ClearSpan
fabric structures and greenhouses

ClearSpan™
Round Style Clear View Greenhouses

Photo may show a different but similar model.

STK#	DIMENSIONS
106185	20' W x 10' 7" H x 20' L
106186	20' W x 10' 7" H x 24' L
106187	20' W x 10' 7" H x 36' L
106188	20' W x 10' 7" H x 48' L

Revision date: 07.22.11

YOU MUST READ THIS DOCUMENT BEFORE YOU BEGIN TO ASSEMBLE THE SHELTER.

Thank you for purchasing this ClearSpan™ greenhouse. 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 greenhouse. Please read these instructions ***before*** you begin.

If you have any questions during the assembly, contact Customer Service at 1-800-245-9881 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 greenhouse or framing during or after construction.
- Do not occupy the greenhouse during high winds, tornadoes, or hurricanes.
- Provide adequate ventilation if the structure is enclosed.
- Do not store hazardous materials in the greenhouse.
- Provide proper ingress and egress to prevent entrapment.

ANCHORING INSTRUCTIONS

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

⚠ **WARNING:** The anchor assembly is an integral part of the greenhouse construction. Improper anchoring may cause greenhouse instability and failure of the structure. Failing to anchor the greenhouse 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 greenhouse where large loads such as snow and ice, large tree branches, or other overhead obstacles could fall.
- *Always check local building codes before you begin.*

SITE

After choosing a location, proper preparation of the site is essential. The following site characteristics will help ensure the integrity of the structure.

- *A level site is required*. The site must be level to properly and safely erect and anchor the structure.
- If the site is not level, use footings to provide a secure base to assemble the structure. Pre-cast concrete blocks, pressure-treated wood posts, or poured footings are all acceptable when properly used. (Some shelters use ground posts or rafter feet.)
- 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 greenhouse. Failing to follow these steps may result in an improperly assembled and anchored greenhouse and will void all warranty and protection the owner is entitled to.

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 greenhouse.
3. Gather the tools, bracing, ladders (and lifts), and assistance needed to assemble the greenhouse.
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 the end wall framing. (End walls are optional items for some shelter types.)
11. Install, tighten, and secure the end wall end panels and doors.
12. Install, tighten (if applicable), or secure the main cover.
13. Read the care and maintenance information at the end of these instructions.
14. Complete and return all warranty documents as instructed.

LIST OF WORDS AND PHRASES

Before you begin, it is important to become familiar with the words and phrases used in this instruction manual.

These words and phrases are common to most ClearSpan™ shelters and identify the different parts of the shelter. (Some are used in this document. Others may not apply to this particular shelter.) These terms describe the shipped parts and can also be found on the materials list/spec sheets included with the shipment. To aid in the assembly, read through the following definitions before you begin to assemble your shelter.

- **Band Clamp:** Clamp used to connect the end wall framing to the rafter pipe. In some cases, band clamps are also used to connect diagonal struts to the assembled frame.
- **Clip or Fabric Clip:** A short, half-section piece of conduit (cut lengthwise) used to secure the end panel cover to the leg or rafter assembly. The clip or fabric clip is typically fastened in place using self tapping Tek screw.
- **Conduit:** An assembly of pipes used to secure the main cover and end panels (if equipped). Purlins and some strut assemblies also consist of connected pipes to form a conduit. Each pipe joint of a conduit assembly is secured with a self-tapping Tek screw to prevent separation. Some conduit assemblies are used to secure larger end panels and main covers. These conduits typically consist of sections of PVC tubing glued at the joints.
- **Cross Connector:** Any one of the metal brackets used to "connect" or secure a purlin to a rafter. Cross-connectors are typically pictured on the Pictorial Parts Guide page or in the Quick Start section (if present).
- **End Panel:** Fabric or material used to cover the end wall assemblies. End wall assemblies are optional for many shelters.
- **Must Read Document:** This document includes building and shelter anchoring instructions, steps for end wall reinforcement, safety precautions, and notices and warnings. The Must Read document is sent with all shelters and buildings. If you did not receive a Must Read document, contact Customer Service to request one.
- **On-Center:** Term used to describe a measurement taken from the vertical center of the rafter or frame member to the vertical center of another.
- **Purlin:** The pipe assembly that runs perpendicular to the rafters or framework that supports the main cover. Purlins are found on the sides and roof areas of the assembled frame, are evenly spaced, and typically run from the front to the back of the shelter.
- **Plain or Straight Pipe:** A term used to describe a pipe that has the same diameter or width throughout its entire length.
- **Strut:** A strut is usually a length of pipe with two flattened ends and is used for diagonal bracing of the shelter frame. A strut is typically secured to the frame work by special brackets and bolts.
- **Swaged End or Swaged Pipe:** The term “swaged" refers to the tapered end of the pipe or tube. Swaged ends of a pipe can be inserted into couplers and the straight ends of other pipes.
- **Tek Screw:** A self-tapping fastener used to secure pipe joints and to fasten brackets to rafters.

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
- Marker to mark locations on the pipes
- Variable speed drill and impact driver (cordless with extra batteries works best)
- Metal-cutting saw
- Wrenches and impact socket set, or an adjustable wrench
- Scissors, utility knife, or tin snips
- Hammers and gloves
- Adjustable pliers and self-locking pliers
- Ladders, work platforms, and other machinery for lifting designed to work safely at the height of the building
- Rope/cable for temporary rafter bracing during frame assembly

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).

QUICK START GUIDE

For a quick overview of the building and its components, consult the information and diagrams in the Quick Start section near the back of these instructions.

SPECIAL NOTE: Baseboards for Frame

These instructions describe installing a baseboard (recommended) at ground level along each side of the frame. The baseboard runs from the front to the back of the frame.

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.

Use the included 1/4" x 4" (FAH009B) carriage bolts and the 1/4" zinc nuts (FALB01B) to attach a customer-supplied baseboard. Depending on the dimensions of the baseboard, alternative customer-supplied fasteners may be needed.

During the installation, align the baseboard with the center of the end rafter. Do not allow the baseboard to extend beyond the end rafters at either end of the frame. Doing so will interfere with the installation of the end wall corrugated panels.

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.

Consult these instructions or contact Customer Service for additional information regarding baseboards.

ClearSpan
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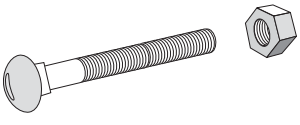
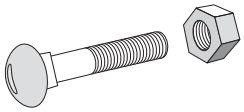
The following graphics and photos will help you identify the different parts. (Some parts are not shown.)

FA4482B
Tek Screw
(short)

QH1402
Band Clamp



FAH009B & FALB01B
Carriage Bolt & Hex Nut



FAH320B & FALB32B
Carriage Bolt & Hex Nut

102921
Neo-bonded
Galvanized Washers

102197
Aluminum
U-Channel Profile

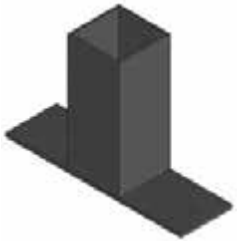
104548
End Cap Profile
Doors/Fans/Vents

102548
Cross Connector

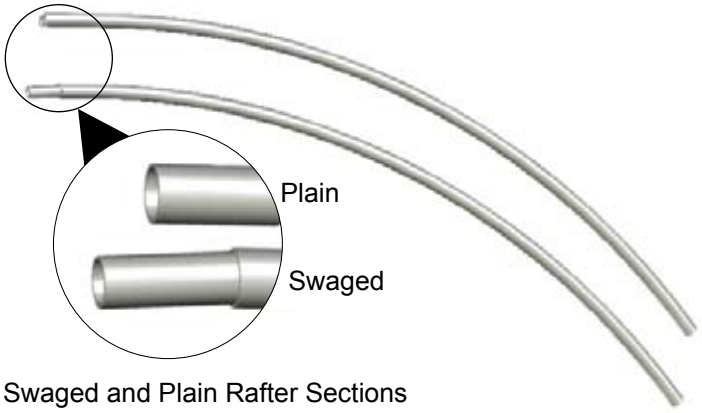
104074
Square-to-Round Tube
Connect Bracket

102856
End Clamp

QH1330
Angle Bracket



104624
Square Tube Fitting



Swaged and Plain Rafter Sections

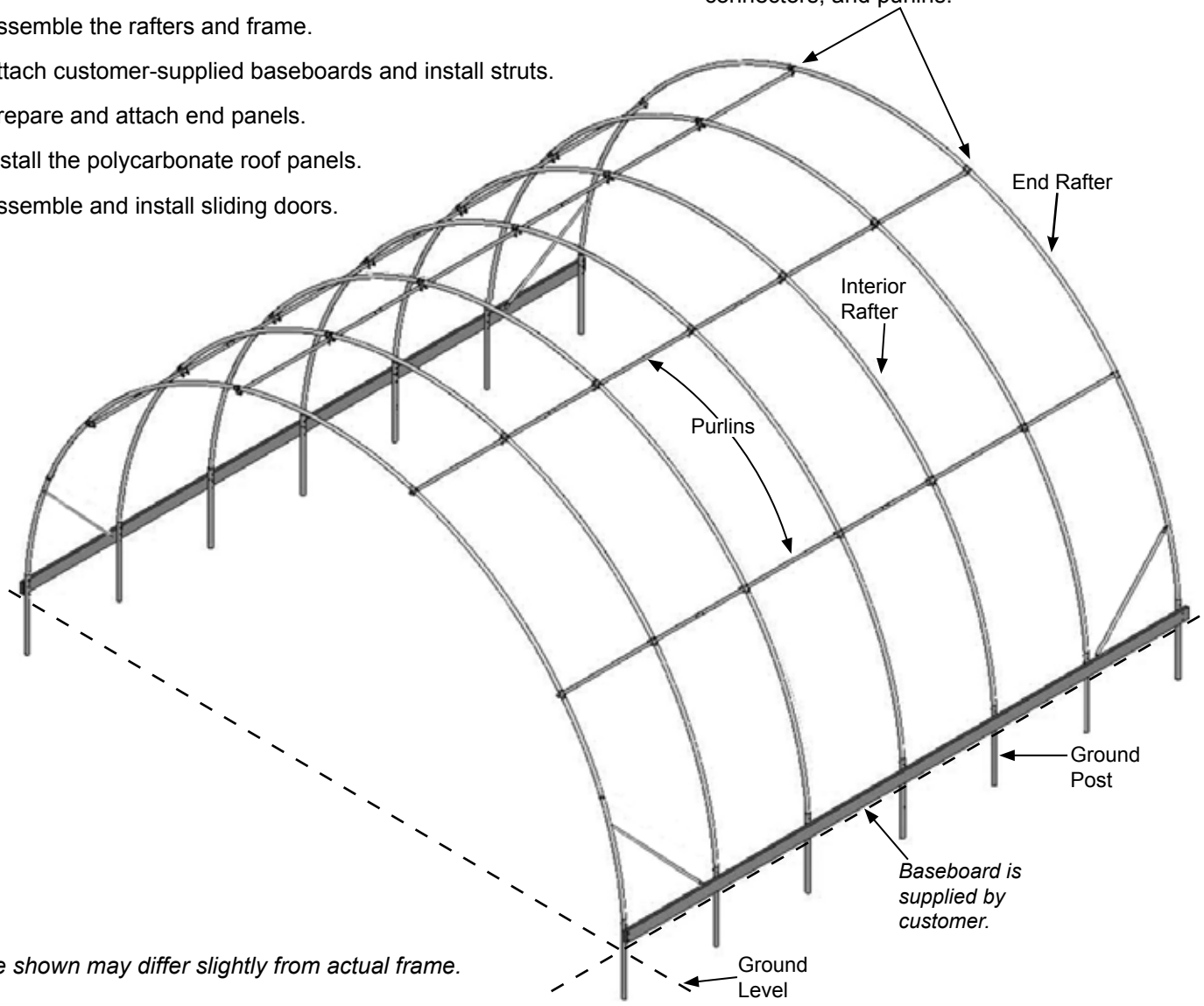
Round Style Clear View Greenhouse

OVERVIEW

This section describes assembling your Round Style Greenhouse. For details, please see section, Assembling the Round Style Greenhouse Components. See illustration below to identify main parts of greenhouse.

1. Locate the required parts for each assembly procedure.
2. Assemble the rafters and frame.
3. Attach customer-supplied baseboards and install struts.
4. Prepare and attach end panels.
5. Install the polycarbonate roof panels.
6. Assemble and install sliding doors.

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



Frame shown may differ slightly from actual frame.

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.

Drive ground posts 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.

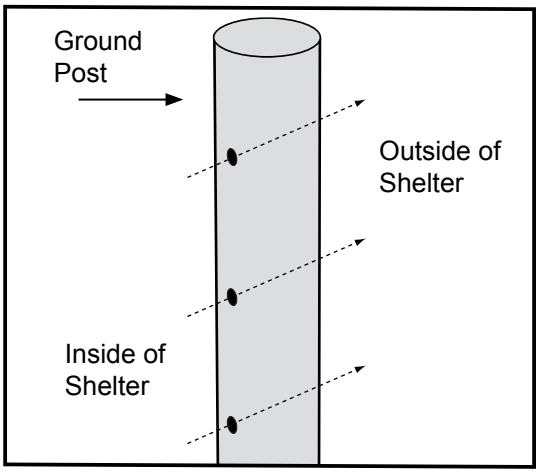
SQUARE THE SITE

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 eleven (11) inches 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.

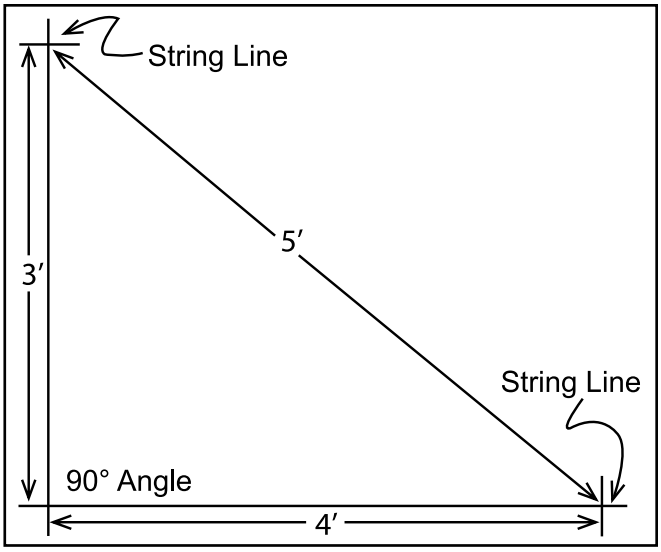
   To align the bolt holes in the ground posts with those in the rafter *after driving the ground posts,* insert a tapered rod or pry bar into a ground post bolt hole and turn the post using the rod or pry bar.

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 (center-to-center) 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. See Step 1 if needed.

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

ASSEMBLING THE ROUND STYLE GREENHOUSE FRAME COMPONENTS

After the site is prepared and an inventory of parts is complete, continue with the rafter assembly.

NOTE: All rafter assemblies consist of rafter tubes and purlin clamps. Consult the Front Profile diagram in the Quick Start section of these instructions before and during the rafter assembly process.

Assistance is required to assemble the greenhouse frame.

RAFTER ASSEMBLY

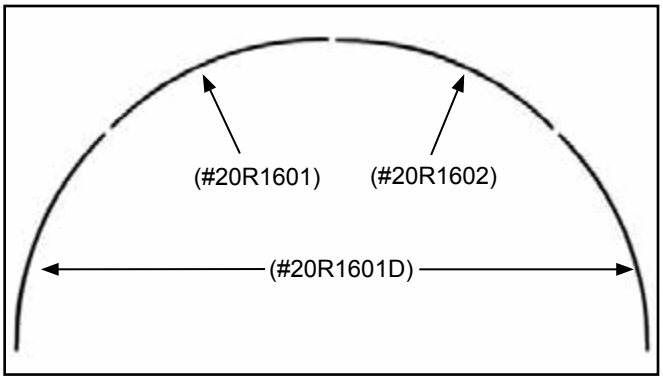
Gather the parts:

- Rafter pipe (#20R1601)
- Rafter pipe (#20R1602)
- Rafter pipe (#20R1601D)
- End clamps (#102856)
- Tek screws (#FA4482B)
- Magnetic nut setter 3/8" x 2-9/16"

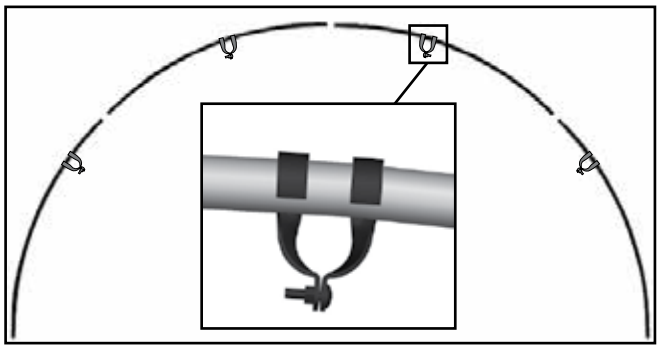
END RAFTER ASSEMBLY

The end rafters include purlin end clamps and band clamps. Install the purlin end clamps before the different pipes of the rafters are connected. The band clamps for the side struts are installed when the two (2) end rafters are set onto the ground posts.

1. Select the four (4) pipes needed to assemble the first end rafter and arrange on a level surface.



2. Slide four (4) end purlin clamps (two on each side of the peak) over the rafter pipes.



End clamp as seen from outside the assembled rafter.

NOTE: Consult the Front Profile diagram in the Quick Start section for proper end clamp placement and position.

3. After slipping the clamps over the rafter pipes, insert the swaged end of the rafter pipes into the plain ends of the pipes to assemble the rafter.

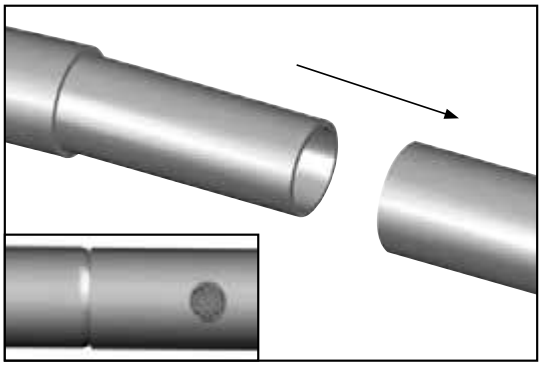
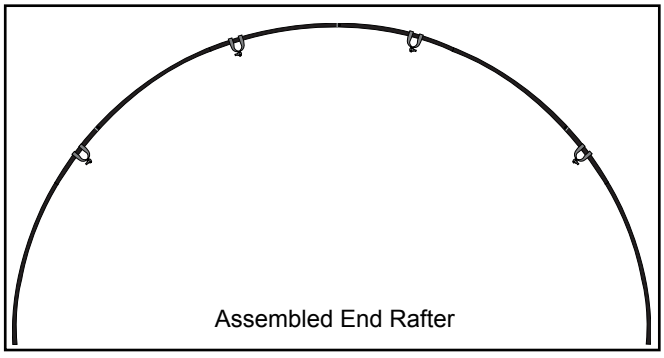


Diagram shows a similar connection.

