



## The Planning Phase

The following article was derived from my podcast on iTunes. I've added photos on page two help explain the complicated process of planning your guitar.

Building your own electric guitar can be as easy as purchasing a kit where all you have to do is sand the pre cut wood, apply finish and bolt together, or you can go all out and take a pile of wood, some off the shelf components and render your own custom made instrument. This series of articles will deal with the latter. But before you go and fire up the power tools, you'll need to have a plan.

Why is it so important to have a plan you might ask? The answer is simple. Electric guitars are sophisticated instruments that require a carefully executed approach in order to work properly. If you take a close look at some of the guitars on the market, you'll notice the wide variety of configurations available. Different pickup choices, scale lengths, body and neck woods, the number of strings and so on. The list goes on as you might expect, but I'll try and give you the information you'll need to plan the type of guitar you've always dreamed of owning.

Let's start by considering the type of electric guitar you want to build. You can quickly narrow your choices by thinking about the kind of music you intend to play. For example, you wouldn't want to play light jazz on a guitar built with dual, active humbucker pickups. And even though you can play classic metal with a triple single coil setup, the particular sound you want may not work with that choice.

The bottom line is you'll have to do some research before doing anything else. I would recommend heading over to your local guitar shop and try out several different guitars to get an idea of how tone is determined by the choice of wood and components. But if you're like most other guitar players, you may already have some idea of what you want to build.

While you're out there exploring options, pay close attention to how the guitars feel in your hands. Start with the neck. How does it feel to you? What about the different scale lengths and the size of the frets? If possible,

bring along a pair of digital calipers and a tape measure to check neck width, thickness and length. Also make a note of the neck's contour. Is it a "U" shape? Or is it more like a "V." If you have a digital camera, use it to snap some shots looking down the top and the bottom of the neck. Then, use the calipers to get a rough idea of how wide and tall the frets are. If you're worried about raising the ire of the shop's staff, throw them a bone. Offer to buy some parts if they'll let you take some measurements.

Another important consideration is what you prefer as far as the layout of your guitar. I call this guitar ergonomics and it can be measured two ways: the length of the scale and where it's positioned with respect to the center of your torso. As far as scale length is concerned, most electric guitars today fall somewhere between 24.75" and 25.5" and is measured from the front of the nut to where the strings meet the bridge. However, it's important to note that scale length is usually chosen for its impact on tone. Never the less, the scale length you settle on will have an impact on ergonomics.

The best way I've found to determine the most comfortable layout is to start by holding the guitar in a normal standing position with a strap over your shoulder. With your fret hand, reach up and hold what you consider to be a tough cord at the first fret. Then, draw an imaginary line from your chin to your belly button. I call that the torso line. Use your tape measure to determine the distance from your torso line to where the strings meet the bridge. You'll notice this measurement varies with each guitar you try. Once you've found the guitar with the most comfortable reach, make note of the distance from your torso line to the front of the bridge. I call that the bridge position measurement. Then, measure across the guitar's body from one strap peg to the other and record that number as the strap peg measurement. At the same time, observe where your torso line hits the tape and note that measurement as the vertical centerline. Now you can head home and start to draw up your plan.



Start by drawing a vertical line on a large sheet of paper. This will represent both your torso line and the guitar's

vertical centerline. Next, mark the positions of the strap pegs using the strap peg measurement as it relates to the vertical centerline measurement. Now you can add the position of the bridge by referring to your bridge position measurement.

Once you have the strap pegs and bridge positions marked, you can start to work on the guitar's body shape. After that, you'll need to precisely mark the position of your pickup, control and neck cavities as well as the fretboard. Now the fretboard's dimensions will require special consideration. First, you'll have to determine the placement of each fret. The best way to do this is by using an online fret calculator. You can find this handy tool at either [stewmac.com](http://stewmac.com) or [buildyouwonguitar.com](http://buildyouwonguitar.com). Simply input the length of the scale, the number of frets and presto, you'll have the distance from one fret to the next as it relates to the nut. Add 3/8" and that will give you the fretboard's length from the nut to the heel. Don't worry about width and taper of the fretboard just yet. We'll get to that in the next article when I discuss measuring the string spread.

