BOOTSTRAP FARMER

14’ & 20’ Hoop House

INSTRUCTION & OWNERS MANUAL

Rev. Date 2024-4-1

Thank you for choosing Bootstrap Farmer for your farm’s equipment needs. Our All-Metal Greenhouse Kit is manufactured with 100% American made steel and aluminum for maximum strength and durability.

Our team strives to provide quality products that are built to last. From all of us at Bootstrap Farmer, we thank you for putting your trust in us.

If you have any questions, please reach out. We are available 7 days a week by phone, email and chat.

1(888)-406-1982 contact@bootstrapfarmer.com www.bootstrapfarmer.com

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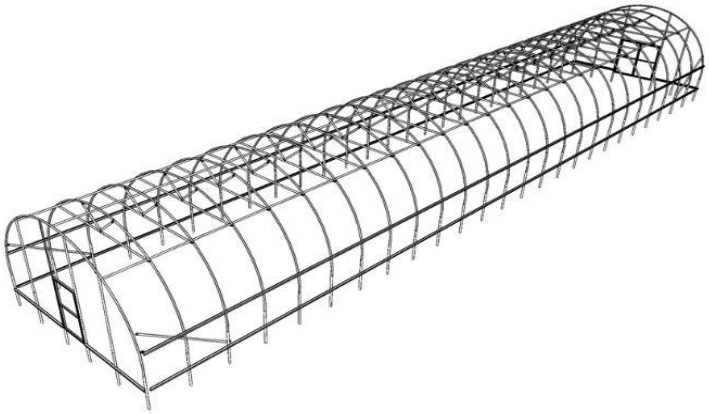
Getting Started

BEFORE BEGINNING INSTALLATION, PLEASE CAREFULLY READ THROUGH ALL INSTRUCTIONS. CONTACT OUR TECH TEAM WITH ANY QUESTIONS YOU HAVE BEFORE BEGINNING YOUR BUILD. WE ARE AVAILABLE VIA EMAIL, CHAT OR PHONE 7 DAYS A WEEK 888-406-1982 EXT. 1

CAD DRAWINGS



Recommended Tool List

For Your Safety: Take all necessary safety precautions with power tools and building equipment. Personal protective gear such as: gloves, eye protection, ear plugs, and closed toe shoes are recommended.

- Clamps
- Drill & Drill Bits (1/4" bit included)
  ** **Impact driver not recommended for driving self tap screws.**
- Extension Cord
- Ground Post Driver (included)
- Levels (long, magnetic & string line)
- Roll of mason line
- Metal File
- Metal Saw (reciprocating, chop or hack saw)
- Grinder
- Slip joint pliers
- Scissors / blade
- Sledge hammer (double jack)
- Single jack (3 pound hammer)
- Center hole punch
- Socket set & Adjustable Wrench - (1/2" ratchet or nut driver)
- Spare Rope & tennis balls
- Stakes / Markers
- Step Ladders (at least one tall enough to reach the peak of your roof line, see height warning.)
- Tape measure
- Extendable painter's pole

HEIGHT WARNING: The 20' kit has a center height of 11'4" which means you will have to work 12-14' from the ground. The 14' kit has a center height of 9'4". BOOTSTRAP FARMER cannot be held liable for unsafe work practices. Installers and Farm Owners are encouraged to rent a lift from your local equipment rental company. Refer to their safety equipment recommendations and best practices for the unit you rent during use, loading, unloading, and transport. On the build site keep the lift level and on packed solid ground. **Do not operate in inclement weather.**

Greenhouse Placement

We recommend finding a flat area of land, clear of any trees, and far enough away from existing structures to avoid runoff and snow drifts. Pay attention to the drainage in the area. Extra ground work may be required to divert water runoff caused by regular greenhouse waterings. Make sure that you are able to access the area with water.

****Always call 811 before you dig or install ground posts to have gas and utility lines marked or check your site map.**

Scan **QR** for info on **Greenhouse Orientation and Site Prep before you build** or visit https://www.bootstrapfarmer.com/blogs/building-a-greenhouse/ideal-location-for-a-greenhouse

Parts List

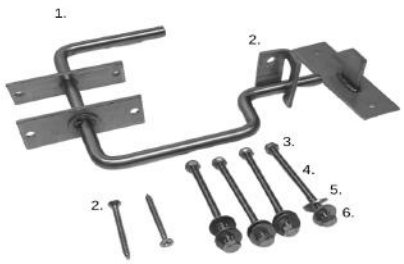
Uncrate shipment and check against packing list to ensure that all materials have been included. If any discrepancies are noted, please notify us immediately at (888) 406-1982 so we can get parts to you as soon as possible.

Door Hardware

**Upgraded double door will include additional hardware

Door Latch Kit

1. Handle (1 per frame) *latch plate/ 2 attachment plates
2. Strike plate w/ 2 screws
3. ¼ nut galv. (8)
4. ¼ x 3" bolt galv. (8)
5. ¼ split lock washer gal. (8)
6. ¼ flat washer galvanized (16)



Door Frame Hardware

7. Cane Bolt (1 per door)
8. Spring (1 per door)
9. Door Mounting Kit
10. Hinges (4 per door)

Single Door/ Door Frame

*Double door upgrade available

1. Single GH Door
2. Single Frame

Endwalls

Endwall Hardware

1. Kit with Tools (in zipper bag)- 2¼" jobber length drill bit (1), 1" Hole Saw, Nut drivers for #8 & #10 self tap
2. #8 x ¾ zinc self tap (200)
3. #10 x ¾ zinc self tap (50)
4. ¼ x 2" bolt galvanized (10)
5. ¼ nut galvanized (10)
6. ¼ split lock washer galv. (10)
7. ¼ flat washer (20)

Endwall Frame Hardware

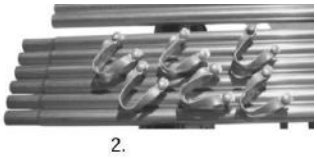
1. Tension Band Clamp 1.35 (8)
2. Endwall Cross Connector 1.375 (2)

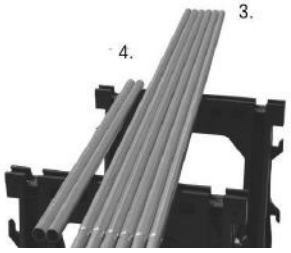
Frame Hardware Kit

** Check "Pick-list" as hardware/part quantities are dependent on kit size.

1. ¼ x 2" bolt galv.
2. ¼ nut galv.
3. ¼ split lock washer galv.
4. ¼ flat washer galv.
5. #8 x ¾ zinc self tap
6. #10 x ¾ zinc self tap
7. Sidewall hardware kit

Hoop House Frame Parts





1. 10in splice channel
2. Cross connector 1.375
3. 75in swaged ridge pole
4. 36in extension ridge pole
5. 48in 1.66 drilled ground post*
6. 78in hat channel
7. Lock channel & spring wire
8. Wire Hoop Pack**

*Ground Post Pack Options

14/20- (18) 14/40- (28) 14/60- (38) 14/80- (48) 14/100- (58)

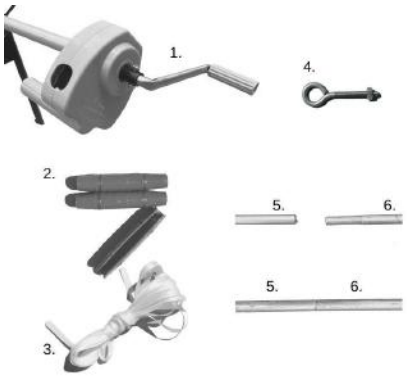
20/20- (20) 20/40- (30) 20/60- (40) 20/80- (50) 20/100- (60)

**Hoop Pack Options

- 14' Hoop Pack (2) 96" Swaged & (1) 99” Pole
- 20' Hoop Pack (3) 96" Swaged & (1) 99” Pole

Optional Upgrades

Roll-up Sidewalls



1. Sidewall Hand Crank (2)
2. Snap Clamps
3. Strapping
4. Eye Bolt
5. EMT 0.5in 2ft
6. 78in 0.922 EMT Pole with swaged End

Corner Brace Kit

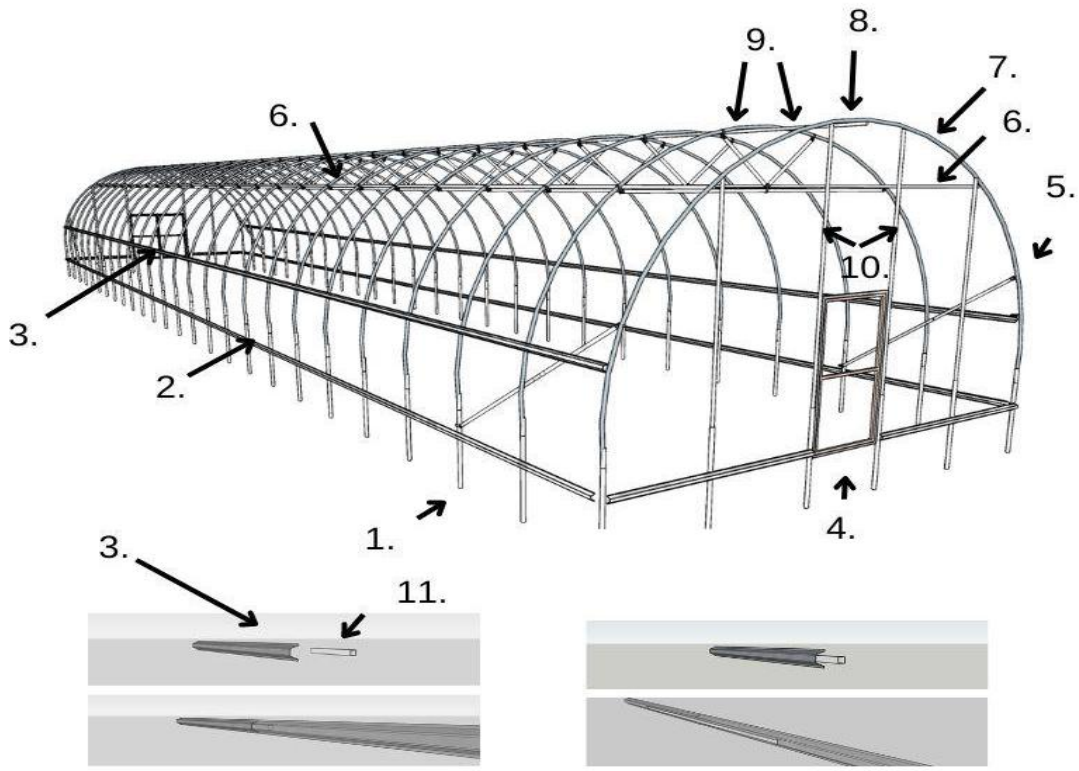
1. Flat open 75in brace 1.315 (4)
2. Flat swage 36in brace 1.315 (4)
3. #8 Hex self-tap screws 1in (11)
4. 1 ⅜ tension band for hoops (4)
5. 1 ⅝ tension band for ground posts (4)

Purlin Kit

- Cross connector 1.375 (2 per hoop)
- 75in swaged ridge pole (# dependent on length of kit)
- 36in extension ridge pole (2)

Labeled CAD Drawings

1. 48” 1.66 drilled ground post
2. Base brace (hat channel)
3. Hip brace (hat channel)
4. Single door / door frame
5. Optional corner brace
6. Optional purlins
7. Endwall hoop
8. Ridge pole
9. Optional truss kit 36” flat flat bar with tension bands (2)
10. Vertical uprights (36” extension & 78” Ridgepole)
11. 10” Splice channel



Ground Posts

Optional: Install landscape fabric prior to installing ground posts. It is recommended that you line the perimeter of the greenhouse 1' inside and 3' along the outside with landscape fabric, so you will prevent erosion from the water the greenhouse sheds and so you don't have to mow or weedeat next to your greenhouse! Accidentally throwing debris through your greenhouse plastic!