4. Once the rafter is assembled, install a Tek screw through the rafter pipes to secure each joint. See the diagram above.

IMPORTANT: Verify that you are installing the screw through the pipe that contains the swaged end of the adjacent pipe. To prevent damage to the cover and end panels (if equipped), position the Tek screws so the heads do not contact the cover when it is installed.



Assembled End Rafter

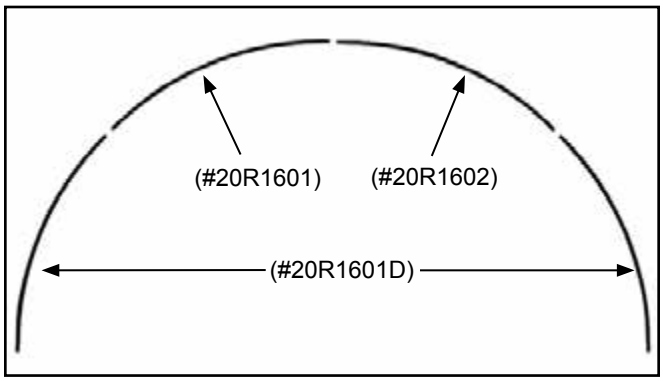
5. Repeat steps to assemble the remaining end rafter and set both end rafters aside.

RAFTER ASSEMBLY (continued)

INTERIOR RAFTER ASSEMBLY

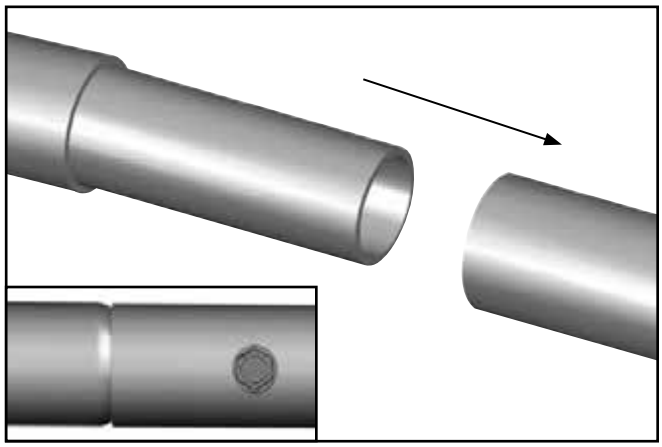
Complete the following steps *for the interior rafters*.

1. Select the pipes for the first interior rafter assembly and position these on the ground as shown.



IMPORTANT: Interior rafters do not use end clamps. Instead, cross connectors are attached during the frame assembly.

2. Insert the swaged ends of the rafter pipes into the plain ends of the pipes and secure each joint with a Tek screw.



NOTE: For longer frames, it may be easier to assemble a few rafters at a time and then begin to assemble the frame.

3. Once rafters are assembled, assemble the frame.

FRAME ASSEMBLY

After all ground posts are driven in place and rafters are assembled, assemble the frame.

NOTE: The baseboards (strongly recommended) shown in the diagrams throughout these instructions are not included and must be supplied by the customer.

ASSEMBLE AND PRE-MARK THE PURLINS

The following steps describe one way to speed the assembly process. Pre-marking the purlins ensures that an accurate spacing of the rafter assemblies is achieved and maintained during assembly.

Those familiar with the assembly of similar structures may elect to skip this procedure and continue with the ASSEMBLE THE FRAME procedure on the next page.

Gather the parts:

- Pipe 1.315" x 75" swaged (#131S075)
- Pipe 1.315" x XX" plain (#131P0XX)
- Marker and tape measure

NOTE: The purlins are part of the assembled frame and run perpendicular to the rafter assemblies. Each purlin consists of 1.315" x 75" (#131S075) swaged pipes (number is determined by shelter length) and one (1) 1.315" x XX" (#131P0XX) plain pipe.

The XX" represents the remaining length required to reach the end of the shelter. Consult the Spec Sheet for part identification.

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 separated during the assembly procedure. Do not fasten them together at this time.

3. For the 48" rafter spacing, measure forty-eight and three-quarters inches (48-3/4") from one end 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.

FRAME ASSEMBLY (continued)

4. From the location marked in the previous step, measure forty-eight inches (48") and make another mark on the assembled purlin.
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, assemble the frame.

ASSEMBLE THE FRAME

After all ground posts are driven in place, rafters are assembled and purlins pre-marked, assemble the frame.

Gather the Parts:

- All rafter assemblies and pre-marked purlins
- Band clamps (#QH1402)
- Cross connector (#102548)
- 5/16" x 2-1/2" machine bolts and 5/16" nuts
- Lifts, ladders, and assistants
- Rope or cable to temporarily brace rafters

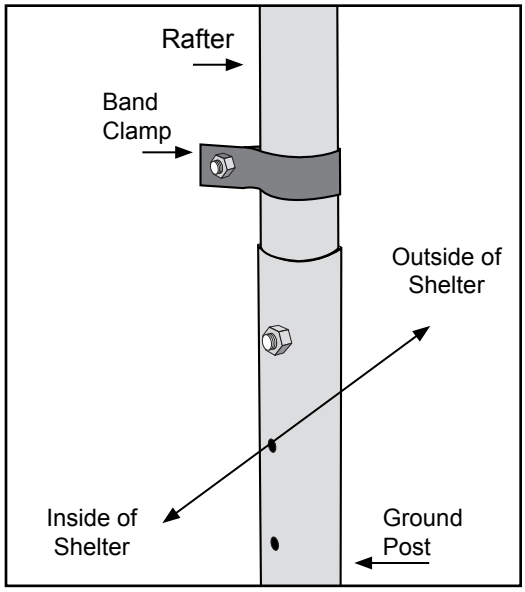
1. Carefully stand the *first end rafter*, *slide a band clamp onto each rafter leg*, and place the leg pipes in the first set of ground posts.

   Brace the rafter in place to keep it straight. Depending on the frame size, a lift and additional assistants may be needed. Consult Quick Start section for details.

Rafter shown differs in design.

ATTENTION: Stand the rafter so the nuts and bolts of the end clamps are to the inside of the frame.

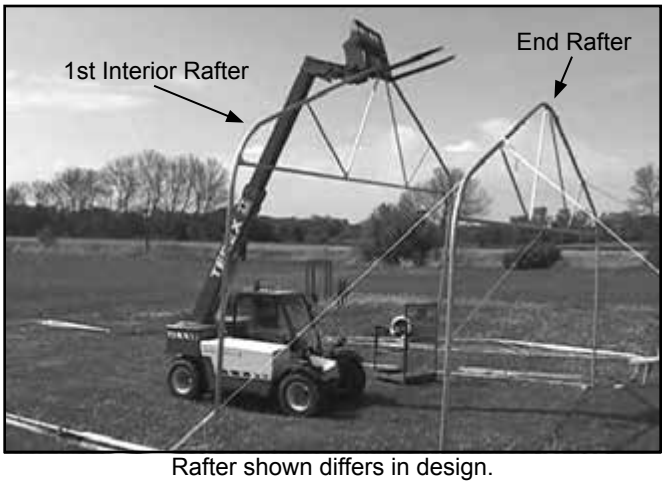
2. Secure the leg pipes to the ground posts using the 5/16" x 2 1/2" machine bolts and nuts.



3. Use rope or cable to brace the rafter in position.

Rafter shown differs in design.

4. Carefully position the first interior rafter in place and secure the leg pipes to the ground posts.



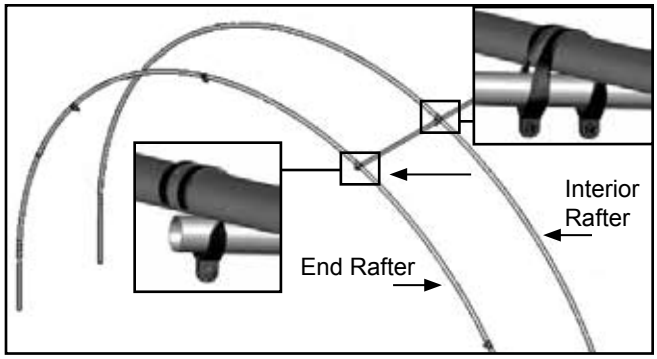
Rafter shown differs in design.

FRAME ASSEMBLY (continued)

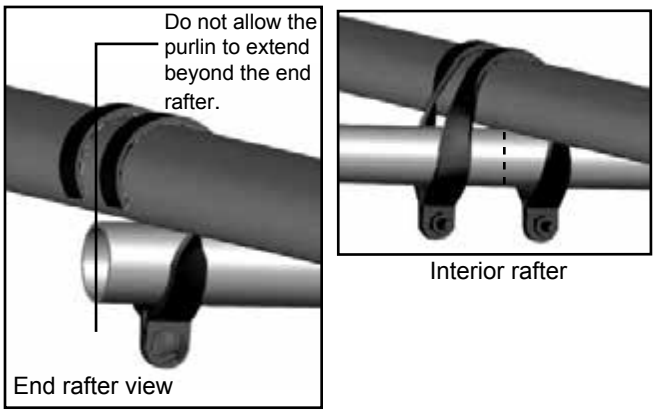
5. As the second rafter is steadied, remove one section of pipe from one assembled purlin.

   NOTE: Work from the end of the purlin where the first measurement was taken during the pre-marking procedure if that procedure was used.

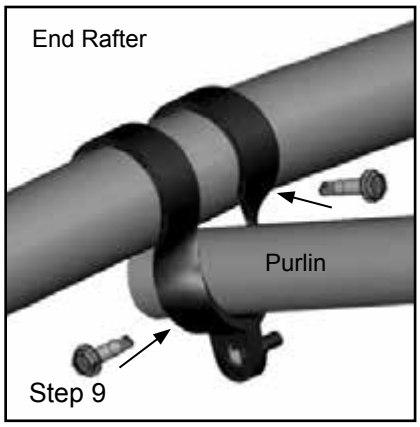
6. Insert the purlin pipe through an upper end clamp of the end rafter and through a cross connector placed in the same position on the *interior rafter.* Consult Quick Start section for purlin location per frame.



7. Align the plain end of the purlin with the center of the end rafter and rotate the purlin pipe so that the first mark is visible (near the clamp of the interior rafter).

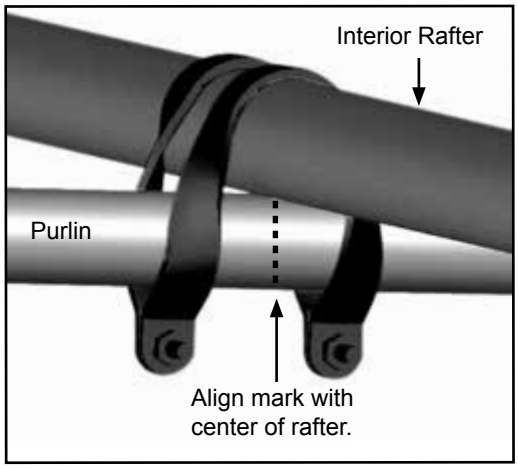


8. Tighten the end clamp and secure it to the rafter with a Tek screw.



9. Install Tek screw through end clamp and into the purlin pipe.

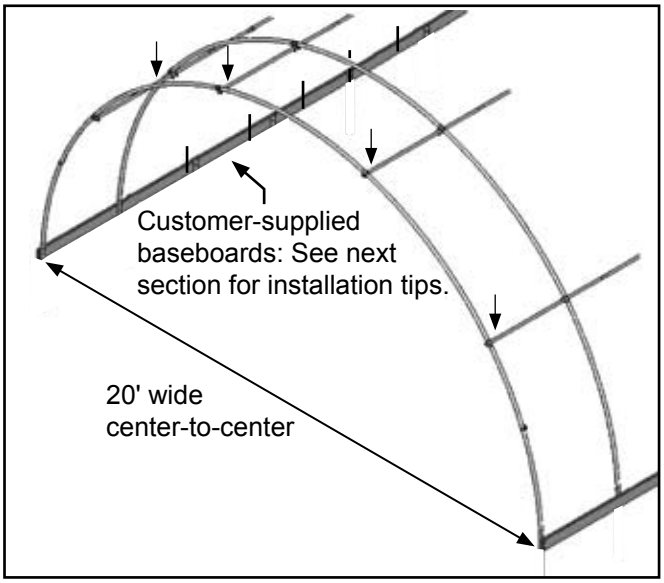
10. Move to the interior rafter and align the mark on the purlin with the center of the rafter to maintain the proper rafter spacing.



11. Verify that the rafter spacing is forty-eight inches (48") on-center (adjust as needed) and tighten the cross connector.

12. Secure the cross connector to the rafter using a Tek screw. See Quick Start section if needed.

13. Repeat Steps 6-12 to install the first section of each purlin assembly for the first two rafters.



14. Choose another interior rafter assembly and set it in position. DO NOT USE THE REMAINING END RAFTER.

15. Secure the rafter legs to the ground posts as previously described and steady the rafter.

16. Remove another section of purlin pipe from each pre-marked purlin assembly and attach these to the rafter.

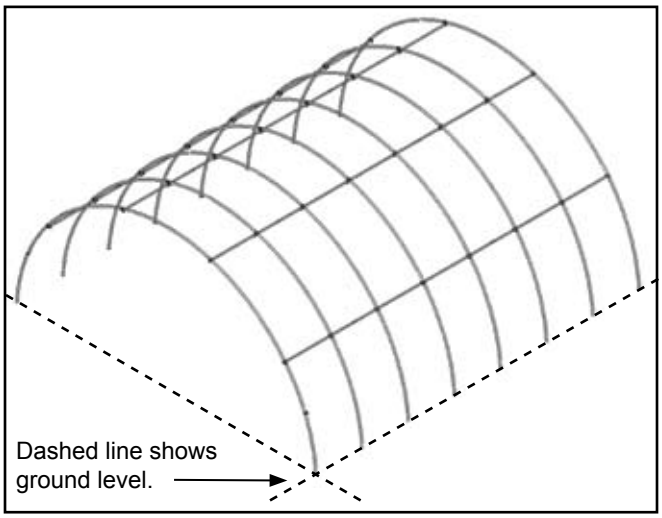
17. Verify that the distance between the rafters is 48" center-to-center. *Adjust the rafter forward or backward as needed to maintain this dimension.*

FRAME ASSEMBLY (continued)

18. Secure each purlin pipe joint with a Tek screw.
19. Repeat the above steps as needed to stand and secure the remaining interior rafters and purlins to complete the frame assembly.
20. Slide a band clamp onto each leg of the remaining end rafter, secure the rafter to the ground posts, and attach the purlins to it. Verify that the end clamps are positioned with the nut and bolt to the inside of the assembled frame. Refer to the Quick Start section and previous diagrams if needed.

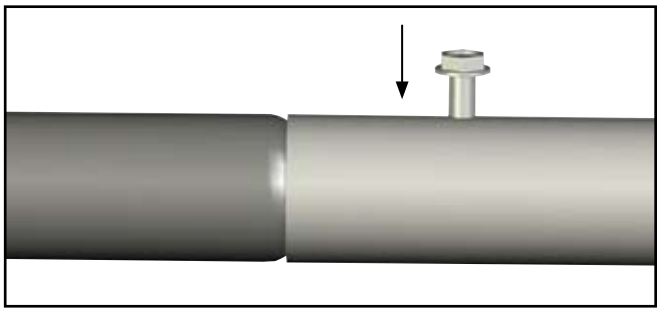
    NOTE: If the last end rafter is plumb and the purlin extends beyond the end of the rafter, cut the last section of purlin pipe to the required length.

    Typically purlins do not require cutting. Verify that you have correctly assembled the purlin using the correct pipes *before cutting any pipe to length*.



Frame length may differ from actual frame.

21. Once all rafters are set and all purlins are in place and secure, return to each pipe splice of each purlin and rafter and verify that a Tek screw is installed to secure the joint. Install a Tek screw if needed.



22. Remove any temporary bracing (if needed) and install the baseboards and side struts.

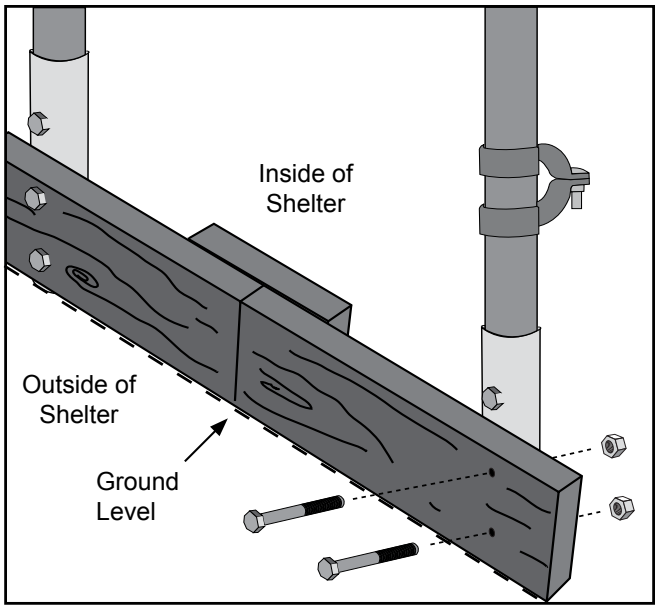
BASEBOARD INSTALLATION (RECOMMENDED)

Gather the parts:

- Treated or recycled plastic lumber (supplied by customer).
- 1/4" x 4" carriage bolts and nuts (may not work for baseboards with a thickness greater than 1-1/2")

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 1/4" x 4" carriage bolts and nuts. Continue adding baseboards to complete the first run. Splices are made between posts as shown below in the illustration. 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.

