

Pyroweeder

ASSEMBLY AND INSTRUCTION MANUAL



↑ Pictured: Pyroweeder 30 with optional Flame Blade

Watch the video!

Scan the code or visit: fflc.us/pyro/s



Farmers
FRIEND



The Flame Weeder, Refined



Pyroweeder 30

Tank-mounted Valve



Pyroweeder 48

Tank-mounted Valve



Pyroweeder 30

Handle-mounted Valve



Pyroweeder 48

Handle-mounted Valve

Safety

IMPORTANT WARNINGS

1. Read all safety instructions before first use.
2. The Pyroweeder is intended for agricultural weed management only.
3. Propane is extremely flammable. Before each use, inspect hoses, valves, and connections for damage or leaks.
4. Carbon monoxide gas is a poison—it can kill. Since it is colorless and odorless, it is especially dangerous. Incomplete propane combustion will produce carbon monoxide; you can recognize incomplete combustion by a yellow flame. On the other hand, complete combustion produces a blue flame. To operate the Pyroweeder safely, adjust the pressure and control valve to avoid a yellow flame—make it blue. Symptoms of carbon monoxide poisoning include headache, weakness, dizziness, nausea, vomiting, confusion, and fatigue. If you have reason to believe that you or anyone else has carbon monoxide poisoning, move to fresh air and seek immediate emergency medical care.
5. Prevent wildfires by complying with local burn bans.
6. Practice fire safety—do not use on dry grass, leaves, or brush, or during high fire-risk conditions.
7. Do not operate in high-wind conditions.
8. Do not operate indoors or in an enclosed space.
9. Do not allow a child to operate the Pyroweeder.
10. Do not operate the Pyroweeder if your coordination, balance, or judgment are impaired by any medication, alcohol, or drug.
11. Do not store propane tanks indoors. Store propane in a cool, well-ventilated outdoor location.
12. Do not allow the Pyroweeder to tilt back onto its handle while it is operating.

FOR YOUR SAFETY

1. Protect your feet—always wear shoes when operating the Pyroweeder.
2. Take safety precautions around children, pets, and small animals.
3. Keep hands and feet away from burners while the machine is operating. Flame may not be visible in bright sunlight. The burner flames are most visible when the Pyroweeder is operated during lower light conditions, such as at dawn or dusk.
4. Close the propane-tank valve when not in use.
5. Be prepared to promptly ignite the propane upon opening the control valve for use. Do not allow prolonged propane flow to un-ignited burners. If excessive unburned propane flow occurs, close the control valve and wait for the propane to dissipate before attempting to ignite the burners.
6. Keep the propane tank upright while operating the Pyroweeder. It is recommended that you use at least two bungee cords to secure the tank against the tank brace.



I just want to say a personal “Thank You” for purchasing our Pyroweeder. Our team has worked hard to develop a better flame weeder 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. Our 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 to live, and we are developing the tools to make your work more productive and enjoyable. Your success is our success! Keep up the good work you are doing and we will remain focused on supporting you with quality tools.

From the whole team here at Farmers Friend, I want to wish you happy and safe flame weeding. May your days be filled with more veggies and flowers and less weeds! Thank you again for your trust in us.

Jonathan

Jonathan Dysinger
Owner & Chief Innovator



PS Don’t hesitate to contact us with ideas on how we can make your work more enjoyable.

Thread Galling

Stainless-steel nuts and bolts are especially prone to a frustrating problem—thread galling. As the nut is tightened on the bolt, friction between the contacting surfaces may cause portions of the threads to break down and “cold weld” together. In the most severe cases of thread galling, the nut and bolt will be completely jammed and can only be separated by breaking the bolt or cutting the nut.

Thread galling can be minimized by using a thread lubricant when tightening threaded stainless-steel fasteners. **Don't force** a nut that resists tightening before it is under tension; loosen and try lubricating the threads again before proceeding.

Thread galling is not caused by defective parts. Thread galling on stainless steel fasteners can be minimized, but it cannot be completely prevented.

We have included a small pouch of thread lubricant; we encourage you to use thread lubricant on all threads as you assemble your Pyroweeder.



Tools and Parts Needed

A 20-lb propane tank

Optional*

B $1\frac{5}{16}$ " wrench or socket or adjustable wrench

C $\frac{9}{16}$ " wrench or socket

D $\frac{7}{16}$ " wrench or socket

*The included Pyroweeder Wrench can be used to assemble the Pyroweeder.



This kit includes:

- A** 2 × Bungee Cords
- B** 1 × Handle
- C** 1 × Tank Brace
- D** 1 × Long Bar
- E** 1 × Short Bar
- F** 1 × Tool Bar (pre-assembled)
- G** 1 × Angled Lower Handle Tie
- H** 1 × Straight Lower Handle Tie
- I** 1 × Striker
- J** 2 × Wheels
- K** 2 × Burner Ties
- L** 1 × Hook-and-Loop Strap



- M** 1 × Burner Assembly (*handle-mounted valve pictured*)
- N** 1 × Pyroweeder Wrench
- O** 2 × 3/8"-16 Nuts
- P** 2 × 1/4"-20 Wing Nuts
- Q** 1 × Thread Lubricant
- R** 2 × 3/8"-16, 3" Carriage Bolts
- S** 2 × 1/4"-20, 1 3/4" Carriage Bolts
- T** 8 × 1/4"-20, 1 1/2" Carriage Bolts
- U** 10 × 1/4"-20, 1" Carriage Bolts
- V** 2 × 1/4"-20, 1 3/4" Hex Bolt
- W** 2 × 1/4" Lock Washers
- X** 8 × 1/4" Washers
- Y** 2 × 3/8" Washers
- Z** 12 × 1/4" Oversize Washers
- AA** 4 × 1/4"-20 Locknuts
- AB** 16 × 1/4"-20 Nuts

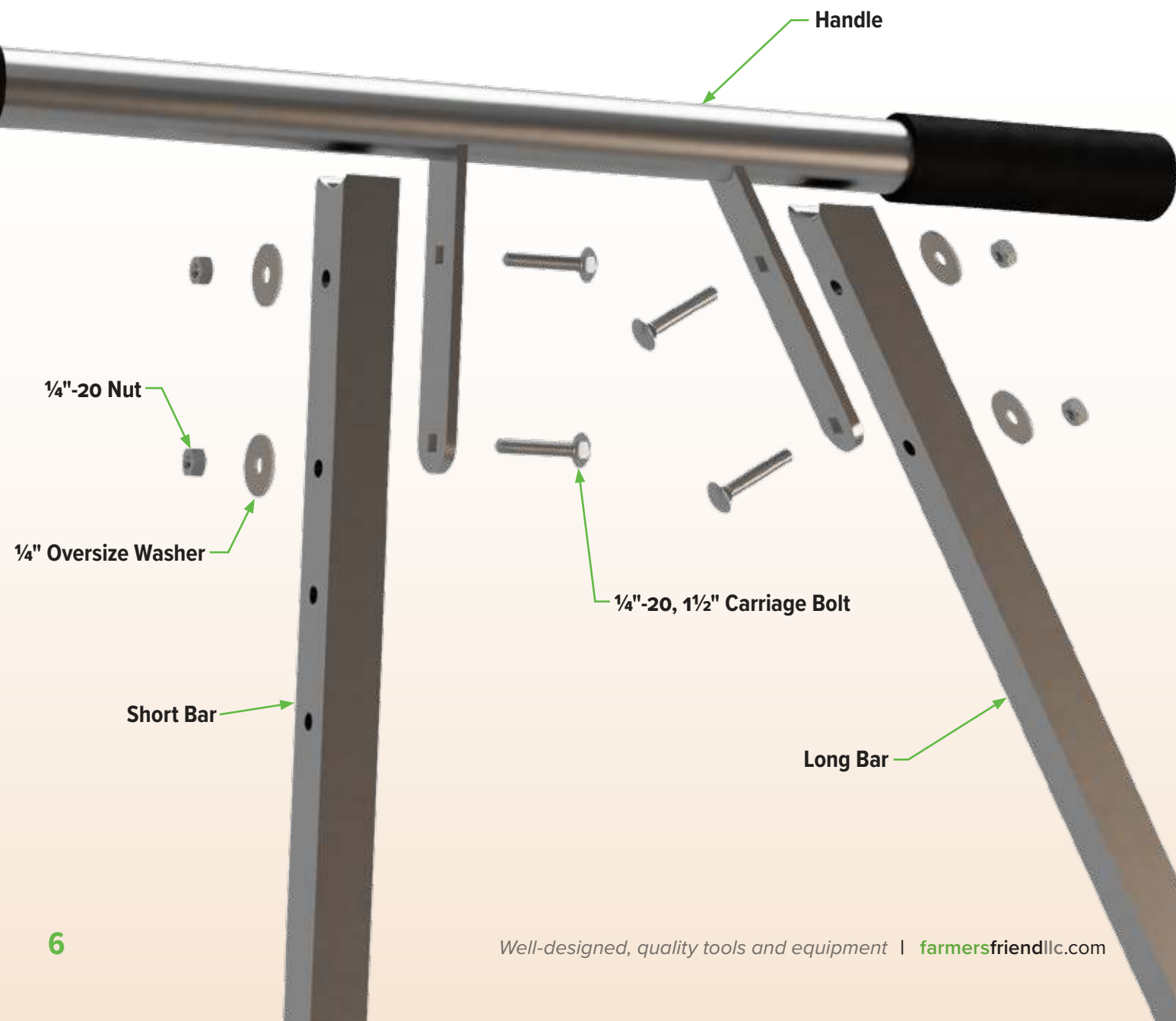


STEP 1 Upper Handle Assembly

PARTS NEEDED

- 1 × Handle
- 1 × Short Bar
- 1 × Long Bar
- 4 × ¼"-20, 1½" Carriage Bolts
- 4 × ¼" Oversize Washers
- 4 × ¼"-20 Nuts