Scan **QR Code** for information on **Landscape Fabric** or visit

https://youtu.be/spzkFIPTOWE

Tools

Every kit we sell comes with a specialized tool called a ground post driver. It is placed on the top of the post to keep it from mushrooming when you hit it with a sledge hammer.

You will also need:

- Sledge hammer/double jack
- Single jack (a smaller sledge hammer with a handle under 2' in length)
- Tape measures; ideally at least one that will measure the entire length of the diagonal between corner posts.
- Levels; a line & magnetic level.
- Mason line
- Stakes
- Pencil, paper, and a calculator

Parts

- 48x1.66_16GA_HL

* Quantity of posts dependent on kit size.

Squaring Your Structure

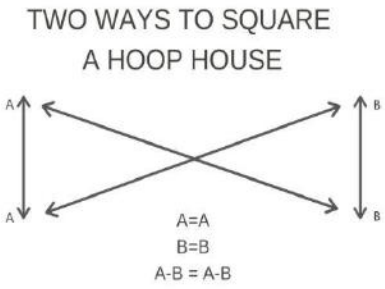
Making sure that your first four corner posts are squared will provide you with a base to work from to ensure the rest of the posts are easy to install plumb and level.

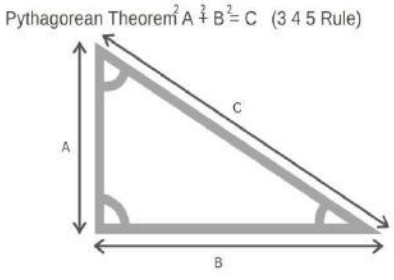
Using one of the following methods, set your corners.

Measure Method - First measure length to length. Then mark width, it should be 14’ or 20’ depending on your kit. Then measure diagonally, making sure the diagonal measurements are equal to each other. Double check that all length, width and diagonal measurements are equal and install stakes. This ensures your greenhouse will be square.

Pythagorean Theorem method - Starting at your first desired post location, sink a marking stake. Use your tape measure to measure and mark a line at 3 feet and a second line at 4 feet perpendicular to the first. Then place a line directly across both marks. The third line should equal 5 feet and give you a square corner.

From this triangle you can extrapolate out to the desired length and width to sink your second and third stakes for the corners. Use a plumb line from the second and third stakes to intersect at a right angle for the location for the final corner post. Check all measurements.





Installing the Ground Posts

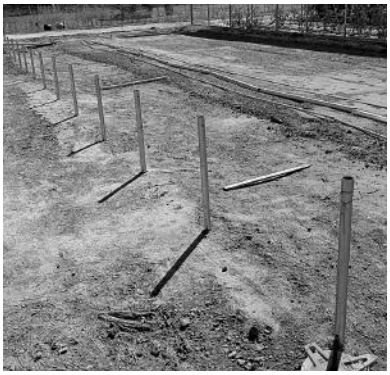
Once your area is measured out with temporary stakes in place. Install each corner ground post from the previous step. Place your posts where you had previously marked the corners and begin driving those into the ground.

While driving the posts into the ground you want to make sure the poles are plumb in all directions.

As you are driving the pole into the ground check for levelness on the front and sides and adjust as needed. The hole should be facing parallel to the length of the hoop house.

After the corner ground posts are installed, re-measure length, width and diagonals one last time. If you made a mistake it's not too late to fix it without too much work. Once you are satisfied, tie a string line around the outside of the corner posts.

This will help to keep all your ground posts in alignment so you don't get wavy hoops later on. Install ground posts every 4' on center following your line keeping approximately 2' into and 2' above ground.


Scan **QR** for info on
Installing Ground Posts or visit

https://youtu.be/S0iSPnsYVi0

Hoops

The hoops will come bundled together, and you will need to construct them.

Tools

- Drill
- #8 Self Tap Screw

Parts

14' WIDE HOOP set contains:

- (2) 96” Swaged pole (bent)
- (1) 99” Pole (bent)

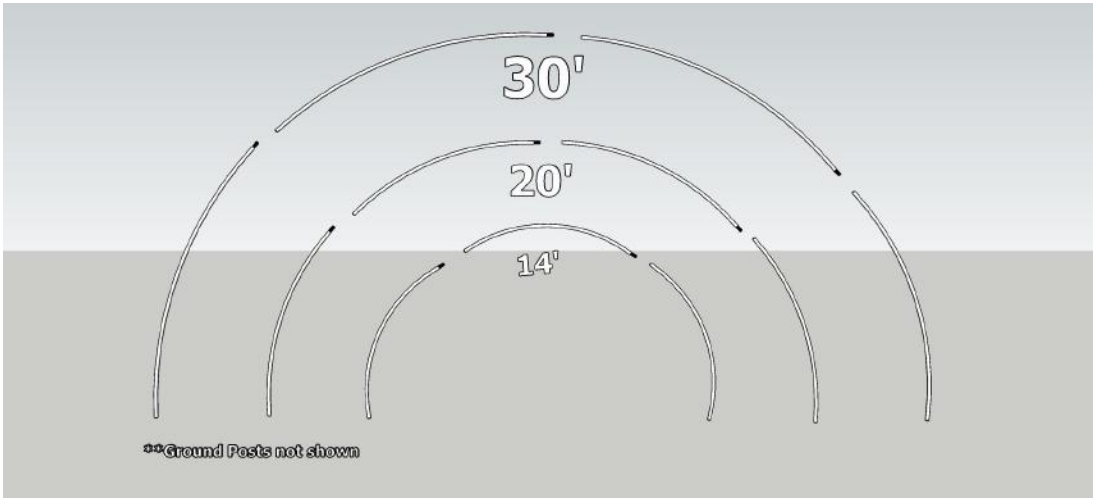
20' WIDE HOOP set contains:

- (3) 96” Swaged pole (bent)
- (1) 99” Pole (bent)

Pole Layout for Hoops

Our pre-bent poles (96” swaged) come with one open end and one swaged end to decrease the diameter, similar to a pipe nipple. This enables you to connect poles without the use of fittings. The final hoop section (99” open) is open on both ends. When properly constructed, the bottom of the hoops will be open to slide over the ground posts.

Always drill on the side of the hoop so that the screw will end up parallel to the ground when the hoop is placed upright to protect the plastic from damage.



Connect and Install Hoops

- Piece your hoop set together on a flat surface. For consistency, assemble all your hoops in the same spot so they match.
- Using a #8 self tap screw, connect the hoop together to prevent twisting and separation. Screwing straight down while the hoop is lying flat will ensure the screw is parallel to the ground once you raise the hoop.
- When all of the hoops are connected, place them near the ground posts.
- With a partner, stand the hoops up and place one side into a ground post and then the other. For consistency, have the same person go first. At this point do not force the hoops down into the ground posts all the way. Adjustments will come on the next couple of steps.

Scan **QR** for info on **Setting Hoops** or visit

https://youtu.be/eXq7C5LAeVQ

Installing Hoops to Ground Posts

1. While on a ladder, one person eyeballs the top of hoops as a partner adjusts the height of the hoops at ground posts. (20’ has a center height of 11’-4’’. The 14’ has a center height of 9’-4’’)
2. Adjust height and sides until they all line up and are level all the way along the structure.
3. When you are satisfied with the hoops being aligned, drill a 1/4" hole through the hoop at the hole in the ground post. Secure with 1/4"x2" bolt, flat washers, lock washer, and 1/4" nut.

NOTE: If you purchased optional bracing, installing on the ground posts now will be much easier. SKIP TO PAGE 34 for install instructions.

Do not stress out about the hoops looking uneven when in the ground posts at this point. Adjustments will come later.

Scan **QR** for info on **Installing Hoops to Ground Posts** or visit

https://youtu.be/S0iSPnsYVi0

Ridge Poles

End Wall Cross Connector

The end wall connector is manufactured in the OPEN position for an easier installation over the hoops. End wall cross connectors help to keep the ridgepole from extending past the end hoops and poking the plastic end walls. We recommend adding a #8 self tap screw to all tension bands and end wall cross connectors - but not the saddle type cross connectors.

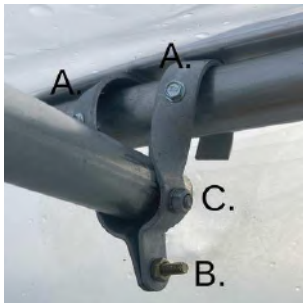
Note: Since each hoop will be connected to the first end wall it should be carefully made plumb and held that way as you make the connections. You can do this easily using stakes and rope. Wrap a rope up and around the hoop. Using a magnetic level, stake the rope securely on either side of the hoop with the hoop directly perpendicular to the ground. If you need to, move the stakes slightly left or right in order to secure the hoop in the proper position.

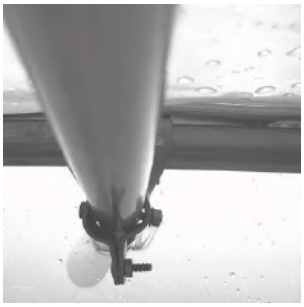
Tools / Parts

- Ladder
- Clamps
- Drill with 3/16” drill bit
- Hammer (16 oz)
- Slip joint pliers for installation.
- End Wall Cross Connectors with hardware

Installing End Wall Cross Connectors

1. Place Ridge Pole past the lower loop but not further than 1/2 way past the hoop, tighten the gold nut and bolt supplied with the end wall cross connector.
2. Pre drill at “Point A” with a 3/16” drill bit. These connectors are thicker metal so be prepared to use extra force.
3. Use a clamp to press the ear that faces the inside of the hoop house with the pre-drilled holes against the hoop. Secure with #8 self-tap screws.
4. Use slip joint pliers and a 16 oz. hammer to curl the outside ears further around the end wall hoop. It is not necessary to make the end wall cross connector snug around the hoop.
5. Finally, drill through the end wall cross connector and ridge pole on both sides. Use a #10 self-tapping screw on each side to secure the cross connector to the ridge pole. You do have the option to drill all the way through the cross connector and ridge pole, and use a 1/4 bolt to secure the endwall cross connector. Insert a 2" bolt with a lock washer and nut (same as ground post nut/bolt) at point C.
6. When you install the lock channel over the ears you can install self-tap screws close to, **but not through**, the ears of the end wall cross connector to add tension.