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: To prevent interfering with the installation of the end wall panels, *do not allow the end of the baseboard to extend beyond the end of the end rafter.*

SIDE STRUT INSTALLATION

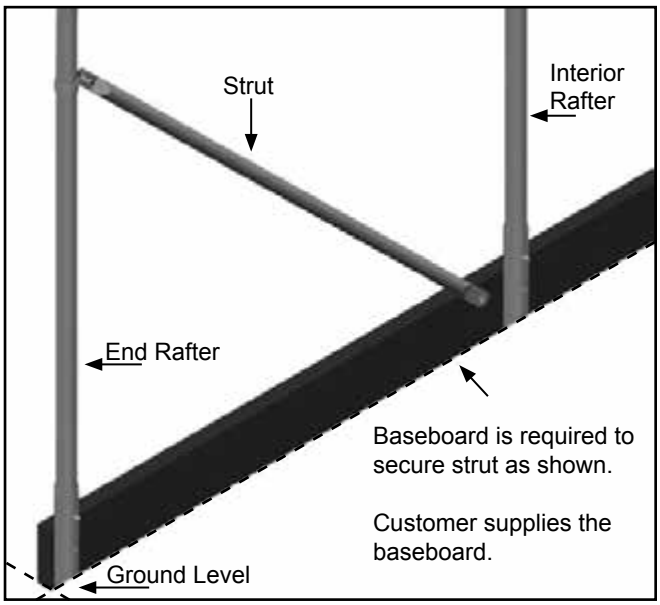
There are four (4) side struts for the shelter. These struts are positioned between the end rafters and the first interior rafter on each side of the shelter.

Complete these steps to install the four (4) side struts:

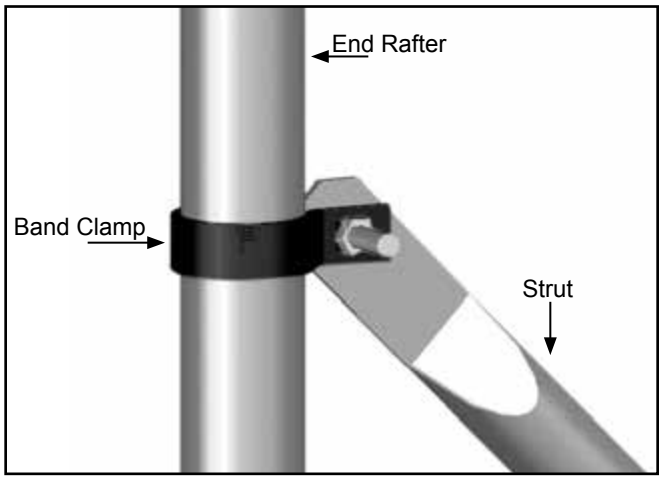
Gather the parts:

- Struts
- Band clamps (#QH1402)
- Lag screw or nut and bolt (supplied by customer)

1. Locate one strut and position it between one end rafter leg and the leg of the first interior rafter as shown below.

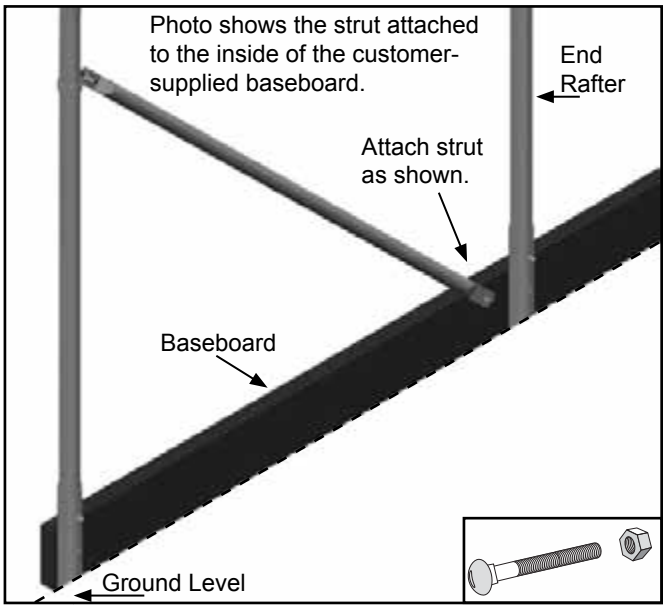


2. Attach one end of the strut to the band clamp as shown in the diagram below.



NOTE: Head of bolt on the band clamp must face the polycarbonate panels.

3. Attach the remaining end of the strut to the baseboard using a lag screw or nut and bolt (not included). See the diagram that follows for location.



NOTE: A baseboard provides a place to attach each strut and helps keep the ground posts at the required depth. The customer is responsible for providing a baseboard for this frame.

If no baseboard is used, place a band clamp around the rafter just above the ground post and secure the lower end of the strut to the band clamp (not shown).

4. Repeat the above steps to attach the remaining side struts to the shelter.
5. After securing the struts, verify that all clamps are secured with a Tek screw to the rafters.
6. Continue the next procedure to anchor the assembled frame.

ANCHOR THE ASSEMBLED FRAME

At this point, anchor the greenhouse 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 greenhouse 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.

END WALL INSTALLATION

The steps to install the end walls for the greenhouse include the following:

1. Install end wall framing. (See the diagrams in the Quick Start section at the back of these instructions. Read the installing accessories note below.)
2. Prepare polycarbonate end panels and attach.
3. Assemble doors and attach.

INSTALL END WALL FRAMING (Front and Back)

Site variations and different methods for anchoring the greenhouse may require slight changes to be made to these instructions. *It is the responsibility of the owner/ builder to adapt these instructions as needed to adjust for these and other differences.*

A NOTE ABOUT INSTALLING THE END WALL FRAMING FOR OPTIONAL HEATERS, VENT FANS, AND MOTORIZED SHUTTERS (if equipped):

Optional accessories such as heaters, vent fans and motorized shutter units are typically installed or attached to the end walls of this greenhouse. Additional horizontal framing (included) is installed *between* the vertical end wall frame tubes to mount these accessories. The spacing shown for the end wall supports on the end frame diagrams may be too narrow for the installation of some larger accessories.

Diagrams do not show framing for the accessories.

When framing the end wall, consult the installation instructions for the accessories (if equipped), or measure the width of the accessory to accurately space and position the end frame tubes.

Consult the panel installation diagrams in the Quick Start section to *identify the verticals that can be moved*.

MOVE ONLY THE VERTICAL SUPPORTS LABELED AS NC (NON-CRITICAL). See Quick Start diagrams.

Before installing any greenhouse accessory, adhere to the following:

- Consult the end frame diagrams before installing the accessory horizontal framing.
- Move only those verticals labeled as "NC" on the end frame diagrams when deciding where to install the additional horizontal framing for accessories.
- Consult the diagrams in the Quick Start section showing the polycarbonate panel locations and the locations of the aluminum trim and profile before repositioning any end wall vertical.
- DO NOT REPOSITION THE END WALL VERTICALS USED AT THE SEAM OF TWO (2) POLYCARBONATE PANELS.
- Always consult the installation guides that shipped with the accessory for additional precautions, recommendations, and safety requirements.
- Before installing any electrical accessory, consult a professional electrician for precautions and additional assistance.
- For gas heaters, a professional, qualified service technician must install the unit.

Complete these steps to install the accessory framing:

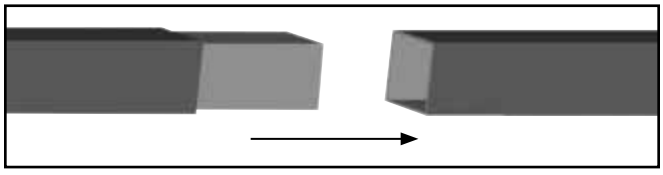
1. Based on the installation requirements and precautions of the accessory, choose a location in the end wall to mount the accessory, and cut a 1.5" x 1.5" frame tube to the required length for framing.
2. Attach these horizontal frame tubes between the vertical frame tubes of the end wall (at the required height determined by the installation instructions included with that accessory) using QH1330 brackets.

INSTALL THE FRONT END WALL FRAME

Refer to the end frame diagrams (Quick Start section). The materials and parts needed to assemble the end wall frame include:

- Square tube (#102897) & roller assembly (#100356)
- Angle brackets (#QH1330) & band clamp (#QH1402)
- Square tube fitting (#104624)
- Square-to-round tube connect bracket (#104074)
- Carriage bolt (#FAH320) and nut (#FALB32B)
- Tek screws (#FA4482B)

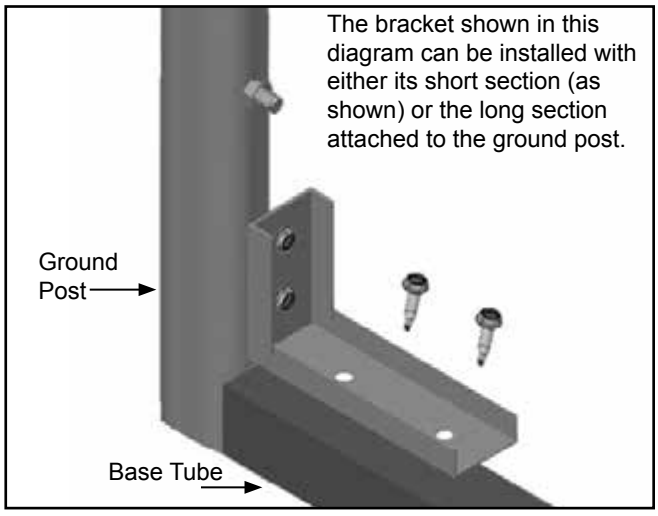
1. Locate the square metal tubing for the base tube of the end wall. The base tube consists of 99" swaged tubes and one (1) short section cut from a length of square pipe. See Quick Start section for clarification.
2. Insert the swaged ends of the tubing into the plain ends to connect the pieces, measure, and cut to length.



3. Position this assembled base tube on the ground between the legs of the end rafter at the front of the greenhouse and anchor it in place. This base tube will be directly below and in line with the end rafter.

END WALL INSTALLATION (continued)

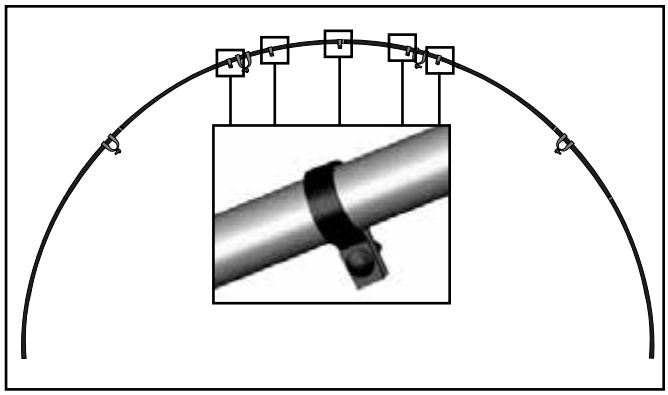
4. Secure the base tube between the legs of the end rafter using an angle bracket and Tek screws.



5. On the base tube surface facing the inside of the greenhouse, install a short Tek screw at each joint and then locate and mark the center of the base tube.

6. Consult the End frame diagram (Quick Start section) and mark the rough opening for the width of the double door assembly.

7. Place the band clamps on the end rafter above the door as shown below. **DO NOT TIGHTEN THE BOLTS AT THIS TIME.**

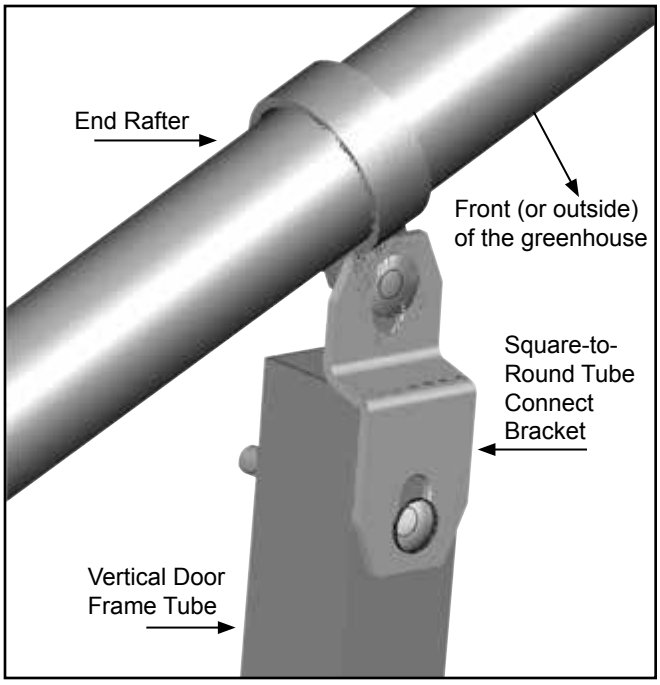


8. Select the tubing for the two vertical frame supports for the sides of the double door. Each support includes:
   - Square tubing (#102897 swaged end): For the longer vertical frame members, shorter sections of tube may need to be cut and added.
   - One (1) square-to-round tube bracket (#104074)

9. Measure the distance *between the top of the base tube and band clamp (Step 7)* to determine the length of the first vertical section of the door frame tube.

10. Choose one square tube (#102897), insert the swaged end of the long tube into the plain end of another tube and tap with a hammer to properly seat the tubes at the joint.

11. On this assembled frame member, mark the length determined in Step 9 (above) and *subtract the amount needed to account for the square-to-round tube connect bracket*, which is attached to the top of the frame tube. See the diagram that follows.



12. Select a square-to-round tube connect bracket and attach the bracket to one end of the vertical frame member. Use a 5/16" drill bit to drill a hole through the tube and attach the bracket to the tube using a nut and carriage bolt.

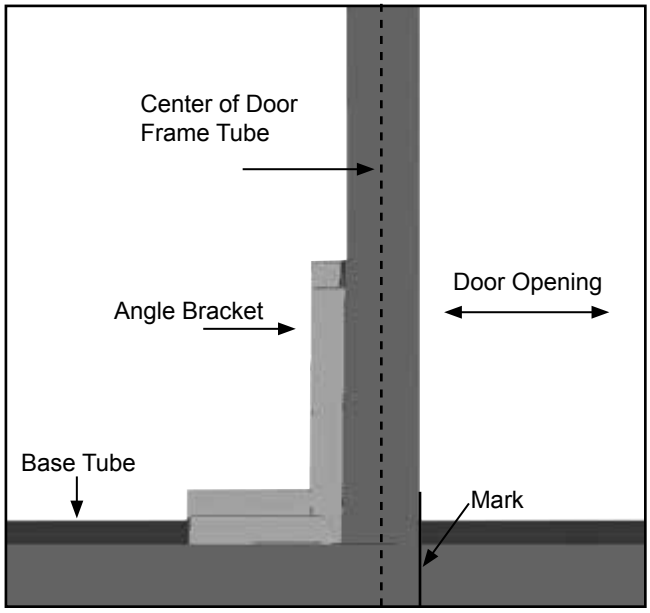
13. Repeat Steps 9-12 for the remaining vertical frame member for the door.

14. With the square-to-round tube connect bracket attached to the top of each vertical door frame tube, use the bolt in the band clamp to attach the bracket to the band clamp. DO NOT TIGHTEN AT THIS TIME.

    NOTE: The heads of the bolts for each clamp are to the outside (or front/back) of the greenhouse. At this point, the two vertical door frame members should be loosely attached to the end rafter assembly.

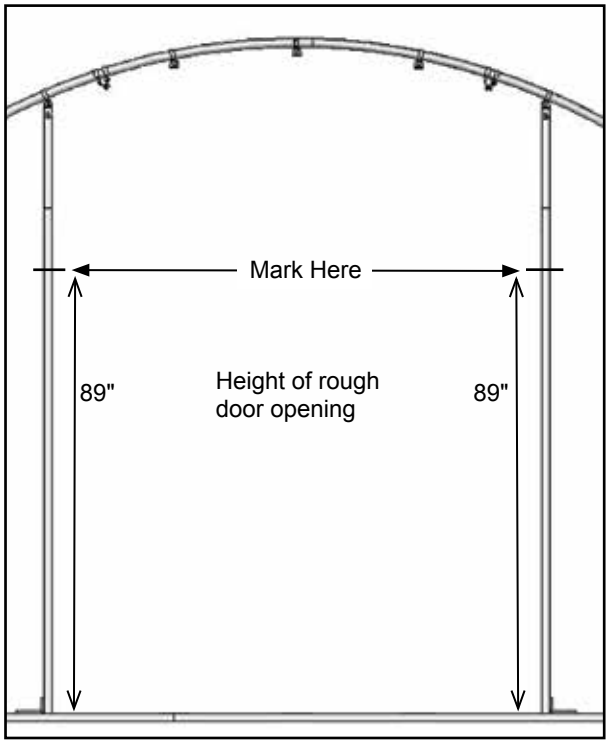
INSTALL THE END WALL FRAME (continued)

15. Using the marks on the base tube for the rough opening for the door, attach the bottom of each vertical frame member to the base tube using an angle bracket. Consult the end frame diagram.



16. With the vertical door frame tubes attached at the bottom and loose at the top, measure each frame member to locate the height of the rough door opening and mark the location on the inside of the door frame.

    Consult the End Frame diagrams in the Quick Start section located at the back of these instructions.

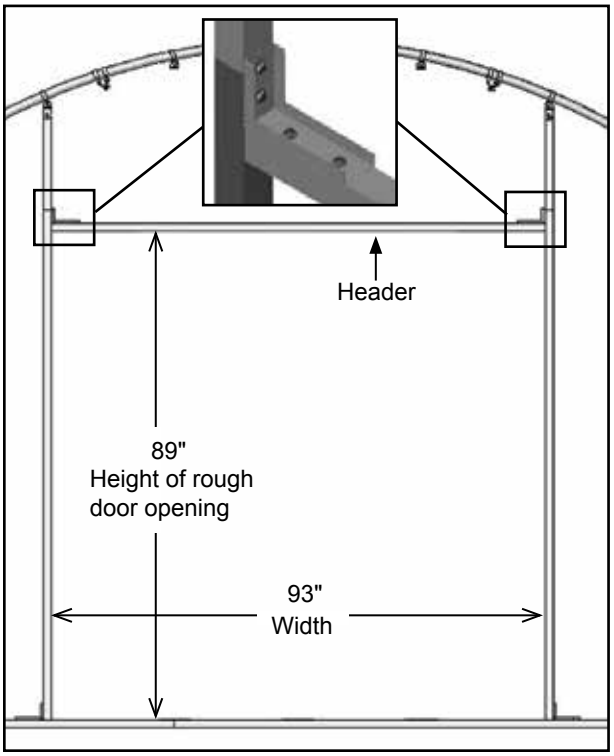


Frame shown may differ from actual frame.

