

Build Your Own Electric Guitar!

by [gbuilder](#) on September 4, 2007

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intro: Build Your Own Electric Guitar!

Have you ever looked at a guitar and wondered, "How do they make that?" Or thought to yourself, "I bet that I could build my own guitar," but never actually tried it? I have built several electric guitars over the years and through trial and error have learned many helpful tips that anyone who might want to tackle this sort of project needs to know before starting out. This kind of thing does require some wood working skill and also requires some specific tools as well but not all the fancy stuff that a guitar manufacture has. Building an electric guitar is time consuming and requires the completion of several steps before your project gets finished but be patient and you'll be happy with the results. I tend to go into detail so as not skip any steps or tips you need along the way, and use pics from other projects that I did as well so you can get more that on reference. If you set out to make a guitar you'll find that it takes quite a bit of time so you'll have time enough to go back and read other info if you just want to skim through the first go round. So I hope this helps all the future guitar builders out there!

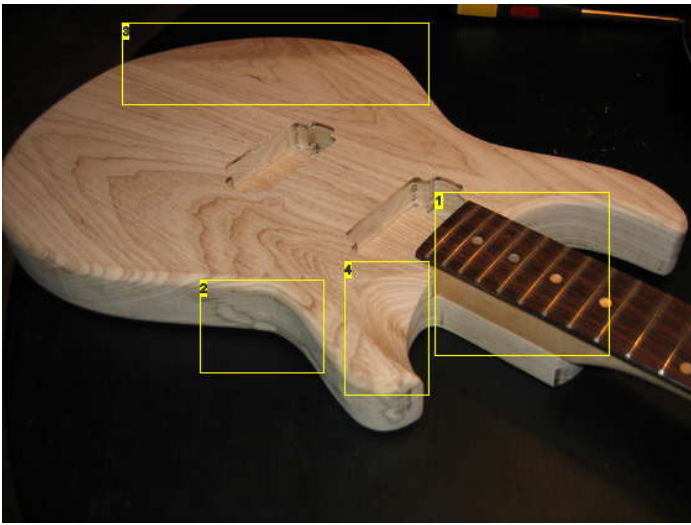


Image Notes

1. Make sure that the neck sits at the right height based on the bridge that you are using. Measure the bridges height from the base to groove of the saddle the string will be seated in, then subtract 1/8th of an inch. That's approx the amount of space you want from the top of the fret board to the face of the guitar.
2. The wood that I used was a grade B ash and after I had cut the body I noticed a knot in the wood where a branch was. I cleaned it out and filled it with wood filler.
3. This contour was carved down with a belt sander.
4. This small pocket that is made famous by PRS guitars was carved down with a dremmell tool.

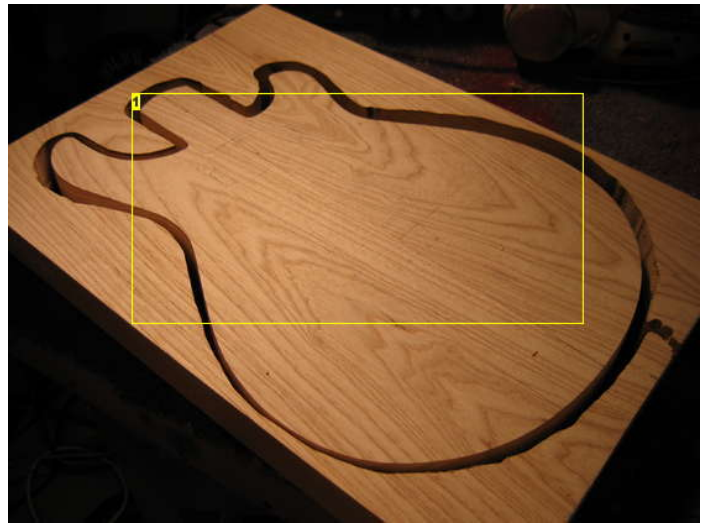


Image Notes

1. The initial rout of the body in a solid blank of swamp ash wood.



step 1: TOOLS, PARTS AND SUPPLIERS

Tools Needed

Plunge Router and Router Bits

(I use a Skill router with a 1/4" bit, a 1/2" bit with ball bearing guide and a 1/2" round over bit)

Drill and Drill Bits

(A basic electric drill and bit set with an optional 6" sanding disk for carving down the body, and a 1/2" Forstner Bit for counter sinking the neck ferrules.)

Jig Saw

(Any good jig saw and fine tooth blade for cutting the plastic control covers)

Belt Sander (optional)

(For carving down the top back body contour)

Mouse or Orbital sander (optional)

Dremmel tool (optional)

(Use with a sanding attachment for hard to reach areas that need to be sculpted)

Drill press (optional)

(I wish I had one, it makes drilling perfectly straight holes much easier)

Clamps

(Good to have if you need to laminate your own body blank. A small one is good to have for holding the neck in place when you attach it)

Soldering Iron and Solder

Flux and Wire

(Both for the electronics)

Basic Parts and Electronics

Premade Neck

(Trying to build your own neck is difficult and requires more tools that you might be willing to buy.)

Body Blank

(Make your own out of Birch Plywood or buy a blank from a retailer)

Bridge

(I tend to go with a hard tail type bridge since it can be easily bolted on. Not much to it.)

String Ferrules

(These are used to hold the string in the guitar and are placed in small holes drilled in the back. You won't need these if you decide to go with a Gibson style bridge and tail piece.)

Tuners

(It's a good idea to get high quality tuners since the cheaper one don't stay in tune as well)

Screws

(You will need pick guard screws for the control cavity cover and other various size screws for pickup rings and truss rod cover. Your bridge should come with screws but check and make sure in case you need to order any)

Ferrules

(For the neck and strings. You can use a neck plate instead of ferrules but I like the clean look and tight fit that you get with the ferrules.)

Pickups

(This depends on the type of sound you want and how much you are willing to spend. Shop around for good deals.)

Pickup Rings

(Most come with screws when you buy them but if you decide to go with all gold hardware you might want to buy gold screws separately.)

Plastic

(You can get a sheet of black plastic from [Stewart MacDonald](#) and use it to cut the cover for the control cavity.)

Control Knobs

(These can be bought from many online retailers. Get the style that best fits your guitar design. Shop around for the best deal)

Potometers

(Uses for volume and tone control you typically need between two and four depending on the type of sound you want. They come in different sizes and values so the best thing to do is look up a wiring schematic online for the set up you want to see what kind to use. [Seymour Duncan](#) has great schematics.)

Capacitors

(They also come in different values so find out what you need from your schematic)

Input Jack

(I like to use a long shaft input jack. All you have to do to install it is drill a hole. Pretty easy)

Control Switch

(These come in different styles also. Fender Strats use 5 way switches while Les Pauls use 3 way ones.)

Parts and Suppliers

[Stewart MacDonald](#)
[Seymour Duncan Pickups](#)
[Guitar Parts USA](#)
[Guitar Fetish](#)
[Guitar Parts Central](#)
[Guitar Jones USA](#)
[Guitar Parts Online](#)
[DJs Guitars](#)
[Catalina Guitars](#)
[EBAY](#)

There are tons of different online retailers and ebay stores that you can find a great deal on parts and supplies, but those were just some of the ones that I have purchased on and been satisfied with their service and parts. NOTE: Do your research when it comes to parts and the quality of the parts you buy. I like to get feedback and reviews from [Harmony-Central](#). You might not be able to get reviews on everything, but it helps you out allot.