After sketching the top view, work up a side view showing the neck and body thickness as well as the placement of the cavities for the neck, the controls and the pickups. At this stage it may not be possible to indicate the cavity depths, but in the next article I'll discuss how to measure everything so you can finish the drawing.

Now that you have the info necessary to start your plan let's take a look at the tools you'll need.

I wish I could tell that I build all of my guitars with nothing more than a pair of scissors and some scotch tape, but I'd be lying like a rug. To make the process a bit easier and to do it right, there are some specific tools you'll need to have access to.

The big guns in our list of tools are as follows: For cutting the wood, at the very least, you'll need a jigsaw and some 3" long, 6-7 tooth per inch blades. But even better than a jigsaw would be a band saw, if you can get access to one. As for the various drilling operations you'll need to perform, you can't beat a drill press for

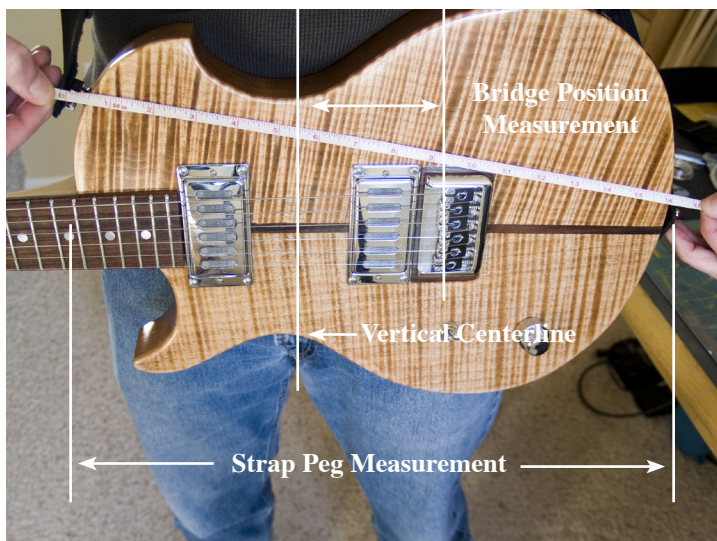
accuracy. But if you can't swing one, don't worry. A variable speed drill and a steady hand can do the trick, although not as well as a drill press. For hogging out the neck, pickup and control cavities, you'll need a plunge router with an inch long, 1/2" diameter top-bearing pattern bit. And last but certainly not the least in our electrically powered arsenal would be hand-held belt sander along with an orbital one as well.

Next on the list is an assortment of hand tools. You know, things like wire cutters, slotted and Philips head screwdrivers, some needle nose pliers, a half dozen or so 6" "C" clamps along with several 24" pipe clamps, a soldering iron and a spool of solder. But, there are also some very specialized tools as well. Some can be fairly expensive, however, I plan to describe in future articles how you can fabricate a few of them yourself. The items I'm referring to are related to making the nut and installing the fret wire. To make a nut, you might want to pick up a set of nut slotting files, especially if you plan to build a lot of guitars. Otherwise, I'll explain in a future article how to make your own precise nut-slotting tool. Next you're going to need a fret saw to slot the fretboard. These are back cutting saws, which means they cut on the pull stroke and the slot they cut is about .022" wide. Normally you'd spend about \$30 US for such a saw, but if you have a good hardware store or hobby shop nearby ask them if they can order a Zona 350 saw. I did and it only cost me \$8! There's also a whole host of specialty files available specifically for dressing the frets after they're installed, but I'll show you a simple way to avoid this step altogether.

Whew! That was a lot to cover in this article. In the next one, I'll be discussing component selection and why it needs to happen before you start cutting any wood. I'll also tell you what needs to be done to finish your plan.

Until then, start measuring some guitars and round up those tools!

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



The measurements you'll need to establish good guitar ergonomics



Determining the bridge position measurement