

# SHAPING THE TELECASTER BODY

By  
Ron Kirn

# Shaping The Telecaster Body

Everything you need to know to  
Shape and carve  
The Body  
you have always wanted

A Ron Kirn  
Publication

Everything you need to know to  
assemble the custom guitar  
you have always wanted

A "How To" manual

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Printed in the USA  
Revised 7/05/2004

Ron Kirn  
3009 Blue Heron Dr. S.  
Jacksonville, FL 32223

E-Mail: [ron@ronkirn.com](mailto:ron@ronkirn.com)

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## About this Book

There are many publications available with great instructions regarding guitar construction. The one problem I have detected in most of them is, they assume you have a complete wood working shop with \$50,000.00 worth of tools. Other assumptions are, you have a professional spray booth for painting your project, and have been applying Nitro-Cellulose Lacquer for years. This is not at all realistic for an amateur accumulating components waiting to assemble a professional player's guitar.

I offer this so that anyone with a fundamental understanding of basic hand tools can make a body for the guitar project.

Discussed here are my experiences as I have shaped bodies for a bolt on neck solid body guitar. Often copied is the Fender Telecaster®. Some topics are not discussed in detail because they are explained quite adequately in the web sites listed. Please check them out before writing and ragging on me.

First, note that Tele®, Telecaster®, Strat®, Stratocaster®, Fender®, and Texas Specials® are all registered trademarks of Fender Musical Instruments Corporation. The author has no affiliation with this company.

Also:

There exists in the aftermarket, reproduction parts, made well enough to fool all but the best appraiser. I do not recommend you constructing a copy of existing guitars for any other purpose than your own edification.

Constructing a counterfeit of any registered trademark product with the intent to sell, or otherwise distribute, is a violation of State and Federal laws.

Build it, play it, fool your friends, with it, but do not sell it as an original. You don't want any un-scheduled stays at a Federal facility with a big ugly sweaty roommate that takes a bath every couple of weeks if he needs it or not, a roommate that is looking for a nice young dude to get very, very friendly with. You don't want that do you?

# Chapter 1

## What have you gotten into?

First, let me be frank. This is not a project for a novice in the wood shop. Unless you are competent with power tools, professional power tools, and know when and where to place your fingers, do not attempt this. Its damn hard to play a guitar with only six and a half fingers remaining.

Second: This is no way to save money, It will cost you far more to make a body than to buy one. I'll give a cost analysis later.

What I would suggest? If you're committed to shaping your own body, I recommend getting several of your friends to join you. By making three or four bodies at a time you can break even.

Third: Actually this should be first, be safety conscience. The tools are dangerous in the hands of the inexperienced. The lacquer or whatever finish you are applying and associated chemicals are just as dangerous. The damage just doesn't show up for several years. The music you will be playing is dangerous too, hell just listen to it.

So now you're asking, " Just why in the heck do I want

to build my own guitar body?" Well, the answer is, there is nothing like playing a quality guitar you have made from scratch. All the Fenders®, Gibsons®, Ibanez®, PRS® or whatever just will not come close. That's why.

It will take about a month to shape the body, fit the electronics, and paint your masterpiece. The number one reason for major screw-ups is impatience.

There will be days when it seems as though nothing goes right. I have learned, and share with you. . . Just give it up on days like that. Go do something else.

The primary tool you will be using is a electric router, that's row-ter, like cow her. It's not a router, like roooooo ter. You use those in computer networks. Ok, so I thought it was funny.

Make a mistake, slip, or have a brain fart, while the router is on and in your hands, and one of three bad things happen, sometimes two. You screw up an expensive piece of wood. You screw up an expensive piece of your flesh. Or you get the crap scared out of you and nothing bad happens. Hope for the scared thing.

Remember, when working with wood, the slower you move, the better the cut, so take it easy. Don't rush anything, and you may survive with enough of your fingers intact to play the thing.

