



The Ultimate Strat Guitar

By Ron Kirn

Building The Solid Body Guitar

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

A "How To" manual

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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 build a great guitar on their back porch or in the garage.

Discussed here are my experiences as I have constructed several Strat® type guitars. As I'm writing this, I am constructing several more. Therefore there may be some miscellaneous ramblings occasionally as I make new discoveries. 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.

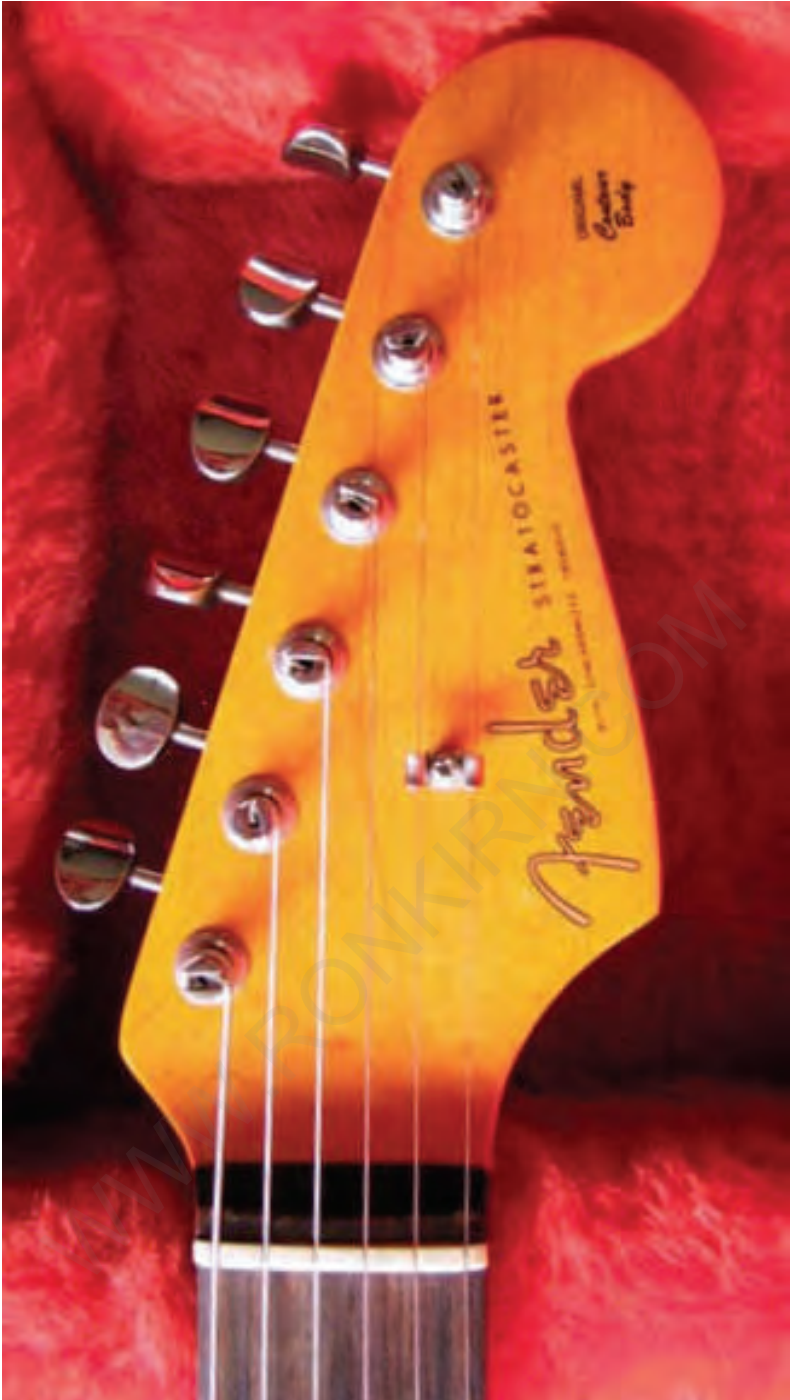
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Also:

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?



