

# Electra Manufacturing

1406 Kimberlin Heights Rd. • Knoxville, Tennessee 37920

## ELECTRIC FENCE ENERGIZER INFORMATION BOOKLET

### IMPORTANT SAFETY INFORMATION WARNING—READ ALL INSTRUCTIONS BEFORE USING

**WARNING** - Any alteration to the design of this energizer may cause serious electrical shock and voids the warranty.

1. Install the energizer and the electric fence according to these installation and operating instructions.
2. Mount electric fence signs in visible areas to identify the electrified wire(s).
3. Inform everyone, especially children who might possibly come into contact with the electrically charged fence, about its location and operation.
4. Instruct all persons how to disconnect the energizer in case of emergency.
5. Never climb over an electric fence wire while it is electrically energized.
6. Never install an electric fence below high-voltage power plant transmission lines.
7. Never use more than one electric fence energizer on the same fence.
8. **WARNING** - Do not simultaneously connect an electric fence to any other device such as a cattle or poultry trainer. Otherwise, lightning striking your fence will be conducted to all other devices.
9. **DANGER** - This energizer must be grounded. If it should malfunction, grounding reduces the risk of electrical shock by providing a path of low resistance for the electric current. A properly installed ground rod electrically connected to the fence energizer output ground terminal provides grounding of this product. An internal fault on an improperly grounded fence energizer could result in a risk of harmful electric shock on the electrified fence.
10. Repair of the electric fence energizer should be performed by an authorized repair center only. For the nearest repair center in your area, call 865-850-4596 or 865-216-7753

***If your fence energizer is battery-powered, please ignore the following information regarding plugs.***

11. **DANGER** - To reduce the risk of electric shock, 120 VAC line-powered energizers are equipped with a polarized 2-blade plug (one blade is wider than the other) so that it will fit in a polarized outlet only one way. The plug must be inserted into an appropriate outlet that is properly installed in accordance with all local codes and ordinances. If the plug does not fit in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install the proper outlet. Do not alter the plug in any way.
12. If it is necessary to use an extension, use only a polarized extension cord that will accept the plug for the unit. Repair or replace a damaged cord.

**SAVE THESE INSTRUCTIONS**

## ELECTRIC FENCE INSTALLATION AND OPERATING TIPS AND SUGGESTED ELECTRIC FENCE MATERIALS

<u>POSTS</u>	<u>INSULATORS</u>	<u>WIRE</u>	<u>ACCESSORIES</u>	
Wood	Plastic	Galvanized Steel	Gate Handle	Electric Fence Sign
Steel	Porcelain	Aluminum	Fence Tester	Ground Rod
Aluminum		Plastic-Metallic	Lightning	Ground Clamp
Fiberglass		Wire*	Arrestor	
Step-in				

\*Do not use plastic-metallic wire with continuous output or chopper-operated energizers.

### FENCE WIRE RECOMMENDATIONS

Size : 20 through 9 American wire gauge

Type: 1. Smooth galvanized steel electric fence wire

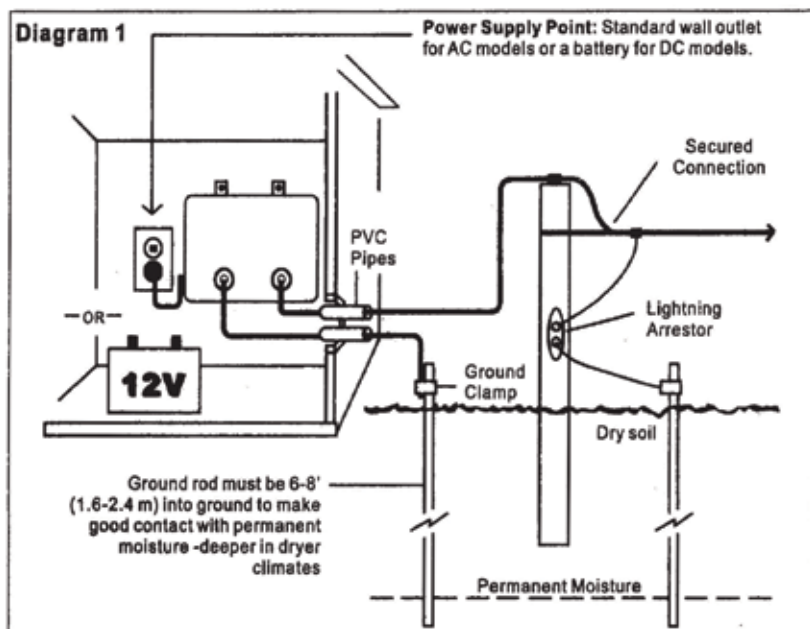
2. Aluminum (conducts electricity 4 times better than steel)