1. Attach the concave ends of the rectangular bars to the handle as shown. (Attach the longer bar to the angled handle tie.)
2. Tighten the bolts just enough so that the bars are firmly attached. **Do not over tighten.**

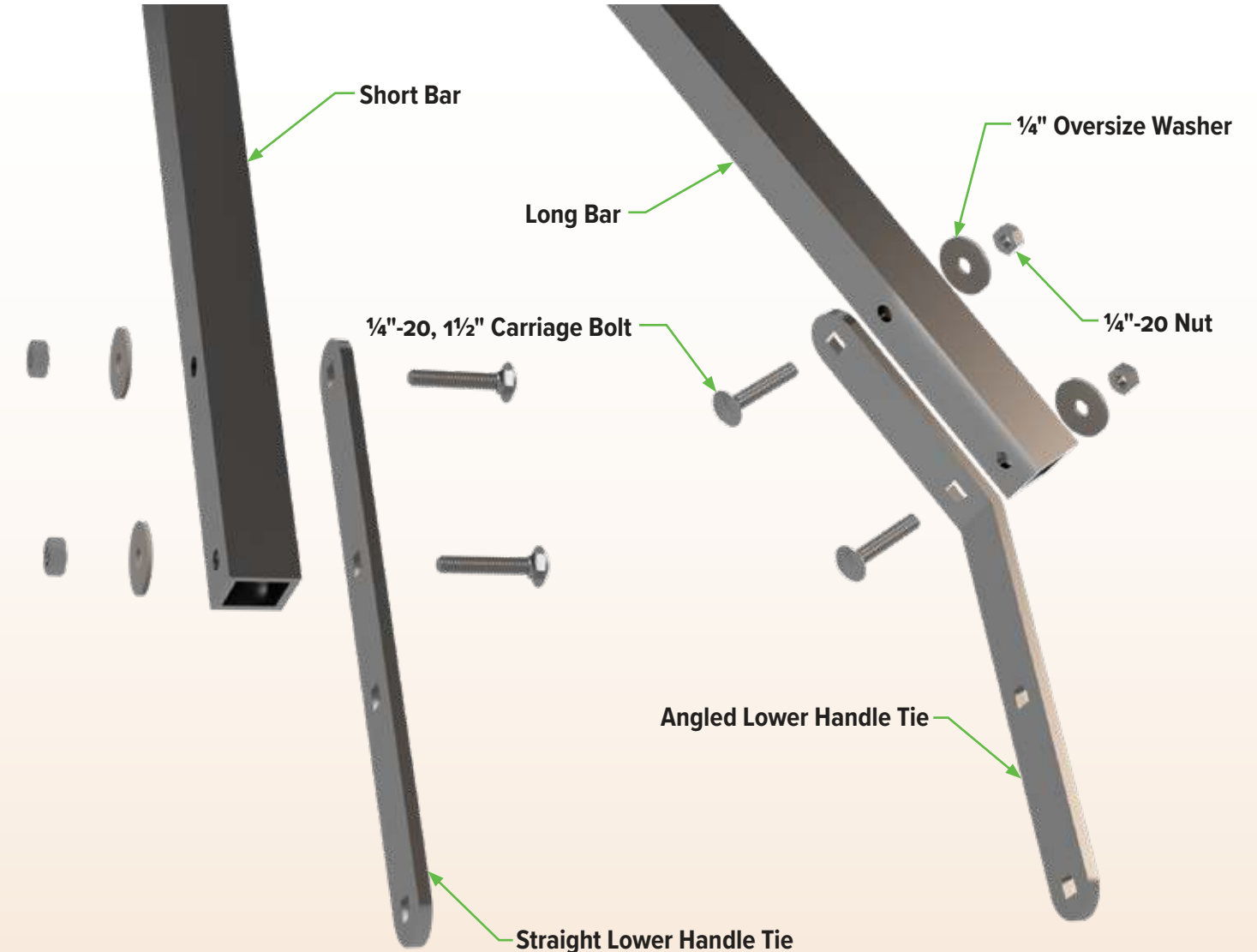


STEP 2 Handle Assembly

PARTS NEEDED

- 1 × Upper Handle Assembly (from Step 1)
- 1 × Straight Lower Handle Tie
- 1 × Angled Lower Handle Tie
- 4 × ¼"-20, 1½" Carriage Bolts
- 4 × ¼" Oversize Washers
- 4 × ¼"-20 Nuts

1. Attach the **Straight Lower Handle Tie** and the **Angled Lower Handle Tie** to the square ends of the rectangular bars as shown. (Attach the straight handle tie to the short bar and the angled handle tie to the long bar.)
2. Tighten the bolts just enough so that the bars are firmly attached. **Do not over tighten.**



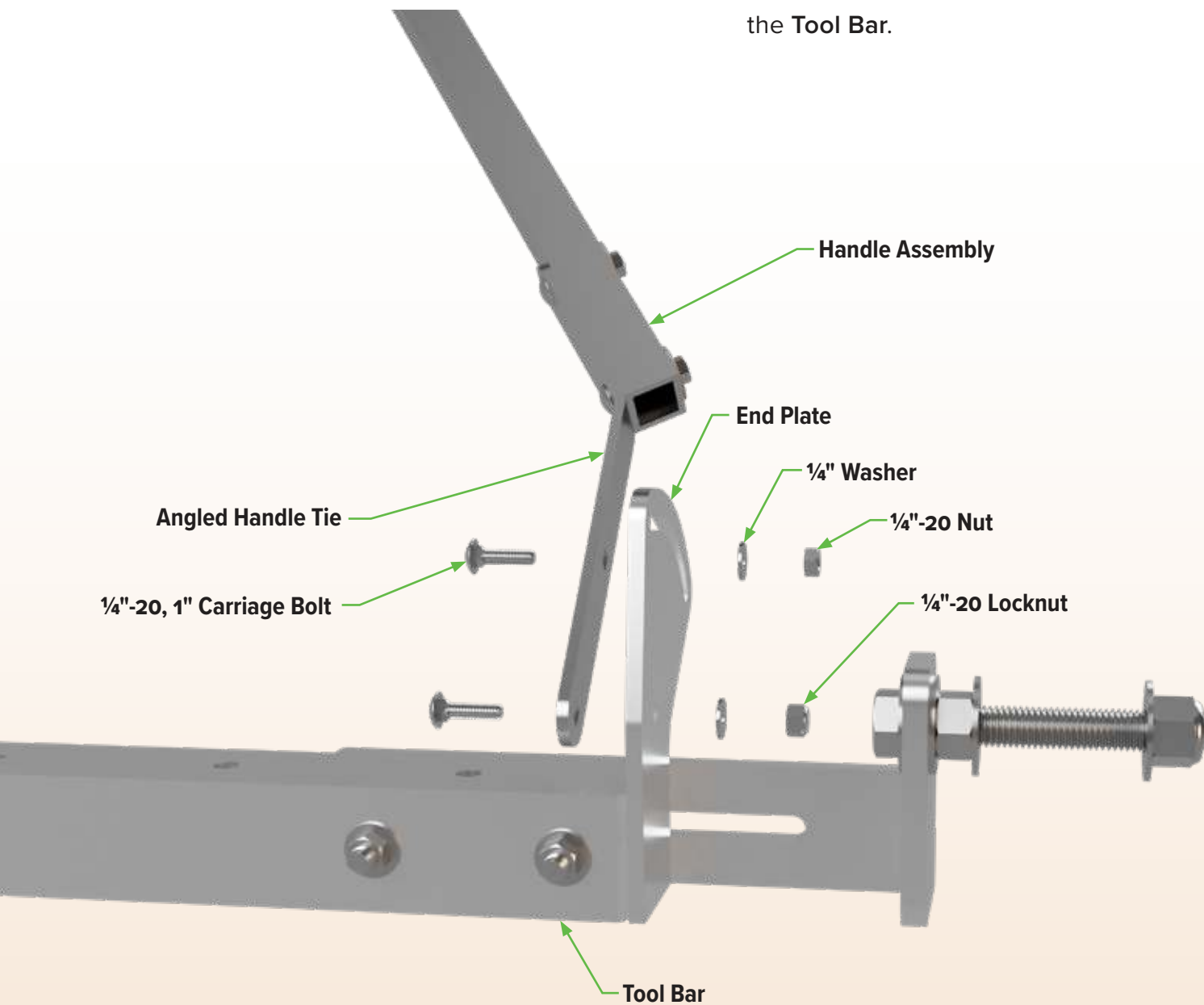
STEP 3

Tool Bar and Handle Assembly

PARTS NEEDED

- 1 × Handle Assembly (from **Step 2**)
- 1 × Tool Bar
- 4 × ¼"-20, 1" Carriage Bolts
- 4 × ¼" Washers
- 2 × ¼"-20 Locknuts
- 2 × ¼"-20 Nuts

