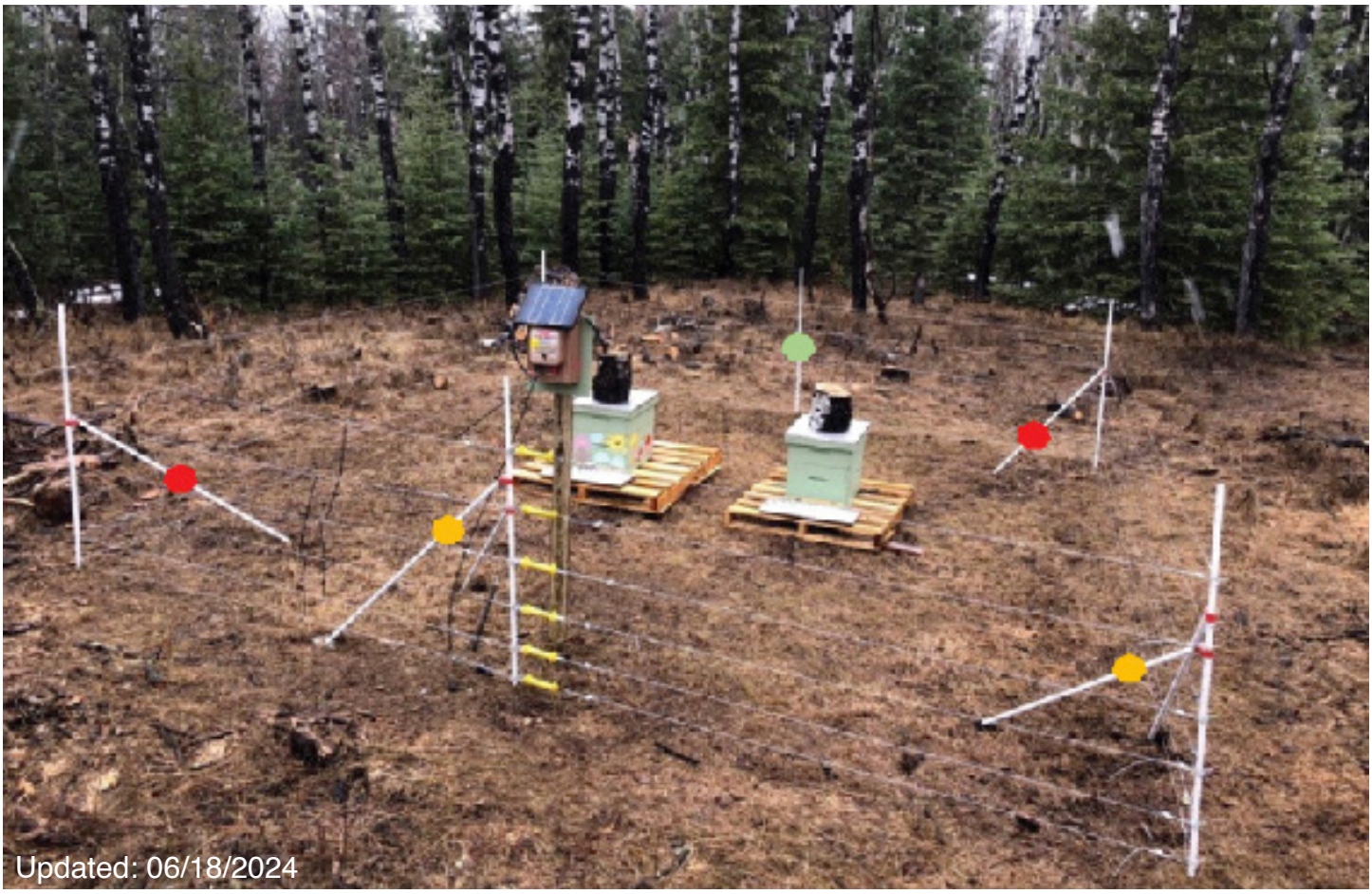
MARGO SUPPLIES

HEAVY DUTY PORTABLE U-BUILD

ELECTRIC FENCE SYSTEM

3089 - INSTALLATION & MAINTENANCE MANUAL



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INTRODUCTION

Electric fencing is a widely used technique to contain livestock, control wildlife, and exclude predators. Honey producers, agricultural applications, wilderness camps for resource industries, recreation, military, and temporary camps are sites where electric fencing has proven an effective tool.

Its effectiveness depends on proper fence construction. Where the animal is on a poor ground plain (i.e. dry, sharp gravel/sand), this alternating positive/ negative system should be used. The following methods result in a fence that is quick and easy to erect and one that has proven to be very effective for temporary and permanent installation.

GENERAL SPECIFICATIONS AND FENCE CHARGER SAFETY FEATURES

This electric fence is to be constructed to total height of 44” of 6 strands alternating (positive and negative) of graduating height.

The fence is to be properly grounded with 3/4” diameter ground rods or ground plates complete with bronze ground rod clamps.

This fence system consists of durable resin fiberglass posts of continuous glass filaments (all corner/gate/brace posts are 7/8” diameter; line posts are 11/16” diameter).

Our fence chargers are 100% solid state unit, with a low impedance and uni-junction circuitry which meets all C.S.A. and UL standards. High voltage of electric fencers presents no danger or hazards to humans. The electrical charge is pulsating. The time on (pulse width) is 0.004 of a second, the fencer is then off, that is, there is no voltage flow for 3/4 of a second.

Although the voltage is high, it is low in current (amperage). This allows the enclosure to deliver an unpleasant experience to an animal without lasting harm, and provide safety for human accidental contact. Fence controllers must hurt but not injure. Similar systems are employed in other applications that require animal control and involve people proximity, such as agriculture and zoological parks.

The combination of pulsating charge and low amperage ensures safety. The presence of high voltage must not be confused with the continuous AC electrical systems that power our lights and tools. Amperage in electric fencing is at a level to counter resistance in fence wire, and deliver sufficient voltage to control animals.

