should not extend past the end clamp. The bolt side of the end clamps must go toward the "inside" of the shelter (the same side as the purlin) as shown below.

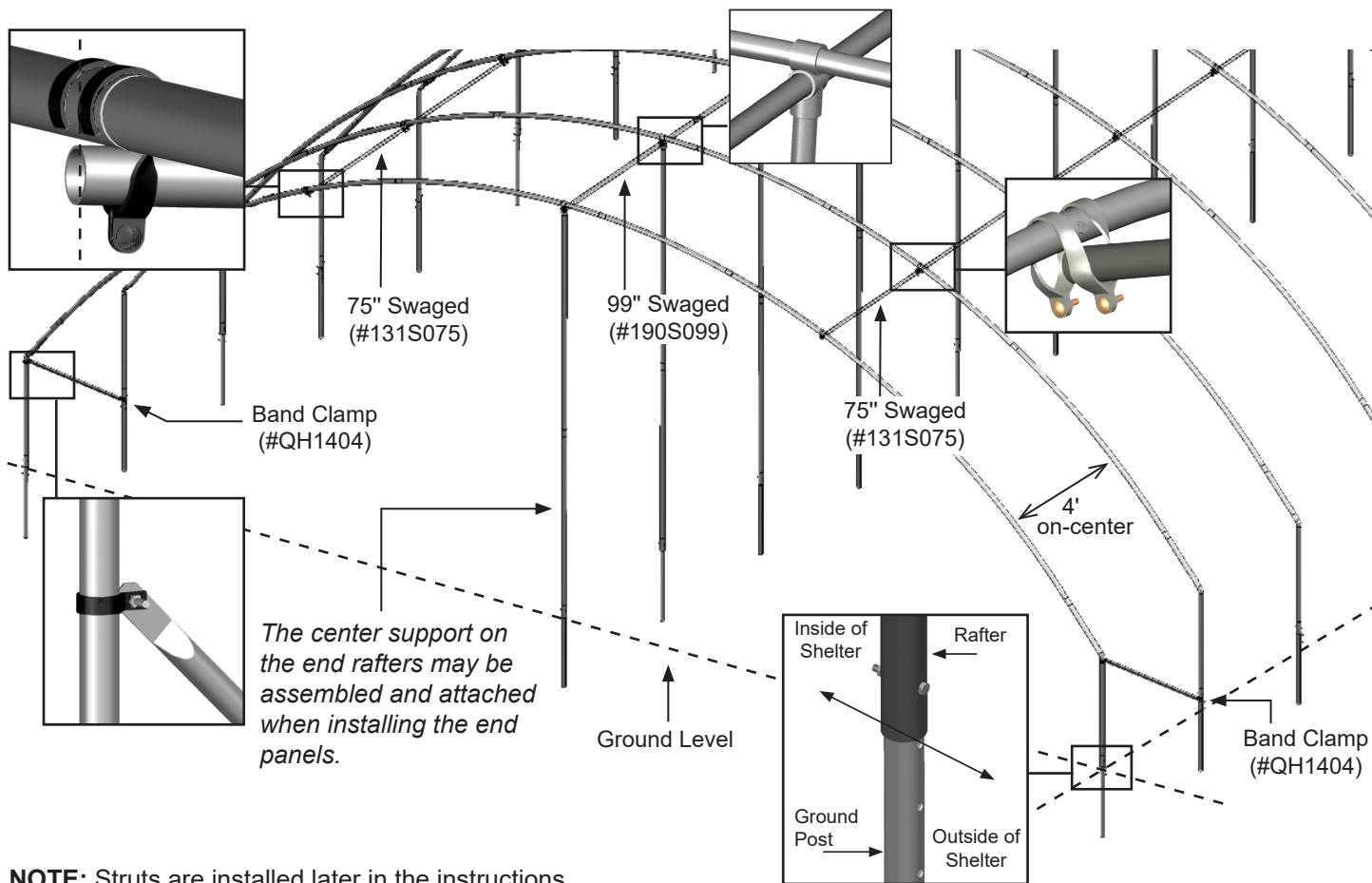
17. Once all rafters are set and all purlins are in place and secured, return to each pipe splice of each purlin run and install a Tek screw through the pipes to secure the joints.



18. With all rafters and center supports in place, take one end panel and spread it out on a clean, flat surface with the center pocket facing up.

NOTE: Position the panel at the end of the frame where you want to install it.

19. Remove the attached center support from the end rafter. Tape over the screw and joint with duct tape to protect the end panel.

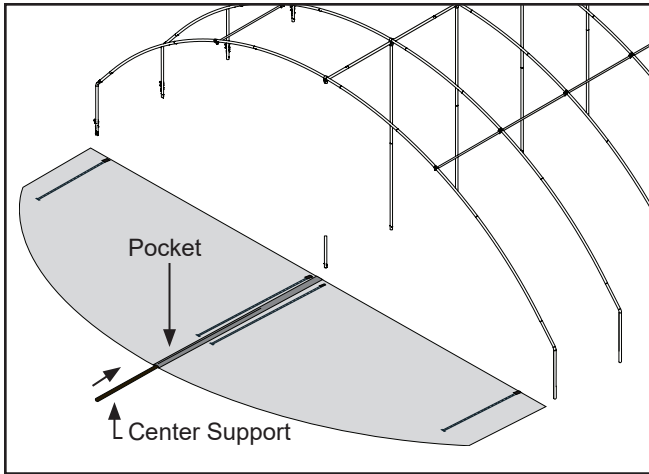


NOTE: Struts are installed later in the instructions.

GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

FRAME ASSEMBLY (CONTINUED)

- Slide the center support into the center pocket of the end panel. Be sure to position the drilled holes in the center support toward the bottom so the support can be reattached to the ground post.



- Lift the end panel with the center support inserted into the pocket and reattach the support to the end center ground post.

ATTENTION: The end panel will hang on the center support until it is pulled up and over the end rafter in a later procedure. **DO NOT** secure the end panel to the end rafter at this time. *The main cover must be installed before the end panels are attached.*

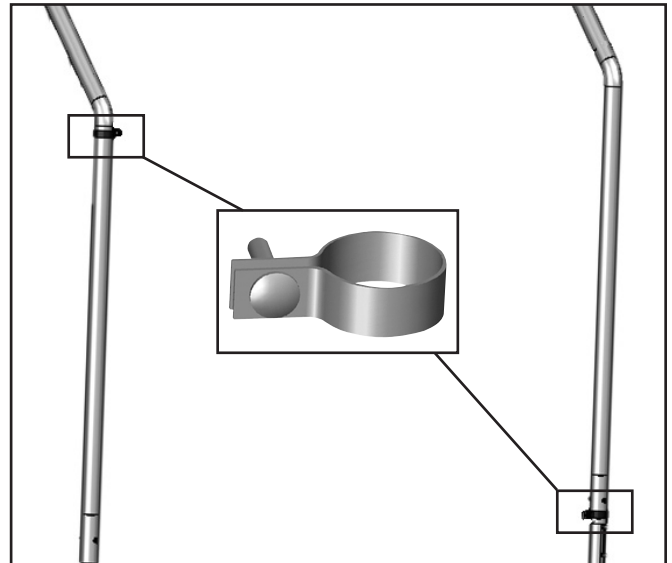
- Repeat the steps 18-21 to install the remaining end panel.

At this point, all center supports should be installed and secured. The two end panels will be hanging from the center support at each end of the frame.

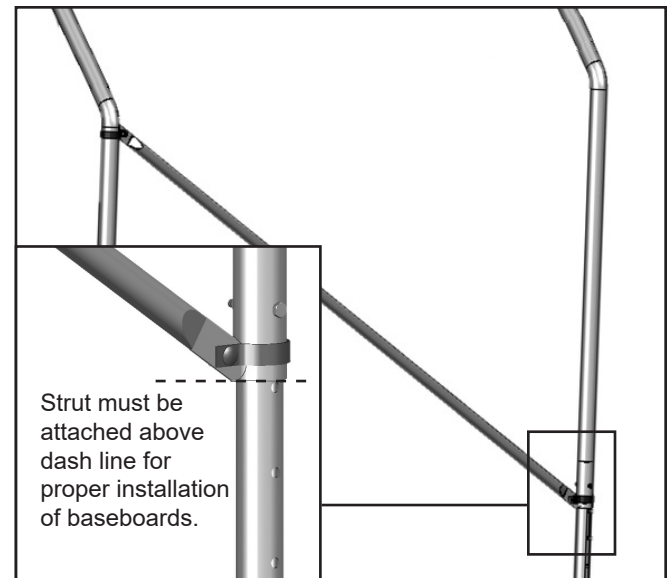
- Continue with installing the struts.

Strut Assembly Procedure

- After the rafter assembly is complete, verify that the band clamps are in the proper location. See diagram below. Add clamps if needed.



- Remove the bolts and attach a strut between the band clamp on the purlin and the band clamp on the end rafter. *The lower band clamp and strut must be attached as shown below.*



NOTE: Verify that the bolt heads are to the outside of the shelter and that the end rafter is plumb before tightening the nuts.

- Install the remaining struts and tighten all band clamp bolts.
- Secure each band clamp to each purlin or rafter with a Tek screw.
- Check each purlin joint and secure using a Tek screw if this has not been done.

BASEBOARD INSTALLATION (RECOMMENDED)

Gather the parts

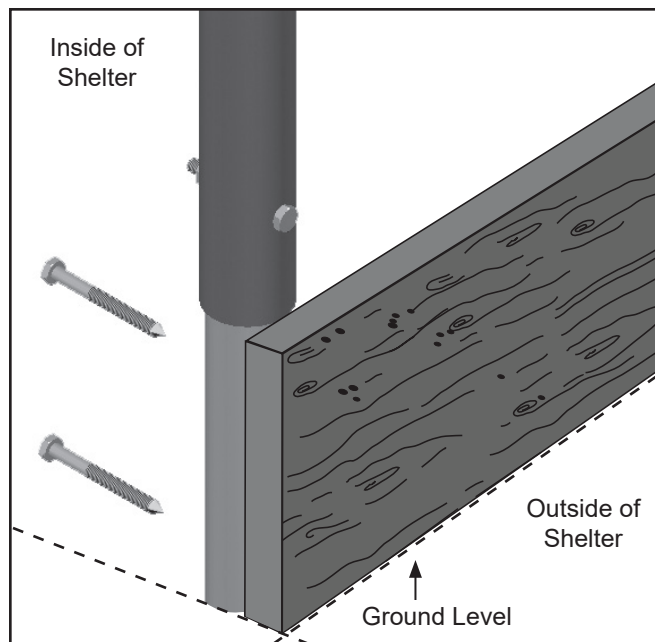
- Treated or recycled plastic lumber (supplied by customer). RECOMMENDED: 2" X 6".
- 5/16" x 3" Lag Bolts (FAJ117B)



Space below is reserved for customer notes.

NOTE: The following procedure describes one way to install the recommended baseboards. The size and type of the baseboard you choose may require the use of alternative steps. When properly installed, baseboards run the length of the frame.

On the outside of the frame, attach the first baseboard to the ground posts using the 5/16" x 3" lag bolts. Insert the lag bolts, from the inside of the shelter, through the ground posts into the baseboards. Continue adding baseboards to complete the first run. Splices are made between posts. Use a short section of baseboard to secure separate baseboards at a splice.



NOTE: The boards should be at ground level or slightly into grade to prevent the shelter from sinking and to create a seal along the bottom. After installing the baseboards, continue with these instructions.

