BOOTSTRAP FARMER

DIY High Tunnel Plans

02/28/2024

Read All Instructions Before Beginning Your Build

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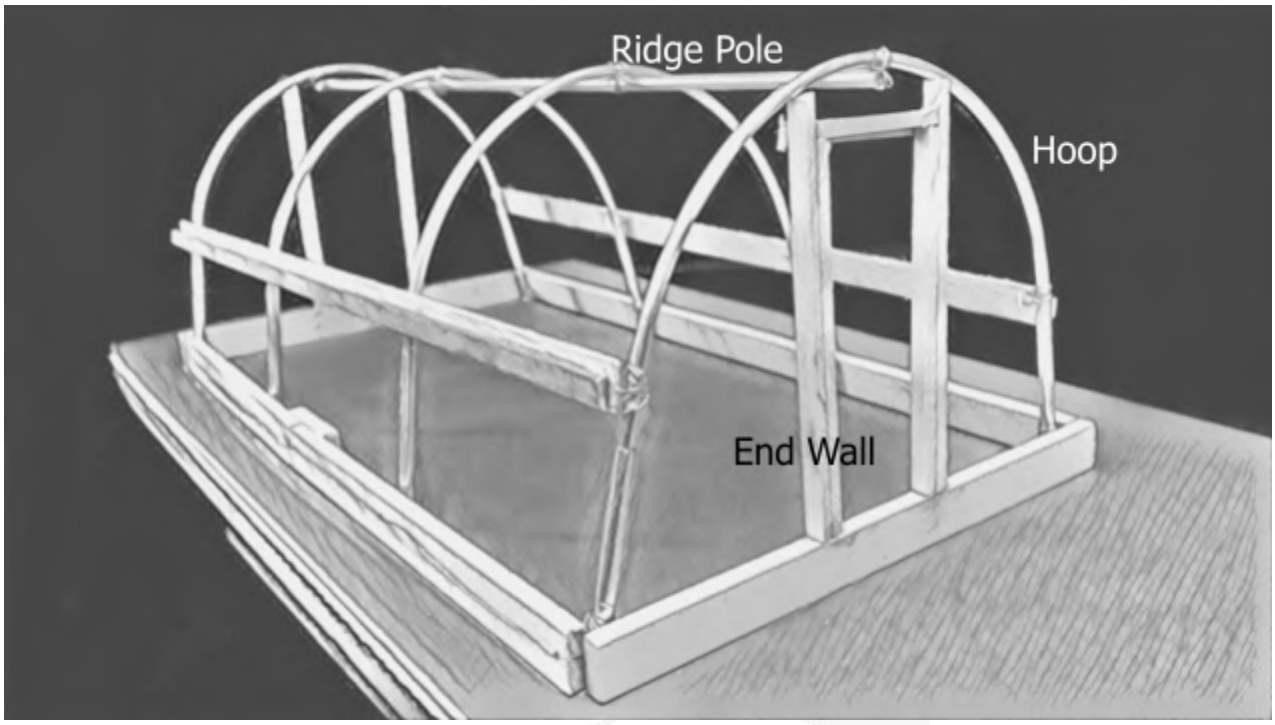
Identifying Structure Components



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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 (¼" bit included) ** **Impact driver not recommended for driving self tap screws.**
- Extension Cord
- Levels (long, magnetic & string line)
- Roll of mason line
- Metal File
- Metal Saw (reciprocating, chop or hack saw)
- Grinder
- Slip joint pliers
- Scissors/blade
- Sledgehammer (double jack)
- Single jack (3-pound hammer)
- Center hole punch
- Socket set & Adjustable Wrench - (½" 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

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HEIGHT WARNING: 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.**

Parts List- Kit Components

		
6 Mil Greenhouse Plastic	Lock Channel & Spring Wire	Ground Post Driver

		
Cross Connector 1-⅜”	Endwall Cross Connector 1-⅜”	(Optional Add-on) 16 GA Ground Posts

	
Bolts DIY Starter	Bolts DIY Addon (kits 40’ in length or over)

Hardware in Bolt Packs

			
¾” Self Tap Screws	¼” Lock Washers	¼” Nuts	¼” Flat Washers

			
¼” x 2” Hex Bolt	¼” x 3.5” Carriage Bolt	2 ½” Phillips Flat Head Wood Screw	1 ¼” Phillips Flat Head Wood Screw

		
¼” Nut Driver	5/6” Nut Driver	(2) ¼” Drill Bits

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Locally Sourced Parts

		
10' x 1⅜" top rail	8’ x 1-⅝” fence line posts	1" x 6" x 8' wood for baseboard

		
2" x 4" x 8' stud for door	1" x 4" x 8’ board for door frame	2" x 6" x 12' board for end-walls

Optional Add-Ons*

*Not included in Base Kit

Hoop Bender

Our hoop benders allow you to bend your own hoops to 10', 12', or 20' wide high tunnel hoop house out of 1⅜" chain link fence top rail.

Each hoop bender includes the bender, hardware for attachment to any solid flat surface, and an extension bar for added leverage at the end of your bend.