**Now, first thing, go to your local lumber yard, buy a 24 X 48 inch sheet of 3/4 inch MDF (medium density fiberboard) and make working templates from the masters I sent you. That way when the router slips, and it will, it is simply an inconvenience, not a catastrophe.**

I know, you're smart, you're not going to let the router slip. Well the difference between stupid and ignorant comes to mine. Before I made the above suggestion, you were ignorant of what may happen. If you ignore the good advice, you're. . . Well you get the point.

# CHAPTER 2

## Who Ya Gonna Call

The tools and supplies you will need are as follows:

### **BASIC**

Router, 1/8 inch radius round over bit with ball bearing ,  
2 ea 1/2 inch X 1 1/2 inch pattern bit with a top ball bearing one  
with a bottom ball bearing. 1/2 inch X 3/4 inch pattern bit with a  
top ball bearing. 1 Electric drill and a set of drill bits, A Saber saw,  
10 sheets each of 100 grit, 180 grit and 220 grit sandpaper. A  
Body blank 1 3/4 inches X 13 inches X 20 inches. The choice of  
wood is yours.

### **MORE ADVANCED**

Jointer, Band Saw, Planer (13" width) Small cooler with  
a lotta beer, Compressor, Hose, Spray gun, a Table mounted 2  
hp Router and a good collection of router bits. Two pieces of  
lumber 7" X 20" X 2"

Maybe the cooler should be listed under basic.

If you are buying these, you can buy bargain tools from

wherever, BUT! Get a good router. There are some pretty good deals on eBay. For the bits, go to [pricecutter.com](http://pricecutter.com) or [woodbits.com/](http://woodbits.com/)

Now for the cost of the stuff. A body blank of a medium grade, Alder, Swamp Ash, etc will be about \$50.00. The Router will cost between \$50.00 and \$200.00 depending on what you find. I use several Porter Cable 1 3/4 hp at \$150.00 ea, and a 2 hp Bosch that cost 21 bux, yep, \$21.00. I went to a cabinet shop and asked if they had any non-working tools they wanted to get rid of. It cost me \$21.00 for the new ball bearing to repair it. Of course, you have to be able to fix such stuff.

The router bits will be about \$20.00 each, more, if you get them locally. You have to have a drill already, and the bits that go with it. If you don't own this basic tool. Forget making a body. If your goofy enough to pursue it anyway, a good drill is \$50.00 and the bits will be about \$15.00. The Saber Saw will set you back about \$45.00, and the sand paper another \$10.00

If you are in the advanced category, the Jointer is \$400.00 from Grizzly.com. The planner will be another 400 bux. A compressor is \$250.00 at Sears. The Spray guns are about 20 bux from eBay. I get the inexpensive foreign Binks rip-offs and throw 'em away after I get tired of cleaning 'em.

Now the cooler, Sam's, BJ's and Costco all have a nice one for \$150.00. Budweiser is \$12.00 a case, so 10 cases for the first couple of days. . .



These are the two primary bits you will be using, a bout 10 bux each at [pricecutter.com](http://pricecutter.com) and [woodbits.com](http://woodbits.com)

# Chapter 3

## Let's Get To It

If you are advanced, and will be gluing-up your body blank, you must run the two pieces of lumber through the jointer to produce a flat edge. Use a glue that is compatible with the wood you have selected. For instance Cocobolo does not respond well to the traditional carpenter's glues. Clamp the blank and let it cure over night.

Once the glue has cured, run the stock through the planer until the thickness is 1 3/4 inches thick, for a body similar to a Telecaster®.

You are now ready to begin shaping. You have two templates, numbered one and two. Take number one and run a flathead screw into each of the two registration holes, the hole it puts in the body will be covered by the neck and the bridge. Now, trace the outline onto your body blank, including the electronics and pick-up cavities. This will indicate the shape of the finished body. Now remove the two screws, and the template. Set them in a safe place.

If you have access to a band saw use it for the following, otherwise this is where you use the saber saw. Cut out the body, leaving about 1/8 inch clearance from the line you have just traced. This will leave about 1/8 inch of wood remaining to be removed with the router.

Once you have rough cut the shape of the body, replace the template, number one, and set-up your router with the template following bit. It will have a bearing at the top. This will ride along the edge of the template and cut a perfect shape.