This baseboard is *not included* with the shipment and must be supplied by the customer. Treated or recycled plastic lumber works well for a baseboard.

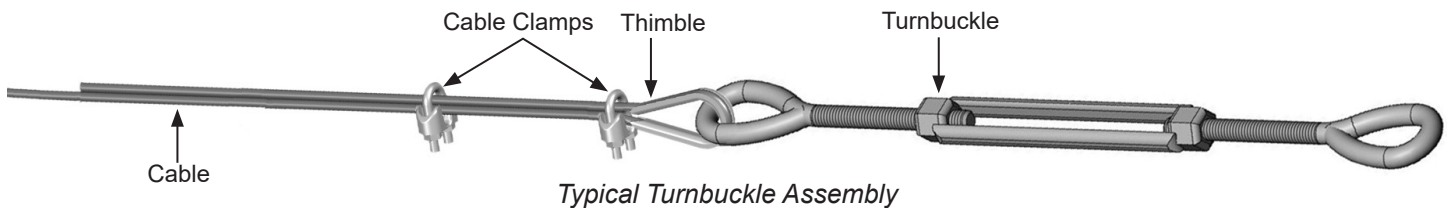
Recommended dimension: 2" x 6".
LENGTH DETERMINED BY CUSTOMER/CONTRACTOR.

GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

CABLE ASSEMBLY

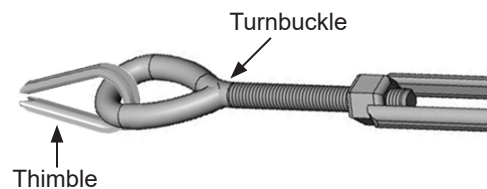
Cable assemblies provide diagonal bracing for the building. Each cable assembly includes the following items:

- Cable
- Turnbuckle (1)
- Cable thimbles (2)
- Cable clamps (4)



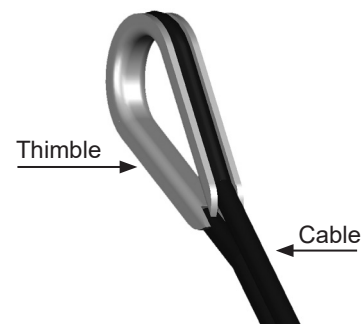
Cable Assembly Procedure

1. Cut the cable to the proper length for each assembly. More than an adequate amount has been sent for the cabling application. Use diagram on the following page for location of the cable and measure the length needed.
2. Insert one cable thimble through one end of the turnbuckle as shown in the first figure to the right.
3. Place the cable thimble approximately twelve inches (12") from the end of a cable section and wrap the cable around the thimble as shown in the second figure to the right.
4. Grasp both sections of the cable near the thimble and position one cable clamp one inch away from the thimble as shown above.



NOTE: The clamp must be positioned on the cable with its U-bolt portion over the short section of the cable as shown in the diagram above.

5. With the saddle portion of the cable clamp in position, thread the nuts onto the U-bolt section of the clamp and tighten slightly to maintain the position of the clamp on the cable.
6. Install a second cable clamp on the cable six to eight (6"-8") inches from the first clamp.
7. Tighten both clamps.
8. Open the turnbuckle to its longest position.
9. Repeat the above procedure for the remaining cable assembly.



TIGHTEN THE CABLING

1. After attaching both cable assemblies to the building frame, return to the first turnbuckle and tighten the cables.

NOTE: Tighten the cables in each section evenly so that the frame remains plumb.

2. After the first cable assembly is tightened, move to the other assembly and repeat the tightening steps.
3. Continue with finishing rough edges and anchor the frame.



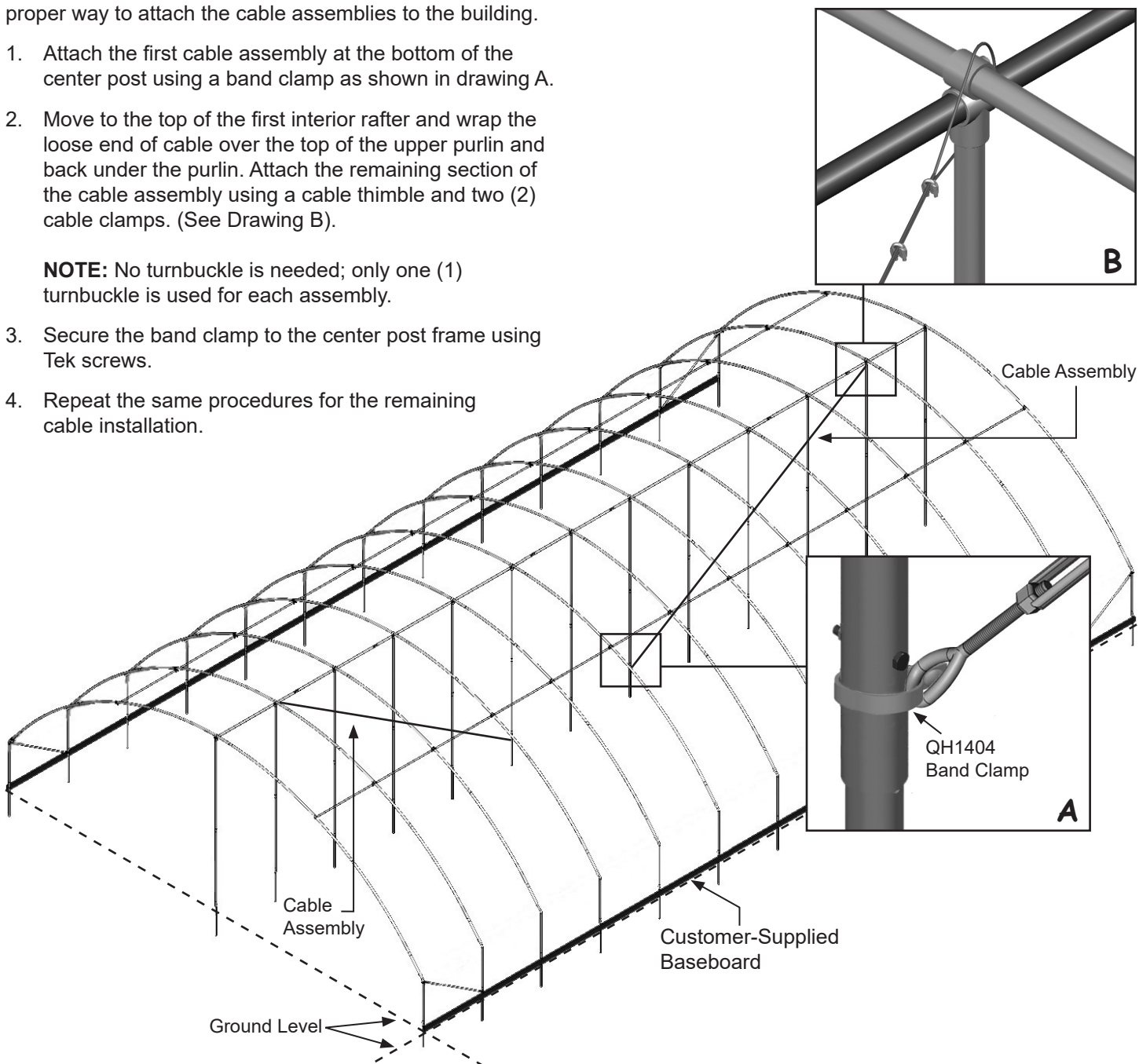
CABLE PLACEMENT

The diagram and inserts below identify the placement and proper way to attach the cable assemblies to the building.

1. Attach the first cable assembly at the bottom of the center post using a band clamp as shown in drawing A.
2. Move to the top of the first interior rafter and wrap the loose end of cable over the top of the upper purlin and back under the purlin. Attach the remaining section of the cable assembly using a cable thimble and two (2) cable clamps. (See Drawing B).

NOTE: No turnbuckle is needed; only one (1) turnbuckle is used for each assembly.

3. Secure the band clamp to the center post frame using Tek screws.
4. Repeat the same procedures for the remaining cable installation.

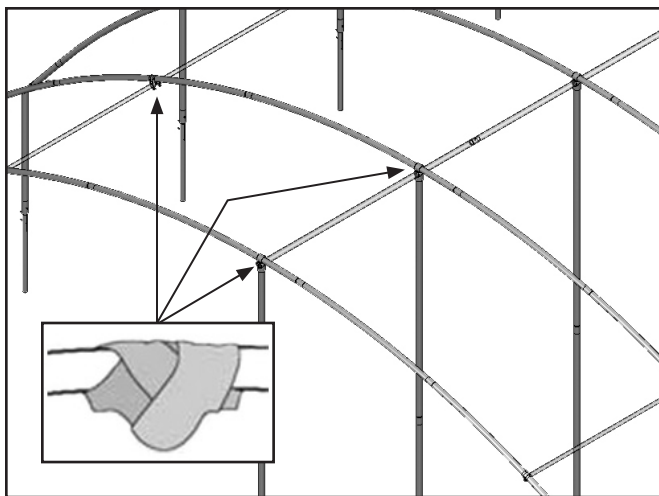


GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

FINISH ROUGH EDGES

Gather the parts

- Duct tape (supplied by customer)
 - Metal file
1. Check for any sharp edges on the frame and file them smooth so they will not cut the cover.
 2. Apply two layers of heavy duct tape on all pipe connections and clamps that may contact the cover.



ANCHOR THE ASSEMBLED FRAME

At this point, anchor the high tunnel frame. Consult the MUST READ document for anchoring information and suggestions. Please call customer service at 1-800-245-9881 for additional anchoring information.

CAUTION: The anchor assembly is an integral part of the high tunnel construction. Improper anchoring may cause instability and failure of the structure to perform as designed. Failing to anchor the shelter properly will void the manufacturer's warranty and may cause serious injury and damage.

ATTACH END PANELS

CAUTION: To prevent damage, do not install end panels on a windy day.

Gather the parts:

- Fabric clips #CC6214 (divide quantity in half.)
- Measuring tape
- Scissors

Assembly Procedure

1. With the proper lift (or ladders) positioned inside the frame, pull the end panel up and over the top of the end rafter.
2. Secure the end panel to the backside of the end rafter at the top, center position using a fabric clip and Tek screw.

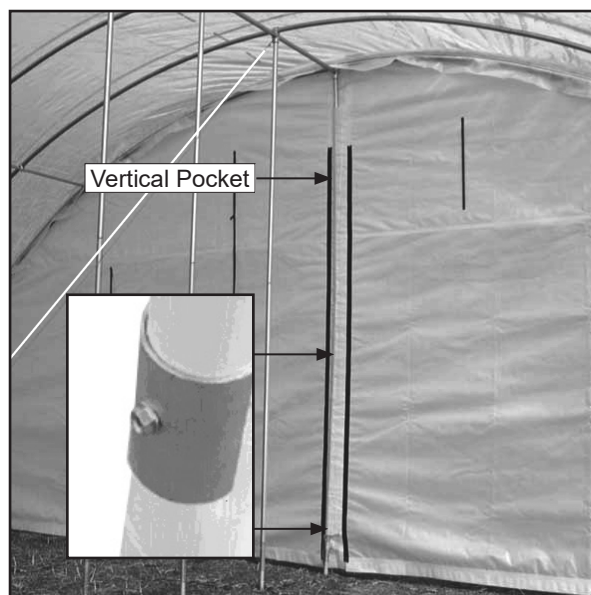
NOTE: It may be necessary to trim or cut the vertical pocket material to allow the panel to be pulled up and into position.

