ClearSpan™
Instant Greenhouse and Garden Center

Photo may show a different but similar model.

STK#	DIMENSIONS
104218	24' W x 20' L
104219	24' W x 30' L
104220	24' W x 40' L

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

Revision date: 05.08.12

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 shelter. 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 shelter or framing during or after construction.
- Do not occupy the shelter during high winds, tornadoes, or hurricanes.
- Provide adequate ventilation if the structure is enclosed.
- Do not store hazardous materials in the shelter.
- Provide proper ingress and egress to prevent entrapment.

ANCHORING INSTRUCTIONS

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

WARNING: The anchor assembly is an integral part of the shelter construction. Improper anchoring may cause shelter instability and failure of the structure to preform as designed.

Failing to anchor the shelter 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 shelter 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 or the perimeter base frame 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 shelter. Failing to follow these steps may result in an improperly assembled and anchored shelter 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 shelter.
3. Gather the tools, bracing, ladders (and lifts), and assistance needed to assemble the shelter.
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 documentation 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.

- **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.
- **Coupler or Fitting:** A part of the frame assembly where legs, purlins and rafter pipes are inserted and secured. In most instances, 3-way and 4-way couplers are used. In some larger applications, couplers are used to secure the joints of the different rafter sections during the assembly of the rafters. Some shelters do not use couplers.
- **Foot or Rafter Foot:** The part attached to and found at the base of the rafter or leg of the shelter. Depending on the shelter, the foot is an optional purchase. Some shelters do not offer an optional foot. Some use 1-way connectors; others use ground posts.
- **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
- Variable speed drill and impact driver (cordless with extra batteries works best)
- Wrench set or ratchet and socket set (recommended)
- 1/4" Allen wrench
- Two ropes long enough to reach over the shelter
- Hammers and gloves
- Metal file and metal-cutting saw
- Duct tape (supplied by customer)
- Box cutter, utility knife, or scissors
- Ladders, work platforms, and other machinery for lifting designed to work safely at the height of the shelter

Space below is reserved for customer notes.

UNPACK AND IDENTIFY PARTS

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

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 shelter 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.

QUICK START GUIDE

For a quick overview of this shelter, its components, and connection details consult the Quick Start Guide at the back of these instructions.

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 and
CC6213
Fabric Clip

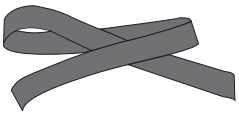
QH1402
Band Clamp

102717
Gearbox Drive

103544
Mounting Plate

102569
Bearing

QH1061
Ratchet



103620b
Plain End Strap

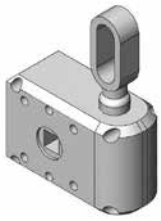
102548
Cross Connector

102856
End Clamp

10015107
T-Fitting

10015507
Elbow T-Fitting

104074
Square-to-Round
Tube Connect
Bracket

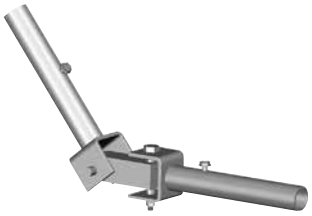


103496
Gear Box

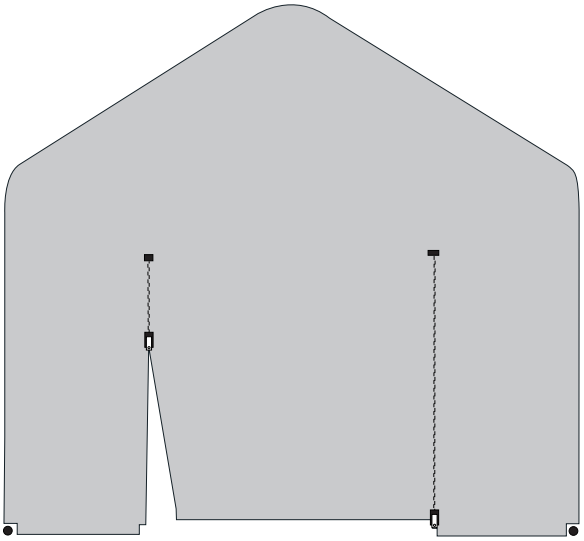
102193
3-Way Coupler

102194
4-Way Coupler

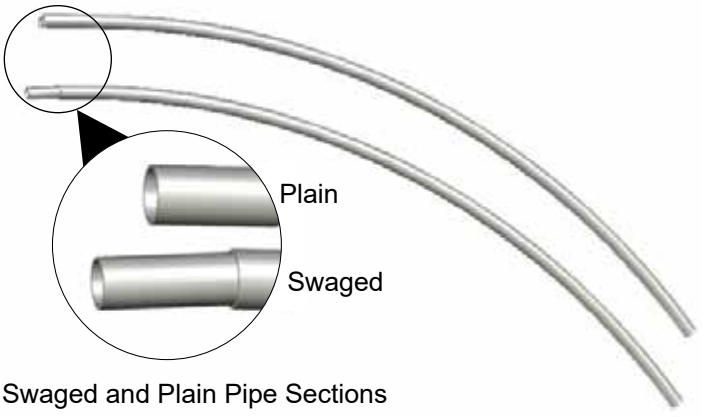
103395
Spin Handle



103396
Universal Joint



Zippered End Panel



Swaged and Plain Pipe Sections

ADDITIONAL PARTS IDENTIFICATION NOTES

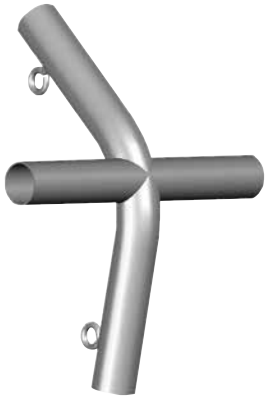
In some instances, there can be differences between the parts that are shown and referenced in the instructions and the parts that are shipped with the shelter. These differences *do not* affect the integrity of the shelter, but can change the assembly procedures.

The information that follows identifies possible changes in the assembly procedure found in this instruction document. *Please implement these changes during the assembly of the shelter.*

3-Way Coupler (no lock bolt)

3-Way Coupler (includes lock bolt)

4-Way Coupler (no lock bolt)



4-Way Coupler (includes lock bolt)

There can be two types of couplers used during the assembly of the shelter: those that include an installed locking eyebolt and those that do not. See above.

If the couplers included with your shelter do not have an installed lock bolt, u*se a self-tapping Tek screw* to secure the different pipes to the couplers during the assembly process. The self-tapping Tek screws are included with the shipment.

ATTENTION: Tek screws are sent with all shelters of this type. For couplers with locking eyebolts, install the Tek screws at each pipe connection for additional security if desired.

WARNING: To prevent personal injury and damage to the shelter, *fasten and tighten a Tek screw* at each pipe and coupler joint.

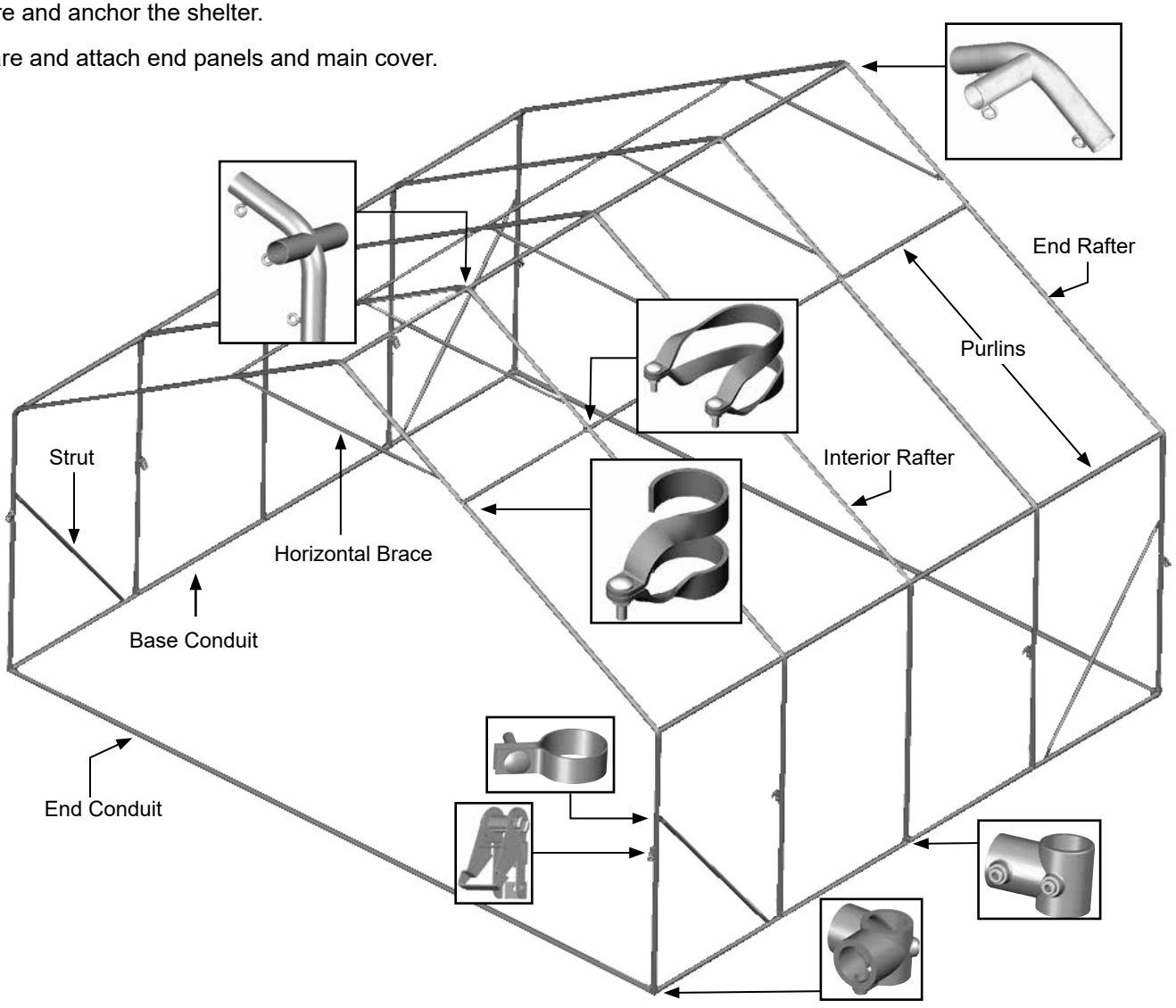
To prevent cover damage, install the Tek screw so that it *does not* touch the main cover or any optional side or end panels once these are installed.

ClearSpan™ Instant Greenhouse and Garden Center

OVERVIEW

This section describes assembling your canopy. The illustration below helps identify the main parts of the canopy.

1. Locate the required parts for each assembly procedure.
2. Assemble the rafters and frame assembly.
3. Square and anchor the shelter.
4. Prepare and attach end panels and main cover.



LAY OUT THE BUILDING SITE

After the site is prepared, identify the location of the shelter corners to help square the frame after it is assembled.

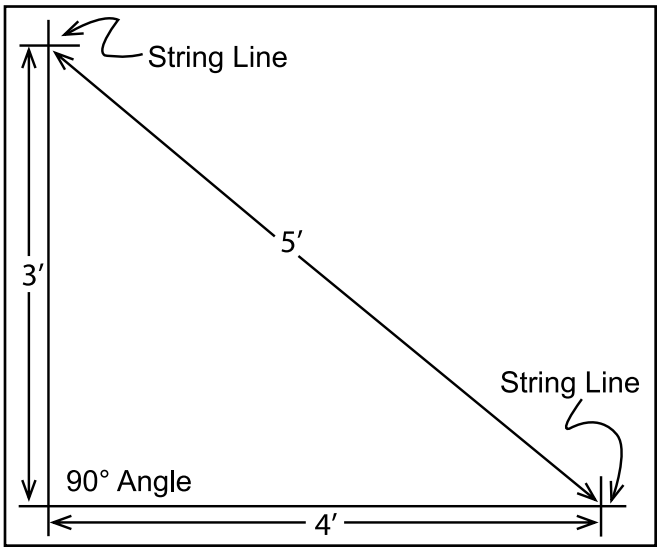
Taking these steps ***before*** assembling the shelter saves time and ensures that the structure is positioned as desired. The following procedure is a suggested method. Its use depends on the size of the shelter, shelter application, the footings, and the method used to anchor the shelter.

The procedure may not apply to your shelter.

SQUARE THE SITE

1. Identify a corner where a building rafter will be positioned, drive in a stake, and string a line the exact width of the building and stake in place.
2. Sting 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.
3. After squaring the position of the building and placing a stake at all corners, string a line between the stakes to mark the base of the building.



4. Continue with the frame assembly procedure.

FRAME ASSEMBLY

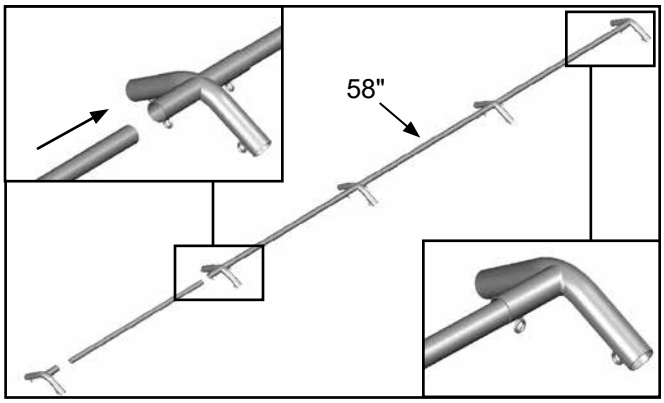
NOTE: For easier assembly of shelters longer than 30', construct the frame in short sections and then lift and connected the different sections to complete the assembly.

