

## University Extension, University of Missouri-Columbia

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# Constructing Electric Fences for Cattle

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With rising costs of wire, posts and labor, and the improvement of electric fence chargers, more use is being made of electric fences.

Electric fencing is low cost and effective. It is ideal for such uses as:

- Pasture management and rotation grazing.
- Salvaging of grain left in a field.
- Constructing temporary lanes.
- Extending life of old line fences.
- Adding safety to bull pen fences.
- Keeping bulls apart by adding electric fence to an existing line fence.
- Protecting terrace outlets.
- Protecting hay stack or other feed supplies.
- Stopping animals from crowding fences.
- Lowering costs of feed lot fences by adding charged wire.

## Chargers

There are two kinds of chargers — battery-powered and the type that plugs into a 120-volt electric system.

The battery-powered type is good for remote, seldom used fields. For fields located near the farmstead, the 120-volt plug-in type is best.

The controller receives electricity at 6, 12 or 120 volts and steps it up to as much as 30,000 volts. The charger has a safety device that controls the flow of the current to 25/1,000 of an amp (25 milliamperes). This charge will effectively flow through several miles of properly built fences.

When buying a charger, select only one that has been approved by Underwriters' Laboratories (U.L.), the Industrial Commission of Wisconsin, or the U.S. Bureau of Standards. Notice of approval will be printed on the controller near the name plate. Never use a homemade charger — they can kill people and animals.

When you are using a plug-in 120-volt charger, locate it in a dry, well-protected place such as a machine shed or livestock shelter that has been wired for 120-volt service. It should be readily accessible for inspection but protected from livestock. Romex cable works well to lead the high-voltage, low-amperage charge to the outside of the building. Attach the black covered wire to the positive terminal and the white covered wire to the ground terminal of the charger.

Outside the building, attach the black covered wire to the electric fence or to a lead wire. The lead wire, #16- or #18-gauge galvanized wire that connects the charger to the electric fence, can be supported by insulators on 2-by-4-inch extensions on top of the existing fence posts. These supports may be up to 100 feet apart. The white covered wire should be securely attached to a ground rod. A steel clamp such as that used in plastic plumbing makes a positive and secure attachment.

## Ground rod

The ground rod (Figure 1) is an important part of an electric fence because the earth is used as a conductor to complete the circuit back to the controller. To be most effective, the ground rod must be in moist soil. During dry weather this may be 6 feet deep. Remember, inadequate grounding can be the cause of many electric fence troubles.

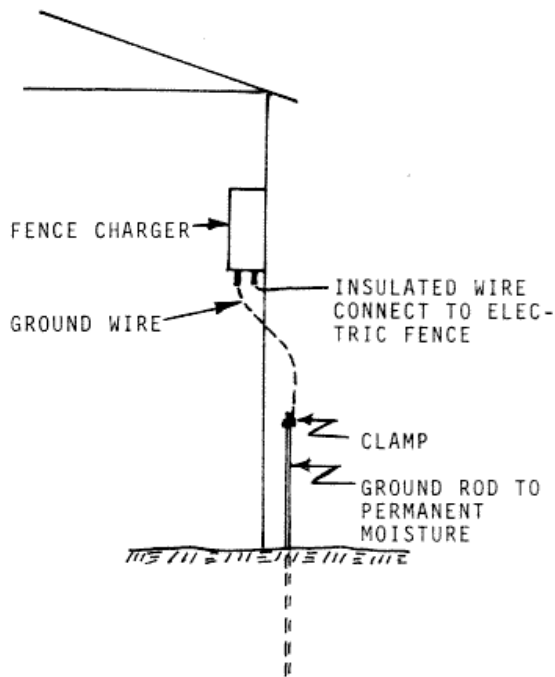


Figure 1. The ground rod.

## Fence construction

The success of an electric fence depends a great deal on fence construction (see Figure 2). Temporary fences may be smooth #16- or #18-gauge galvanized wire. This wire is easy to handle but difficult for livestock to see. Many times it is broken by cattle being pushed into it or accidentally bumping into it. Where fences are to be used a considerable length of time in one place or used to separate cattle from a field of corn or other important crop, the wire should be barbed. It is stronger, more visible to the livestock and the points of the barb make it more effective.

