Caterpillar Tunnel
14-FT WIDE, 17-GAUGE STEEL BOWS
ASSEMBLY AND INSTRUCTION MANUAL

Watch the video!
Scan the code or visit: fmfr.io/tunnel/v
I just want to say a personal “Thank You” for doing business with us. Our team has worked hard to develop the best caterpillar tunnel on the market, and I’m excited to share it with you!

I grew up on a small farm so I know firsthand how hard each of you works at what you do; market gardening is not for the faint of heart. I also know how important it is to have the right tools for the job. My goal at Farmers Friend is to make well-designed, high-quality tools to improve your efficiency, profitability and quality of life.

I see us all on the same team. You are growing the food and flowers to make our world a healthier, happier place, and we are developing the tools to make your work more productive and enjoyable. Your success is our success.

From the whole team here at Farmers Friend, I want to wish you a happy and extended growing season. May your days be filled with more veggies and flowers and less stress!

Thank you again for your trust in us.

Jonathan Dysinger,
Owner & Chief Innovator

P.S. Don’t hesitate to contact us with ideas on how we can make your work more enjoyable.
1. **Install EZ-Clip to anchor plate and then slide anchor plate over rebar.** (Rebar may mushroom after pounding them into the ground, making it difficult to install anchor plates afterwards.)

2. **Drive rebar in the ground leaving 12-15 inches above the ground at distances specified in Table 1.** Pick a corner point on one side and drive rebar 1. On the same side measure the tunnel length (50-ft or 100-ft) and drive rebar 2. String from 1 to 2 for a straight line. **SEE FIGURE 1.** Drive the remaining rebar at the appropriate spacing along the string.

3. Measure 14 feet from each corner. Then measure distance of 1 to 3 (50-ft or 100-ft). Repeat step above. For most precise placement, make measurements from 1 to 3 and 2 to 3 and adjust stakes 1 and 3 until both diagonal measurements match.

**Tools Needed**
- Tape Measure
- Sledge Hammer
- String

**Materials Included**
- EZ-Clips
- Anchor Plates
- Rebar Stakes

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**ANCHORING**

**Ground Posts**

1. **Mark greenhouse corners.** With a rock or some other object, mark general position of greenhouse corners.

2. **Make batter boards for a string grid.** Cut 24 batter boards at 24 inches each from six 2" × 4" × 8’ boards. Screw three batten boards together. **SEE FIGURE 2 ON PG. 4**

3. **Install batter boards.** Drive batter board frame into the ground making sure the top is twelve inches above the ground and level. Repeat for all four corners. **SEE FIGURE 3 ON PG. 4**

4. **String batter boards to create rectangle grid, then square.** Connect parallel boards with string held in place by a weight on each end. **SEE FIGURE 4 ON PG. 5**

**Tools Needed**
- Permanent Marker
- Saw
- Drill
- Tape Measure
- Sledge Hammer
- String
- Post Hole Digger
- Level
- 1/2" Wrench
- Ground Post Driver*

**Materials Needed**
- 6 - 2" × 4" × 8’ Boards
- 1½" Wood Screws
- Concrete Mix

**Materials Included**
- Self-Tapping Screws
- Nuts and Bolts
- Brace Bands
- EZ-Clips
- 17-gauge Ground Posts

*Ground post driver sold separately
5. Check your angles with the 3-4-5 rule. Measure three feet from the string intersection on one line, and four feet on the other and mark both points. Adjust strings so the measure from mark to mark is five feet. Repeat for each corner. All diagonal measurements should match. **See Figure 4.**

6. Secure strings on batter board by marking position with nail and wrapping.

7. Mark string every four or five feet:* Dig holes where you plan to add concrete for posts. We recommend concreting at least every other post, starting from the corners. You may choose more or less concrete depending on soil structure and wind exposure. **See Table 3 and Figure 4.**

8. Mark posts for depth line. Mark each post according to **Table 4.** One side of your tunnel must have the swaged ends of the posts facing up and the other side must face down. Mark posts accordingly. **See Comparison on Left.**

9. Mix concrete, pour into hole, and insert post. Concrete should be loose but not soupy and about four inches below soil surface. Push post into concrete until the mark on the post is level with the string line. Plumb with level.

10. Drive remaining posts into ground. Place ground post driver in top of post. Drive post a few inches, then check for plumb. Continue until line on post is level with string line.

11. Add fill dirt. Fill in around cemented posts after concrete has set.

12. Install brace bands. Slide brace bands over the posts with bolting side facing out. Installation may be easier if you spread the brace bands apart with pliers. Push brace band down to ground level.

13. Bolt EZ-Clip to brace band. With EZ-Clip and bolt in hand, place the EZ-Clip small end inside the brace band, then insert bolt through holes of brace band and EZ-Clip. Tighten bolt. * Depending on if your tunnel has four- or five-foot bow spacing.