Gather the parts:

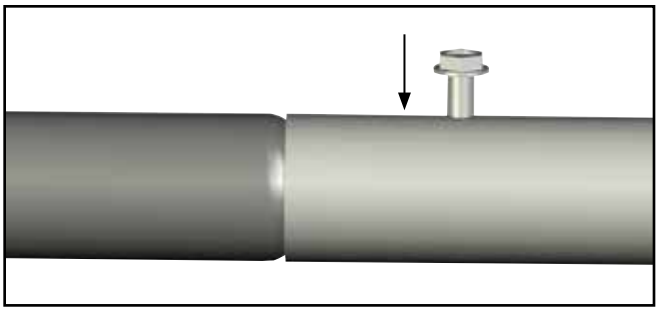
- Pipes 1.66" x 99" swaged (#166S099)
- Pipes 1.66" x 58" plain (#166P058)
- 3-way couplers & 4-way couplers
- End clamps (#102856) & cross connectors (#102548)
- QH1402 band clamps, QH1308 struts, and Tek screws

Complete these steps:

1. Connect the first two or three 58" ridge pipes (#166P058) using a 3-way coupler at the end and 4-way couplers between the ends.

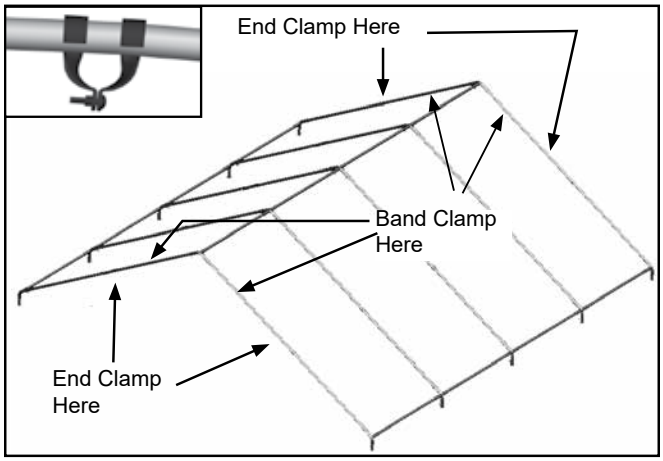


   NOTE: It is best to assembly the ridge pipe as the rafter pipes are added. Consult the Side Profile diagrams in the Quick Start section for length.
2. Assemble each rafter pipe using one (1) 166S099 pipe (99") and one (1) 166P058 pipe (58"). Connect the two (2) pipes and secure the joint using Tek screws. Tape the splice and Tek screws with duct tape.



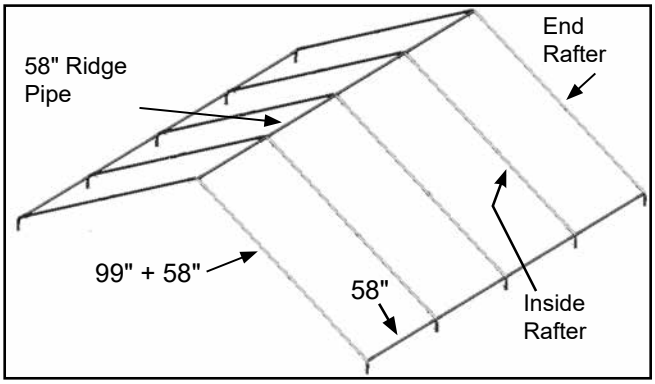
FRAME ASSEMBLY (CONTINUED)

3. Slide one (1) end clamp (#102856) and one band clamp (#QH1402) onto the first end rafter and connect the pipes to the upper and lower 3-way couplers. *Consult Quick Start section for details.*

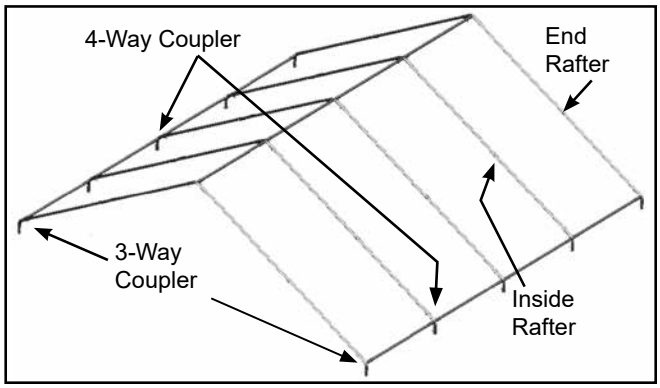


NOTE: The end clamps are used to attach the purlins to the frame; the band clamps are used to secure the 7' strut between the rafter legs at each rafter peak.

4. Slide a band clamp onto each of the remaining rafter pipes and connect the lower 3-way couplers to form the rafters of the assembly and connect the lower 4-way cross couplers *to construct the inside rafters*.



NOTE: Position the couplers so the eye bolts are to the inside of the frame. End the ridge pipe assembly with a 3-way coupler to form the final end rafter.



5. After the rafters are assembled as shown, install the two (2) runs of purlin.

Purlin Installation Procedure

The following steps describe assembling each purlin run one pipe at a time. If additional assistants are available, each purlin run can be completely assembled and then attached to the frame.

Gather the purlin parts:

- 1.315" x 75" swaged pipe (#131S075)
- 1.315" x XX" plain pipe (#131P0XX)
- Tek screws and magnetic nut setter (3/8" x 2-9/16")

NOTE: The purlins are part of the assembled frame. There are two (2) lengths of assembled purlins that run perpendicular to the rafter assembly. 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.

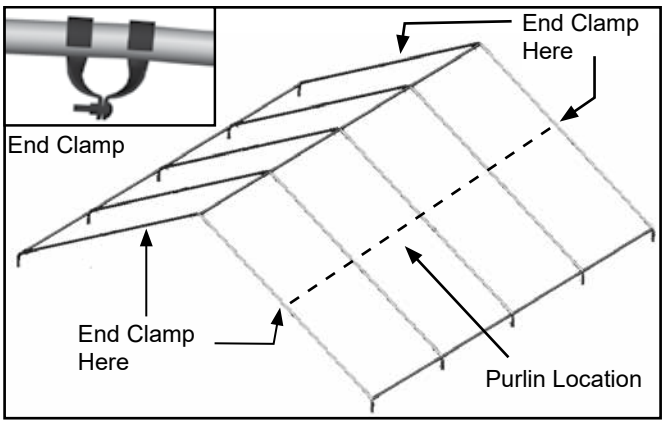
The X's represent the remaining length required to reach the end of the shelter. Consult the Spec Sheet and Side Profile diagram for the pipe identification if needed.

1. Select the required pipe sections for one purlin and place these along one side of the roof frame assembly.

NOTE: *Do not fasten the pipes together at this time*.

2. For all rafters, slide *each band clamp* toward the peak of the rafter and tape it in place if needed.

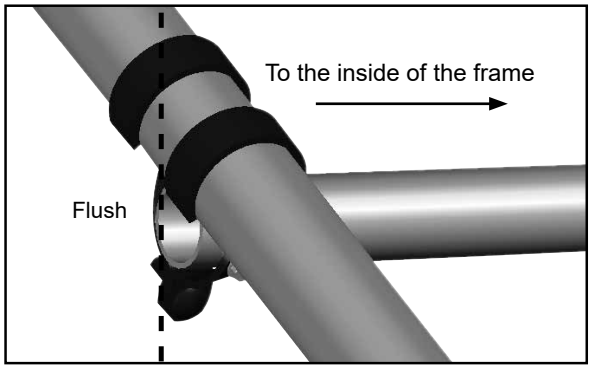
3. At the *first end rafter,* slide the purlin end clamp (installed earlier) toward the middle of the rafter pipe between the upper 3-way connector at the ridge and 3-way connector in the lower position on the rafter.



NOTE: The purlins run parallel with the ridge pipe assembly.

FRAME ASSEMBLY (CONTINUED)

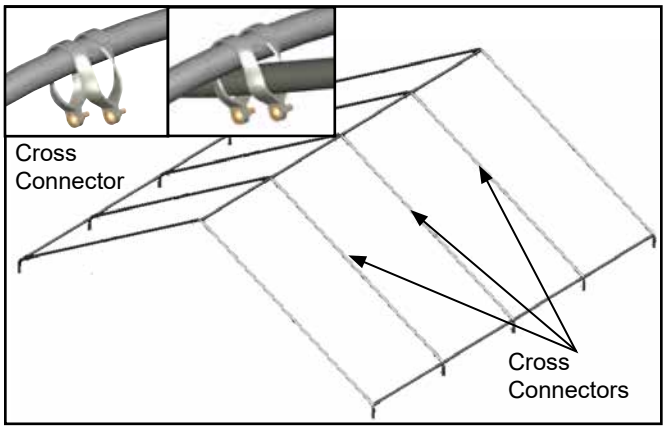
4. Take one 75" swaged pipe and insert the plain end into the end clamp.



5. On the *first inside rafters*, install a cross connector (#102548) in line with the end clamp on the end rafter.

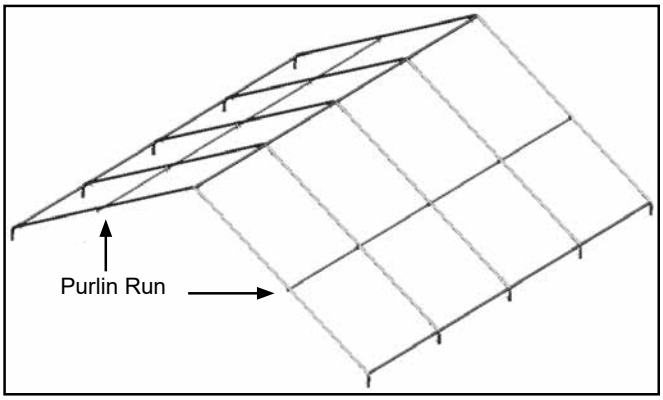
6. Slide the pipe through the cross connector and end clamp (as needed), verify that the pipe is parallel with the ridge pipe, and *tighten the end clamp*.

   NOTE: Verify that the end clamp is in the proper position. To prevent cover damage, *do not allow the purlin to extend beyond the center of the end rafter*. See the diagram above and on the following page.



NOTE: Depending on the rafter spacing, it may be necessary to add the purlin pipe before you tighten the cross connector.

7. Continue adding 75" swaged purlin pipes and cross connectors and working toward the other end clamp on the remaining end rafter to complete the purlin run.



8. Finish the purlin run with the shorter, plain 1.315" pipe. *Consult the Side Profile diagram in the Quick Start section for pipe identification number for your shelter.*

9. Insert the final pipe through the end clamp on the end rafter, connect it to the purlin run, and secure it in place.

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.*

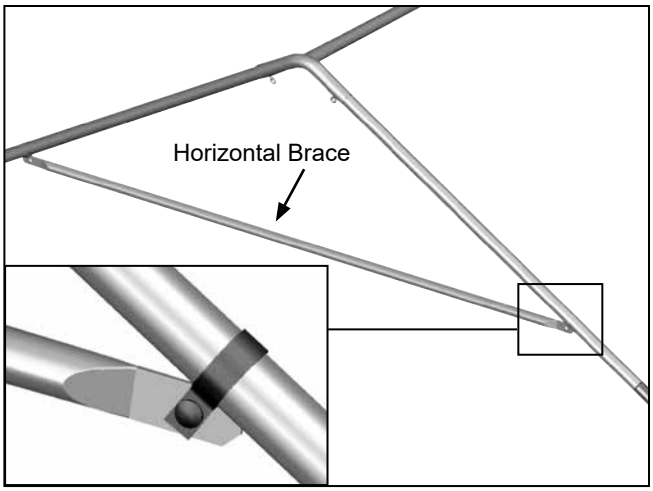
Consult the Side Profile diagram.

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

⚠ **CAUTION:** To prevent cover damage, the ends of the purlins should extend no more than ½" past the end clamp. The bolt side of the end clamps must go toward the inside (or purlin side) of the shelter.

10. Repeat the steps to assemble and install the remaining purlin run or runs. Check diagrams for location.

11. Attach the 7' struts (#QH1308) at the peak of each rafter to construct the horizontal brace. Reposition the band clamps as needed to center the strut and secure each end to the band clamps as shown below.



12. Secure each band clamp to the rafter pipe using a Tek screw. Position the screw so it will not contact the cover when it is installed.

13. Return to each *purlin clamp and secure the clamp to the rafter*. See the diagram at the top of this column. Install the Tek screw in a location that will not touch the main cover when it is installed.