DO NOT CUT THROUGH THE OUTER PANEL MATERIAL IF YOU TRIM. CUT ONLY THE POCKET OF THE END PANEL.

3. Verify that the end panel is positioned as desired and centered in the end wall with its lower end touching the ground evenly between the end rafter legs.

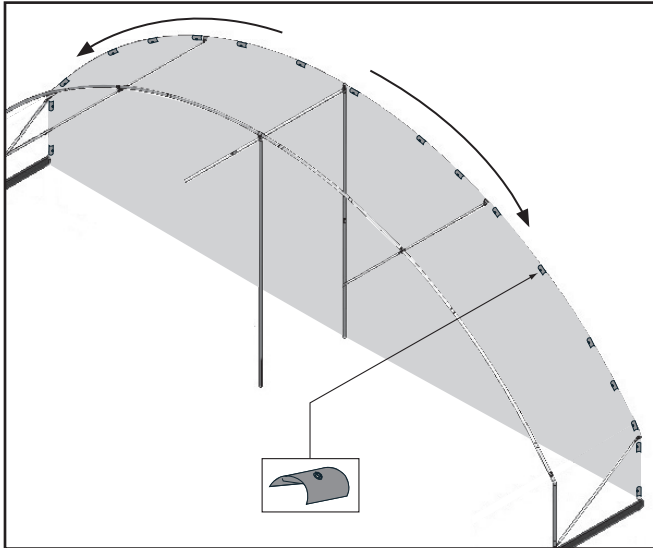
NOTE: The amount of end panel at ground level depends on how much you pull up and over the top of the end rafter. Adjust before securing to the rafter.

4. Using two (2) of the fabric clips, secure the end panel to the center support in the vertical pocket. This will help keep the panel in the position determined in the previous step.



ATTACH END PANELS (CONTINUED)

- At the top center position, secure the panel to the backside of the end rafter pipe using a fabric clip and a Tek screw.
- Moving outward in both directions, continue attaching fabric clips to secure the end panel to the rafter. Evenly space the fabric clips and work toward the ground.



ATTENTION: For each end panel, evenly space the fabric clips as you work down from the top of the rafter. Fabric clips are installed on the backside of the rafter to prevent damage to the main cover when it is installed.

- Verify that the end panel is in the desired position and repeat the steps to secure the other end panel to the frame using the remaining half of the fabric clips.

NOTE: The end panels may be shipped as untrimmed rectangular pieces. If so, use scissors to trim the excess end panel material from inside the frame after attaching the panels to the end rafters.

MAIN COVER INSTALLATION

After the end panels are installed, install the main cover. The steps to install the main cover include:

- The double poly latch U-Channel (#104211) is attached to each side of the frame and runs from the front to the back of the shelter. The position of the U-Channel attaches the cover to the extended cover with roll-up sides. Tek screws are used to secure the U-Channel to each rafter.
- The single poly latch U-Channel (#102197) is attached to the along the top of each end rafter between the double U-Channel runs using Tek screws. This U-Channel is used to secure the main cover. During installation, the single poly latch U-Channel will bend with the curve of the end rafter as it is attached.
- Pull main cover over the frame.
- Attach the main cover to the end rafters and double poly latch U-Channel using the poly latch springs.
- Single poly latch U-Channel will also be attached to each side of the frame and runs from the front to the back of the shelter. The position of this U-Channel identifies the highest "open" position of the roll-up side panels.
- Finish the end rafters with single poly latch U-Channel between the double and single U-Channel that are attached on the sides of the frame.
- Attach roll-up covers to the sides of the frame using the double and single poly latch U-Channel; and poly latch springs.
- Install roll-up side kits, the anti-billow ropes, and test the operation of the twist-of-the-wrist assembly.

INSTALL POLY LATCH U-CHANNEL

Attach double and single poly latch U-Channels along the frame sides and single U-channel along the tops of the end rafters between the U-Channel runs.

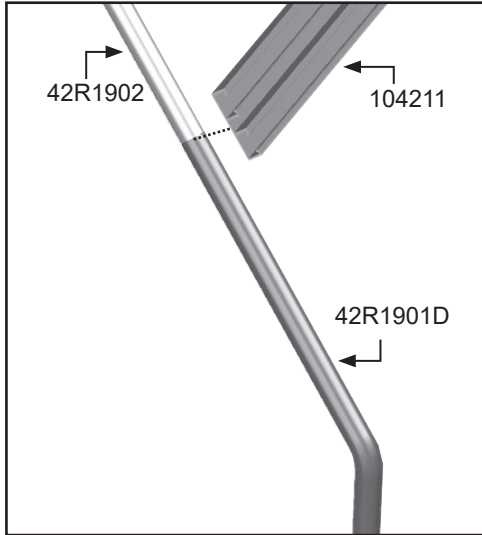
Gather the parts:

- Aluminum single U-Channel (#102197): End rafters and sides
- Double poly latch Channel (#104211): Sides
- Tek screws (#FA4482B)

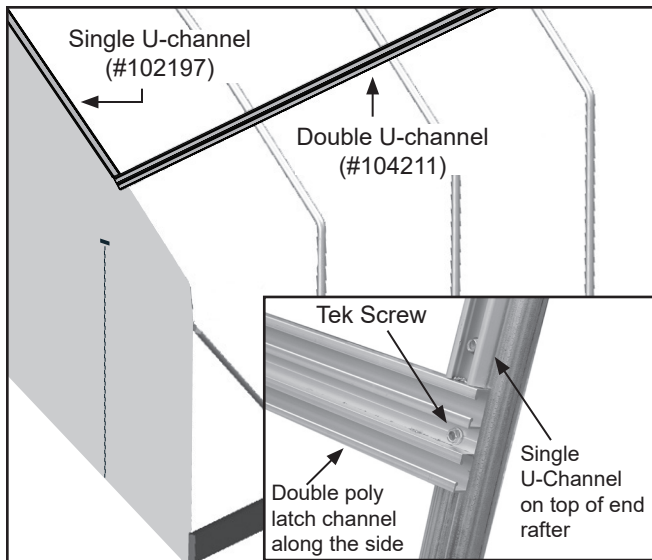
GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

Assembly Procedure

1. Using the pipe joint between the drilled leg pipe and the curved rafter pipe as a guide, attach the double poly latch U-Channel along both sides of the frame using Tek screws. The double U-Channel will be attached over the center of pipe joint. See diagrams below.



NOTE: If needed, remove existing Tek screw from the pipe joint so the double poly latch lays flat against the rafters.



2. After attaching the double poly latch U-Channel to the both sides of the frame, use Tek screws to attach the single poly latch U-Channel to the top of end rafters.

ATTENTION: The poly latch U-Channel will bend with the curve of the rafter as it is attached. The U-Channel runs from the poly latch U-Channel attached to one side of the frame to the U-Channel attached to the other side of the frame.

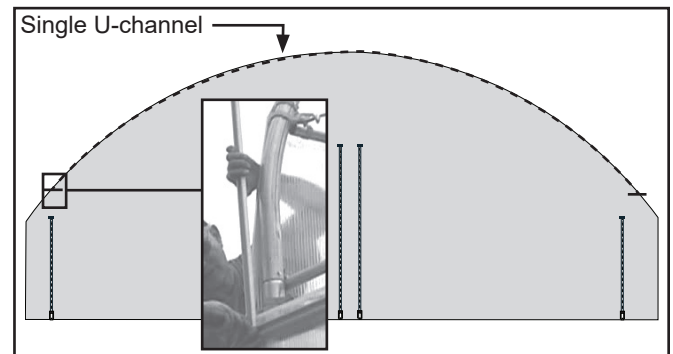


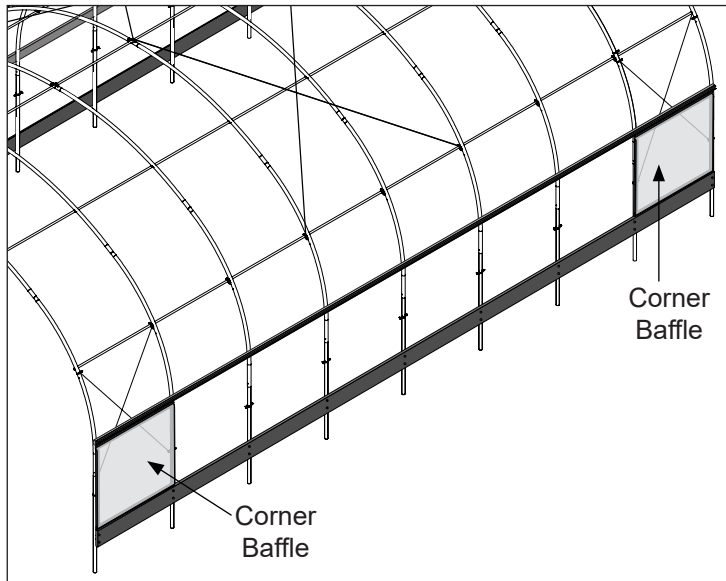
Diagram may not be to scale.

Insert above shows the installation of poly latch U-Channel on top of an end rafter. The poly latch U-Channel will bend with the curve of the rafter as it is attached. Dashed line shows where to install the single poly latch U-channel.

3. Repeat the steps to install the single U-Channel at the remaining end of the frame.
4. Continue with the installation of the corner baffles.

INSTALL CORNER BAFFLES

If you do not want corner baffles installed, skip this section and continue with the next page. Corner baffles for roll-up sides can be installed later; however, it is easier to install before installing cover, roll-up panels, and anti-billow ropes.

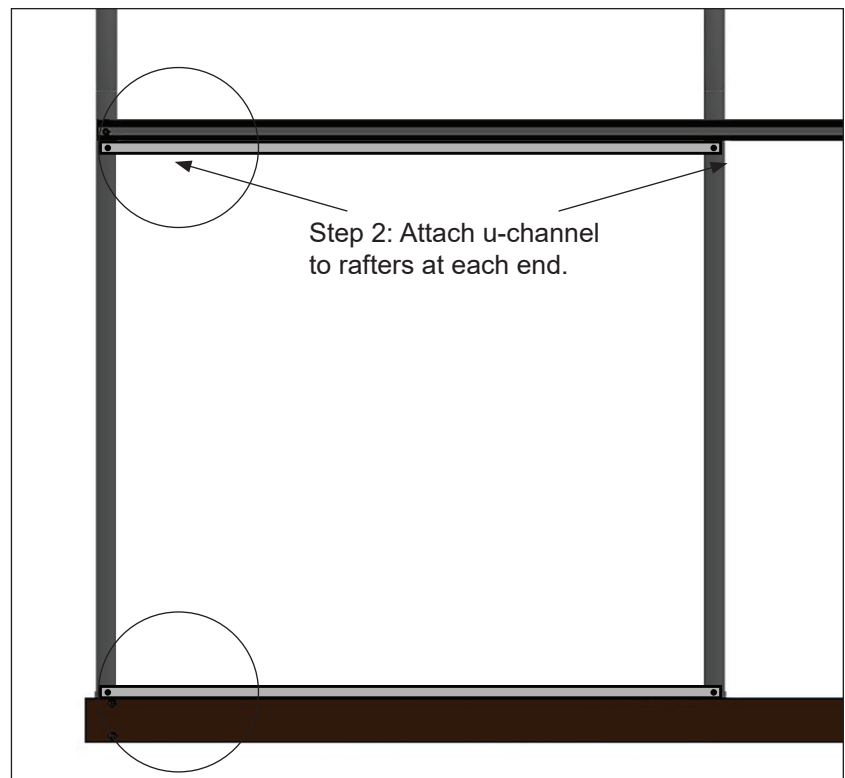
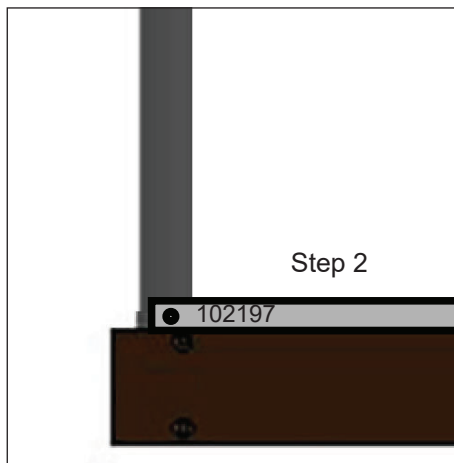
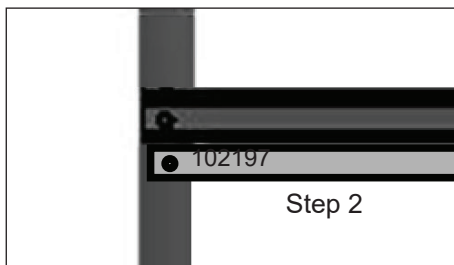


REQUIRED PARTS:

- 102197 U-channel
- 102198A Poly-Coated Spring Wire
- 108654 6' Wide 6 MIL Film
- FA4482B Tek Screws

Complete these steps to install a baffle at each corner of the assembled frame.