Image Notes
1. Body blank

Image Notes

1. This isn't the neck that I used for my guitar but it is the same kind you can get from guitarpartsusa.com

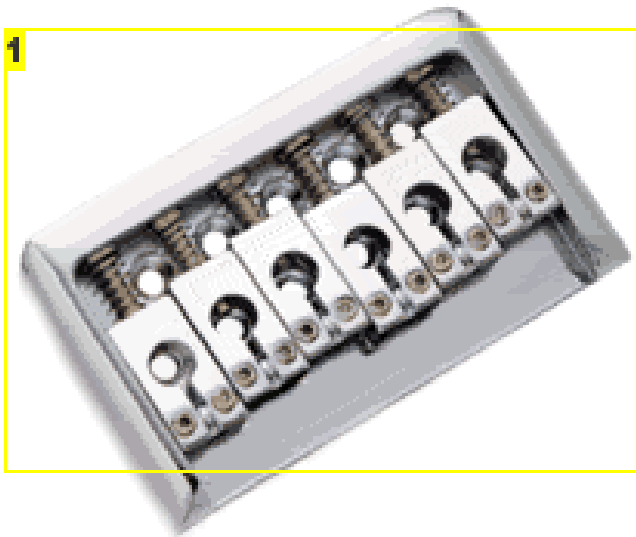


Image Notes

1. Nice hardtail bridge

Image Notes

1. Humbuckers with the humbucker rings for mounting

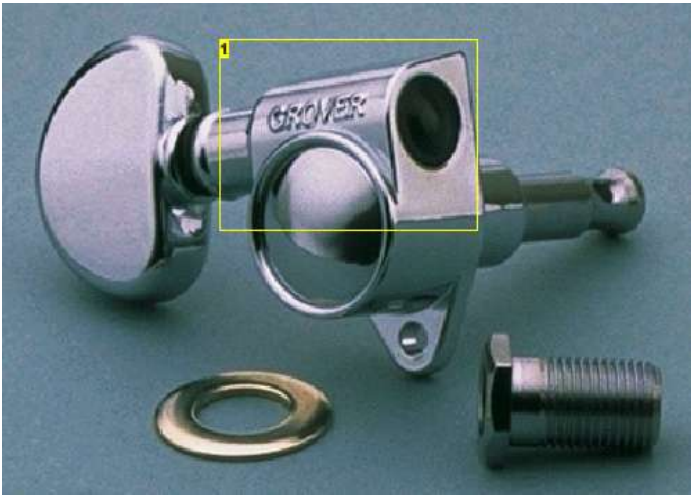


Image Notes

1. Grover tuners. The style and brand is up to you, but remember you get what you pay for!



Image Notes

1. Strap buttons

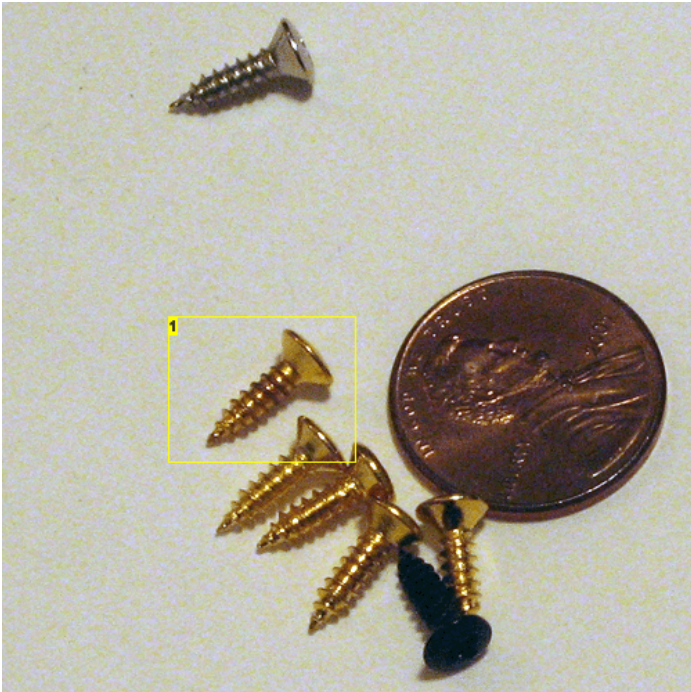


Image Notes

1. Pick guard screws that can be used for the control cavity.

Image Notes

1. String ferrules



Image Notes
1. Neck ferrules



Image Notes
1. Long body input jack.



Image Notes
1. Gibson style speed knob

Image Notes
1. Quarter size pots



Image Notes
1. 3 way style box switch



Image Notes
1. Capacitors



Image Notes
1. Standard plunge router. I know this is a fixed base but it is the same model I use and it comes with an attachable plunge rout base.



Image Notes
1. Standard electric drill



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Image Notes

1. 6 inch sanding disk, can also be used with a polishing bonnet for a high gloss finish

Image Notes

1. Standard soldering iron



Image Notes

1. Standard bar clamps. The shorter ones work fine.



Image Notes

1. Standard jigsaw



Image Notes
1. Standard belt sander



Image Notes
1. Easy to use hand held electric sander



Image Notes
1. Dremmel style rotary tool and sanding attachment



Image Notes
1. Attachment for rotary tool makes it easier to hold and operate in tight places.

step 2: DESIGN AND PLAN

PRE-DESIGN INFO Before you can design your guitar you must know a few important rules to building guitars. The first and most important is "Know Your Scale Length".

SCALE LENGTH What is a "Scale Length?" The scale length is the length the string travels between the nut at the top of the fretboard and the bridge at the mid section of the base of the guitar. To determine the scale length of your guitar you would measure from the front part of the nut where it meets the fretboard to the center of the 12th fret on the neck and multiplying that by 2. Add about 3/16" to that on the low e string and taper that to about 1/16" added to the high e string. This is called compensation and that is why you see that tapered line on a bridge. Go to [Stewart MacDonnald](#) for more info. They also have a [Fret Calculator](#) that helps you determine your particular scale length in addition to a page dedicated to helping you out with tons of free info for your guitar building projects. The fret is the metal of nickel wire that is raised up off the fretboard. I would suggest buying a neck that has been pre made from a manufacturer that fits the design concept that you want to go with. I bought mine from [Guitar Parts USA](#) for about \$70. You can pay anywhere from \$50 to \$300 for a neck at online retailers, but surf around and make sure you are satisfied with what you get. [Guitarpartsusa](#) will tell you to buy an expensive neck if you are building an expensive guitar, not a \$70 neck. But for mine the \$70 neck works just fine. Once you get the neck in and you determine what the scale length is you can lay it all out on paper. I recommend buying all your hardware, pickups and knobs before you draw your final template. This will allow to place everything where you want it and know what size holes to drill for the electronics and how big the cavities will need to be for them and the pickups.

DESIGN AND PLANNING It is best to pre-plan your design concept so you can correct any mistakes on paper before you get to the wood and can't go back. Sketch out some design concepts on paper then, once you have decided on something, lay out a couple of pieces of poster board to draw the body shape out on. You can let your imagination go wild or if you prefer stay with a more traditional design. For this particular guitar I built, I chose to go with a PRS style body design. To get the measurement correct, I pulled a picture of the guitar I was modeling it after from a guitar catalog that was taken straight on and not from the side. I then scaled up the guitar by marking out a grid on the picture and transposed it to some poster board that I had drew a larger grid on. I knew that the pickup rings measured 3 1/2" by 1 1/2" and that's what I used to scale the picture up and get the proportions correct. Another method is to project the image on a wall and trace it to the poster board if you happen to have a projector but I like to draw my template out freehand. You don't have to use this method for the design if you want to come up with your own unique style. Just make sure that take all the parts that will go on to your guitar into consideration first like the neck position, pickups and knobs.

PLOTTING OUT THE PEICES Once you have drawn out the shape of the body you can then locate and draw the cavities that the pickups and electronics will go and set your bridge placement. It is good to know where the center of the guitar's body is so you can make sure that the pickups and bridge are in good alignment with the neck pocket. I like to take a piece of poster board and trace the fretboard of the neck on it and cut it out, that way I can properly place my bridge according to my scale length. For the neck pocket you will want to trace the heel of the neck where you want it to be placed. For this guitar I had to extend a piece of the body to attach the neck to since I was copying a PRS which uses a set-in neck. I was using a bolt on and didn't have much of a neck pocket to work with.

Next, make sure you give yourself enough room in the electronic cavity to fit all the potentiometers and switches. Also remember to add about 1/4" of a lip that the control cover will sit on.

After your design has been properly plotted out on the poster board you can cut it out with an exacto knife. Make sure you stay as true to your lines as possible so you have a nice clean line to trace once you're ready to. Then lay out the template on your body blank and trace away. I like to cut the piece of poster board the same size as the body blank I am using. It makes it a lot easier to line everything up that way. Now you're ready to move on to the next step.

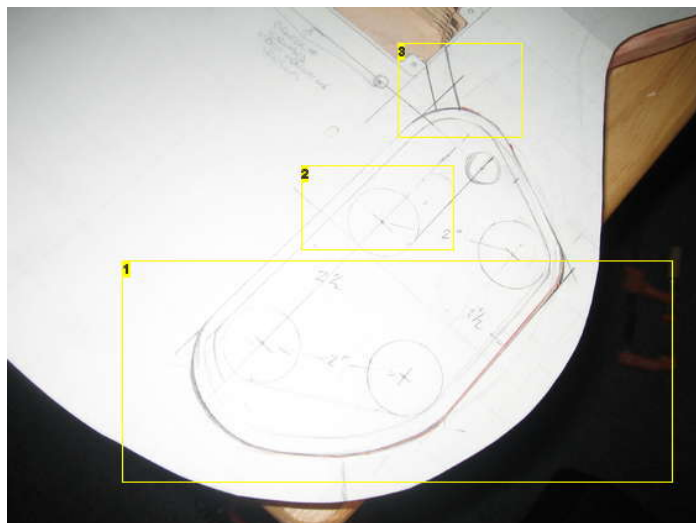


Image Notes

1. Here is a closer look at the design of the cavity. Make sure you take the placement of the input jack into account (bottom)
2. Find the exact center for the pots and switch so you will drill the holes in the right spot.
3. The wire rout. You can drill it if you use a solid blank, but if you laminate the body it is best to pre-rout the wire cavities.

Image Notes

1. This is a different guitar that I built with the diagram placed on the guitar body after it has been cut out. You can see the routed pickup cavities.
2. Along with the body diagram I made one for the neck so I could accurately place the bridge for the correct scale length.
3. This is where I plotted out the spacing and size of the control cavity. After I drew everything out I used an exacto knife and cut it out so I could trace it to the back.

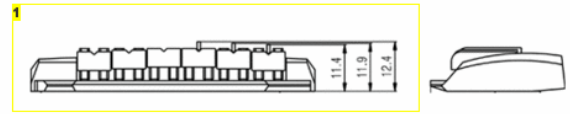
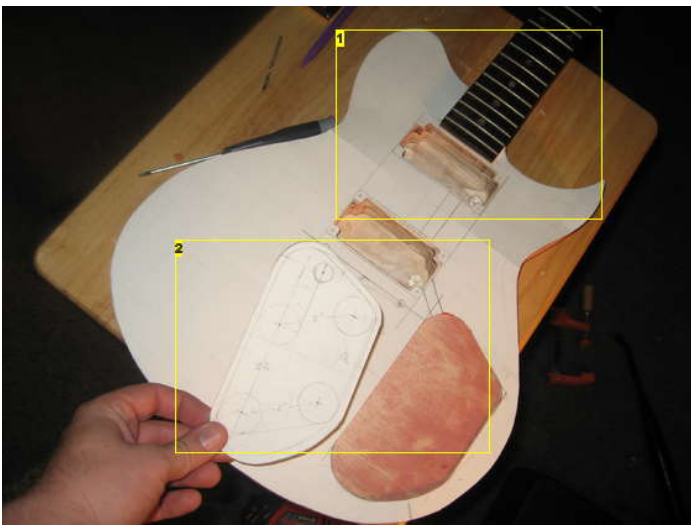


Image Notes

1. This outline of the bridge shows the curve that the saddles are placed in to match the curve of the fret board and compensate for string thickness.

Image Notes

1. Making an exact template of the guitar before you cut it out allows you to get the proper fit and placement of the neck and parts with out any bad surprises.
2. I used the cut out peice to trace on the plastic that I used for the control cover.