Note: I have deleted the screw pilot holes in the template because there is so much variation in their location among the many different tailpieces available.





Use any method you are comfortable with to rough out the basic shape  
Your roughed out body should resemble this soon to be Telecaster®

Note that you do not have to remove all the wood in one pass. In fact, you will get better results if you take a small amount in each of several passes. I would recommend that you clamp the work to a work table, rout the exposed end, then reverse the clamp position to what you just finished and rout the remainder.

You have noticed that the router bit did not cut all they way down the side of the body. See #1 below. This is because the bit to accomplish that in one pass, and a router powerful enough to accomplish it would set you back another \$400.00. For 20 bux you got a bit with a ball bearing on the bottom.

1



2



Once the entire circumference of the body is routed you can remove the template. Set-up the router with the second straight cut bit, the one with the bearing on the bottom. Extend the bit so that the bearing will track along the previously routed edge of the body. See #2 above.

If at this point you have learned about router tear-out, or chatter, both of which will leave a un-even surface. You will need to know how to repair them. I use automotive body filler. It hardens in about 10 minutes and is very easy to sand. The reason it is important to fill the irregularities, the second router pass will duplicate every irregularity that resulted from the first router pass. So take a few moments to smooth any bad wood. The body filler will have directions.

Continue the shaping process. The part of the body that has already been routed will act as the template for the second routing pass. See #2 above. Again, remove small amounts of wood in slow passes until the router is no longer cutting. You are through with phase one.

At this point, you should rout the cavities. The holes where the Pick-ups go will be 3/4 inches deep. The section that receives the elec-



tronics will be 1 1/2 deep. DO NOT ROUT ALL THE WAY THROUGH THE BODY!!

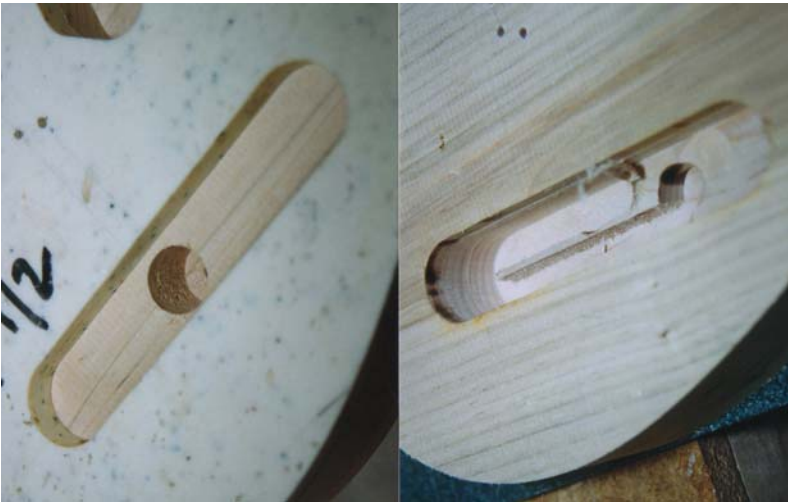
You can also drill the neck mounting holes. I recommend using a drill press to ensure they are perpendicular to the surface of the body. If you don't have a drill press, a hand drill can be used, just be careful to get the holes as true as possible. Actually this isn't hyper critical. A note: These holes should be slightly larger than the neck mounting screws. It allows for a little neck movement to adjust the guitar during set-up. I

have seen necks where the screws had to be screwed all the way through the body. That isn't necessary.

Your Body should resemble the Tele® you desire now, but we now have to address the neck pocket.

Attach Template number two. Be very careful to get the edges aligned with the body as perfectly as possible. If you're sloppy here, the neck pocket rout will be off slightly and it will be a bitch to get aligned correctly. So take your time and get it right.

The electronics rout is 1 1/2 inches deep. And The jack hole on



the bottom edge is 7/8 inch in diameter

Routing the deep electronics section will require you do it in several passes, increasing the cut depth until it's 1 1/2 inches deep. Make the first two cuts with the template as your guide, then remove

the template, lower the 3/4 inch top bearing bit so that the bearing now runs along the previously routed cavity wall and make a third cut, continue until it's the correct depth.

