



“The Mini” Caterpillar Tunnel Installation and Maintenance Manual

Customer Name:

Date:

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Congratulations with the purchase of your new GrowHoops caterpillar tunnel!

The addition of a caterpillar tunnel to your market garden, homestead, or backyard is exciting!

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Tunnel Installation Instructions

Step 1: Site Selection and Tunnel Orientation

The site where you intend to install your tunnel should be mostly level, although a slight slope will aid in drainage. If your growing region is prone to heavy rains, consider landscaping around the exterior of your tunnel to prevent sudden flooding. Ray Tyler, the master gardener at Rose Creek Farms, has some excellent resources on how to landscape around tunnels to create a successful growing environment, despite wet conditions. Additionally, if you anticipate the need to clear snow around the edges of your tunnel during the winter, leave enough room for your equipment to complete this job.

A major environmental condition to consider for tunnel orientation is wind. Wind is one of the main stressors on the structure, so proper orientation is important. What is the direction of your prevailing winds? Typically, it is best to orient a tunnel so that the end is facing the direction of the prevailing winds. For example, face the end of your tunnel west if your prevailing winds are from the west. This consideration will be less important if your growing environment is calmer. Proper orientation will impact the success of your tunnel.

Step 2: Layout and Installation of Rebar Anchor Pins

Parts needed:

- 10 x rebar anchor pins

Refer to the picture, as it provides an overview of the layout for the rebar anchor pins. There are two rows of anchors which are 10' apart. Within each row, the anchors are spaced 5' apart. Take sufficient time to ensure that the layout is square, as this will make the rest of the installation process easier.

The rebar anchor pins are 48" long and should be driven into the ground until 16" is remaining above the ground. A manual post pounder or a sledgehammer works well to drive the anchors in but be creative with whatever resources you have available. There are 5 rebar anchor pins in each row. There will be 2 extra rebar anchor pins, but these will be used later when installing the end walls.



Step 3: Snap Clips and Anchor Plates

Parts needed:

- 10 x anchor plates
- 10 x snap links

Install the snap clips on the anchor plates. Then slip the anchor plates over the rebar anchor pins. Make sure the snap clip is facing the outside of the tunnel. Picture shows rebar anchor pins sticking up 16 inches above the ground with the anchor plates slipped over them.



Step 4: Arch Assembly

Parts needed for each arch (5 arches to assemble in total):

- 2 x curved pipe
- 1 x peak pipe (L shaped)
- 4 x large tek screws

In total, there are 5 arches to build, but build these one by one, and erect them as they are built. Choose a flat area to build your arches and use 2 rebar anchor pins to make sure the arch is 10 feet wide at the bottom. The picture shows how the arch looks assembled on the ground.

Slide the swaged end (the end with a smaller diameter) of the curved pipe into the end of the peak pipe for both sides.

Once the 2 curved pipes and the peak pipe are slid together, install a large tek screw through the swaged connection to hold the pieces together. This screw should be installed from the top as the arch lays on the ground. Install the second set of screws into each arch after step 5.

Install the finished arch over the furthest rebar anchor pins and work your way forwards.



Arch being assembled on a flat surface with rebar anchor pins used to measure correct width.



Step 5: Install the Top Purlin

Parts needed:

- 3 x purlins – one section of purlin is shorter, and this one gets used last
- 3 x cross-connector clamps
- 6 x bolts with nuts
- 2 x pipe straps
- Large tek screws

First connect the sections of purlin on the ground with large tek screw through each swedged joint in the purlin. Install the length of purlin underneath the peak of the arches using the cross-connector clamps and bolts with nuts. Measure that the arches are spaced 5 feet apart on-center, to match the spacing of the rebar anchor pins before tightening up the bolts. The purlin ends are installed flush with the outside of the end arch.

The first arch and the last arch are attached to the purlin with a pipe strap. The pipe strap is designed to attach to a flat surface, so the ends will need to be bent out a little to fit inside the peak properly. Attach the pipe straps to the arch with large tek screws. Also, drill a large tek screw through the strap into the purlin.

Install the second set of tek screws into each arch within the swedged section. Make sure the screws are not on the outside where they will rub against the poly.



Step 6: Install the Wind Bracing

Parts needed:

- 2 x wind bracing
- 4 x brace bands
- 4 x bolts with nuts

Wind bracing is installed in one corner of the structure. Starting by installing a wind brace from the bottom of the second arch to the middle of the first arch. The wind braces are attached to the arches using brace bands. Ensure the brace band on the second arch is several inches from the ground and then tighten. Before tightening the other end of the wind brace, ensure that the arch is vertically plumb. Next, install the second wind brace a bit above the first wind brace so that the corners don't interfere. This wind brace goes from the middle of the first arch to near the top of the second arch. Again, ensure that the last arch is vertically plumb before tightening.