14. Return to each purlin pipe splice and secure the joint using a Tek screw.

15. Return to each 3-way and 4-way coupler and check that all locking screws are tight.

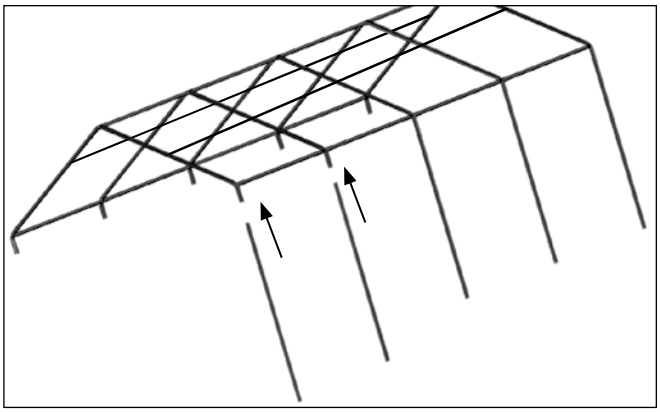
16. Continue by installing the rafter leg pipes.

FRAME ASSEMBLY (CONTINUED)

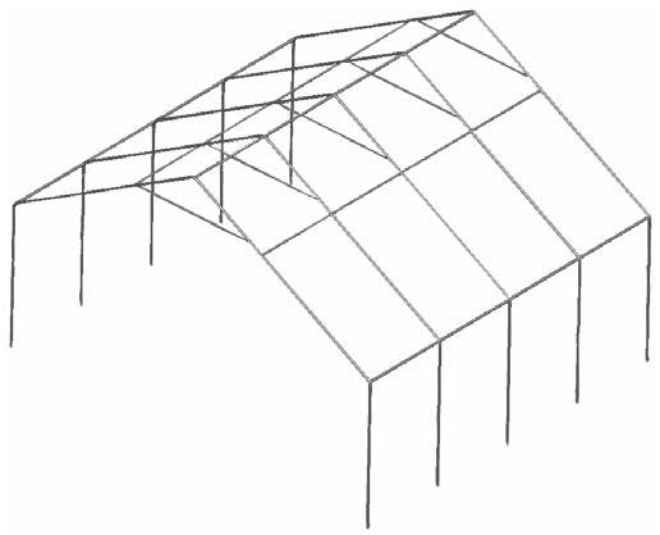
Rafter Leg Installation Procedure

Additional assistance and lifts are needed to safely lift the assembled frame and to install the legs. Exercise caution when lifting the assembled frame. Consult the services of a qualified contractor if needed.

1. With assistance, lift one side of the assembled roof structure, insert the 96" pipes (#166P096) into the 3-way and 4-way couplers and tighten eyebolts. Refer to the illustration below.



2. Repeat the steps for the other side of the assembly.



3. Verify that all eye bolts are tight and install base conduits as described in the next procedure.

BASE CONDUIT INSTALLATION

Gather the parts:

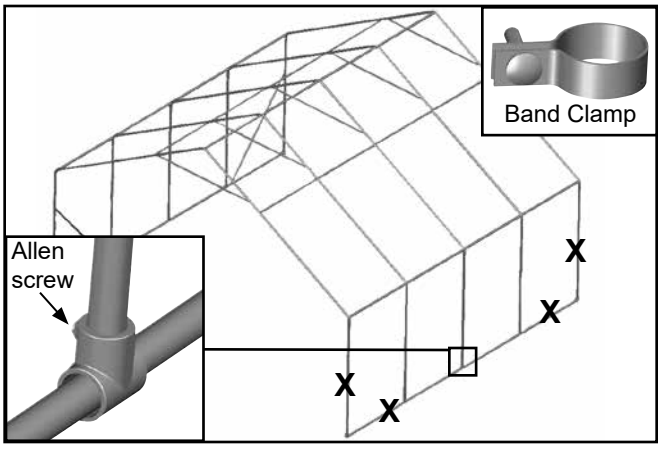
- Pipes (See chart below)
- T-fittings (#10015107) & band clamps (#QH1402)
- Tek screws

Assembly Procedure

1. Locate the base conduit pipes and T-fittings. *Each base conduit consists of the following pipes*. See chart below.

Base Conduit Lengths	
Length	Pipes
20'	(2) 99" & (1) 48"
30'	(3) 99" & (1) 72"
40'	(4) 99" & (1) 96"

2. Assemble a base conduit by inserting the swaged pipe end into a plain pipe end. Repeat the step to assemble the remaining end conduit.
3. Slide T-fittings (#10015107) onto each base conduit assembly at 5' increments along the length of the conduit to match the position of the inside rafter legs.
4. Slide a band clamp (#QH1402) onto each end rafter leg and base conduit location marked with an "X" below for the installation of the struts.
5. Insert rafter legs into the T-fittings, *verify that the on-center rafter spacing* is 5', and tighten all Allen screws to secure the fittings and leg pipes in position.



NOTE: *Do not* attach the elbow T-fittings (#10015507) to the end rafters at this time. These are installed with end panels in a later procedure.

6. Secure the base conduit joints using Tek screws.
7. Repeat the steps to install the base conduit for the remaining side of the frame.
8. Continue by assembling the end wall conduits.

END CONDUIT ASSEMBLIES

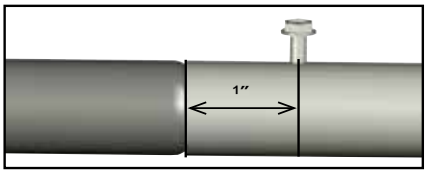
After assembly, each end conduit is inserted into the bottom pocket of an end panel and then secured between the end rafter legs.

Gather the parts:

- Pipe 1.66" x 99" swaged
- Pipe 1.66" x 96" plain
- Elbow T-fitting (#10015507)
- Tek screws (#FA4482B)
- Duct tape (supplied by customer)

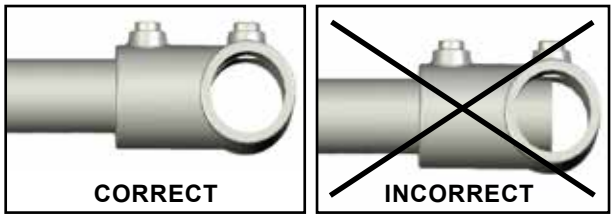
Assembly Procedure

1. Locate the end conduit pipes. Each end conduit consists of two (2) 99" pipes and one (1) 96" pipe. The frame requires two (2) end conduits.
2. Assemble an end conduit by connecting the 99" swaged pipes to the 96" plain pipe and secure each joint using a Tek screw. Apply duct tape (customer-supplied) over the Tek screw to protect the end panel.



3. Repeat the steps to assemble the remaining end conduit.
4. After assembling each end conduit, *measure and cut each to a length of 22' 8-1/2"*.

   NOTE: To account for the elbow fittings, this dimension is a few inches shorter than the actual width dimension shown on the Front grid diagram in the Quick Start section of these instructions.
5. Slide an elbow T-fitting onto each end of each conduit as shown below and slightly tighten the Allen screws to keep the fitting in position.



   NOTE: Do not insert the end conduit pipes all the way into the T-fittings, but instead allow room for the end rafter to be inserted later.
6. Continue by preparing the end panels.

PREPARE END PANELS

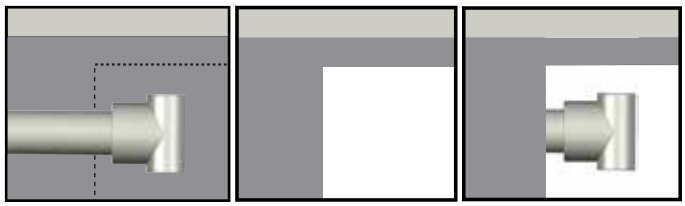
CAUTION: To prevent damage, do not install end panels on a windy day.

Gather the parts:

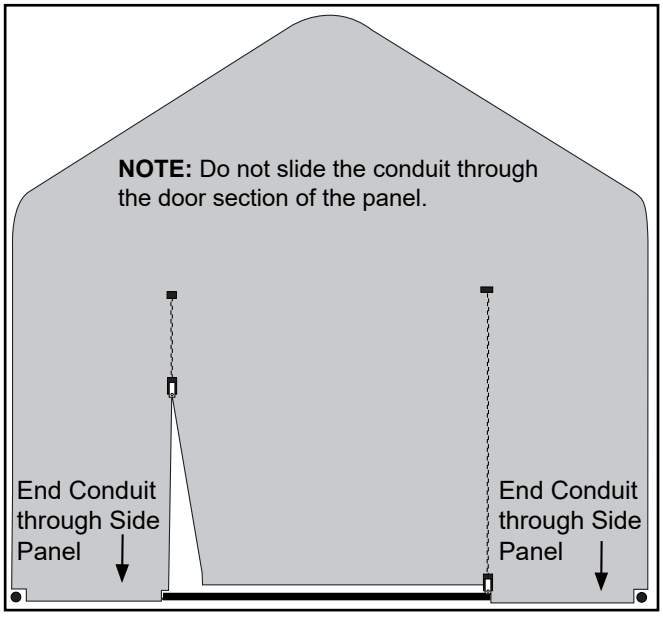
- End panels: Large zippered door
- End conduit assemblies (2)
- Scissors or similar tool to trim end panel corners

Assembly Procedure

1. Place the end panel at the desired end of the frame and prepare the end panels as follows:
   a. Position an end panel on a clean flat surface.
   b. Place the end conduit assembly centered side-to-side on top of the pocket.
   c. Trim the corner of the end panel so the elbow T-fitting is accessible when conduit is placed inside the pocket.
   d. Repeat the same steps for the other end of this end panel and for both ends of the remaining end panel.



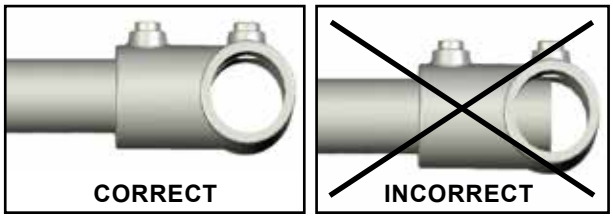
2. Remove one elbow T-fitting from one end conduit assembly, insert the conduit *through the two side panels* of the end panel, and reinstall the fitting.



3. Repeat for the remaining end panel and continue by attaching the end conduits to the frame.

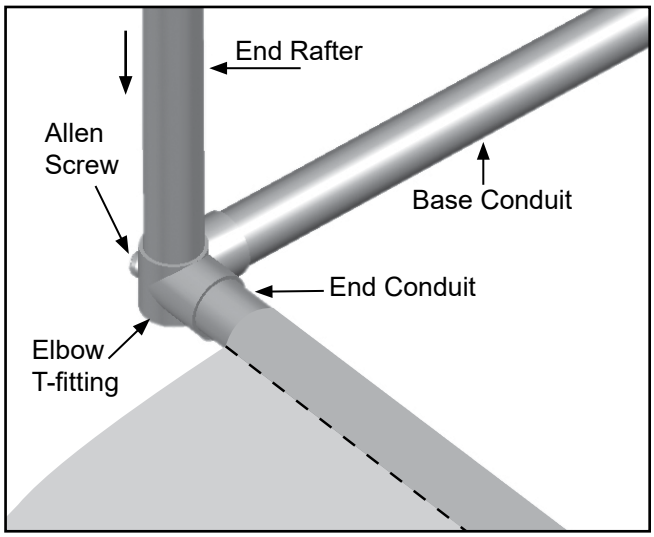
ATTACH END CONDUIT ASSEMBLIES

1. Verify that the elbow T-fittings are installed correctly.



ATTENTION: Do not allow the end conduit to extend into the opening that remains for the bottom of the end rafter legs.

2. Position the end conduit and end panel at the desired end of the frame.
3. Lift one end rafter leg and insert the leg pipe into the elbow T-fitting of the end conduit.



4. Verify that the leg pipe is flush with the bottom of the elbow T-fitting and tighten the Allen screws.
5. Repeat the steps to secure the end panel conduit to the remaining leg pipe of the end rafter.
6. Move to the remaining end of the frame and attach the end conduit as previously described.
7. Recheck *all Allen screws* to verify that they are tight.
8. Continue with the installation of the struts.

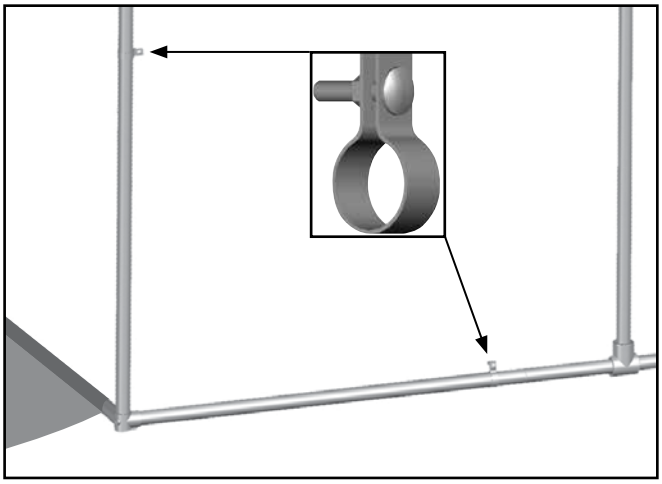
NOTE: Do not attach the end panels at this time. The frame must be anchored before the end panels and the main cover can be installed.