Scan **QR** for info on **Stabilizing Your End Wall** or visit

https://youtu.be/eXq7C5LAeVQ?t=300

Cross Connectors and Ridge Poles

Pictures on the following page.

Ridge poles and cross connectors work together to connect and stabilize the hoops. Optional purlins and additional cross connectors further stabilize and are installed the same way. (See page 33)

Tools

- Rope/ Stakes
- Drill w/ ¼” bit
- Step ladder
- Saw
- Ratchet & Sockets
- Tape measure
- Cross Connector 1.375”
- 75” Swage Ridge Pole
- 36” Extension Ridge Pole
- wrench

Parts (PER 20FT)

- ¼ x 2" bolt galv. (15)
- ¼ nut galv. (15)
- ¼ split lock washer galv. (15)
- ¼ flat washer galv.(30)
- End Wall Band Clamp 1.375”
- #10 self-tap screw

Install Ridge Pole and Connectors

1. Loosely place cross connector on the top of the rest of the hoops.
2. Starting at one end wall carefully ensure that the end wall is still plumb.
3. Connect the ridge poles together with #8 self tap through from the bottom or on the side at the swaged connection.. Insert the pole into the end wall cross connector and the next hoop cross connector. Continue adding ridge poles until the other endwall is reached.
4. Center the loose assembly on the very top and center of the hoop, double check the plumb of the end wall and tighten the bolt on the connector using a ratchet.
5. Measure 4' on center from 1st tightened connector to the next connector and secure at that point.
6. Repeat this process for each hoop as you make final plumb adjustments while keeping cross connectors 4' apart. Depending on the length of your greenhouse, you will use a 36’’ extension on the end of the ridge pole, or a full 75’’ ridge pole and cut off the excess.




Scan **QR** for info on **RidgePoles** or visit

https://youtu.be/AfTKTvcqw20

Hip & Base Braces

All Metal Kits use 16 gauge hat channel. Hat channel is the same material for both the hip board and baseboards where lumber would typically be used.
The hip and base braces are made exactly the same way and is a layering process between hat channel, hat splice, and lock channel.

These steps are not complicated but do require your understanding of the process before you start. Please read all steps in this section, view pictures, and consult our video on the build process. Hat splice seams will get close but not fall directly on hoops. When you are assembling, understand that you slide the next hat channel inside of a space between the hat splice and lock channel as you butt up to the previously installed hat channel. Begin with the base and then the hip brace. Keep the base brace as close to the ground and level as possible.

Tools

- Drill & Drill Bits
- Clamps
- Metal Saw
- Bubble Level

Parts

- #8 self tap
- #10 self tap
- lock channel
- 78” hat channel
- 10” hat splice

*Save time by laying out the lock channel, hat channel and splice ahead of beginning installation

Installing the Hip and Base Brace

1. Begin on the same end you installed the ridge pole. Using #10 self tap screws attach base hat channel level and even with the end wall hoop as you secure to the second hoop.

   ***Note:** you do not need a splice on the end wall hoops.

2. Cut a piece of lock channel to 2' and secure it to the hat channel on the outside face of the first hat channel nearest the endwall with #8 self tap screws. This allows seams to stagger.
3. Using a clamp secure a hat splice spaced evenly (5 in.) between the butt joints of the hat while sandwiching a full (6 '6") piece of lock channel. Secure all three pieces (lock channel/hat channel/and hat splice) with #8 self tap screws.

   Note: that you are only securing half of the hat splice. (Pre drilling through the lock channel and hat channel can make this easier and prevent breaking screws)

4. Next, slide a new piece of hat channel between the space left by the previous half hat splice and the lock channel. Secure seam with #8 self tap screws (no washer) through lock channel/hat channel/ and hat splice.
5. Secure new hat channel to next hoop (using #10 self tap screws) and repeat the process until the end.
6. Cut off excess hat and channel at the end of the hoop house flush with the end wall.
7. The very bottom of the hat may be difficult to reach when installing bottom #10 self tap. Use an extension or dig out a little hole to get the screw in.

Scan QR for info on

Installing Hip and Base Braces or visit

https://www.bootstrapfarmer.com/blogs/building-a-greenhouse/installing-hip-and-baseboards-on-a-hoop-house

Note On Installing the Hip Brace-

Begin on the same end you installed the ridge pole.

The hip brace will be installed between 3-½' and 6' above the base brace. Mark this height on each of your endwalls and run a line level to guide your hip board installation.

If your line is not level, move your lower side up until you find the level line.

This will give your roll up sides a large opening to cross ventilate and will also work with the optional Insect Netting and the appropriately sized shade cloth for your structure.

Keep the hip board level and check hoops for plumb as you go.

End Walls

Pictures on the next page.

Tools

- Ladder
- Mason Line
- Drill
- Ground Post Driver
- Bubble Level
- Tape Measure
- Clamp

Parts

- Ground Post
- Lock Channel
- Ridge Pole
- Endwall Hardware Kit
- 1 ⅜ Tension Bands

Installation of End Wall

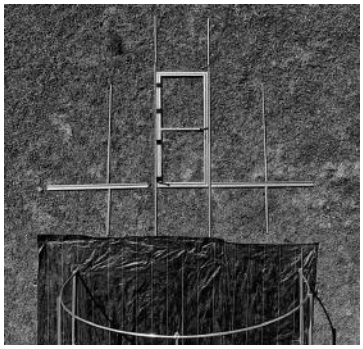
1. Run a mason line across the end hoop on the outside of the building.
2. Center door frame in the middle of the hoop.
3. Install ground post inside of line and immediately to the left and right of door frame - 2' in ground / 2' above.
4. For 20' houses, center additional vertical supports 1/2 way between hoop and door and install ground posts.
5. Attach hat channel as base board with #10 self tap screws level along ground to all ground posts - cut off excess. There will be no baseboard across where the door frame is to be installed in the next section.

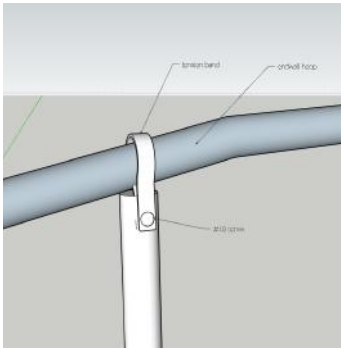
6. A. Insert ridge poles into newly installed ground posts (with swage facing up).

   B. Insert 36”ridge pole extender onto ridge pole (door uprights only) and secure with #8 self tapping screw, through the side of the swaged connection.

7. Install a tension band over the endwall hoop. Slide ridge pole up to bottom of hoop and secure with a with a #10 self tap through the tension band. (Pre-drill a pilot hole in the end of the vertical pole for ease of attachment)

If building an end wall without a planned door, place supports the same way that you did for the side with the door.



Scan **QR** for info on **Building End Walls** or visit

https://youtu.be/zJ34EQjeBMU

End Wall Lock Channel

For the hoops

On the end walls, install the lock channel from baseboard to baseboard going over the outside/top of the hoop.

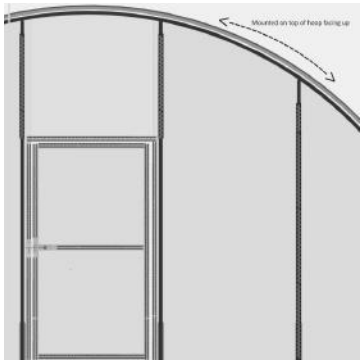
The channel will bend with the curve of the hoop with **ZERO modifications, Do Not Notch the Channel.**

Keep your clamps at the ready to assist with bending and holding the channel as you use the #8 self tap screws directly in the center of the channel. (Use the grooves in the Lock Channel to keep your screws centered)

At the hip brace, cut off the lock channel and continue on the other side of the hip brace to the bottom base brace on both sides.

For the end wall uprights

Attach the lock channel to all vertical end wall supports from the base brace up to 12” below the top of your hoops.



Doors

See pictures on the next page.

Tools

- Drill
- Level
- Step ladder
- Tape measure

Parts

- ¼ x 2" Bolt (8)
- ¼ Nut (8)
- ¼ Split lock washer (8)
- ¼ Flat washer (16)
- Door frame single GH
- Door GH (1)

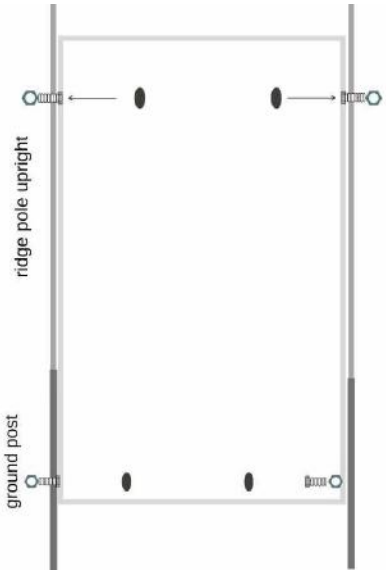
Door Frame Installation

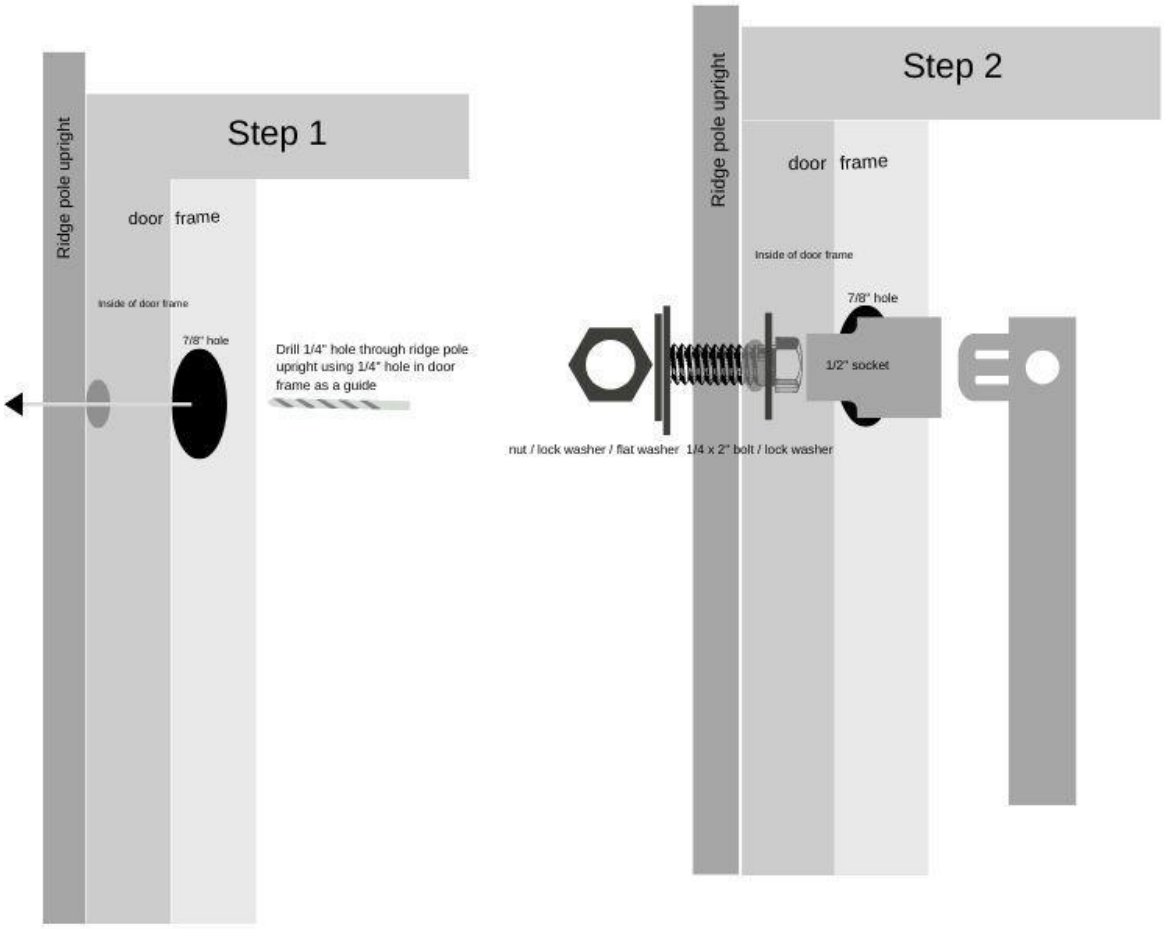
1. Once the verticals (consisting of ground posts, ridge poles, ridge pole extensions, tension brace bands) have been secured with #10 self tap. Stand the door frame up and temporarily hold to verticals, with clamps.