1. Attach the **Tool Bar and Handle Assembly** as shown below.
2. Tighten the locknut far enough so that the handle tie is lightly pressing against the **End Plate** of the **Tool Bar**, but not so tight that the handle can not swivel.
3. Repeat this step on the opposite side of the **Tool Bar**.



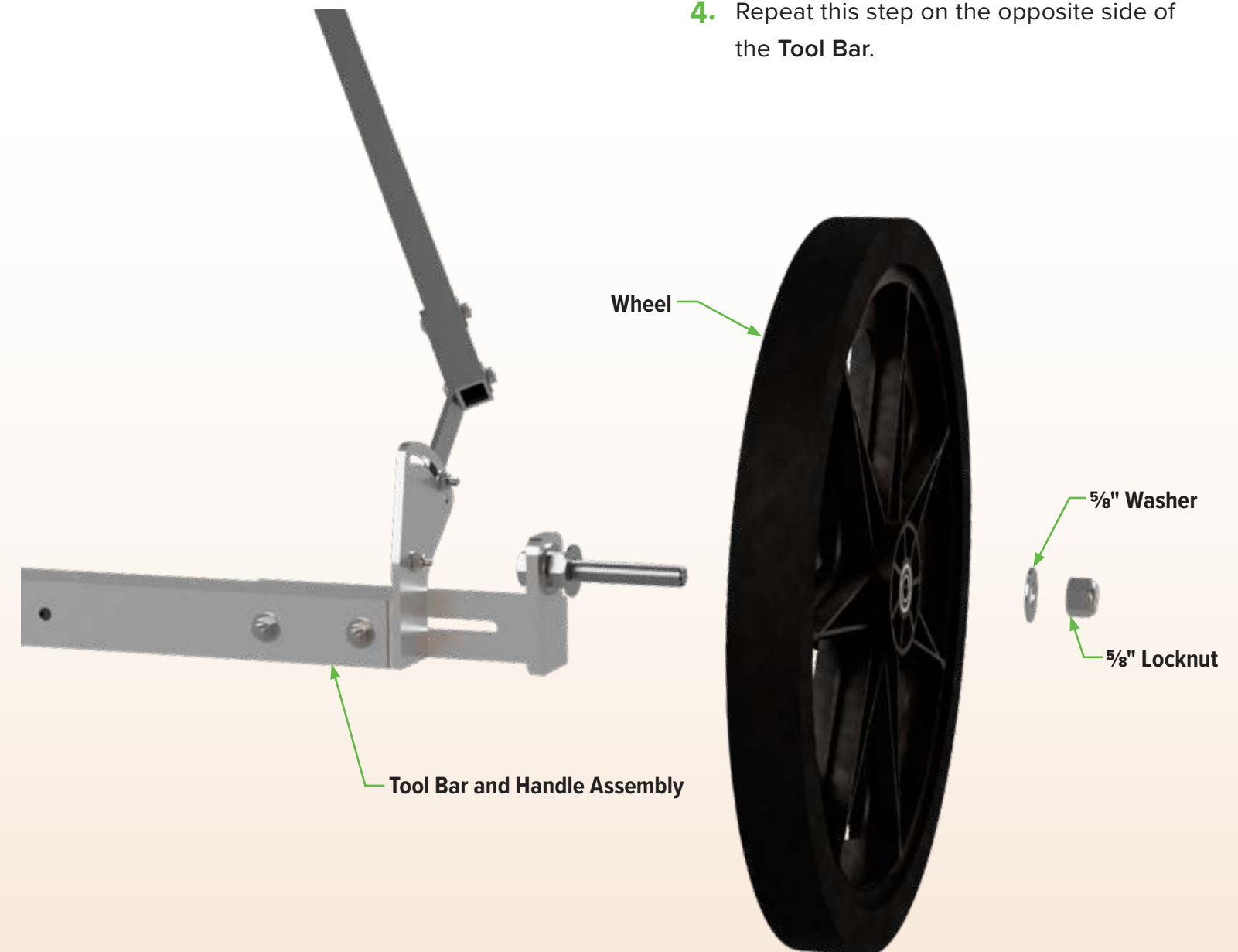
STEP 4

Tool Cart

PARTS NEEDED

- 1 × Tool Bar and Handle Assembly (from **Step 3**)
- 2 × Wheels

1. Remove the ⅝" locknut and one washer from the axle bolt.
2. Mount the wheel onto the axle bolt and replace the washer and locknut as shown.
3. Tighten the locknut just enough so that the washers are lightly pressed against the wheel. **Do not over tighten.**
4. Repeat this step on the opposite side of the **Tool Bar**.



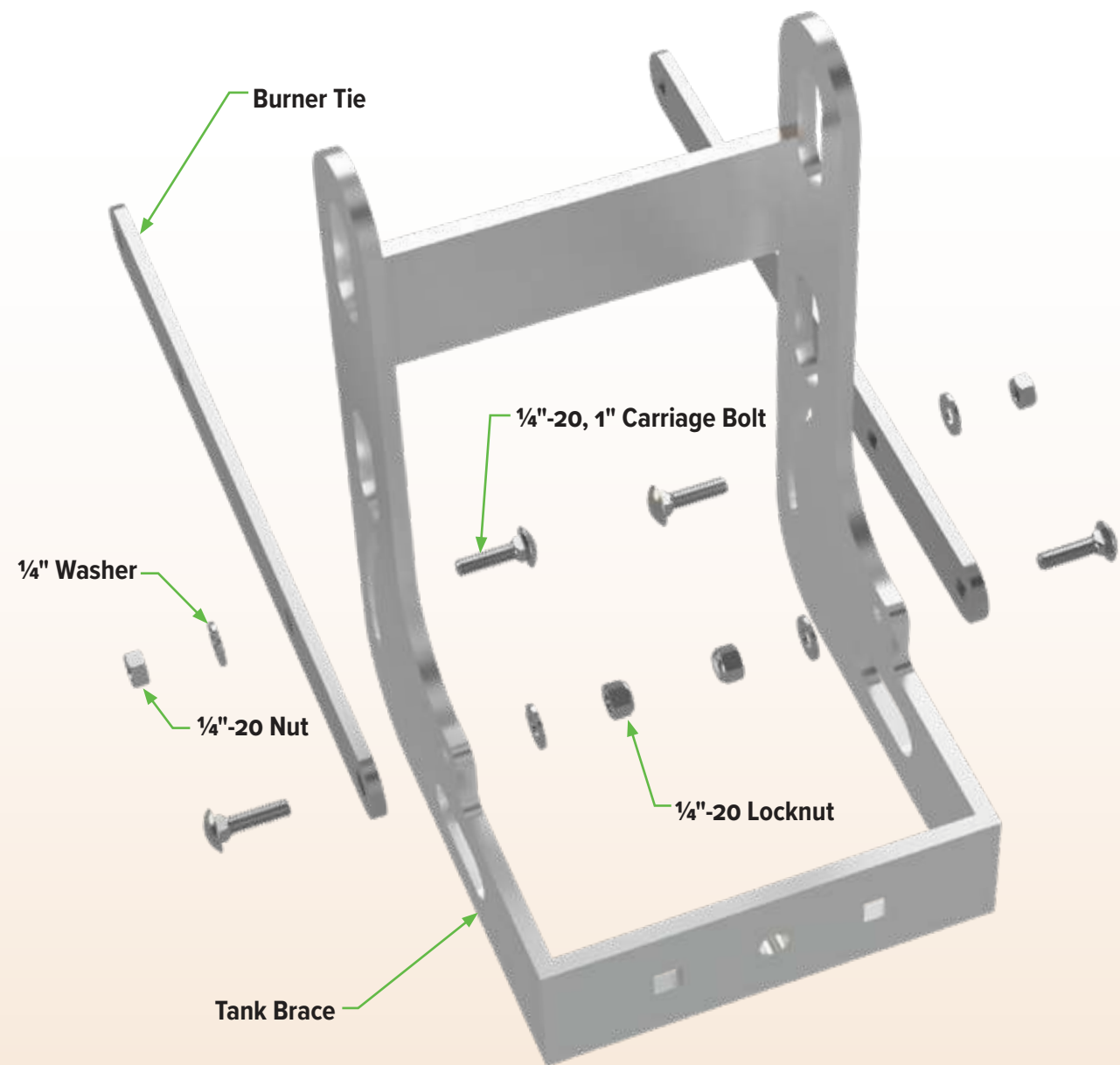
STEP 5

Tank Brace Assembly

PARTS NEEDED

- 1 × Tank Brace
- 2 × Burner Ties
- 4 × ¼"-20, 1" Carriage Bolts
- 4 × ¼" Washers
- 2 × ¼"-20 Locknuts
- 2 × ¼"-20 Nuts

1. Attach the **Burner Ties** to the **Tank Brace** as shown.
2. Tighten the locknuts just enough so that the **Burner Ties** are lightly pressing against the **Tank Brace** and can still swivel.