Adjust the straight cut router bit with the top bearing so that the bearing will run along the edge that you have already routed. It is only 3/4 inch deep here, so you will be gently lowering the router into the wood as it cuts, once the router base is resting on the guitar surface, follow the outline of the electronics cavity. The straight edge will guide it along the top.

Once this cut is made, lower the bit again and repeat the above instructions, continue until the depth is 1 1/2 inches deep.

Use the same process on pick-up cavity. Remember, the template is only 1/4 inch thick here and the pick-up holes are only 3/4 inches deep so you will not be removing the template. The router bit extended to the maximum will make the correct 3/4 inch deep cut. Take it slow, and remove small amounts of wood until the correct dimensions are achieved.

The diagonal wiring rout can be a problem. Since it is 1/2 inch wide and the pattern tracing bits are 1/2 inch diameter, getting it into the slot without chewing up the template is tough. What I do is use a 1/4 inch spiral carbide bit and set it in the router so that enough of the smooth shaft acts as the bearing to ride against the template. Just take it slow.

## Chapter 4

# The Neck pocket

The template is cut to allow any Fender® or Fender licensed Telecaster® neck to fit. That said, you must remember that the final fit will depend on the quality of YOUR workmanship and the amount of paint that accumulates in the neck pocket walls during finishing. Some sanding may be needed to get the final fit. DO NOT FORCE THE NECK. You will crack the thin wood where the body meets the neck. That is a MAJOR bummer.

Note: I have changed the templates a little to make it easier, simply put two drill bits through the string holes to register the template, then align with the outside of the body.

To rout the neck pocket, attach the neck pocket template. Place a pin, a couple of drill bits will work but should fit snugly, through the registration holes. They will fit into the outer string holes in the body. Be certain the edges are even all the way around the body. This ensures that the template is accurately placed.

The Neck pocket is 5/8 inch deep. Take it slowly. Particularly where the body curves into the neck. The wood will be cut thin here and can split, tear, or break of completely. Any of the above would be a real bummer, but easy to fix with the automotive body filler.

The thought of body filler might be repugnant to many of you, but, let me tell you a little story.

The birth of the Fender® guitars in 1949, when I was three, was spawned by Leo's electronics experience. He was a radio repairman about the same time Gibson was working with Les Paul to create the Les Paul Gibson's.

The Gibson guitars were relatively expensive for their day. About \$500.00. That would translate into about \$8000.00

today. The obvious target was the professional musician.

Leo saw that a much larger market existed among those that just wanted to pick at home. Thus the NoCaster® was created at around 100 bux. That translates into about \$1600.00 today. Thus the Telecaster (Custom Shop) still sells for the same as it did when it was first marketed with the figures adjusted for inflation over the years. The Les Paul (their custom shop) had to be discounted by 50% because it was too expensive to start with.

What's this got to do with auto body filler? Well the way Leo kept the cost down by using readily available materials. Like Dupont's automotive lacquers Duco and Lucite. Also automotive techniques were used, by hand to shape and refine the shape of those earliest Fenders. Thus automotive finishing methods are at home in the body of the guitar.

Back to the neck pocket. As you are routing the pocket use slow movements and remove as little wood as you can in multiple passes. The edges can splinter and break. While it won't effect the playability or sound, it will piss you off.

Before you remove the template, take a 3/32 drill and drill into the body the six string and four tailpiece screw holes. The tail piece holes should be about 3/4 inches deep. The String holes go all the way through. If you have access to a drill press, use it. It is very difficult to get the holes in a straight line where they emerge from the back. BUT!! Where they do emerge, they will be enlarged to 5/16 for the string ferrules, If the holes aren't in a straight line, they can be corrected when you enlarge them.