Image Notes

1. Stewart MacDonald's scale length definition is pretty good, I guess.

Image Notes

1. Scale Length- You can use this to figure up yours. Measure from the front of the nut to center of the 12th fret and multiply times 2. Don't forget to add a little room for string compensation.
2. On a tremolo bridge you don't need to add space for compensation. Just measure the scale length to the center of the forward most mounting screw. There is already extra space behind the screw to the saddle for the compensation.

step 3: ROUTING THE BODY AND CAVITIES

THE BODY This is where your guitar starts to take shape. After you have finished your design you will need to trace it onto the wood that you are going to use for the template or body. A solid blank of tonewood that you can get from online retailers like [Catalina Guitars](#) can run anywhere in the price range of \$70 to \$250 depending on what wood you use. Some people will tell you that different wood will produce a different tone. While this is true in some cases like the crisper higher pitch tone of Maple and the warmer fuller tones of Mahogany, you probably won't be able to tell the difference between using a lower grade wood versus a higher grade more expensive wood. The only time that I would splurge and buy expensive wood is if I was going to use a clear finish on the body and all the other parts of the guitar were going to be high end quality parts. For my project I didn't have a lot of money, much less the expensive tools to work with to produce a result that I would want to break the bank on.

MAKE YOUR OWN BODY BLANK Another neat trick to create your own body blank for \$10 is to get a 3/4" thick piece of Birch Plywood that comes cut into a 4' by 2' board. Simply cut out two rectangular sections of the board that will accommodate your design and wood glue them together. Be generous with the glue to make sure there aren't any spaces between the boards when you press the two together, clamp and stack weights on top of it so the two pieces are joined firmly and let dry overnight. This gives you a 1 1/2" thick body blank that is rigid and works great for electric guitars. You will have to go with a solid color paint when you finish it but you won't be able to tell the difference between it and the solid wood blank. Plus you'll save a good chunk of change that you can use towards good pickups and hardware. If you want to make the body a little thicker, you can get a 1/4" piece of birch and glue it between the two thicker pieces. It's also a good idea to prerout any wire cavities in that 1/4" piece before you glue them together. That way you don't have to worry about drilling them later and ruining the top of your guitar body with the drill.

MAKING A TEMPLATE Once you have traced out your design to the wood you can start routing. I recommend making a template first for the body rout out of 1/4" hard board or something equivalent to that. The professionals use cnc machines to carve and rout the bodies but smaller shops will use templates made from acrylic. The hard board works just fine, but might not last as long. You can also rout the body by hand and forget the template but if you mess up there's no going back so be careful if you do.

I cut my template with a jig saw and a fine tooth blade to make sure it kept a straight edge. Then I mounted it to the body blank using small screws in the areas that would be routed out later like the neck cavity area and where the pickups would be. You will want to start routing a bit outside your line or the edge of the template so you can get your router bit to the depth it will need to be at for the ball bearing to follow the template. I use a 1/2"x1" bit with a ball bearing guide on top. I make several passes around the body, lowering the router 1/4" at a time for smooth easy cuts. Once you have made your pass where the bearing runs along side the template, it is much easier to rout and you will end up with a nice squared edge to the body.

ROUTING THE EDGE I like to use a 1/2" round over bit on the edge of the body to give it a nice even curve. You don't have to do this but it is good to round the edges of the body a little bit at least. It's easier to polish the body after you gloss it and you don't risk burning through on those sharp edges.

THE NECK POCKET The next step is to rout the neck pocket and body cavities. For the neck pocket I like to use a 1/4" bit and leave the scrap wood edge around the body to give the router the extra support it needs when routing the neck area. To find out how deep you will have to rout the pocket measure the total thickness of the heel of the neck. Then measure the height of the bridge from the bottom to the top of the groove the string will sit in on the saddle and add about 1/8" to it. That allows for the string clearance over the frets. Subtract that from the overall thickness that you came up with when you measured the heel of the neck. That will give you a pretty accurate depth that you will need to carve the pocket down to. Be very careful when you rout the neck pocket! You don't want to make it too big otherwise you end up with gaps between the neck and the body and you don't want to go too deep because it can be impossible to fix. Rout a little bit at a time, and set the neck in each time to make sure you get the proper fit. It shouldn't fit too tight and the pocket should be slightly larger than the heel of the neck because you will have paint accumulation in it which will shrink it a little.

PICKUP CAVITIES Same basic thing here. Be careful routing as you don't want to go outside your lines. The pickup rings tend to be thin along the outer edge, so if you go outside your lines it will look like there is a hole in the body of the guitar once you fit the rings on. Determine the depth that you will need for the pickups you are using. This is usually based on the length of the mounting screws. You will need enough room for them to fit. I use a 1/4" bit for this as well. You can use a template if you want but I do it free hand because any imperfections will be covered by the pickup rings.

THE CONTROL CAVITY Routing the control cavity is just as important as the neck pocket but with a couple more steps. The best thing to do is to cut out the plastic cover. Trace the pattern that you came up with for it on the plastic then cut it out with a jig saw. Use a fine tooth blade to prevent the plastic from chipping and will also yield a smoother cut. Once this is done, take your template and reverse it, trace the pattern on the back side of the body. Next set your router to a depth that is the same as the thickness of the plastic plate and rout the cavity working out to the line you drew. I do this free hand since the first cut is too shallow for a template. Be careful when you do this and test fit the plate you cut to make sure you get a good fit. Then you will draw another line about 1/4" along the inside of the cavity you routed out, leaving extra room in areas for the screws you will use later on to secure the control plate. Rout this area out in the same way, working out to the line you drew. When you start to get close to the half way point in the wood start to think about how much wood you need to leave at the bottom. Usually 1/4" is good but make sure you are careful! I miscalculated once and ended up going all the way through the body. Bad experience.

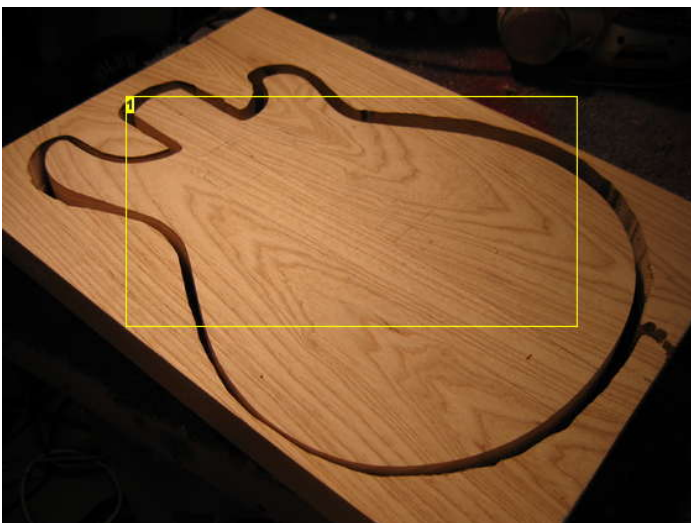


Image Notes

1. The initial rout of the body in a solid blank of swamp ash wood.

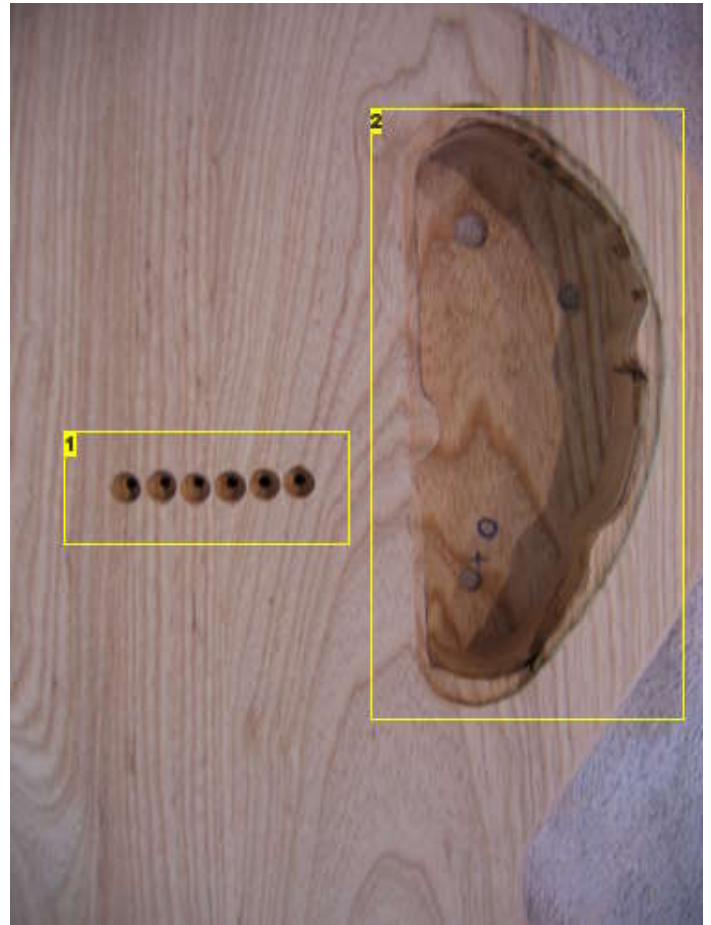
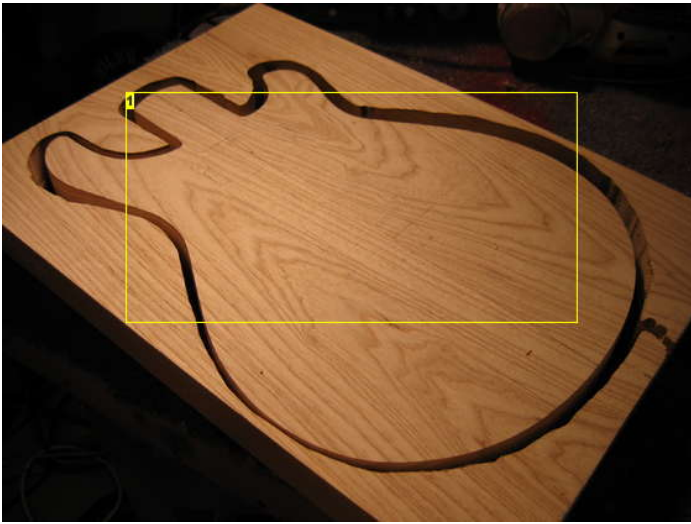


Image Notes

1. As you can tell, the holes that were drilled for the string fureles aren't perfectly straight because I had to use a hand drill instead of a drill press, but its on the back of the guitar so that's not a big deal to me.
2. This is the control cavity after it has been routed out. Note the lip along the edge that the cover plate sits on and the humped areas on the inside that allow you to drill hole for the screws that will hold the plate on.

