



How To Make An Electric Guitar Nut

In this article, I'll discuss how you can make your own electric guitar nut as well as why you need to mock-up the guitar before going any further.

At this stage, you are almost ready to connect the neck of your guitar to the body. But before you glue or bolt them together, I recommend test assembling your guitar to check for alignment problems.

In most cases, alignment problems can be easily fixed. However, sometimes an issue may arise that requires starting part or all of your hard work over. Don't let that last statement scare you too much. After all, it's not like you're trying to bring the space shuttle back to earth safely, you're building an electric guitar. If you have to redo the neck or body, try to think of the work you've done so far as part of the learning experience. Besides, if you've done everything correctly up to this point, you shouldn't have to worry taking such drastic steps.

Before you can test assemble your guitar, you'll need to prepare a nut. If you plan to use a locking tremolo system, you're good to go as far as the nut is concerned. But, if you plan to use a nut made from bone or graphite, you'll need to fabricate the nut first.

Making a nut has always been a sort of touch and go process where the result either works or it doesn't. For that reason, you should plan on buying at least three blanks in case your first attempt goes awry. But don't worry too much as I will try and detail the process as clearly as possible.

Test fit the blank on the neck.



Make sure the slot for the nut is flat.

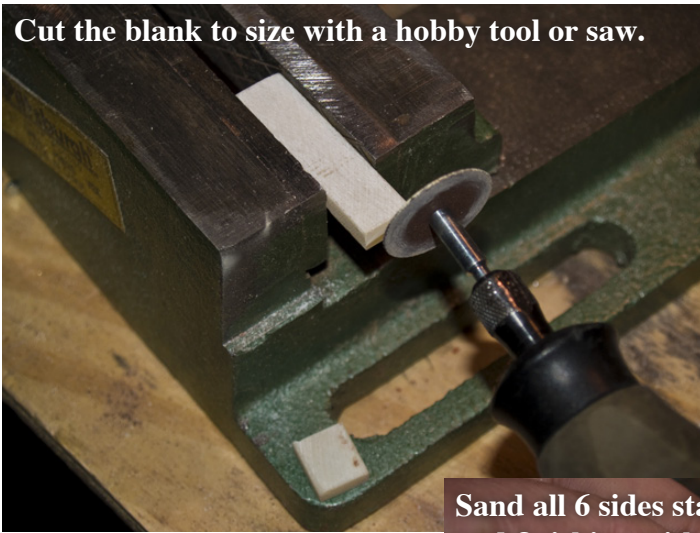


At this point, there should be a flat section on your guitar's neck between the end of the fretboard and the peghead. This is where the nut will reside. Use the flat edge of a wood file to generate the flat surface from one side of the neck to the other so that the end of the fretboard creates a stop for

the nut to butt up against. The width of this flat section should equal the thickness of your finished nut. If the blank is 3/16 of an inch thick, make the flat section a bit narrower since the nut will be thinned slightly during its fabrication.

Start by sawing the blank just a tad wider than the neck where the nut will sit. Next, sand all six sides of the blank starting with 80 grit paper and progressing through to 220 grit. Test fit the nut several times and keep sanding until the thickness of the blank is almost the same as flat section it will sit on. Later on

Cut the blank to size with a hobby tool or saw.



down the top of the blank until you reach the last line you drew. As you remove material from the top of the blank, angle your file so the peghead side of the nut will be lower than the fretboard side. This angle will serve to smooth the bend that will form in the strings as they head from the nut down to the tuners. At this stage, you may want to round over the sharp corners where the sides of the blank meet the top. **DO NOT ROUND OVER THE FACE EDGES. THEY MUST REMAIN SHARP.**

Now comes the fun part; cutting the slots.

If you plan on making a lot of guitars, you'll want

you'll do some final sanding and polishing, which will make the nut fit perfectly.