** The depth will be determined by your specifications, but exposed post above soil line should not exceed 2 feet. Plastic will not go to ground if post exceeds these specifications.

**Table 3**

<table>
<thead>
<tr>
<th>Post Above Soil</th>
<th>Post Below Soil</th>
<th>Hole Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>36&quot;</td>
<td>40&quot;</td>
</tr>
<tr>
<td>14&quot;</td>
<td>34&quot;</td>
<td>38&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
<td>32&quot;</td>
<td>36&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>30&quot;</td>
<td>34&quot;</td>
</tr>
</tbody>
</table>

**Table 4**

<table>
<thead>
<tr>
<th>Post Above Soil</th>
<th>Mark from Top of Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>0&quot;</td>
</tr>
<tr>
<td>14&quot;</td>
<td>2&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>6&quot;</td>
</tr>
</tbody>
</table>

*Recommended

*Recommended

*Recommended

**FIGURE 3**

**FIGURE 4 (NOT TO SCALE)**

**FIGURE 2**

**TABLE 2 Distance Between Ground Posts**

<table>
<thead>
<tr>
<th>Bow Spacing</th>
<th>50-ft Tunnel</th>
<th>100-ft Tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-foot</td>
<td>50&quot;</td>
<td>48&quot;</td>
</tr>
<tr>
<td>5-foot</td>
<td>60&quot;</td>
<td>60&quot;</td>
</tr>
</tbody>
</table>
1. **Find level surface to assemble bows.** Note: If you are assembling a Gothic Pro Tunnel with cross bracing, it is easiest to attach the bracing at this point. See page 8 for instructions.

2. **Connect each bow section with one self-tapping screw in the side of each bow joint.** Three sections form one complete bow.

3. **Slide side curtain hooks onto bottom of bow with eyelets facing down to prevent damage to plastic.**

** All bow sections are swaged on one end. This allows for universal interchangeability. **SEE FIGURE 5**

**TOOLS NEEDED**
- Drill or Impact Driver
- 5/16" Driver Bit

**MATERIALS INCLUDED**
- A Side Curtain Hooks
- B Self-Tapping Screws
- C 17-gauge Classic Bow Sections
- D 17-gauge Gothic Center Bow Sections

*Only included in Gothic Tunnels

**Recommended Side Curtain Hook Placement**

**Grey lines represent bows. Colored circles indicate placement of side curtain hook.**

1. **Step 1**
2. **Step 2**
   - **Step 2.1**
   - **Step 2.2**
3. **Step 3**

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**Figure 5: Complete Bow Assembly**
**BOW ASSEMBLY**

## Cross Bracing

### Attaching cross bracing to bows is easiest when done during bow assembly on a level surface.

1. Pry brace bands open enough to slide over bows. Use two pairs of pliers for leverage.

2. Slide two brace bands onto every other Gothic bow and position 39" from peak of bow in both directions. See Figure 6.

3. Squeeze flanges back together with pliers, leaving some slack.

4. Attach cross brace to brace bands with bolt. Finger tighten nut.

5. Center cross brace in the peak, then tighten nuts.

6. Repeat process for correct number of bows. See Table 3.

### TOOLS NEEDED
- 2 Pairs of Pliers
- 1/2" Socket or Wrench

### MATERIALS INCLUDED
- A Nuts and Bolts
- B Brace Bands
- C Cross Braces

---

**TABLE 3**

<table>
<thead>
<tr>
<th>Bow Spacing</th>
<th>50-ft Tunnel</th>
<th>100-ft Tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-foot</td>
<td>6 bows</td>
<td>12 bows</td>
</tr>
<tr>
<td>5-foot</td>
<td>5 bows</td>
<td>10 bows</td>
</tr>
</tbody>
</table>

**Figure 6: Brace Band Placement**

Grey lines represent bows. Colored circles indicate bows with cross braces.
A simple irrigation solution for your Caterpillar Tunnel. Have you ever felt intimidated by the challenge of designing your own irrigation system? Or been frustrated with working around unruly lines of drip tape on your beds? We’ve been there too. The basic needs of your plants shouldn’t be complicated. **This may be the easiest irrigation system you’ve ever installed.**

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  - 100-ft kit

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**TOOL ASSEMBLY**

**Lift Kit**

**TOOLS NEEDED**

- Drill or Impact Driver
- 5/16" Driver Bit

**MATERIALS INCLUDED**

- [A] 19" 17-gauge Swaged Pipe
- [B] Self-Tapping Screws

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The Lift Kit is not to be used in conjunction with Ground Posts.