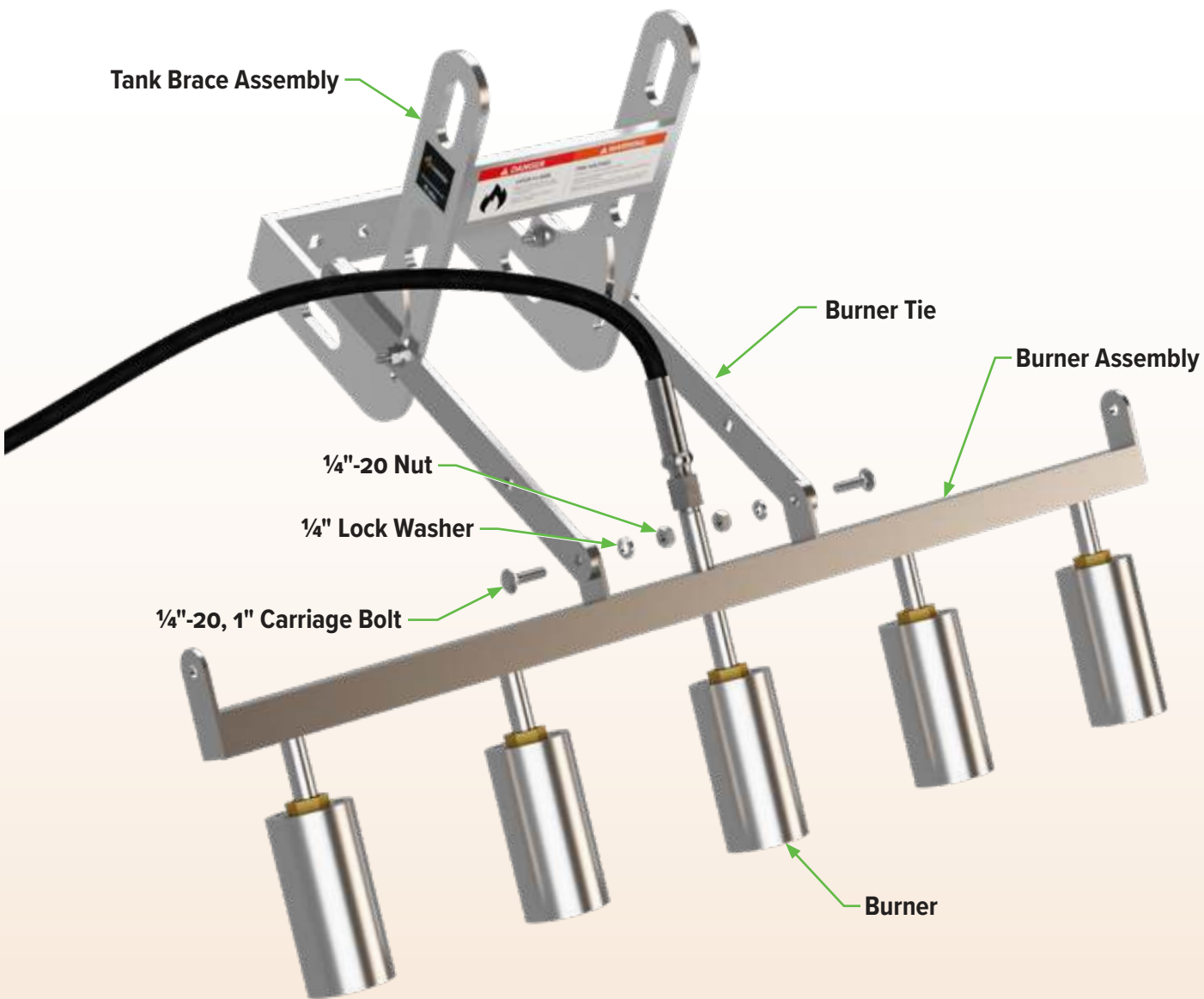
STEP 6

Flame Weeder Implement

PARTS NEEDED

- 1 × Tank Brace Assembly (from **Step 5**)
- 1 × Burner Assembly (Regulator and Control Valve not shown)
- 2 × ¼" Lock Washers
- 2 × ¼"-20 Nuts
- 2 × ¼"-20, 1" Carriage Bolts

1. Attach the **Burner Assembly** to the **Burner Ties** as shown.
2. Adjust the angle so that the burners point forward and downward at about a 45° angle. Tighten the nuts until the burners hold their position.



↑ Pictured: Five-burner, Pyroweeder 30 model

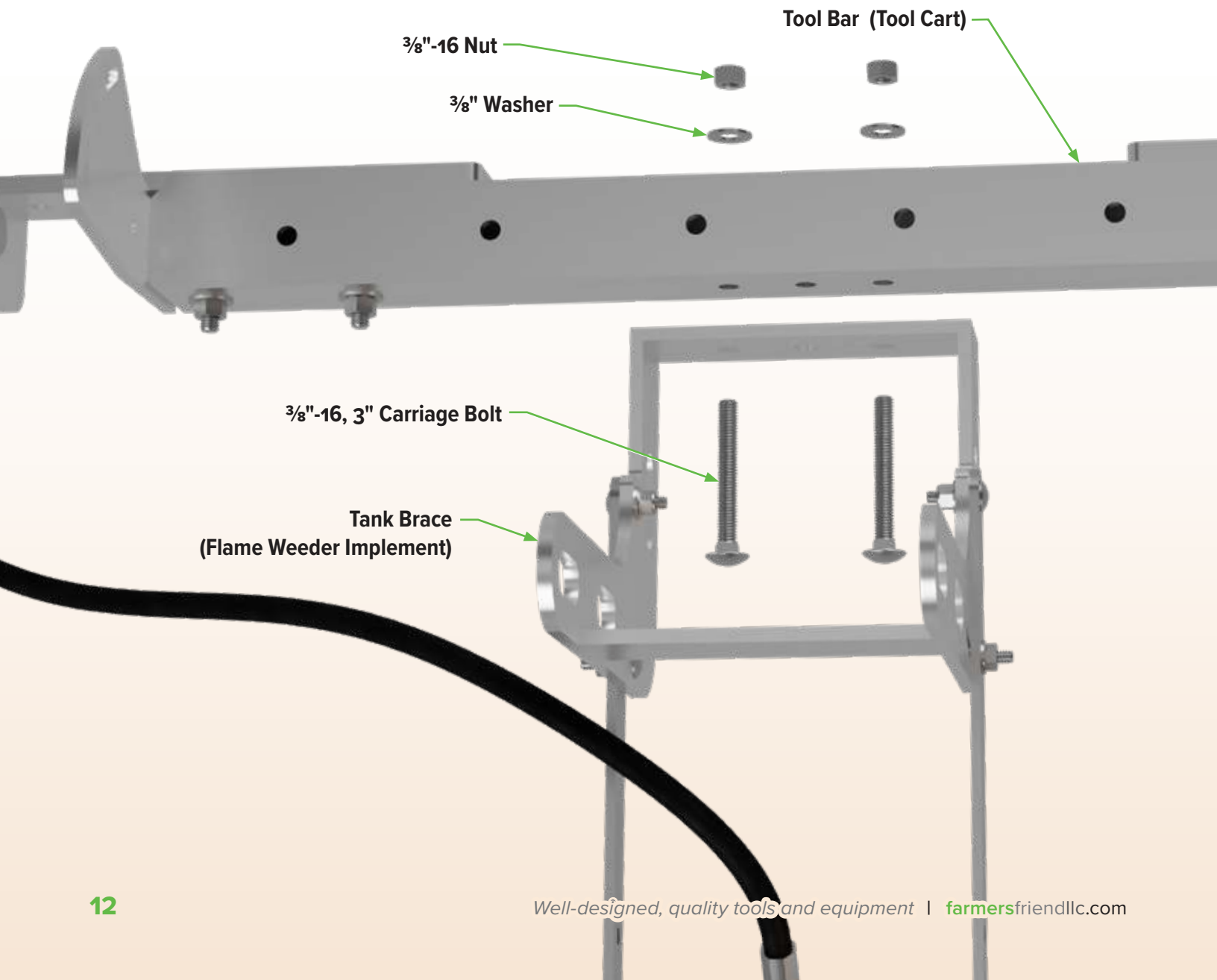
STEP 7

Attaching Flame Weeder Implement

PARTS NEEDED

- 1 x Tool Cart (from **Step 4**)
- 1 x Flame Weeder Implement (from **Step 6**)
- 2 x 3/8"-16, 3" Carriage Bolts
- 2 x 3/8"-16 Nuts
- 2 x 3/8" Washers