17. Using a level (or other means), verify that one vertical door frame tube is plumb and tighten the band clamp bolt to lock the first door frame member in place.

18. Choose the square tube for the door frame header and cut the swaged end to the proper length for the width of the rough door opening.

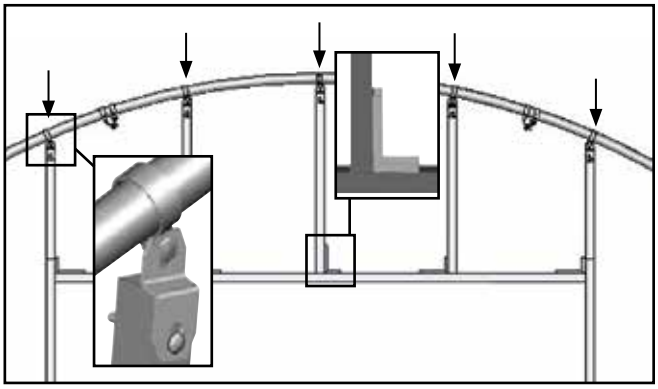
19. Using two angle brackets, attach the header tube to the end wall assembly between the vertical door frame tubes as shown.



Inside dimensions are shown. Diagrams may show a different frame used for illustration purposes only.

20. Verify that both door frame verticals are plumb and recheck the width of the rough door opening at the top and bottom. Adjust if needed.

21. Cut the metal tube for the short, end wall supports (positioned between the header and the end rafter) and attach as shown in the following diagram.



INSTALL THE END WALL FRAME (continued)

22. Use the end frame diagram to determine the number of remaining vertical end frame supports and place one band clamp on the end rafter for each of the remaining vertical supports. Use the diagram for the location of these clamps.

23. Using the end frame diagrams (Quick Start section), measure and mark (on the base tube) the locations of the remaining vertical end wall supports.

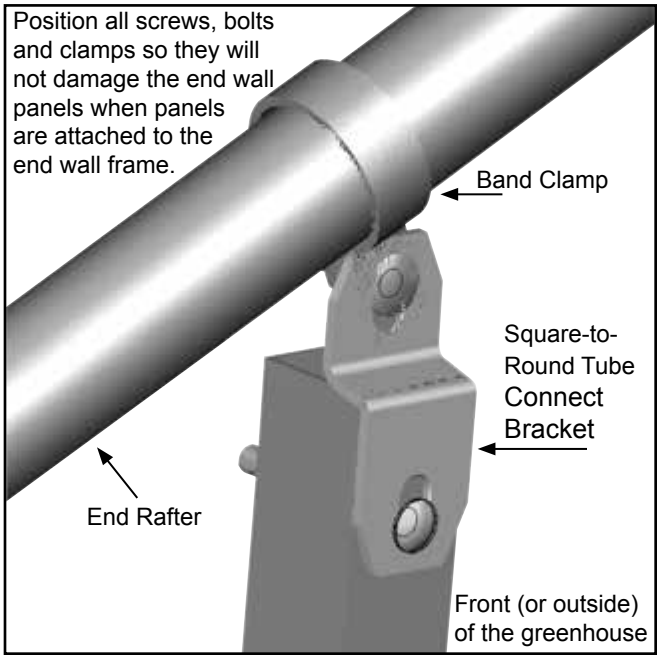
24. Choose the parts for each remaining vertical support for the end wall framing. Each vertical support consists of the following parts:

    - Square tube: Longer verticals may require an additional shorter length cut from a longer tube.
    - One (1) square tube fitting (#104624) to attach the support to the base tube of the end wall assembly.
    - One (1) square-to-round tube connect bracket (#104074) to attach the tubing to the band clamp on the end rafter.

25. Use the steps presented earlier in these instructions and the end frame diagrams to measure and cut each section of square tubing for the remaining vertical frame members.

    ATTENTION: Remember to subtract the amount needed to account for the square-to-round tube connect bracket that will be attached to the top of each remaining frame member.

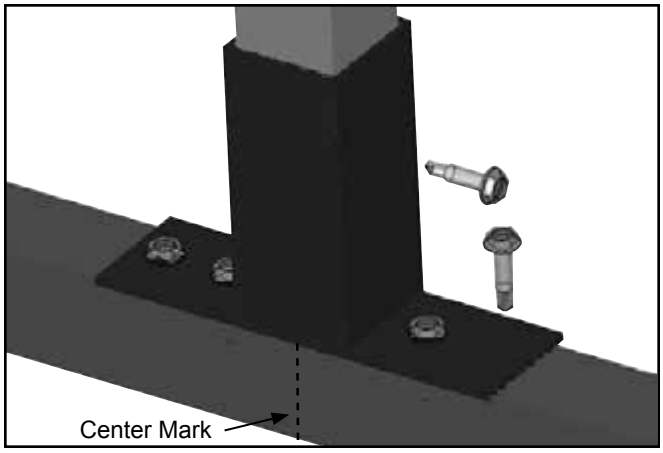
26. Choose a square-to-round tube connect bracket and attach the bracket to one end of the vertical frame member. Use a 5/16" drill bit to drill a hole through the tube and attach the bracket to the tube using a nut and carriage bolt.



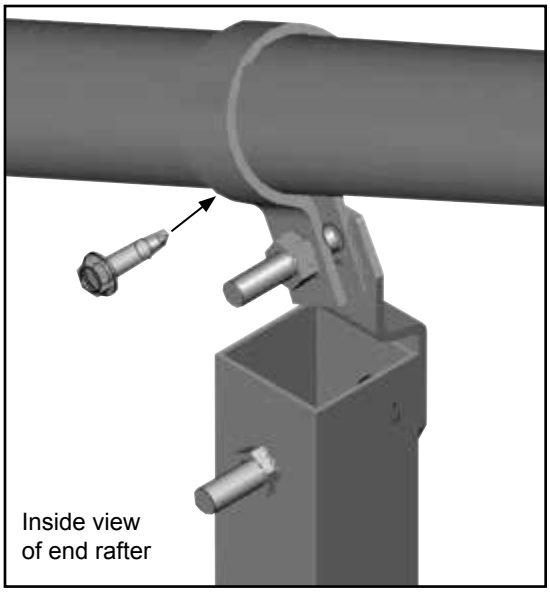
27. With the square-to-round tube connect bracket attached to the top of the frame member, place a square tube fitting on the bottom of the frame member.

28. Align the center of the assembled frame member with the center mark on the base tube and attach the top of the frame member to the band clamp on the rafter. *Do not tighten*.

29. Verify that the vertical end wall frame member is plumb and use the short Tek screws to secure the square tube fitting to the base tube.



30. Tighten the top band clamp and *install a short Tek screw through the clamp and into the rafter.*



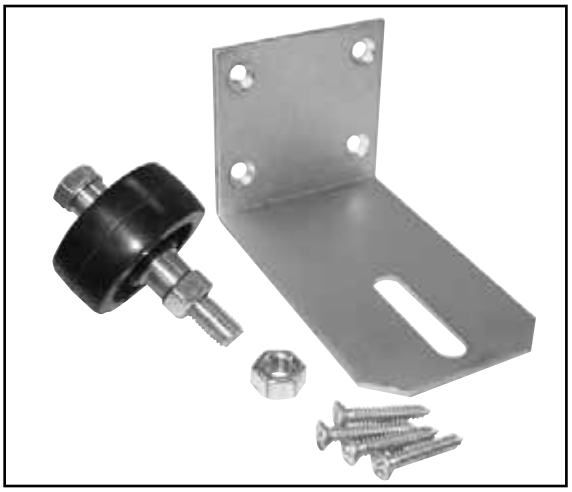
31. Repeat the procedure as needed to assemble and install the remaining vertical end wall supports.

32. Return to the bottom of each frame member and install a short Tek screw through the backside of each tube fitting to secure the end frame support to the tube fitting.

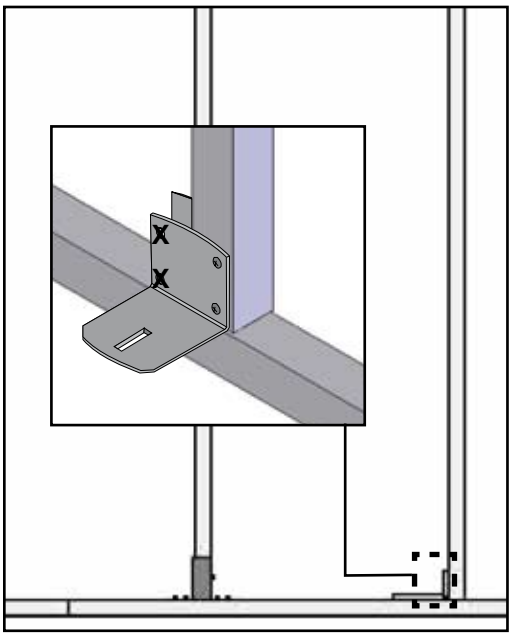
33. Once each end wall is assembled, return to each band clamp and pipe splice of each base tube and verify that a Tek screw is installed. Install a Tek screw if needed.

INSTALL THE END WALL FRAME (continued)

34. Locate the 100356 lower roller assembly and remove the roller, bushings, screws, bolt and nuts.



35. Looking at the rough door opening of the assembled end wall, secure the angle bracket in the lower-left corner of the opening as shown below.



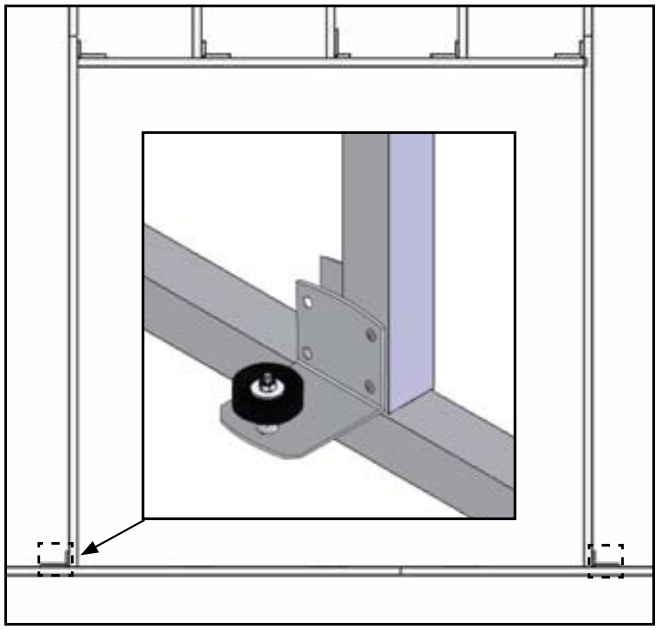
NOTE: Use FA4482 Tek screws. Do not use the holes marked with an X in the photo above.

If using the screws supplied with the roller assembly, drill two (2) pilot holes into the frame and attach roller assembly using two (2) screws.

36. Reattach the roller and related parts to the angled bracket attached to the end wall frame.

NOTE: Do not tighten the roller assembly at this time. It is adjusted and tightened when the door is installed.

37. Repeat the steps to attach the remaining roller assembly to the lower-right corner of the rough door opening. View as seen from outside the frame.



38. Continue with installing the framing for the back end wall.

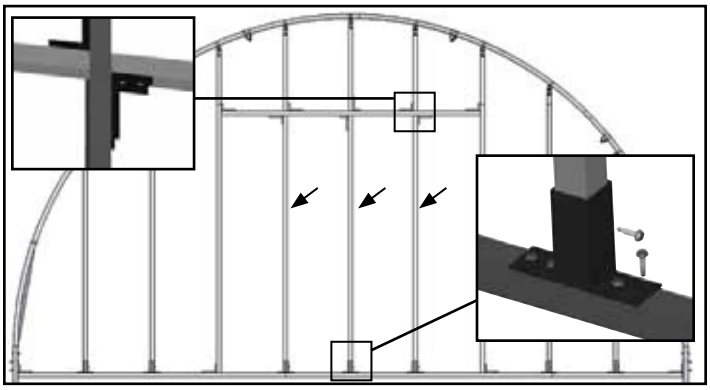
INSTALL THE BACK END WALL FRAME

The end wall framing for the back of the greenhouse is assembled in the same way as the front end wall.

If the back wall includes the optional double door kit, repeat the End Wall Installation procedure and install the framing for the remaining end wall.

CONSULT THE QUICK START SECTION FOR ADDITIONAL FRAMING INFORMATION.

If the back end wall *does not include* an optional double door kit, install vertical frame members in the framed opening. See the diagram below.



1. Join and cut the tubes to the required length and attach to the end wall framing.
2. Attach the frame support at the top and bottom as previously described.
3. Continue with installing the end panels.

END PANEL INSTALLATION

After the end wall framing is attached, the end wall panels are installed.

The following procedure describes one way to install the end panels. This procedure installs the panels so the corrugated ribs run horizontally.

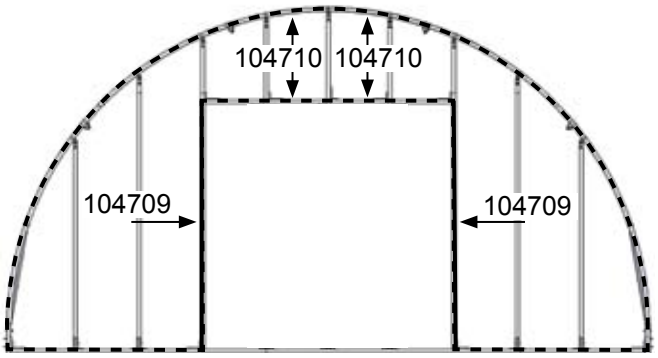
Complete these steps to install the end panels.

NOTE: End panels overlap each other and are attached to each frame member of the end wall and to the rafter.

Use *Tek screws (#FA4482) and washers (#102921) to secure all polycarbonate panels to the framing*.

ATTENTION: Both end walls are covered using 4' x 8' panels. *Consult the Front and Back End Panel Details diagrams in the Quick Start section of this document.*

1. Locate the vertical closure foam strips (104710), remove the plastic film to expose the adhesive, and attach the strips to the bottom frame member of the end wall and to the outside edge of the end rafter.



Dashed lines show where to attach the vertical foam closure strips (#104710). The solid lines show where to install the horizontal closure strips (#104709).

NOTE: The foam stripping regarding the arch of the rafter is installed on the *end wall face of the rafter. It is used to seal the edges of the end panels*.

2. Choose one 8' corrugated panel, set it in place to one side of the rough door opening, and secure it to the end wall frame tube in a few places.

DO NOT attach it along the edges at this time.

ATTENTION: All screws that hold the panels to the frame are spaced at approximately 24" apart.

3. Take a section of the horizontal foam stripping (104709) and install it under the edge of the end panel to seal the edge along the door frame.

4. Install a Tek screw and washer to hold the panel and foam seal in place.

ATTENTION: *DO NOT* install the screw near the top of the end panel where the next panel will overlap.

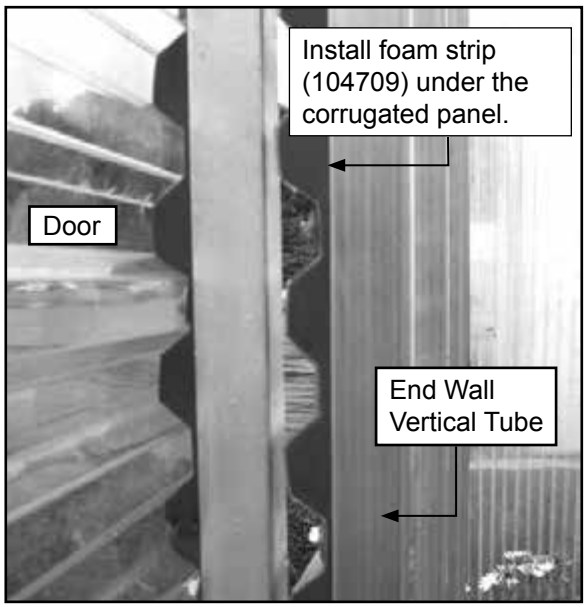
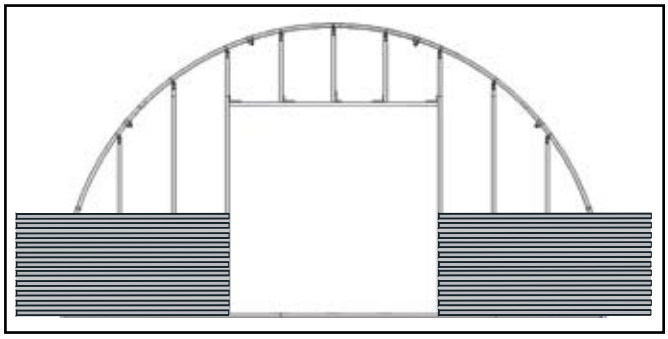


Photo shows the foam strip (104709) under the panel along the edge of the door frame as seen from *inside the greenhouse*.

5. Install the next bottom end panel and foam strip to the end wall frame on the other side of the door.

6. After installing all bottom end panels on each side of the door, secure the outside end panels to the rafter using Tek screws and washers.

NOTE: Do not completely secure the panels in place until the next panel (moving up) is installed.

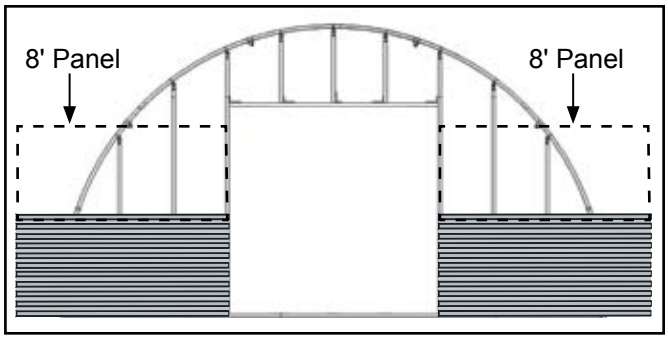


Panels are not to scale.

CONSULT THE DIAGRAMS IN THE QUICK START SECTION FOR DETAILED INFORMATION.