- 10'-12' wide high tunnel hoop house - (2) 10' x 1⅜" top rail per hoop
- 20' wide high tunnel hoop house - (3) 10' x 1⅜" top rail per hoop

Finished Height Hoop House Width (ft) | Approximate Height (ft)

10 | 8.5
12 | 8
20 | 10.75

HOOP BENDERS SOLD SEPARATELY
Many people build multiple hoop houses and only one bender is needed per width.

Location Of Hoop House

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 groundwork may be required to divert water runoff caused by regular hoop house watering. 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

The Build Process

Weed Barrier

Optional: Install landscape fabric prior to installing ground posts. It is recommended that you line the perimeter of the greenhouse 1’ inside and 4’ along the outside with landscape fabric so that you will prevent erosion from the water the greenhouse sheds, and so you don’t have to mow or use a weedeater next to your greenhouse! Accidentally throwing debris through your greenhouse plastic is a surefire way to get holes in your plastic!

Scan the **QR Code** for information on **Landscape Fabric** or visit https://youtu.be/spzkFIPTOWE

Cutting Ground Posts

*Not required with Ground Post Add-On

To expedite the setup process for your high-tunnel greenhouse, prepare all ground posts in advance. You'll need 1 ⅝” fence line posts for this project, which are readily available at large hardware stores and may be listed as terminal posts. You can also buy pre-cut 16-gauge ground posts at 48" length, pre-drilled for easy hoop attachment.

Scan the **QR Code** for information on **Ground Posts** or visit https://www.bootstrapfarmer.com/products/ground-post

Calculating the Quantity of Posts Needed:

- Determine the length of your greenhouse (in feet).
- Divide this length by 4 to calculate the number of hoops.
- Add 1 to this result for the total number of hoops and, consequently, the total number of fence line posts required.

Example Calculation:

For a greenhouse that is 100 feet long:

(100 ÷ 4) + 1 = 26 hoops. This means you will need 26 fence line posts.

Preparing the Ground Posts:

- Cut each post into two 48-inch sections to serve as ground posts.
- After cutting, mark a point 4 inches from the top on each ground post to drill a ¼ inch hole. This hole is for attaching the hoops to the ground posts.

Tools and Tips for Cutting:

- We recommend using a reciprocating saw or a circular saw equipped with a metal cutting blade for efficient cutting.
- Secure the posts with a vice or clamps to ensure they remain stable while you cut.
- This preparation should take around an hour. While a hacksaw can be used instead of a reciprocating saw, it will significantly increase the time required for this step.

Installing the Ground Posts

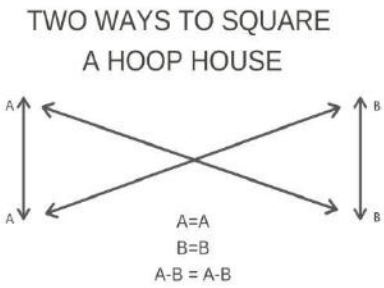
First, measure out your area with temporary stakes by squaring the Hoop House.

Squaring The Hoop House

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

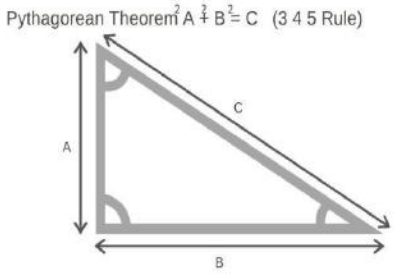
Tools

- Hammer
- Tape Measure
- Bubble Level
- Ground Post Driver (Included)



Using one of the following methods, set your corners.

Measure Method - First, measure length to length. Then mark the width; it should be 10', 12', 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 on each corner. This ensures your greenhouse will be square.



Pythagorean Theorem method - Sink a marking stake starting at your first desired post location. 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.

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

Setting the Ground Posts:

Read each step before driving the ground posts into the ground.

1. **Position and Install Corner Posts**: Place the corner posts at your pre-marked spots. Start driving these posts into the ground, ensuring they're correctly positioned where you initially marked.

2. **Check for Vertical Alignment**: As each post is driven into the ground, continuously check to ensure it's perfectly upright (plumb) from all angles. Make adjustments as needed to keep the posts straight.
3. **Orient the Posts**: Ensure the drilled hole on each post is aligned parallel to the intended length of the hoop house.
4. **Verify Measurements**: Once the corner posts are in place, re-measure the length, width, and diagonal distances to confirm accuracy. It's easier to correct any discrepancies at this point.

5. **Use a String Line for Alignment**: Tie a string line around the outer side of the corner posts, positioning it 4 inches below the top. This string line will guide the installation of the remaining ground posts, ensuring they are all at a uniform height.
6. **Install Additional Posts**: Following the string line as a guide, install the rest of the ground posts every 4 feet on center. Ensure each post is driven to a depth where its drilled hole aligns with the string line, achieving consistent post height. Each post should be roughly 2 feet in and 2 feet out of the ground.
7. **Maintain Post Orientation**: During installation, check each post for levelness on the front and sides, adjusting as necessary. Also, ensure the drilled holes remain parallel to the hoop house's length to facilitate later assembly steps and prevent any issues with the installation of bolts and the plastic covering.