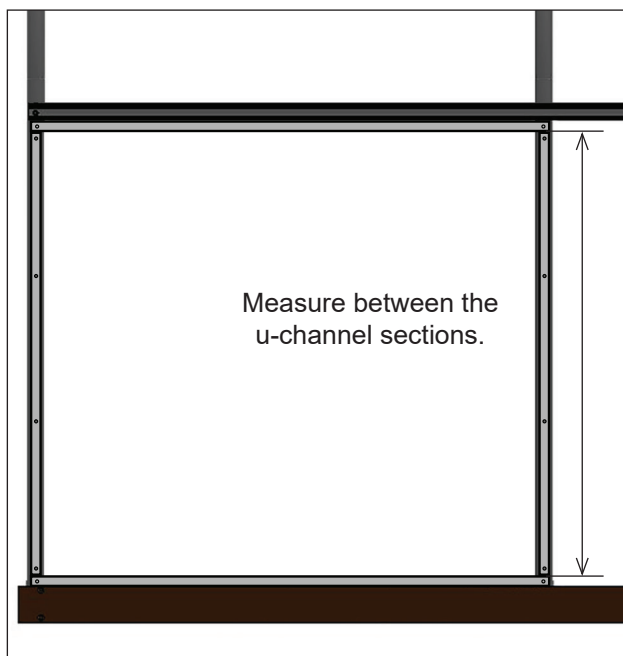
1. Locate four (4) pieces of 102197 single u-channel, additional 102198A spring wire, and the 108654 roll of 6 mil film.
2. At one corner, cut and attach the 102197 u-channel to the end rafter and first interior rafter as shown. Install these horizontal runs of single u-channel above the baseboards and below the single u-channel.



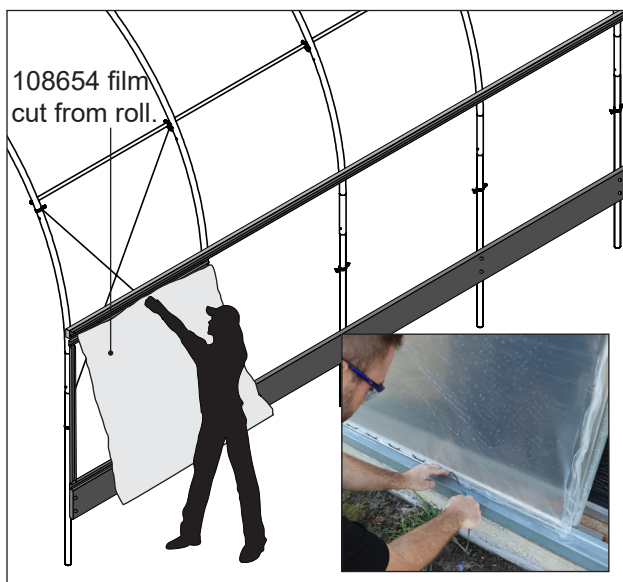
GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

INSTALL CORNER BAFFLES (continued)

3. Measure the distance between the upper and lower single u-channel installed in Step 2. Cut two additional u-channel sections to this length and attach these vertical runs to the end rafter and interior rafter. *Space Tek screws (FA4482B) approximately 12" on-center. Vertical channel runs may consist of multiple small lengths of available u-channel.*



4. Take the 108654 roll of 6 mil film and cut a piece to cover the end bay opening framed by the single u-channel. Roll out the film and measure length to determine the best way to cut the film. You need four (4) identical panels from the film roll.
5. With assistance, secure the film panel in the u-channel using the 102198A wire spring.



6. Trim the film as needed and repeat the steps to install all remaining corner baffles.
7. After installing all baffles, continue with the next procedure.

INSTALL MAIN COVER

Gather the parts:

- Top cover and two (2) side covers
- Ropes long enough to reach over the frame (provided by customer)
- U-Channel wire spring
- Box cutter or utility knife

Assembly Procedure

After the poly latch U-channels are attached to the frame, unpack the main cover and pull into place. Ropes or straps are typically used to pull the top cover onto and over the frame.

⚠ WARNING: To prevent damage to the cover and to prevent serious personal injury, DO NOT attempt to install the cover on windy or stormy days.

1. Unpack the top cover and position it at the base along one side of the frame.
2. Make small holes along the edge of the cover at evenly spaced intervals and tie rope to the cover. (The length of the cover determines the number of holes that are needed to attach the ropes.)

NOTE: The ropes must be long enough to reach over the top of the building to the other side. Long buildings will require additional ropes to prevent tearing the main cover when it is pulled into place.

3. After tying the ropes to the cover, throw the ropes over the top of the frame and pull the cover into place. Cover must be centered side-to-side and end-to-end.

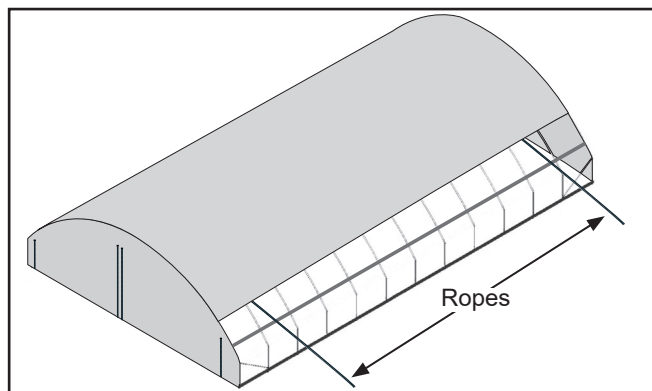


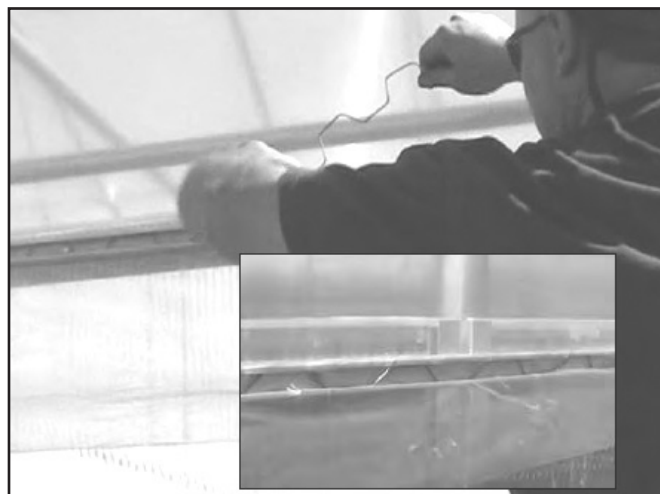
Diagram may show a different length frame, used for illustration purposes only.

IMPORTANT: To prevent damage to the cover during installation, additional personnel and lifts may be needed.

4. Once the top cover is in place and centered on the frame, begin at the peak of one end rafter and install the wire spring into the U-Channel to secure the cover.

ATTENTION: Center the cover front to back and side-to-side to ensure that enough cover material is present to lock into the U-Channel.

The rope can remain in place to temporarily secure the cover if needed. Remove the ropes as the cover is secured to the frame.



Photos show installing the spring into the U-Channel on the outside of a frame. The process is the same for the U-Channel attached to the top of the end rafters.

GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

INSTALL MAIN COVER (CONTINUED)

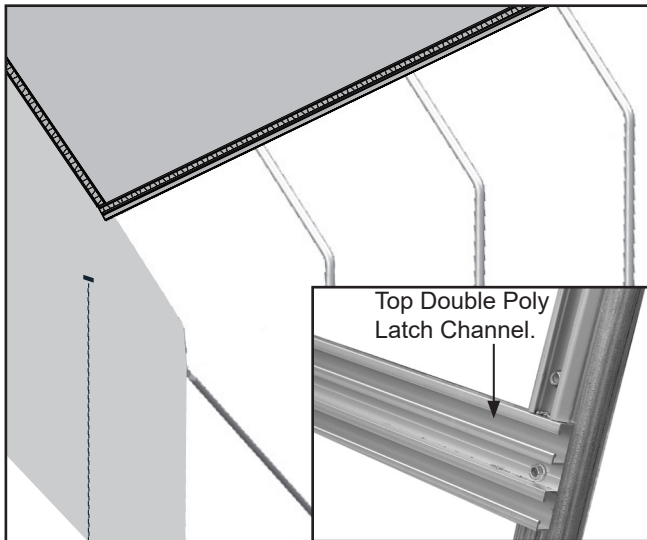
- Continue adding the spring into the U-Channel at the top of the first end rafter. Ensure that an even amount of the cover is exposed and maintained along the edge of the frame as it is attached.

NOTE: The cover material is cut longer/wider than is required to cover the frame. For easier anchoring, allow approximately 10" to extend past the edge of the end rafter as the cover is anchored in place.

- Continue down both edges of the first end rafter until the entire length of the end of the top cover is secured in place.
- Stretch the cover to the other end of the building and repeat the steps to secure the cover in the U-Channel.

NOTE: Pull the cover tight as the spring is inserted into the U-Channel.

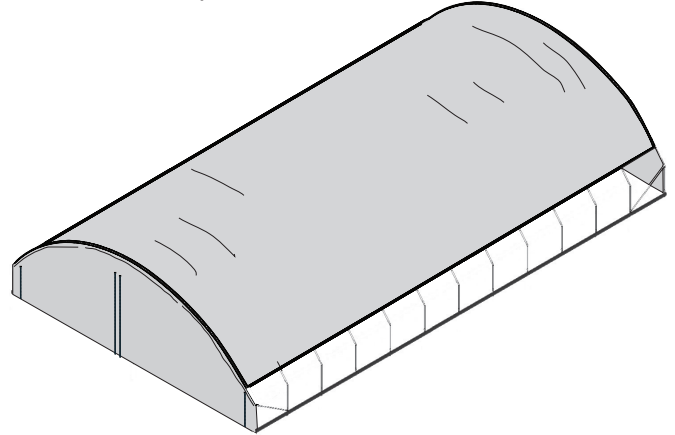
- After the cover is stretched end-to-end and secured using the spring and U-Channel, move to one side of the frame and repeat the steps to anchor the cover to the first side. *Use the top channel of the Double Poly Latch for this application.*



Begin at one end of the U-Channel and work toward the other. It is also possible to begin at the middle of each side and work toward each end.