2. Confirm plumb along door verticals and level along door frame horizontals. Use shims or scrap wood to make adjustments to level and plumb until door frame bolts are plumb, level and secure.

3. Drill a ¼" hole through the ridge pole uprights from inside of the door frame using the ¼" hole on the outside of the door frame (and up against the upright). (Picture marked Step 1)

4. Secure with a ¼" X 2" bolt, lock washer, flat washer and ¼" nut placed on both sides of the frame. Most ½" deep sockets will fit into the larger hole of the door frame. (Picture marked Step 2)


ridge pole upright
ground post


Step 1
Ridge pole upright
door frame
Inside of door frame
7/8" hole
Drill 1/4" hole through ridge pole upright using 1/4" hole in door frame as a guide
Step 2
Ridge pole upright
door frame
Inside of door frame
7/8" hole
1/2" socket
nut / lock washer / flat washer 1/4 x 2" bolt / lock washer

Door Hanging and Latch Installation

NOTE: YOU WILL DRILL THE HOLE FOR THE LATCH BEFORE HANGING THE DOOR. THEN HANG THE DOORS AND ATTACH ALL LOCK CHANNEL. AFTER ALL OF THE PLASTIC IS IN PLACE COVERING THE ENTIRE HOOP HOUSE, YOU WILL COME BACK AND INSTALL LATCH.

Tools

- ¼” drill bit
- ⅛” drill bit
- 1" hole saw (included with hardware pack)
- 7/16” sockets or adjustable wrench (you will need two)
- ¼" driver for #8 self tap
- Shims

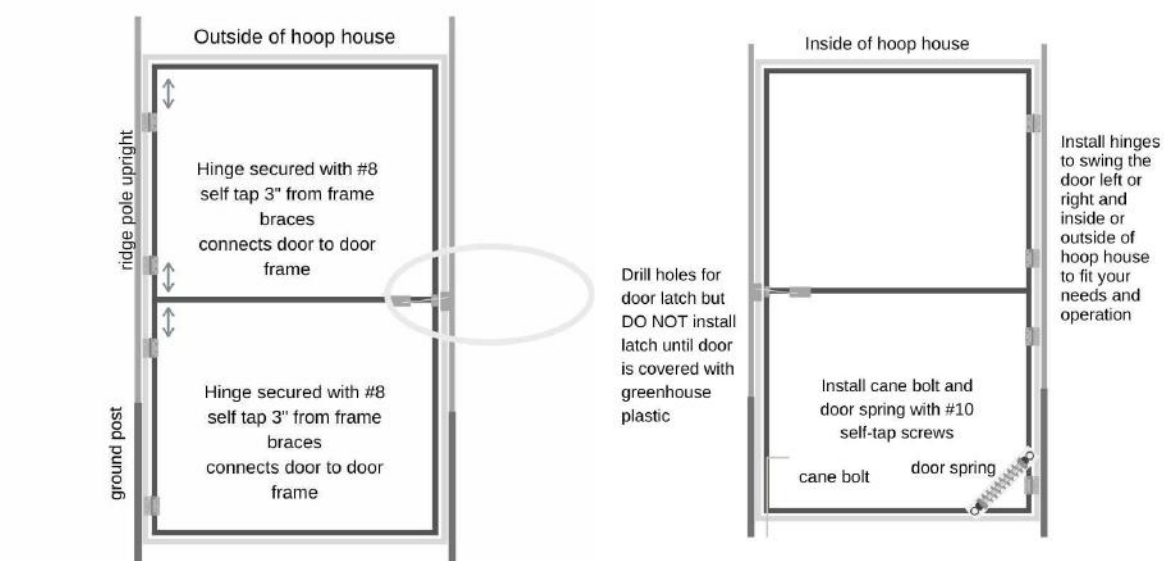
Parts

- Hinges (4 per door)
- Cane bolt (1 per door)
- Spring (1 per door)
- Latch (1 per frame)
- ¼” x 3" bolts
- Nuts
- Lock channel and spring wire bundle

1. With the door laying flat on a hard surface, drill a 1" hole 5" from the door edge and right in the middle of the door frame center brace. (This is part of the door latch but the rest of the door latch installation takes place after plastic installation.)
2. Decide if you want the doors to swing towards the interior or exterior of the house. If using a single door decide if you want it to open left or right.

3. Using the hinge as a guide mark and drill guide holes in the door frame using the ⅛” bit. Each hinge should be placed 3 inches away from the closest horizontal cross piece of the frame.
4. Attach all hinges to the frame using the #8 screws.
5. Using shims and clamps, place the door so that it has space to swing freely once attached.
6. Attach all hinges using #8 self tapping screws. Drill guide holes for ease of installation.
7. Completing door latch installation: These steps will be completed after you finish installing the plastic.
    a. Cut a small hole through the plastic over the 1 inch hole that you drilled back in step 1.
    b. Thread latch through hole and align plate horizontally.
    c. Secure front and back latch mounting plates with #8 self tapping screws.
    d. Mount door latch receiving plate with #8 self tap screws against the door frame edge so that the latch lays flat. (For double doors this goes on the other door.)
    e. Guide plate can be used to limit latch mobility.

NOTE: Some hardware from the kit will not be used. These parts (guide plate, 3” bolts) are included in case you will be customizing your door.

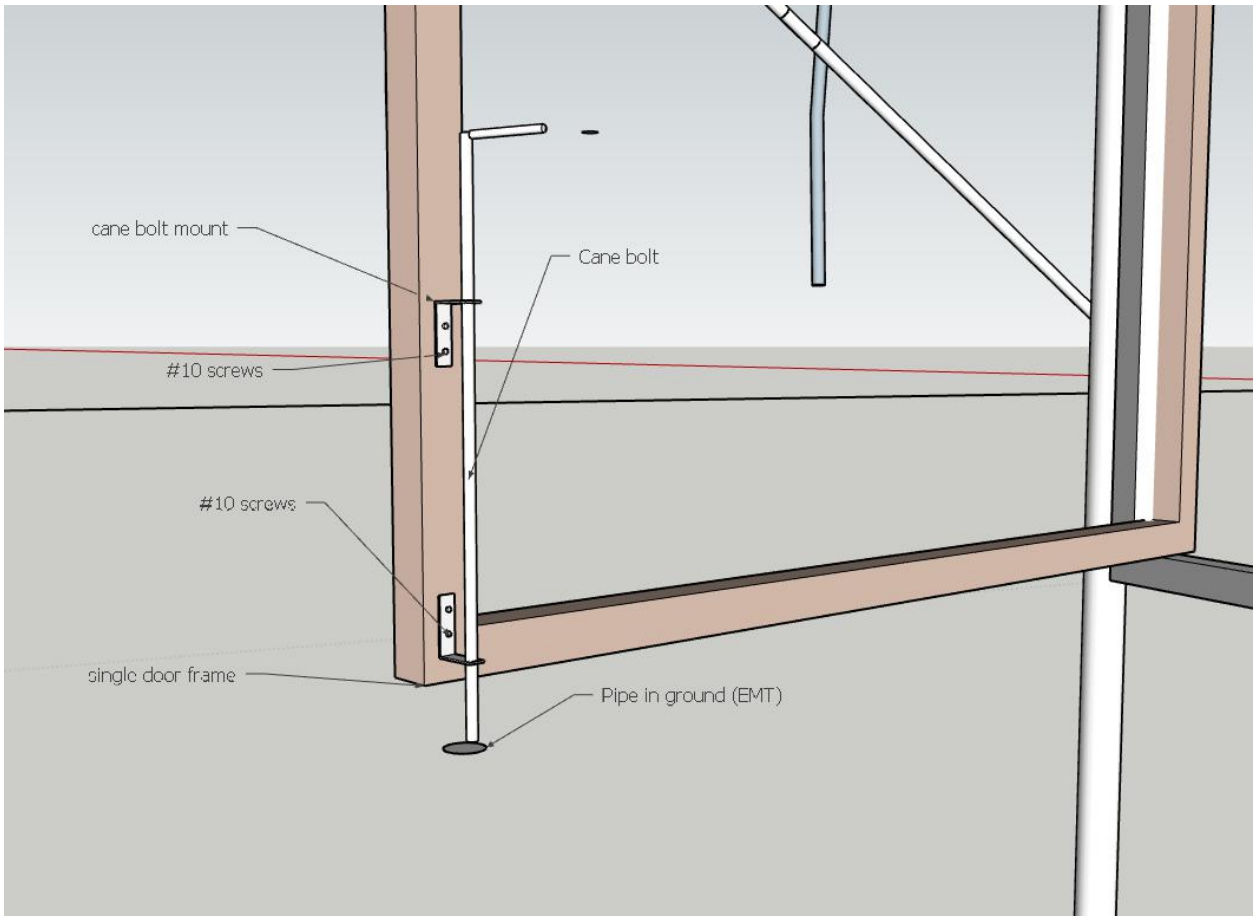


Attaching Spring and Cane Bolt

A cane bolt allows you to secure a single door in the open position or one section of a double door in the closed position. The spring will close the door if left open but given the tightness of the latch, the latch will need to be secured by hand.

1. Attach the top of the spring to the frame with #10 self-tap.
2. Attach the bottom of the spring to the door with a #10 self-tap.
3. The can bolt installs on the inside of the door.
4. Line up your cane bolt brackets at least 1/2'' above the bottom of the door and directly in line with the vertical part of the door. .
5. Install the second cane bolt bracket above the first, so that you are able to guide the cane bolt into the pipe at least 2'' below ground. If installed too high, the cane bolt will not drop down enough to protrude into the ground.
6. Secure cane bolt brackets with #10 self-tap screws as pictured below.
7. Install a small piece of scrap pipe or EMT into the ground 4-8" deep below the cane bolt, where the door is in your preferred open position. Inserting the can bolt into the brackets and into the pipe will hold the door in an open position.

