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High Tensile Permanent Electric Fence, Installation

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Installing a High Tensile Electric Fence

High Tensile electric fences can be economical long lasting fences, if installed properly. There are a few important steps that will ensure a solid fence that will last for many years. This fact sheet will detail these important installation steps to follow to ensure a durable and long-lasting high-tensile electric fence.

Step 1: Install and Brace Corner and End Posts

Corner and end posts need to be sturdy enough to bear the pressure placed on them by the tension of the wires. Typically the wire tension is between 200 and 250 lb. of pressure. Therefore, they should be sufficiently strong, buried adequately deep, and be appropriately braced.

Diameter of Posts
The more wires your fence has, the thicker or stronger your corner and end posts will need to be. Braces do not need to be as thick as the posts they are bracing. Four-inch diameter braces should be sufficient for all posts. Table 1. Identifies the size of the post appropriate for the number of high tensile wire(s) on the fence.

Length of Posts
One end of the posts should be buried and tamped as deep as the height of the tallest wire, and after being buried be at least 6 inches taller than the highest wire. Therefore, posts should be at least twice as long as the height of highest wire plus 6inches. If the height of the tallest wire was 42 inches, the post height would need to be at least 90 inches tall and buried 42 inches deep (42 inches tall + 42 inches deep + 6 inches extra = 90 inches total).

High Tensile Fence Wires	Wood Post Diameter Needed
1 or 2 Wires	4 to 5 inches
3 or 4 Wires	5 to 6 inches
5 or 6 Wires	6 to 7 inches

Table 1. Size of post needed for the number of high tensile wire(s). (Burt, 2015)

Different Types of Braces
Floating braces are extremely strong, look great, are cost-effective, and require less labor than other braces that can carry a similar load (See Figure 1.).

H-Braces (See Figure 2.) are also extremely strong and look great, but they do require at least one more brace post than floating braces. If post holes are being dug by hand a considerable amount of extra labor may be required.

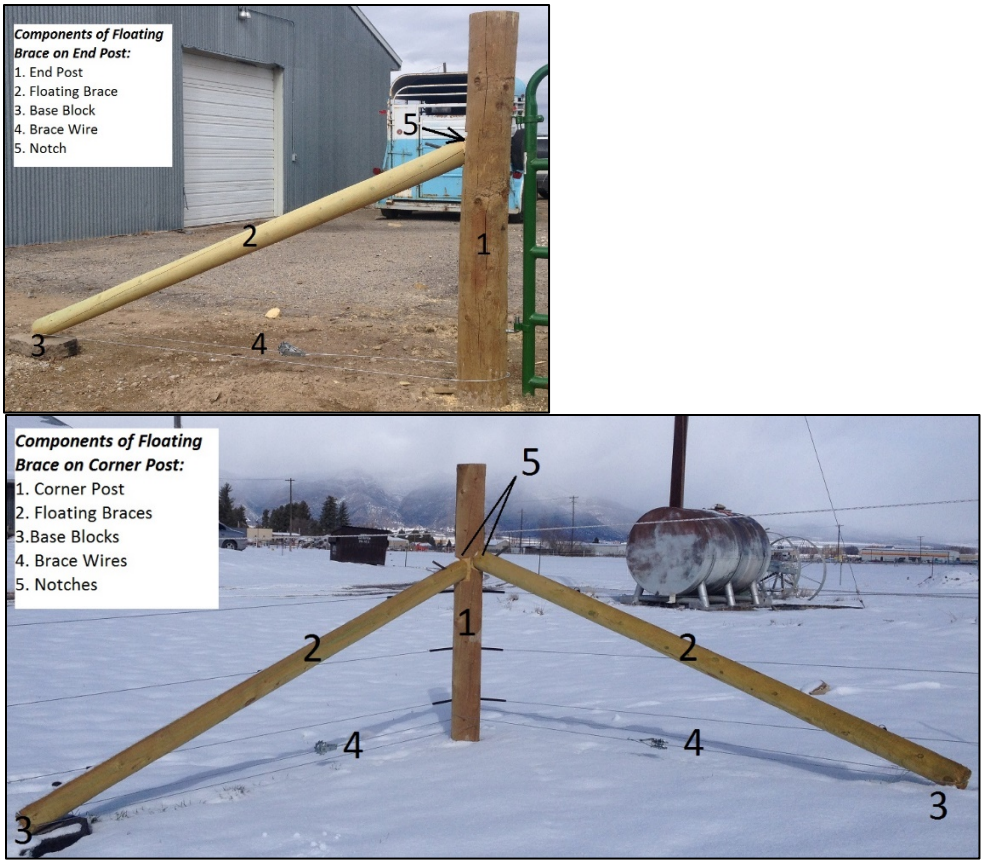

Figure 1.Top (Fence end floating brace) Bottom (Fence corner floating brace)

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Figure 2. Top (Fence end H-brace) Bottom (Fence corner H-brace).