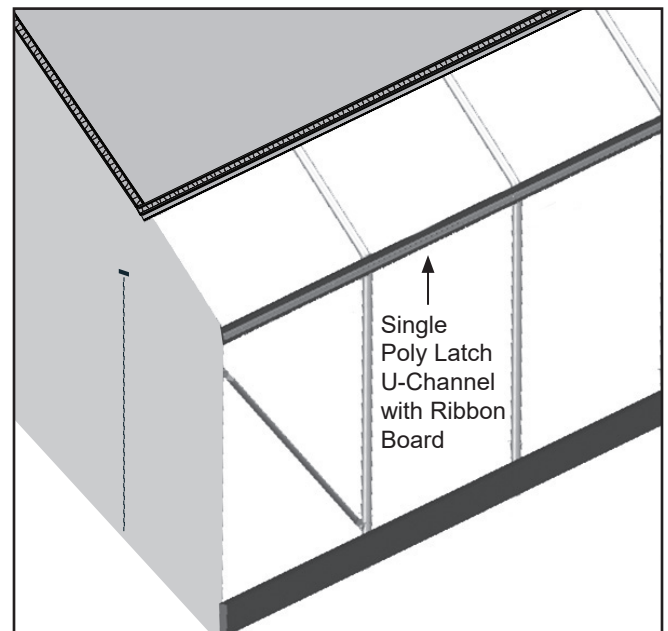
NOTE: Maintain an even length along the side. The final stretching of the cover takes place when the last side is secured.

- After securing the first side, move to the remaining side and secure it in place.



IMPORTANT: DO NOT REMOVE TOO MUCH OF THE EXCESS COVER MATERIAL AT EACH END. Some excess main cover material—the material that extends beyond the end rafters—should remain in place. If the top cover needs stretched in the future, remove the spring from the U-Channel, grasp the excess material, pull the cover tight, and reinstall the spring.

- Once the top cover is installed and secured in the U-Channel, attach single poly latch U-Channel to each side of the frame using Tek screws.

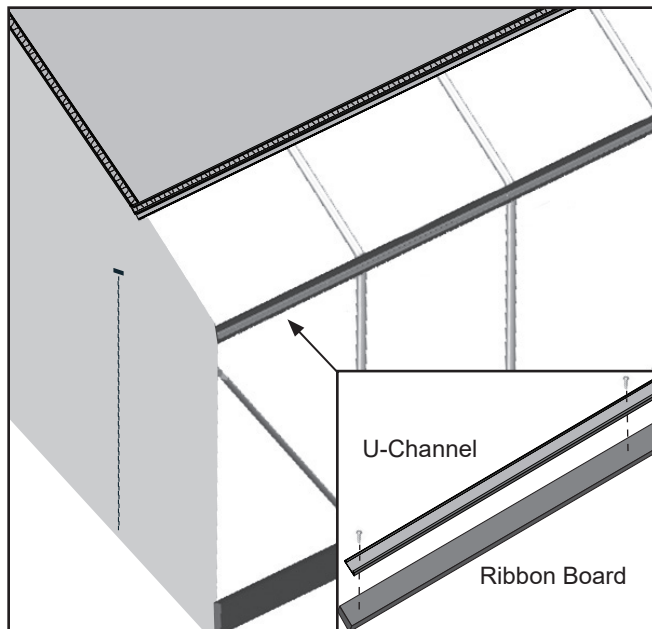


RECOMMENDED FOR BEST RESULTS: Attach a ribbon board (2" x 4" or 2" x 6") to the rafters and then attach the poly latch U-channel (102197) to the ribbon board using *customer-supplied wood screws*.

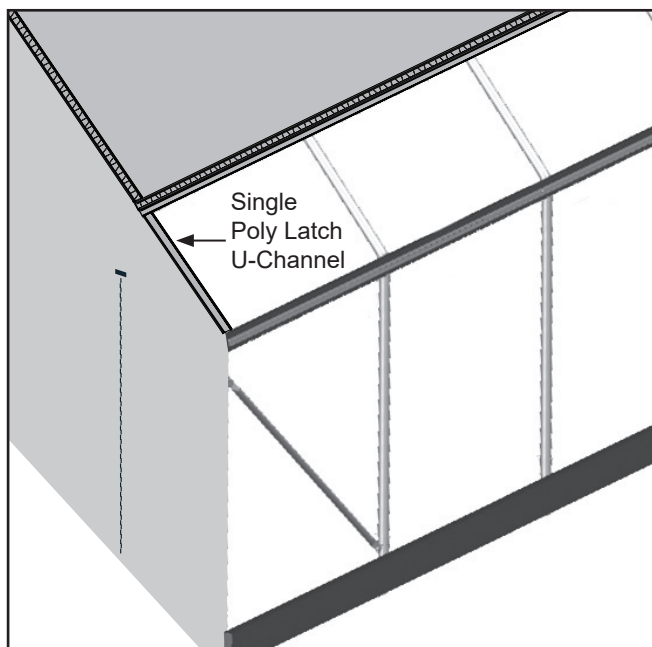
NO RIBBON BOARD: Attach one section of the poly latch U-Channel to the side of the frame using Tek screws. Attach U-Channel flush with the outside edge of the end rafter at each end of the assembled frame.

INSTALL MAIN COVER (CONTINUED)

- Continue to attach the single U-Channel sections to the rafters (or ribbon board if used) and work toward the other end of the frame.

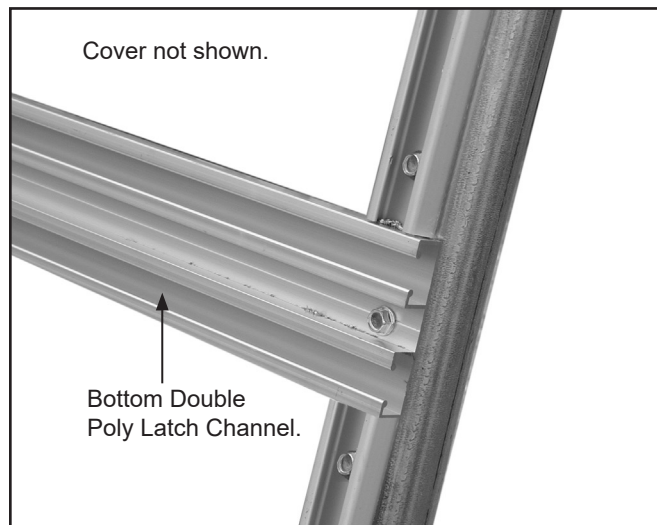


- Cut the last section of U-Channel to the required length so that it is flush with the outside edge of the end rafter.
- Repeat these steps for the remaining side.
- After attaching the single poly latch U-Channel to the sides of the frame, use Tek screws to attach the single poly latch U-Channel to the remaining area on the top of end rafters. See diagram below.

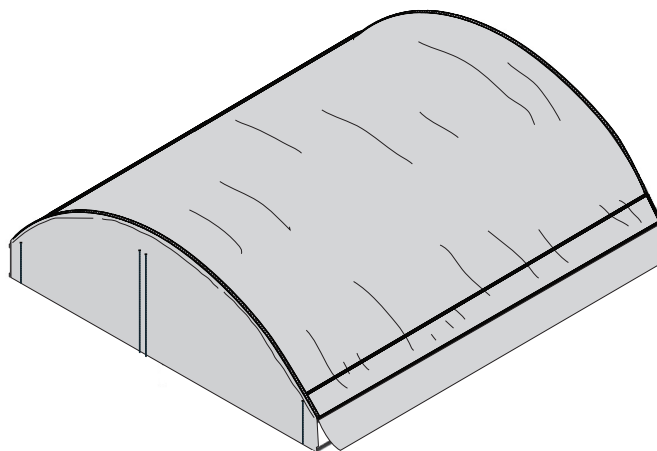


- Place and center a side roll-up panel along one side of the frame.
- Attach side roll-up panel to the frame using the same procedures as the top cover (Steps 4-9).

NOTE: Install U-Channel wire spring into the bottom channel of the double poly latch and the single U-Channel on the sides and ribbon board.



- After securing the first side roll-up panel, move to the remaining side of the frame and install the final roll-up panel.



NOTE: The excess material along each side is rolled up in the roll-up side assembly.

- Once the roll-up panels are installed, continue with the **Install the Roll-up Side Assemblies**.

GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

INSTALL THE ROLL-UP SIDE ASSEMBLIES

The instructions below describe how to install a single roll-up sidewall assembly for one side of the frame. The procedure is repeated for the remaining side.

The procedures to install the roll-up side include the following:

1. Assemble the roll-up side conduit.
2. Attach the roll-up conduit to the bottom of the side cover.
3. Assemble the Twist-of-the-Wrist assembly and attach it to the frame and the roll-up side.
4. Install the Anti-Billow Rope system and test the operation of the roll-up side.

INSTALL THE ROLL-UP SIDE CONDUIT

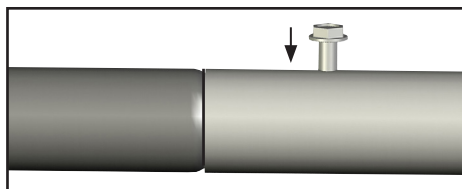
Gather the parts:

- Pipe 1.315" x 75" Swaged 17 GA (#131S075)
- Pipe 1.315" x 25.5" Plain 17 GA (#131P0255)
- Tek screws

A roll-up side conduit assembly is attached to the bottom of each roll-up side cover material. This assembly runs the length of the frame and serves as the center pipe that the roll-up cover wraps around when it is opened to ventilate the shelter. *These conduits are longer than the shelter and will be trimmed later in the instructions.*

Complete these steps to assemble the roll-up side conduits.

1. Locate eight (8) 75" swaged sections of pipe and one (1) 25.5" plain pipe needed to assemble each cover conduit.
2. Insert the swaged end of each pipe into the plain end of another pipe until the conduit is assembled.
3. Secure each pipe joint with a Tek screw.



4. After assembling both conduits, place one (1) conduit assembly at the base of each side of the shelter.

NOTE: Duct tape Tek screws to prevent damage to main cover.

5. Continue with the procedure that follows to attach the conduit to the side cover.

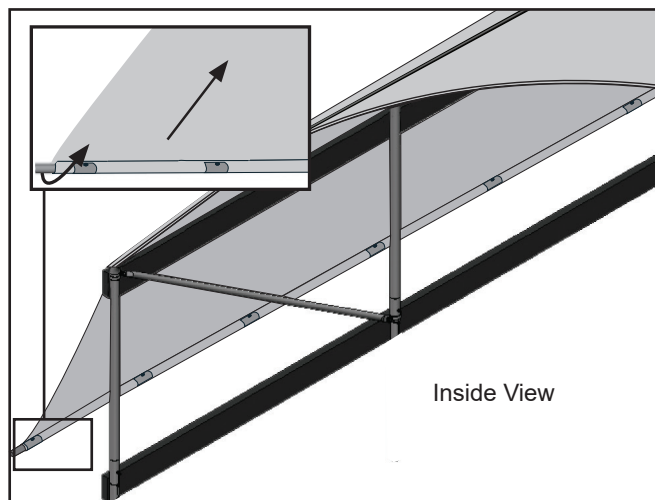
ATTACH CONDUIT TO MAIN COVER ROLL-UP SIDE

Gather the parts:

- Assembled conduits
- Fabric Clips #CC6212 (Divide quantity in half.)
- Tek screws

To this point, the main cover should be secured to the frame and the excess cover along both sides should be hanging down along the side of the frame.