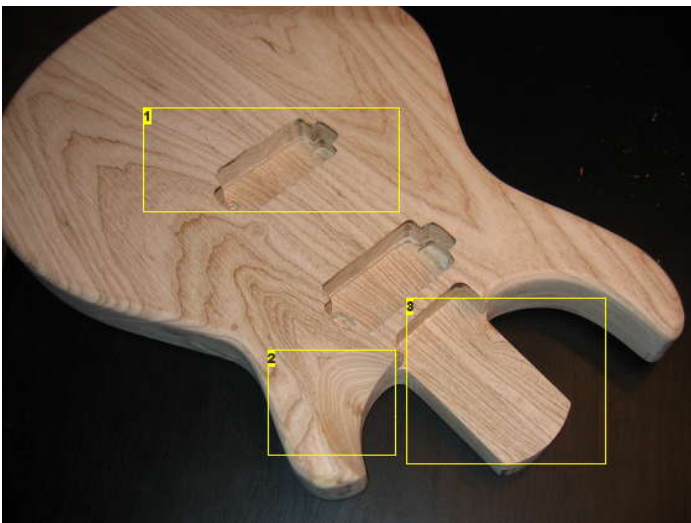


Image Notes

1. The pickup cavity after being routed. Be especially careful here not to go outside the rout lines. If you do you will see a hole in the body outside the pickup ring once you put it on.
2. I used a dremmel tool with a sanding attachment to carve out this neck pocket. It worked really well.
3. Note the lack of a neck pocket here. This is why I left a bit of a platform for the neck to sit on. It looks large but I carved it down to a slant in the back to get a good reach on the upper frets.



step 4: DRILLING THE HOLES AND SHAPING THE BODY

DRILLING THE HOLES Now is a good time to drill the holes for the neck, pickup rings, bridge, string furreles, the control plate and cavity. Here is where I wish I had a drill press but I don't, so I just use a hand held drill. It doesn't matter when you start drilling your holes, just make sure you use the right size bit for the screws that you will put in them later. To figure this out I compare the thickness of the screw minus the threading. A good rule of thumb is to start off with a bit that will produce a hole that is smaller than the screw. If the hole is too small when you try to screw in the screw then you can move up to the next size bit and re-drill. Be careful of the depth that you drill your hole to as well. A good way to do this is to size up the screw with the bit and mark the bit with a piece of tape. This will help you to keep from going too deep.

DRILLING THE NECK HOLES ON THE BODY Before you do this you can carve down the back of the neck area if that is something you were going to do. If you are just going to leave it flat then that's ok too. The first step if you are using furreles is to map out where you want to place them and then mark the center of the hole where the screw will go. Then take your forstner bit drill enough to fit the furrele inside. Usually you can tell how deep to go if you drill a little at a time, and place the furrele in it to see if it is just low enough in the hole not to see the top of it if you look at the body horizontally or it is flush with the wood. After doing this you can drill the holes for the screws. Use a bit that has the same circumference as the screw including the threading so when you put the screw into the hole it just passes through without you having to screw it in. Drill in the indentation that was left by the tip of the Forstner bit, keeping the drill as straight as possible.

ATTACHING AND DRILLING THE NECK For this you will want to use a clamp to hold the neck firmly in place while you drill the holes. Attach the neck to the body and clamp it lightly so you can set it in the right position before drilling. Make sure you have some protection between the clamp and the body so you don't leave any indentions in the wood. A soft piece of plastic or a soft rag will work nicely. Use a long ruler to align the neck to the position of the bridge. Do this on both sides of the neck to see that you get it centered. Tighten down the clamp a bit more until the neck doesn't move. Drill the holes as straight as possible with a smaller bit that you used on the body. If you can't reach all of the spots that you need to drill at because the clamp is in the way, take a couple of the furreles and neck screws and screw them into the neck. Once you have done this you can finish drilling the other holes without the clamp.

SHAPING THE BODY This is totally up to you. You can carve down the body however you want. For my project I chose to carve down the body as close to the way the guitar I was modeling it after was. I used a variety of different sanders. I used a belt sander for the arm contour on the top back of the guitar, a dremmel tool with a sanding attachment for the small carve down under the neck, a 6" sanding disk attachment on my drill for the body contour on the back of the guitar, and a Black and Decker mouse sander for the neck area and smooth down all the other areas that had previously been carved. One rule of thumb is to only sand with a 220 grit when carving the body down. This will prevent any deep scratches any lower grit will cause. Don't use any electric sander on the flat parts of the guitar either, like the top or the back. Use a 220 grit paper with a sanding block to smooth out those areas. You can also run a slightly dampened cloth along the surface of the body and let dry before the final hand sanding. This will raise the small grains in the wood so they can be cut by the paper easier. Sand in the direction of the grain.

FINISH DRILLING THE HOLES After you have shaped and carved the body and the neck holes are drilled and the cavities routed out, you can preposition all of your parts and drill the last of the holes. Start with the pickup rings. It is good to assemble them first and then drop them into the cavity so you can line them up and mark where you will need to drill. Make sure they aren't crooked when you line them up. I like to have the neck bolted on so I can line them up with it. I do the same thing with the bridge. Be sure to check that the scale length is correct and that it is lined up with the neck as well. Drill the holes for the mounting screws and then the string through holes. Try to keep the drill as straight as possible when you do this because you will be going all the way through the body and if they aren't straight you will see it on the other side. This is the time that I wish I had a drill press.

Next you can move on to the holes for the control cavity. Use the washers that come with the electronic components to find out what size bit you will need. I use the 1/2" forstner bit that used on the neck to drill the input jack hole. It makes it straight and smooth.

TEST FIT It is a good idea to go ahead and test fit all the parts on the guitar before you move on to prep and paint to make sure that everything is in the right spot and that there is nothing that needs to be corrected.

Image Notes

1. This is a pic from a previous project that I took while drilling the wire holes. Be careful not to get the bit stuck and damage the body.

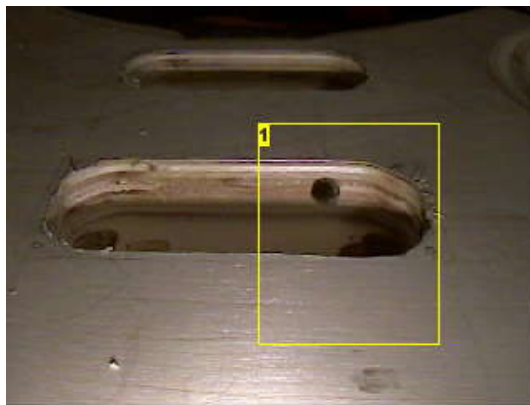


Image Notes

1. Here is the hole after it was drilled and you can see where I nicked the body with the drill because of the funny angle at the bottom of the pic.

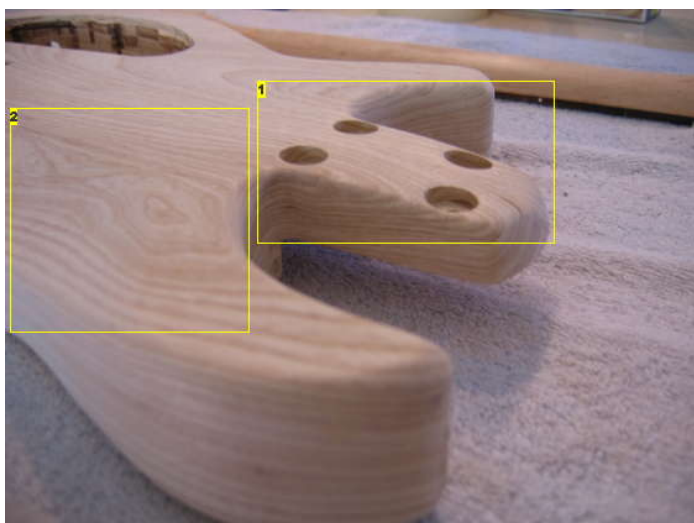


Image Notes

1. The neck area after it has been carved down and the holes drilled with the forstner bit.
2. You can also see some of the body contour here that was done with the 6" sanding drill attachment.