When you're satisfied with the initial fit, you can begin rough shaping the blank. To do this, place the blank onto the flat section so it butts up against the fretboard. Next, take a set of brass, automotive spark plug feeler gauges and stack them onto the fretboard until they equal the height of the first fret. Move the stack up to the face of the nut and press it down so that it conforms to the curvature of the fretboard. Use a sharp, mechanical pencil to draw a line onto the blank's face right where the stack touches it. Next, add one or more gauges to the stack to increase its thickness about .030 inches. Press the stack down to the fretboard and draw a second line onto the blank just above the first line. This line will represent the maximum depth of the string slots you'll be cutting later. A third line will now be added just above the other two by once again adding to the stack. This line will represent the top of the nut and should be at least .030" above the line you just drew. Make sure you press the stack down firmly so all three lines match the fretboard's radius.

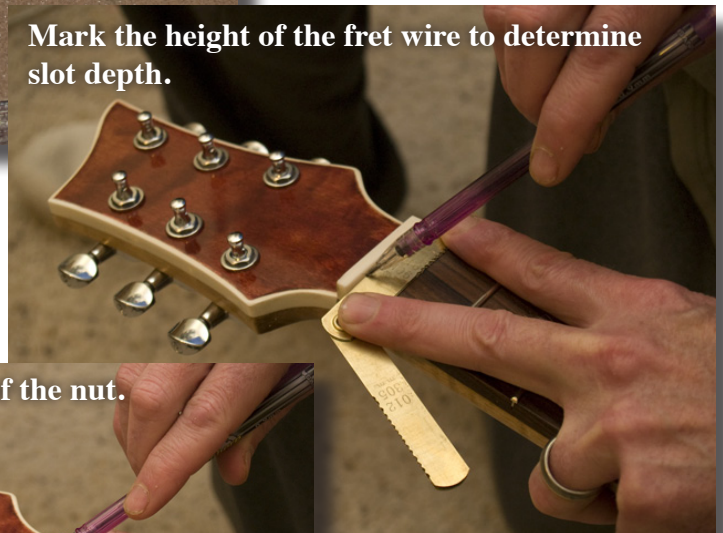
Remove the blank from the neck and place it into a vice so the top line is visible. Now you can start filing

Sand all 6 sides starting with 80 grit and finishing with 220 grit paper.



to invest in a set of nut slotting files. However, be aware they ain't cheap. On the other hand, I use a very simple and much less expensive alternative; brass feeler gauges. What I do is use a Dremel tool with a thin grinding disk to cut teeth into each of the feeler gauge's blades. By combining

Mark the height of the fret wire to determine slot depth.



Mark the top edge of the nut.



the different thickness gauges, I can make a saw for each slot. In fact, I can use the thinner gauges by themselves for the G, B and high e string slots. The only disadvantage of this

approach is that the slots will tend to be flat along the bottom instead of rounded to match the shape of each string. However, in a minute, I share with you a simple trick to fix this.

To slot the blank, you'll first need to mark the position of each string. You can do this by either

The lower line is where the fretboard meets the nut. The second line is the depth of the slots. A third line will be drawn to show the top.

purchasing a nut-slotting ruler, or go the eguitarplans.com and click on the Luthier's Checklist link. On that page you'll find a free template, which features the slot position for several nut widths. With the blank still clamped into the vice, use the template or the nut-slotting ruler to mark the slot positions with a sharp mechanical pencil. Then, I like to start the slot by "sawing" each with a new number 11 blade in my hobby knife. These starter slots will be very thin and shallow, but will be enough to provide a guide for your files or feeler gauge saws.

I usually start by sawing the low E slot with one of the feeler gauge saw blades that is just thick enough to barely fit into the starter slot I made with my hobby knife. After a few strokes, I add more blades until the thickness of my homemade saw equals the low E string's gauge. Then I saw at a slight angle, down toward the peghead. When the depth of the slot touches the top of the middle line I drew earlier, I stop sawing and proceed with the other slots in the same fashion.

At this stage, the slots won't be deep enough to get the proper string action.

However, when I do the final set-up later on, I'll deepen the slot gradually until I achieve the action I want. More on that in article eight. And remember when I said the bottom of the slots would be flat? I'll round them out during final set-up by using the wound, low E, A and D strings like a file! For the G, B and low e, I'll blunt the teeth of my feeler gauge saw blades with some 400 grit wet/dry paper to do the same.