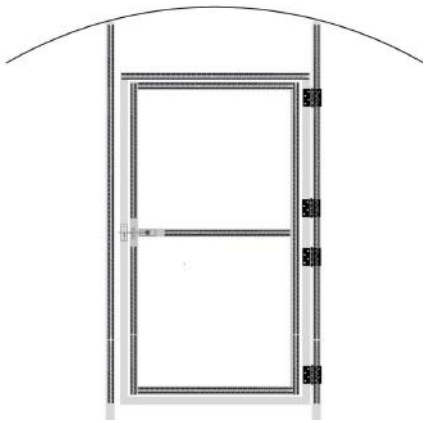
NOTE: Wood screws will be used to install on customized doors.


cane bolt mount
Cane bolt
#10 screws
#10 screws
single door frame
Pipe in ground (EMT)

Door Lock Channel

Lock Channel will install OVER the hinges on both the door and the frame. The lock channel you installed on the vertical supports in the previous step will act to secure the outside edge of the plastic.

1. Cut lock channel to fit across top of door frame, door top, door bottom and cross bar support from inside edge to beginning of latch mounting plate. (Verticals will need to be comprised of at least two pieces of lock channel.)
2. Attach lock channel on door frame across the top edge.
3. Install lock channel across the top and bottom of the door(s).
4. Install vertical door lock channel on both sides but not over the latch mounting plates.
5. Install cross bar lock channel.
6. When installing plastic you will insert spring wire into all lock channels and then cut around the edge between the door and the frame.



Optional Upgrades

If you did not order any of the additional upgrades you can skip to the section on attaching your plastic starting on page 40. Many upgrades are installed before the plastic or this affects the installation steps.

Purlin Kit (Optional)

The Purlin Kit is installed the same way as the ridge poles.

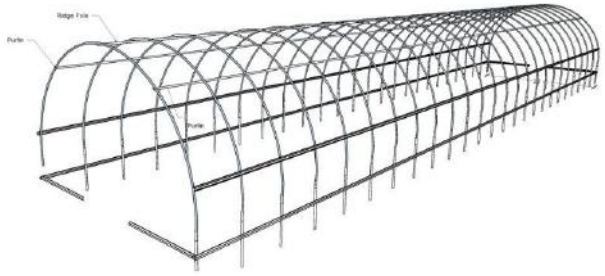
Tools

- Drill w/ ¼" bit
- Step ladder
- Saw
- Ratchet & Sockets

Parts

- Cross connector 1.375" (2 per hoop)
- 75in swaged ridge pole (# dependent on length of kit)
- 36in extension ridge pole (2)
- End wall cross connectors

Installing Purlins



Purlin poles will be installed approximately on the 50° mark. Half way between the ridge pole and your hip braces. Depending on your end wall options it may or may not fall in line with vertical end wall supports. This is okay as they are not dependent on each other.

You may notice the hoops may still need adjusting as you work your way down. Use a clamp to help pull the Purlin to the hoop so you can install the cross connectors.

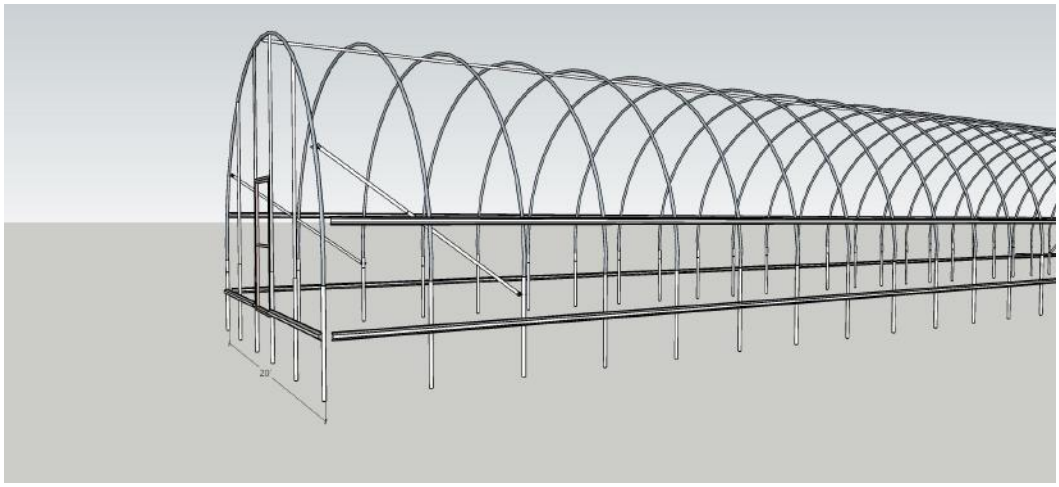
Corner Brace Kit (Optional)

Tools -

- Ladder
- Tape Measure
- Drill
- Saw
- Ratchet & Sockets

Parts - (hardware included)

- 1 ⅜” Tension Band
- Flat Swage 36in Brace
- Flat Open 78in Brace
- 1 ⅝” Tension Band



Carriage bolt threads will be situated toward the inside of the hoop house.

Installation of Corner Brace

1. Insert swaged end of 36’’ into the 78’’ and connect with #8 screw. Make sure that the flats are in line with each other, before screwing together.

2. 1 ⅜” Tension bands wrap around endwall hoops and secure with bolts through tension band and hole in flat end of the brace pole.

3. 1 ⅝” Tension bands go around the third hoop’s ground post and are secured with bolts through tension band and hole in the flat end of the brace pole.

4. Repeat steps for each corner.

Truss Kit (Optional)

Tools

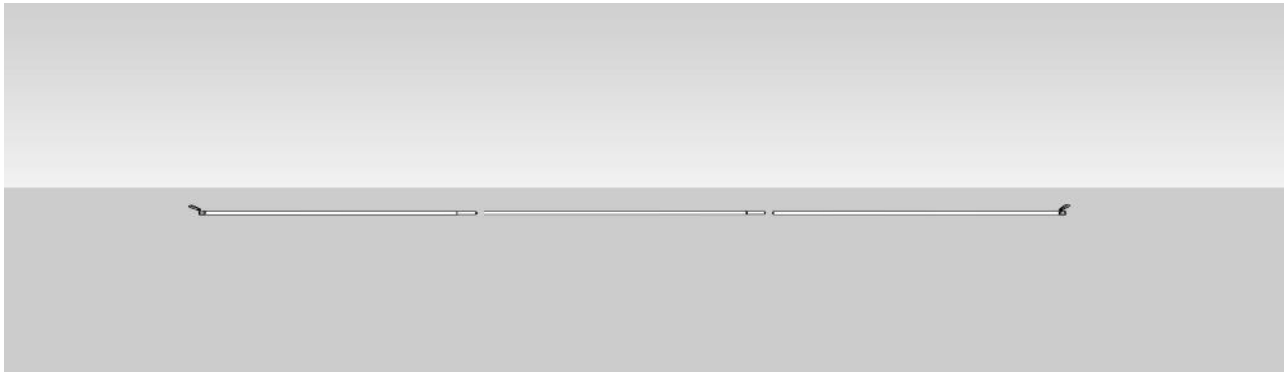
- Pliers
- Level (level with magnetic base is recommended)
- Step ladder
- Tape measure
- Adjustable wrench
- Wrenches or ratchet and sockets optional

Parts

- ¼ x 1" Bolt (galv.) (6)
- ¼ Nut (galv.) (6)
- #8 Self tapping screws
- 1-⅜” Tension bands (6)
- 78” Flat to Open
- 78’’ Flat to Swage
- 75” Swage Ridge Pole
- 36’’ Flat to Flat (for 20’ Truss)

Pole Layout

The Truss is made up of several pieces. We have the horizontal crossbar that is made up of 78’’ flat to swage, ridge pole(s), and a 78’’ Flat to Open.

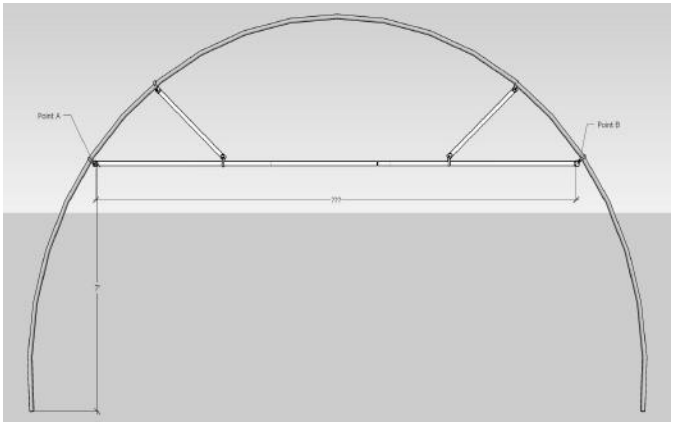


Determining Truss Height

The cross bar length will determine its height when installed in the greenhouse. The longer it is, the closer to the ground. The shorter it is the taller it will be in the greenhouse. By cutting the ridge pole(s) you can shorten the length. We recommend installing the truss system with hoops in the vertical position. This will allow you to level them. They can be installed on the hoops before standing them up in the ground posts, but you will need to leave all the hardware loose so you can level the truss after installation of the hoop.

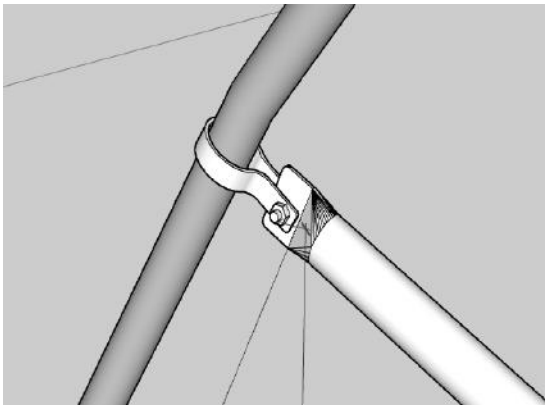
Installation

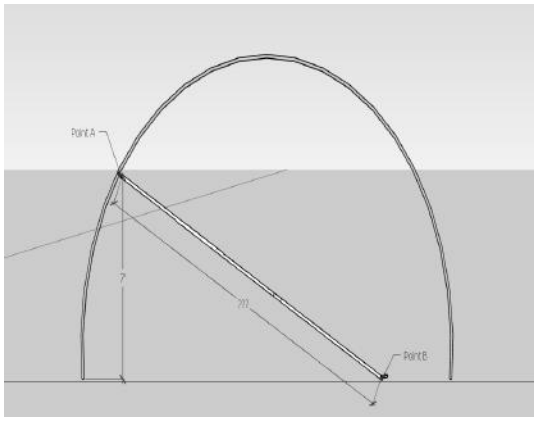
1. Determine the desired height of the horizontal crossbar from the ground. Then measure from one side of the hoop to the other (Point A to Point B). This will determine the length of the horizontal cross bar.