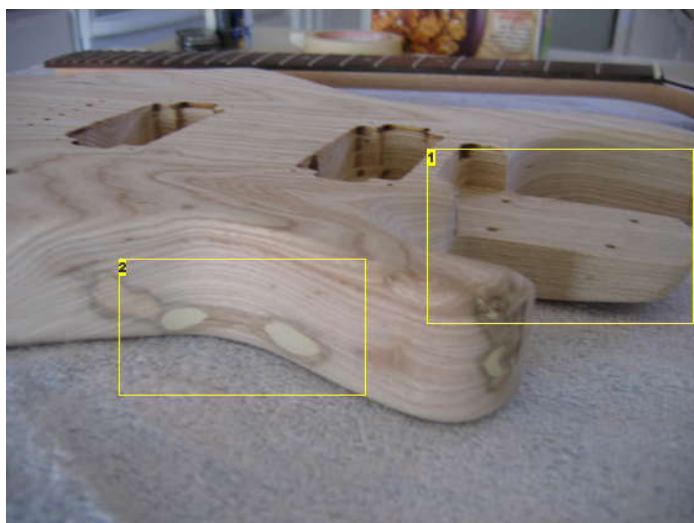


Image Notes

1. A good perspective look at the neck pocket and sculpted back.
2. Wood filler comes in handy!

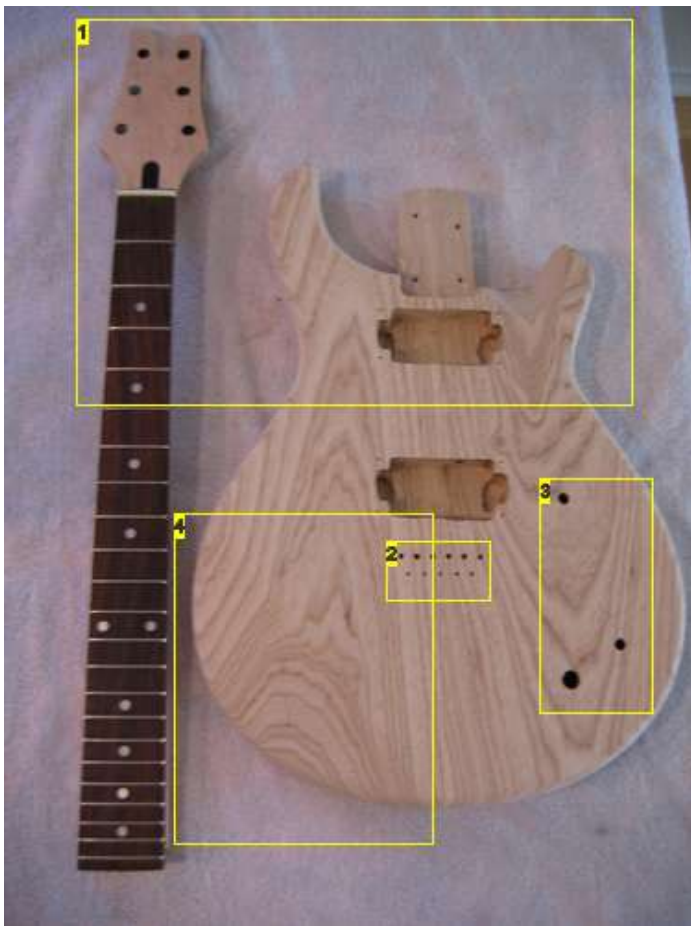


Image Notes

1. The body and neck preped and ready for paint.
2. Holes for the bridge
3. Holes for the pots and switch.
4. I used my belt sander to carve down an evenly flat surface here.

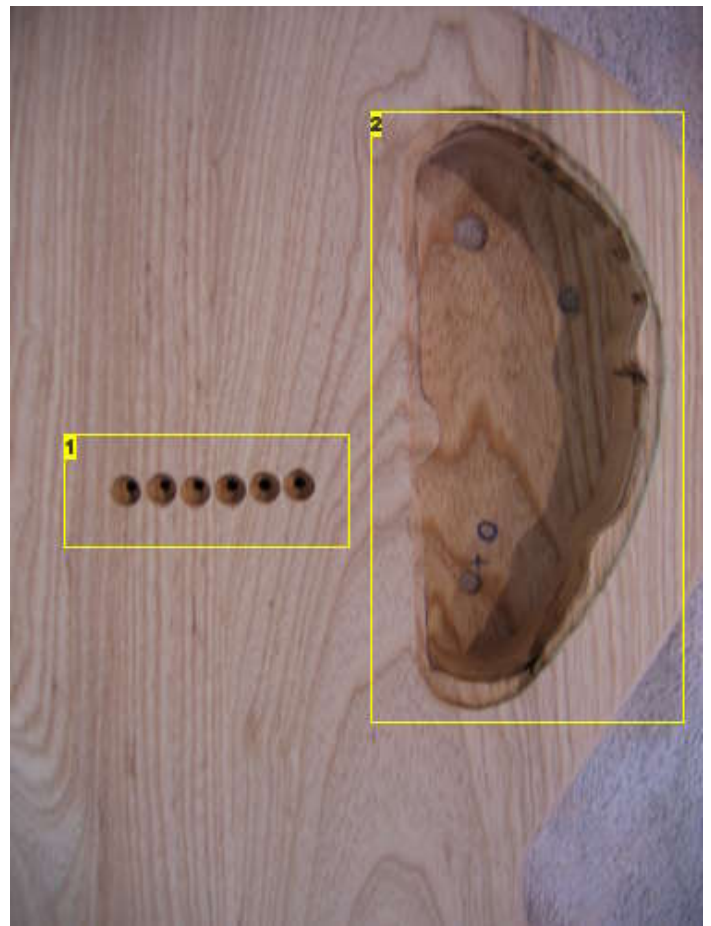


Image Notes

1. As you can tell, the holes that were drilled for the string fureles aren't perfectly straight because I had to use a hand drill instead of a drill press, but its on the back of the guitar so that's not a big deal to me.
2. This is the control cavity after it has been routed out. Note the lip along the edge that the cover plate sits on and the humped areas on the inside that allow you to drill hole for the screws that will hold the plate on.

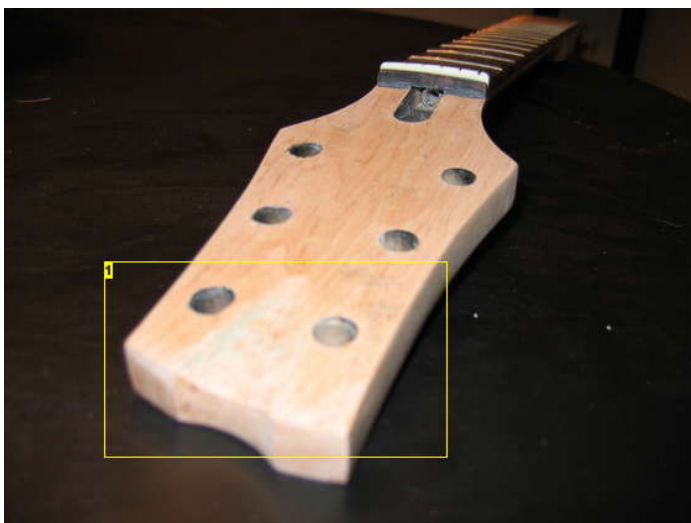


Image Notes

1. This headstock used to look like an epiphone headstock but I carved it into design that was more original and fit the body style of the guitar.



Image Notes

1. I used the 6 inch sanding disk attachment on my drill for this contour because of the curve in the body.

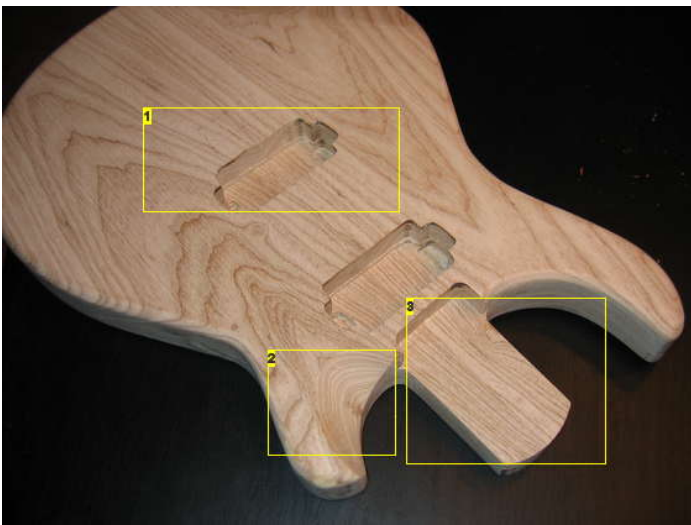


Image Notes

1. The pickup cavity after being routed. Be especially careful here not to go outside the rout lines. If you do you will see a hole in the body outside the pickup ring once you put it on.
2. I used a dremmel tool with a sanding attachment to carve out this neck pocket. It worked really well.
3. Note the lack of a neck pocket here. This is why I left a bit of a platform for the neck to sit on. It looks large but I carved it down to a slant in the back to get a good reach on the upper frets.

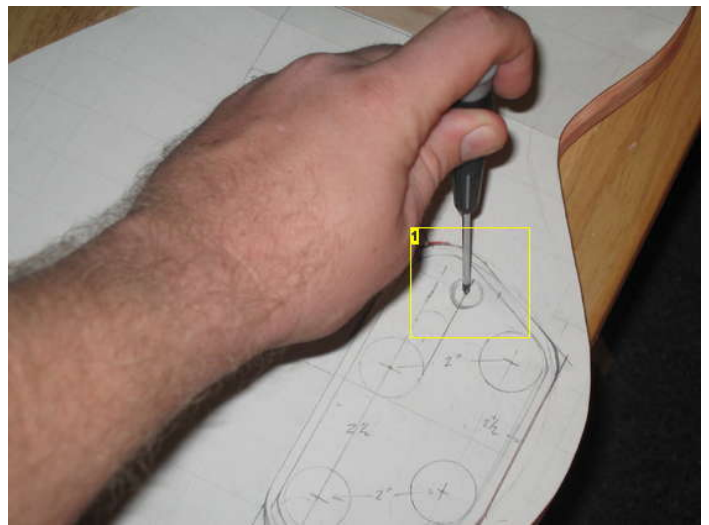


Image Notes

1. With the poster board template placed on the front of the guitar body I was able to get the proper placement of the holes and used a small screwdriver to punch an indentation at the center of where I want the holes to be drilled.

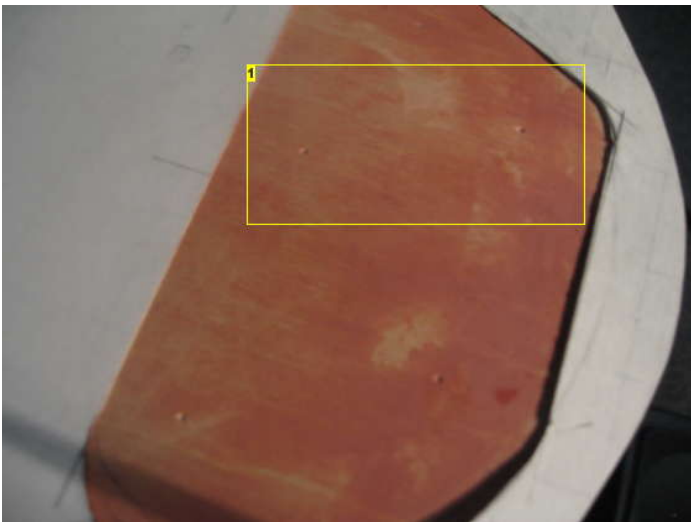


Image Notes

1. Now I know exactly where to drill the holes. The indentation also helps the drill bit to find it's place.



Image Notes

1. The drilled holes!

step 5: PREP THE BODY

PLUG THE PORES What you use to prep the body for paint depends on the chosen finish that you will go with. For a solid color finish you will want to fill any of the pores with a wood filler or Bondo glazing putty. I prefer Bondo because it dries quickly and sands smooth. Use one of those plastic spreaders that you can get for mud at a paint or hardware store and press the filler firmly into the pores and gaps in the wood. Cut diagonally across and against the grain to fill the pores and gaps better. Use a sanding block and a 220 grit paper and after the filler dries to ensure an even flat surface. Only use your hands to lightly sand on the rounded edges or hard to reach areas of the guitar. The roundness of your fingertips can cause depressions in the woods surface so stick with the sanding block on the flat areas. Inspect the surface to see if any pores or gaps remain and repeat the steps if needed. Then clean the surface with a tack cloth to remove any dust.