1. Unfold the remaining portion of the main cover (if needed) and evenly stretch it out on the ground along the frame.
2. Roll the assembled cover conduit onto the edge of the main cover.
3. Verify that the cover and conduit are evenly positioned. Conduit must extend beyond the end rafter approximately 4" to 6" at the end where the twist-of-the-wrist assembly will be attached.



4. Secure the cover material to the conduit with Tek screws and fabric clips evenly spaced along the conduit.

ATTENTION: Use half of the fabric clips for each roll-up conduit. Evenly space these throughout the length of the side curtain.

5. Continue to roll the conduit until the excess cover material is wound around the conduit.
6. With the excess cover material rolled up on the conduit assembly, continue with the **Twist-of-the-Wrist Assembly** procedure.

TWIST-OF-THE-WRIST ASSEMBLY

Gather the Parts:

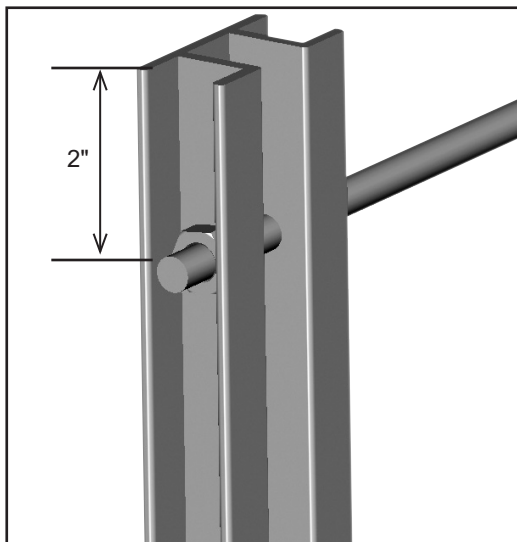
- Aluminum Channel
- Drive Handle
- Gearbox and Gearbox Drive
- Mounting Plate
- Bearing and Threaded Rod
- 3/8" Nuts and Washers

The Twist-of-the-Wrist Assembly is designed to roll up a portion of the sides of the structure. The following steps describe the assembly and its installation.

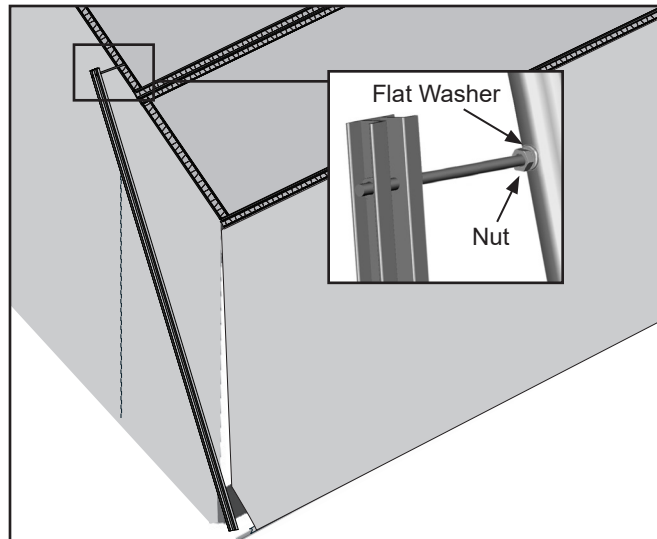
1. Drill a 5/16" hole through the trimmed cover conduit 1/2" from the end of the conduit.
2. Insert a tubing adapter into the conduit and align the holes of the adapter with the drilled holes in the conduit.



3. Select the aluminum channel and drill a 3/8" hole through the channel approximately 2" from the end and attach a threaded rod using a 3/8" nut on each side of the channel.



4. With lower end of the channel approximately 4" off the ground, position the channel along the rafter at the end of the building where the Twist-of-the-Wrist assembly will be located.
5. Secure the upper end of the channel by drilling a 3/8" hole through the end rafter and attach as shown. The lower end of the channel will "float" and is not attached.



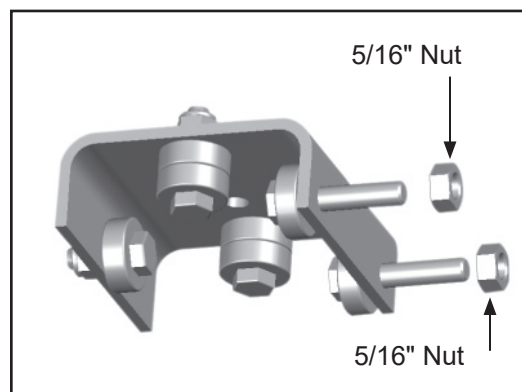
NOTE: Install a flat washer between the nut and the end panel.

6. Select the bearing bracket and attach the bearings as needed. (In some instances, the bearings may come already attached.) Assemble as follows:

Single bearings are attached to the sides of the bracket and double bearings to the middle portion of the bracket. Use 1/4" hex bolts and locknuts as needed. Install a flat washer on both sides of each bearing to insure proper operation of bearings and the assembly.

Install the longer bolts with bearings on the side of the bracket that has the two holes. Install these *before* installing the double bearing assemblies. See the figures below.

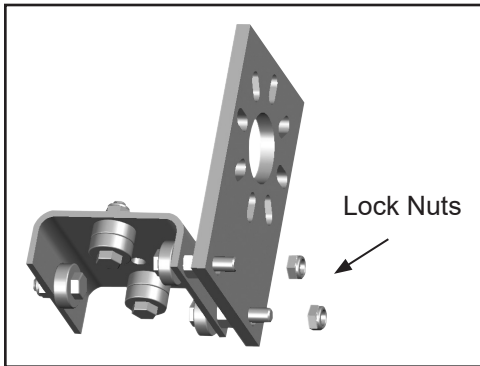
7. For the spacers on the long bolts, insert a 5/16" nut over each bolt. *These nuts are used as spacers only.*



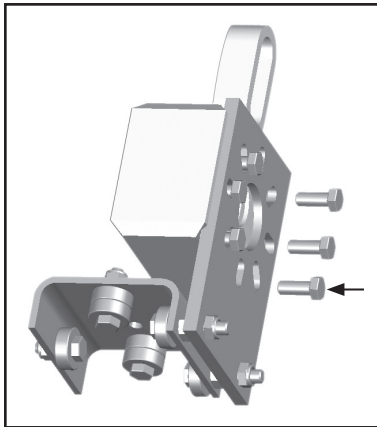
GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

TWIST-OF-THE-WRIST ASSEMBLY (CONTINUED)

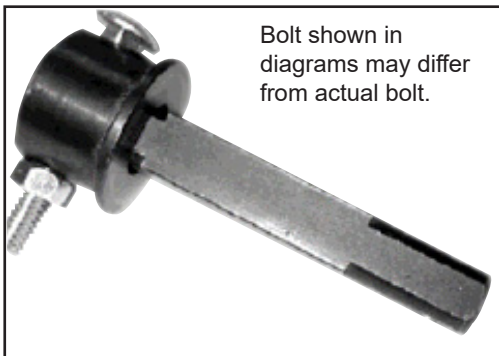
8. Slide the Twist-of-the-Wrist mounting plate over the long bolts and secure the plate with two lock nuts.



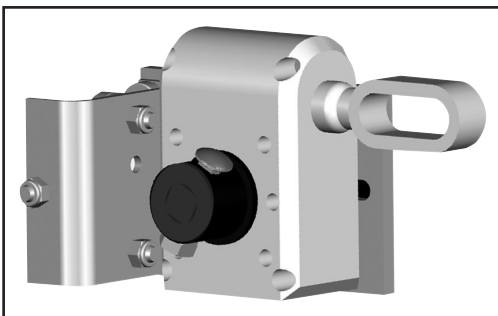
9. Attach the Twist-of-the-Wrist gearbox to the mounting plate using hex head bolts.



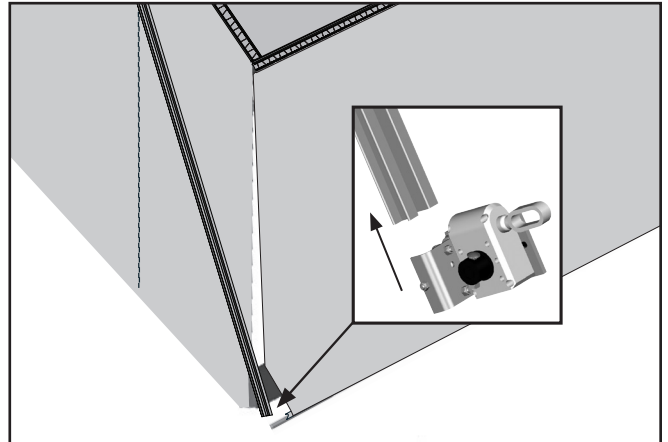
10. Using a 1/4" x 2" bolt (FAG308B) and nut (FALB01B), attach the square shaft to a tubing adapter.



11. Slide the square shaft through the Twist-of-the-Wrist gearbox.

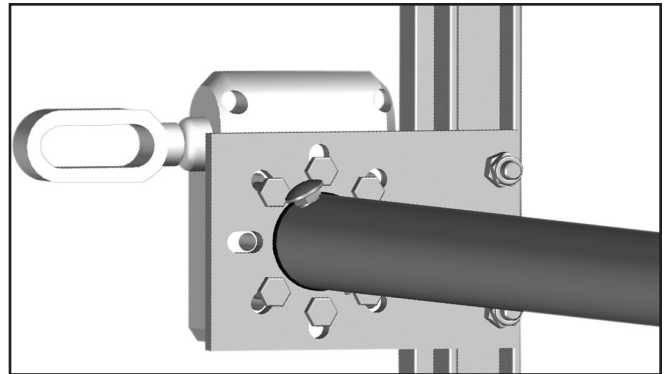


12. Slide the Twist-of-the-Wrist assembly onto the aluminum channel from the ground end. (This is the free end of the channel.)

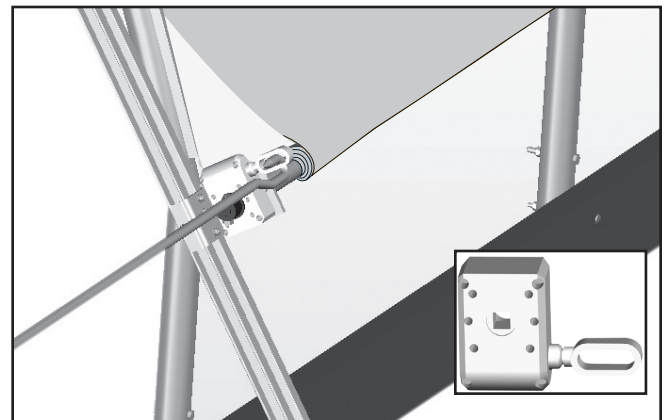


13. Finish rolling the cover conduit in a clockwise motion up to the Twist-of-the-Wrist assembly.

14. Attach the conduit to the square shaft of the assembly by inserting a 1/4" bolt through the hole in the conduit and tubing adapter. Add and tighten the 1/4" nuts.