INSTALL STRUTS

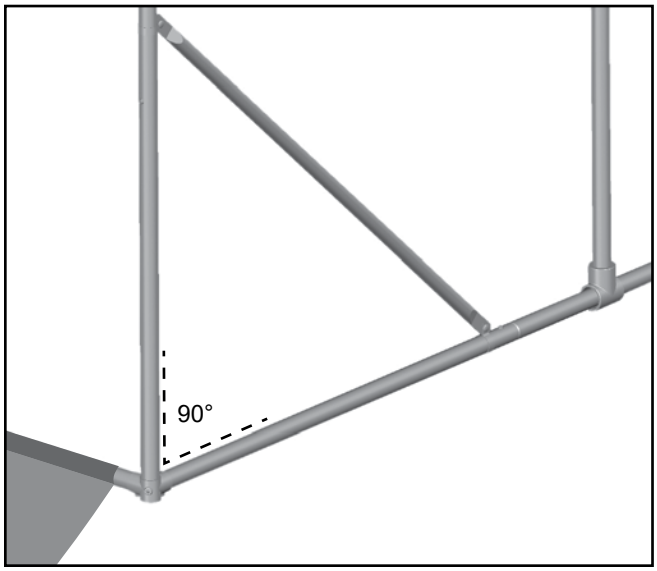
Gather the parts:

- Struts (4)
- Band clamps (#QH1402)

1. After the end conduits are assembled, verify that the band clamps are in the proper location on the frame. (Install if needed.) See diagram below.



2. Remove the bolts and attach a strut between the band clamp on the base conduit and the band clamp on the end rafter leg. Position the strut so that it forms a triangle as shown below. Tighten the bolts.



NOTE: To prevent damage to the main cover when it is installed, verify that the bolt heads are to the outside of the shelter.

3. Install the remaining struts and tighten all band clamp bolts.
4. Secure each band clamp to each base conduit and rafter leg pipe using a Tek screw.
5. Continue by squaring the frame.

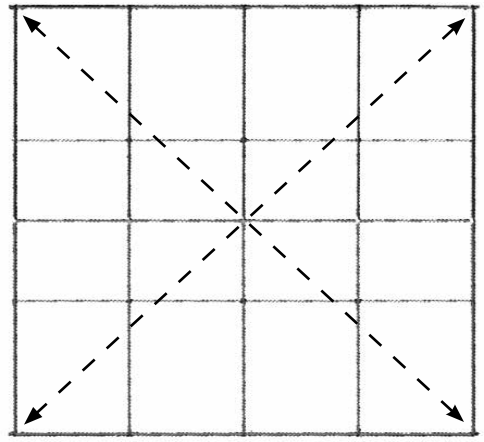
SQUARE THE ASSEMBLED FRAME

Gather the parts:

- Measuring tape

Complete these steps:

1. Square the frame by measuring diagonally corner-to-corner and align all rafters as shown below.
2. Verify that the on-center width of the frame is uniform between the legs at the base of each rafter.



FRAME TOP VIEW

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

3. Continue by anchoring the frame.

ANCHOR THE SHELTER

At this point, anchor the shelter. 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 shelter construction. Improper anchoring may cause shelter 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.*

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. Verify that the purlin pipes do not extend beyond the end of the end rafter.
3. Apply two layers of heavy duct tape on all pipe connections and clamps that may contact the cover.

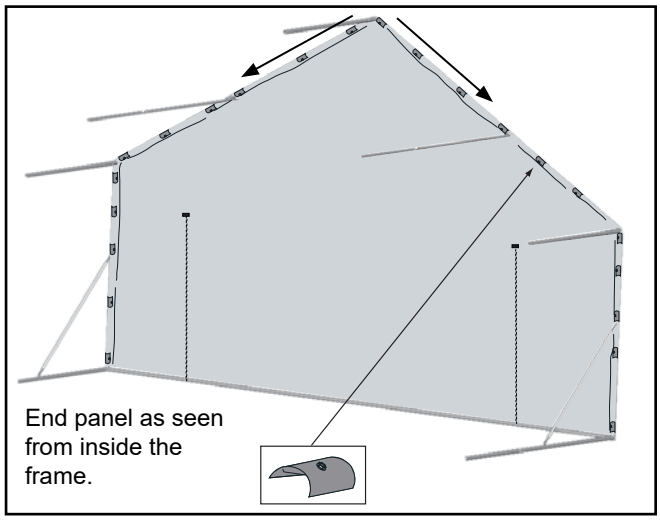
ATTACH END PANEL ASSEMBLIES

Gather the parts:

- Fabric clips - #CC6213 (Divide quantity in half; use half for each end panel.)
- Tek screws
- Measuring tape and scissors

Complete these steps to attach the end panel to the end rafter:

1. While standing inside the shelter, start at the peak of the end rafter and pull the zippered end panel over the top of the rafter so the material edge is on the inside of the rafter.
2. Secure the end panel in place near the top center of the end rafter using a fabric clip (#CC6213) and Tek screw.
3. Moving outward in both directions, stretch the panel as needed and place fabric clips spaced evenly on rafter.



4. Secure each fabric clip to the end rafter using a Tek screw position so it will not contact the main cover when it is installed.

   NOTE: The end panels may be shipped as untrimmed rectangular pieces. If so, use scissors or a similar tool to trim the excess end panel material from inside the shelter if desired.

5. Continue with the installation of the main cover.

PREPARE MAIN COVER

Gather the parts:

- Ratchets (QH1061)
- Cover conduit pipe (see chart)
- Roll-up conduit pipe (see chart)
- Cover
- Tek screws
- Duct tape (supplied by customer)

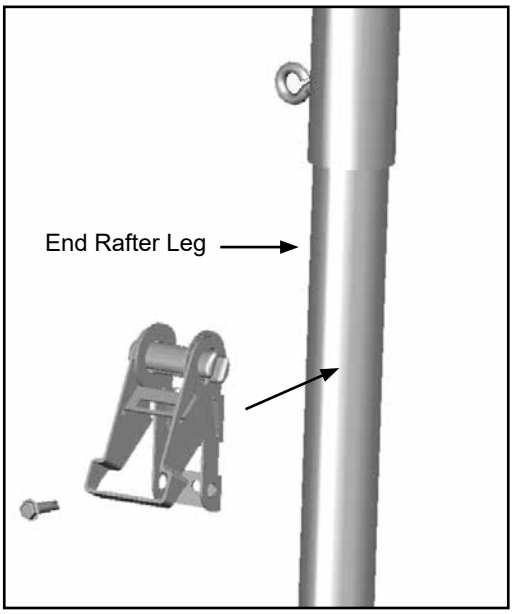
The sides of the cover are attached to the inside rafters using ratchets with straps. The ends of the cover (front and back) are attached to the end rafters using ratchets from the outside. The straps to secure the ends of the main cover are pre-installed in the cover.

NOTE: When handling the main cover and setting it in position, do not pull on the end straps. They will pull out of the cover.

WARNING: To prevent damage to the cover and to prevent serious personal injury, DO NOT attempt to install the main cover on a windy day.

Assembly Procedure

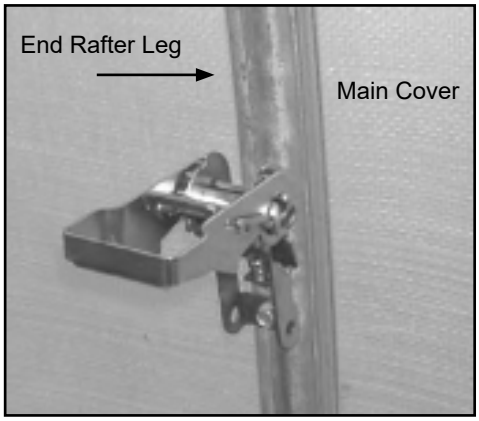
1. Fasten a ratchet *to the outside of each end rafter* using a Tek screw in the bottom hole of the ratchet as shown below. *Position the ratchet about 36" up from ground level.*



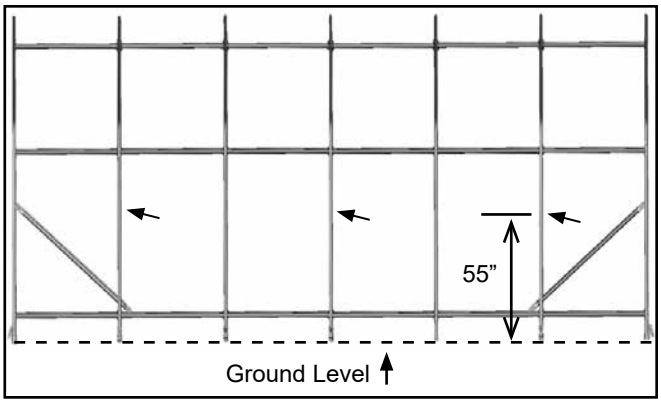
NOTE: The end panel is not shown in the above diagram. Ratchet design may differ from actual ratchet.

2. Repeat this step at the remaining three corners.

3. Attach the remaining ratchets to the inside surface of the interior rafters using a Tek screw. Install the ratchets approximately 55" up from the ground.



NOTE: Consult the Side Profile diagrams in the Quick Start section for ratchet location for your frame.



Arrows show ratchet locations. Actual frame may be different from the frame shown. Consult the Side Profile diagrams.

4. Assemble two (2) cover conduits. These conduits are the same length. Start each conduit with one plain pipe and add swaged pipes to arrive at the correct length.

   NOTE: Conduits can be assembled before use as described in the following steps, or they can be assembled as they are inserted into the cover pockets. (The latter works best for longer frame lengths.)

   Consult the table that follows to select the correct pipe for your frame length. Each main cover conduit consist of these pipes:

Cover Conduit Pipe Lengths	
Greenhouse	Pipe Lengths
20'	3 @ 75" & 1 @ 25.5"
30'	4 @ 75" & 1 @ 73.5"
40'	6 @ 75" & 1 @ 49.5"

5. Secure each conduit pipe joint using a Tek screw. Wrap two layers of duct tape over the pipe joint and Tek screw head to protect the cover.

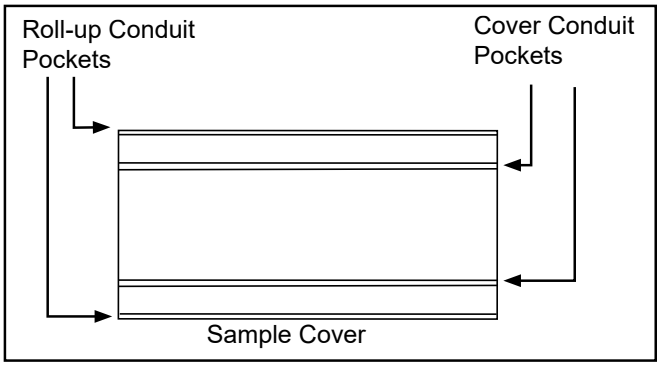
PREPARE MAIN COVER (CONTINUED)

6. Assemble two (2) roll-up cover conduits. Use the table below to select the correct pipe:

Roll-up Conduit Pipe Lengths	
Greenhouse	Pipe Lengths
20'	(3) 75", (1) 25.5"
30'	(4) 75", (1) 73.5"
40'	(6) 75", (1) 49.5"

ATTENTION: These conduits are used later in these instructions. Mark them so they do not get used in the wrong place and set them aside after assembly.

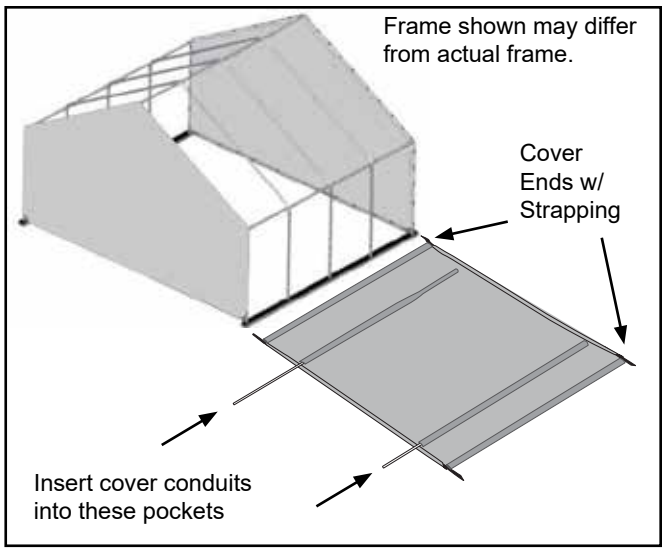
7. After assembling the cover conduits and roll-up conduits, unfold the main cover on a clean, smooth surface near the frame.



NOTE: Unfold the main cover with the inside surface facing up.