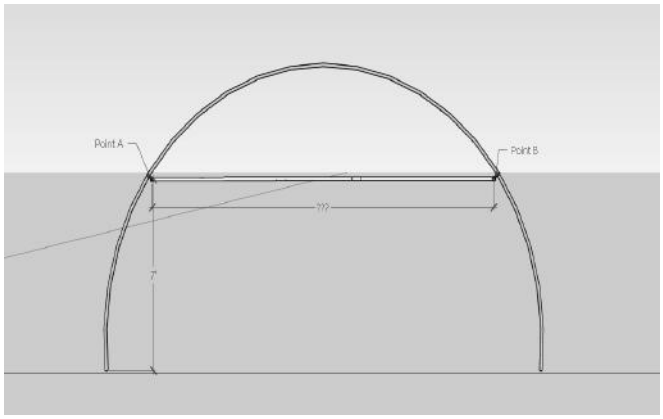
2. Cut the ridge pole down to shorten the crossbar to your desired length.
3. Connect the 78” Flat to swage, to the ridge pole, then attach these to the 78’’ Flat to open. Align the flat sections, so they are on the same plane.
4. Once connected together, use #8 x ¾’’ self tapping screws at the joints to prevent twisting and separation.

5. Install a tension band over the hoop and connect the flat section to the tension band with a bolt and nut inserted through the tension band and hole in the flat section.



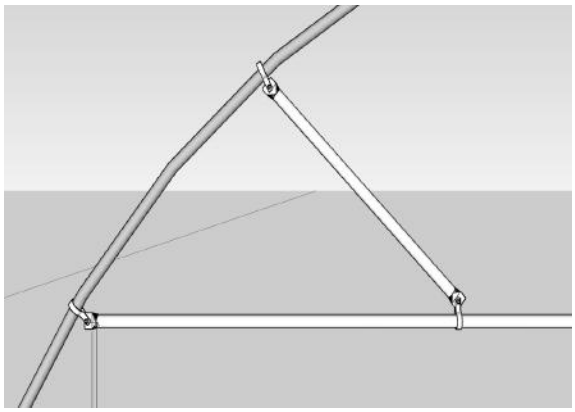


6. Raise the opposite side of the crossbar up to the hoop and attach with a tension band, the same as step 5.

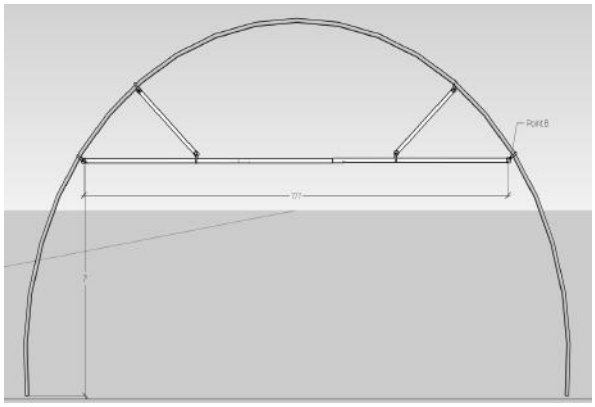


7. Put a level on the bar and adjust it so it is level. Then tighten the bolts at the tension bands.

8. **Installing the diagonal supports on the 20’ wide kit,** is similar to the steps you have already taken. Install a tension band over the hoop, use a bolt to attach the tension band to the diagonal, secure with the nut. Install a tension band on the horizontal crossbar. Install the other end of the diagonal with a bolt and nut, to the tension band. Position the bar close to a 45 degree angle as shown below.



9. Tighten bolts on tension bands holding the diagonal brace in place.You should have a truss that looks similar to the one pictured below.



Insect Netting (Optional)

Insect netting is installed after the frame is completely built but prior to installing the plastic. The sidewall insect netting will be your protection from pests when the roll up sides are open.

Installation

1. Hold up the insect net against the outside side walls and attach using the lock channel and spring wire. Install your insect netting BEFORE the plastic layer.
2. Work along the hip board, securing into the lock channel with spring wire.
3. Secure in the lock channel down the end wall and across the base board.
4. Cut off excess netting a few inches away from the lock channel.



Scan **QR** for info on **Installing Insect Netting** or visit

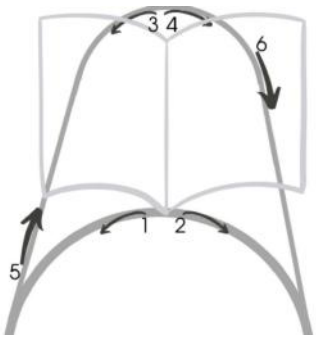
https://youtu.be/V8VKpNeF7BA

Greenhouse Plastic

Your kit will come with two pieces of plastic. The larger one will be used to cover the top of your structure and the smaller one will be used to cover the endwalls.

Make sure you can finish securing the plastic before you stop for the day, so it doesn't blow away on you. Roll the plastic out and drape over the length of the greenhouse. Ensure there is an equal amount of plastic that overhangs both ends.

Installing plastic can be the most intimidating part of your build but once you get going you will find it to be pretty straight forward. Having 2-4 people will make the job go faster and easier. Pick a time when there is little or no wind to interfere with installation. Keep a rounded broom handle or painter's pole handy to help gently push the plastic over hoops in the middle. Grab your friends and step ladders and let's go folks!



*

***This label should be on the inside of your structure.**

Before you begin, look for sharp edges on cut pieces of lock channel and file them down. Make sure that all tension bands and cross connectors are tight and not sticking up, where they could possibly snag the plastic.

Installation

1. Install spring wire starting at the middle top of the hoop down to the hip brace.
2. Spring wire from the top down on the other side of the hoop.
3. On the opposite end wall, pull plastic tight and repeat step 1 and 2
4. Pull the plastic tight and attach with spring wire along the hip braces one side at a time. (*See Note Below)
5. Attach to end wall hoops from hip brace to the baseboard.
6. Pull tight and attach plastic with the spring wire along the baseboards of the hoop house.
7. Cut the plastic 3-4 inches away from the lock channel on both endwalls.

   ~For areas with severe winters or hurricanes: If you will be removing the plastic during the winter, leave 6-12 inches of plastic all the way around to make reinstallation easier.~

8. Cut the plastic all the way along the baseboard 3-4 inches from the lock channel. (For roll up sides, leave at least 6” past the baseboard.)

   * Note: If you have rollup sides you will not do steps 6 and 7, but will need to cut the plastic as described in steps 8 and 9.

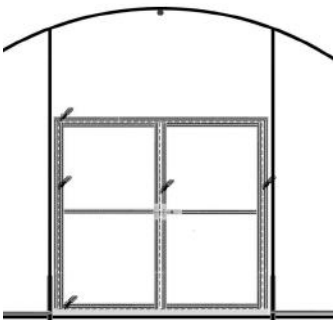
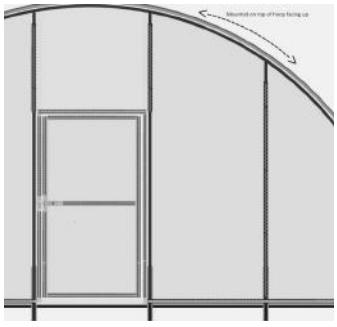
Scan **QR** for info on **Installing Plastic** or visit

https://youtu.be/qxApDmKXYyo

Installing End Wall Plastic

Once the top/ long sides are covered, and you have cut the excess plastic off of the hoop at the lock channel you can begin endwall installation.

1. While making sure the "inside" label is facing the inside of the house, install spring wire along your base board while keeping the plastic stretched left & right
2. Next, stretch the plastic up and work from the top of the hoop to one side. You will keep pressure by pulling up and out. You will install this spring wire into the same lock channel that you secured the top plastic into.
3. Now repeat for the other side.
4. Install spring wire to attach the plastic to the uprights.
5. Install spring wire into all door lock channels.
6. Cut the plastic 3-4 inches away from the lock channel along the hoop. The remaining piece will be used to cover the other end wall.
7. Carefully cut the seam between door and door frame to allow access. Cut out door access only AFTER all plastic is secured with spring wire in all vertical and horizontal lock channels.
8. Follow instructions for door latch on page 26 and install over plastic.
9. Repeat steps 1-8 for the opposite end wall if you have doors on both ends. Repeat steps 1-3 for an end wall with no door.

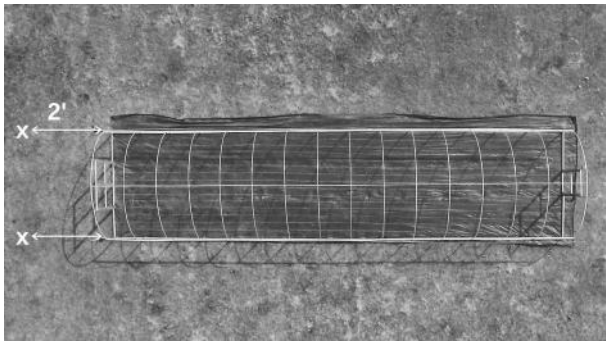




Roll Up Sides (Optional)

1. Drive 1/2 x 2' EMT into the ground 2' from the house on the x to help secure the 3/4 hand crank guide rod. (One for each side)

   NOTE: Instructions in the hand crank box ask you to put the crank less than 2', however we have had better performance 2' away from the building.