1. Attach the **Flame Weeder Implement** to the front of the **Tool Bar** as shown.



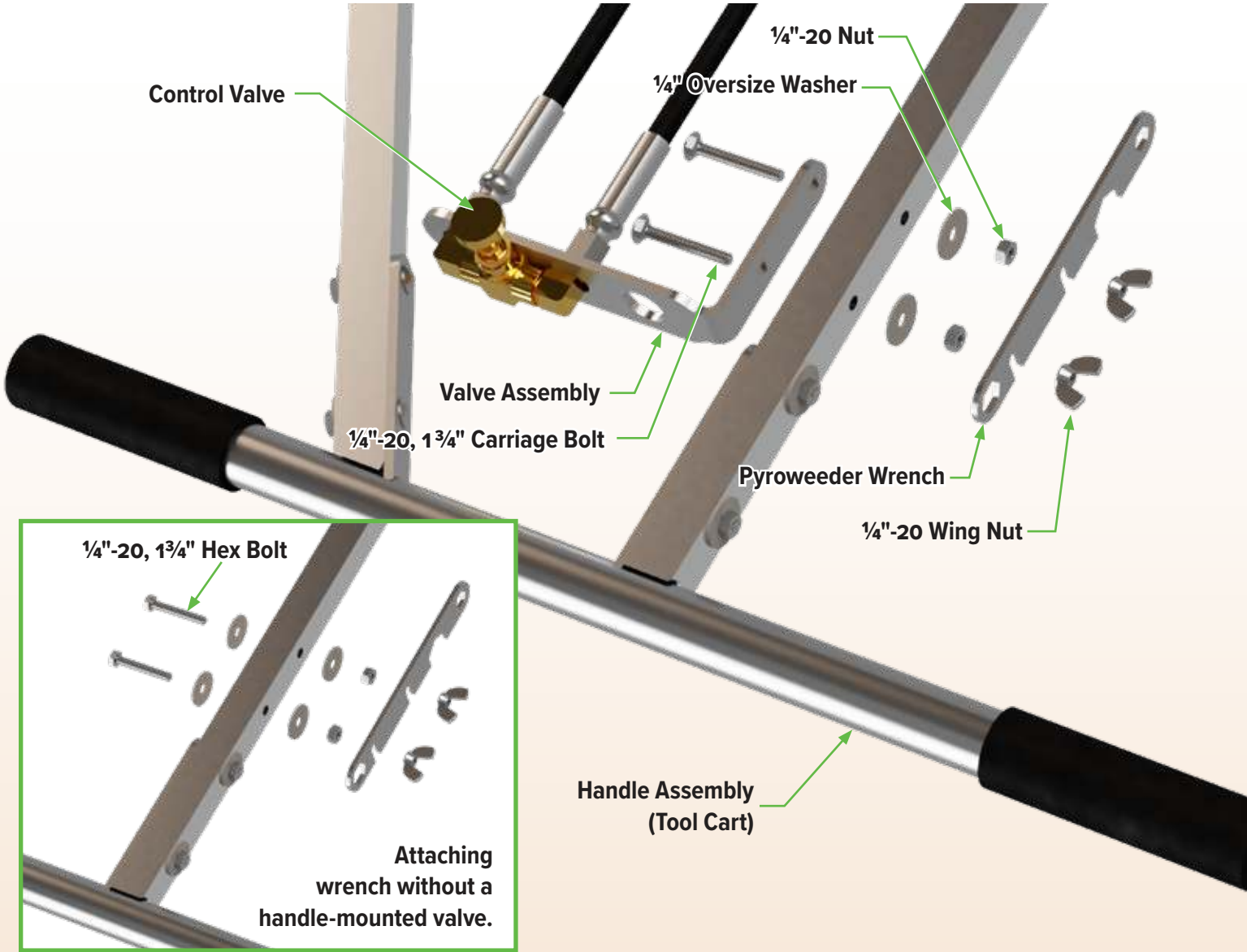
STEP 8

Attaching Valve Assembly

PARTS NEEDED

- 1 x Tool Cart (from **Step 4**)
- 1 x Valve Assembly (Flame Weeder Implement, from **Step 6**)
- 2 x 1/4"-20, 1 3/4" Carriage Bolts
- 2 x 1/4" Oversize Washers
- 2 x 1/4"-20 Nuts
- 2 x 1/4"-20 Wing Nuts
- 1 x Pyroweeder Wrench

1. Attach the **Valve Assembly** to the **Handle Assembly** as shown, placing the **Pyroweeder Wrench** under the 1/4"-20 Wing Nuts.
2. You may occasionally need to adjust or tighten nuts as you work with your Pyroweeder. The **Pyroweeder Wrench** is attached near the handle so that it is available at any time. For in-field adjustments, loosen the wing nuts and temporarily remove the Pyroweeder Wrench.



Attaching Propane Tank and Regulator

PARTS NEEDED

- 2 × Bungee Cords
- 1 × Regulator (Flame Weeder Implement, from **Step 6**)
- 1 × 20-lb Propane Tank (not included)
- 1 × Hook-and-Loop Strap