NOTE: the corners of the wind brace may protrude outwards. It is recommended that the brace bands are adjusted to minimize this. If needed, these corners can be bent inwards to ensure they do not puncture the plastic once it is installed or tape these sharp corners with 3M all weather flashing tape.

On the inside of the structure, put large tek screws through the brace bands into the arches. This will prevent the brace brands from moving.



Step 7: Install the End Wall Posts

Parts needed:

- 2 x rebar anchor pins
- 2 x end wall posts (9' 5" in 1 5/8")
- 1 x end wall plates
- 1 x end wall angle plate (for door)
- Large tek screws

Pound in a rebar anchor pin at each end. The rebar anchor pins are spaced at 4'8" from a corner – both ends use a corner from the same side. Place an end wall post over each rebar anchor pin and fasten to the end arch with the supplied end wall plate and large tek screws.

NOTE: for the end with the scissor door, the end wall angle plate is used, as this plate is the hinge for the door.



Step 8: Install the Door Post

Parts needed:

- 1 x door post (8' 8" in 1 5/8")
- 5/16" bolt with lock nut

The door post is installed with the 5/16" bolt through the end wall angle plate. Let the post hang and then snug up the nut, but do not go too tight, as the door should swing freely.

Step 9: Install the Wirelock Extrusion on the Gables

Parts needed:

- Wirelock extrusions
- Small tek screws

The wirelock extrusions are installed using small tek screws. Use a small tek screw at each end and then every 12". Start the extrusion 8" up from the bottom of the arch. The wirelock extrusion is flexed into position as it is screwed into place. Work from one side up the arch, bend over the top, and then down to the other side. Trim to keep the end 8" up from the bottom of the arch.



Step 10: Install the Wirelock Extrusion on the End Wall Posts and Door Post

Parts needed:

- Wirelock extrusion
- Small tek screws

Starting at the top of the end wall post, the wirelock extrusion can be installed up to 8" from the bottom of the post. Use a small tek screw at each end and then every 12". On the door post, the extrusion starts from just below the hinge bolt at the top to flush with the bottom.



Step 11: Install the End Wall Poly

Parts needed:

- Plastic
- Wirelocks

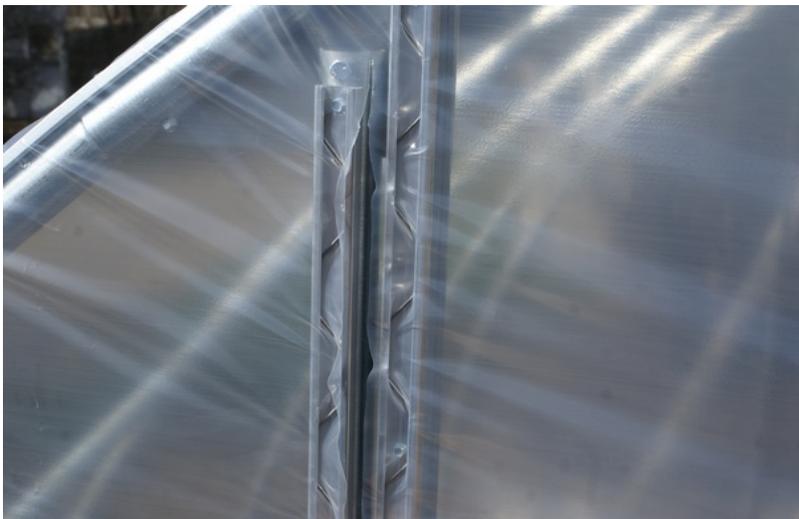
NOTE: install the poly on the calmest day possible, as this will make it much easier.

Ensure you are working on a surface where the poly will not be damaged or punctured. Unroll the poly far enough to cut off a 12' length of poly. Cut this 12' by 24' piece in half on the middle fold. You should now have two pieces of poly that are 12' by 12'.

Start installing the poly on the end wall without the door. Have two people hold the poly tight while the wirelocks are installed to prevent wrinkles and folds. Make sure the poly is centered with extra on the ground. Using the wirelock, install the poly starting centered at the peak and working down the end of the arch. Once the arch has been locked into place, the end wall post wirelocks can be installed. Doing this after the arch is done will get the poly tighter.

Repeat the procedure on the door side. Something to note on this is that it is usually desirable to have the plastic tight, but for the door, this will interfere with proper closing later, so do not pull too tight. Install the wirelock on the end wall post adjacent to the door post. Then, install the wirelock on the door post keeping any slack poly between the two posts. Cut a slit in the poly between the two posts staying as centered as possible.

Trim off the extra poly on the sides leaving 2-3" so that the poly doesn't slip out of the wirelocks. The excess plastic on the bottom can be secured with sandbags or something heavy that will not damage the plastic.