SAFETY GUIDELINES

- Wear protective clothing e.g.: hard hats, safety shoes and eye protection.
- Keep hands and feet dry.
- Disconnect or turn fence charger to the OFF position before working on fence.
- Do not work on fence during an electrical storm.
- When repairing wire, always have control over loose ends of wire to prevent whipping.
- Do not tamper with or attempt to repair fence charger. If repair is necessary, send unit to Margo Supplies Ltd. for all service and warranty.
- Warn all personnel about fence, and install electric fence warning signs.
- Build fence to allow easy access to all areas of the fenced facility.
- If building for wildlife or predator control, because activity may continue in and around the site for a period of time after fencing, it is important to monitor the fence line for signs of digging and attempts to breach the electric fence (vigilance should be maintained by all interested parties).

KIT COMPONENTS

18’ X18’ HEAVY DUTY FENCE KIT

	Fence Energizer
(#3015a)	Galvanized Stranded Steel Wire
(#3027)	Wire Winder and Spool
(#3034a)	7/8” Single Brace Corner Assembly
(#3034b)	7/8” Double Brace Corner
(#3078)	Assembly Post Pin Clips
(#3012)	American Cable Cutter
(#3014)	5/64“ Aluminum Ovals
(#3049)	Ground Plate
(#3050b)	¾” Ground Rod Clamp
(#3022)	Small Wire Rope Gripple
(#3124)	Heavy Duty Joint Clamp
(#3025)	Insulated Gate Handles
(#3051a)	25ft Underground/Hook-Up Wire
(#3032)	Small Electric Fence Warning Signs
(#3009)	Digital Electric Fence Tester
(#6065)	Large Dry Box
(#9065b)	Medium Nylon Carry Bag

50’ X 50’ HEAVY DUTY FENCE KIT

	Fence Energizer
(#3015b)	Galvanized Stranded Steel Wire
(#3027)	Wire Winder and Spool
(#3034a)	7/8” Single Brace Corner Assembly
(#3034b)	7/8” Double Brace Corner
(#3078)	Assembly Post Pin Clips
(#3012)	American Cable Cutter
(#3014)	5/64 “ Aluminum Ovals
(#3026e)	11/16” x 60” Fiberglass Line Posts
(#3049)	Ground Plate
(#3050b)	¾” Ground Rod Clamp
(#3022)	Small Wire Rope Gripple
(#3124)	Heavy Duty Joint Clamp
(#3025)	Insulated Gate Handles
(#3051a)	25ft Underground/Hook-Up Wire
(#3032)	Small Electric Fence Warning Signs
(#3009)	Digital Electric Fence Tester
(#6065)	Large Dry Box
(#9065b)	Medium Nylon Carry Bag

RECOMMENDED TOOLS

- Wire Cutters (Provided)
- Voltage Meter
- Post Pounder
- Shovel
- Claw hammer
- Vice Grip
- 7/16” Wrench
- 7/16” Socket
- Adjustable Wrench
- Measuring tape
- Level
- Marking Paint

SITE PLAN & PREPARATION

SITE PLAN

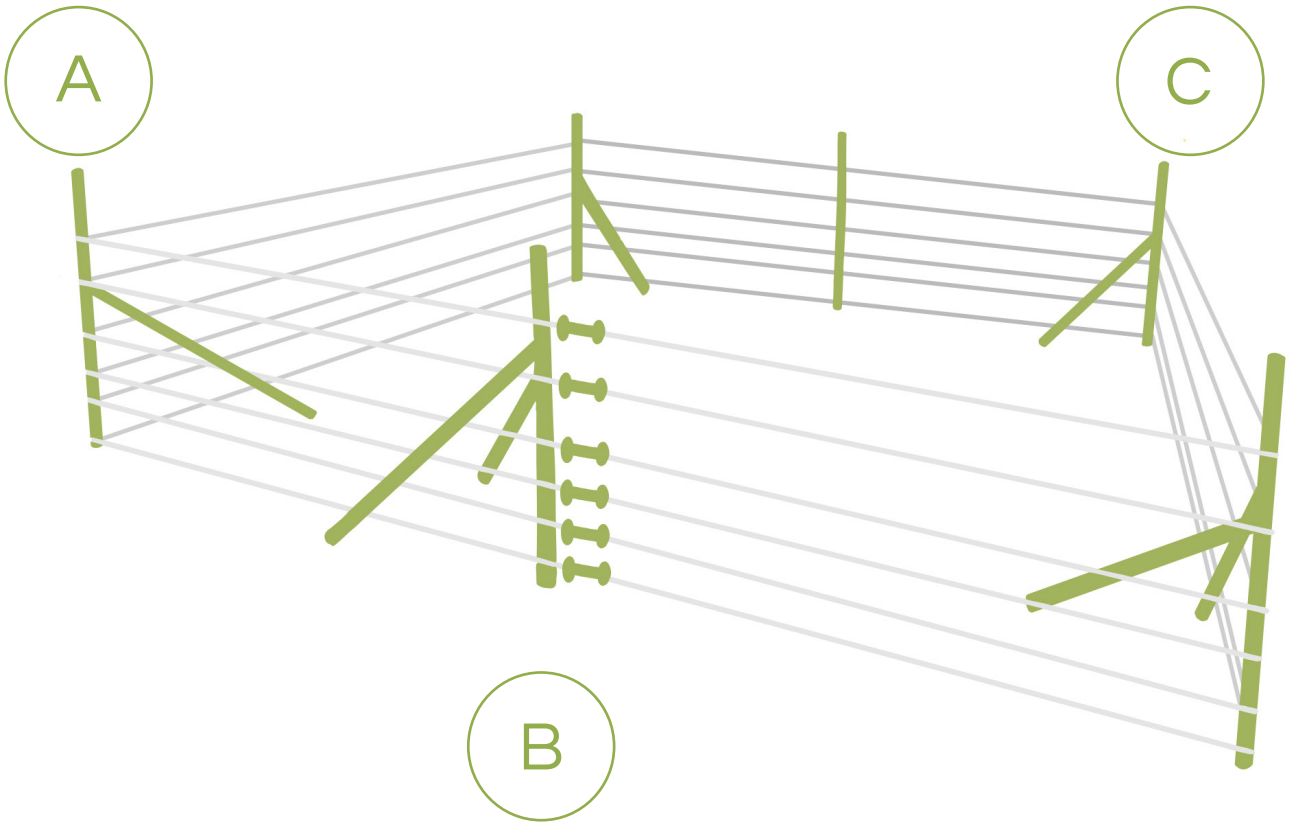
Prior to starting, a site plan needs to be developed to determine fence placement and materials required. A complete site plan should include a drawing indicating the following:

- The position of corner and end posts.
- The position of the gate(s).
- The position of the line posts (15’ – 20’ centers or as required by terrain).
- The location of the fence energizer.
- The position of the ground rod(s) and/or ground plate. Moist soil (soil with humidity) is the best location, but not in standing water, as water is an insulator and will not provide adequate grounding.