8. Locate the cover ends with strapping and align with the front and back of the shelter.

9. Insert one cover conduit into each of the pockets nearest the center of the main cover as shown below.



10. Continue by pulling the main cover onto the frame.

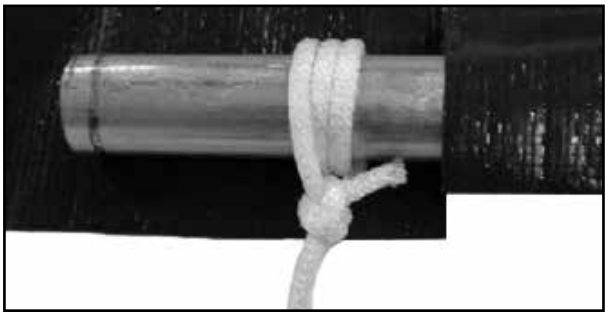
ATTACH MAIN COVER

Gather the parts:

- Main cover (with conduits already inserted)
- Ropes long enough to reach over the frame (provided by customer)
- Plain strap (#103620b)
- Tek screws
- Box cutter or utility knife

Assembly Procedure

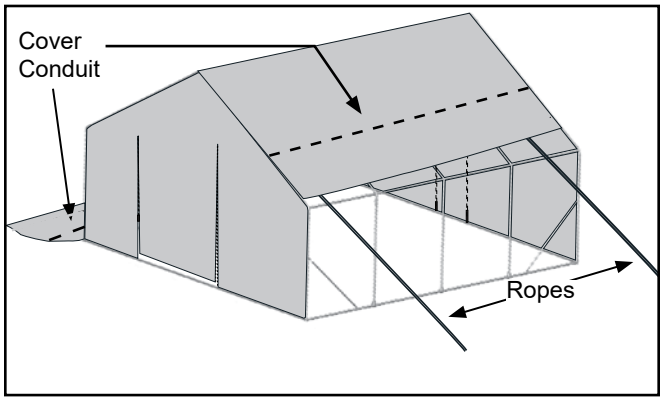
1. To pull the cover over the frame, attach a rope to each end of the cover conduit farthest from the frame. Wrap the rope around the conduit a few times to prevent it from slipping off. *May not be required for small covers*.



NOTE: Depending on the length of the cover it may be necessary to attach additional ropes to the roll-up conduit between the end ropes. Cut a small opening in the cover pocket and tie the rope around the conduit. DO NOT cut through the main cover. *Cut through the conduit pocket only.*

2. With all ropes attached to the cover conduit, lift the conduit and rope and carry it toward the base of the frame.

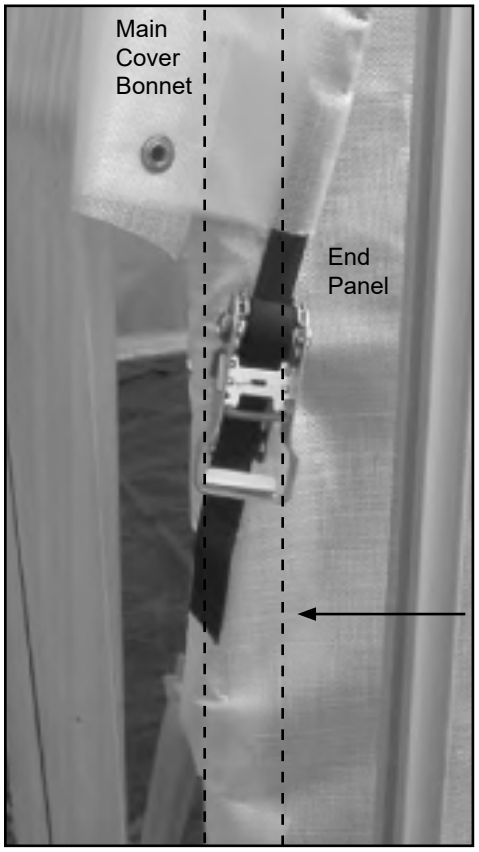
3. Toss the ropes over the frame and pull the cover into position. One person is required at each rope.



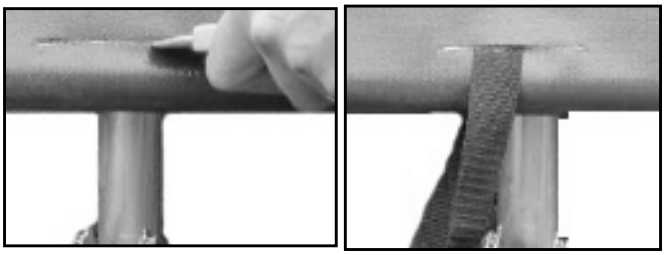
4. Once the main cover is pulled into position, center the cover on the frame and remove the ropes.

ATTACH MAIN COVER (CONTINUED)

1. Feed the bonnet straps through the four (4) ratchets attached to the corners of the greenhouse frame and tighten only enough to hold the cover in place.

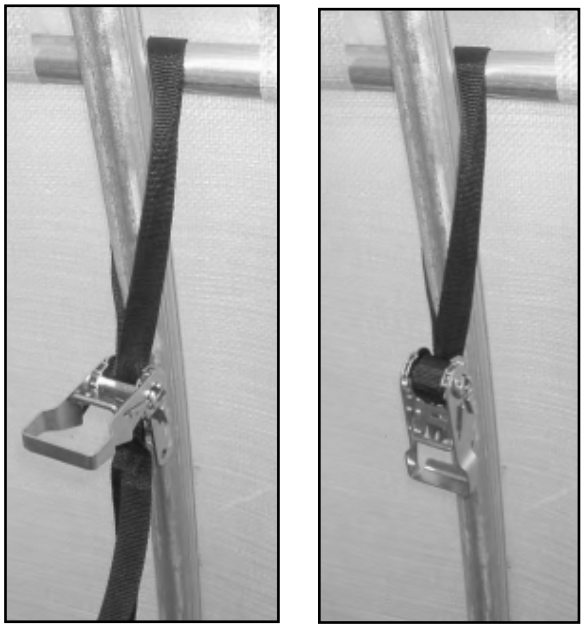


2. Move to the inside of the greenhouse and make sure the cover is centered front-to-back and side-to-side.
3. Slit or notch the cover conduit pocket at each rafter where a ratchet is attached.



NOTE: Do not cut the cover, cut only the pocket containing the cover conduit.

4. Slide a 3' strap through the slit or notch in the cover pocket and around the cover conduit at each ratchet.
5. Feed both ends of each strap into a ratchet and tighten the ratchet only enough to hold the cover snug.



6. Verify that the cover is centered on the frame then tighten all side ratchets evenly until the cover is tight.

NOTE: To remove excess strap that binds up in the ratchet, loosen the ratchet, shorten the strap, and retighten.

7. Move to the end rafters and tighten the corner ratchets to tighten the bonnet section of the cover.

8. Take the two (2) remaining roll-up conduits that were assembled earlier and insert each one into a roll-up conduit pocket of the main cover.

NOTE: The roll-up portion of the main cover will hang down along both sides of the assembled frame.

9. Continue with these instructions to install the twist-of-the-wrist roll-up assembly for the main cover.

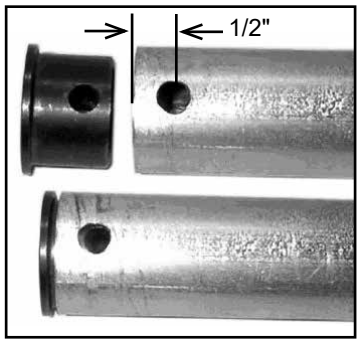
TWIST-OF-THE-WRIST ASSEMBLY

Gather the parts:

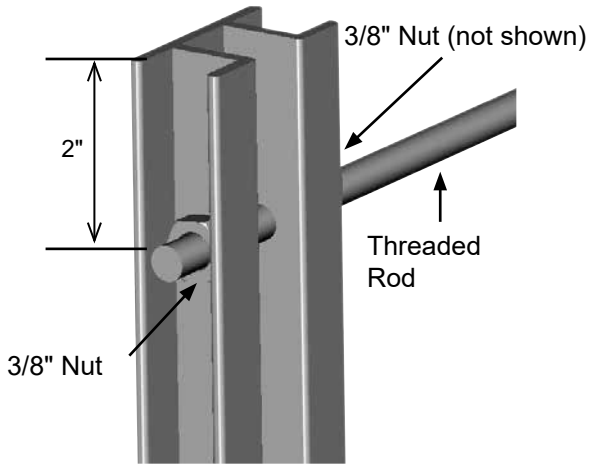
- Aluminum channel (#102570) and drive handle (#102480)
- Gearbox (#103496) and gearbox double drive (#102717)
- Mounting plate (#103544) and bearing assembly (#102569)
- Threaded rod (#FAK26) and 3/8" nuts and washers
- CC6212 fabric clips (Set 8 aside and divide the remaining quantity in half; use half for each side.)
- 5/16" machine bolts (FAG336B) and 5/16" nuts
- Drill and drill bits

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

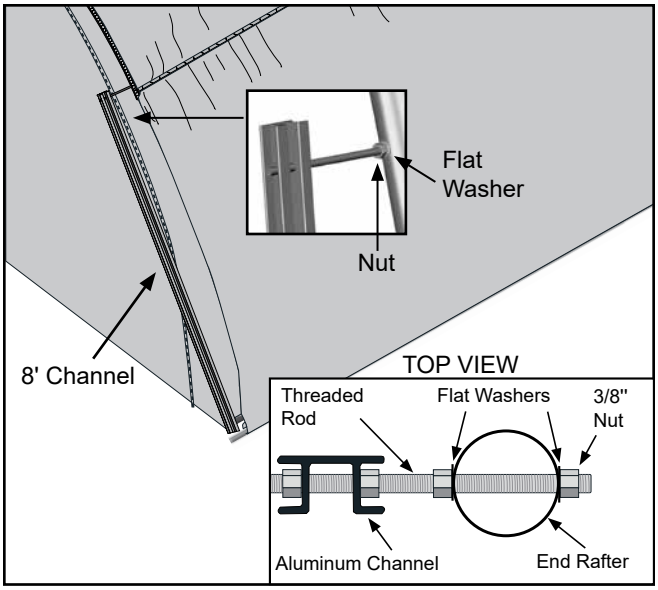
1. Drill a 5/16" hole through the cover conduit 1/2" from the end of the conduit.
2. Insert a tubing adapter into the conduit and align the holes of the adapter with the drilled holes in the conduit.



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



4. Position the channel along the rafter at the desired end of the building where the Twist-of-the-Wrist assembly will be located. Place the lower end of the channel an inch off the ground to allow free movement of the channel during the operation of the roll-up cover.
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.



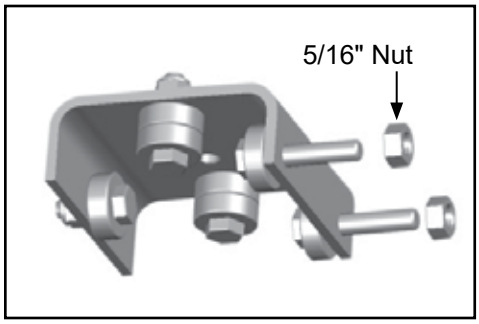
NOTE: Install a 3/8" flat washer between the 3/8" nut and the end panel. *Frame shown for illustration.*

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

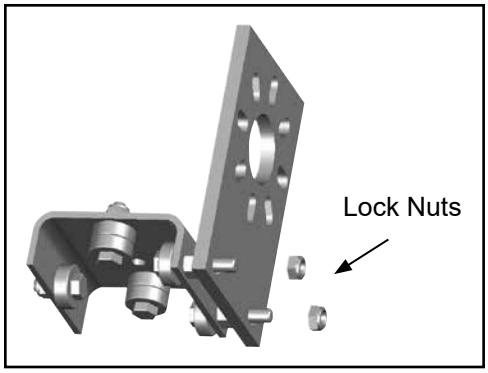
   Single bearings are attached to the sides of the bracket and double bearings to the middle portion of the bracket. Use 1/4" hex bolts and locknuts as needed. Install a flat washer on both sides of each bearing to insure proper operation of bearings and the assembly.

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

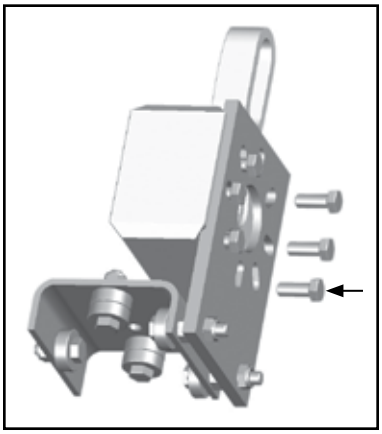
7. For the spacers on the long bolts, insert a 5/16" nut over each bolt. *These nuts are used as spacers only.*



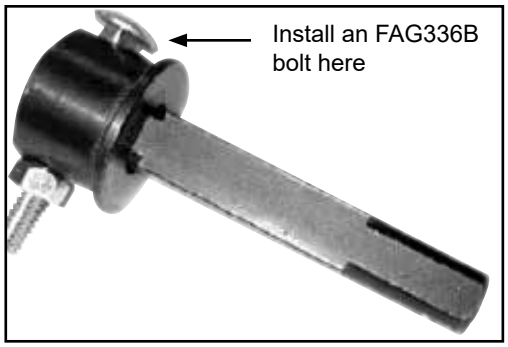
8. Slide the Twist-of-the-Wrist mounting plate over the long bolts and secure the plate with two lock nuts.



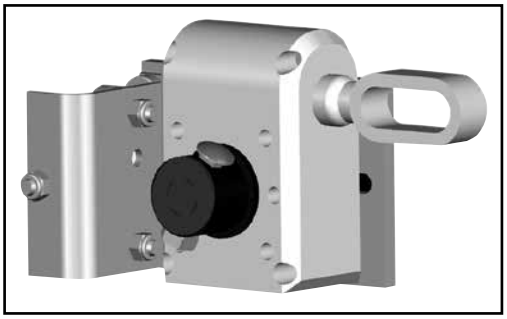
9. Attach the Twist-of-the-Wrist gearbox to the mounting plate using hex head bolts.