Stewart MacDonnald has a great finishing schedule that I would recomend reading before you start the painting process. You shouldn't need to fill any pores on the neck because necks are usually made from maple which is a tight grain wood. All that's need for it is a sanding with 220 grit paper unless you want to leave the neck natural and unfinished. I recomend using at least a few coats of sanding sealer or clear gloss laquer to protect the wood from dirt and grime that comes from playing.



Image Notes

1. A sanding block made from plywood and an added piece of felt on one side for wet sanding, Bondo and spreader. This again is a different guitar I made from ply. It requires filling but works just as well as other wood.

Image Notes

1. With plywood the grain runs in two different directions down the side so be sure to fill in the grain.

step 6: PAINT AND POLISH

PAINT INFO Remember to stick with the medium that you have chosen to finish the guitar with. Never mix lacquer with water base. This will lead to a cracked finish or lifting up off the clear coat. For my guitar I used a lacquer based paint that I got from an auto shop for one project and just plain white lacquer paint that I got from Home Depot. The waterbased paints and clear coats tend to be more expensive so that's why I chose lacquer. Make sure the surface has been cleaned and is dust free before you begin to paint. Try to find cans that have a fan nozzle because it makes it easier to get an even coat.

I use a coat hanger wire to hang the body and neck from when I paint. It keeps the guitar from touching anything and makes it easier to move from one place to another. I like to dedicate one place for painting and another for drying to avoid any free floating particles from landing on the wet paint. I use a shed for painting and hang the guitar to dry in my garage.

SPRAYING TECHNIQUE Spray the body holding the can 6 to 8 inches away, moving either up and down or right and left depending on how you have set the nozzle. Start spraying from 2 inches outside the body and finish the stroke the same way. Don't stop or start the spray right on the body because you will end up with an uneven build up or paint drips. It is also good to spray a light "tack" coat first and let that dry for 45 min before laying on the thicker coats. This lets the paint adhere to the body better. You can also mount the guitar body to a square wooden stick that will fit inside the neck pocket so you can hold the guitar flat while you paint the top of it. This lets the coats build up thick and even, but watch for drips on the side.

After you have good coverage, let it dry for a few days or until it has hardened up enough. Inspect the surface for runs or imperfections. If there are any runs then you can wet sand them flat with 800 grit wet sand paper and a sanding block. Usually you will be able to see if there is any grain showing that you might not have filled up when you prepped the body. If there is then apply a few more coats to cover it up and wet sand it to make it level.

RACING STRIPES Once you have checked out the color coat and are satisfied with the results and have let it dry completely, you can move straight to clear coats or add some racing stripes... or any other design you feel comfortable painting on. I did a paint splatter on the guitar I'm currently working on and it looks awesome. Plus it was really easy. I just sprayed some black lacquer paint in a pan, dipped a brush in it and splattered it on to my liking. For racing stripes make sure you get auto masking tape so you don't get any bleed through when you paint. Decide where you want your lines to go and tape them off. Use a garbage bag to cover the rest of the guitar and make sure all the other areas of the body are covered and taped off to prevent any unwanted spray from getting on the guitar. Spray just enough coats of paint to cover up the base color. You don't want it to be too thick because you will lay down a clear coat on top and wet sand to level out the finish. If it is too thick it will take much more coats of clear and more sanding than you will want to do just to level it out.

CLEAR COAT Stew Mac sells nitrocellulose lacquer that works really well for guitar finishing but if you like me you can't afford \$10 a can for paint. Or you can check out [rera](#) although I haven't used any of their products they are a little cheaper. I use Deft spray lacquer. You can get it at Wal-Mart for under \$5 a can and it works great. Use the same basic steps that you used when you sprayed your color coats, keeping in mind that you want enough coats so you don't cut through the clear top coat when you wet sand and polish it out. Now comes the waiting. The paint has to set for several days to a month to let the solvents that are in the paint to rise to the top and harden. The paint will feel dry but you will notice that it might feel a little sticky or soft when you touch it. I like to do a "nail" test on mine. I use my finger nail and push it into the painted area in the neck pocket to see if it is still soft. No one will see the inside of the neck pocket so it's ok if you scratch it. Once it has cured completely you shouldn't be able to dent the finish. It could take longer than a month for certain finishes to harden completely but trust me, you will be glad that you waited. For more information about all the different types of lacquer or clear coats products that are out there and how to choose what may be right for you, check out the [drum foundry](#) they have some great info.

WET SANDING You can wet sand with 600 or 800 grit wet sanding papers that you can get from the hardware or auto body shop before you apply the clear coats. You can get precision paper from Stewart Mac Donald that are supposed to cut better, last longer and yield a better result, but I have never tried them so that's up to you. When wet sanding there are a few things to keep in mind. First you will need to soak the paper overnight in water. You can add a little Murphy's Oil soap to it. It will act as a lubricant and help it cut better. You could even soak the paper in a solvent if you use a lacquer finish but I use water because it cleans up easier and doesn't smell. Next be sure not to overly soak the areas that you have drilled holes in. If the water gets in the wood it can cause a lift in the lacquer that could lead to cracks in the finish. This is why some people choose a solvent to sand with because it is more forgiving in that area. Start wet sanding with a 600 to 800 grit paper and gradually work your way up to a 2000 plus grit. If you use water you may experience a condition in your finger tips that comes with a prolonged exposure to it called "raisoning". Just let them dry out for a while and get back to work!

POLISHING Once you have completed the wet sanding you will have a pretty smooth surface that is almost a dull shine. You can either hand polish the finish or use a polishing attachment to buff it out. Stew Mac has a polishing pad that attaches to you drill. Or you can get 6" foam bonnets from an auto parts store that will fit over the sanding disk attachment you may already have. It is best not to use any thing made from cotton because it will cut through the finish. Stew Mac also has polishing compounds that you will use in order working you way down to the swirl remover. It's on the expensive side so I use McGuire's polish that you can get from the auto shop. If you use a buffing attachment make sure that you use a different attachment for each grade of polish. Don't use the same pad for each one. Also remember to wait 10 minutes after buffing before you wipe off the surface. The lacquer gets hot and soft after buffing so give it time to cool. You will have to hand polish the cutaways, don't attempt to use the buffer on the edges of the guitar or cutaways because you will burn through the finish.

I finished my last guitar in this pattern:

Wet Sand 800/1000/1500/2000 grit,

Buff Down using an orbital sander that had a "hook and loop" base or velcro that I had attached a polishing pad that Gator Grit makes and McGuire's step 1 cleaner polish

Hand Buff with McGuire's step 2 swirl remover

It took less time than previous finishes and looked awesome.

Once you have finished polishing, clean off the residue the polish left behind with a clean cloth ie: an old t-shirt, look closely to admire the shine and get that piece of broccoli out from between your teeth.

STAINED FINISHES Check out the master Dan Erlewine put a stained finish on a guitar with out the use of spray equipment or buffing arbor.



Image Notes

1. I chose to leave the grain on this project to give it a unique look.
2. The body before the clear coats.



Image Notes

1. Before the clear coat on the neck I added rub on lettering that I got from a hobby store to spell out my initials.



Image Notes

1. The polish on a bright pink SG I built a while back.



Image Notes

1. The dull sheen of the body after the wet sand.

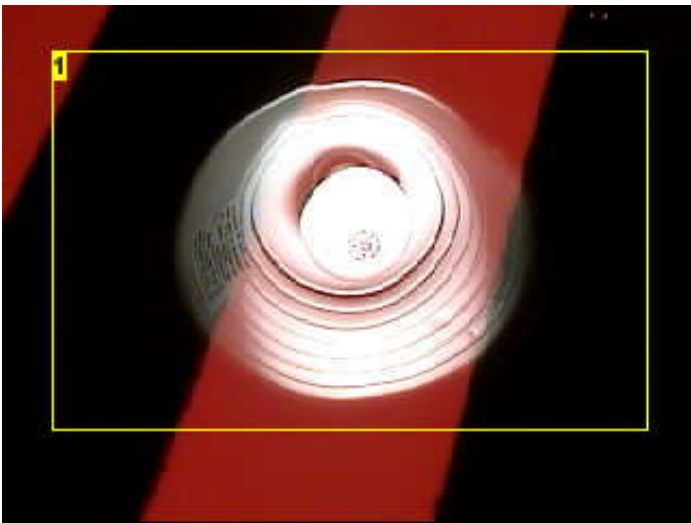


Image Notes

1. Nice golsss!

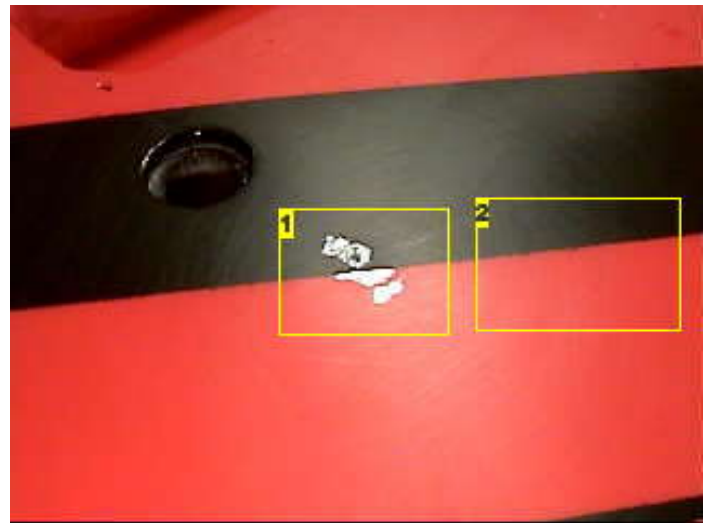


Image Notes

1. You might have small divots that you can't sand down to. These will fade in to the finish once you polish it out.
2. Notice how the racing stripe will be level with the finish once you have sanded down.

