

Electric Wire Fence Tips

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Wire:

- Minimum 12½ gauge, smooth wire, Type III galvanizing
- Recommend 170,000-180,000 psi breaking strength.
 - Avoid 200,000-210,000 psi wire. It is way too stiff to work with.
- ALWAYS, put the wire roll on a SPINNING JENNY before cutting the bands on a new roll.
 - Find both ends of the wire roll before cutting the bands.
 - Bend a curl on INSIDE end to be able to always identify that end in the future. The roll will not unroll from the inside out, so you don't want to accidentally grab that end in the future.
 - Find OUTSIDE end and secure it before cutting bands so it's not lost in the roll once you cut the bands.
- Wire does NOT need to be tight.
 - If wire droops a little between posts, it will help when deer hit the wire, if a limb falls on the fence, expansion/contraction from summer to winter.
- DO NOT ELECTRIFY BARBED WIRE
 - Safety – person can get hooked in the barbs and not be able to get away from 8,000 to 10,000 volts
 - Reliable -- Every barb throws off electricity, curl in barbed wire throws off electricity
 - Galvanized is usually not Type III, therefore shorter lifespan
 - Cost
 - 12 ½ gauge smooth wire averages \$0.024 per foot
 - High quality barbed wire averages \$0.049 per foot

Wire Tying, Crimping, Splicing:

- Loose connected wires will reduce voltage because of increased resistance.
- All splices, ties, crimps must be tight.
- Twist tying reduces the strength of the wire considerably.
- Best electric connections are crimped, a loose tie can create arcing and a hard, round wire wrapped around its self has very little surface area contact.
- Make sure crimping sleeves are also class III galvanized and made specifically for 12 ½ gauge smooth wire. Made to crimp round.
- A few poor or inadequate electrical connections won't be a problem with the modern charger. Several poor connections will become a problem in a hurry. Quality installation the first time.
- Leave 1" – 1 ½" end past the crimp when crimping to curl back just in case the sleeves weren't crimped tight enough and slip.

Insulated Wire:

- Always use Double-insulated 12½ gauge galvanized wire.
- Use for:
 - Lead-out wires from charger to fence and to ground rods.
 - Induction coil (choke) for lightning protection
 - Crossing under gates
 - Connections around corner posts.
- Any time you bury this line, place it in plastic conduit or pipe for added protection and insulation.
- Do not allow water to get into conduit. Freezing and thawing will eventually pull insulation away from the wire, causing a ground out.

Energizers (Chargers):

- Installed according to manufacturer's recommendations.
- High voltage, low impedance
 - Short pulse, less than 300 mAmps intensity, finished within 0.0003 of a second and a rate of 35-65 pulses/minute.
- Minimum 5,000 volt peak output, when under a load. Energizer should be rated 8,000 – 10,000 volts.
- Minimum of one output joule of energy for each mile of fence. Never go less than 2-5 joule.
- Plan for expansion.

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Charger Ground:

- 90% of electric fence problems are caused by poor grounding of charger.
- Minimum -- three 6' ground rods (minimum ½ inch diameter. 5/8" is better.)
- Spacing -- minimum 10' apart
- All ground rod clamps and connecting wire shall be left above ground
- Do not mix types of metal.
 - Galvanized rods-galvanized clamps-galvanized wire
 - Copper rods - copper wire
- Energizer terminals need to be stainless steel
- When installing ground wire through buildings use double insulated wire.
- Minimum 65' Spacing from other grounding systems (power poles, well casing, house ground, etc.)
- Do not tie charger into existing grounding systems such as, power poles, breaker boxes or milk barns.
- Install plenty of ground rods.

Lightning Protection:

- Lightning arrestors, choke and lightning ground system should be installed. See Manufacturer's Instructions.
- Lightning arrestor ground rods system should be minimum 65' from charger ground system
- At least 1 more ground rod in lightning grounding system than the charger grounding system.
- In lightning prone areas, on a multi-wire fence make the top wire a ground.
- You can build a homemade lightning arrestor that will last longer than most purchased types.
- Keep lightning protection grounding systems as far from barns and lots as possible, you don't want a lightning strike going to ground in the middle of a bunch of cows.
- If fence crosses a wet area, add an extra lightning arrestor and ground rods there.

Surge Protector:

- Surge protector should be installed between energizer and 110 power supply.

Shutoff Switches

- Use plenty of shutoff switches, makes trouble shooting and maintenance much easier.

Insulation:

- High density porcelain (gray) that withstands 10,000 volts or more
- AVOID white porcelain insulators. Low density and will crack and cause ground outs.
- High-density Polyethylene or Polypropylene with ultra-violet stabilizer
- Do not use red insulators. For plastic insulators, dark colors, such as black, hold up best to sunlight.
- Some problems with insulube holding moisture and wire deteriorating (rusting) has occurred.
- There are several grades of insulube, some is very light. Avoid this.
- Most good insulators are black but not all black insulators are good. Some high quality white insulators are now on the market.
- Polypropylene insulators may become brittle when cold.

Offset Brackets:

- Type -- High-tensile spring wire type with a high-density polyethylene pinlock or porcelain insulator
- Spacing -- minimum 50' apart (25' recommended)
- Height -- 2/3 the height of the animal to be controlled.
- Shorter, plastic offset brackets are not adequate. Can bend and cause problems

Gates:

- Use 3/32" or 1/8" galvanized cable.
- Not electrified when the gate is open. Underground or overhead transmission lines carry electricity past gate

Corners Post:

- Putting a post 6" deeper doubles the strength.
- Floating Angle Brace system is 10-15% stronger than the H-Brace System and one less post, one less post hole to dig!

Line Posts:

- Many options -- composite, wood, plastic, fiber glass or steel T-posts.
- Consider one of the options made from nonconductive material. Avoids ground outs, hold up to deer hitting wire to limbs falling on fence better.
- Spacing and stays depends upon terrain and number of wires.
- An average spacing of 50 ft. works well.

Live Trees as Line, Bracing and Corner Posts:

- Diameter – diameter breast height minimum 5"
- Protection should be used between tree and insulator.

Study fencing catalogs and manuals. New products and ideas are in every one of them.

(August, 2017)