The Fender Stratocaster®

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A DREAM IS SPAWNED

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I grew up at 1306 Lakeshore Boulevard in Jacksonville, Florida. My next door neighbor was Ronnie Van Zant, of **Lynyrd Skynyrd**. We played as very young children, running through the southern tall grass, just being Kids. Another friend, as I grew a little older, was David Goddard. He became an accomplished studio guitarist and his brother Steve, went on to play in the **Atlanta Rhythm Section** a top ten group of the '70's.

My Sister plays, my Daughters can play a little. My best friend plays a little, I'm building him one now. I just gave a Mini Strat to my 9 year old grandson. It looks like he will be a player. My Nephew plays, damn can he play. He is in an up and coming group in Atlanta, **6 Degrees**, <http://www.6degreesmusic.com/main.htm>. He was a Classical Guitar Major at Florida State University. (You wanna be's, get an education.) Ya' know, most every body I know can play a little.

Anyway, I've influenced a lot of my friends over the years to pick up a guitar and no one has ever complained.

My love affair with the guitar began one Fall afternoon in 1960. A good friend, David Goddard, insisted I come by his home to hear this incredible album, yes album, genuine black plastic with scratches in it. There were no CD's in '60. I was 14, and the sound of A, A, A; G, G, G; F, F, F; E, spewing from the tiny record player that day gave me goose bumps. It still does today. These four chords are the introduction to an instrumental that catapulted 3 guitarists and one drummer into Rock 'n Roll stardom. "Walk, Don't Run" by The Ventures motivated, MOTAVITED? No! Electrified me, just as it did thousands of other teenagers to get on the Rock 'n Roll band wagon. Man! I had to have a guitar.

Within a few months I had it, a Sears & Roebucks Silvertone®, black with silver specks in the finish. I never could get it in tune, but it did give me the calluses I needed to play, and it began a lifelong romance with the guitar. I wonder where she is today.

I put up with that thing for several years. I was never happy with the way it felt, or the way it sounded. I was always playing around with it, trying to make it a better guitar, all the time I would drool over the Fender® catalogues I had accumulated. I always wanted THE guitar my idols played, the Fender Stratocaster®, a red Fender Stratocaster® to be precise, the guitar of my dreams.

How he did it I still don't know, (thank you Dad wherever you are) but my father found a used '62 Strat® for sale, a hundred and fifty bux if I recall. We could never have afforded the \$249.95 a new one cost. This one was owned by a guitarist in Xavier Cugat's orchestra. They were playing in Brunswick, Georgia, about an hours ride north of Jacksonville. It was another Fall day, and now, I owned the guitar of my dreams.

The ride home was heaven, The Strat® laying in my lap, I caressed it, stroked it, touched it, like young lovers would preen each other. By time I was home I had picked out "Penetration". I was happy beyond words. But. . . I was 17.

Caution: Don't read this if you have a weak stomach.

The first thing I did when I returned home was to disassemble the guitar. I began my first re-finishing project. I stripped the sunburst finish from

the body, then removed the clear nitro-cellulose lacquer from the maple neck. I spent hours bleaching the finger marks from the blond neck, and then filed the frets. I was an ambitious little fool wasn't I? I had learned a lot about a guitar from trying to get the Silvertone® to play.

To keep things in perspective, if I had just left the guitar alone and played the ugly beat-up thing for all these 38 years, it would be worth about \$20,000.00 today. By re-finishing it, I caused the today's value to plunge to \$6,000.00. This is true, despite the fact that in those days Fender, would, and did send me a free genuine decal to replace the one I removed.



That's me in 1965, with the "62 Strat on the left. Oh, I made the Amp too, The others, Jim, Eric, and Steve are all still good friends. I mention, out of respect for a dear friend, we are playing at a party for Paul Isaac Garret, who died one December morning in 1988 over Lockerbie Scotland in Pan Am 103.

To continue my story, I played the Strat® for a couple of years, then I took a hand full of STUPID pills and traded it in on a candy apple red Fender Jaguar®. It never was the equal of the Strat®, the Jag just never sounded as good, but I still wish I had them both.