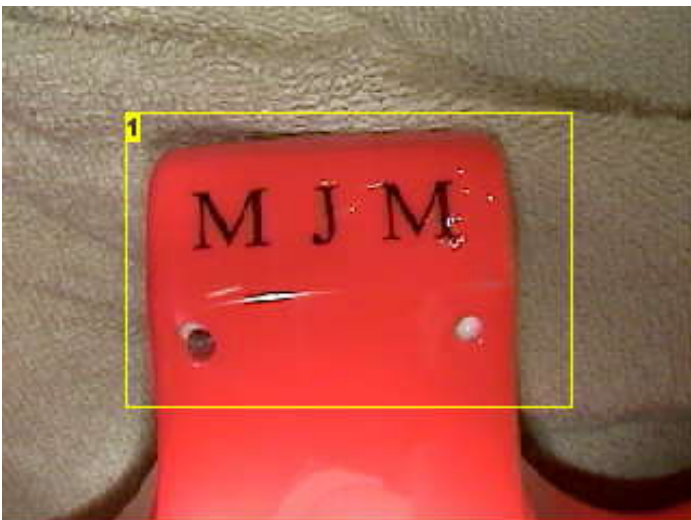


Image Notes

1. Rub on letters on the back of the body where the neck attaches after the clear

<http://www.instructables.com/id/Build-Your-Own-Electric-Guitar/>

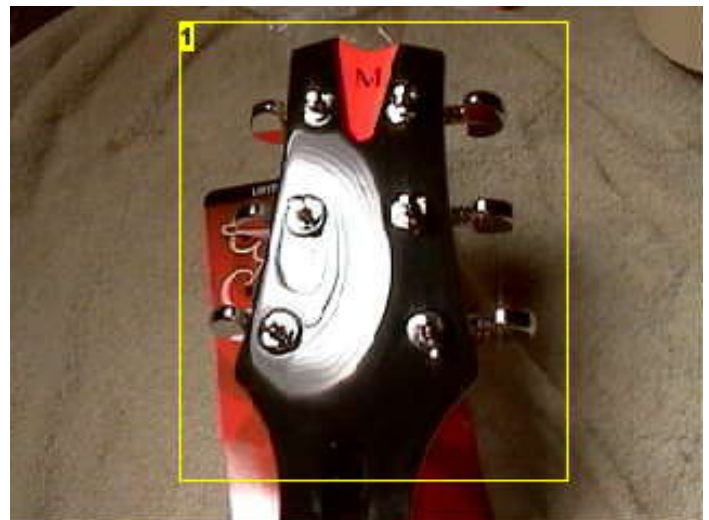


Image Notes

1. Finished headstock for the pink SG.

coats. My brother-in-law's initials.

step 7: ASSEMBLY AND WIRING THE ELECTRONICS

ASSEMBLE Now you can put it all together! By this time you'll be so excited you'll forget about the electronics and start to string in up before you get the electronics in but it's ok, we'll get there. Start with bolting on the neck in the same fasion that you did when you test fitted everything. Then follow that with the tuners, bridge and pickups. Don't forget to run the wiring for the pickups when you put them in.

SHEILDING Sheilding is good to use if you want to minimize that annoying buzz you can get from surrounding interference that electronic components such as amps can produce. You can use sheilding paint that is a bit more expensive but easier to apply than copper tape. All you do is paint it on and let it dry. It also gets into the areas tape can't reach. To install the tape you basically just apply it to the inside of the control cavity and solder up any seams that might let the interference through. The soldering can be a little tricky since you have to lay down a long bead of it along the seam. Kind of like welding. Here are some futher instructions After this is done you can install the pots and switch. Be careful when tightening them down not to scratch the finish. Add the knobs and get out your schematic for wiring it up.

WIRING Lay your beautifully finished guitar on a soft towel so you don't scratch it and cover the back with a cloth as wel so you don't splatter solder on it. How you wire you guitar up depends on the layout you have chosen. Mine was a simple one tone, one volume and three way switch set up. I have gone with the Les Paul set up on other guitars which is a two tone and two volume before as well. What ever set up you go with just follow the schematic that either came with you pickups or get one from Seymour Duncan. They also have instructional videos that are done by Seymore Duncan himself on Strats and Les Pauls. I recomend watching these if its your first time wiring a guitar.

Image Notes

1. I forgot the sheilding here too but eventually went back and added it. I told you it's easy to get too excited and skip a step.



Image Notes

1. This was my first wiring job so I forgot about the sheilding.

step 8: SUMMARY

Now that you have made it through, if you chose to build a guitar, you are probably going to want to make more. Hopefully some of the info as well as links I have provided has helped to get you started in the right direction. Guitar building is fun and challenging at the same time, and if your like me you will always want to improve your skills and find something else to try out on your next project. I have added some pictures of some of the guitars that I have made down at the bottom so you can see my progression. So here's to having fun and building a piece of art that you don't just have to look at. Though they do look good hung on a wall!



Image Notes

1. This is the first guitar I ever build from scratch. I tried a totally original design but it ended up looking like a fish for some reason.
2. The second guitar I made from scratch. I was alot happier with the result but learned alot in the painting process.



Image Notes

1. I'm not trying to copy PRS. Those are my initials.

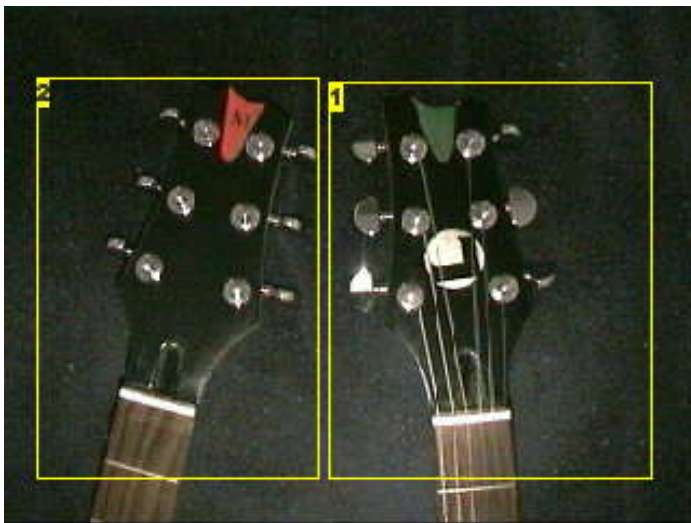


Image Notes

1. My first headstock design. I really liked the look so I stuck with it.
2. The headstock from the SG.

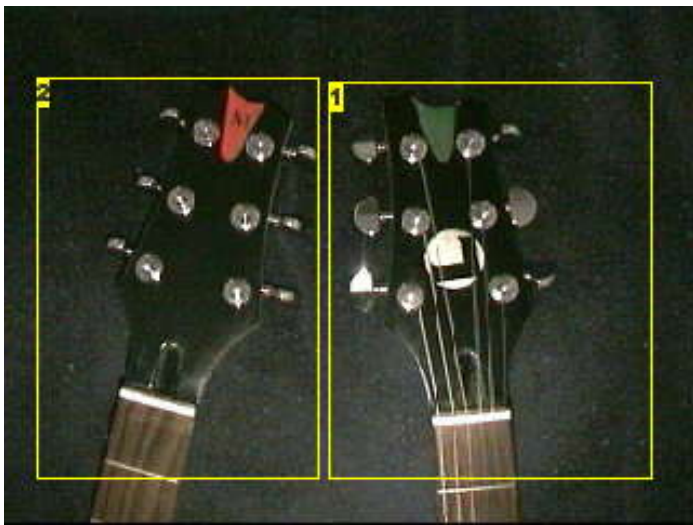


Image Notes

1. The third guitar I made from scratch and the finished product of what you saw being built through out the tutorial. I love everything about it!
2. This is my Saga kit Strat. I basically just painted and put it together. All the parts were ordered separate from the kit to give a nice look. Anyone that has ever seen has thought it was a real strat. Kit building is a very good way to learn how make a guitar.







Image Notes

1. Shiny!

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Comments

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eye_sick says:
wow im gonna try it would any one know the cost?

May 28, 2009. 3:11 PM [REPLY](#)



apricots says:
wow u really went all out nice job

May 25, 2009. 8:46 PM [REPLY](#)



tigerdog330 says:
so im makin one like ive never seen before.. its all one piece, and im doin it for as cheap as possible. I'm having a problem with the pickups, though. I only want one pickup wired straight to the jack. I also don't want to spend more than \$20 on just the pickup.. I know call me cheap... I found a decent pickup for like \$10, but its a bridge pickup. Would I be able to use it as a middle pickup? or should i just use it as a bridge pickup, then add others as i get more money? thx in advance

May 24, 2009. 8:48 PM [REPLY](#)



PYROMANIA122 says:

Jan 16, 2009. 9:17 PM [REPLY](#)

Nice guide so far. Just out of curiosity would you be able to make the body and neck out of the same piece of wood and save yourself some money by not buying pre made necks?



tigerdog330 says:

May 24, 2009. 8:36 PM [REPLY](#)

dude im doin the same... imma make it mad thin, like the body is an extension of the neck.. <http://www.stewmac.com/FretCalculator/> might help you out a bit with the measurements for the frets



spiceyweasel says:

Apr 13, 2009. 1:35 PM [REPLY](#)

Have fun. It's a real pain in the backside.



ads100 says:

Jan 24, 2009. 5:50 PM [REPLY](#)

you can find tutorials on making the neck and as long as you've got the right tools it'll be cheaper, but you've got to get the fret positioning just right which is quiet hard and will need some calculating (it can go down to 2 decimal points of a mm). You might be able to get someone or a guitar shop to do the frets for you but it depends if you want to try or not



agjorgjevski says:

Jul 31, 2008. 9:46 AM [REPLY](#)

This is my "build from scratch". It's my first... and i'm proud of it :D



Mandela says:

May 24, 2009. 7:22 AM [REPLY](#)

how nice!