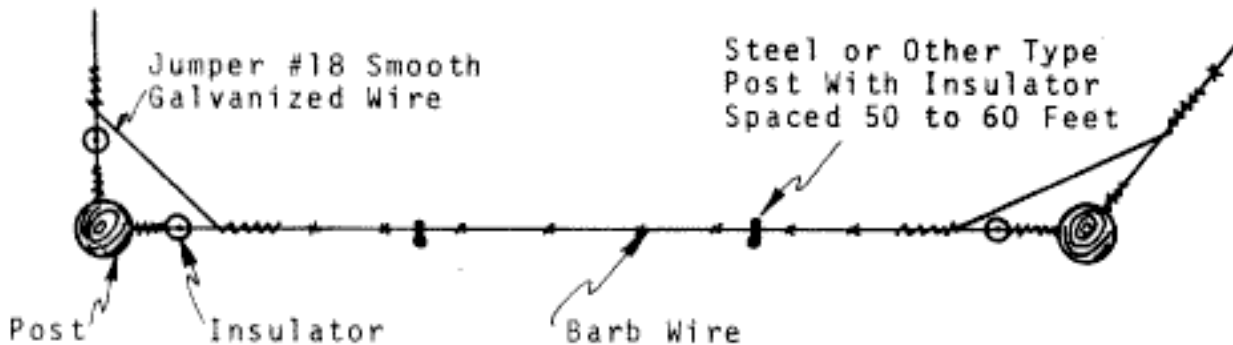
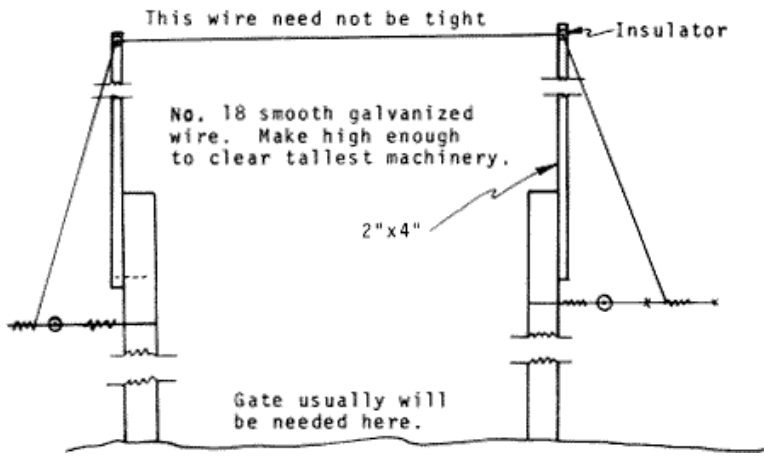


Figure 2. Plan view of electric fence.

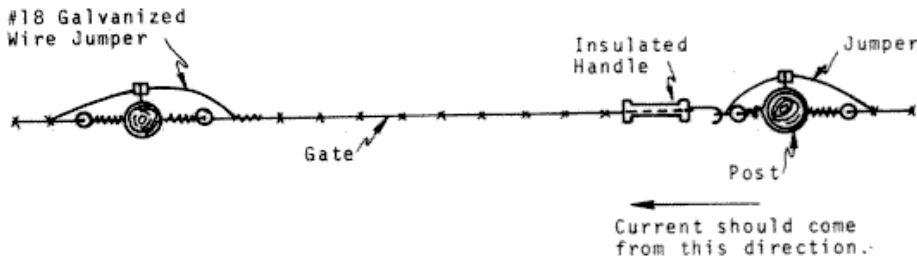
When constructing the fence, build each straight portion as an independent unit. Set 5- or 6-inch minimum diameter posts 36 or 42 inches deep and thoroughly tamp the back fill. For greater stability, set the posts in concrete. Don't fill the holes completely full of concrete, however, because a mushroom-shaped section of concrete will "freeze out" of the ground, taking the post with it. After the concrete has set, attach one end of a barbed wire to the post. Note that the end of the barbed wire is separated from the post by an insulator. The wire that attaches to the post is not charged. This allows a good stretch to be placed on the wire, and the intermediate steel, wood or plastic post may be spaced 50 to 60 feet or even more apart. The greater the distance between these posts, the easier maintenance is. A sickle bar mower with the grass deflector removed can conveniently mow under the wire (see Figure 3).



**Figure 3. Current can be carried over a much used passageway. A gate could also be installed.**

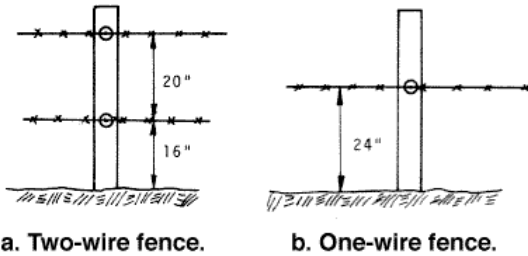
Continue around the field in this manner. A small galvanized wire can be used as a jumper at each corner to continue the charge around the field. This method of construction allows any portion of a field or fields to be disconnected as desired.

Gates (see Figure 4) are usually made by using a commercially insulated handle that allows current to flow through a conductor in the center. The gate should be wide enough for the widest piece of equipment to go through with plenty of clearance. Note that the current comes from the handle side and, therefore, when the gate is on the ground the fence is not shorted out.



**Figure 4. Gate in electric fence.**

Often a fence made of one wire is sufficient (see Figure 5). Distance above the ground should be about 24 inches but will vary some depending on whether only cows or both cows and calves are to be retained in an area. The figure of 2/3 the height of an animal is often used as a guide. Two wires are, of course, better than one but twice the amount of wire is required.



**Figure 5.**

An electric fence should be inspected frequently to see that it is functioning properly. Many chargers have a device on them that tells if there is a short in the fence anywhere. Keep weeds down under a fence. Check grounds and other connections frequently.

A properly constructed and maintained electric fence commands a lot of respect from cattle. One or two contacts will usually keep them away. A fence can be shorted by a rainstorm for a brief time and cattle will not bother it. But if the fence is not charged for a long time, the livestock will likely detect it and may go over or under the fence.

**To order,** request G01190, *Constructing Electric Fences for Cattle* (25 cents).

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