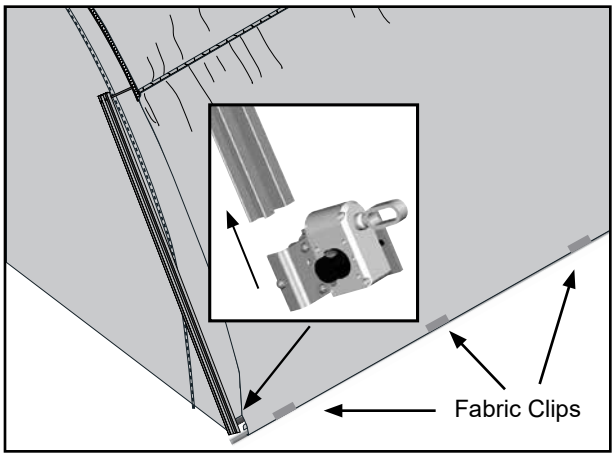
10. Using a 5/16" machine bolt and 5/16" nut, attach the square shaft to a tubing adapter. (Carriage bolt is shown for illustration. Use an FAG336B machine bolt.)



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.)

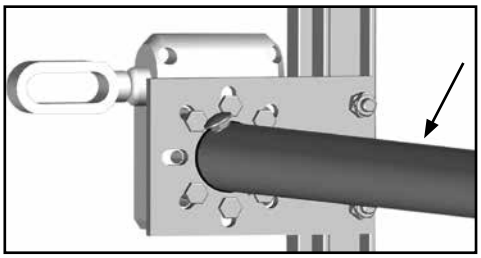


13. Adjust the roll-up cover conduit so that it reaches the gearbox and *secure the cover to the conduit* using half of the CC6212 fabric clips and Tek screws.

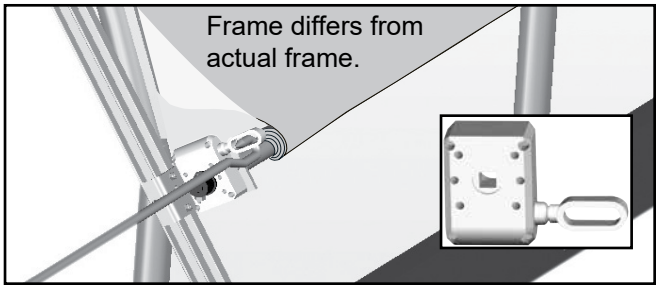
14. Roll the conduit toward the frame and up to the gearbox to wrap the excess cover onto the conduit.

15. Attach the rolled conduit to the square shaft of the assembly by inserting a 5/16" x 2-1/2" bolt through the hole in the conduit and tubing adapter. Tighten the nut.

NOTE: It may be necessary to trim the conduit and cover to the proper length so that it aligns with the gearbox. Adapt these instructions to your application.



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



17. 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

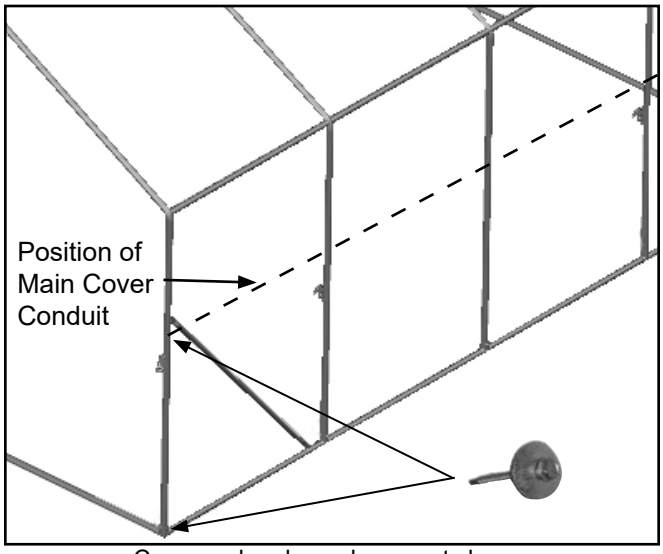
Gather the parts:

- Anti-billow rope (#CC5310A)
- Fender washers 1/4" (#FAMF01b)
- Tek screws

Anti-billow ropes secure the roll-up sides when they are in the down position. Complete the following steps to install the ropes.

1. Using the Twist-of-the-Wrist assembly, roll up the sidewall so that it is a few inches above the ground.
2. Install a Tek screw and fender washer into the base conduit near the elbow fitting of the end rafter.

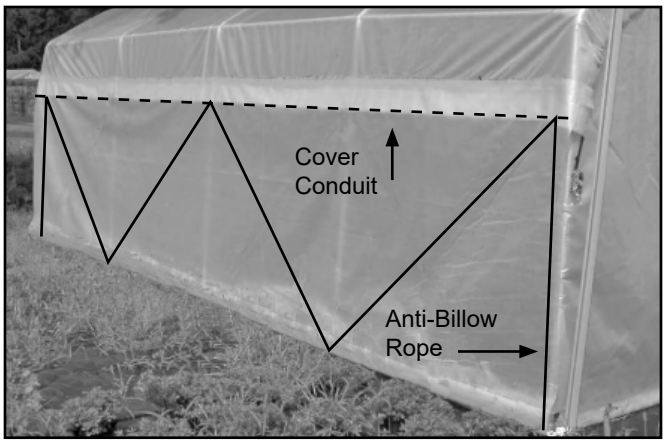
   NOTE: Do not tighten the Tek screw completely, leave room for the rope to fit behind the washer.



Cover and end panels are not shown.

3. Move up the rafter leg to the main cover conduit and install another Tek screw and fender washer through the cover material and into the main cover conduit.
4. Move to the bottom of the second rafter and install a Tek screw and a fender washer into the base rail.
5. Move to the cover conduit at the next rafter and insert a Tek screw and a fender washer into the cover conduit. Do not tighten the Tek screw completely.
6. Continue installing Tek screws and fender washers into the cover conduit and base rail conduits and work to the other end of the greenhouse frame.
7. Using the Twist-of-the-Wrist assembly, roll up the side cover to its highest position.
8. Attach the end of the rope to the Tek screw at the base of the end rafter leg and tighten the Tek screw to hold the rope in place.
9. Run the rope over the Tek screw attached to the cover conduit at the same end rafter and down to the Tek screw attached to the base rail

10. Continue running the rope over and under the Tek screws until the end of the greenhouse is reached.
11. With the cover rolled to its highest position, pull the anti-billow rope tight to remove excess slack.
12. Tie the rope the final Tek screw and tighten the Tek screw to secure the rope.
13. Lower the roll-up side to check the operation.



NOTE: Dashed line shows the position of the cover conduit within the pocket of the main cover.

14. Repeat all of the above procedures for the remaining roll-up side for the greenhouse.
15. Install the roll-up door assembly for the paneled end walls.

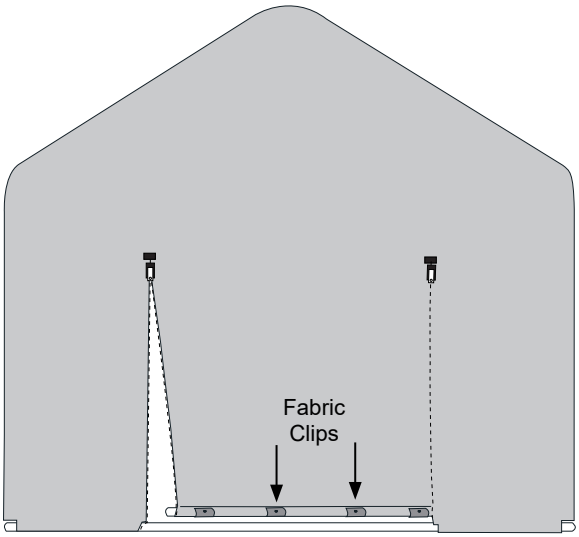
INSTALL THE ROLL-UP DOOR ASSEMBLY

Gather the parts:

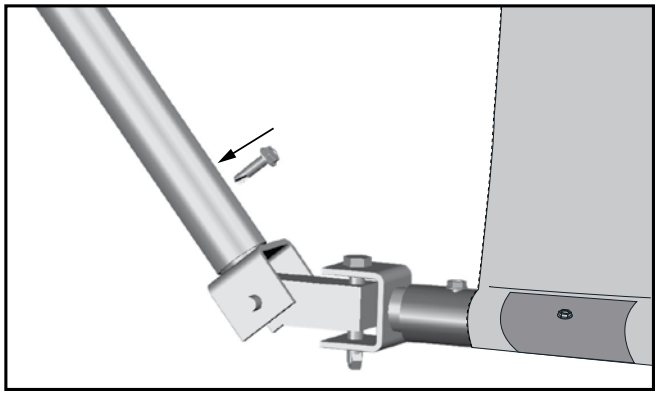
- 75" Pipe (#131S075)
- 49-1/2" Pipe (#131P0495)
- Handle (#103395) and universal joint (#103396)
- 8 fabric clips (#CC6212) reserved from the roll-up conduits. Divide quantity in half.
- Tek Screws
- Measuring tape, metal-cutting saw and duct tape (supplied by customer)

Assembly Procedure

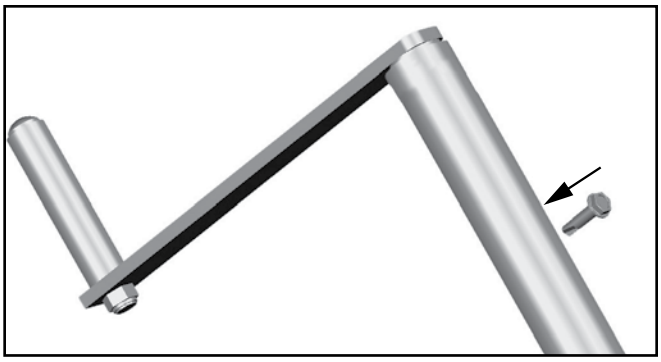
1. Assemble the roll-up door conduit by connecting two (2) 75" swaged pipes. Secure the joint using a Tek screw. Wrap two layers of duct tape over the Tek screw head to protect the door panel.
2. Insert the conduit assembly into the door pocket so the plain end of the conduit (where the crank will be) extends an inch or so beyond the panel.
3. Secure the conduit to the panel using four (4) the fabric clips and Tek screws as shown below. Number of fabric clips shown may vary.



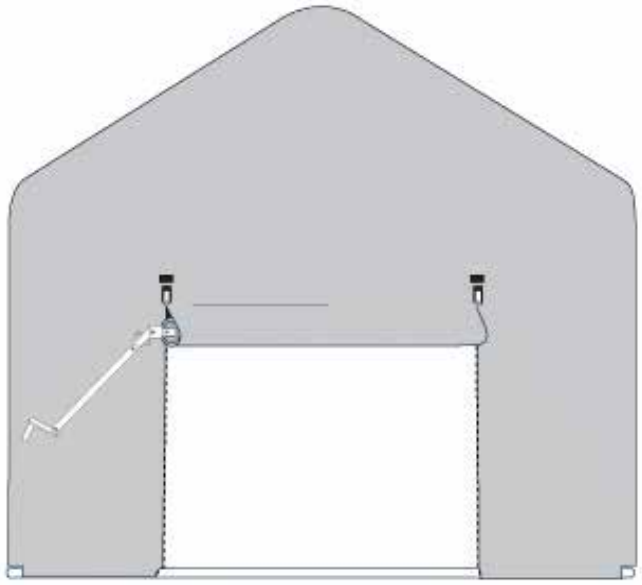
4. Attach the universal joint to the conduit in the door pocket using a Tek screw to secure the connection.
5. Attach the 49-1/2" plain pipe to the other end of the universal joint using a Tek screw.



6. Add the spin handle to the 49-1/2" pipe and secure the connection using a Tek screw.



NOTE: The completed assembly is shown below.



7. Complete the roll-up assembly for the remaining end panel door.
8. Read the care and maintenance information that follows.

SHELTER CARE AND MAINTENANCE

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

- Regularly check the main cover and end panels to see that these remain tight and in proper repair.
- Check connections and all fasteners to verify that they remain tight.
- Verify that the Twist-of-the-Wrist assembly remains secure and in good condition.
- Inspect the Anti-Billow Rope system and replace any worn or broken ropes or missing screws and washers.
- Do not climb or stand on the shelter at anytime.
- Remove debris and objects that may accumulate on the shelter. 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. *Never allow snow to accumulate on the cover or pile up along the sides and ends of the shelter.*
- Check the contents of the shelter to verify that nothing is touching the cover or the end panels that could cause damage.
- Check the anchoring system to ensure that all components are tight and in good repair. *Replace worn or damaged parts immediately.*
- If the shelter is moved, inspect all parts and connections before reassembling.
- For replacement or missing parts, call 1-800-245-9881 for assistance.

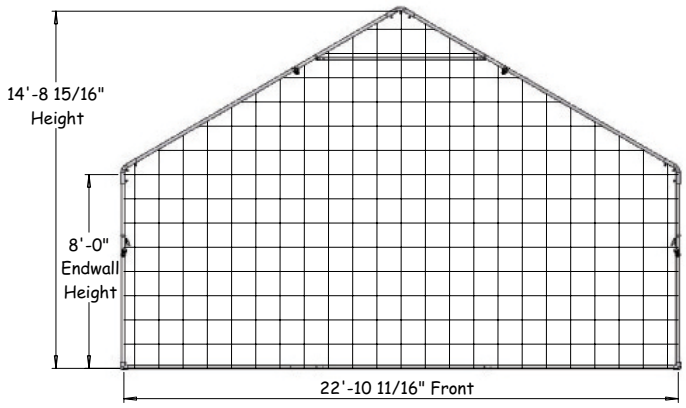
NOTE: With the exception of Truss Arch buildings, ClearSpan™ shelters and shelters do not have any tested loading criteria.