Dansaren says:

Apr 16, 2009. 10:57 PM [REPLY](#)

Nice job! :)



SuperWar5 says:

May 23, 2009. 3:57 AM [REPLY](#)

hOW much would it cost all together? \$150

and instead of buying a head could you take one of an acoustic guitar??



hesseluke says:

May 22, 2009. 2:38 AM [REPLY](#)

if the neck scares anyone, just get a neck through body from the store, slap some custom sides on it, and wire it up as you see fit. i paraphrase of course, but neck through body designs are supposed to have more sustain, etc. then you dont have to worry about the scale length. still have to wire and may have to rout out more area for pickups, etc, but will save some steps



tim_p_harris says:

May 20, 2009. 3:17 PM [REPLY](#)

so is there a science to how far apart the pickups have to be? from the bridge, each other and the neck?

I have been asked to make a guitar and while a competent wood worker I want to make sure I get the technicalities right as well.

Otherwise it seems like a great st of instructions. I might post some comments once it is done



alejito says:

Dec 19, 2008. 9:26 PM [REPLY](#)

hi, i want to build a guitar and i dont want to spend too much. Im thinking of building a les paul style body and buying the neck.. the pickups and all that stuff i want to use the ones from my old guitar.. any ideas of how to star or what to do? thanks



JDCamera says:

May 16, 2009. 6:55 PM [REPLY](#)

I am doing a similar thing, but I don't have an electric guitar that I can sacrifice so I am going out to a store and finding one with dents into the body and talking them down as low as I can (if you make your own body it doesn't matter if there are scratches or chunks out of it, but it is nice to get the better parts for less \$) I am actually making the body out of metal though, it is an absolute experiment, I might end up making one out of wood at some point, it is a custom design, a fancy cross shape.

I am doing it this way (buying a guitar to take parts from) so I will know I have all the parts, I will know how they go together and to (hopefully save money), it seems like a good idea to me



Gothik1 says:

Mar 14, 2009. 6:11 PM [REPLY](#)

how do u put strings on a mdf guitar, cuz i made 1 and have strings



kyrinp says:

May 15, 2009. 12:41 AM [REPLY](#)

if you try to use an mdf guitar i don't think it'd sound very good, but it's sure to be the same as with any guitar



jeydon123 says:

Apr 14, 2009. 10:09 AM [REPLY](#)

u should ask a family member cuz its hard to show on the internet



crankflip says:

May 10, 2009. 9:53 AM [REPLY](#)

I've been spending a lot of time lately looking around on how to make guitars, and something I'm really annoyed at is "tutorials" that say "buy all the parts you need and put them together". For me, the point is that I make it, so good luck to everyone making one and no offense to the author, but I'm going to wind my own pickups and use flat-head screws for a bridge (Call me cheap if you will, but I'd rather have a poor guitar than none at all)



fergal says:

May 9, 2009. 12:37 AM [REPLY](#)

could you make a make your own bass guitar?



iEatedYourCookie says:

Apr 16, 2009. 3:06 AM [REPLY](#)

<http://www.warmoth.com/Guitar/Bodies/Radical/Iceman.aspx> Does anyone know where I could buy 2 DiMarzio Evolutions and a Floyd Rose bridge that would fit on this iceman???



greendude182 says:

Apr 20, 2009. 6:19 PM [REPLY](#)

you can get the pickups from musician's friend (<http://accessories.musiciansfriend.com/navigation/fretted-instrument-accessories?N=100001+304472&Ntk=All&Ntt=dimarzio&Nty=1>) as for the floyd rose, you're going to have to route the body to install it, though i'm sure you already knew that. the best place to get it is at Stewart Macdonald (http://www.stewmac.com/shop/Bridges,_tailpieces/Floyd_Rose_tremolos_and_parts.html)



iEatedYourCookie says:

May 8, 2009. 12:18 AM [REPLY](#)

ummm could you find any place cheaper than stewart mcdonald? because im british and the black floyd rose costs £162 (bit too much for a 12 yr old)



iEatedYourCookie says:

May 8, 2009. 12:09 AM [REPLY](#)

thanks i mite be gettin those with a little dosh comes in so yeah but i saw that kid talkin about a whammy bar so should i put in a whammy bar?



tigerdog330 says:

May 25, 2009. 2:51 PM [REPLY](#)

sure if you think youre gonna use it. But im pretty sure you need a tremolo bridge, cuz thats all ive ever seen it done with.



wazupwiop says:

Apr 28, 2009. 1:27 PM [REPLY](#)

Does anyone know how to do a set neck?



ziggie2011 says:

Apr 24, 2009. 12:11 PM [REPLY](#)


dude awesome white guitar... how did you get the paint splatters on it tho?





The Jamalam says:


Apr 24, 2009. 10:58 AM [REPLY](#)


Wow... these are amazingly well done. The third one you made, the SG, and the white one in the last few pictures look completely professional. Well done! 5 star rating, favoured.

 **klar2d2** says: Apr 21, 2009. 9:30 PM [REPLY](#)
How much would all the tools approximately be? I am looked over this guide, and I want to make one, but I'm wondering if i have the money to buy all the things needed to build one.


 **IWannaRock72** says: Apr 21, 2009. 3:28 PM [REPLY](#)
can anyone give a good estimate on how thick the plastic should be? please respond as soon as possible!


 **guitarbuilder18** says: Apr 21, 2009. 7:51 AM [REPLY](#)
If you were wanted to paint it with acrylic paint on the birch plywood and finish with that \$5.00 lacquer at Wal-Mart What would you have to do first? Like Still fill it up with Wood putty and prime it Or What? I really like to know.

 **Stick4444** says: Apr 13, 2009. 8:15 PM [REPLY](#)
One thing I noticed in this step is the use of tthe router for the entire cut. While this does save time, its hell on router bits. What I would reccomend, would be to trace the template over the blank, and bansaw or jig saw the tracing about an 1/8" larger than the pencil line, then hit up the router on the template. other than that, pretty spot on dude!

 **spiceyweasel** says: Apr 13, 2009. 1:39 PM [REPLY](#)
Have you considered making metal templates? They take all the worry and hassle out of router work and are nifty to have when your buds say "Cool! I want one!" That leads to you making some bank, bro! I wish I'd made one before I began my Draconis project. I stick with custom made necks I get out of Vegas.

 **zahmashista** says: Apr 12, 2009. 7:22 AM [REPLY](#)
is this the same for a bass guitar??


 **Sparrow40k** says: Apr 9, 2009. 12:17 AM [REPLY](#)
How much money would it be for every think (not tools - Only guitar parts) to make one?

 **pas12334** says: Apr 7, 2009. 4:32 PM [REPLY](#)
what was the total cost of the parts


 **guitarfreak2011** says: Apr 3, 2009. 4:00 PM [REPLY](#)
have you ever thought of doing a B.C. Rich Warbeast syle?

 **guitarfreak2011** says: Apr 3, 2009. 4:00 PM [REPLY](#)
**style

 **mr.colm** says: Mar 30, 2009. 10:35 AM [REPLY](#)
Do you know any good places to get good Les Paul style necks

 **skip2572** says: Mar 31, 2009. 5:17 PM [REPLY](#)
Guitar Parts USA is a good place, they have them for around \$80
<http://www.guitarpartsusa.com/>

 **skip2572** says: Mar 31, 2009. 5:14 PM [REPLY](#)
Does any one know where I can find 12 string tuners and bridges &/or tailpieces, or could I use 2 sets of regular tuners. All I've found are slot head tuners and very few bridges for a 12 string. Any help is appreciated.

 **elliot-the-prodigy** says: Mar 29, 2009. 12:37 PM [REPLY](#)
okay sorry if you already have said this in your instructable, but i was wondering if you are a "wood worker" or if you are a "regular person"? (...whatever that means...) how long does it take and how much money if starting from scratch?
-elliot the prodigy-



SmokeScream says:
How long will it take approximately

Mar 25, 2009. 5:38 PM [REPLY](#)



walkingwolf says:
i just went to lowe's and found birch plywood with very few pits at a very guitar sized 2 by4 foot by 3/4 inches thick. perfect for cutting out bow designs like i'm going to do. it was like 16 bucks for a sheet. i think that's what i'll start using. plus it's real easy to bring home! check it out.

Mar 25, 2009. 2:39 PM [REPLY](#)



robotsuk says:
Hi, Awsome Project, I just made a body, and i was wandering, if i brought a strat type neck is there anyway i could shape it into a more *heavy metal* style?

Mar 20, 2009. 9:24 AM [REPLY](#)

Thanks
Kris



walkingwolf says:
i added a tip to my headstock with mortise and tenon joints. i drilled 2 holes the same distance apart on both the headstock (which i cut just the tip off of to make it flat) and in the piece of black walnut extension. then i used a dowel the diameter of my drill bit and glued a piece in each hole to reinforce the joint. if you have an unusual sense of design you can add, remove or both to get the shape you want. mortise and tenons may not always work but if you put your mind to it you can figure out a way to reinforce a joint. if you can't then post a pic of your project and perhaps i can help. good luck!

Mar 23, 2009. 7:37 PM [REPLY](#)



IWannaRock72 says:
do you use the same wood for all of your guitars? if not, what kind of wood did you use for the pink+black guitar? also (im SO sorry for bugging you) what would be the best measurments for that shape?

Mar 23, 2009. 6:40 PM [REPLY](#)



IWannaRock72 says:
are 50v capacitors safe for an electric guitar? for some reason, i'm having a hard time finding the 25v you used...

Mar 21, 2009. 8:31 PM [REPLY](#)



IWannaRock72 says:
nevermind, I found some!

Mar 22, 2009. 11:47 AM [REPLY](#)



walkingwolf says:
almost finished! still waiting for the nitro in the mail. but here she is with several coats of paint. and if you want to see what she looked like before, use the link i gave kayla below. only mine was silver. can't wait to build the next one.

Mar 19, 2009. 4:36 AM [REPLY](#)



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