How to Build a Floating Brace

1) Cut a notch in the post. Although there are several different ways to do this, two methods are shown in Figure 3 below. It is important to get a snug fit between the post and brace.
2) Set one end of the brace into the notch and the other on the base block. The base block can be any solid material that does not degrade with the rough dimensions of 15-inchs long, and eight inch wide, and two inches thick.
3) Install the brace pin. #40 galvanized nails are ideal for brace pins, although 8-10" long 3/8" pieces of rebar works well. Drill a hole through the brace and into the post, then pound the pin through the brace and into the post until the brace and post are snug.
4) Install the brace wire. The brace wire should hang about 4" above the ground. Pound a staple into both the post and the brace about 4" above the ground. Then, loop high tensile wire through the staples, and around the base of the post and the base of the brace. Use a strainer to tighten the wire until it is taught. Strainers are small high tensile wire tighteners that can be purchased at most fence supply companies. See Figure 7.

Figure 3.Top (Flat floating brace post notch) Bottom (Angle floating brace post notch

How to Build an H-Brace

1) Bury and tamp one end of the post and vertical brace. For a corner post you will need to bury and tamp on end of two vertical braces. The posts and supporting braces should be spaced at least 8' apart.
2) Install the horizontal brace. The height of the horizontal brace should be somewhere between the top two high tensile fence wires. You will need two brace pins (4 for a double h-brace on a corner post) that are at least ¼" in diameter. One brace pin should be 5" long and the other should be 3" longer than the diameter of your vertical brace. Drill a 2.5" deep hole in the post as well as in both ends of the horizontal brace, and then drill a final hole all the way through the vertical brace. Next, pound the 5" brace pin into the post so that half of it is sticking out, and then place the horizontal brace onto the 5" brace pin and pound it so that it is snug against the post. Next, pound the longer pin through the vertical brace and into the horizontal brace so that they are snug against each other, and so that there is about ½" of the pin still sticking out of the vertical brace. This ½" of brace pin will be used to support the brace wire in the next step.
3) Install the H-brace wire. On the side of the post farthest from the two braces, pound a staple in the post about 4-5" from the ground. The brace wire should run diagonally from where the brace pin is sticking out of the vertical brace down through the staple in the bottom of the post. Loop the brace wire in a figure-8 pattern twice so that it makes two loops, and then tighten it with a strainer until it is taught.

Figure 4. H-brace with brace wire

Step 2: Lay Out Guide Wire

After the end and corner posts have been placed, the next step is to lay out the first and lowest high-tensile wire. Once this wire is tightened, it will act as a guide while you place the intermediate posts. Go around corners and terminate this "guide wire" just like you would the rest of the wires. Follow the instructions for going around corners and terminating wires that are listed below.

Step 3: Place Intermediate Posts

Recommended spacing between posts

Because high-tensile wire has the ability to remain tight over long distances, the spacing of intermediate posts can be wider than in other fencing systems. As a general rule 25-50 feet between intermediate posts is an appropriate spacing, however rolling or hilly terrain may require closer spacing and level or evenly sloped terrain may allow more distant spacing. If possible, space your intermediate posts in such a way so that they divide your pasture into known areas like ¼ or 1/8 of an acre. This will make it easier to estimate how much area the herd is allotted when practicing management intensive grazing practices.

Pros and cons of different types of intermediate posts
Typically, either metal t-posts or composite posts are used as intermediate posts on an electric fence. Composite posts have the advantage of being non-conductive, unlike wood or metal posts, and will not result in a short if the wire touches them or if an insulator pops off. An insulator is a non-conductive connector used to attach the high tensile electric wire to the posts. Also, composite posts are flexible so that if something runs into the fence, the wires will flex with the posts rather than breaking. T-posts are typically about $2 less than composite posts, but because composite posts do not require insulators and t-posts do, the price difference is probably closer to $1.