END PANEL INSTALLATION (continued)

7. Choose the next 8' panel and overlap the top edge of the bottom panel with the bottom edge of the top panel.



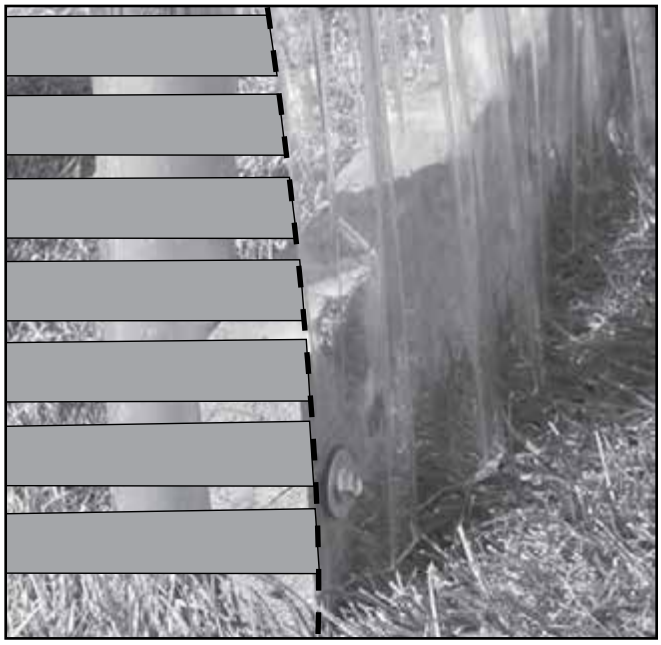
NOTE: The top panel will overlap the bottom panel by one rib. (Panels are not to scale.)

8. Install the horizontal foam strip (104709) to the door edge of the panel as previously described.
9. Secure the top panel to the end wall framing as previously described.
10. Once the top panel is secured, finish securing the bottom panels to the end wall framing (as needed) and add the next top panel.
11. Repeat the process for the top panel regarding the other side of the door.
12. Continue to install the remaining panels until the end wall is covered.
13. Once the door end of the greenhouse is covered with end panels, cut all panels to the width of the end wall using the rafter as a guide.

    ATTENTION: The roof panels can be installed on the outside of a baseboard as shown in the next photo, or flush with the top edge of the baseboard (not shown).

    If you want to attach the roof panels to the outside of a baseboard, use *the installed baseboard as the outside edge of the end wall at the bottom* when cutting the *lower end wall panels* to width. See the photo in the next column for details. *Use the rafter* as the outer edge of the end wall if you install the roof panels flush to the top of the baseboard.

The gray bars in the photo below represent the horizontal ribs of the corrugated panels. The dashed line represents the edge of the roof panel that is installed in the next procedure.



The roof panels are attached to the outside of the installed baseboard as shown above. When cutting the corrugated end panels to the proper width, cut the panel so that it extends beyond the end rafter to cover the small area above the installed baseboard.

ATTENTION: Allow the roof panels to extend beyond the end of the rafters an inch or so to create a drip edge.

Panels can be installed to the top of the baseboard.

14. Move to the remaining end wall and repeat the steps to install the end panels for that wall.

    NOTE: The width of the end wall determines how the end panels are installed. When setting the end panels in place, the excess end panel material can be removed, or the next panel can overlap it, depending on how much panel remains.

    End panels are attached to each frame member of the end wall and to the rafter. Panels must overlap each other.

    CONSULT THE BACK END PANEL DETAILS PAGE IN THE QUICK START SECTION FOR DETAILS.

INSTALL THE CORRUGATED ROOF PANELS

The corrugated roof panels are attached to the tops of each rafter using Tek screws and washers. These panels are designed to span the 48" on-center rafter spacing, which allows each panel to overlap the previous panel.

CONSULT THE MAIN COVER DETAILS DIAGRAM IN THE QUICK START SECTION OF THIS DOCUMENT FOR ROOF PANEL INSTALLATION DETAILS.

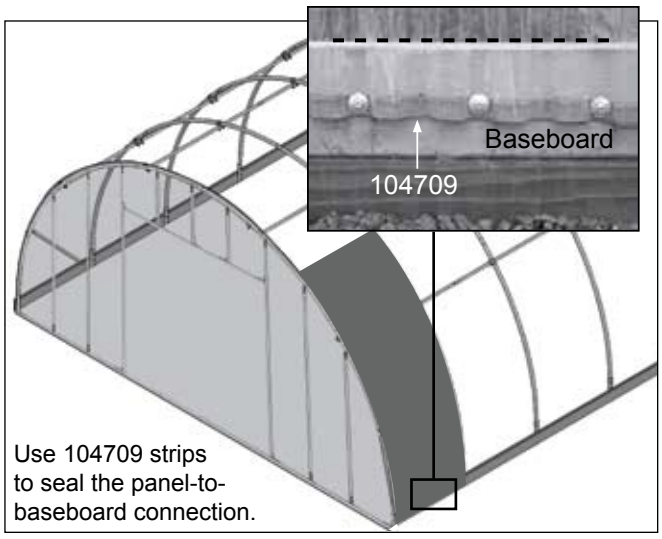
Panels are installed beginning at one end of the greenhouse and working toward the other end. All panels are installed between two rafters and over the greenhouse. The overlap seams are secured before moving to the next rafter.

REQUIRED PANELS: Use three 4' x 12' panels to cover the area between *same two rafters*.

Complete the steps that follow to install the roof panels.

ATTENTION: Tek screws (#FA4482) and washers (#102921) are used to secure all polycarbonate panels to the framing.

1. Choose one 12' corrugated polycarbonate panel and position it between the end rafter and the first interior rafter. Start the panel an inch *above* the lower edge of the baseboard as shown below.



NOTE: Install a section of the 104709 horizontal closure strip under the edge of the panel *before* attaching the panel to the rafters. See the arrow above.

The horizontal closure strip (104709) can also be installed flush with the top of the baseboard to prevent dirt and debris from filling the spaces between the polycarbonate and the baseboard. (See the dashed line in the photo above.)

2. Place the panel at the desired height above the ground and on top of the end rafter. Align panel with the center of the rafter pipe and attach the panel to the *top of the end rafter* and to the baseboard.

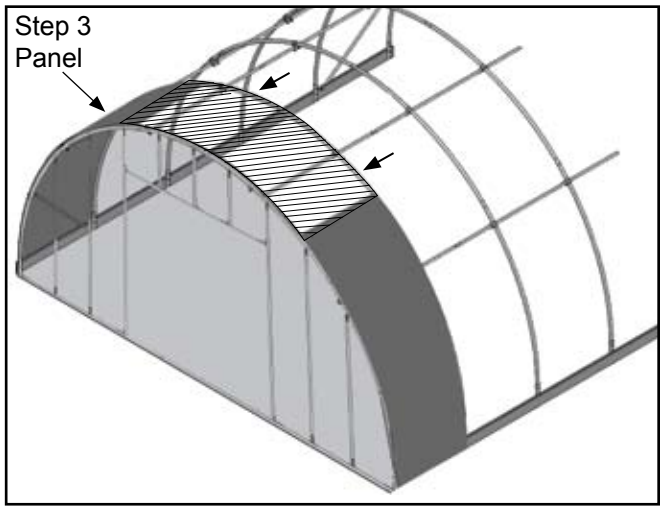
   ATTENTION: Install Tek screws and washers at 16" intervals along the panel edges for all roof panels. The lower and upper ends where different panels overlap are secured every 12". Be sure to *position the panel so that it reaches the second rafter.*

   DO NOT attach the first panel to the second rafter at this time. *Attach it to the end rafter only*. The next panel will overlap the previous panel, which is the repeated pattern for the length of the greenhouse.

   DO NOT secure the upper end of the first panel to the top of the end rafter until the top panel is in position.

3. Choose another 12' panel and move to the other side of the frame between *the same rafters*. Attach the panel as described.

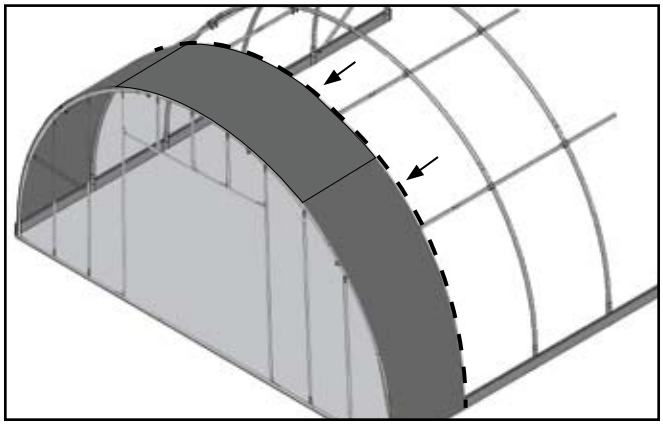
4. Center the top 4' x 12' panel on the frame and secure as previously described. Allow the panel to evenly overlap the upper ends of the two (2) lower panels to complete the installation of the first set of panels.
   NOTE: To this point, the first run of roof panels (three



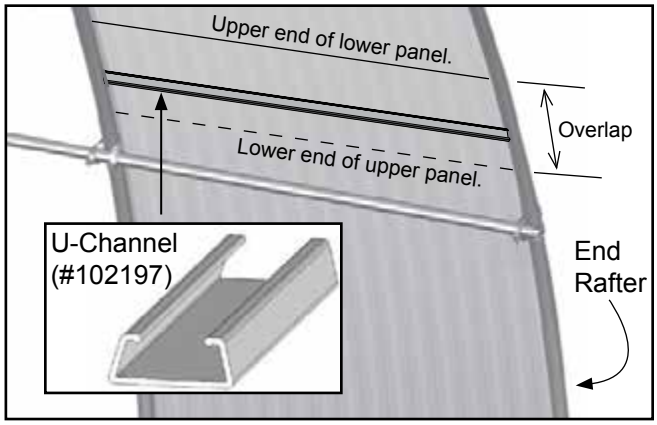
panels in all) should be in place and secured to the top of the end rafter only.
DO NOT INSTALL FASTENERS ALONG THE INSIDE

INSTALL CORRUGATED ROOF PANELS (continued)

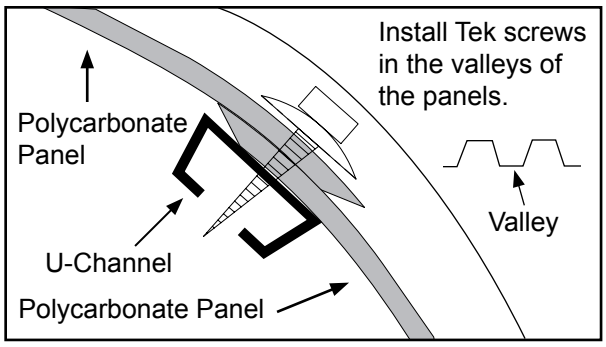
EDGE OF ANY PANEL AT THIS TIME. THE NEXT SET OF PANELS WILL OVERLAP THIS EDGE BEFORE YOU INSTALL SCREWS AND WASHERS.



5. Return to the first seam where two panels overlap and cut a section of poly-latch U-Channel (#102197) so that it fits *between the rafters*.



NOTE: Position the channel at the seam ***on the inside of the greenhouse roof where panels overlap***. Install Tek screws (#FA4482) and washers from the outside, through the two polycarbonate panels (where they overlap), and into the poly-latch U-Channel to secure the seam. ***Install screws in the valleys of the panels.***



Secure *all overlap seams as you work toward the other end of the greenhouse*. Use four (4) Tek screws (#FA4482) and four (4) washers for each seam to secure the roof panels to the U-Channel.

6. Once the seams for the first run of roof panels are secured, install the next run of roof panels.

   ATTENTION: These panels will overlap the edges of the installed panels and are secured to the rafter common to the first set of panels. This is the pattern throughout the length of the frame.

   To more easily reach the rafter to secure this next run of polycarbonate panels, roll the panel under or over itself during the installation and unroll the sheet after securing the edge to the rafter.

   Install the horizontal closure strip (104709) between the panel bottom and the baseboard and continue as previously described.

7. Continue installing the corrugated polycarbonate roof panels and securing the overlap seams as previously described until all roof panels are installed.

8. Verify that all panels are properly secured and continue with the ASSEMBLE AND INSTALL SLIDING DOORS procedure.

ASSEMBLE AND INSTALL SLIDING DOORS

The general steps to install the door are as follows:

1. Assemble the door rollers and attach the brackets to the door frames.
2. Assemble each door panel by installing the corrugated polycarbonate panels and closure strips.
3. Optional Step: Install door profile (#104548) along door frame of end wall to cover the gaps created by the corrugated end wall panels.
4. Attach the sliding door track to the end wall.
5. Hang the sliding doors in the door track.
6. Install Tek screws (#FA4482) through track to prevent door from sliding out of the track.

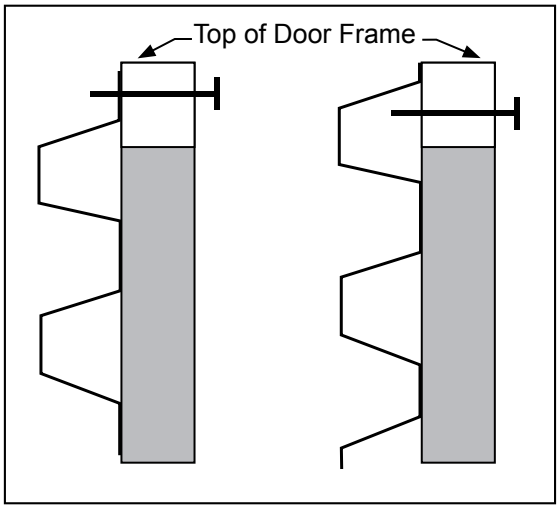
NOTE: The following photos show a door frame without the polycarbonate panels installed. The installation of the roller assemblies can occur before or after the panel installation.

If you decide to install the panels *before* installing the roller assemblies, you must drill holes through the panel at the top edge of the door frame to allow the mounting bolts for the roller assembly to be installed properly.

If a rib of the corrugated panel falls where the mounting bolts are located, nuts of the bolts will fall under the rib.

The roller assembly mounting bolts must be tightened against the flat surface of the door frame.

Do not install the bolts through a rib of the corrugated panel.



End View of Door

PREPARE THE DOOR FRAMES

1. Locate the two door frames (#102923) and the roller hardware kits for the top of the door frames.

To prevent damage to the end panels, install the heads of the carriage mounting bolts to the inside of the door frames.

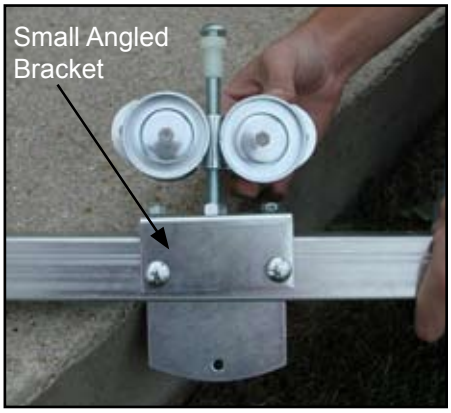
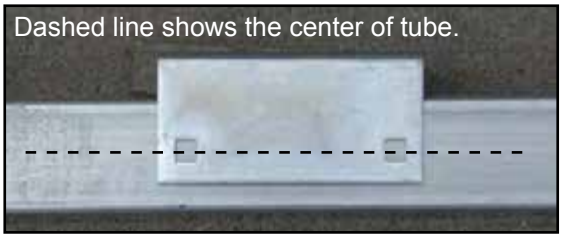


Photo shows an assembled roller attached to the top of a door frame. The view is from the inside/backside of the door. The small angled bracket is installed on the back of the door or to the inside of the building.

NOTE: Each box includes two roller assemblies for each door frame.

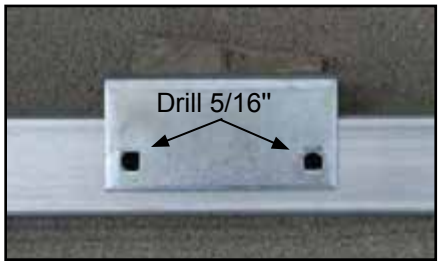
2. Position the small angled bracket on the top of the door frame (with its square holes on the inside surface of the frame tube) a few inches from the end of the frame (as desired). Align the holes of the bracket with the center of the square door frame tube.



The small angled bracket has square holes to lock the carriage bolts in place.

The bracket cannot sit tight against the top of the frame. Space must exist between the frame and the bracket to allow for the adjusting nut and the bracket bolts.

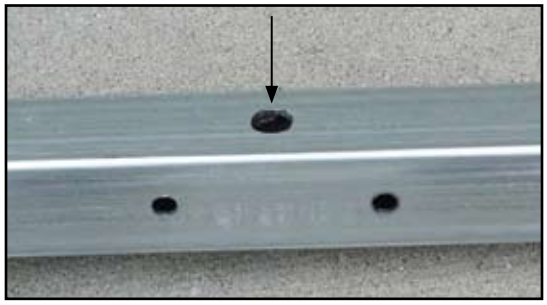
3. Using a 5/16" drill bit, drill the holes through the tube. The holes must go through the entire tube and must be straight.



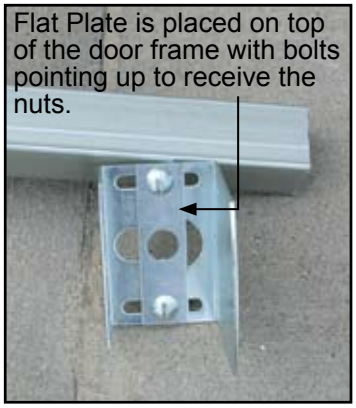
ASSEMBLE AND ATTACH SLIDING DOORS (continued)

4. After the holes are drilled, temporarily insert the carriage bolts through the bracket and tube to hold the bracket in place and mark the location of the adjusting bolt hole on the top of the door frame tube.

5. Using a 1/2" drill bit, drill a hole through the door frame tube. The hole allows the adjusting bolt of the roller assembly to extend through the tube if needed.



6. Assemble the flat plate and brackets as shown below.



Do not tighten the small bolts at this time. You will need to adjust the brackets when the rollers are installed.

7. Place the adjusting nut on the door frame and set the assembled brackets and flat plate over the nut.

NOTE: Assembly is shown looking from the front or outside. Insert the mounting carriage bolts for the brackets *from the back to prevent damage* to the polycarbonate panels on the end wall when the door is used.

Brackets must be assembled as shown so that the holes in the brackets are aligned.

8. Adjust the flat plate and brackets to align the adjusting nut with the pre-drilled 1/2" hole and tighten bolts.

NOTE: The adjusting nut must turn freely between the brackets and the top of the door frame. Tighten all bolts.