3. Plastic/metallic wire (see wire manufacturer recommendation located on the wire package)

### LOCATION OF FENCE ENERGIZER

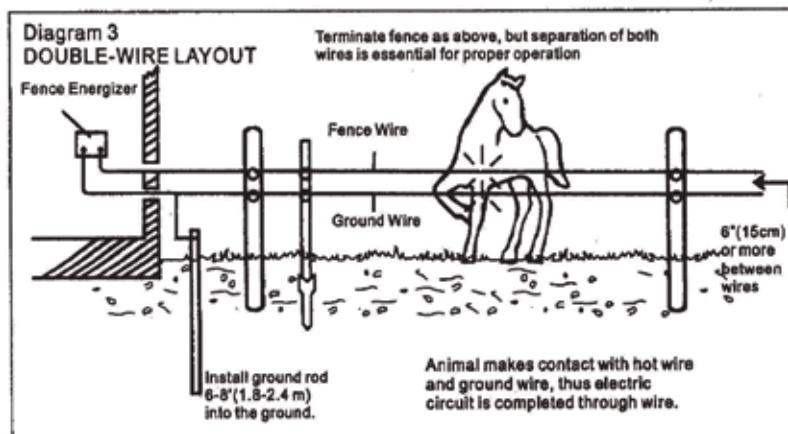
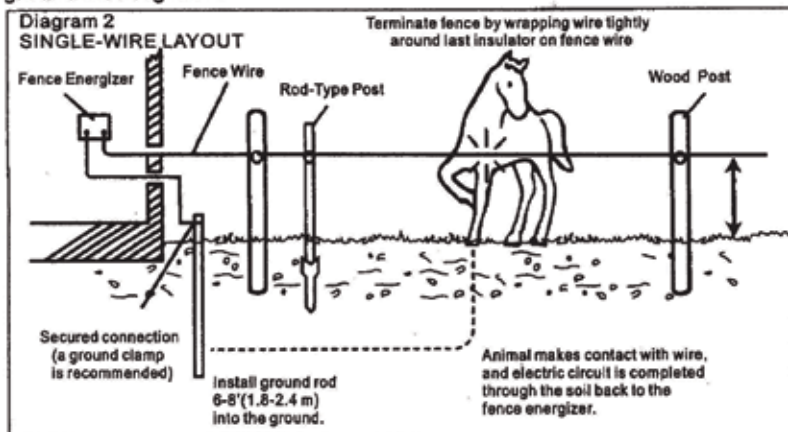
The electric fence energizer should be installed in a clean location where direct moisture and sunlight do not come into contact with the enclosure on a continuous basis. This location should be as close to the power source and the electric fence as possible. Even though the energizers enclosure is basically weatherproof, it is advisable to install it indoors or in a weatherproof housing. Be sure to install porcelain tube-type insulators (or equivalent) in the walls of buildings or housings where the fence wire feed through. See Diagram 1.

Never allow the fence wires to come into contact with objects which may conduct the electric fence "charge" to the ground. Frequently inspect the area where the energizer is installed and maintain it as a clean and dry environment.