Once you've shaped and slotted the blank to form a rough nut, you can go ahead and mock-up your guitar.

Start by marking the center of the fretboard at both the nut and the heel with a sharp mechanical pencil. Next, mark the centerline of the body from the neck pocket to the rear edge of the body. Then, insert the neck into the body's neck pocket and make sure it's firmly seated.

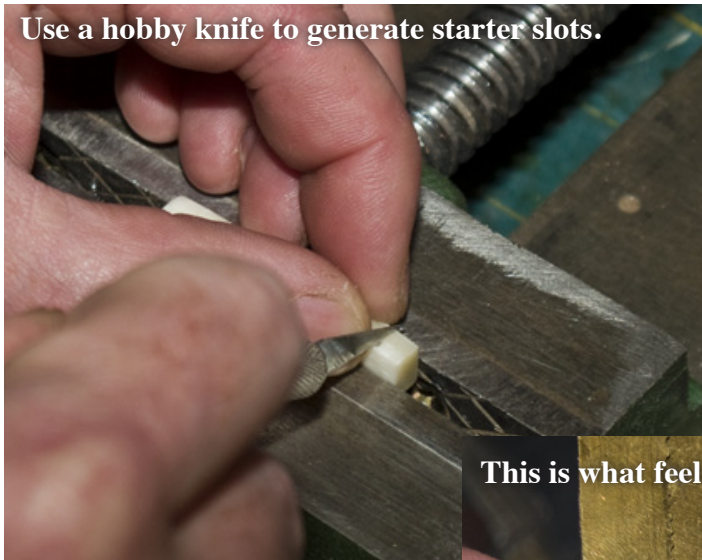
File down to the top line.

The top of the nut must be angled down to the headstock.

Mark the position of the slots.

Take a length of thread and stretch it from the center mark at the nut all the way back to the rear edge of the body where the centerline is marked. If the string passes directly over the heel mark, congratulations, the neck is straight. On the other

Use a hobby knife to generate starter slots.



hand, if the string misses the mark, you'll need to rework the pocket's shape and add some thin wood shims between the tenon and the pocket's walls to straighten out the neck. If the result of shimming the neck ends up looking unsightly, consider adding a pickguard that wraps around the neck's heel to cover up any gaps.

Once the neck is straight, place the nut where it belongs on the neck between the fretboard and the headstock. Next, carefully position the bridge into place where the mounting holes have been drilled. Use washers or small coins to lift the bridge up to the height it will be at when the guitar is assembled.

Now comes the moment of truth. Stretch a length of thread or a guitar string from the low e nut slot back to its corresponding bridge slot. Check the position of the string as it runs the length of the fretboard. What you're looking for here is how close the string is to the edge of the fretboard. It should be no more than an 1/8" from the edge. If it's too close to the edge or worse, it falls completely off, you've got a problem. Before going any further,

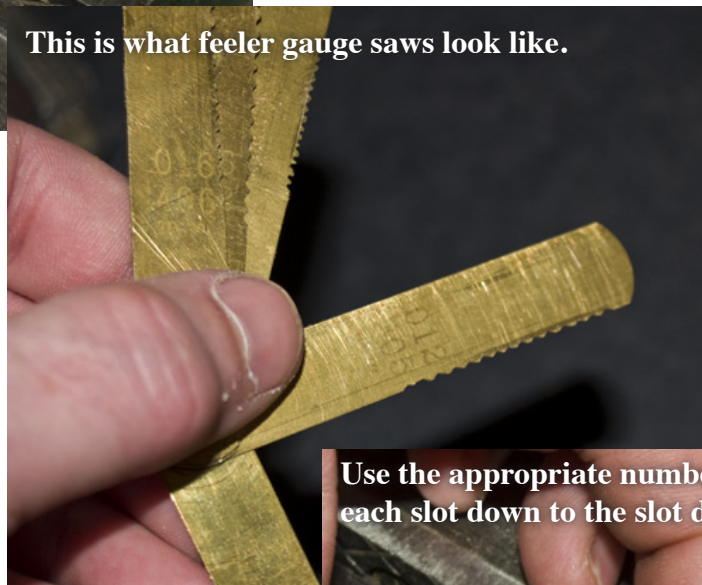
double check the position of both the nut and the bridge to make sure they are situated properly.