9. Install the adjusting bolt and roller assembly. Position the notch of the roller assembly up and away from the door.

10. Repeat the steps to assemble and attach the remaining roller assembly to the door frame. Photo below shows the attached roller assembly as seen from the outside or front.

11. After attaching the roller assemblies, turn the door frame on its side and drill a hole in the bottom of the frame tube. (This hole will allow water drain from inside the door frame if it finds its way through the adjusting hole at the top of the frame.

NOTE: Each box includes two (2) roller assemblies for each door frame.

12. Repeat the steps to assemble and attach the remaining roller assemblies.

ASSEMBLE AND ATTACH SLIDING DOORS (continued)

ASSEMBLE THE SLIDING DOOR

1. After attaching the rollers to the top of the doors, install the corrugated polycarbonate panel on the doors using Tek screws (#FA4482) and washers (#102921).

   NOTE: The horizontal closure strips are used under the panels along the edges to seal the corrugated openings when the panels are installed with the ribs in the horizontal position as shown in the photo (right).

   Each door is covered using one 50" x 8' 2" panel. ***DO NOT*** *cut 12' panels to cover the doors.*

2. Install the 104548 profile along the end wall door frame as shown in the following photos.

   ATTENTION: The installation of the 104548 profile is an optional step for those who want to cap the end of the corrugated end panels at the door opening. Use Tek screws to secure the profile to the end wall framing.

   Photo below shows end wall without installed profile. Dashed line shows where to install profile to cover the valleys of corrugated end panels. *View is from the inside of the frame* looking at the point where the door meets the door frame of the end wall.

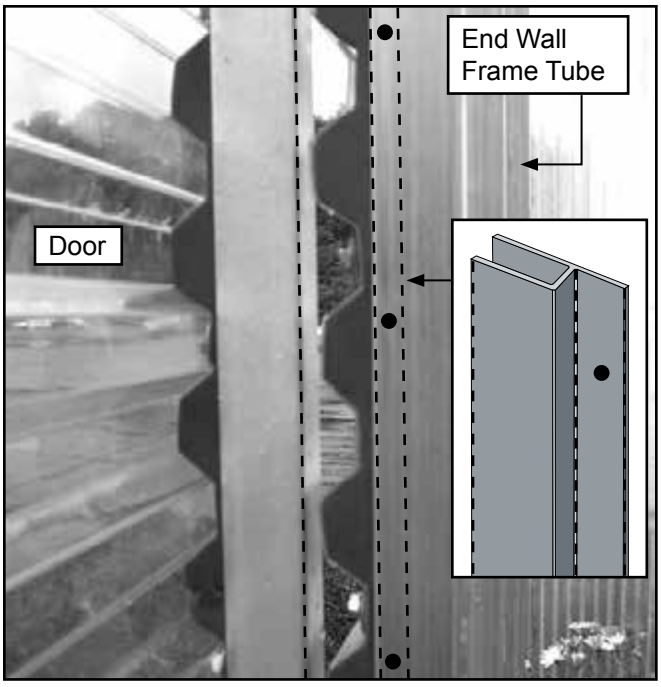
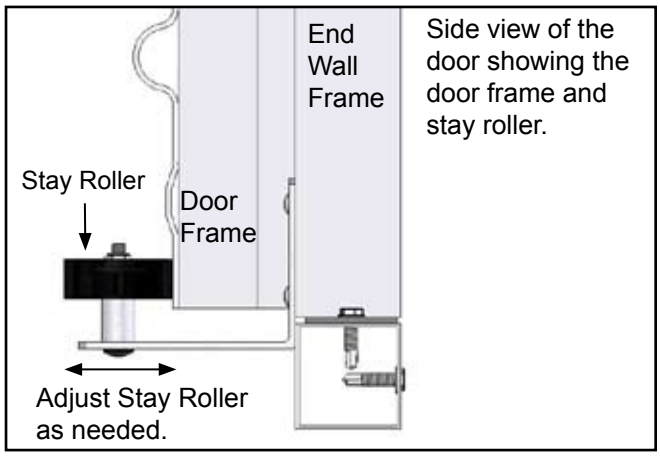


Photo below shows the assembled doors and the corrugated polycarbonate panels.

3. Using the lower roller assembly as a guide, place one assembled door into position and rest its bottom edge on the lower roller assembly as shown below.



4. With the first door in position, use blocks to level the door and set the second assembled door in place.

5. Level the second door and temporarily secure both doors in place so they do not tip to the inside or outside of the greenhouse.

6. Using the rollers as guides, mark the location on the end wall for the sliding door track.

   NOTE: Be sure to account for the distance between the top of the door frame and the roller assembly. You must be able to adjust the door (up or down) once the track is installed so that the doors are centered in the rough door opening.

   Use the lower roller assembly as a guide. *The final adjustment for the door will lift the door 1/4" to 1/2" off the angled brackets of the lower roller assemblies.*

ASSEMBLE AND ATTACH SLIDING DOORS (continued)

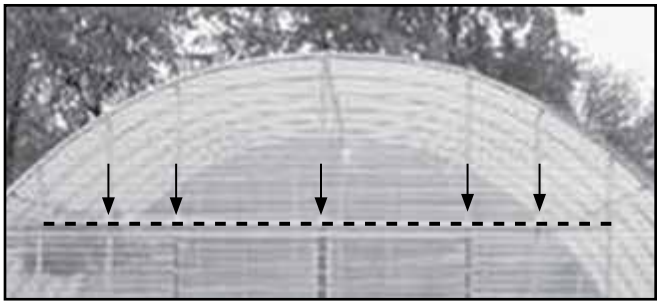
7. Verify that the marks for the sliding door track are level and attach the two sections of door track to the end wall frame.

   NOTE: The track must be level for the doors to function properly.

INSTALL SLIDING DOORS

Complete the following steps to properly attach the sliding door track mounts to the end wall frame of the greenhouse.

1. Locate the 3/8" x 4" carriage bolts and related nuts and washers used to secure the track brackets to the end wall framing.
2. After identifying and marking the desired height of the door track on the end wall, determine the locations of the track brackets.



   The dashed line above represents the sliding door track. The arrows show where to attach the track brackets to the end wall framing.

3. Drill a 3/8" hole through the corrugated polycarbonate panel and through the vertical end wall frame tube. *The hole must be level to mount the bracket and track properly*.
4. Insert a 3/8" carriage bolts through a hole from inside the building and tap it with a hammer to set it tight against the end wall frame member.

Install a flat washer, lock washer and nut to secure the mounting bolt to the end wall frame.

5. Repeat the steps to install the remaining sliding track mounting bolts. All mounting bolts must be installed at the same height on the end wall frame so that the track is level.
6. After installing the mounting bolts, slide the two track mounting brackets onto the sliding door track.

7. Align the brackets with the mounting bolts and install a flat washer, lock washer, and a nut.
8. Verify that the track is level and flush to the inside edge of the end rafter and tighten the 3/8" nuts. The carriage bolts can be trimmed if desired.

   NOTE: The center track mounting bracket will cover the joint where the separate track sections meet at the center of the end wall.

9. After securing the track to the end wall frame, lift one door up and into place and insert the rollers into the track.
10. Repeat the step to install the second door into the track.
11. Slide both doors to the center of the door opening to the closed position and adjust as needed to level the doors so they meet evenly at the center.
12. Adjust the lower stay rollers as needed.

ASSEMBLE AND ATTACH SLIDING DOORS (continued)

13. After adjustments are made, slide one door to its open position and install two Tek screws through the door track to prevent the door from sliding out of the track.

Arrows show the locations of Tek screws (two at each end) used as door stops. Tek screws are installed through the front of the door track.

14. Repeat the previous step for the remaining door.

15. Install the door handle in the desired location. Door handle is attached using Tek screws.

Use the FA4482B Tek screws to secure handle through the polycarbonate panel and *into the door frame*.

16. Continue by reading the CARE AND MAINTENANCE information that follows.

SHELTER CARE AND MAINTENANCE

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

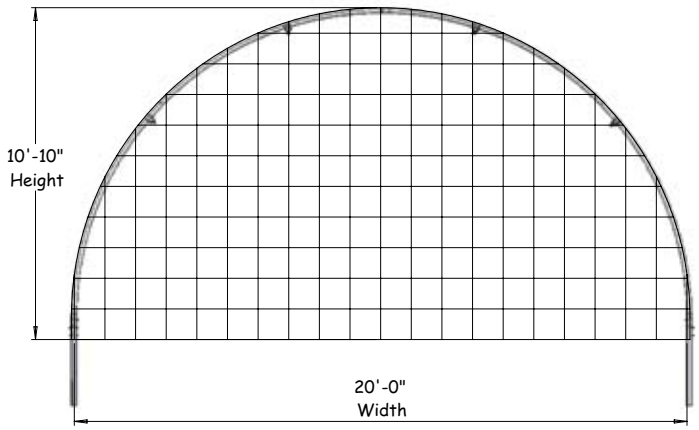
- Regularly check the polycarbonate panels to see that these are secure and in good condition. Replace damaged panels if needed.
- Check connections and all fasteners to verify that they remain tight.
- Do not climb or stand on the greenhouse at anytime. (See the ridge cap installation notes.)
- Inspect the anchoring system to verify that all components remain tight and in good condition.
- Remove debris and objects that can accumulate on the greenhouse. Use tools that will not damage the cover when removing debris.
- Remove snow to prevent excess accumulation. Use tools that will not damage the polycarbonate panels when removing snow.
- Check the contents of the shelter to verify that nothing is touching the polycarbonate panels that could cause damage.
- If the greenhouse is moved, inspect all parts and connections before it is reassembled.
- Depending on the contents, construction of the shelter, shelter materials, and shelter location, the potential for condensation exists. ClearSpan™ offers several items that can be used to alleviate a condensation condition. Please contact a ClearSpan™ representative for additional information.
- For replacement or missing parts, call 1-800-245-9881 for assistance.

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

ClearSpan
fabric structures and greenhouses

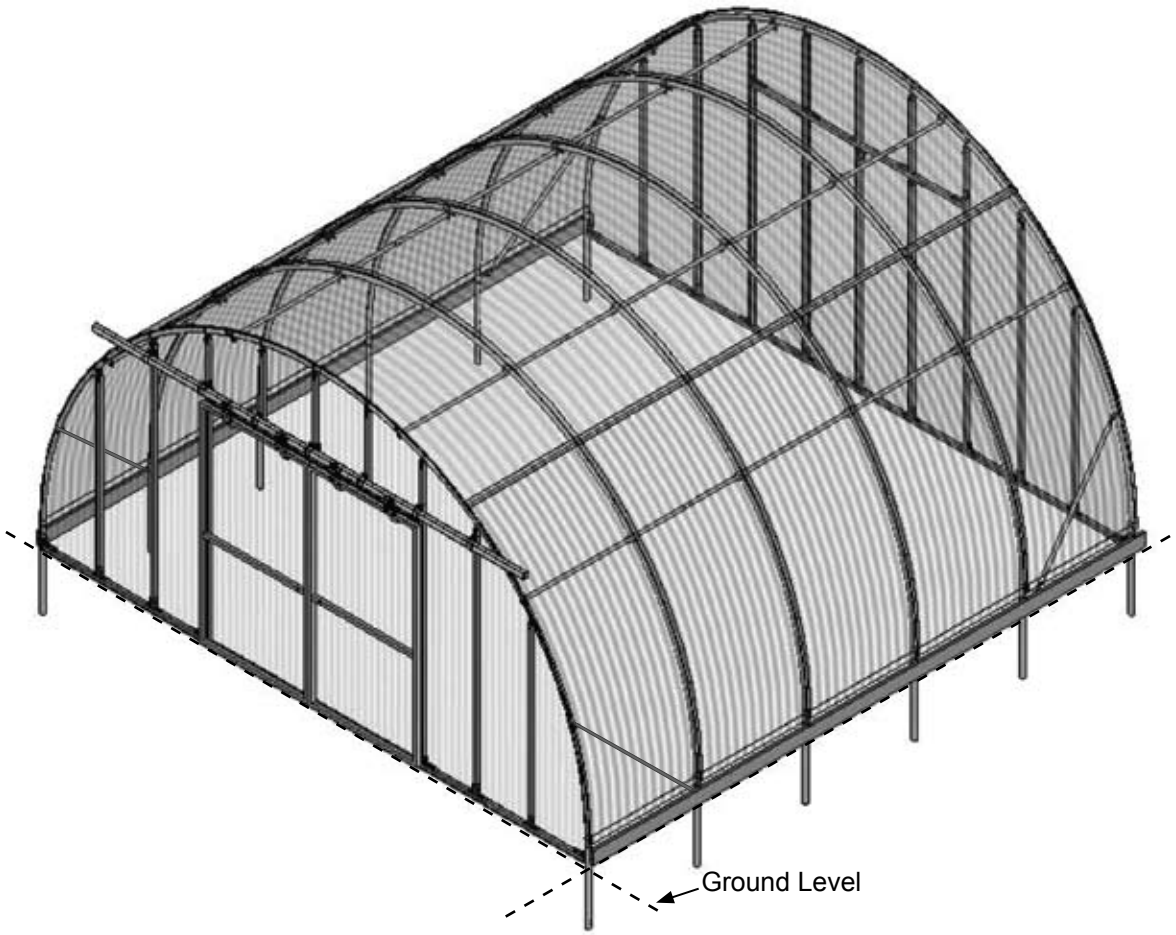
QUICK START GUIDE

20' Round Style Greenhouse



FRONT

Grid Represents 12" Squares



Frame shown may differ in length from actual frame.

FRONT PROFILE

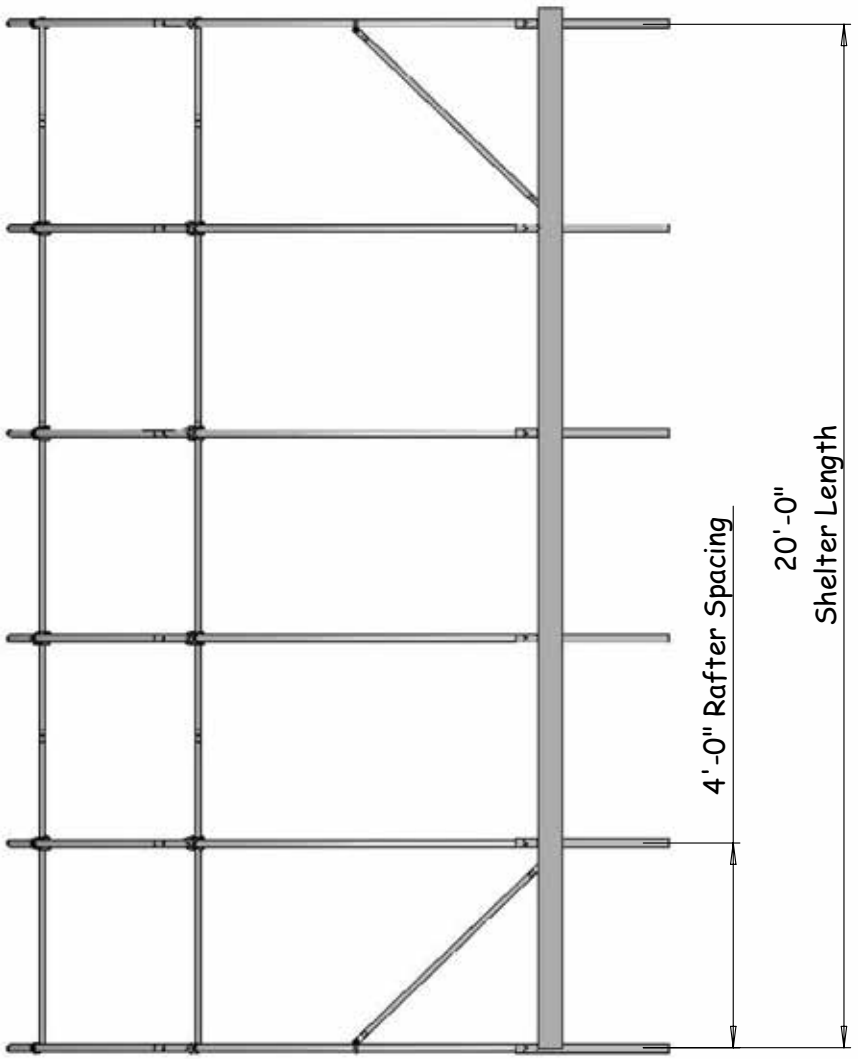
Connection Notes

Purlin Connections

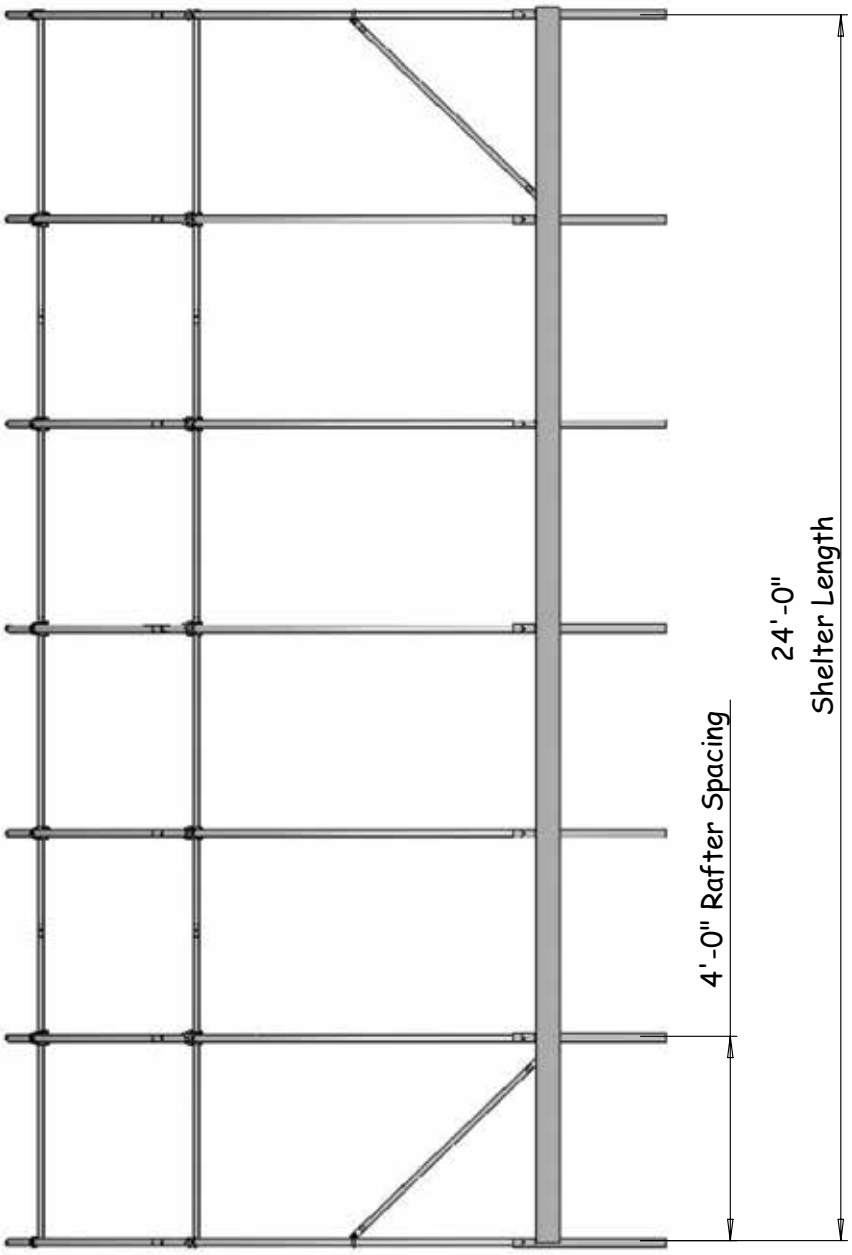
Purlin connected to end rafters using **102856** clamp