Bending Poles to Make Hoops

Note the following:

10-12 ft wide hoop house requires (2) 10 ft 1 3/8" top rail per hoop.

20 ft wide requires (3) 10 ft 1 3/8" top rail per hoop.

Scan the **QR Code** for information on **Making Hoops** or visit
https://www.bootstrapfarmer.com/products/ground-post

Bending Poles to Make Round Hoops

NOTE BEND INSTRUCTIONS ARE DIFFERENT FOR GOTHIC STRUCTURES

1. **Align the Poles**: Arrange all poles so that their male ends, referred to as 'swaged' ends, point in the same direction.
2. **Mark the Poles**: On each pole, make a mark 9 inches from the end, and then make a mark every 18 inches after that. These marks will guide you in two ways: they indicate where to position the pole in the hoop bender and how deeply to insert the poles into the ground posts.
3. **Secure the Hoop Bender**: Fasten the hoop bender firmly onto a table or bench. It comes with hardware for this purpose. Make sure it is stable before proceeding.
4. **Bend the Poles**: Place each pole into the hoop bender, ensuring it slides through the holding strap. Align the pole so the 9-inch mark you made is at the point where the pole exits the bender collar and bend.
5. **Continue inserting the pole to each mark:** Apply force evenly to bend it at every 18-inch interval along its length.
6. **Maintain Pole Level**: Use scrap wood pieces as a support on your bench to keep the pole level and prevent it from twisting as you bend it.
7. **Finish with an Extension**: Upon reaching the pole's end, attach the pole extension (provided with your hoop bender) for additional leverage and continue the bending process as needed.

8. **For 10’ and 12’ hoops**: Stop bending at the mark that is 9 inches from the end on the second pole of each hoop.
9. **For 20’ hoops**: Stop bending at the mark that is 9 inches from the end on the third pole of each hoop.

Connecting and Setting 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 sections 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, place one side into a ground post, and then the other. For consistency, have the same person go first on every hoop. At this point, do not force the hoops down into the ground posts all the way. Adjustments will come in the next couple of steps.
- If you install each end of each hoop into the ground post to the 9’’ mark you made, and your ground posts are level. This should make your hoops the same height along the length of the hoop house.

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 the hoops as a partner adjusts the height of the hoops at the ground posts. (20’ has a center height of 10.75’. The 12’ has a center height of 8’, and the 10’ width has a center height of 8.5’.)
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’ alignment, drill a ¼” hole through the hoop at the hole in the ground post. Secure with ¼”x2" bolt, flat washers, lock washer, and ¼” nut.

   NOTE: If you purchased optional bracing, installing on the ground posts now will be much easier.

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 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-tapping screw to all tension bands and end wall cross connectors - but not the saddle-type cross connectors on the interior hoops.

Scan **QR** for info on **End Wall Cross Connectors** or visit https://youtu.be/cAYCGLnQqIU?si=5RSC_A_OqWy-5x2l	Scan **QR** for info on **Stabilizing Your End** https://youtu.be/eXq7C5LAeVQ?t=300

Note: Since each hoop will connect 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 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 • Ridge Pole 1 ⅜ top rail

Installing End Wall Cross Connectors

1. Place the end wall cross connector on the peak of the end wall hoop.
2. Place the Ridge Pole past the lower loop, not further than 1/2 way past the hoop, and tighten the gold nut and bolt supplied with the end wall cross connector. If the ridge pole extends past the end wall hoop, it will wear on the plastic once installed.
3. Pre-drill at “Point A” with a 3/16” drill bit. These connectors are thick metal, so be prepared to use extra force.
4. 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.
5. Use slip joint pliers and a 16 oz. hammer to curl the outside ears further around the end wall hoop. Making the end wall cross connector perfectly snug around the hoop is unnecessary.
6. Drill through the end wall cross connector and ridge pole. Insert a 2" bolt with a lock washer and nut (same as ground post nut/bolt) at point C.
7. 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.

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Cross Connectors and Ridge Poles

Ridge poles and cross connectors work together to connect and stabilize the hoops. Optional purlins and additional cross connectors further stabilize the structure and are installed the same way outlined below.

Tools	**Parts** (PER 20FT)
• Rope/ Stakes • Drill w/ ¼” bit • Step ladder • Saw • Ratchet & Sockets • Tape measure • Wrench	• ¼ x 2" bolt galv. (15) • ¼ nut galv. (15) • ¼ split lock washer galv. (15) • ¼ flat washer galv.(30) • 10' x 1⅜" top rail • Cross Connector 1.375” • End Wall Cross Connector 1.375” • #10 self-tap screw

Install Ridge Pole and Connectors

1. Loosely place a cross connector on the top of each of the rest of the hoops except the final hoop.
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 end wall 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.

7. Depending on the length of your greenhouse, you will need to cut off the excess from the final ridge pole before installing the end wall cross connector.
8. Install the final end wall cross connector on the last hoop as outlined above.