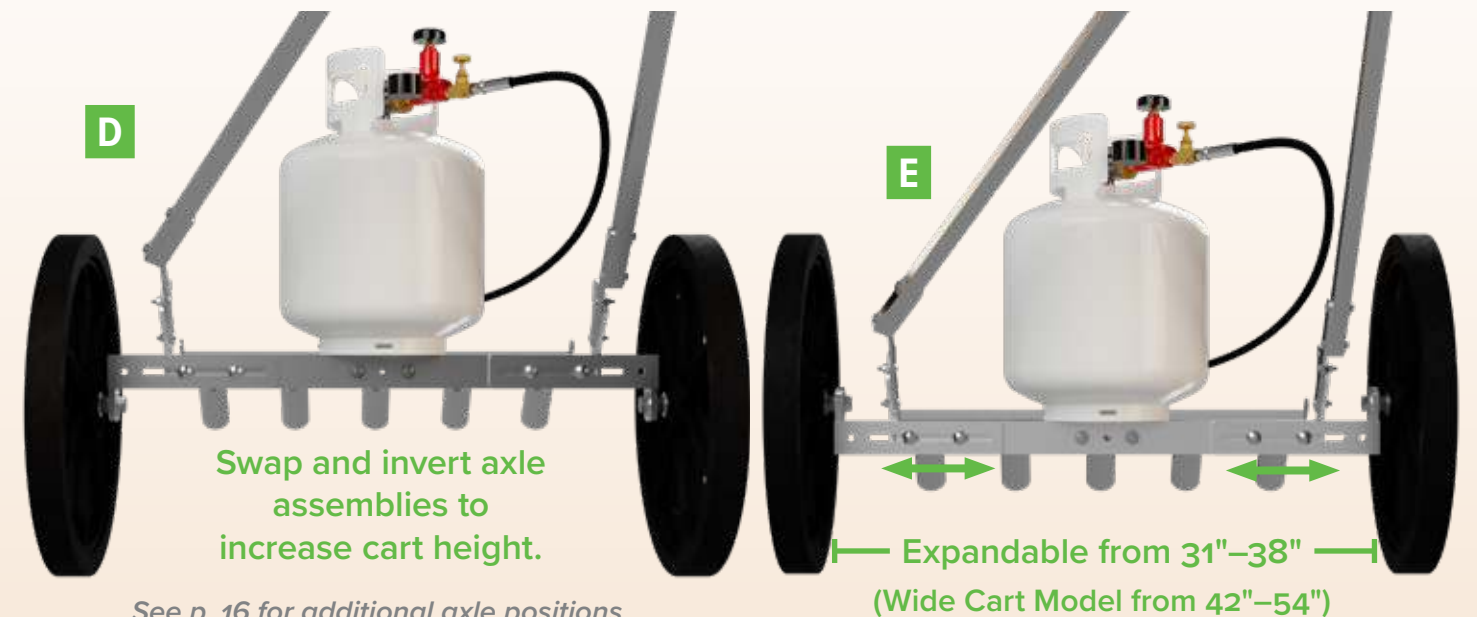
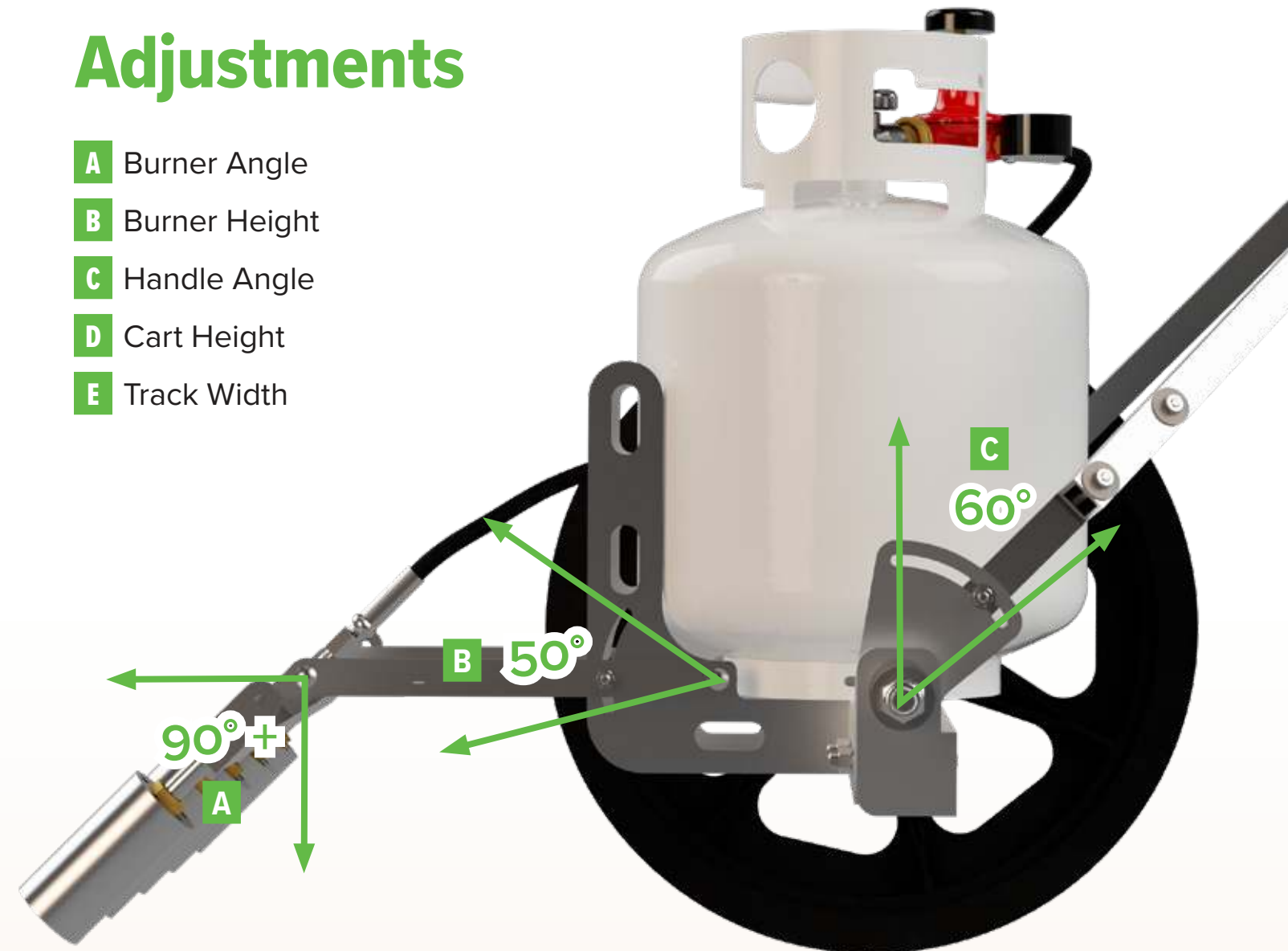
1. Strap the 20-lb propane tank (not included) to the tank brace as shown. One bungee is insufficient to securely hold the tank—use two bungees.
2. Attach the **Regulator** to the propane tank valve as shown. Hand tighten the connector. The **Regulator** assembly attaches to the propane tank valve with a left-hand thread. Tighten with a counterclockwise turn.
3. Towards the lower end of the short bar, wrap the hoses and the bar with the **Hook-and-Loop Strap** so that the hoses are held neatly in place.
4. Propane pressure can be adjusted using the black knob on the **Regulator**. Try 20 psi to start.



↑ Pictured: Handle-mounted valve

Adjustments

- A** Burner Angle
- B** Burner Height
- C** Handle Angle
- D** Cart Height
- E** Track Width



See p. 16 for additional axle positions.

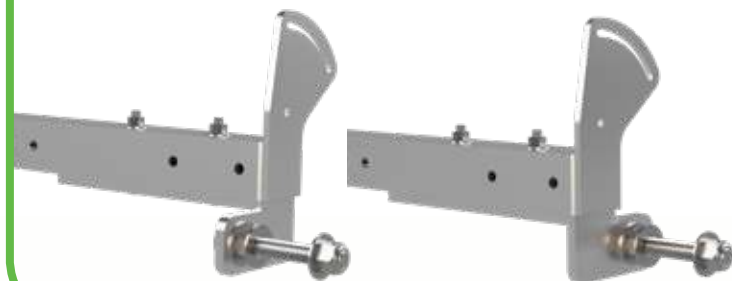
Axle Positions

Below is shown the possible axle positions. Axle position adjustment allows for **change in height** and **front-to-back balance** of the Pyroweeder. Swap left and right axles for some of the illustrated positions. (Ships in position **L2**.) Try positions **L1** or **H1** when using the Flame Blade. In positions **L3** and **H3** the Pyroweeder will tend to be more front heavy which some may prefer.

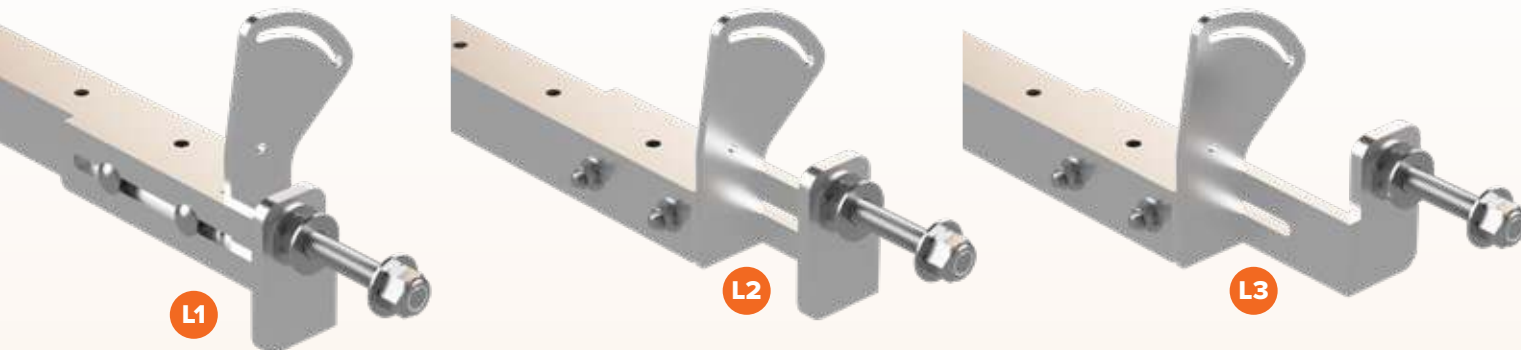


Narrower Wheel Track

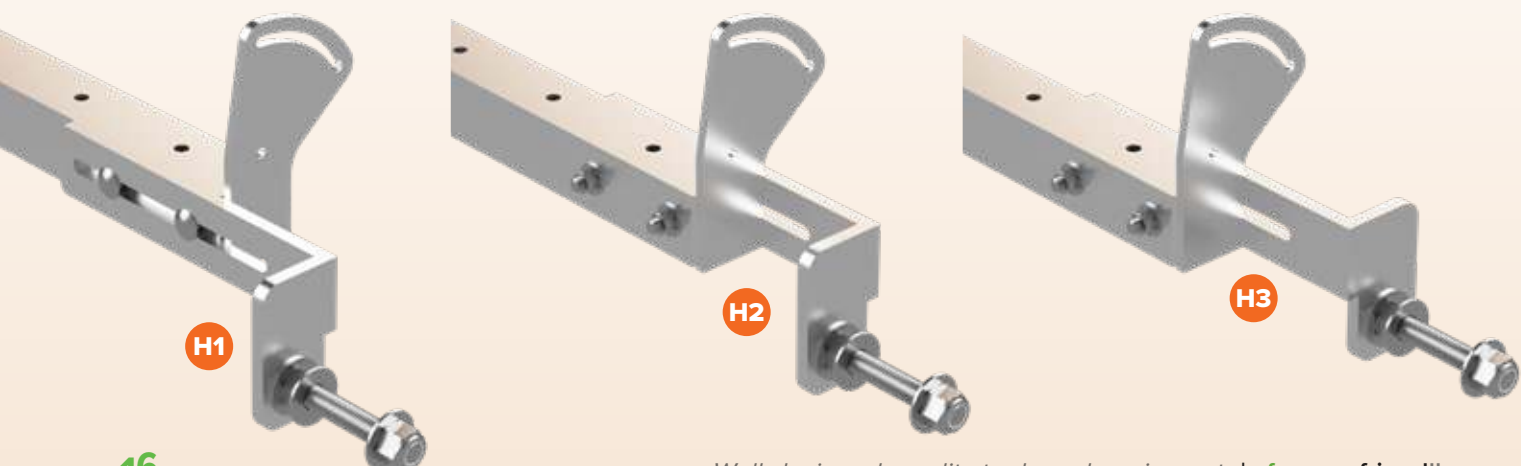
Reduce wheel track to 30 1/2" (outside to outside) by mounting the axle on the bottom of the main bar.