SITE PREPARATION

- Fence line preparation is important. Take care that there are no low spots, exposed tree roots, rock, brush, holes or rough terrain. There should be no climb trees within one meter of the fence line. The fence line right-of-way ideally is 3-5m wide. Aside from using trees as ladders, it is best for the bears to have a buffer zone from the forest to the fence.
- Stake fence perimeter corners/gates/ends as per site plan.
- Install single corner and double gate assemblies.
- With a post pounder (#3018 or #3019) or mallet, drive the 7/8” x 72” fiberglass upright corner/gate/end posts to a stable depth (at least 8” and no more than 24”). If the ground is difficult to drive in posts, use the 3/4” ground rod to make a pilot hole.

POST INSTALLATION



A

7/8" Single-brace Corner Assembly (#3034a)

a. Consists of 1 upright posts 72"
b. One 72" Diagonal Brace post
c. Complete with brace hardware:
   i. 1 Steel Bottom Plate
   ii. 2 Post Pin Clips
   iii. 1 U-Strap with 2 nuts and 2 bolts

B

7/8" Double-brace Corner Assembly (#3034b)

a. Consists of One upright posts 72"
b. Two 72" Diagonal Brace post
c. Complete with brace hardware:
   i. 2 Steel Bottom Plate
   ii. 4 Post Pin Clips
   iii. 2 U-Strap with 4 nuts and 4 bolts

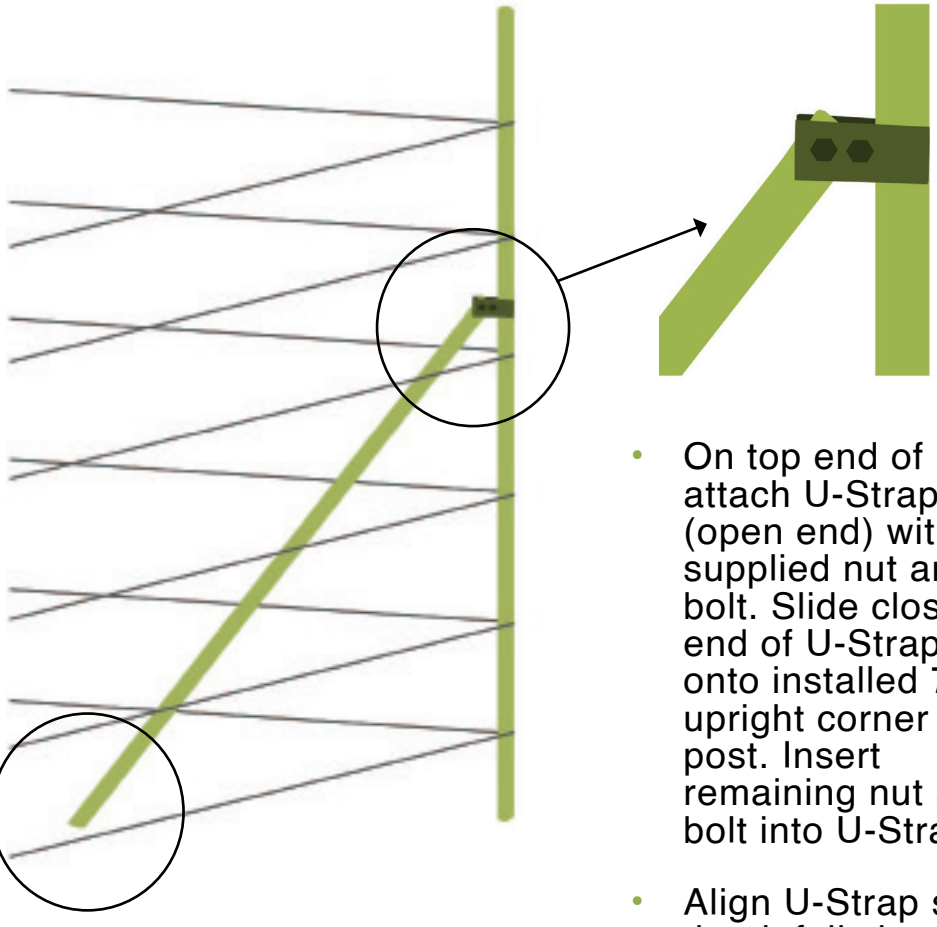
C

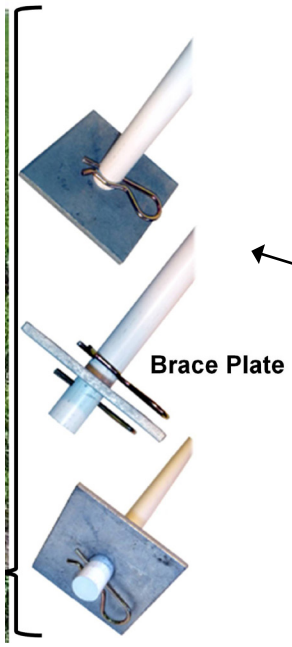
Line posts 11/16" diameter x 60" (#3026e) OR 72" (#3026f), length depends upon soil type