Scan **QR** for info on **Ridge Poles** or visit

https://youtu.be/AfTKTvcqw20

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Install Baseboards

For baseboards, we use the 1" x 6" x 8' ledger boards. These will be in contact with the ground, so using a water-resistant wood like cedar, redwood, or pine is ideal. We also recommend coating the boards with latex paint.

1. For the first baseboard, we cut off the first foot so the board doesn't end on a ground post.
2. Line up the cut board with the front of the first ground post.
3. Clamp the board to the post and use your ¼” drill bit and drill through the wood and the ground post.
4. Insert a 3.5" x ¼” Carriage Bolt & tighten with a lock washer & nut on the outside.
5. Where two pieces of wood butt together, connect them with a scrap piece of 1" x 8" and attach with 2-½” wood screws (Phillips flat head #8).
6. Be sure not to overdrive these screws as you don't want the screw tip poking out the other side as it could pierce your greenhouse plastic.
7. Once you have all the side baseboards attached, you can install the baseboards on the end walls with a 2" x 6" x 12' board and a carriage bolt and lock washer and nut.

Installing Hip Boards

There is no hard rule regarding where to place your hip boards. You want to set hip boards as high as you want your roll-up sides to go (if you are using them).

If you are NOT using roll-up sidewalls, you still want to install the hip board for stability. However, it gets mounted on the INSIDE with the bolt flush with the outside (so it doesn't interfere with the plastic).

1. For our hoop houses, we typically place the bottom of the hip board about 36 inches from the top of the ground post. (4’-5’ from the ground)
2. Mark each hoop at your desired height
3. Similar to your baseboards, you want to cut the first 1 foot off your hip board so the butt joints don't land on a hoop.
4. Line up your boards on the marks and use a clamp to hold them in place.
5. Drill a ¼” hole through your board and then through the hoop.

6. Place a zinc-plated 3.5" x ¼" carriage bolt through the wood and attach it with a washer and nut on the hoop end.

Installing Lock Channel

The spring wire channel can now be installed on the hip boards and baseboards.

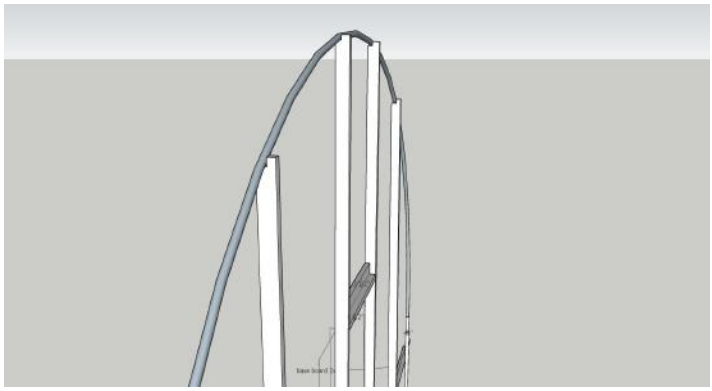
Tools	Parts
• Drill & Drill Bits • Clamps • Metal Saw • Bubble Level	• #8 coarse threaded screws (it may be necessary to pre-drill the lock channel to install these) • lock channel

1. Use clamps to hold the lock channel level on the hip board.
2. Install at least four of the #8 screws per piece of lock channel, six in higher wind areas and on larger-sized hoop houses.
3. If you run into difficulties, you can drill guide holes through the metal and wood before installing screws.
4. The channel has ridges in the middle to help guide screws into place.
5. Be sure that the lock channel is installed level from one piece to another. If the spring wire lock channel is not straight, it can create corners where the pieces join, and the plastic may snag.
6. Repeat the above steps 1-4 for all baseboards and hip boards.

End wall hoops

1. Install spring wire lock channel on the first and last arches/hoops.
2. Use #8 self-tapping screws to install into the metal hoop
3. Starting at the top of your baseboard, run the lock channel over the entire hoop but not overlapping the hip board. It should face the sky/outward.
4. Use a clamp to help you keep the channel in place while you bend it along the curve.
5. Your lock channel will easily bend to the curvature of your hoops. Do not kink or

bend the channel before installing it.



End Walls and Doors for Hoop Houses

Tools	Parts
• Drill & Drill Bits • Clamps • Metal Saw • Bubble Level	• #8 self tap • #10 self tap • Lock channel • 2" x 6" x 12' board • #8 x1.25" Phillip Flat Head Wood Screws