Space below is reserved for customer notes.

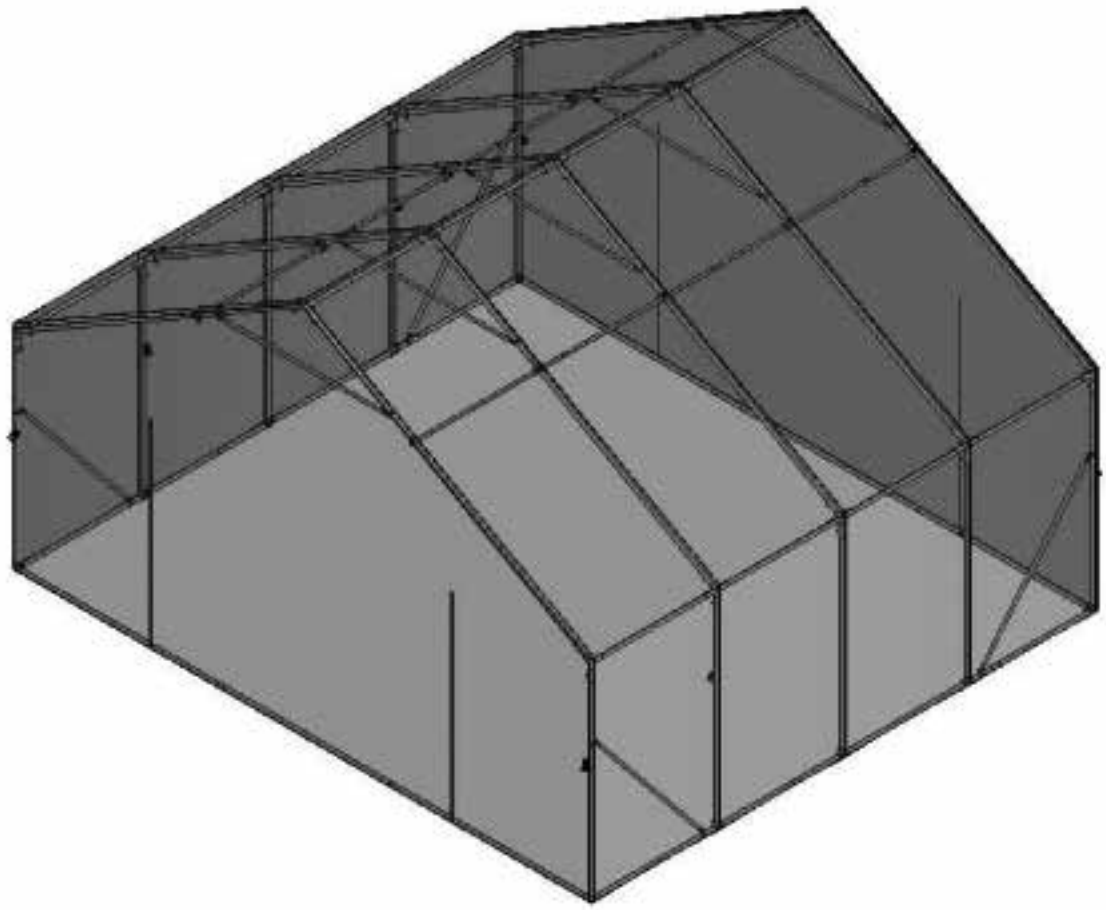
ClearSpan

QUICK START GUIDE

24' Wide Instant Greenhouse and Garden Center

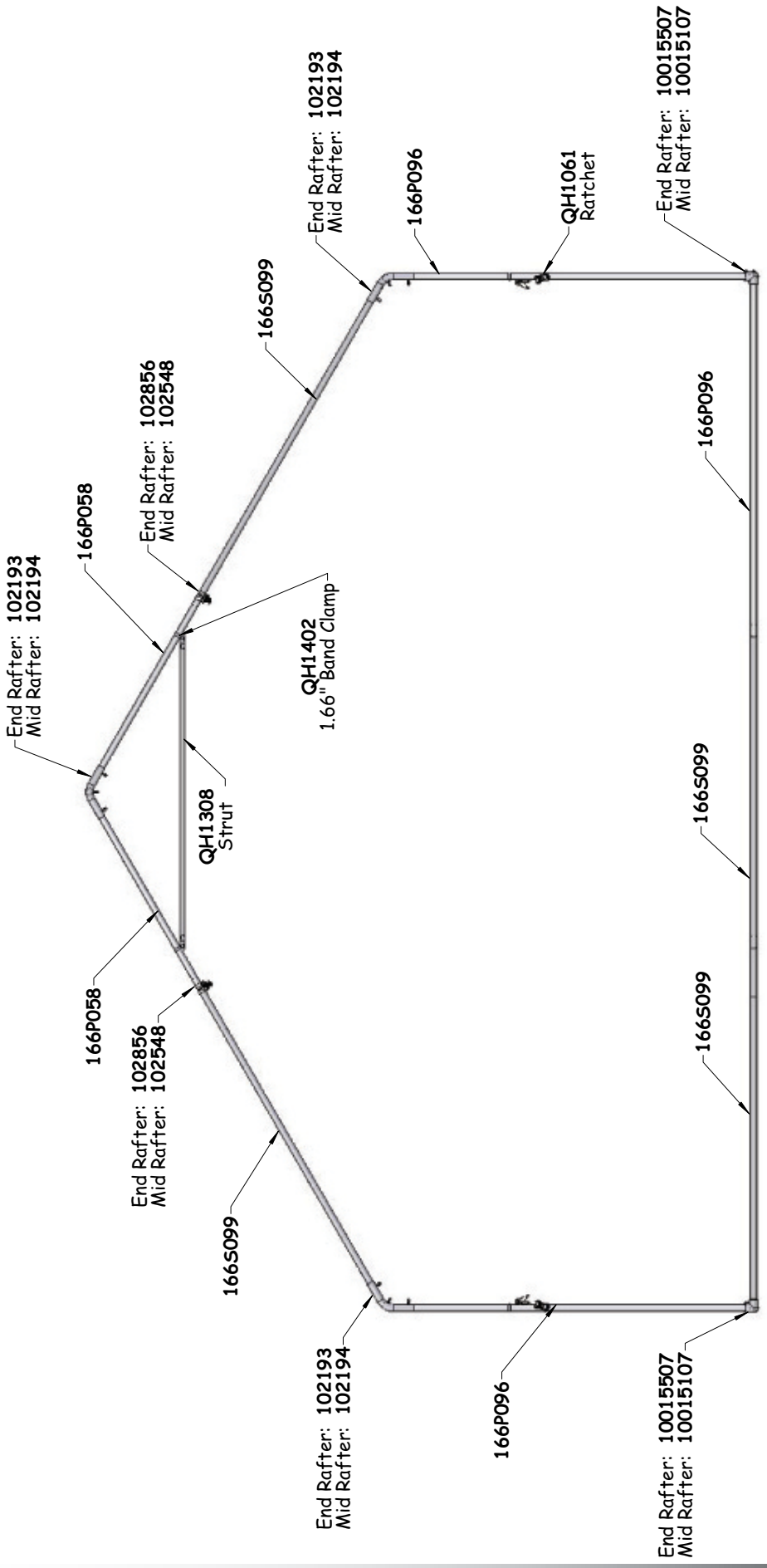


FRONT
Grid Represents 12" Squares

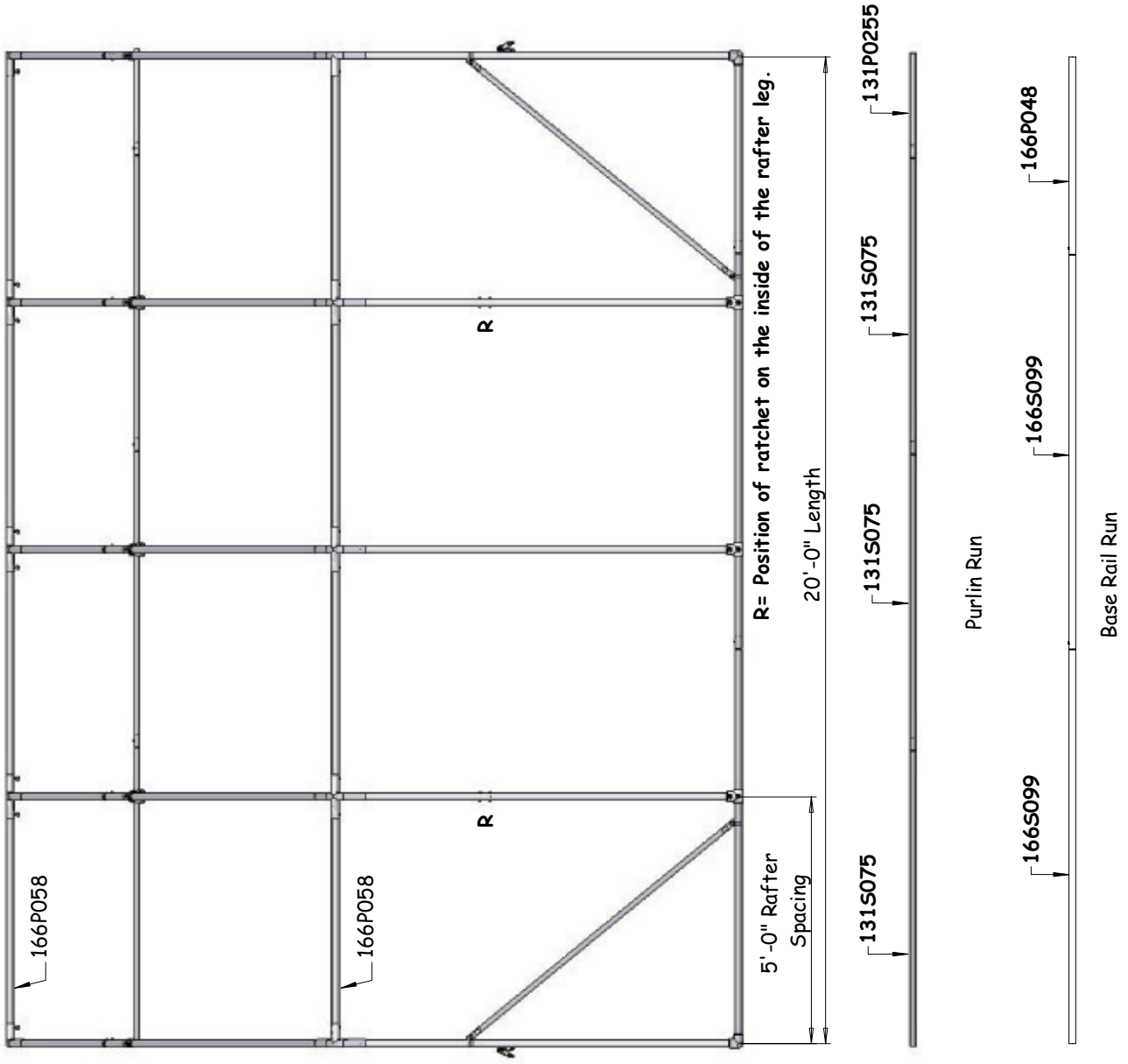


Frame shown may differ in length from actual frame.