SINGLE-BRACE CORNER ASSEMBLY

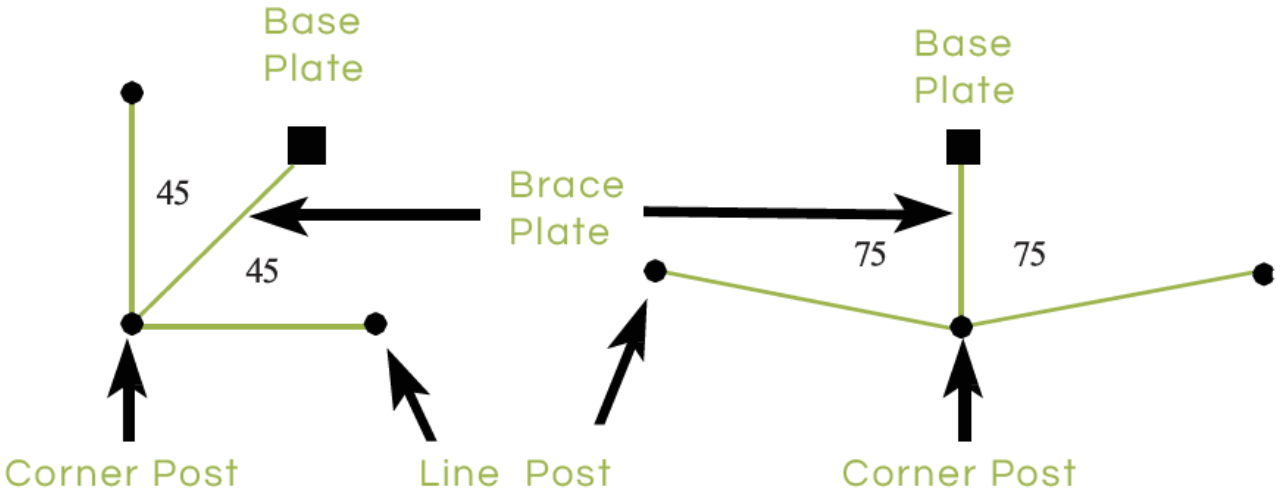
Assemble and install the 7/8” diagonal brace posts.

- On the bottom end (side with two holes drilled) of the brace post (7/8” x 72”) insert one post pin clip in the top hole, slide on bottom plate and insert second post pin clip.



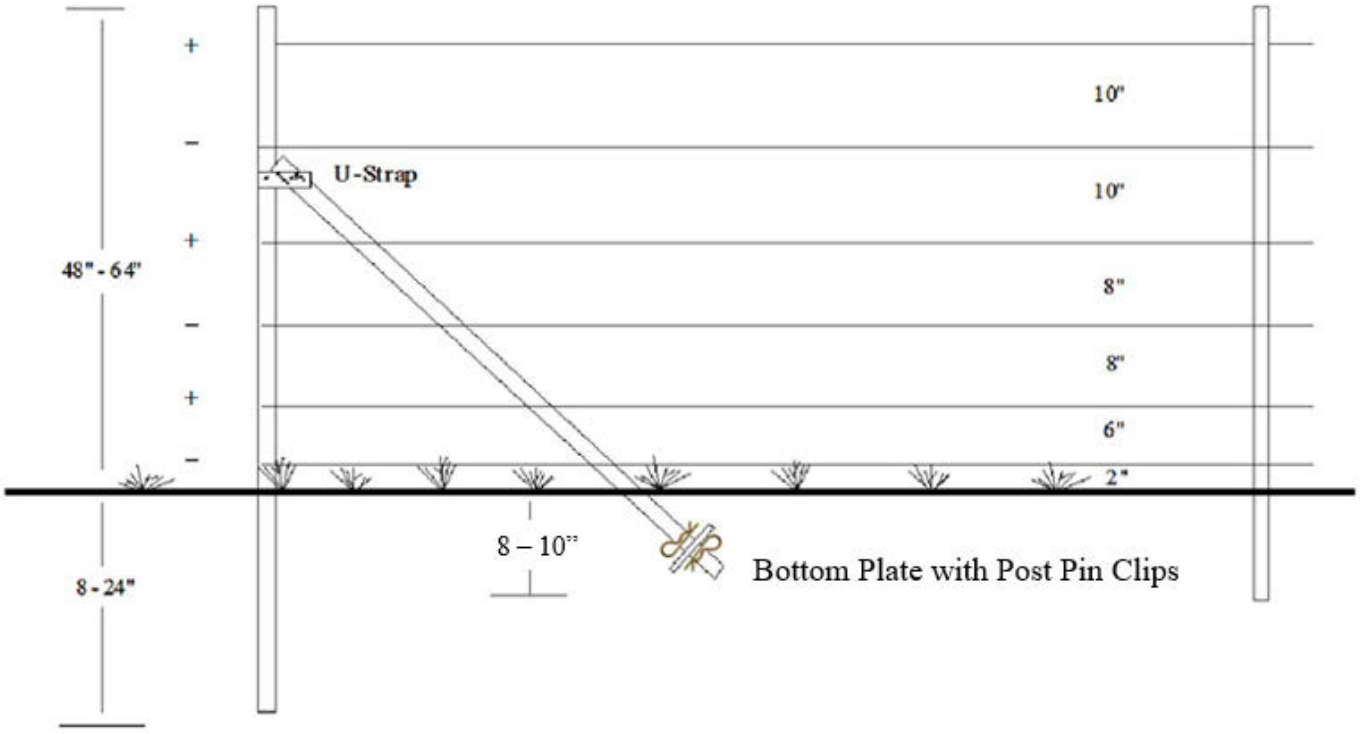


- On top end of post attach U-Strap (open end) with supplied nut and bolt. Slide closed end of U-Strap onto installed 7/8” upright corner post. Insert remaining nut and bolt into U-Strap.
- Align U-Strap so that it falls just below the post clip of the 5th strand (negative).



SINGLE-BRACE CORNER ASSEMBLY

- Position brace so that it equally bisects the angle of the corner.
- Dig a hole for the bottom plate to rest in. Bottom plate should be burried 8-10"
- Ensure brace is firmly in place with upright post perpendicular to the ground (can be slightly angled away from direction of brace post).
- Tighten nut and bolt on closed end of U-Strap.