Next, do the same test with the high e string. If both e strings have good clearance from the edge, you're done mocking up the guitar and can rest easy. But, if there's a problem, you may be in for some serious reworking of the neck. In fact you may have to start over. But don't panic just yet. There are some possible solutions that could fix the problem.

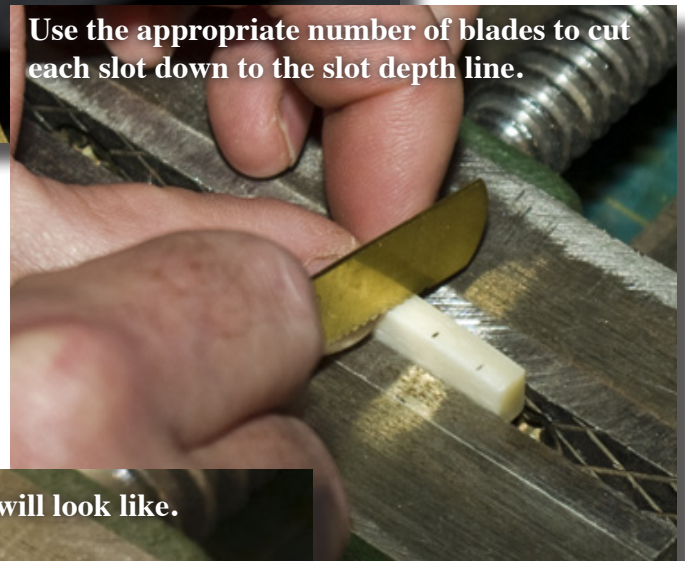
First, you could make a new nut and bring the strings closer together. However, this fix alone usually

doesn't do much to bring the strings in from the edge. Another approach you can take, one that can be used in conjunction with making a new nut, is to find a bridge with narrower string spacing. If

This is what feeler gauge saws look like.



Use the appropriate number of blades to cut each slot down to the slot depth line.

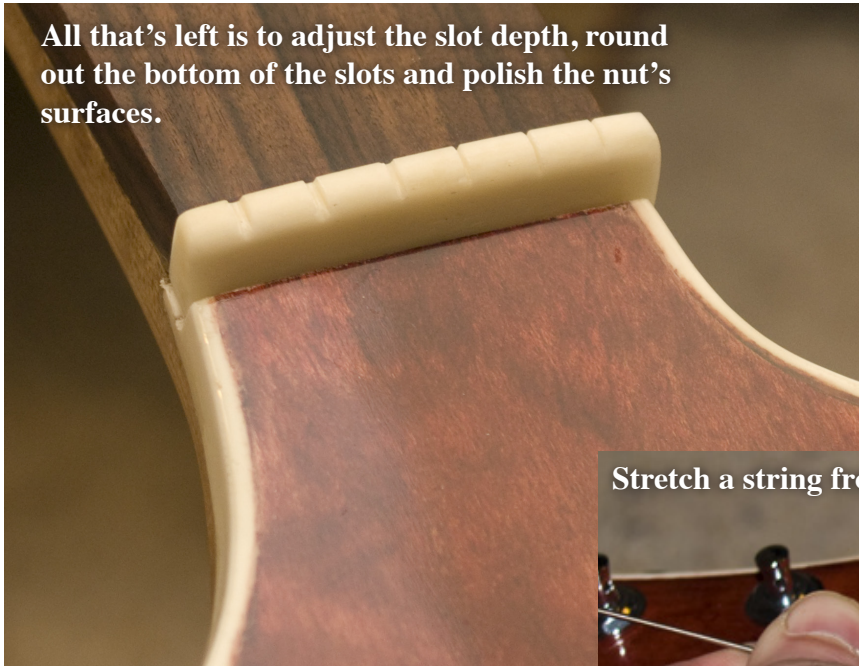


This is what the rough slot will look like.