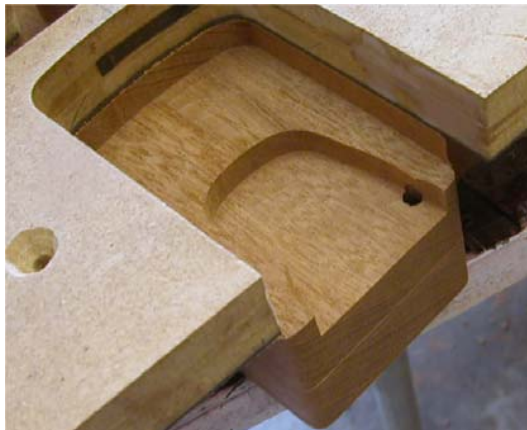
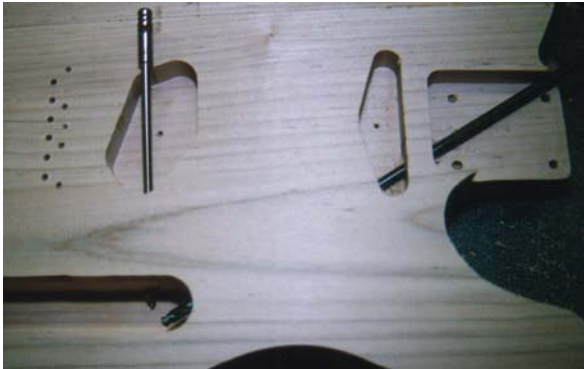
An amateur luthiers wrote in to make this suggestion about drilling the string holes and getting the 5/16 inch holes exact on the back for the string ferrules.

Drill the 3/32 inch string holes from the top on a drill press into the body 1 1/2 inch deep. Then take a piece of scrap wood, clamp it to the drill press table. Now drill a 3/32 inch hole into the scrap. Put a 3/32 inch dowel, broken drill or nail into the hole. Now turn the body over, place the peg into one of the string holes and then drill a 5/16 inch hole into the back 1/2 to 3/4 inch deep. The hole will be perfectly centered.

Two other miscellaneous holes need to be drilled, Now is a good time. You may need a 12 inch long 1/4 inch drill. It will make it easier.

Drill a hole from inside the neck pocket through to the neck pickup cavity, then continue through to the deep electronics cavity. Drill a second hole from the bridge pickup cavity to the deep electronics cavity too.

At this point all that remains is rounding the outside edges , OH! And the finish. You do have my book on finishing with nitro-cellulose don't you?



# Chapter 5

## The Round-Over

The 1/8 inch radius round-over bit with ball bearing you have is the tool for this job, Simply adjust the router base up or down to allow for a gentle roll over. Test the cut on a piece of scrap wood. Note: 1/8 inch is the early 1950 look. By 1953 the round over is 3/16 radius.

Before you begin, examine the outside edge of the body, it must be smooth. If there is router "chatter" visible take a sanding block and sand the perimeter until it is all smooth. Be careful around the neck pocket area. The reason? The ball bearing is going to follow the outside edge exactly, what ever bumps exist will be duplicated in the rounded edge. It can be sanded



later, but its easier to do it now.

Simply run the router around the edge, top and bottom I





generally give each two passes, it creates a smoother surface.

Now, there is one area that you must be extremely careful. Where the rounded over edge flows into the edges of the neck pocket, you will have to stop routing BEFORE you get to these edges. This final 1/4 inch has to be hand shaped because the 1/4 inch radius changes and flows into a square edge on the bottom where the neck plate will go. On the top it flows into the thin edges of the neck pocket.



To shape these small areas, I use a 1 1/4 inch piece of dowel, (round wood) wrapped with 180 grit sand paper. Use it

like a file and be gentle, move slowly.

this completes the router action. You can put it away.

It's time for the contours.

## Chapter 6

### “Custom Contour Body”

Some like the custom contour body features of the Stratocaster® on their Telecaster®. Go figure. Anyway here's how to do it.

The contours are hand shaped. Unless you have a computer controlled routing machine.