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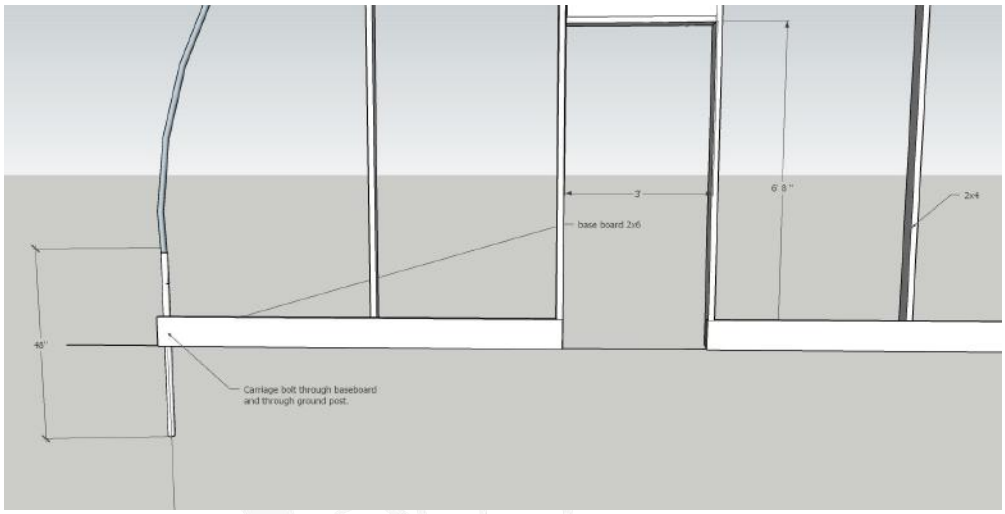
General Tips

- **Customize to Your Needs**: Tailor the end wall construction to suit your farm's requirements, considering factors like equipment access, frequency of use, simplicity, security, and your comfort with building projects.
- **Source Durable Materials**: For hinges, latches, and other hardware, opt for items designed for outdoor use, often found in the fencing section of hardware stores.

Before Installing the Door Frame

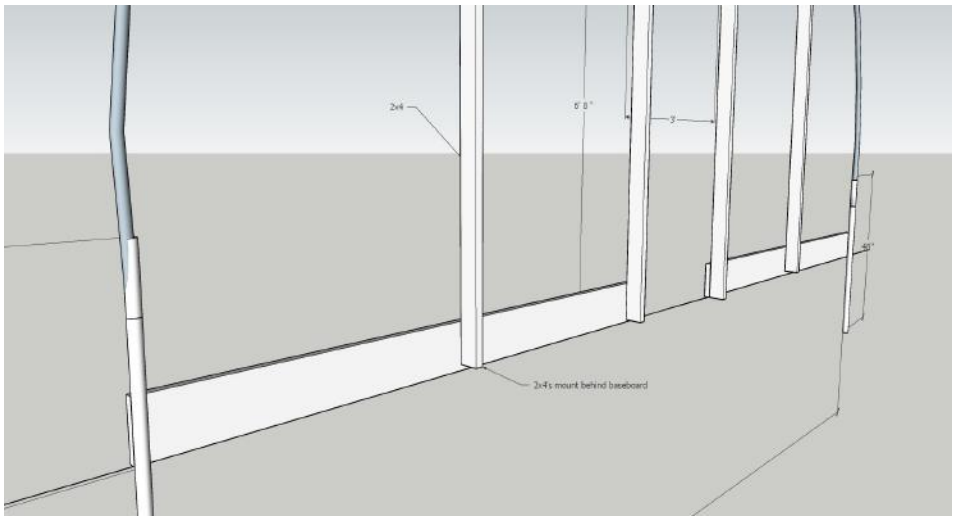
1. **Install Baseboards**: First, if not already done, install baseboards at the front and back ends of your greenhouse. Extend the baseboard along the full length of the greenhouse, securing it to the ground posts using 3.5” by ¼” carriage bolts. This step is crucial for providing a stable foundation for the door frame.



Installing the Door Frame

Planning the Door Size

1. **Ensure Adequate Door Width**: Determine the width of your door based on the need to accommodate equipment, like a wheelbarrow or tiller. The door should be wide enough to pass through easily.



Marking and Cutting the Door Frame

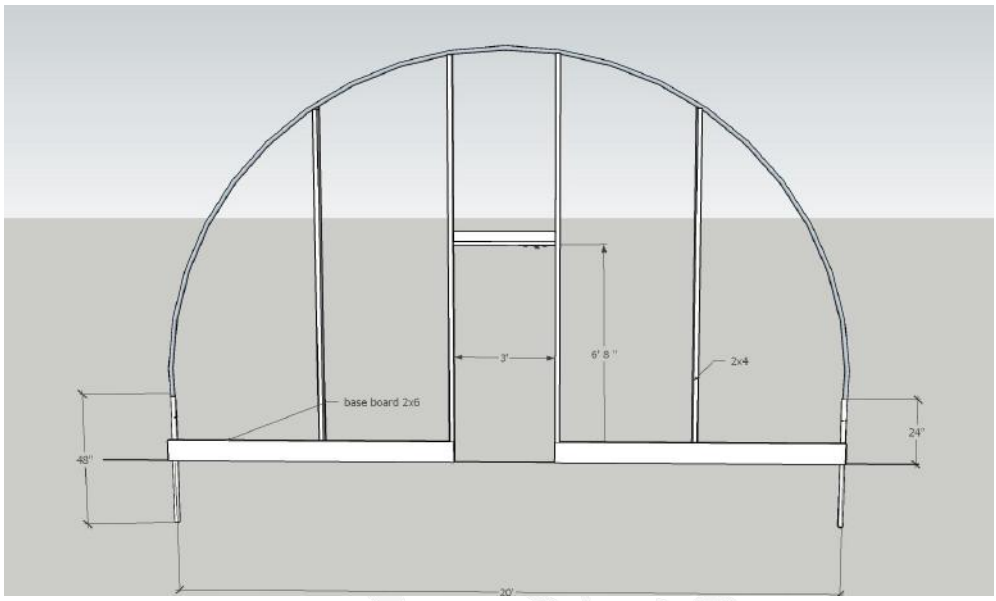
1. **Divide the Door Width**: Divide the total width of the intended door by two to find the center point for each side of the door frame.
2. **Mark the Hoop**: Measure from the center of the hoop to each side using the half-width measurement you've calculated. Mark these points on the hoop where the door frame will align.
3. **Position the 2x4 Studs**: Align a 2-inch by 4-inch stud vertically from the ground up to the marked point on each side of the hoop. The 2x4s should have their wider sides facing each other (with the narrow edge facing outward).
4. **Trace and Cut the Curve**:
    a. Trace the curve of the hoop onto the top and bottom of each 2x4 stud.
    b. Use a jigsaw to cut along the top mark to match the curve of the hoop.
    c. At the bottom mark, cut a 1-⅜" deep notch. This notch will help to anchor the stud firmly to your hoop structure. Ensure the 2x4 is slightly shorter than the top of the hoop for a snug fit.