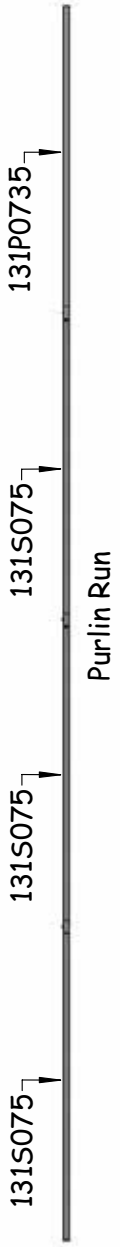
Purlin connected to mid rafters using **102548** connector

SIDE PROFILE - 106185

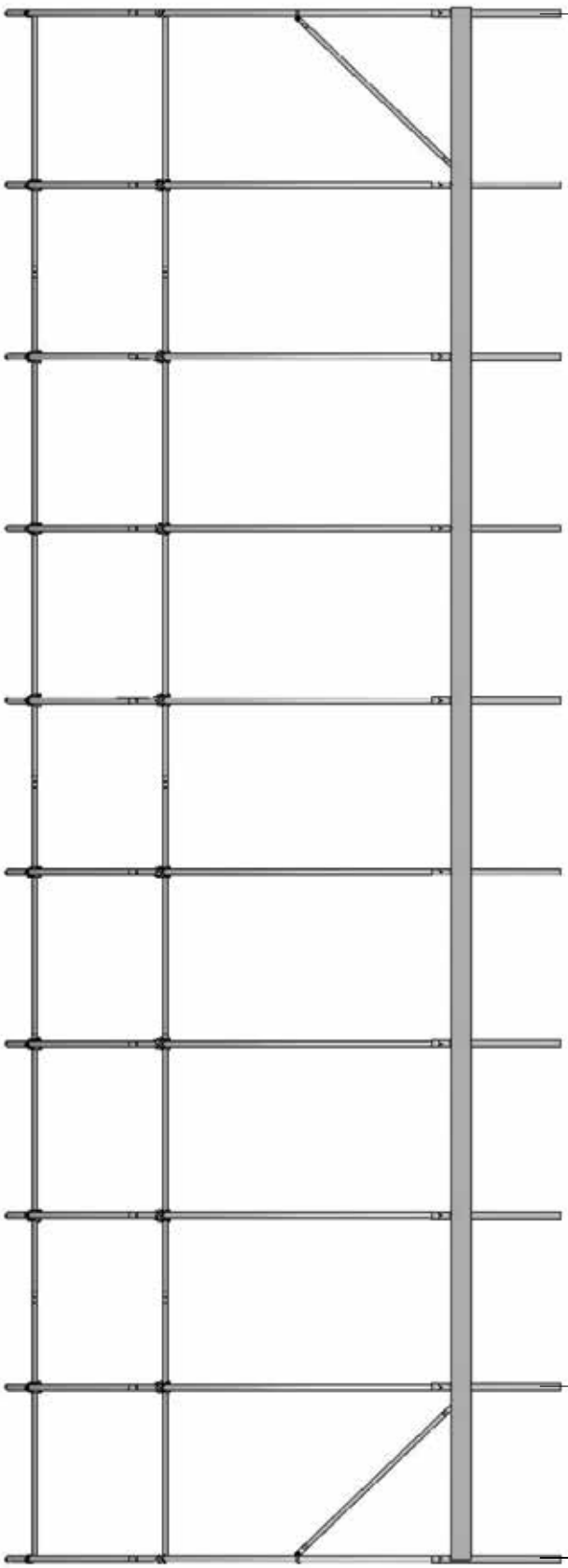


SIDE PROFILE - 106186

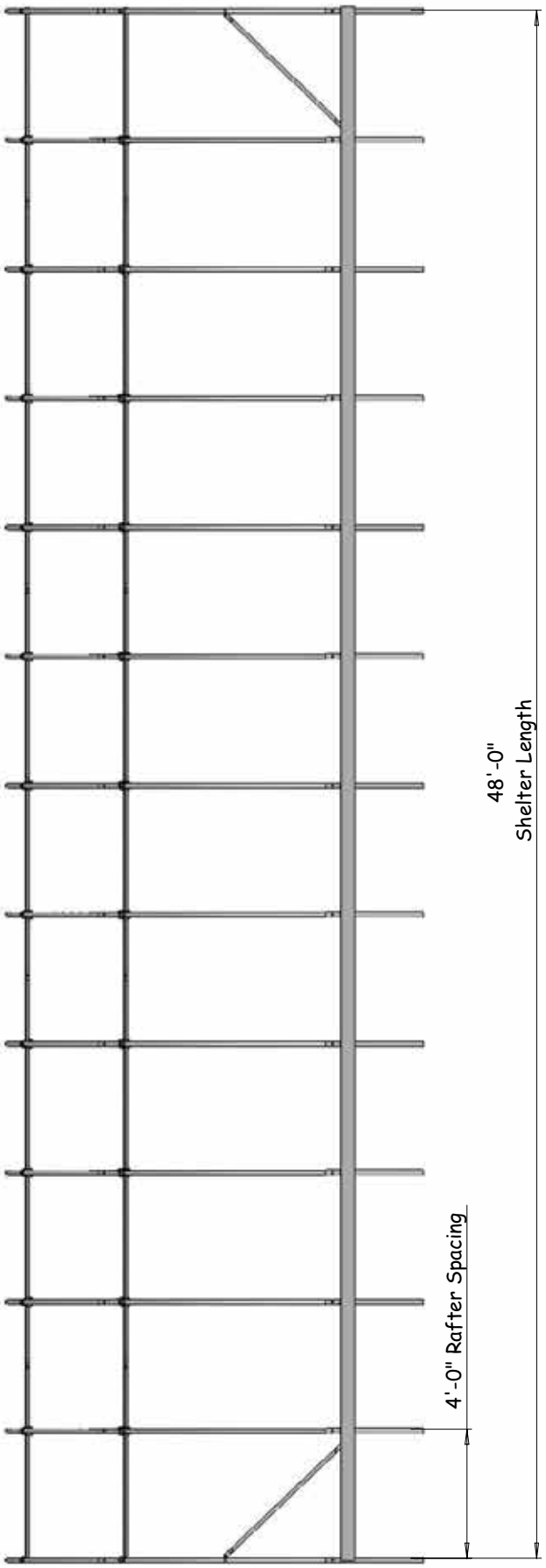


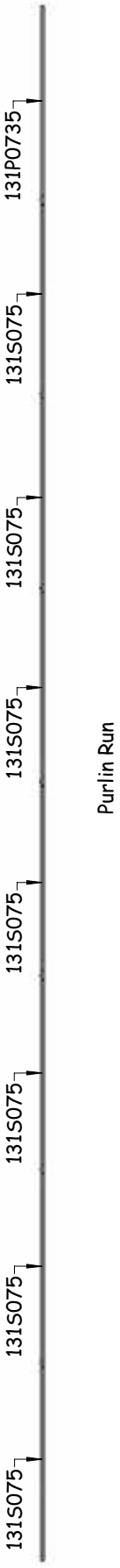


SIDE PROFILE - 106187

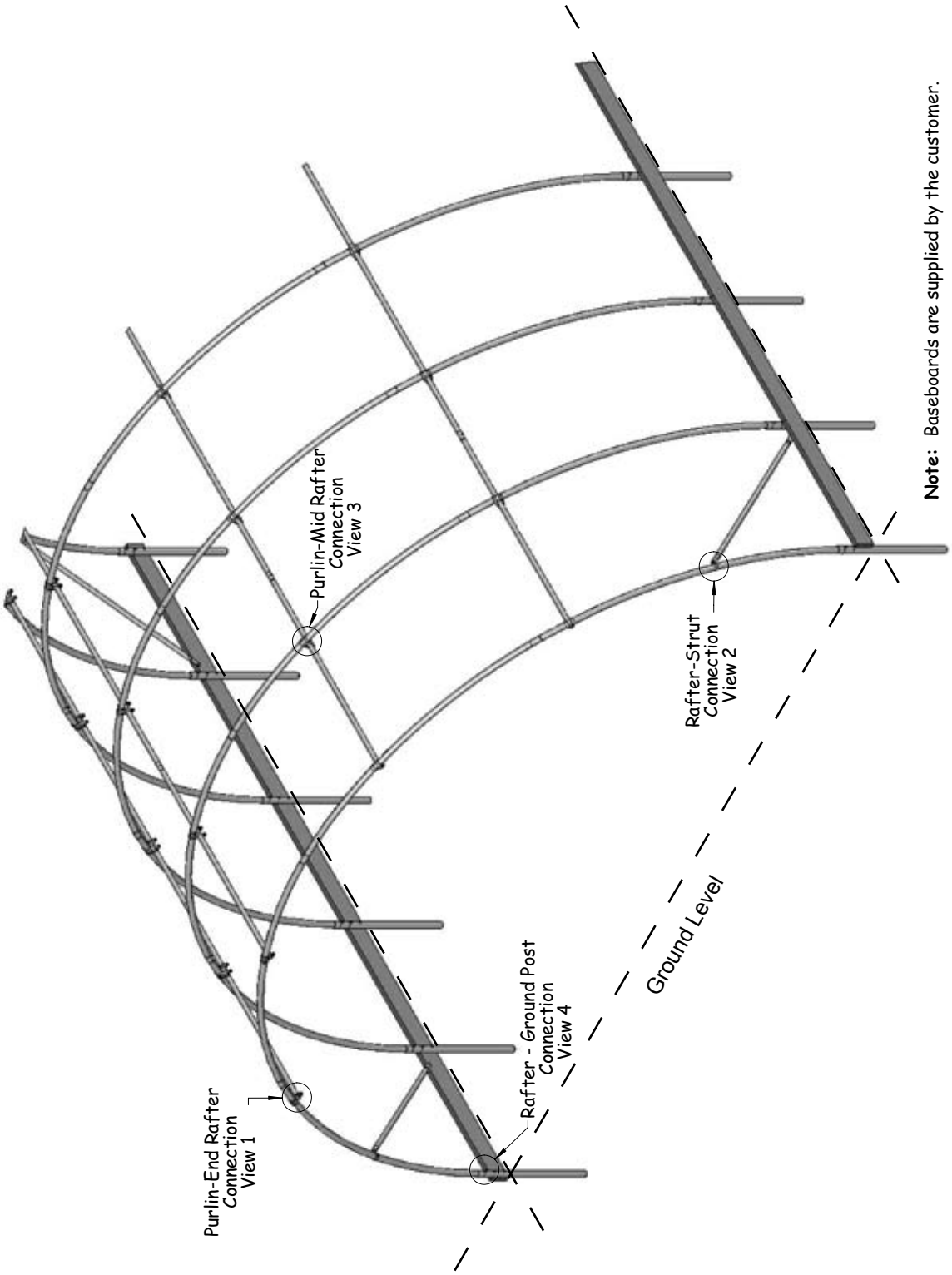


SIDE PROFILE - 106188

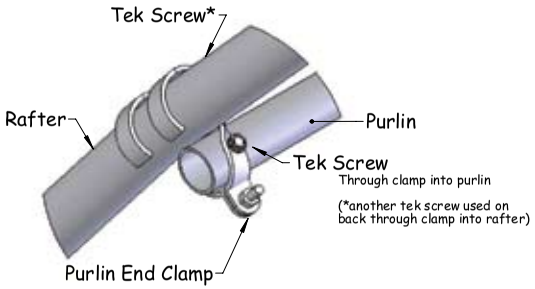




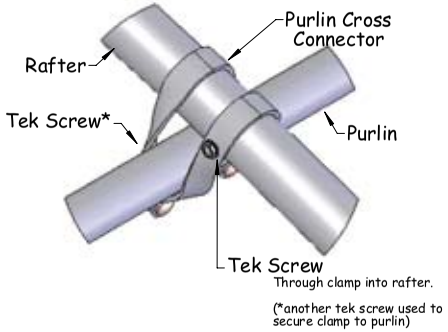
CONNECTIONS



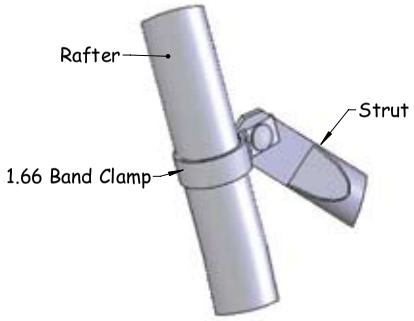
CONNECTION - FRAME DETAILS



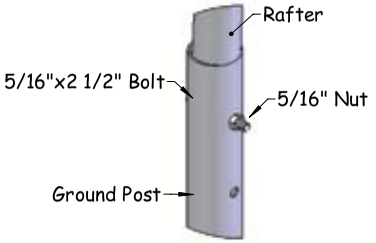
VIEW 1
PURLIN - END RAFTER



VIEW 3
PURLIN - MID RAFTER



VIEW 2
RAFTER - STRUT



VIEW 4
RAFTER - GROUND POST

END FRAME DIAGRAM - FRONT VIEW

End Frame Detail Guide

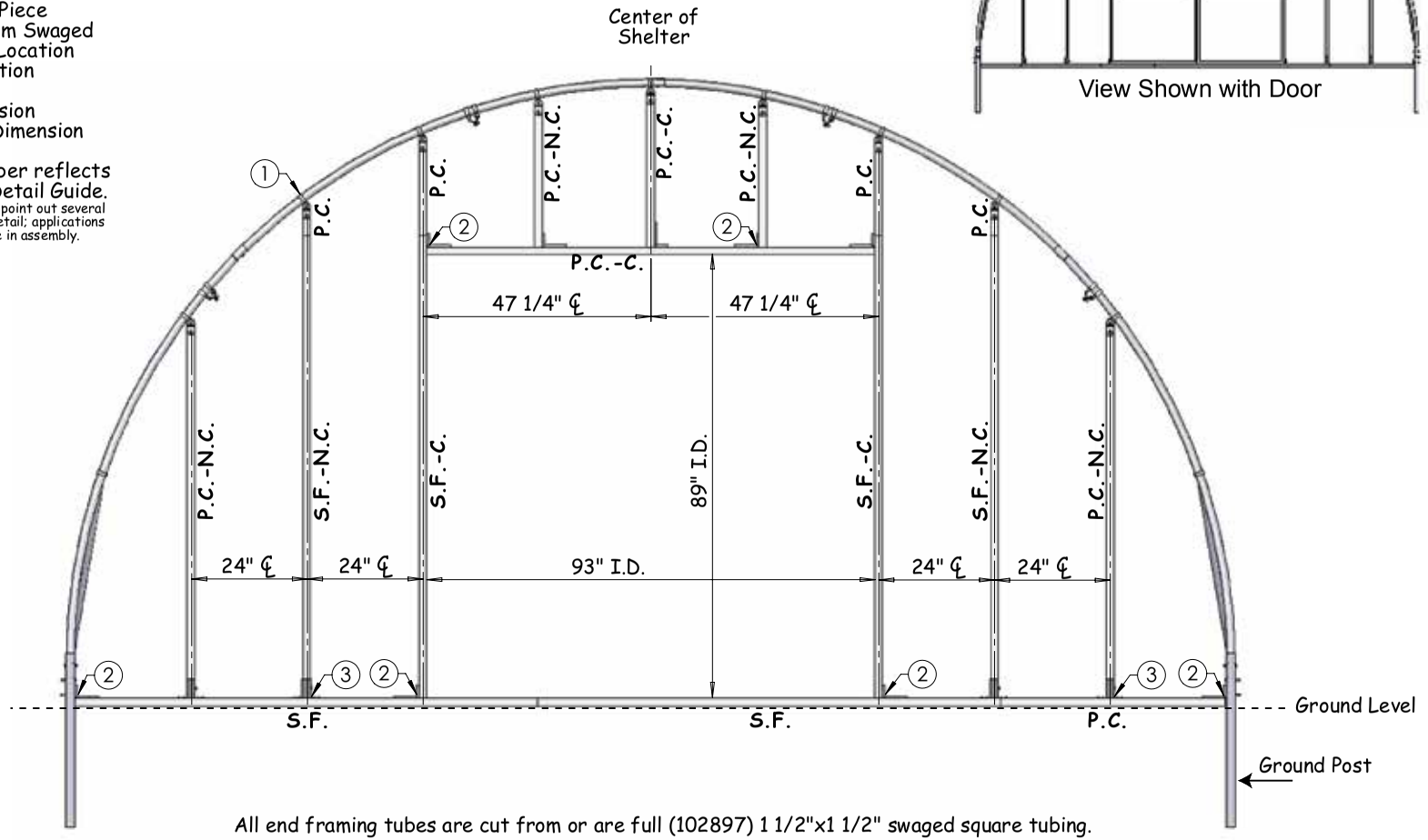
1. End Framing-Rafter, View 1
2. **QH1330** Bracket, View 2
3. **104624** 1-Way/Plate, View 3

Symbol & Abbv. Key

S.F. Swaged, Full Piece
P.C. Plain, Cut from Swaged
N.C. Non Critical Location
C. Critical Location

I.D. Inside Dimension
℄ Center Line Dimension

(#) Balloon: Number reflects detail. See Detail Guide.
Note: Balloons only point out several instances of each detail; applications may apply elsewhere in assembly.