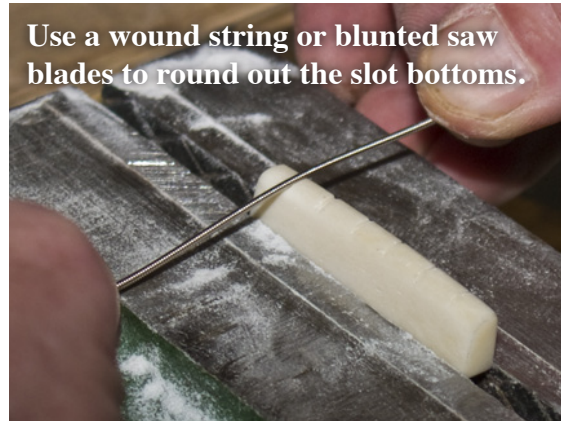


you're using a tune-o-matic bridge, you can purchase one without slots in the saddle. Or you can replace the saddles with notch less ones. That way you can cut your own slots and thereby move the strings in closer together. If none of these solutions will work with

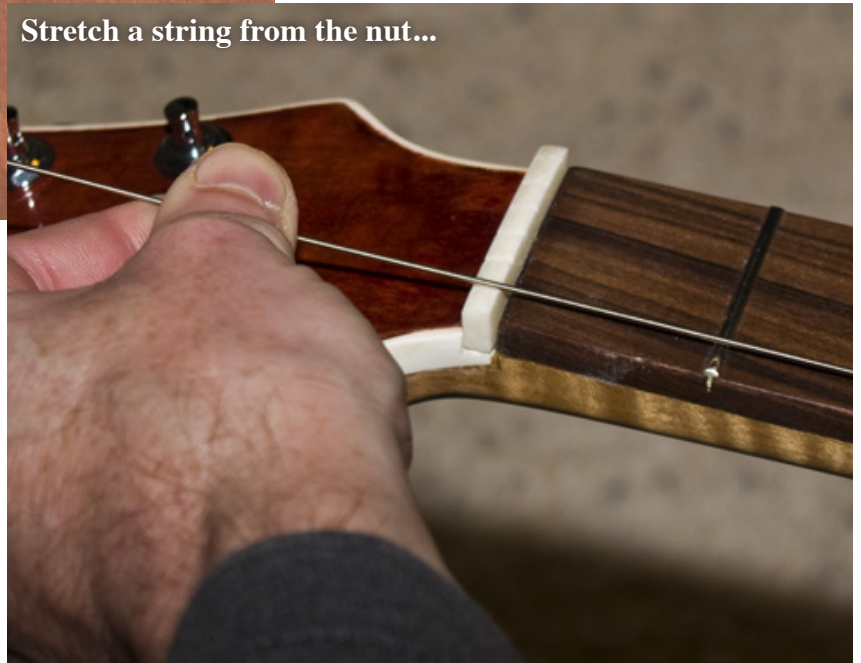
All that's left is to adjust the slot depth, round out the bottom of the slots and polish the nut's surfaces.



Use a wound string or blunted saw blades to round out the slot bottoms.



Stretch a string from the nut...



your guitar, you'll have to make a new, wider neck.

Now you can see why I stress having a good plan as well as measuring your components before cutting any wood. But don't get too upset if you have to make a new neck. This happens to a lot of luthiers—even accomplished ones—and should be considered part of the learning process.

Well, that wraps up this article. I hope when you mock up your guitar, all goes well. If not, please don't give up. When I made my first guitar, I had to carve 4 necks before I got it right. Of course, I was self-taught and had to learn the hard way, by trial and error.

In the next article, I'll discuss different ways you can finish an electric guitar. Until then, make that nut, mock-up your guitar and see where things stand.

For more information about electric guitar building, be sure to visit my web site at eguitarplans.com. There you find a selection of unique and original electric guitar plans available for download at a very reasonable price.

...to the bridge to check string clearance from the fretboard's edge.