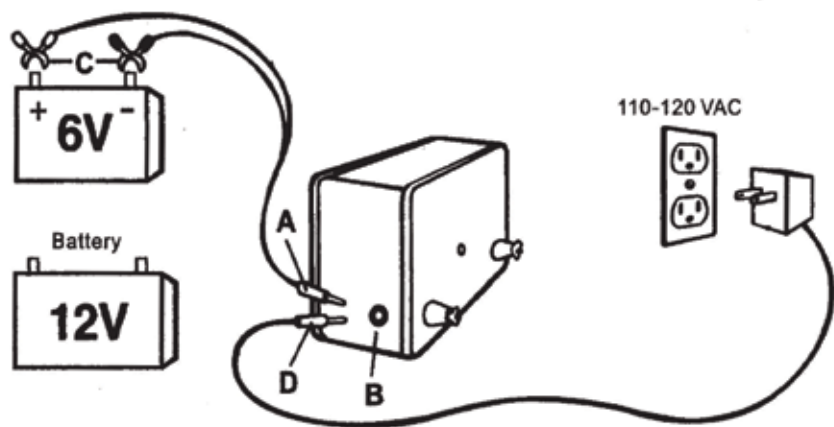
## TYPICAL ELECTRIC FENCE DESIGN

1. The design is simple and usually consists of wood, steel or aluminum posts fitted with electric fence insulators and threaded with a single strand of wire. (See Diagram 2). Spacing between posts may vary at your discretion, but be sure the wire is always taut and never allowed to sag excessively. Rule of thumb; space posts 12-25 feet (3.7-7.6 m) apart.
2. The earth is half your fence, so if the grounding rod is not satisfactory, you will have a poor working fence. For best results, drive a 6-8 ft (1.8-2.4 m) steel rod, galvanized pipe or copper rod in to the earth. This grounding rod does not have to be next to the energizer, but can be located nearby, preferably in a low, wet spot. This assures better grounding.
3. In dry or sandy soil areas it may be necessary to run a ground wire just below the "hot" wire. This ensures proper "shock" if the animal contacts both wires. In other words, some types of earth do not conduct electricity well and often single-line fences do not work because of the poor grounding conditions. See Diagram 3 for details. Never connect the fence wire and ground wire together.



Diagrams 2 and 3 illustrate a typical electric fence circuit. When an animal comes into contact with an electrically charged fence wire, the animal will feel the electric current because the electrical charge passes through the animal's body, then through the earth to the ground rod and then up the ground wire to the ground terminal of the energizer. If the animal and the ground terminal of the energizer are not sufficiently grounded, the path of electric current cannot be completed and the animal will not feel the shock. Since earth is half of the electric fence circuit, it is very important to have a properly installed ground circuit. In areas where poor soil and earth grounding conditions exist, use the two-wire system shown in Diagram 3. Likewise, the fence wire must always be properly insulated and not allowed to come into contact with shrubs, tall grass and any other conductive objects on a continual basis. Otherwise the electric charge from the fence wire will conduct to ground through weeds, etc. and the fence loses its "shocking" power.

### INSTRUCTIONS FOR SUPPLYING ELECTRIC POWER TO THE MODEL AC/DC



Battery Power Supply Cord with Clamps:  
AC/DC Adapter:

The AC/DC is designed to be powered by one of the following:

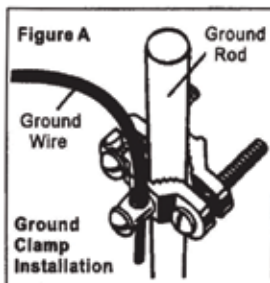
- A: One 6-volt battery-OR Note: Use a rechargeable battery
- B: One 12-volt battery-OR for greatest economy.
- C: A standard 110-120V outlet using an optional AC-DC adapter

**FOR USE WITH A BATTERY** Connect the plug of the DC power supply Cord (A) into the DC power jack (B). Connect the battery clips (C) to a 6- or a 12-volt battery. Connect the red covered battery clip to the positive terminal on the battery and the black covered battery clip to the negative terminal.

**FOR USE WITH AN ELECTRIC OUTLET** Connect the outlet plug of the AC/DC adapter (D) into the DC power jack, then plug the adapter into a standard 110-120V AC outlet.

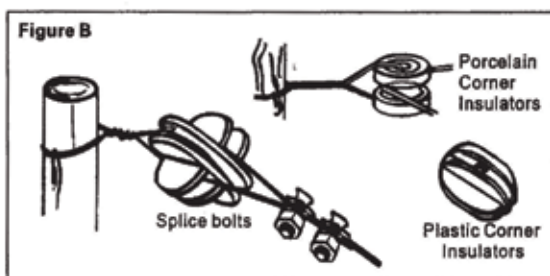
## PROPER GROUNDING (See Figure A)

Most fence problems are caused by poor grounding conditions. Proper grounding is an absolute must if your electric fence system is to work correctly. The ground rod should be either copper or galvanized steel (or equivalent) and driven into the earth to a depth of 6-8' (1.8-2.4 m). The grounding will work more efficiently if the rod is driven to a point where moisture is present. The rod may be driven in to the ground at an angle if necessary. Never use an existing ground rod that is connected to any other electrical systems. Stay at least 50ft (15 m) away from these. Do not use a water line for grounding the energizer. To connect the ground wire to the ground rod, use a ground clamp that is mechanically secured to the rod.



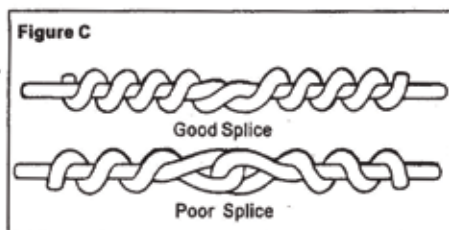
## INSULATORS (See Figure B)

Use standard electric fence insulators on rod-type line support posts or on wooden posts. At stress points such as corners or the starting point, use corner post insulators. Always insulate wooden posts. Do not staple wire directly to the post or you may have a problem with arcing.



## SPLICES (See Figures B & C)

Two types of splicing can be used. One type in Figure B shows the use of specially designed bolts that make splicing simple, fast and effective. The other type in Figure C can be made without the use of extra materials. Splice connectors may also be used.