I kept the Jaguar® until the "Folk Music" era grasped my attention. The Jaguar® was sold and replaced with a Martin D – 12 20. I quickly discovered how difficult a 12 string is to tune. There were no chromatic tuners in '67. So, it was out with the twelve string and in with the Martin D-35. I still have that guitar today. Again, Thank you Dad.

This brings us to today, and the task at hand. How to build a solid body guitar that will rival those the professionals use, and do it for a fraction of the cost asked for a new one.

CHAPTER 2

WHY BUILD ?

First make note: Most experts agree, there are virtually no guitars being produced today that will achieve the value in 40 years that the early Stratocaster®, Telecaster®, or whatever has, but who knows? There are a few very unique guitars being made, i.e. the Harley Davidson Stratocaster®. It is worth \$15,000.00 but this beast costs that much new. Guitars like those are few and far between and the high cost is due to their uniqueness, not to it's playability. What made the Stratocaster® unique was that it was mass produced, assembled by hand, and wonderful to play.

Today, virtually everything is being produced by computers and computer controlled machines. Any of the guitars being made today may be reproduced by simply re-programming a computer controlled shaper. In the future, they may be duplicated simply, by screwing the parts together. Heck! A '62 vintage Fender Stratocaster®, made in 1981, the first year of release for re-issues, is only worth what a new '62 vintage Fender Stratocaster® would cost as I write this.

Consider this. The original '62 vintage Fender Strat® was introduced in 1981 or nineteen years ago. Those guitars are the same age today, as a genuine 1962 Fender Strat® was when the Vintage Re-issue was originally released.

Today it is possible to take a vintage guitar apart, scan the dimensions into a computer and duplicate it perfectly, in fact, that is exactly how Fender® does it. Even such parts as the pick-ups can be disassembled, the details programmed into a computer, and a truckload of the things can be run off, so precisely that they have to be marked so they aren't confused with true vintage parts.

Just remember, it doesn't matter how detailed the duplication is, it still will have been produced in the year 2000. You can do everything you like to recreate the vintage '54 Strat® except turn back the clock and let every component "season" for forty-six years.

Here's a nasty thought. The contemporary vintage re-creations use a orange/brown tinted nitro-cellulose lacquer to recreate the natural tint nitro-cellulose lacquer acquires through the years. The question is, "what color will this freshly tinted fake aged nitro-cellulose lacquer be in 30 years?" It will still continue to darken, that's what nitro-cellulose lacquer does. Anyone want a chocolate colored neck on their Strat® in 30 years?

The difference, the early guitars were hand made, with simple power tools. They were signed by the people that made them. Those people were proud of them. Early Fender® employees often made adjustments during assembly to get things to fit. They were encouraged to "play" around with them until they were happy with the way it looked, played, and felt.

That kind of attention just doesn't happen today. A factory knows exactly what size everything is and exactly what size to program the computer to make a part. Everything fits perfectly, every time. I would bet that very few of the employees in these factories could pick a guitar out of a group of one, much less play it. Many of the mass produced guitars, even the "high end" instruments, aren't touched by human hands until it's removed from the factory packing at the retail store.

Today, even Fender's best guitars, the Master Built Custom Fenders®, use bodies and necks that are shaped by computer. While you can order custom woods, pick guards, pick-ups, frets etc., they are still built with "off the rack" parts and shaped by computer controlled shapers. Those guitars will still cost you five grand.

Another thing to consider if you want a true custom, is, from whom will you order it? Even for those of you with a "money is no object mentality" there are a few things you cannot have if dealing with the Fender, Gibson or PRS custom shops.

Order a Fender with a PRS tremolo system. That just ain't gonna happen. Try asking Gibson to install PRS pickups and electronics in a custom Les Paul, only in your dreams. Paul Reed Smith will never install a Steinberger Trans-Trem or a Fender tailpiece in their masterpiece. Or, if you wanna hear a big laugh, ask them to install a Floyd Rose Tremolo. Good luck on any of those unique combinations.

Those shops, while being excellent at what they do, are limited by the "off the rack" parts available for THEIR guitars. It's gonna be a cold day in hell before any of them will use a competitors parts on their guitars. They have their own designated parts and you can scream "Custom" all day long. If it ain't on their list, you can't have it. In reality they are not custom shops at all. There specialized assembly units.