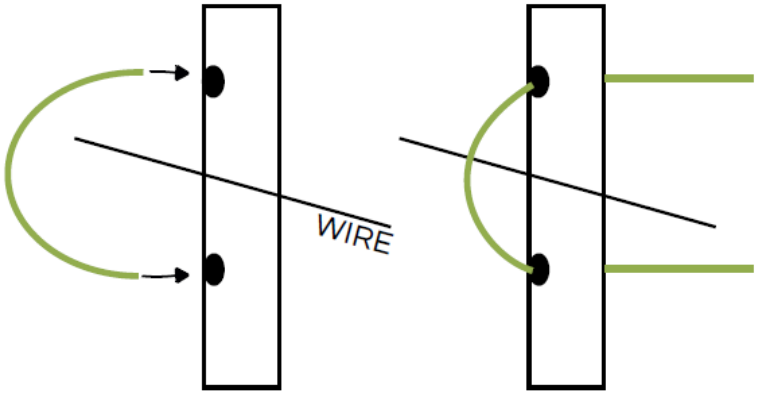
DOUBLE-BRACE GATE ASSEMBLY

Double-Brace Gate assembly is accomplished the same as a single-brace corner assembly (page 8), but the second diagonal brace is installed in-line (parallel) with fence wire (see above)

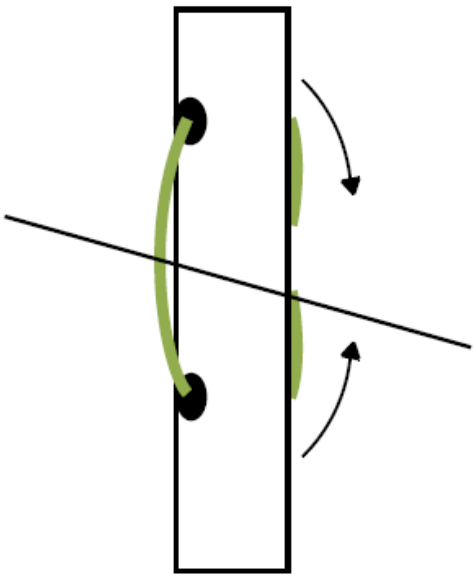
Single-Brace Corner Assembly (above) for comparison

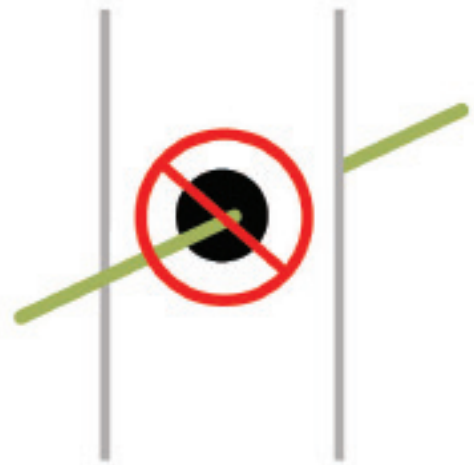
U-CLIP INSTALLATION

1. String fence wire around the perimeter of the fence.
2. Decide the spacing of your wires and place the wire between the two holes you want your wire height to be at.
3. Push 2” U-Clips into the pre-drilled holes in the fiberglass post.



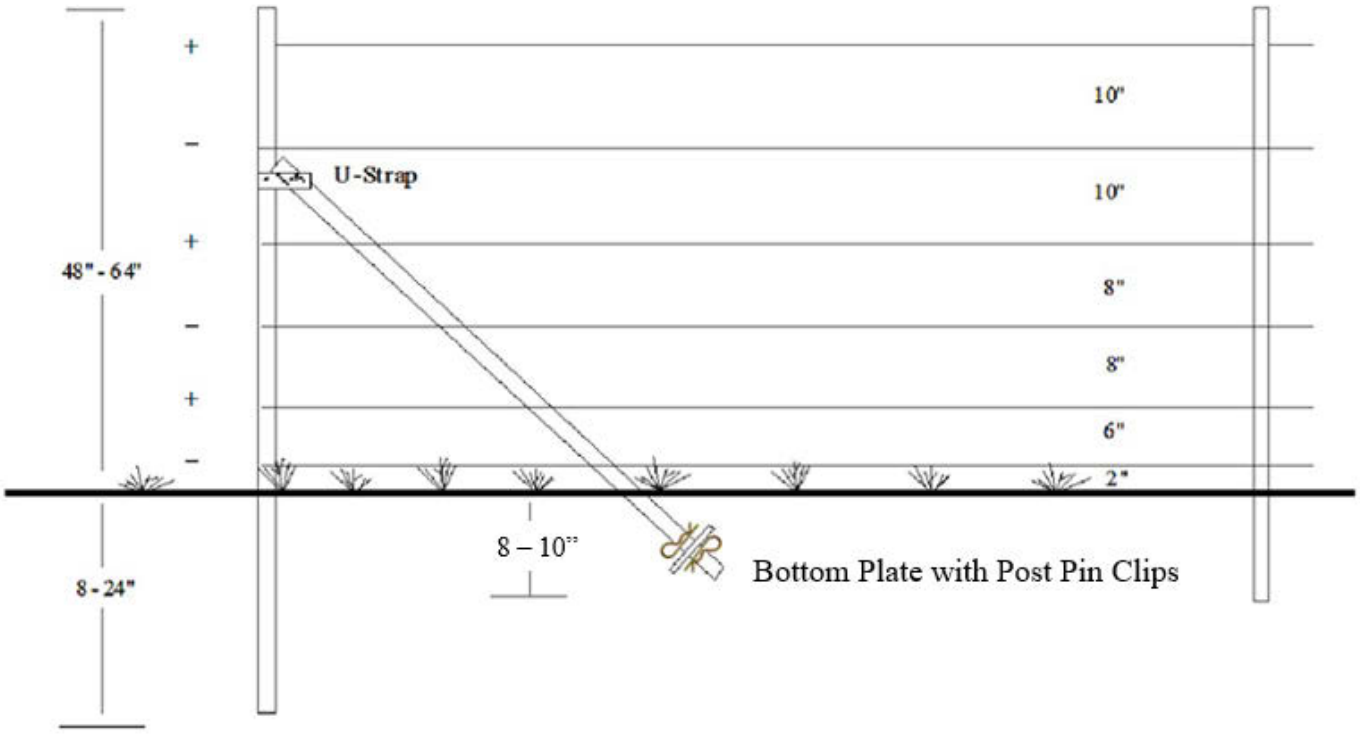
4. Bend the tails 90 degrees inward (Top one downward, bottom one upward) to prevent the U-Clip from moving out of position)





NOTE: DO NOT STRING THE WIRE THROUGH HOLES IN THE FIBERGLASS POST.