1. Insert a Lift Kit post (17-gauge swaged pipe) into bottom of each bow.
2. Connect posts with one self-tapping screw on the side of each joint. Make sure screw head is not facing out or it can cause damage to the plastic.
3. Slide the completed bows over the rebar.

   *All bows sections are swaged on one end. This means that on one side of the bow, the swaged end of the lift kit will be facing down.*

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**Watch the video!**

**SCAN THE CODE OR VISIT:**

ffmr.io/lift-kit/v
If you upgraded to the solid center purlin, you should skip this step and install the upgrade.

1. Drive two T-posts at each end of the tunnel. Pace out 10–12 feet from the center of each end. Drive two posts as close as possible together leaning away from the tunnel.

2. Slide a purlin strap clasp over one T-post at each end.

3. Insert purlin strap into clasp at one end, then wrap strapping around each bow. Using a step ladder wrap purlin strap around the top center of each bow. Ensure bows are standing up straight and strap is in a straight line down the center.

4. Insert purlin strap into clasp at the opposite end of the tunnel.

5. Pull purlin strap as tight as possible from each end.
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STRUCTURE & SUPPORT

Solid Center Purlin

TOOLS NEEDED

- Ladder
- Drill or Impact Driver
- 5/16" Driver Bit
- 7/16" Socket or Wrench
- Level (Optional)

MATERIALS INCLUDED

- Tube Strap
- Cross Connectors with Hardware
- Self-Tapping Screws
- 78" Swaged Purlin Tubes
- 75" Non-Swaged Purlin Tube

1. Assemble cross connectors. Make sure nuts are loosely threaded on bolts.

2. Place cross connectors on center of bows. Position yourself between the second and third bows and place a cross connector on each bow.

3. Slide a 78" swaged purlin tube through both connectors with swaged end facing down the tunnel.

4. Now position yourself under the first bow and slide another 78" swaged tube into the tube you just placed between the second and third bow. Slide the two sections of tube down the length of the tunnel until the purlin tube is flush with end bow.

5. Install tube strap. Use one tube strap and three self-tapping screws to attach the purlin tube to the first bow.

6. Install a self-tapping screw in each purlin tube joint. Make sure screw is facing down to avoid damage to plastic. Ensure bows are visually plumb, then tighten the cross connector.

7. Continue adding purlin tubes and cross connectors down the length of the tunnel. Adjust for center alignment as you go and add one self-tapping screw to each purlin joint. The purlin will terminate with the 75" non-swaged tube and the last tube strap on the end bow.

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STRUCTURE & SUPPORT

Trellising Kit

TOOLS NEEDED
- 2 Pairs of Pliers
- Ladder
- Drill or Impact Driver
- 1/4" Driver Bit
- 1/2" Socket or Wrench
- 3/8" Socket or Wrench

MATERIALS INCLUDED
A Stainless Steel Cable
B Cable Clamps
C Brace Bands
D Nuts and Bolts
E Self-Tapping Screws
F Thimble
G Trellis Wire Hangers

The trellising wire will be easiest to install before you attach any spring wire channel to end bows.

1. Slide brace bands over end bows. Using two pairs of pliers, pry brace bands open enough to slide over both end bows.

2. Attach trellis wire hangers on sides of bows. Ensure that hangers are centered over the bed to be trellised, then use self-tapping screws to attach to the side of each bow (except the two ends).

3. Thread cable through hangers. Pull cable off of spool and thread the end through each trellis wire hanger.

4. Attach cable loop to brace band. Locate brace band over the center of bed and attach cable loop to brace band with supplied bolt and nut. Make sure bolt is facing down to avoid snagging plastic.

5. Attach thimble to brace band at opposite end of tunnel. Make sure brace band is centered over bed then attach thimble to brace band with supplied bolt and nut. Leave room for thimble to move freely on bolt.

6. Attach cable to thimble on brace band. Insert cable end around thimble and pull tight. Secure cable using two cable clamps. The U-Bolt of all clamps should saddle dead end of cable. See Figure 7

7. Repeat above steps for any additional trellis lines.
   * Install middle trellising wire hangers next to either side of center purlin.
TOOLS NEEDED
• 2 Pairs of Pliers
• 1/2" Socket or Wrench
• Level (Optional)