15. Attach the crank handle to the Twist-of-the-Wrist assembly. (Cover is not shown in the above diagram.)



16. Test the operation of the Twist-of-the-Wrist assembly

NOTE: If the cover rolls in the desired direction, but you want to turn the crank in the opposite direction for the same result, unbolt, reposition the gearbox, and remount it on the same side of the mounting bracket.

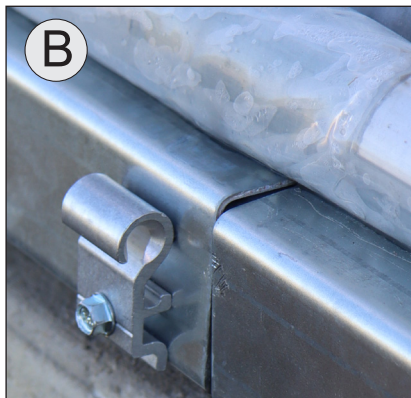
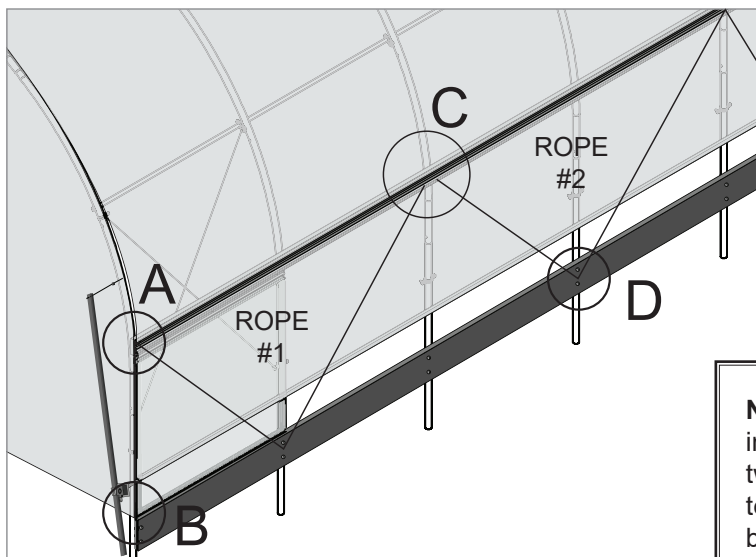
INSTALL ANTI-BILLOW ROPES

ANTI-BILLOW ROPE INSTALLATION

TO PREVENT DAMAGE AND POSSIBLE INJURY, INSTALL ANTI-BILLOW ROPES **IN SHORT LENGTHS** ALONG EACH SIDE. DO NOT INSTALL AS A SINGLE LENGTH TIED AT EACH END. DOING SO WILL RESULT IN A LOOSE SIDE PANEL IF SINGLE ROPE BREAKS. **CONSULT THE SIDE PROFILE DIAGRAM FOR YOUR FRAME LENGTH IN THE QUICK START SECTION FOR ROPE PATTERN AND ROPE HOOK LOCATIONS.**

Follow these general steps to attach the 117063 rope hooks, FA2061 eyebolts, and install the anti-bilow ropes:

1. Determine the location of rope hooks, eyebolts, and the number of anti-bilow ropes for each side using the Side Profile diagram in the Quick Start section for your frame length.
2. Attach the 117063 rope hooks using wood screws for wood and Tek screws for metal. Be sure to note where one rope stops and the next rope begins.
3. Take the CC5525 (1/4") rope and install it in short lengths along each side. Pull tight to keep panels in place.
4. Test the operation of the roll-up side.
5. Repeat to install the anti-bilow rope for the remaining side once the panel is installed.
6. With all anti-bilow ropes installed, continue with the next page.



NOTE: In those instances when two ropes terminate at the baseboard or lower position (D), install the rope snaps and rope as shown in these photos.



Photos show using optional hat channel for baseboards.



GROWSPAN™ ROUND PREMIUM EXTRA TALL HIGH TUNNELS

SHELTER CARE AND MAINTENANCE

Proper care and maintenance of the shelter is important. Check the following items periodically to properly maintain the shelter:



Space below is reserved for customer notes.

- Regularly check the main cover and panels (if equipped) to see that these remain tight and in proper repair.
- Check connections and all fasteners to verify that they remain tight.
- Do not climb or stand on the frame at anytime.
- Remove debris and objects that may accumulate on the cover. Use tools that will not damage the cover when removing debris.
- Remove snow to prevent excess accumulation. Use tools that will not damage the cover when removing snow.
- Check the contents of the high tunnel to verify that nothing is touching the cover or the side panels that could cause damage.
- Check the anchoring system to ensure that all components are tight and in good repair.
- If the shelter is moved, inspect all parts and connections before reassembling.
- For replacement or missing parts, call 1-800-245-9881 for assistance.

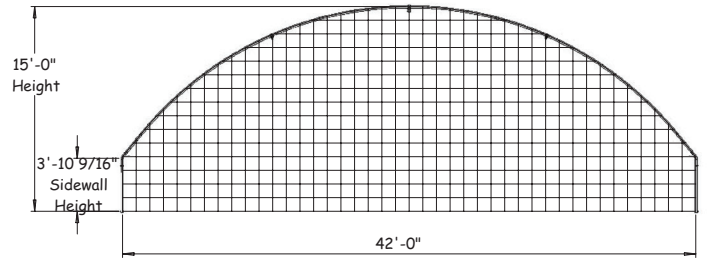
NOTE: With the exception of engineered buildings, GrowSpan™ shelters and greenhouses *do not* have any tested loading criteria.



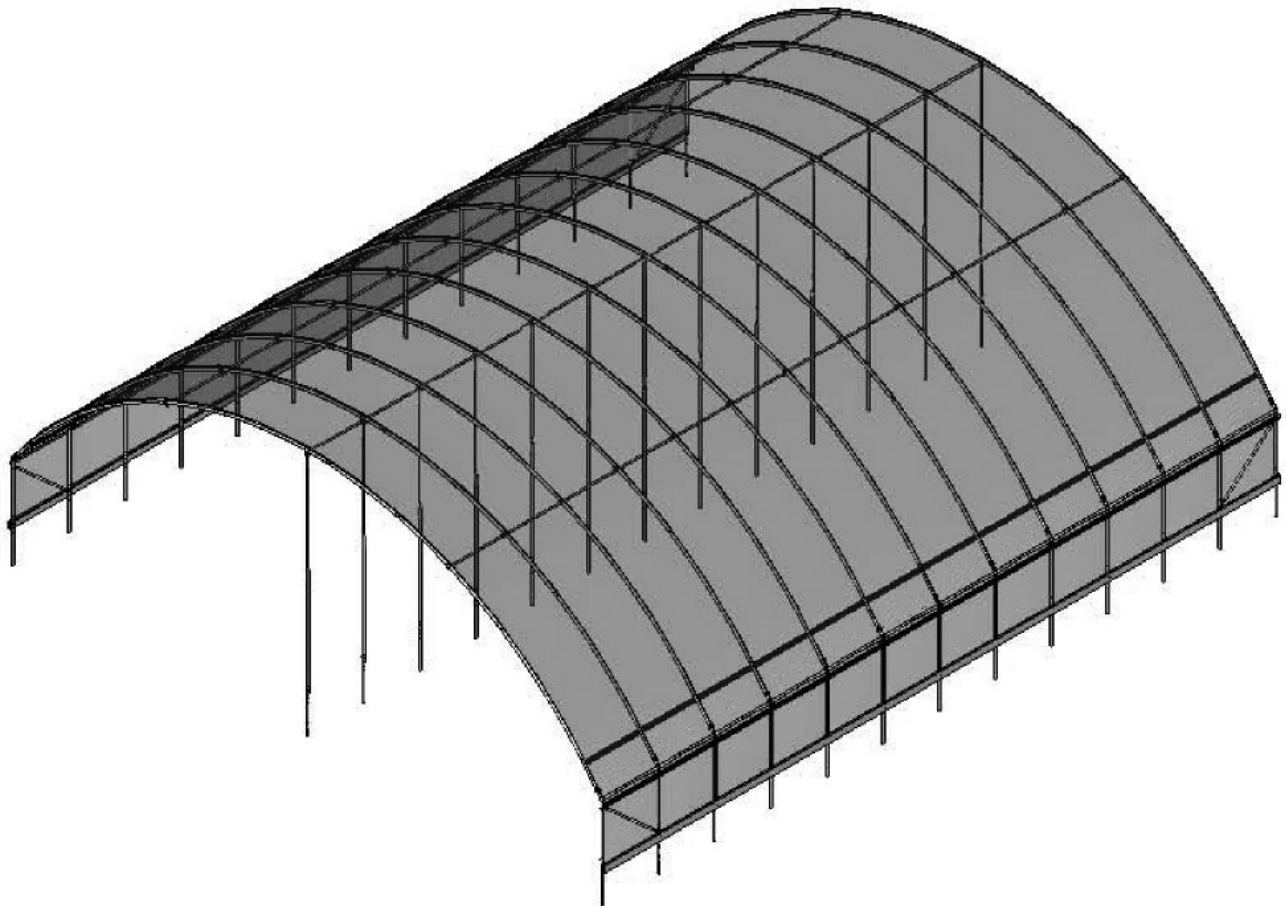
greenhouse structures

QUICK START GUIDE

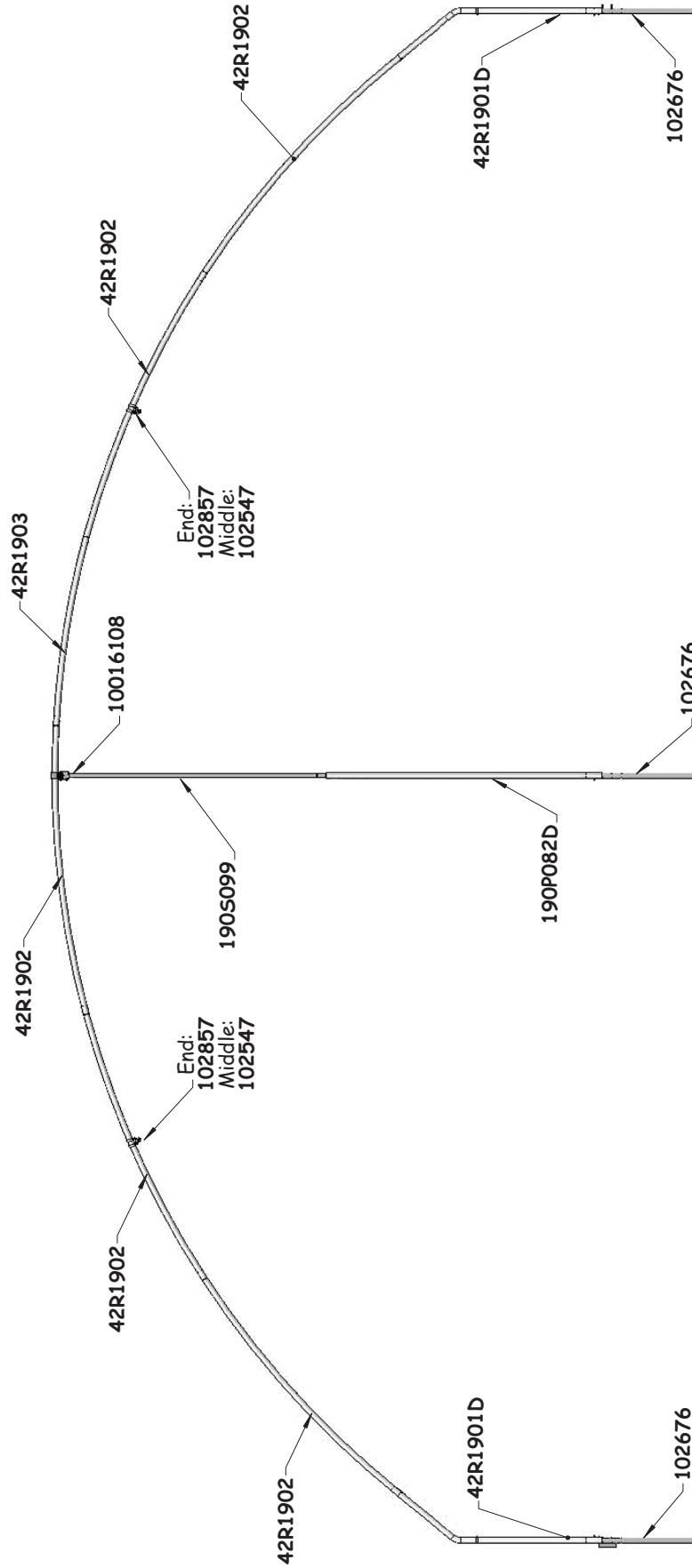
42' Wide Round Premium Extra Tall High Tunnel