WIRE SPACING



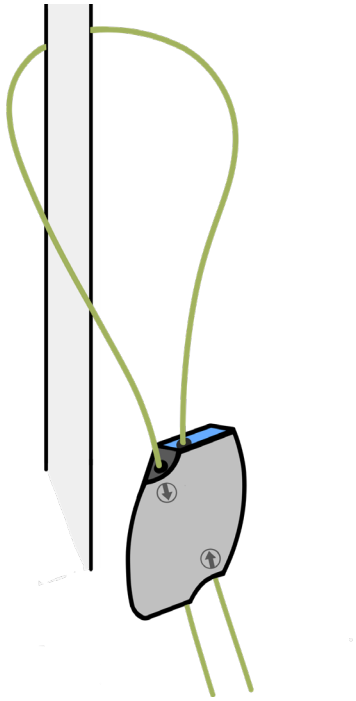
WIRE SPACING

Space wire from ground up at 2”, 6”, 8”, 10”, 10” intervals. All posts have pre-drilled holes at 2” increments for ease of wire spacing.

When you have completed stringing the first wire around the perimeter to the other side of the gate from where you started, pull the wire hand tight and cut it off the spool, leaving enough extra to loop around the last post with a 12” tail.

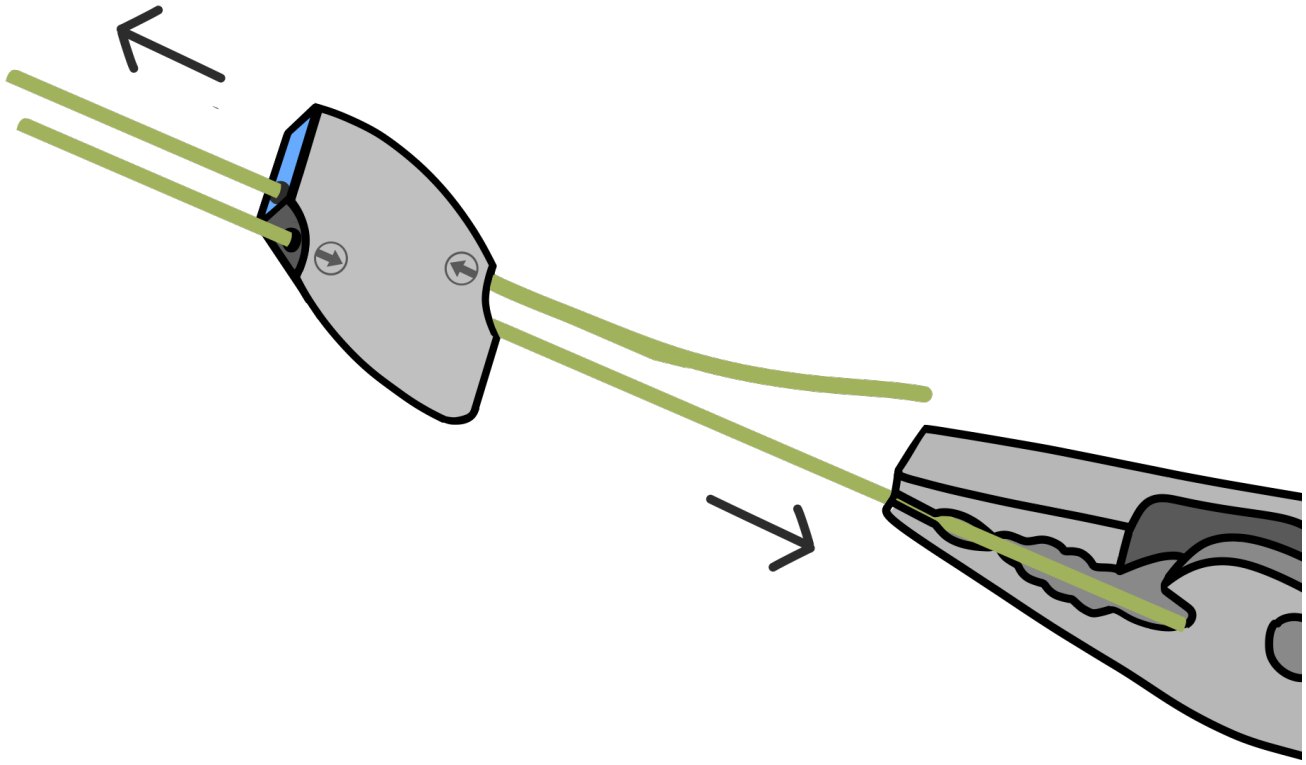
WIRE INSTALLATION

- Stretch a string line between corner/end/gate posts to ensure a straight fence line when installing line posts.
- Along the perimeter of the fence line place the 11/16” line posts every 15’ – 20’ (or as required by terrain) along the string.
- With a post pounder drive the line posts to a stable depth (approximately 8” - 12”). If ground is difficult to drive in posts, use a 12” spike to make a pilot hole.
- Install and tighten the galvanized stranded wire.
- When cutting fence cable it is important to make flush cuts to avoid frayed ends. Use a good wire cutter like the American Cable Cutter (#3012).
- Attach the wire at one side of a gate and string around the perimeter to the other side of the gate. Attach the wire to one gate post with Gripple starting with the bottom.



- Insert wire into Gripple in the large center hole and slide Gripple down the wire about 24”.
- Loop wire around post and back into other side of the Gripple (large center hole)
- Gripple should be approximately 12” from the post at this point. If it is closer, slide Gripple away from post.