Lower ground clearance



Higher ground clearance

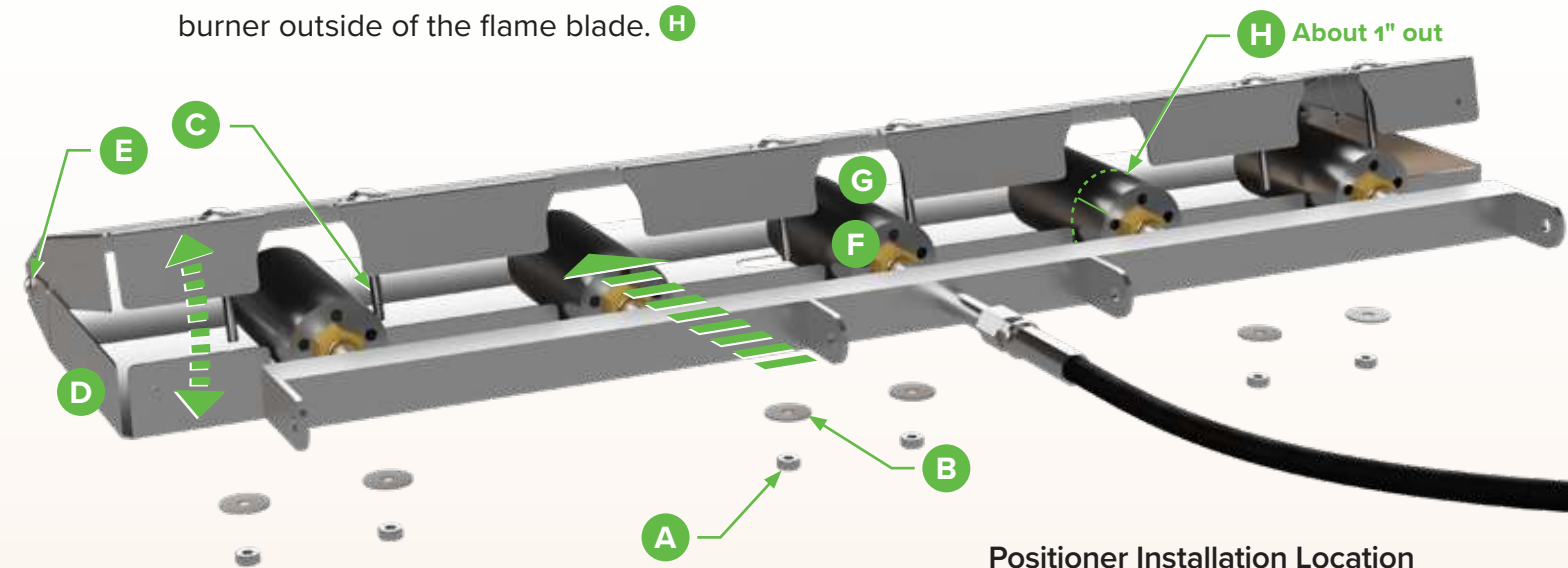


OPTIONAL FLAME BLADE CONFIGURATION

Attaching the Flame Blade Accessory

Tools Needed: 7/16" socket or wrench and a Phillips screwdriver

1. Remove the 1/4"-20 nuts **A** and 1/4" oversize washers **B** from the 1/4"-20 carriage bolts **C** protruding through the bottom panel **D** of the flame blade.
2. Open up space at back of the two panels—clam shell style—as shown, pivoting on the front screws **E**.
3. Insert the Pyroweeder burners **F** through the cutouts **G** in the top and bottom panels as shown. Keep about 1" of the burner outside of the flame blade. **H**
4. Close the two panels around the burners so that the carriage bolts **C** are again protruding through the bottom panel **D**.
5. Re-attach the nuts **A** and washers **B** to the carriage bolts **C** and tighten just enough so that the flame blade is securely attached to the burners.
6. Tighten the front screws **E**.



Positioner Installation Location



↑ Pictured: Flame Blade 30

CAUTION

It is important that you ignite the propane flowing into the flame blade **as soon as possible after you open the control valve**. Propane can accumulate in and around the blade and will produce a startling pop if you are slow to ignite it. **A torch or lighter work best.**