Securing the Door Frame

1. **Attach the Studs**:
    a. Drill a ¼" hole through the hoop and the notched area of the 2x4.
    b. Insert a ¼" by 3.5-inch carriage bolt through the hoop and the 2x4, securing it with a washer and nut on the wood side. Make sure the bottom

of the stud is positioned behind the baseboard (inside the greenhouse).

2. **Level and Secure**:
    a. Use a bubble level to ensure the stud is vertically level.
    b. Secure the stud to the baseboard with 2-½" wood screws.



Constructing the Door Header

1. **Measure the Door Opening**: Determine the width of your door opening and cut a 2x4 to this length. This will serve as the door header.
2. **Determine Door Height and Reveal**:
    - Decide the height for your door.
    - Add an extra ⅞" to this measurement to account for the door reveal: ⅜" at the top and ½" at the bottom.
3. **Mark the Header Height**:
    - Measure up from the baseboard along one of the inner door frame boards to your total height measurement (door height + ⅞") and make a mark.
    - Repeat on the opposite side.
4. **Install the Header**:
    - Cut a 2x4 to fit between the two marks. This will be your door header.
    - Ensure the header is level and adjust as necessary.
    - Secure the header at the marked height using 2.5-inch wood screws, attaching it to the door frame sides.

5. **Add an Upper 2x4**:
    - Cut another 2x4 to sit directly above the header, forming an 'L' shape, and flush with the outer edge of the door frame.
    - This reinforces the header. Secure it in place with screws.

Installing Side Posts

1. Measure and Cut Side Posts: For additional support and to attach wiggle wire lock channels later, install vertical posts on each side of the door frame.
    - Place the bottom of these posts on the ground and mark the top just underneath the hoop.
    - Cut the posts to size and secure them alongside the door frame with 2.5-inch wood screws.

Building the Door

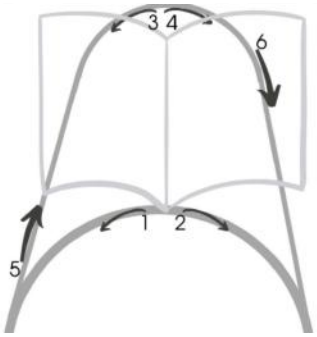
1. **Frame the Door**: Use two 1"x 4" boards to construct the door frame. Make the door width ¾" narrower and length ⅞" shorter than the door opening to allow for expansion.
2. **Add Support and Materials**:
    - For door stability, place a plastic roofing panel, chicken wire, or a similar supportive material between the two 1"x4" boards.
    - Include a 1"x4" board in the middle of the door for additional stability.
3. **Install the Door**:
    - Use zinc-plated hinges for attaching the door, ensuring even spacing between the door and frame for smooth operation.
    - Once installed, surround the door frame with a lock channel to secure the door's cover material.
4. **Finish with Lock Channel and Wiggle Wire**: Attach the lock channel and wiggle wire around the door to secure the plastic or other covering materials, based on your specific needs.

Greenhouse Plastic

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 straightforward. 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 board.
2. Spring wire from the top down on the other side of the hoop.
3. On the opposite end wall, pull the plastic tight and repeat steps 1 and 2
4. Pull the plastic tight and attach it with spring wire along the hip braces one side at a time. (*See Note Below)
5. Attach to end wall hoops from the 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.