WIRE TENSIONING

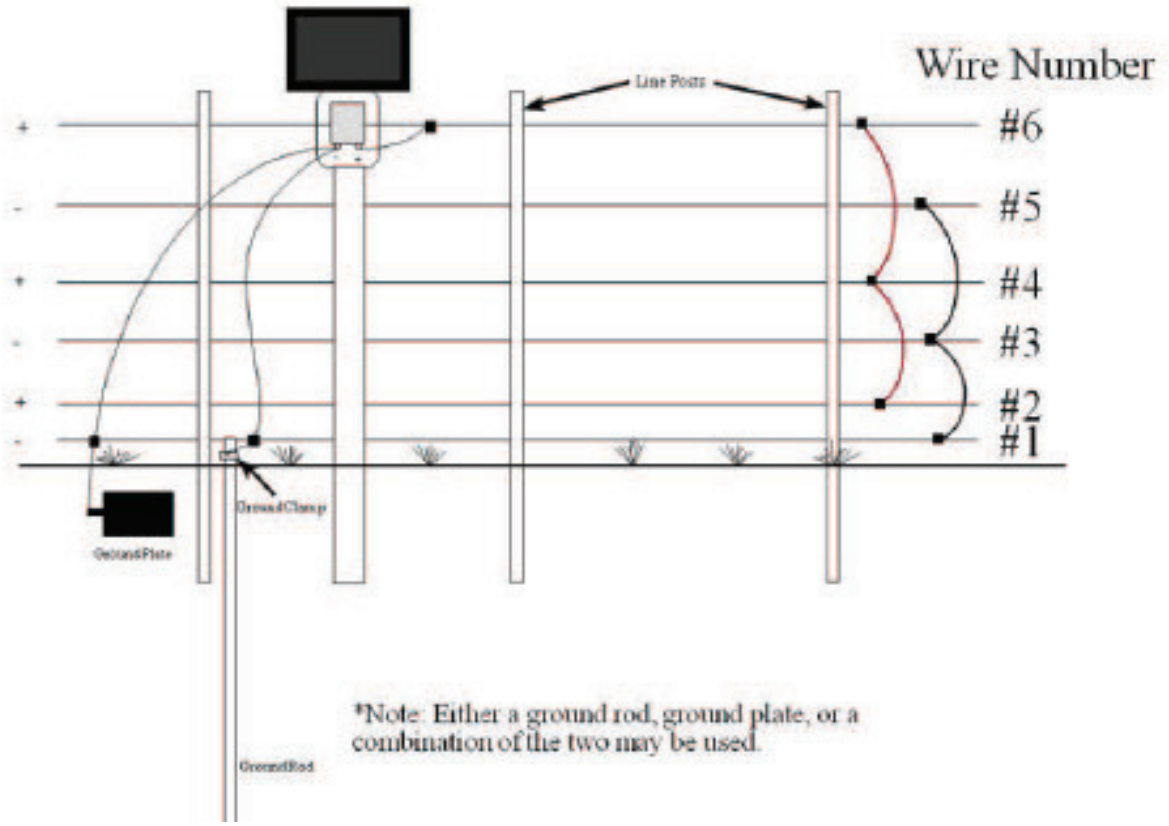


Using pliers, take up the slack on the fence by pulling on the tail of the wire, and at the same time push the rope grip toward the post.

Repeat the above steps for the remaining 5 wires.

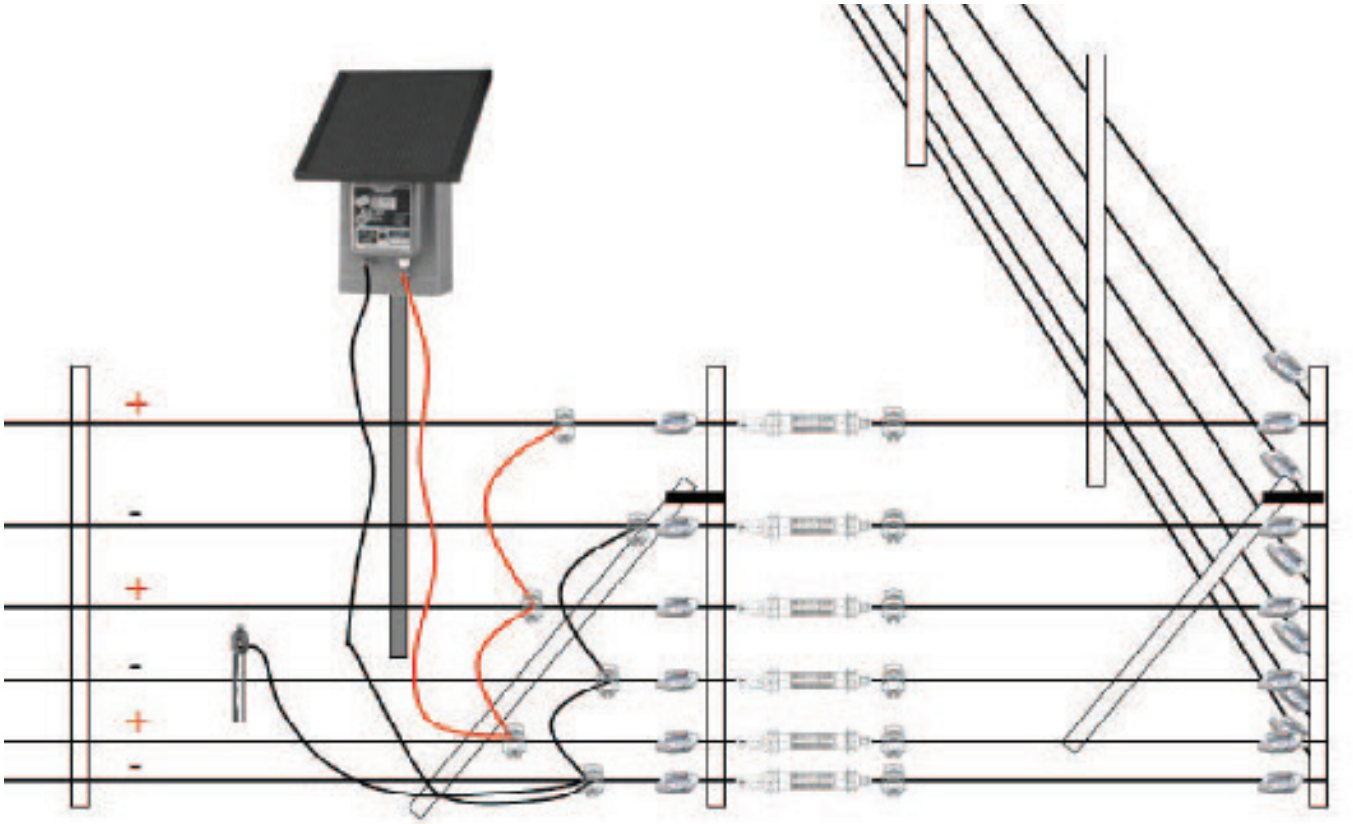
Go back to the other end and repeat pulling with pliers until all wires are tight. Recommended line tightening order: 1-5-6-2-3-4.