Attaching Auxiliary Tank Braces

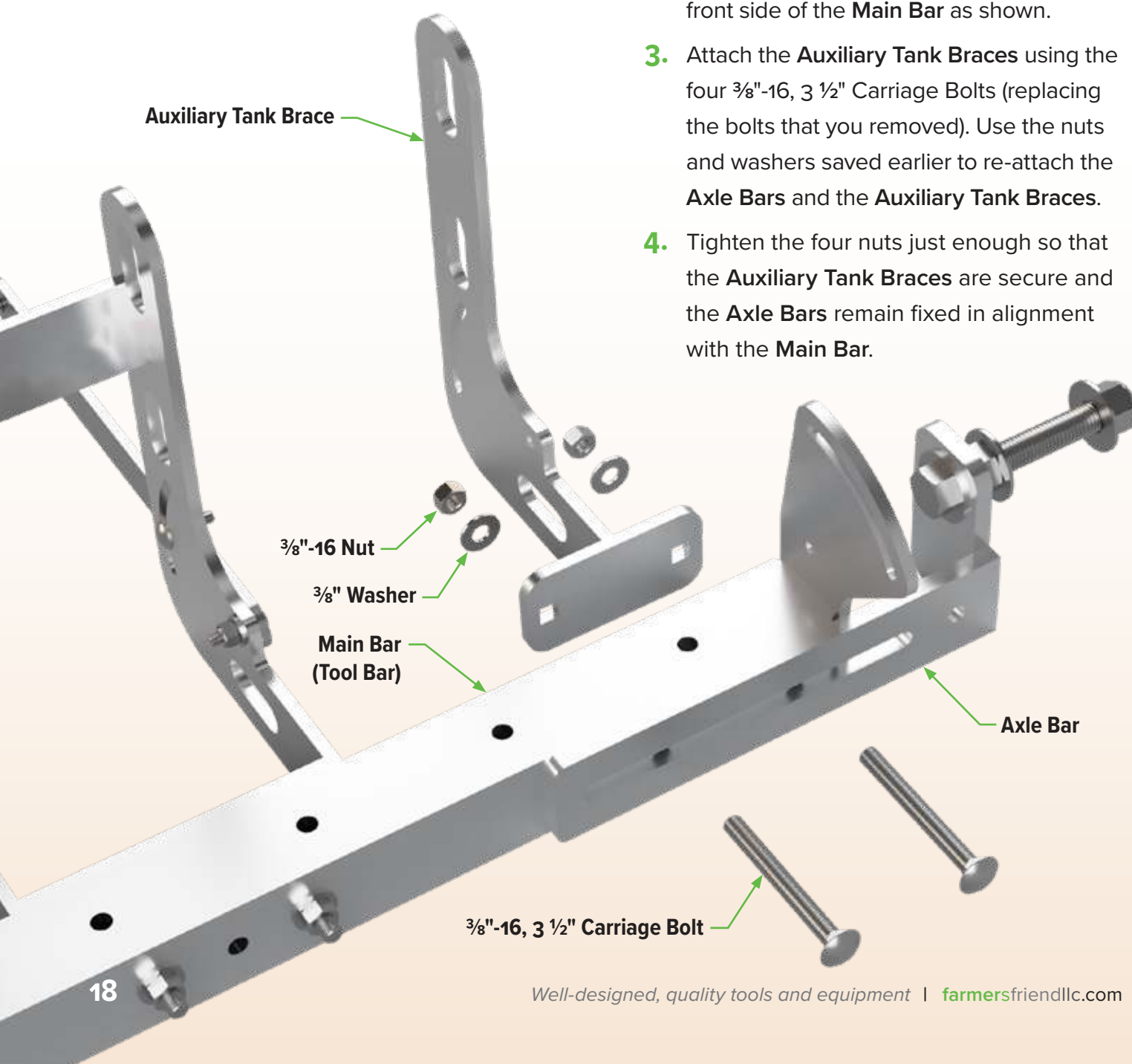
PARTS NEEDED

- 2 x Auxiliary Tank Braces
- 4 x 3/8"-16, 3 1/2" Carriage Bolts

TOOLS NEEDED

- 9/16" wrench or Pyroweeder wrench

1. Remove the four 3/8"-16, 3" Carriage Bolts that attach the axle bars to the **Main Bar** of the **Tool Cart**. Save the nuts and washers to re-attach the the axle bars. The **Axle Bars** are temporarily detached at this point.
2. Place the two **Auxiliary Tank Braces** on the front side of the **Main Bar** as shown.
3. Attach the **Auxiliary Tank Braces** using the four 3/8"-16, 3 1/2" Carriage Bolts (replacing the bolts that you removed). Use the nuts and washers saved earlier to re-attach the **Axle Bars** and the **Auxiliary Tank Braces**.
4. Tighten the four nuts just enough so that the **Auxiliary Tank Braces** are secure and the **Axle Bars** remain fixed in alignment with the **Main Bar**.



Attaching Two-Tank Adapter

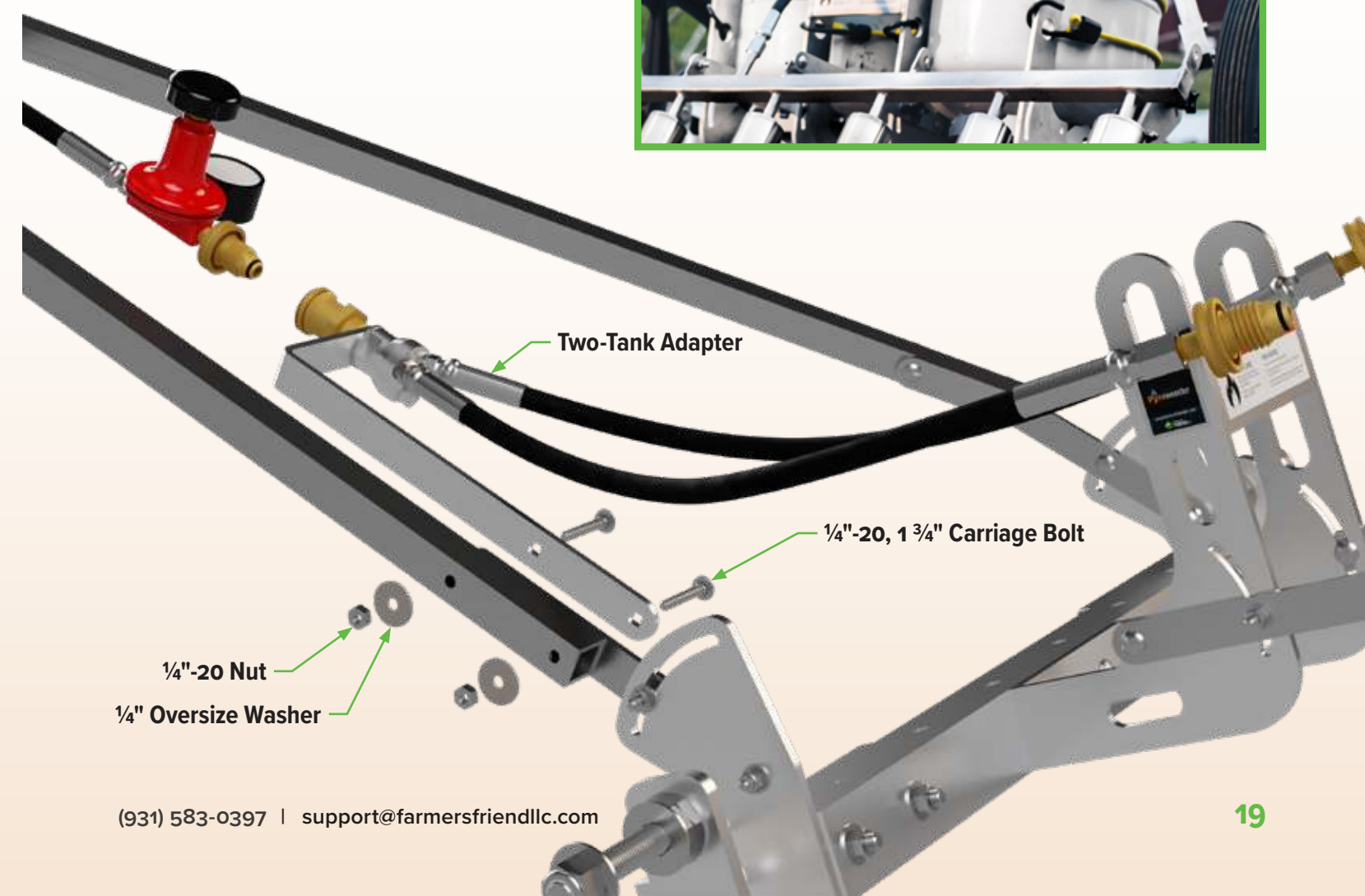
PARTS NEEDED

- 1 x Two-Tank Adapter
- 2 x 1/4"-20, 1 3/4" Carriage Bolts

TOOLS NEEDED

- 7/16" wrench or Pyroweeder wrench

1. Remove the two 1/4"-20, 1 1/2" Carriage Bolts connecting the straight-side bar to the lower handle tie. Replace them with the supplied 1/4"-20, 1 3/4" Carriage Bolts, connecting the Two-Tank Adapter to the Pyroweeder as shown.



Basic Operating Instructions

Although a lot of information on flame weeding is available from other sources, we are summarizing the main points here for your convenience and reference:

1. We recommend that you try 20 psi as a starting propane pressure; later you may find that you can achieve acceptable results with a lower pressure.
2. To light your Pyroweeder, start with both the tank valve and control valve completely closed. Open the tank valve first, then open the control valve just enough to hear the propane gas escaping. Then use your striker to light one of the outside burners. Once one burner is lit, open the valve up and lower the burners until the burner heads are almost touching the ground. This should disperse the flame enough to light the other burners.
3. Try to flame when the weeds are less than 2" tall. Larger annual weeds and all perennial weeds may require multiple passes over time in order to achieve a complete kill. Grass is also harder to kill than broadleaf weeds.
4. Flaming when the weeds are wet will require you to walk a little slower. The water has to evaporate off the leaves before the flame will kill the weeds. Dusk is an ideal time to flame since there is less chance of dew (and it is easier to see your flame).
5. Your goal with flaming is not to actually incinerate the weeds, but just to expand the water in the weeds' cells enough to burst the cell walls. According to Eliot Coleman, this only takes a second at 160° F to do (usually accomplished at a slow walking speed). The only visible indication of "kill" is a slight wilting. To test if you have achieved kill, lightly press a leaf between two fingers. If the leaf surface shows a dark green fingerprint, you have accomplished your goal. The weeds will appear obviously dead within a few hours.
6. In order to have the cleanest seedbed for your crops, prepare your beds for seeding at least 10 days ahead of planting. Irrigate and use floating row cover (during the cooler months) to encourage weed seed germination. Flame your beds once or twice (or more) before seeding. If you are careful, you can seed your crop and let it germinate. Then, just before emergence, flame one final time and have your crop sprout up into a weed-free bed (see Eliot Coleman's *New Organic Grower* pp. 168 & 169 for a more detailed explanation). One little trick for carrots is to seed some beet seeds with your carrots. When the beets emerge, it is time to flame.
7. Because of the high output of the burners, the propane tank will freeze up if you burn for extended periods. After about

a half hour of burning, you may notice the pressure beginning to drop and ice forming on the tank. Extinguish the flame and allow the tank to thaw out before resuming operation. **Tip:** Have a second tank on hand and just replace the tank if you have a lot of flaming to do. Once the second tank begins to freeze up, your first should be thawed and ready to use again.

8. Although there are screens in the pressure regulator and also in the manifold, there is still the possibility that one of your burners could get plugged with some type of foreign matter. A bread bag twisty

tie is the perfect size to unclog the orifice (take off the plastic and just use the bare wire). If you still have problems with the burner, use an 1/16" socket with an extension to unscrew the pipe cap inside the obstructed burner and clean it out from the inside.

9. Remember that flaming is not weed specific. It will kill beneficial plants as easily as it does weeds!
10. Be very careful not to flame poison oak, poison ivy, or any other poisonous plant. The vapor or smoke from these can cause irritation to skin and lungs.