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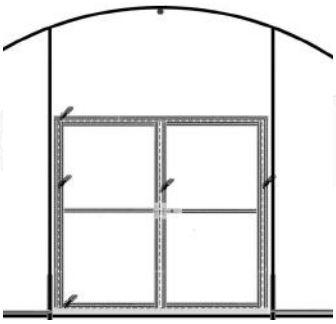
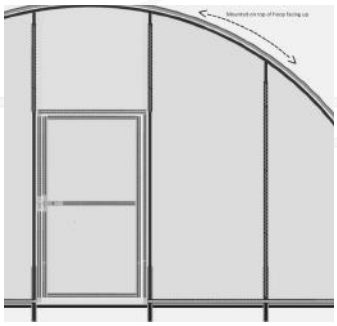
Scan **QR** for info on **Installing Plastic** or visit

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.


Optional Components

Roll-Up Sides

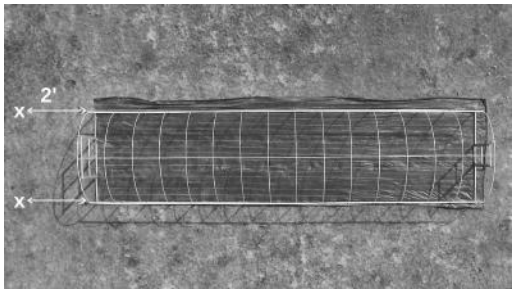
Parts:	Tools
• 2 Roll-up Cranks • ¾” Inner EMT Couplings • Snap On Clamps (every 2') *SNAP CLAMPS ONLY FIT 3/4 EMT- DO NOT USE PVC PIPES! • Eye bolts for tie-down ropes. • ¾ EMT & ½ EMT (Locally Purchased) • Paracord or nylon strapping • #8 screws	• Drill and drill bits • Metal saw • Single Jack (3 pound hammer)

1. Drive ½” x 2' EMT into the ground 2' from the house on the x to help secure the ¾” 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 ¾” x 5' EMT on the ½” 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 ¾” EMT.



Scan to Watch Video

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

https://youtu.be/zdlP_L-fAYg

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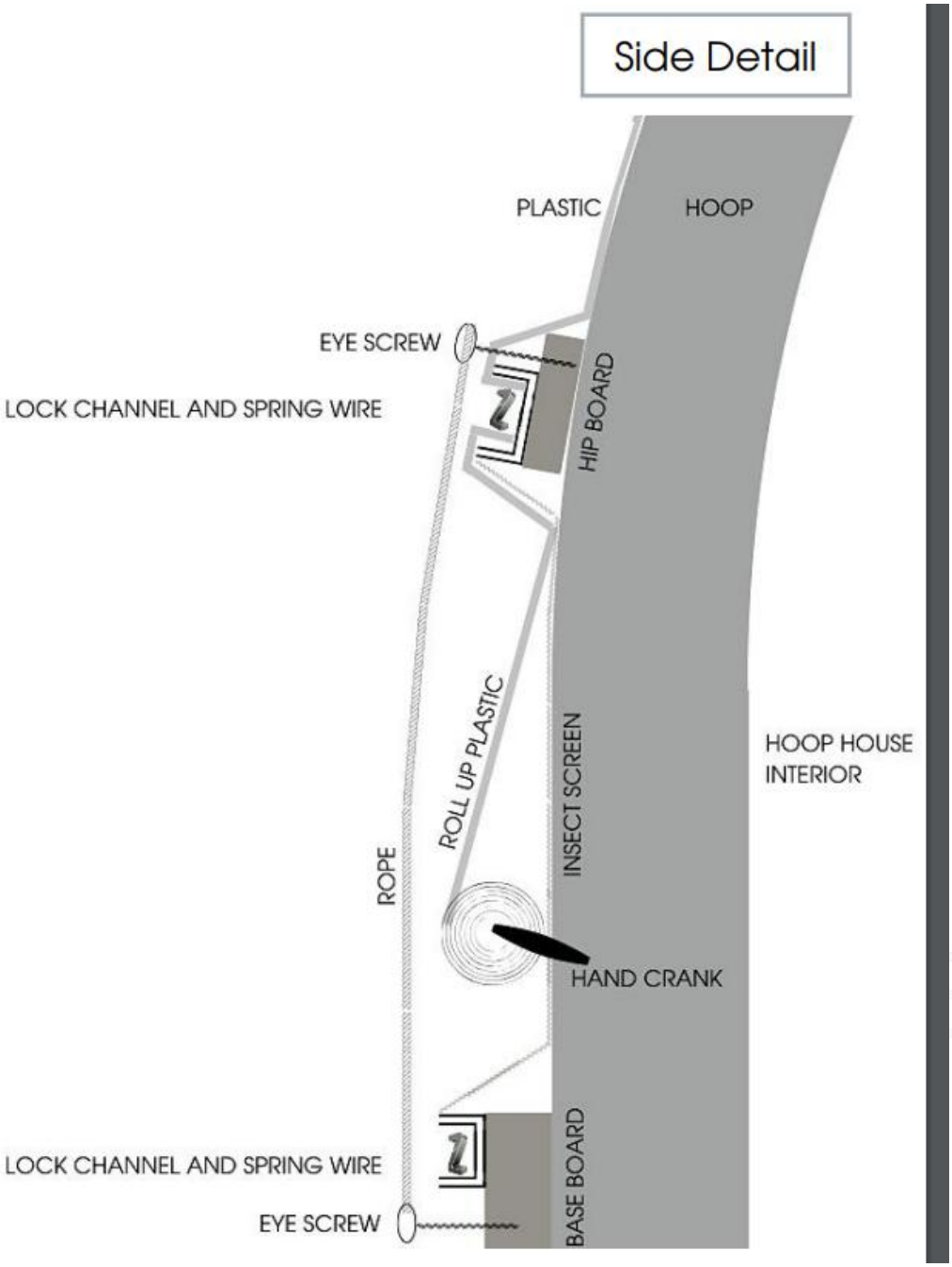

