

# DESTINY RANCH

## Electric Fences

It's like true magic to see cattle standing behind a single wire and in this part of Oklahoma it will certainly have the neighbors calling about cattle being out. However it's not the wire strength or wire height, type of post that will hold them cattle in the place you put them.

It is the respect the cattle learn from the shock pulse they receive when they touch the wire. Generally speaking cattle need approximately 3500 volts to hold them in a pasture. Once they are accustomed to electric fences the voltage can come and go and the cattle will remain in place, however its only a matter of time before one will figure out it is off and will go over or under the fence and then the training has to start again. In short keeping the voltage up will eliminate cattle getting out of a pasture once they are trained and have respect for the wire.

There are several types of chargers available, battery powered, solar powered, 110 volt and come in all sizes and shapes. Most chargers will tell on the package how much acreage or wire the unit will power. Don't believe it.

Electric fence power is measured by joules. And this also is a confusing place for anyone to start even if they are electrically trained. A joule is an electronic measurement of 1 watt for 1 second. Not to worry it gets more confusing as we go along.

However in short the joule is what pushes the power down the line. Think of it as water coming out of a faucet and going thru a hole. The smaller the hole the less water will pass the larger hole the more water comes out. Watts and joules is the same, the more joules the bigger the hole or more watts, the smaller joule number the smaller the watts.

The more joules the more power. The shape or length of the pulse time also has a bearing and the high powered, low impedance, short pulse will travel through much more resistance (vegetation and fence load). Now that is a mouth full to say the least, must have some Einstein to understand this stuff.

Impedance in short is the resistance, low impedance is same as saying low resistance.

So now back to the chargers, some will be selling stored joules and other will only state output joules. At the very least you would need to drop their claims by half.

The best way to size a fence energizer or charger is to find the **output joules** and figure that **1 joule will power about 3 miles of wire**. If the charger manufacturer cannot give you the **output joules** rating then simply do not buy the charger.

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A good charger that will maintain 9000 volts and drops down to 6000 volts in June you will be in good shape, However if you have a charger that is 5000 volts and drops to 2000 volts then you have a problem. The 9000 volt charger will burn back that wet green vegetation. The vegetation loading is critical here in this part of Oklahoma. The last thing you want is to have vegetation overloading the fence and not have sufficient power to hold the livestock. And you certainly don't want to cut vegetation from under the electric fence just to keep the voltage up.

Remember 1 joule will power 3 miles. For example if you have 15 miles of fence (15 divided by 3 = 5) you will need a charger with a minimum of 5 **output joules**. If you are expecting heavy vegetation loads or plan to add more fence I would suggest that you buy a charger with an 8-12 **output joules**.

Just be aware that when you are out shopping for that charger you need to compare apples to apples and do not compare output joules to stored joules.

Now that we have the charger under control let us move on to the grounding of the charger. Make no mistake this is the most important factor in ensuring the fence works properly.

There are copper grounding rods and galvanized grounding rods. Both work but if you use copper rods make sure all the connections and wire are in copper all the way back to the charger. This can be rather expensive and sometimes difficult to locate.

I recommend galvanized since most of the metal in your system will be galvanized. Galvanized grounding rods and galvanized wire for your connections to alleviate the potential of corrosion due to dissimilar metals in contact with each other.

Place your grounding rods at least 35 feet from any other grounds on the farm as well as utility grounds.

One way to figure how many ground rods to use is to take the output joules of your charger times 3 or 3 foot of grounding rod for each Joule. A 6 joule charger will require 18 feet of ground rods or 3-6 foot rods. To compensate for dry ground put in 4 rods. These rods should be spaced 10 feet apart in series and routed to the energizer.

Now it's time to test the system, go 100 feet from the charger and lay a metal rod against the wire to short out the fence, trying to get the voltage below 1000 volts. Once you achieve the 1000 volts take your voltmeter and get a reading from the last ground rod. You should be getting less than 300 volts ( a digital meter would read .3) out of that rod. If there is more than 300 volts you would need to add more rods.

Now the big question is where to place these rods. A drip line off a building is good or anyplace there is permanent moisture. In the event we do not get rain for long periods of time then it may be useful to water the grounding area. Now that you are done it is a good idea to check your connections from time to time to ensure everything stays tight and nothing is broken loose.

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There are a lot of accessories that come with electric fences and most are good investments. Most will recommend lightning protection, surge protectors, indicator lights and many more. You will need to cross this arena but I would at least recommend a Lightning protector.

Cost is a major concern with all areas of the farm and ranch, however a good electric fence charger is generally less than 1 cent per foot. And yes there is a formula for this. Cost of charger divided by distance of feet equals cost per foot.

Have a great experience with your fencing and always have happy grazing days.