Step 12: Install the Main Poly

Parts needed:

- Poly
- Wirelocks

Roll the piece of 23' by 24' poly out along the tunnel. The 23' is for the length of the grow hoop and the 24' goes over the arch. Pull the poly over the tunnel using a ladder at each end. Once the poly is all the way over the tunnel, center it as best as possible. There should be approximately 6" of poly on the ground on both sides. Make sure the extra poly from the end walls is towards the inside, then secure the poly by installing one or two wirelocks at the top of one of the end wall arches. Then go over to the opposite end and pull the poly snug. Before installing one or two wirelocks on this end, ensure the poly is centered as best as possible. If the poly is centered and snug, the rest of the wirelocks can be installed down the arches. It is a good idea to have an extra set of hands pulling the poly tight as the wirelocks are being installed. Once again, trim the extra poly on the sides leaving 2-3".

Step 13: Install the Rope

Parts needed:

- Rope

Tie the rope to the snap link at one of the end arch anchor plates. Any of the four corners works fine as a starting point. Then toss enough rope over to connect to the next arch snap link on the other side. For example, if the rope is started at the front right corner, then to the second snap link on the left-hand side, then to the third snap link on the right-hand side again, then to the fourth snap link on the left-hand side, and so on. Tie the rope once you come to the last snap link.

With the first rope, only half of the snap links are used, as the remaining half will be used with the second rope. Keep the rope snug as it is being installed, a final tightening will be done later.

The rope procedure is repeated for the opposite set of snap links. If the first rope was started on the front right corner, the second rope should be started on the front left corner and so on. Tie the rope once you come to the last snap link.

Once the ropes are in place, a team of two people can tighten each rope. Working from the starting point of the rope, pull through the snap links snugly. Hold this tension while the team member on the opposite side of the tunnel pulls the excess rope and gets it snug. Work your way down the tunnel until you reach the end. Tie the rope again as a significant amount of slack will have been removed from the rope. Repeat this procedure for the other rope.



Step 14: Door Hardware

Parts needed:

- door handles
- door hardware package
- bungee cord

The door tubes (short pieces of pipe used to secure the door shut) are installed over the wirelock. Drill a hole all the way through the posts and fasten the door tubes with the 1/4" hex bolts. We have found a good height to be 32" from the bottom of the door post. This is where the main door "lock" is dropped into. Approximately 12" higher on the door post, install the D handle with large tek screws through the wire lock extrusion. On the inside of the door, several inches below the outside door tubes, install the inside door tubes with 1/4" hex bolts.

Use the large washer and a large tek screw to fasten one side of the bungee cord to the inside of the arch approximately 5' above ground level. When the door is open, this bungee cord can be wrapped around the door post and hooked into the wire lock.

NOTE: the fork shaped lock can come out in more severe weather, so we have found it best to hold it in place with a small sandbag.



Step 15: Start Growing!

Your tunnel is now ready to use!

Whether you plan to direct seed carrots, or transplant lettuce, this tunnel will provide you with a climate to help your crops thrive. The growing experience using a tunnel differs from the outdoors, so there will be a learning curve involved. Some growers use tunnels for wind protection, while other growers use tunnels for rain protection. However, you will soon learn how your tunnel functions in your climate.

If you have any questions, comments, ideas to share, feedback to provide, or awesome pictures you would like our team to see, please send them to mail@growhoops.ca

Maintenance

Just like every other piece of equipment or infrastructure that you own, a tunnel needs maintenance. The three key areas of maintenance are poly, rope, and fasteners/bolts.

Poly

Properly caring for the poly will increase its useful life, given reasonable circumstances. The amount of attention needed to care for the poly really depends on your context. In windy climates, the poly should be given a quick inspection before and after each severe windstorm. The wind will rock your tunnel, which can cause wear on the plastic. If holes are noticed in the plastic, try to patch them as soon as possible. We use 3M All Weather Flashing Tape to repair holes on our poly as we have found it to be a superior product for poly repair. While checking the poly, also ensure that all the wirelock wires are still laying properly in the wirelock extrusions.

Removing the poly during the winter can also help prevent premature wear if you do not intend to use your tunnel for winter growing. Store your plastic as clean and dry as possible.

Rope

The main purpose of the rope is to keep the plastic tight, so it does not flap in the wind. Over time, the rope will stretch, so it is good to check it periodically. Especially consider checking the tension on the rope before any major storm is expected.

It is possible that the rope starts to fray. This can merely be due to the age of your rope, or from a point of infliction. If it is due to some point of infliction, ensure that the problem is solved before you repair the rope, because otherwise you will have a recurring problem. Replace the damaged rope or repair it by removing the section of damaged rope. If the rope is being replaced, ensure that the new rope is of equivalent or superior quality.

Fasteners

It is a good idea to double check all the tek screws and bolts once your structure is complete. Additionally, check the screws and bolts periodically to ensure they are still holding everything securely in place. Replace or tighten the screws and bolts as needed. Severe weather events can damage the fasteners and also damage screws and bolts, so check your tunnel after such events. Over time, rust can weaken screws and bolts, in which case they should also be replaced.