WIRE CONNECTIONS



- The six strands of fence wire are alternating positive/negative, starting with negative on the bottom. Connect all 3 positive wires to each other (so that each are electrified) #6 to #4 to #2. Connect the wires together with the Heavy Duty Joint Clamps (#3124) and Insulated Hook-up Wire (#3051).
- Connect all 3 negative wires to each other to the complete grounding system: #5 to #3 to #1. Connect the wires together with the Heavy Duty Joint Clamps and Insulated Hook-up Wire (#3051).
- The negative wire must be connected to the ground rod or plate with the Ground Clamp (#3050b). Use the Insulated Hook Up Wire for this connection.
- Connect the Ground Rod to the bottom negative wire with a Heavy Duty Joint Clamp.
- Check the fence line again to make sure the wires are at the correct heights if gullies or low spots are crossed. Use logs, stones, etc. under the bottom negative wire to maintain height off the ground or use extra line posts.

GATE HANDLE INSTRUCTIONS



1. Starting with the top strand, connect the wire to the hinge side, using a Gripple, (keep the wire attached to the spool). Loop wire around the 7/8” end post and complete the connection with a Gripple.
2. Continue the wire across the gate opening and attach a gate handle with a Heavy Duty Joint Clamp to the end of the wire at the proper distance to make a tight gate. Repeat with the remaining 5 wires.
3. The hook on the gate handle can attach to the existing loop of each fence wire around the 7/8” post to close the gate.
4. Install ground rods as per site plan. Drive ground rods into moist soil (low area) with a post pounder leaving approximately 6”-12” of the rod above the ground.
5. Ground rods should be at least 50’ away from a utility ground. If ground rods cannot be driven into the ground, use a ground plate. Ground plates should be dug 3”- 4” below the surface into moist soil.
6. For better grounding, extra ground rods or a combination of ground rods and ground plates can be used.
7. Only use a proper ground clamp to attach the ground rod or plate (#3050b). Tighten clamp securely.

GATE HANDLE INSTALLATION

Loose nut on Heavy Duty Joint Clamp
Slide Heavy Duty Joint Clamp onto wire
Thread Wire through loop on the Rub'r Gate Handle
Slide wire through next slot on Heavy Duty Joint Clamp
Tighten nut on Heavy Duty Joint Clamp

Solar fence chargers should be situated within the enclosure with the solar panel exposed to direct sunlight, facing the Southern Hemisphere. Mount the unit off the ground on a post, etc.

Connect the top positive wire of the fence to the positive (red) terminal of the fence charger with Insulated Hook-up Wire (#3051). Use a Heavy Duty Joint Clamp for connection to the fence.

Connect the bottom negative wire of the fence to the ground rod(s) and to the negative (black) terminal of the fence charger with a length Insulated Hook-up Wire. Use a Heavy Duty Joint Clamp for connection to the fence.

Install warning signs on the fence approximately every 50’ or one per side.

Ensure all personnel are aware the fence is ready to be turned on.

Turn on fence charger and ensure the needle on the performance meter moves into the upper green zone. The fence should now be complete and charged.

Following the manufacturers recommendations, test all positive fence wires with the fence tester to ensure adequate voltage.

The voltage reading should be above 5000 volts.

Repeat with the other 2 positive wires.

If the voltage reading on the tester is low, or the performance meter is not in the upper green, this indicates problems on the fence line.

FENCE LINE MONITORING

ANIMALS

Since bear activity may continue around the site for a period after fencing, it is important to maintain vigilance by all interested parties. Monitoring (walking the fence line) to check for attempted digging etc. should be performed daily. This is especially important in the spring when bears come out of hibernation, and also in late summer and early fall, when bears are looking for high calorie food sources.

Smaller animals, such as feral cats, fox, raccoon, etc., may scratch holes under the bottom strand (which is negative) to gain access to the site. This creates a game trail that is easily located by a bear walking the fence line. This has resulted in the bears digging out this small animal hole. These areas must be filled in immediately with packed material such as large bulky rocks or concrete rubble.

Walking the fence line is also recommended to look for debris, fallen branches, or tall grass that may cause shorting to ground. Posts and Braces In order to maintain proper tension on the wire strands, brace posts are installed at all corners/gates (all direction changes).

It is important that nothing is ever placed or stored along the fence line. Bears will quickly learn to use objects as a ladder to gain access to the site.

VEGETATION

A 12” - 16” wide strip under the fence line by herbicides or mowing to prevent shorting the fence. This strip should not be wider than 16” because the animal is better grounded on green vegetation than on bare ground.

WIRE TENSION AND SPLICING

Wire tension on all six strands of wire must be maintained. This is necessary in order to deliver the shock through the heavy fur of a bear. It is highly recommended that this tension be maintained at all times during bear season. If wire splicing becomes necessary, Gripples are fast and easy to use. After the repair is complete, the tension must be reapplied.

FENCE CHARGER AND TESTER

Voltage on the fence must never drop below 5000 volts, and every possible effort should be employed to achieve maximum voltage. Ensure the fence charger or energizer is well grounded as per specification section. The bronze ground rod clamps must never be replaced with anything other than a proper ground rod clamp.

The electric fence charger features a built-in performance meter. This meter should always read high up in the green zone. Readings in the low levels of green or in the yellow, indicate shorting on the fence, and the result is low voltage. Reading in the red zone mean that there is a dead short to ground, and there will be no voltage on the fence.

The meter should be monitored at least once per day throughout the entire bear season. However, more precise readings should be taken periodically at various points on the fence with a voltmeter.

Voltage readings lower than those demonstrated after initial set-up indicate problems on the fence line, i.e. shorting. To find a short, start at the fence charger (where the readings will be the highest) and walk the fence while taking readings every 50’.

As you get closer to the short, the voltage will drop. Often the cause of a short is easy to see, such as a piece of metal bridging together positive and negative wire strands. However, occasionally shorts can be hard to locate. Trust the tester and continue to search.

- Remove posts with the post pounder/puller.
- Setup of the post puller is as follows:
    - Place the handle of the puller on the pin of the pounder (use the pin closest to the open end of the pounder) and attach with the latch pin.
    - Place the grip tool on the post and slide it down so the pounder rests on the ground.
    - Brace the bottom of the pounder with your foot and press down on the end of the handle. Raise the handle up, allowing the grip tool to slide down on the post and repeat this motion until the post is out.