MATERIALS INCLUDED
A Nuts and Bolts
B Brace Bands
C Wind Braces

1. Using two pairs of pliers, pry brace band open enough to slide over the base of BOW 3.
2. Squeeze flange back together with pliers.
3. Attach wind brace to brace band. With wind brace lying on the ground, attach to brace band with supplied bolt. Finger tighten nut. Make sure bolts face to the inside of the tunnel to avoid puncturing the plastic.
4. Slide a brace band onto BOW 2.
5. Attach other end of wind brace to brace band on BOW 2. At its natural connecting height, attach wind brace from bow three to brace band on bow two. Finger tighten nut.
6. Ensure both bows are visually plumb, then tighten nuts with 1/2" socket or wrench. A level can help with this.
7. Repeat previous steps. Begin above the connection point on BOW 2 and go up with the wind bracing to BOW 1.
8. Repeat process for remaining three corners.
1. Attach spring wire channel to the top of your tunnel. For Classic tunnels, start your top spring wire channel approximately 1½” below the bow joint and work your way over the top of the tunnel. For Gothic tunnels, start channel approximately 3” above bow joint. (Clamps can help to hold channel in place)

2. Fasten channel every 12-18 inches with self-tapping screw. Be careful not to over-torque the screws or you will strip out the bows.

3. Repeat until desired amount of channel is used. We recommend using at least one channel per end. Side ventilation will be incrementally restricted when using two or more channels. Spring wire can be removed to increase ventilation, however, repeated installing and removing of wire will wear out plastic. End walls can assist with ventilation.

4. Install spring wire into the channel after plastic is pulled over the tunnel. First insert the end and then wiggle the wire back and forth while seating into the channel.

**TOOLS NEEDED**
- Ladder
- Marker
- Tape Measure
- Clamps (Optional)
- Drill or Impact Driver
- 5/16” Driver Bit

**MATERIALS INCLUDED**
- Self-Tapping Screws
- Spring Wire Channel
- Spring Wire

[Watch the video! SCAN THE CODE OR VISIT: fmfr.io/spring-wire/v]
1. Drive two T-posts at each end of the tunnel (skip if completed on pg. 12, step 1). Pace out 10–12 feet from each end. Drive two posts as close as possible together leaning away from the tunnel.

2. Roll out plastic. Unroll plastic down one side of tunnel leaving about the same amount of extra on each end. Note: 50-ft tunnels come with 80-ft plastic; 100-ft tunnels with 130-ft plastic.

3. Pull plastic over tunnel. Avoid this step on a windy day. Ensure words on plastic can be read on the inside of the tunnel. This side is treated with anti-drip additives. If you have only one wiggle wire base channel on the end bow, it is recommended to hammer down the corners to prevent tearing plastic.

4. Secure plastic on one end between T-posts. Tie T-posts together with a few feet of rope from provided spool. Pull plastic tight from the opposite end. Repeat.

5. Install anti-billowing rope. Tie to EZ-Clip on spot 1 and pull spool to other end of tunnel. Clip into EZ-Clip on spot 2. Pull out enough rope between spot 1 and 2 to throw over tunnel. Clip into spot 3. Repeat to the end. See Figure 8

6. Tighten Rope. Have one person at spot 2 and one person at spot 4. Person at spot 2 will pull rope down with left hand while person at spot 4 will pull rope down with right hand. While spot 2 is holding tension, person at spot 2 will proceed to spot 6 and repeat process all the way to end. Tie rope at end of tunnel. For 50-ft tunnels, pull out an extra 25’ of rope and cut. The extra will be helpful if tunnel is moved.

7. Rope tension should be firm. If slack, plastic will billow.

8. Repeat on the other side with remaining rope or spool.
**Covering**

**Shade Cloth**

1. **Install corner shade cloth clips.** Attach clips at four corners.
2. **Pull shade cloth over tunnel and tie to corners.** On corners 1 and 2, tie rope between clip and EZ-Clip (2-ft rope with no lift kit and 3-ft rope with lift kit). Tie long rope to clips on corners 3 and 4 and pull shade cloth across bows or plastic. Tie rope between clip and EZ-Clip on corners C and D. **SEE FIGURE 9**
3. **Install remaining clips on shade cloth and secure.**
   - **Method 1:** Attach clips to cloth between bows. Tie rope to corner 1 EZ-Clip and run through clips to corner 2 EZ-Clip. Starting at corner 1 pull rope down to EZ-Clips between clips. Pull rope tight and tie off corner 2. Repeat on other side.
   - **Method 2:** Attach clips to cloth at each bow. Tie rope from each clip to EZ-Clip below.
4. **Wiggle wire shade cloth to end bows (Optional).** Keep existing wiggle wire, used to secure plastic, in channel. Additional wiggle wires can be used on top of existing wiggle wires to secure shade cloth for high wind.
5. **Secure shade cloth to T-posts (Optional).** Attach 1–3 clips to shade cloth ends. Pull tight and tie rope from clips to T-posts.

**Suggested tools**
- Ladder
- Rope

**Materials included**
- A Shade Cloth
- B Shade Cloth Clips

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**Shade Cloth**

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5. **Secure shade cloth to T-posts (Optional).** Attach 1–3 clips to shade cloth ends. Pull tight and tie rope from clips to T-posts.