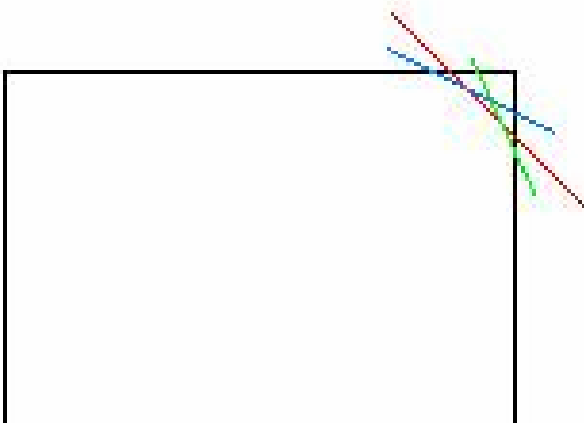
You will need a sanding block. A good flat piece of wood six inches by about twelve. And the 100 grit sand paper. 60 or 80 grit is fine too.

If you have a power grinder, you can get a course sanding disk to rapidly rough shape the contours. I really recommend using one, doing this by hand is hard and tedious.

If you are doing it manually, simply draw a line diagonally across the body top to indicate where the contour starts. Sanding is self explanatory, just remove anything that doesn't look like a Strat®.

The rounded edge that you just removed will have to be

restored, by hand. Yepperz, by hand, actually its pretty easy. Simply use the same sanding block, first sand a 45 degree bevel around the edge blending it into the previously routed round-



over. Now take a second cut with the sand block. You're just "eye-balling" it at this point. Continue until the round-over is continuous through the contoured top.

The Red line indicates the first cut with the sanding block, the red and the green lines indicate the second and third cuts. Then it is simply a matter of rounding off the remaining hard angles until they are smooth.

To see if it is correct, hold the body in the sunlight and roll the body, watching the shadow, it will reveal any irregular areas that need work.

The back contour is concave, and a little more demanding. If you have the ability, make a 6 inch X 12 inch sanding block rounded along the length.

If you have access to the power grinder, rough out the wood to approximately the shape you want. Again, simply take out anything that doesn't look like the guitar you want. <grin>

Now take the sanding block with a course sandpaper and begin shaping. When the shape you have is correct use a finer grade paper to finish the shaping. Complete the round-over like you did on the front.

Your body is now virtually complete.

## Chapter 7

### Final Sanding

Final sanding is as important as the most delicate router techniques. It directly effects the final appearance. Take shortcuts here and your masterpiece will have that classic home made piece of crap look. Enough said?

The outside edges, I do by hand with 180 grit and finish with 220 Grit. Keep sanding until all prior sand scratch marks are gone.

The flat sections of the body should be flat sanded with a good quality sanding block, using the same grades, 180, then 220. The way to check, is to hold the body in the light and allow the shadows to reveal any depressions that need to be corrected. I use the same method to check the hand shaped round-over in the contoured sections.

By rolling the body in the sunlight or strong light you can see in the shadow if the area has been rounded smoothly.

Sanding is simply a process of continuing until you are satisfied. Then it's time to apply a finish.

Do you have a copy of my book, Nitro-Cellulose, Painting The Beast”?

## Helpful web sites.

Other Sites:

<http://www.ronkirn.com/> < new. . coming keep checking

<http://www.tubesandmore.com/>

<http://www.carvin.com/>

<http://www.clarkparts.net/>

[http://www.guitarnotes.com/links/guitars/guitar\\_parts1.shtml](http://www.guitarnotes.com/links/guitars/guitar_parts1.shtml)

<http://www.guitarshoppe.com/customguitars.htm>

<http://www.hipshotproducts.com/>

<http://hoffmanamps.com/>

<http://www.jenkinssoundshop.com/>

<http://www.krunk.itgo.com/>

<http://www.mannmadeusa.com/>

<http://www.rgmusic.com/parts.htm>

<http://www.wdmusicproducts.com/>

<http://www.newtube.com/content/>

<http://www.mightymite.com/>

<http://www.grooveland.com/products/>

<http://www.guitarnuts.com/index.php> < Don't Miss

<http://www.towerpaint.com/index2.html>

Notes