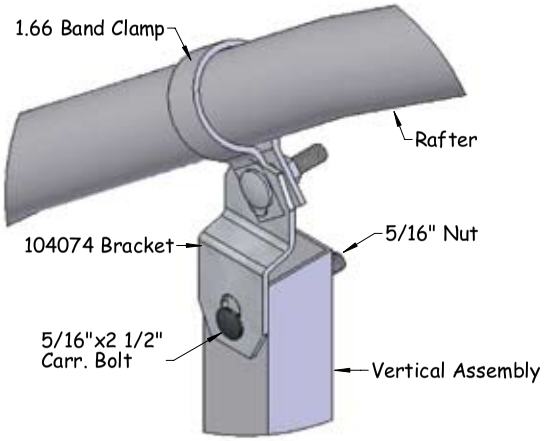
All end framing tubes are cut from or are full (102897) 1 1/2"x1 1/2" swaged square tubing.

Non critical verticals are spaced 24" on center working outwards from the door. However, these verticals can be spaced differently for the framing of greenhouse accessories. For the framing of accessories, check for rough opening and space accordingly.

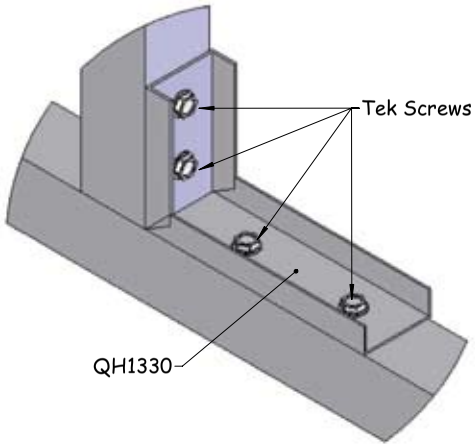
Critical verticals can not be spaced differently because of door opening or Polycarb attachment.

Height of verticals depends on location. Measure location before cutting materials.

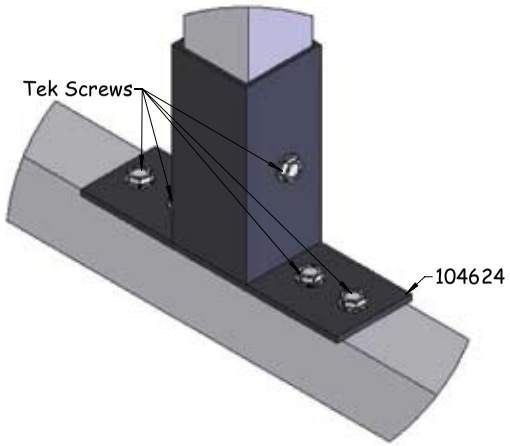
CONNECTIONS - END FRAMING



VIEW 1
END FRAME - RAFTER



VIEW 2
END FRAME - QH1330



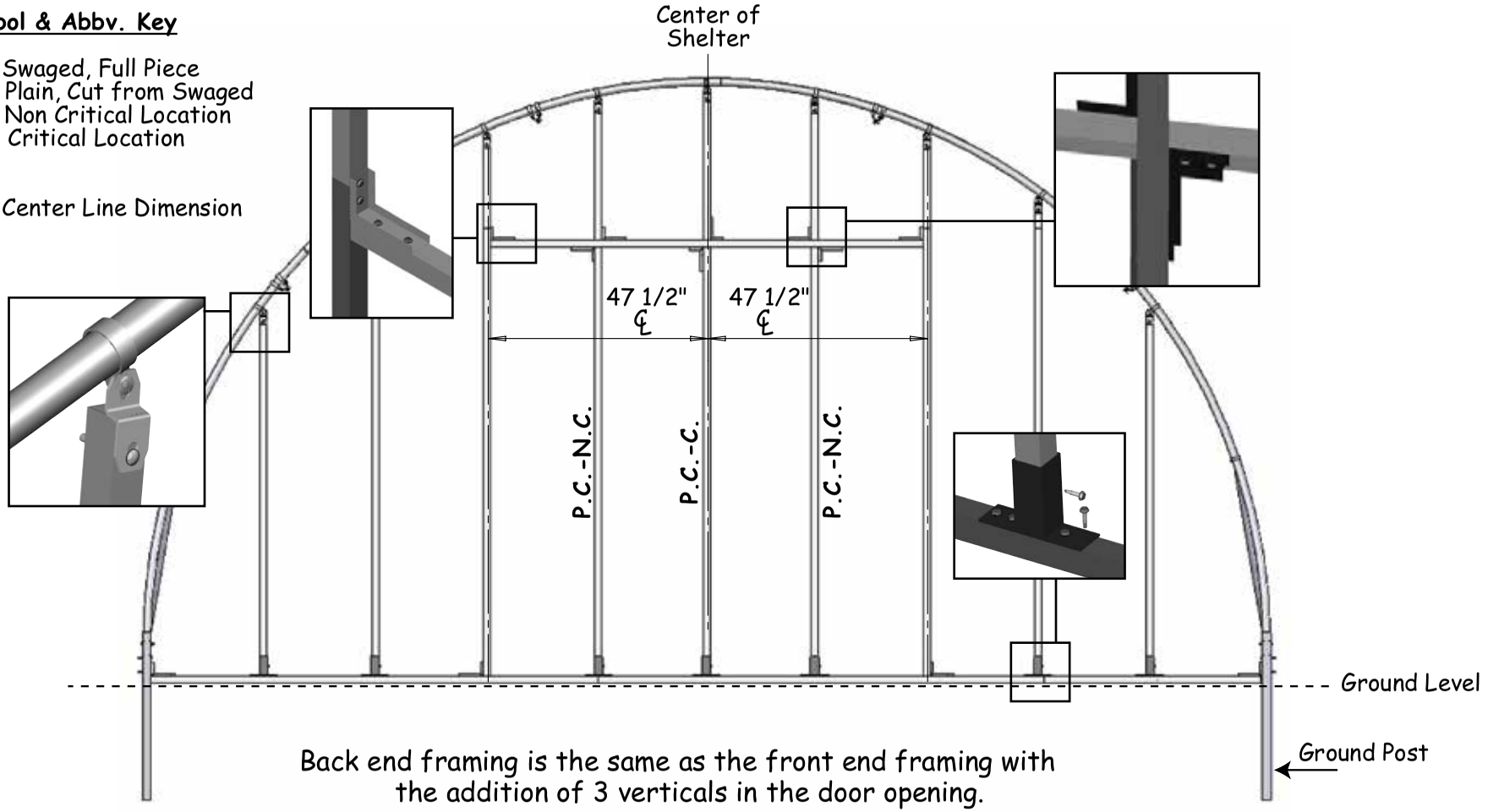
VIEW 3
END FRAME - 104624

END FRAME DIAGRAM - BACK VIEW

Symbol & Abbv. Key

S.F. Swaged, Full Piece
P.C. Plain, Cut from Swaged
N.C. Non Critical Location
C. Critical Location

℄ Center Line Dimension



Back end framing is the same as the front end framing with the addition of 3 verticals in the door opening.

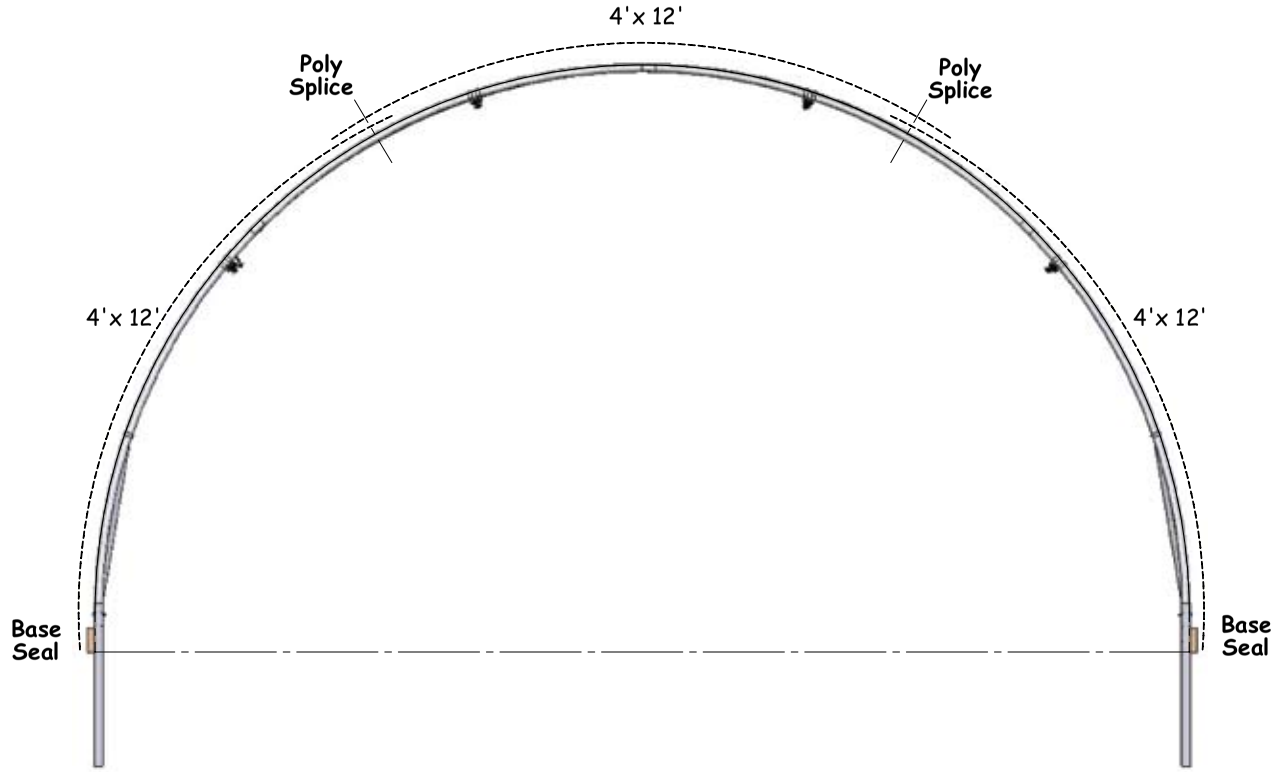
All end framing tubes are cut from or are full (102897) 1 1/2"x1 1/2" swaged square tubing.

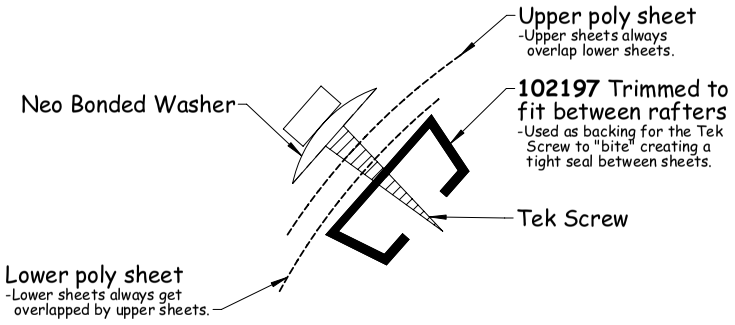
Non critical verticals are spaced 24" on center working outwards from the door. However, these verticals can be spaced differently for the framing of greenhouse accessories. For the framing of accessories, check for rough opening and space accordingly.

Critical verticals can not be spaced differently because of door opening or Polycarb attachment.

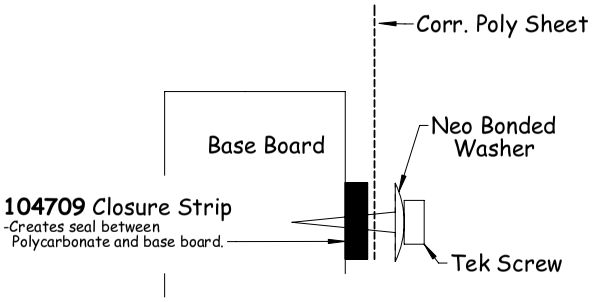
Height of verticals depends on location. Measure location before cutting materials.

MAIN COVER DETAILS



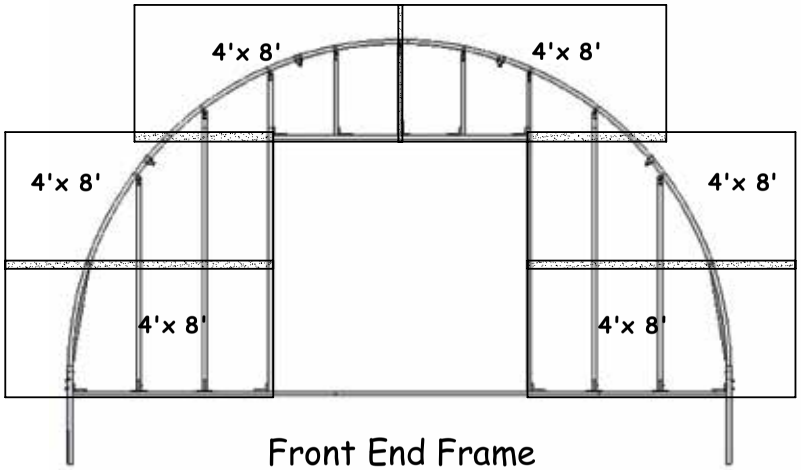


POLY SPLICE



BASE SEAL

POLYCARBONATE PANELS - FRONT VIEW

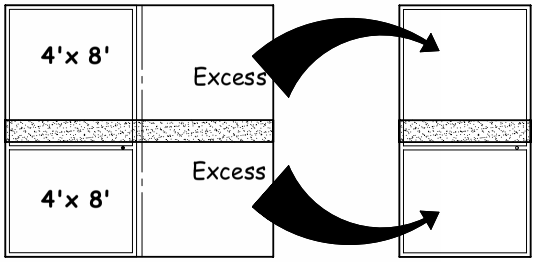


Front End Frame

Symbol Key

Trimmed Poly to be used elsewhere

Area of overlapping sheets
-Upper sheets always overlap lower sheets.



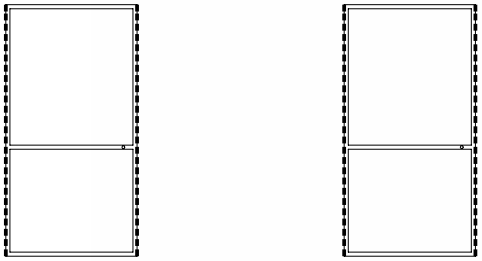
Door 1 Door 2

CORRUGATED POLYCARBONATE LAYOUT

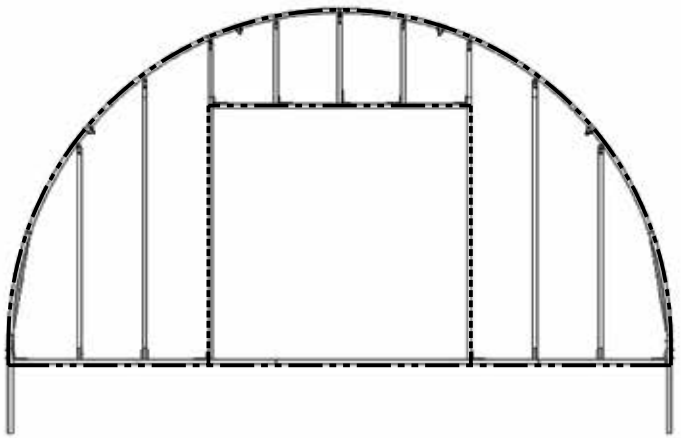
Symbol Key

104709 - Corr. Closure Strip

104710 - Flat Closure Strip



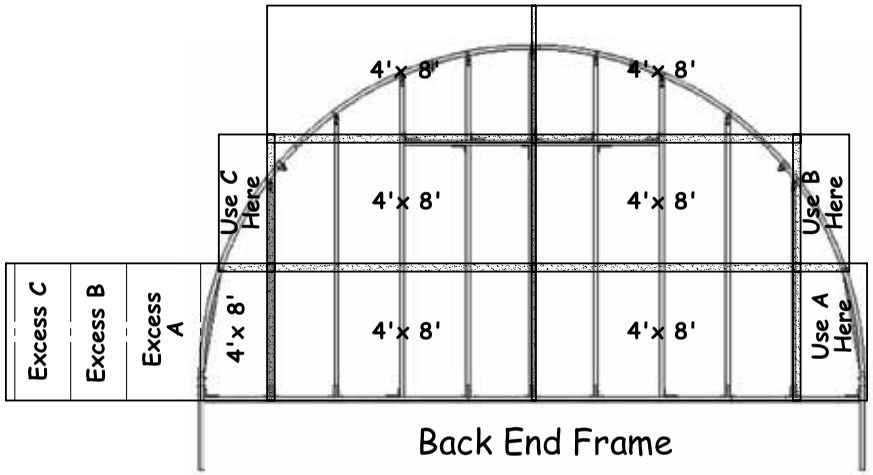
Door 1 Door 2



Front End Frame

POLYCARBONATE CLOSURE STRIP LAYOUT

POLYCARBONATE PANELS - BACK VIEW



Symbol Key

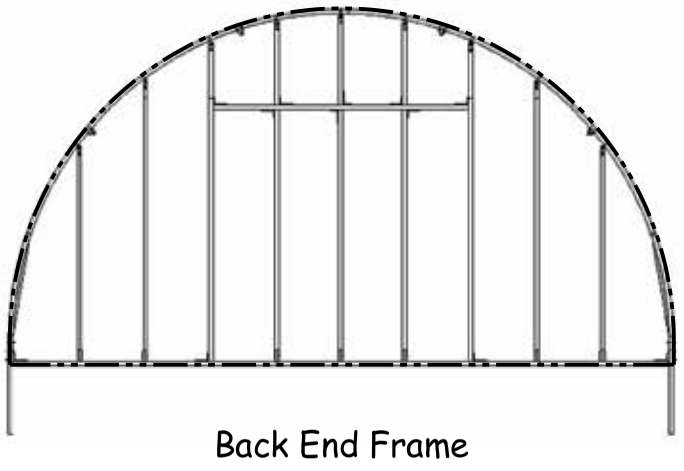
Trimmed Poly to be used elsewhere

Area of overlapping sheets
-Higher sheets always laps over lower sheets

CORRUGATED POLYCARBONATE LAYOUT

Symbol Key

104710 - Flat Closure Strip



POLYCARBONATE CLOSURE STRIP LAYOUT