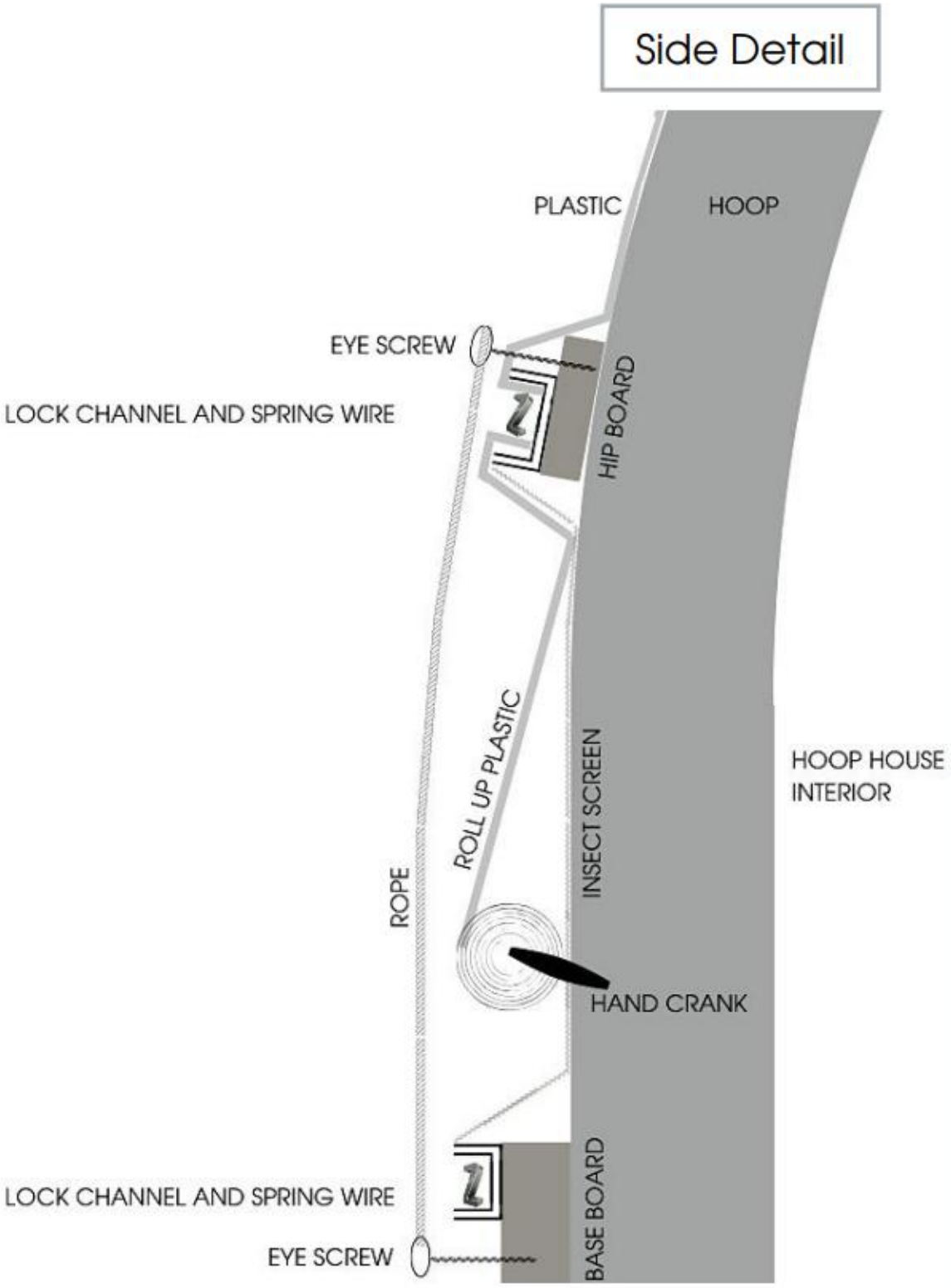
2. Place 3/4 x 5' EMT on the 1/2" and gently drive into the ground until the top reaches your hip board height.
3. Connect your EMT pieces together and secure at each connection point with a #8 self tap screw.
4. Place your snap clamps next to your long EMT sections to use during the covering process.
5. Following instructions in the box install the hand crank on 3/4 EMT.



Scan to Watch Video

Scan **QR** for info on **Rollup Sides** or visit

https://youtu.be/zdlP_L-fAYg


Side Detail
PLASTIC
HOOP
EYE SCREW
LOCK CHANNEL AND SPRING WIRE
HIP BOARD
ROLL UP PLASTIC
INSECT SCREEN
HOOP HOUSE
INTERIOR
ROPE
HAND CRANK
LOCK CHANNEL AND SPRING WIRE
BASE BOARD
EYE SCREW

Installation

1. Roll the end of the plastic onto the EMT pipe you made earlier. Make sure you roll it under the pipe like in the diagram so that the rolled plastic does not collect rainwater.
2. Install eyebolts on every other hoop. These will serve as attachment points for the strapping material.
3. Install the snap clamps every 18" or so with the ends a little closer together. The first time you slowly roll it up it will likely not roll up even. As you roll it up and down you will pull down on higher parts to tighten up your roll.
4. Roll it up and down a few times during this process and it will work out the loose sections and become straighter.
5. Repeat the process on the opposite side.

Trellis Bar Kit (Optional)

Trellis bars can be installed after the plastic has been installed. It is the final step in construction. It will be easier if installed before the plastic. **It is recommended at minimum, you have a truss for every 20’ span, to support the trellis cable. (i.e. one truss for a 20’ long green house, 2 truss for a 40’ long green house.

Before installing your Wire Trellis Kits, determine where your beds will be located. The most common way to trellis for a bed is a single line in the middle of each bed. Common bed spacing width-wise is 2 to 3 feet from the edge of the sidewalls and 3 feet between rows.

1. **Horizontal Bar**

   Included Parts

   14' & Under - (6) 72" x 1½” horizontal bar, (4) 6" x 1¼” bar splice, (50) #10 Self Tap Screws, (8) ⅜” x 3½" Hex Bolt with Nut & Washer

   20' - (8) 72" x 1½” horizontal bar, (6) 6" x 1¼” bar splice, (100) #10 Self Tap Screws, (8) ⅜” x 3½" Hex Bolt with Nut & Washer

2. **Determine Horizontal Bar Sizing**

This kit is installed onto end wall vertical uprights. This allows independent placement of wire trellis anywhere along the width of the structure (not just where vertical supports are located.) You will need a tape measure, level, and marker/center punch for this step.

Height

Stand flat-footed in a comfortable working stance. Determine the height at which you can easily squeeze roller hooks during lower and lean operations. The trellis bar should be 4"-6" above this measurement. It is common for this height to be within 10" of the top of the door frame.

*The horizontal bar must be placed above the door frame at a minimum. Measure and mark desired height with center punch or marker.

Width

Using your marked height, measure the width from the outer edges of the hoop. Use a bubble level to ensure the bar will be installed level.

The trellis bar should span the width of the hoop house, ending just shy of touching the end wall hoops on the top corners.

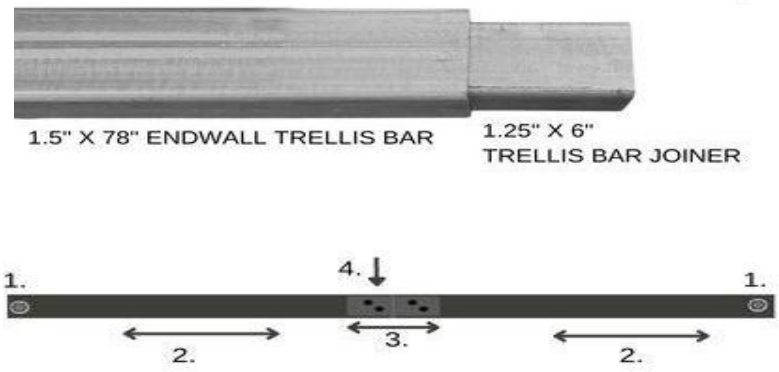
3. Installing Horizontal Bar to Endwall

After determining the desired length, the horizontal bar kit can be attached to the end wall using your marks from the previous step.

Tools Needed: Bubble Level, Drill, ⅜” Drill Bit, ½" Drill Bit, Ratchet Wrench & Sockets, Tape Measure, Metal Saw, Safety Goggles & Gloves, Clamps, Step Stool, Center Punch, String line at least the length of your hoop house and hanging level.

Parts Needed: #10 Self-tap screws, ⅜” x 3½" hex bolt with washer & nut, 1½" x 72" endwall trellis bar, 1.25" x 6" trellis bar joiner

Horizontal Bar Assembly

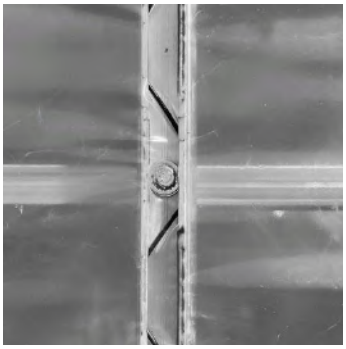


Pictured: 1. ½” Access holes, 2. horizontal bar, 3. trellis bar joiner, 4. #10 self-tap screws

1. Slide the Endwall Trellis Bars 3" into the Trellis Bar Joiner from each end and secure with (4) #10 Self Tap in the pattern pictured above.
2. Continue the process until you make a bar longer than needed.
3. Cut down to desired length from the previous step with a metal saw. Be sure to only cut the open side to adjust length for desired height.
4. Drill a 1/2” access hole on either end of the assembled bar ½” from each end. Drill on the inside face of the bar through one wall of the bar but not both. This will be the guide hole for attaching the bar to the hoop in the next step.

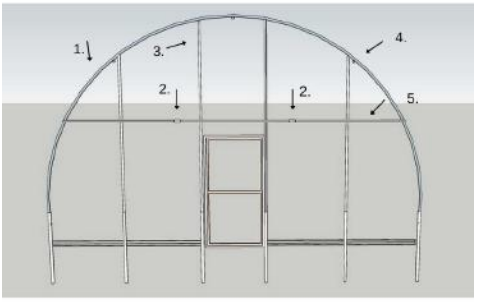
Horizontal Bar Attachment

1. Clamp Horizontal Bar into place inside your house using your marks as a guide.
2. Secure the bar to vertical uprights with ⅜ x 3½" hex bolts by drilling holes through the middle of the existing lock channel and vertical supports on the outside of end wall. (Drilled and installed outside to inside)
3. Secure end of bar to the hoop with #10 Self Tap through the ½” access hole.
4. Repeat the entire process for the opposite side of the hoop house ensuring that the two bars are installed at the same height.



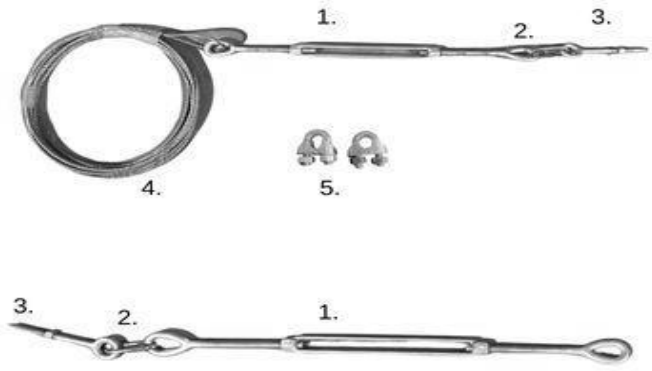
Trellis Bar Layout

1. 20’ endwall hoop
2. Trellis bar joiner
3. 78” ridgepole
4. Optional purlin
5. Horizontal trellis bar



Wire Trellis Kit (Optional)

Upon receiving your kit, get started by checking your parts list. If anything is missing, reach out to our customer service department for assistance.



Included Parts for Each Row

1. 9" Turnbuckle (2)
2. Quick link (2)
3. ⅜" x 4" Eye bolts with nut & washer (2)
4. ¼” 7x19 CABLE 304 Galvanized SS pre-cut to your specified length. (barrel crimp on one end)
5. ¼" Wire Crimps (2)

Determining Trellis Wire Row Spacing

Trellis can be placed anywhere beds are required along the width of the hoop house.

Once the center of the rows is determined, drill a ⅜" hole through the face of the Trellis Bar along the center of the bar through both side walls.
*If your ⅜” drill bit is over 3” long, use a backer board to avoid puncturing your greenhouse plastic.

Repeat for each row and again on the opposite end wall.