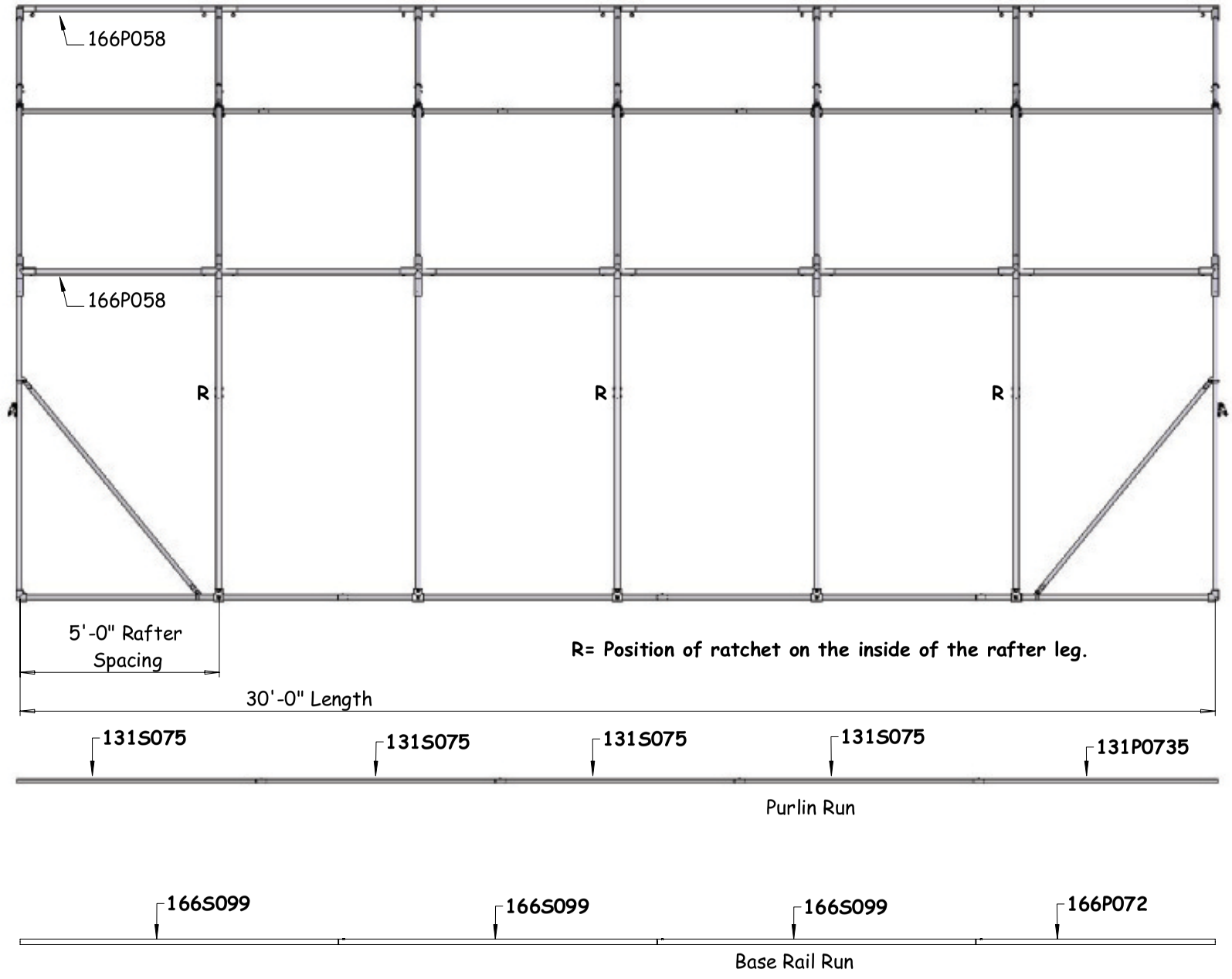
FRONT PROFILE



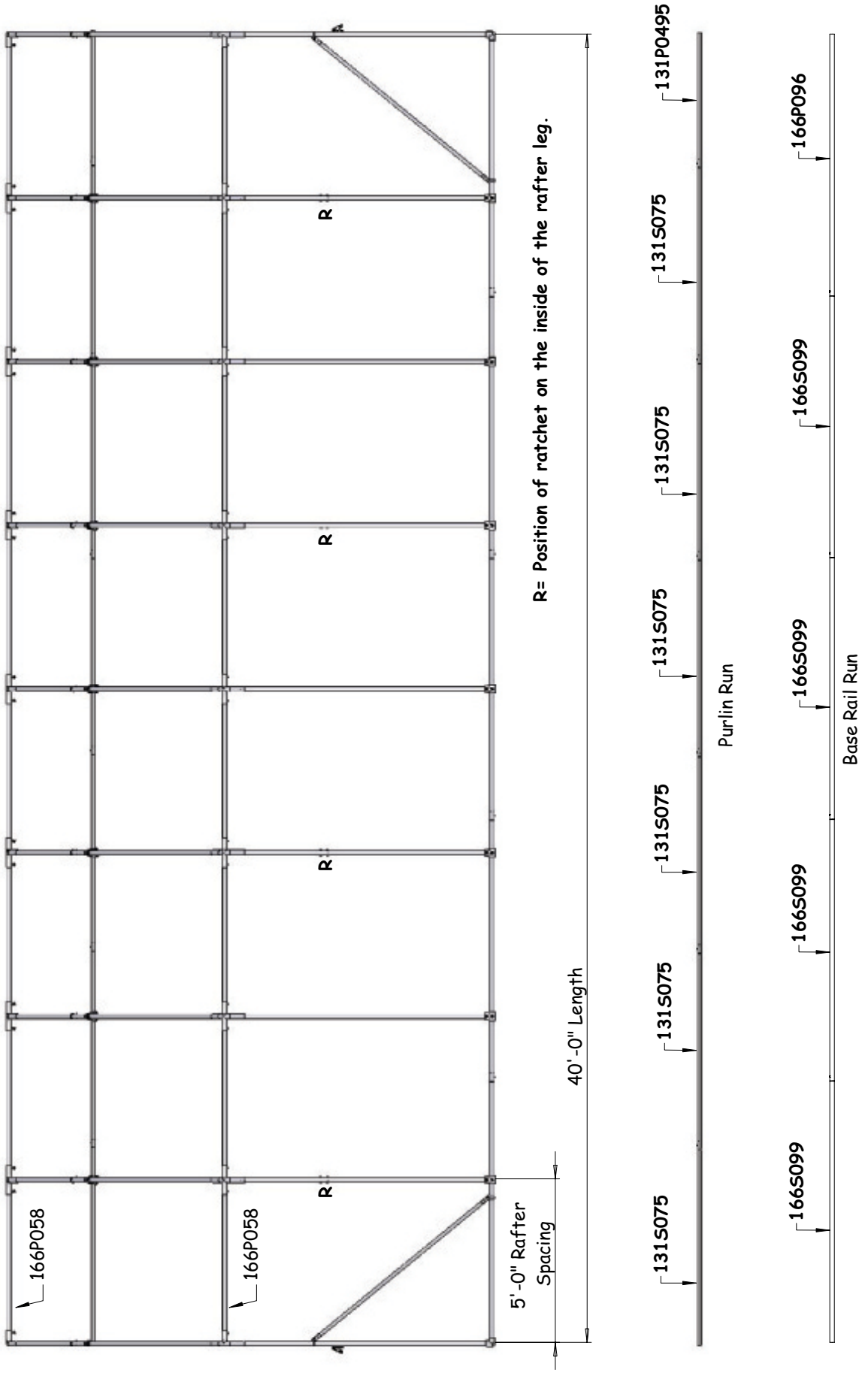
SIDE PROFILE - 104218



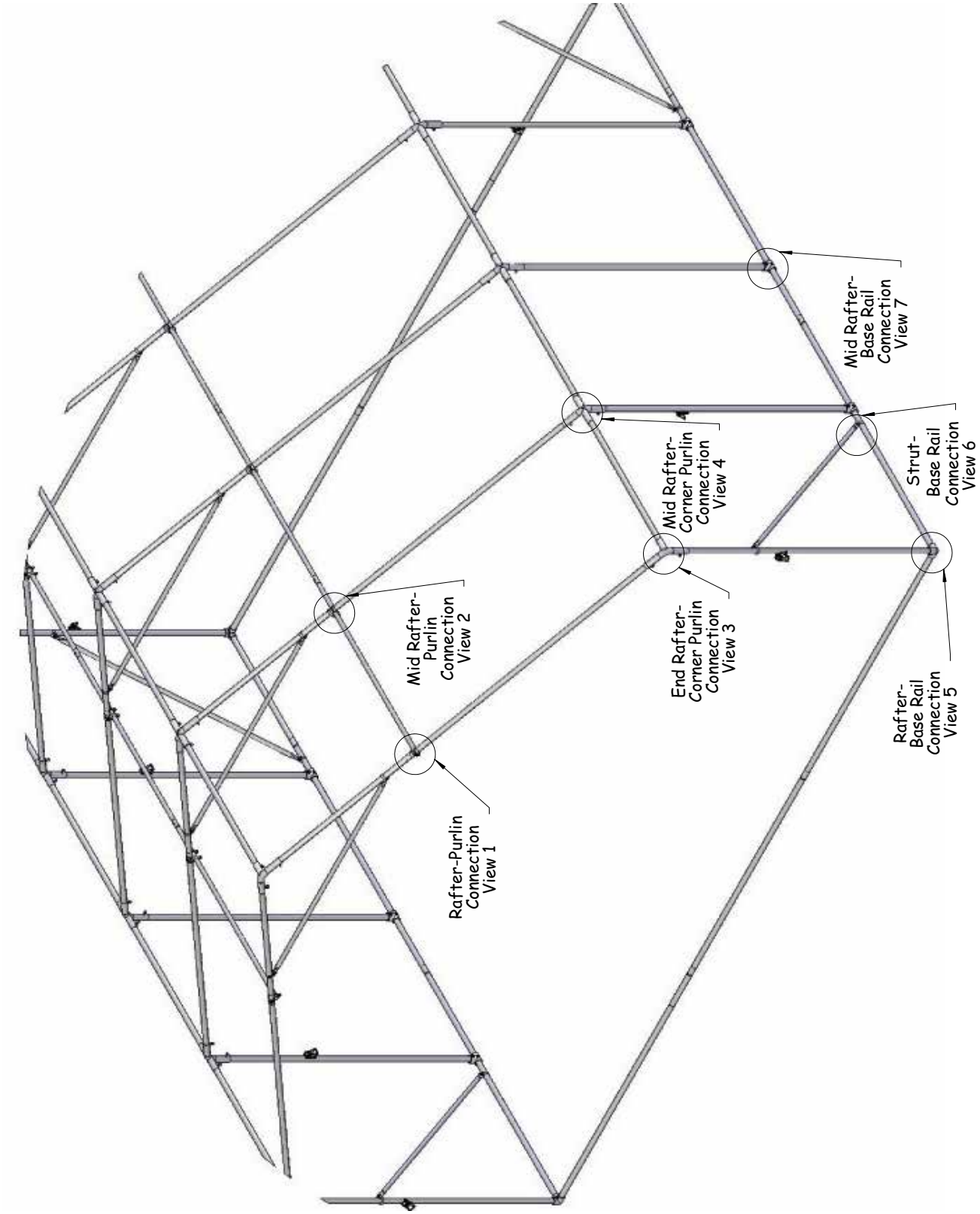
SIDE PROFILE - 104219



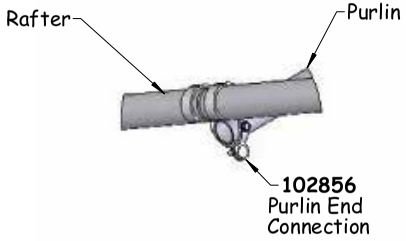
SIDE PROFILE - 104220



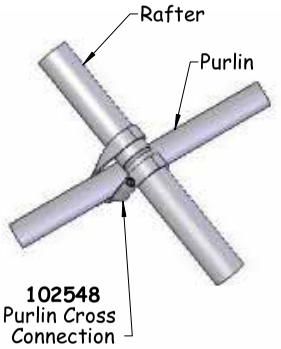
CONNECTIONS



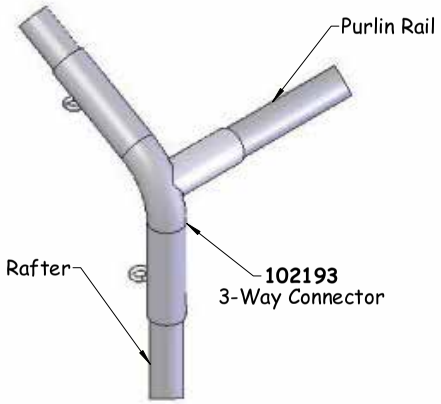
CONNECTION - DETAILS



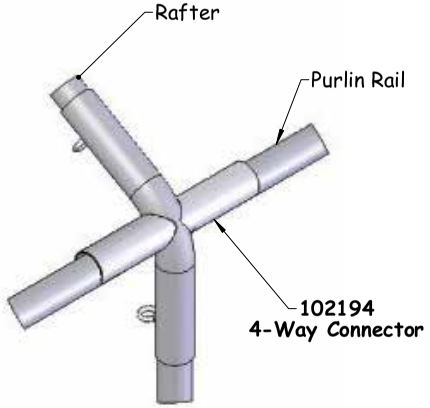
View 1
End Rafter-
Purlin
Connection



View 2
Mid Rafter-
Purlin
Connection

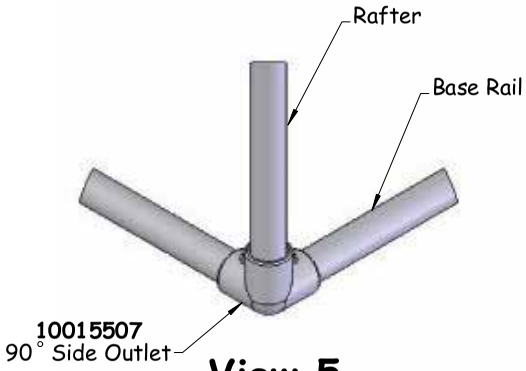


View 3
Rafter-
Corner Purlin
Connection

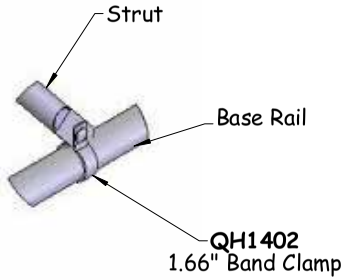


View 4
Mid Rafter-
Corner Purlin
Connection

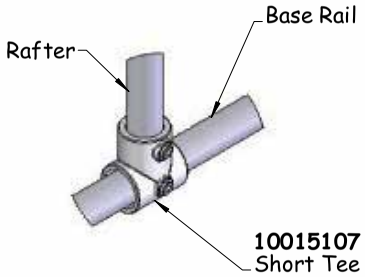
CONNECTION - DETAILS



View 5
Rafter-
Base Rail
Connection



View 6
Strut-
Base Rail
Connection



View 7
Mid Rafter-
Base Rail
Connection

Space below is reserved for customer notes.