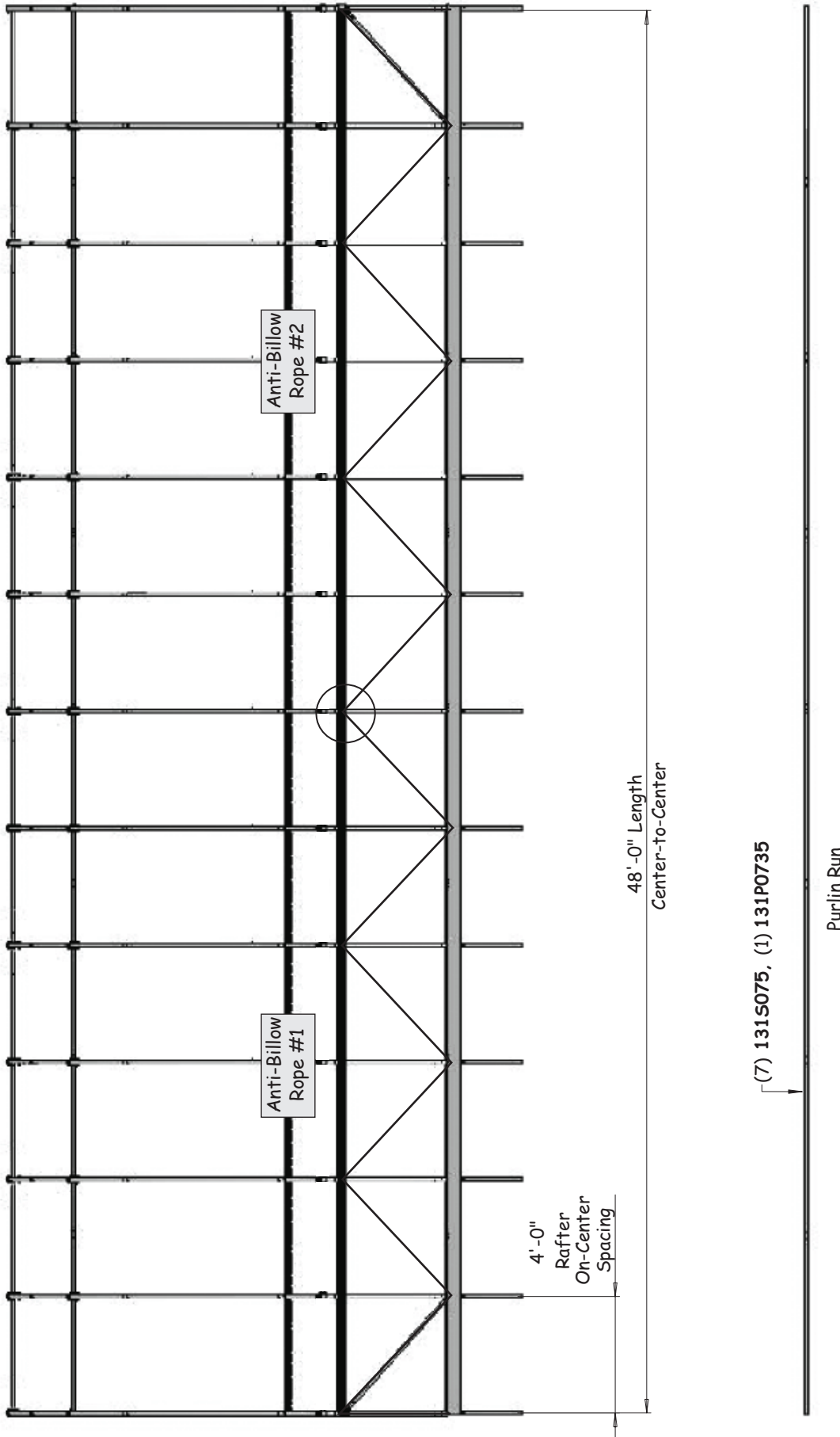
FRONT
Grid Represents 12" Squares



FRONT PROFILE



SIDE PROFILE

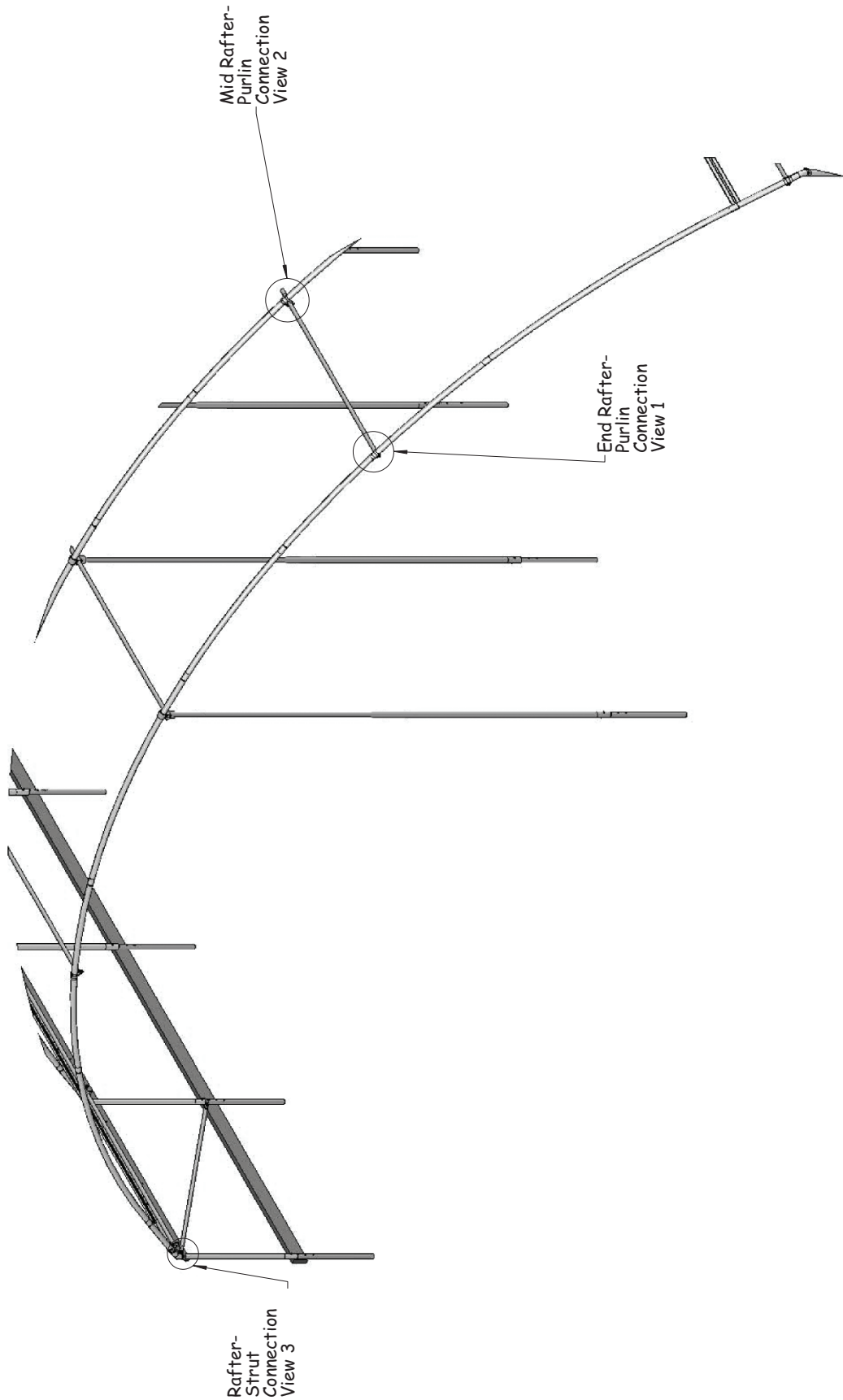


ANTI-BILLOW ROPES PER SIDE

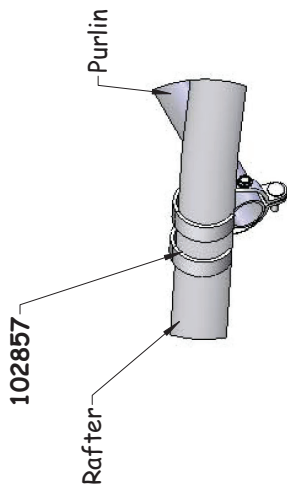
This frame length requires two (2) anti-billow ropes and sixteen (16) 117063 EZ-Snap Rope Clips **per side**. Circled point shows the end of each rope and the location of two (2) 117063 EZ-Snap Rope Clips.

ATTENTION: TO PREVENT DAMAGE AND POSSIBLE INJURY, INSTALL THE ANTI-BILLOW ROPE IN SHORT LENGTHS ALONG EACH SIDE OF THE FRAME. DO NOT INSTALL AS A SINGLE LENGTH TIED AT EACH END. DOING SO WILL RESULT IN A LOOSE SIDE PANEL SHOULD THE ROPE BREAK DURING STRONG WINDS.

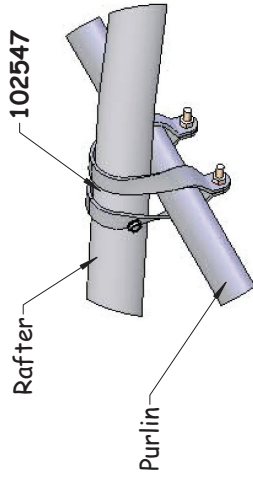
CONNECTIONS



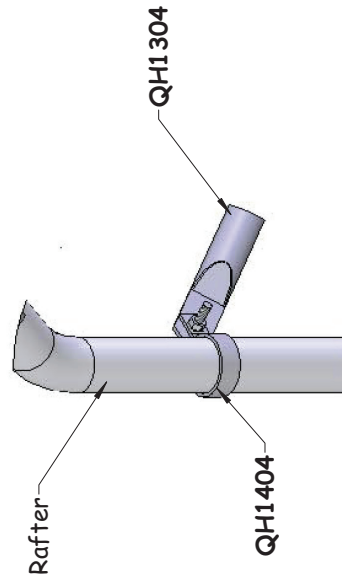
CONNECTION DETAILS



View 1
End Rafter-
Purlin
Connection



View 2
Mid Rafter-
Purlin
Connection



View 3
Strut
Connection