Installing Trellis Wire Turnbuckles

Tools Needed: Drill, ⅜” Drill Bit, ½" Drill Bit, Wrenches, Ratchet & Sockets,

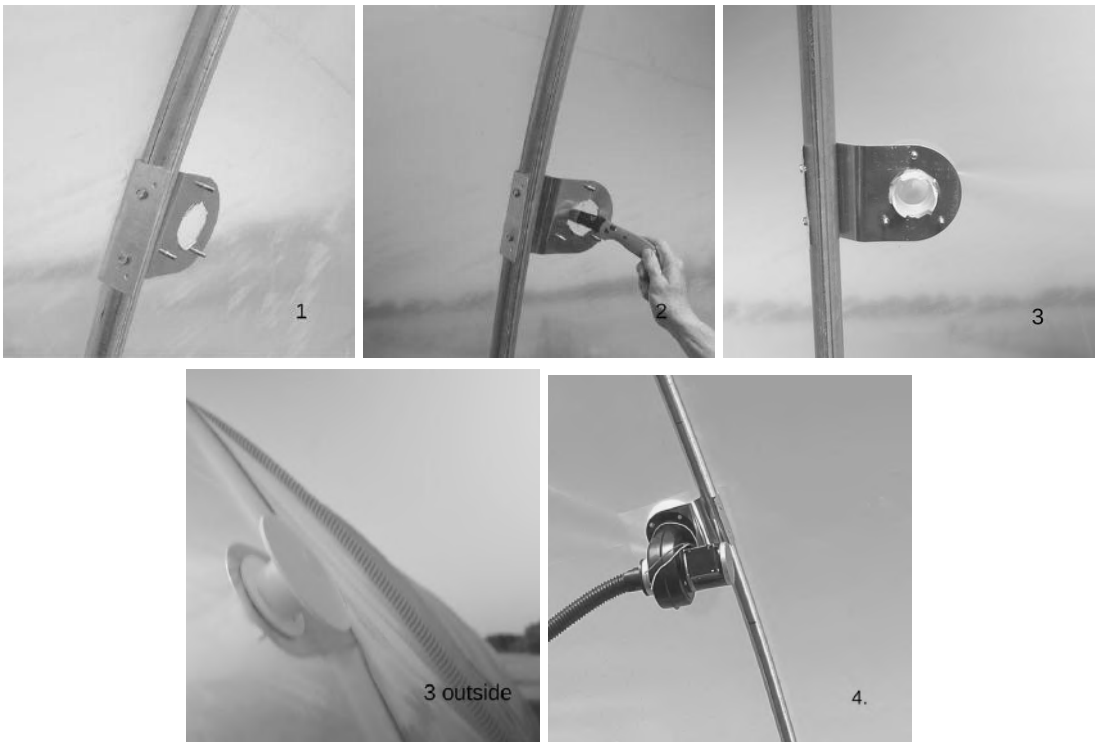
1. Turn all turnbuckles to fully open before installation.
2. Place the eye bolt through the trellis bar and secure the nut between the greenhouse plastic and the trellis bar.
3. Carefully uncoil the wire rope to the opposite side.
4. Install the eye bolt of the second turnbuckle into the horizontal bar on the opposite side as you did on the first side.
5. Coil loose wire through Turnbuckle. Pull as tight as possible to remove slack in the cable.
6. Use two wire clamps to secure the wire rope, one near the turnbuckle and the other to secure additional cable out of the way. Turn one side's turnbuckle until the wire is tight. Once all lines are installed, adjust for even tightness. Wrap the ends of the wire with electrical tape to avoid scratching.

As the season progresses and plants are trellised, growing, and bearing fruit you can adjust for weight and slack in the wire by tightening the turnbuckles.

Double Layer Inflation Kit (Optional)

We recommend pulling outside fresh air with the inflation fan. If you draw the air from inside of the hoop house itself to inflate your double layers, all of that excess moisture from the humidity will end up between your plastic layers.

Step 1: Attach the Mounting Bracket and Fan



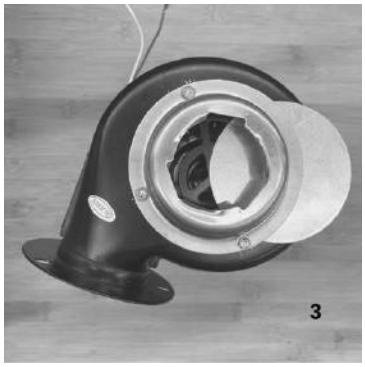
1. Attach bracket to first hoop (not endwall) on the inside of the structure.
2. Gently cut out film from the center of the hole.
3. Place the plastic dome from the outside into the bracket and turn to the right
4. Install fan onto bolt studs with nuts.

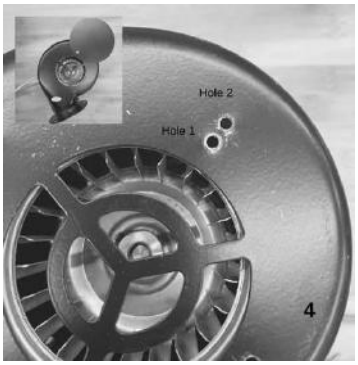
Wiring Notes

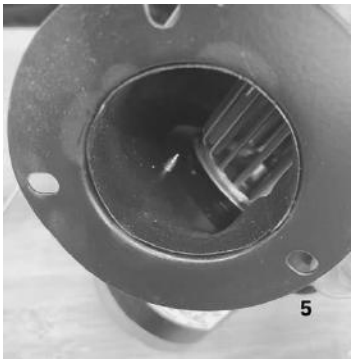
- Add a three-prong cord long enough to reach the nearest 110v outlet with a GFCI.
- Wired directly to an outlet box

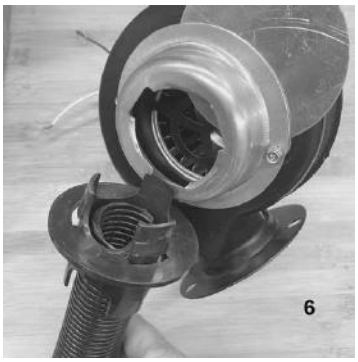
  **Refer to local building codes and consult a licensed electrician if in doubt about electrical work.

Step 2: Installing Hose Hook Up to Motor



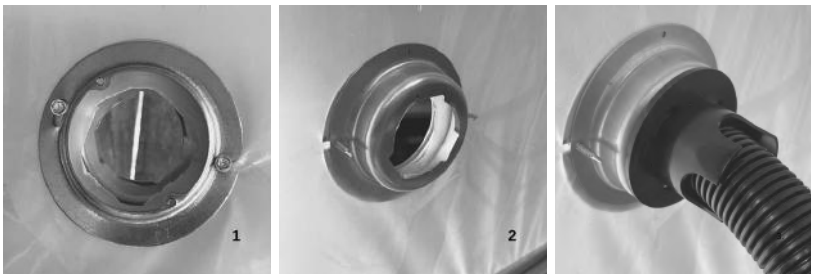






1. Remove Baffle Cover
2. Install Metal Ring to Motor with #8 Self Tap Screws. Note the New Baffle position.
3. Adjust screw tightness to open/close the new baffle. Not too tight.
4. Hole 1 is the original baffle cover hole. Hole 2 is where the ring spacing will be. Note, this IS NOT where the mounting will occur. This is just an example of how far to space the ring so the screws do not interfere with the squirrel cage inside. See picture 4.
5. Location of correctly spaced self-tap screws.
6. Once the motor is installed inside of the house, in the previously installed bracket, insert hose tips into the bracket and twist.

Step 3: Installing Hose to Endwall Flange



1. Sandwich Flange Plate (on the inside) and Flat Plate (on the outside) between the end wall film in line with the mounted fan on the next hoop from the end wall. Secure with #8 self-tap screws.
2. Gently cut plastic from the hole.
3. Attach the air hose from the motor to the endwall flange and twist.

Step 4: Installing the Second Layer of Plastic

Install the Inflation Blowers before installing the 2nd layer of greenhouse plastic.

Double layer greenhouse film is put on exactly like the first layer. The only thing to keep in mind is the double layer is inflating only from end wall to end wall and hip brace to hip brace. The spring wire will fit into the end wall hoops that already have the two springs and two layers that make up the 1st film piece and end wall piece.

Note: When first inflating your double layer start with the baffle wide open and adjust if necessary.

Shade Cloth (Optional)

Installation

- Shade Cloth Clips - A plastic clam shell with spikes that grip the shade cloth with a hole in the middle to strap with rope, strap, or other securing line. This works best if your shade cloth doesn't reach your hip board. Clips should be installed at least every 24" and we suggest extra at the corners. If you are using clips you can just secure the sides. Wind will pass through the knit so you do not have the same wind loads as greenhouse plastic.
- Spring wire into the same channel as your plastic. Follow the same instructions as you would for a double layer. End wall hoop from back to front and hip to hip.



Scan **QR** for info on Shade Cloth or visit

https://youtu.be/KlJ0sz6FJJE

Maintenance

One of the great things about hoop houses is that, once installed, they are a low maintenance option for season extension. This does not mean that they are NO maintenance though.

There are a few things you will need to do in order to keep your house in good working order and extend its life. Set a time to do an intentional walk around your house to look for any problems. Do this monthly and after any major weather events. This is one of those times that an ounce of prevention is worth a pound of cure.

You are looking for any rips or holes in the plastic, clogged drainage ditches, loosening of the plastic, and anything near your house that has the potential to cause damage, IE. fallen branches, tools leaning on the side of the house.

Keep your plastic tight. Using lock channel and spring wire makes it easy to tighten individual sections as needed. Loose plastic is more likely to tear during inclement weather. Do not allow unpainted PVC to be in contact with the plastic. PVC reacts with the plastic and contact between the two will void your warranty. Keep chemical sprays away from the plastic. If you need to spray your plants try to limit over spray by using a more directed stream instead of misting. Turn off circulation fans while you spray. If chemicals do get on the plastic, clean them off with mild soap and lots of water ASAP.

This is particularly important with sulfur and chlorine as both will damage the plastic and high levels may void your plastic warranty. If you live near a large farm or vineyard that regularly sprays their crops, you can ask them to let you know so you can rinse off your hoop house afterwards.

Hoop houses are a major investment for most small farmers and doing these simple tasks will ensure that you get the most from your's. Although most coverings have a 4-year warranty, well maintained plastic can last far longer.

Repairing Holes

Keep a roll of repair tape on hand at all times. Taping up a small hole when it happens will save you a big tear the next time the wind picks up. We farmers have a tendency to keep pokey things in our pocket.

When repairing a tear or small hole, prepare the area by washing both sides of the plastic with mild soap and water. Rinse and completely dry the plastic before attaching tape. Place a piece of tape large enough to extend a few inches beyond the damage on both the inside and outside of the plastic. Make sure the tape sticks to itself through the hole for a more secure repair. Taped repairs should be checked every 6-8 months to ensure the tape is not coming loose.

Seasonal Considerations

Once a season run through this list to head off eventual problems.

1. Tighten bolts and screws.
2. Oil hinges and moving parts.
3. Tighten batten tape and rollup side ropes as needed.
4. Tighten any sways in your plastic.
5. Keep any drainage trenches and lines clear of debris.
6. Re-dig trenches if necessary, particularly in late fall once the rains start falling.

Special Weather Conditions

During weather events:

1. Brush off any snow build up during storms.
2. During heavy rains check for puddling on your plastic and tighten as needed.
3. Clear storm debris from ditches.
4. Brush off fallen leaves and branches.
5. If hurricane force winds are predicted for your area, remove the plastic to avoid damage to your structure.