Step 4: Lay Out and Hang High-Tensile Wires

Laying out High Tensile Wire
The high-tensile wire should be placed on the inside of the intermediate posts and vertical braces on an H-brace, but on the outside of corner posts and floating braces (see Figures 1-2). If possible, lay out your high-tensile wire when the ground is not muddy. If your high-tensile wire does happen to get a coating of mud on it, clean it off with a rag since the coat of mud could interfere with the electrical current. Use a spinning jenny to unreel the high-tensile wire. Spinning jenny is a machine that unwinds high tensile wire and reduces tangling issues and can be purchased at most electric fence supply companies. The spinning jenny can either be secured on the back of a 4-wheeler or truck, or it can simply be placed on the ground and unreeled by hand. Before totally unreeling the wire, think about where the wire will need to be insulated (anywhere it will come in contact with posts, braces, brace wires, and anything else that is conductive). If using tubing insulators, it can save a lot of time to place these on before you unreel all of the wire. If you happen to run out of wire in the middle of your fence-line, or if the wire somehow breaks, you can connect two sections of wire together using two crimp sleeves as seen in Figure 5. Crimping sleeves are small metal tubes used to connect two strands of high tensile wire together with a crimping tool supplied by electric fencing companies.

Figure 5. Top (Floating corner brace insulators) Bottom (Crimping sleeves used to splice two stands of wire together)

Different ways to terminate wire at end post
There are several ways to terminate high tensile wire at an end post. Figure 6 below shows two methods: terminating with double-U insulator and terminating with insulated tubing. Terminating with insulated tubing is faster and requires less sleeve crimps. Both ways are similar in price.

Figure 6. Left (Terminating high tensile wire on an end post with double-U insulator) Right (Terminating high tensile wire on an end post with insulated tubing and crimping sleeves)

How to use strainers
Strainers are very simple to use. Install 1 strainer for every ¼ mile of fence. Get rid of as much excess slack as possible before wrapping the wire through the strainer. Doing so will prevent the strainer from prematurely filling up. When pulling wire around a bend, the strainer should be placed on the longer stretch of wire. Also keep in mind that strainers may need to be tightened every couple of years, and that lower tensile strength wires will need to be tightened more frequently than higher tensile strength wires.

Figure 7. High tensile wire strainers

Step 5: Install Underground Wires

If you have more than one gate in the fence, it will be necessary to connect the separate segments by either burying insulated wires underground or by raising a wire overhead. Buried wires need to be insulated and buried deep enough to prevent damage from heavy machinery or tillage implements. We recommend burying underground insulated wires at least one foot deep. Use open tap crimping sleeves to secure the underground wire to either side of the break in the fence. Finally, make sure to jump all of the other wires on the fence to the wire that the underground wire was secured to. See Figure 8.

Step 6: Choose and Install Gate(s)

Although there are many different kinds of gates, we are only going to compare two: Tube Gates and Spring Gates. Tube gates are effective and look nice but are relatively expensive. See Figure 9. Spring gates do not

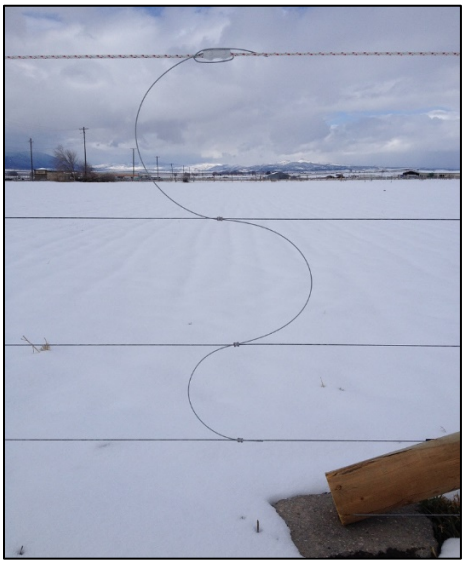

Figure 8. Top (Underground insulated wire buried under a gate and attached to high tensile fence) Bottom (Jumping all high tensile wires together after gate)

need to be as strong as tube gates because they are electrified. Just like electric fence, animals avoid contact withthem because they don't like getting shocked. They are effective and very inexpensive. See Figure 10

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Figure 9. Tube gates.

Figure 10. Left (Electric spring gate) Right (Electric spring gate handles and attachment)

Summary

Once the high tensile electric fence is installed properly it will last for around 25 years or more with less than half the annual maintenance cost as either a non-electric barbed wire fence or a mesh field fence (Edwards & Chamra, 2012). This fence will be an effective conductor of a powerful electric charge that will ensure good animal control for many years.

References

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