## PANEL FUSEHOLDERS (See Figure D)

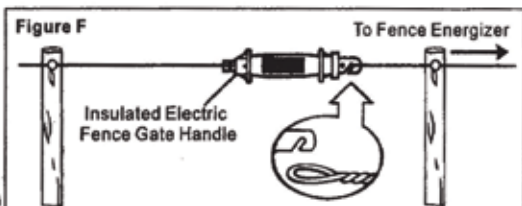
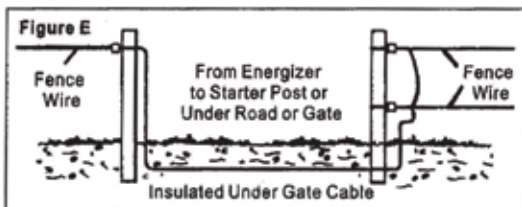
If your fence energizer is equipped with panel-type fuseholders, check periodically.

Caution: Replacement fuse should be rated at the amperage value shown on the energizer's label.

## INSULATED WIRE

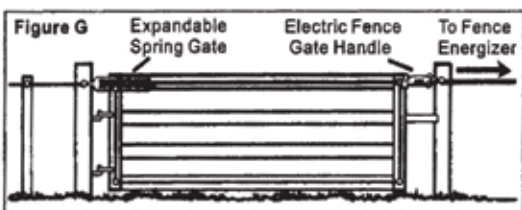
(See Figure E)

1. For running under roads, under gates, etc., Use insulated under ground or under gate-type wire only. Use this application with PVC tubing if desired.
2. For jumping on three to four strand fences, use 12.5 gauge insulated under gate cable.



## GATES (See Figures F & G)

Gates can be constructed from a single "hot" wire line with the use of an insulated gate handle as shown in Figure F. A standard gate can also be used without interfering with the electric fence by running insulated cable underneath the ground as mentioned above. To prevent cattle from rubbing or pushing through a gate, a "hot" line can be mounted on the gate itself. See Figure G.



## TRAINING

Cattle, horse, hogs, etc. will learn to respect an electric fence system after some exposure to a "hot" wire. Set up a simple single line inside a set of pens or small traps and animals will soon learn what the wire means. Even hard-to-handle bulls respect electric fence. Training takes very little time and effort but it is a must if you want a completely successful fence program.

**Energizing range for energizer using single-strand fencing under ideal conditions. Range will decrease when using multiple strands and under certain fence loading conditions.**

**FACT: THE LARGE MAJORITY OF ALL FENCE ENERGIZERS RETURNED FOR REPAIR ARE NOT DEFECTIVE. THE PROBLEM IS USUALLY IN THE FENCE CONSTRUCTION.**

## **HOW TO TROUBLESHOOT AN ELECTRIC FENCE ENERGIZER USING AN ELECTRIC FENCE TESTER**

- Step 1: Disconnect the fence energizer from the power source.
- Step 2: Disconnect the fence wire from the fence energizer.
- Step 3: Reconnect the fence energizer to the power source (without the fence wire connected).
- Step 4: Place the part of the fence tester marked "ground" on the ground terminal of the energizer and the part of the tester marked "fence" on the fence terminal of the energizer. (CAUTION: ONLY TOUCH THE INSULATED PARTS OF THE TESTER TO PREVENT ELECTRICAL SHOCK)
- Step 5: At this time the appropriate light/lights should be lit on your tester (see Chart below). If you have no output or a very low output, the problem is with the energizer and it will need to be serviced.

### **IF THE FENCE ENERGIZER TESTS OK**

- Step 6: Check the electric fence construction for defective insulators, inadequate splices, weeds, tree limbs or any other conductive paths to earth ground touching the fence.

### **SOLUTIONS**

#### **POOR EARTH GROUND**

- Step 1: Make sure the ground wire is securely clamped to the ground rod.
- Step 2: Make sure the ground rod is driven into the earth until 6" (15 cm) of the rod remains above the ground. In some cases a 6'-8' (1.8-2.4 m) ground rod is needed.
- Step 3: In nonconductive soil (sandy, rocky, clay) it may be impossible to achieve a sufficient earth ground for the energizer. In this case a double-wire configuration consisting of a hot wire and a ground wire is recommended (see Double-Wire layout in booklet).

#### **Short to earth ground**

- Step 1: Make sure only standard electric fence insulators or PVC is touching the fence wire.
- Step 2: Do not use any insulated wire on the fence unless it is designed for an electric fence.
- Step 3: If the fence wire goes through a wall or underground, it should be insulated with PVC or a proper electric fence insulated wire can be used.