Side Detail
PLASTIC
HOOP
EYE SCREW
LOCK CHANNEL AND SPRING WIRE
HIP BOARD
ROLL UP PLASTIC
INSECT SCREEN
HOOP HOUSE
INTERIOR
ROPE
HAND CRANK
LOCK CHANNEL AND SPRING WIRE
BASE BOARD
EYE SCREW

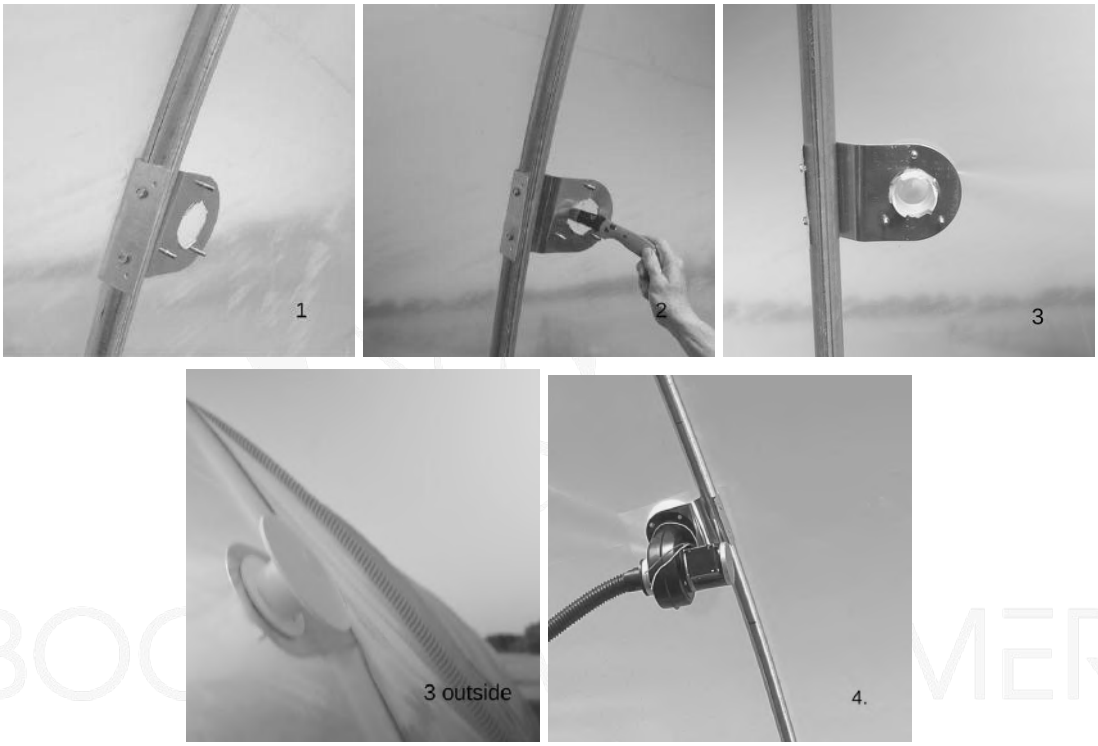
Installation

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 eye bolts on every other hoop alternating between the hip boards and baseboards to create a zig-zag pattern. 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. String paracord or strapping through the eyebolts to keep the side from bowling in the wind when partially rolled up.
6. Repeat the process on the opposite side.

Double Layer Air Inflation Kit

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.

Attach the Mounting Bracket and Fan



1. Attach the bracket to the first hoop (not the end wall) 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.

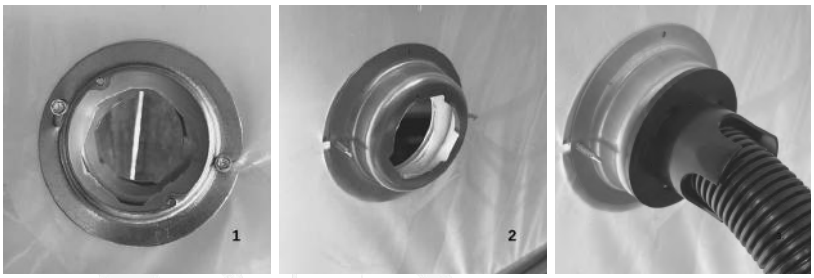
Install Hose Hook Up to Motor

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.

Install 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 end wall flange and twist.

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Double Layer Plastic

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

Installation

- Shade Cloth Clips - A plastic clamshell 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 - The shade cloth will fit 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.



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

https://youtu.be/KlJ0sz6FJJE