That little word, "custom" implies that you can have anything you want, right? Well another little truth is that Fender® doesn't have a custom shop. Not in the truest sense of the word. If you insist on a guitar built your way, the choices are limited, there are only two, a true custom luthier, (you don't have that much money) or build it yourself.

Now for those who want to argue the point. Sure you can have the Fender® Master Built shop hand shape a body and neck. They will be glad to custom assemble it for you too. They will use sterling silver screws, platinum frets, Rodgers sterling silver tuning machines, and a solid gold pick guard, anything you want as long as the parts are on their "list". You can have a guitar made like that, or should I say Bill Gates can have a guitar made like that. If you have the bux, Fender® will do anything you want. But we're not talking about making a \$250,000.00 guitar are we? You may not know it, but you can take a \$25.00 guitar, glue 100 carats of diamonds to the body and *poof, you have a million dollar guitar, and it will actually sound worse than the \$25.00 guitar unmodified. Expensive junk isn't what makes a guitar sound good.

Another concept rarely mentioned is this, (and there are some that will hate me for saying it): The revered original Fender® guitars of the 50's and 60's were not designed to be the highest quality, most desirable instruments available. What they were meant to do was fill a niche in guitar availability. They were intended to be a modestly priced guitar of acceptable quality and mass produced. What made them so phenomenal is that many unexpected variables came together in such a way that they produced a quality guitar with a unique and unrivalled sound.

Many professional musicians immediately recognized the Strat® for it's simple beauty and driving sound. Les Pauls, L-5's and the ES 300's were mellow in sound by comparison. Heck! The L-5 and ES Gibsons are still preferred by big bands and Jazz combos because of that mellow sound.

When CBS took over Fender® in '65 it would appear that there was a conscious effort to make the worst guitars and amps they could. The three bolt Strats and the chrome/blue faced amps of the 70's were even worse.

By the early 80's, Fender® began to recognize that the original Fender guitars were sacred among aspiring musicians and professionals, so a conscious effort to restore the quality returned, though never like seen in the originals. The variables that produced the originals had been lost to the modern manufacturing techniques they were now using.

I recently visited the local mega music store to look at a genuine Strat®. It had been so long since I had actually seen an un-modified one up close and personal. It occurred to me that since I was ragging on the quality of today's Strats, I better know what I'm talking about. I wanted to see how the quality looked. Damn, I can't believe people will actually spend \$1700.00 for one. They are really pretty poor. The Squire® series is an absolute joke. 'nuff said?

When it became apparent that his creations were a success, Leo created the Jazzmaster®, and then the Jaguar®, neither of which were worth the equal of a Strat. The Jaguar was available with the Mother of Pearl block position markers and contrasting edge binding on the fingerboard, a typically Gibsonesque feature, an obvious attempt at making the Jaguar® look like a "high end" guitar. Neither guitar were particularly good. I had a Jag, I know.

While I'm no Gibson fan, all you have to do is look back to those offered and their prices in those days to see what Leo was trying to do. The attention to detail in the Gibson guitars ran their cost up. There were other manufac-

turers making electrics by the late 50's. Most were over designed, just plain ugly, and way too expensive. Then came the Stratocaster, classic simplicity and about 30% less than a Les Paul in the 60's, with a sound made for rock.

So, anyway, my love affair continues to this day. I have had cheap guitars, expensive guitars, ugly guitars, and beautiful guitars. I wish I had them all. I miss them all.

After 40 years of guitars, my advice is never dispose of any that you own. A guitar is as close as an inanimate object can come to being a friend. That is how the "Blues" were born. Well, it took the guitar, a good Scotch, and there's probably a beautiful woman in the mix somewhere too.

A wonderful old man, C. A. Turner, a luthier, taught me a lot. He once told me. "A guitar is one of the few things a person can own that is theirs exclusively. You don't share ownership with anyone. It's not the family guitar. You don't share it with your sister. You don't co-own it with your brother. It is yours and yours alone."

Dr. J Robert Oppenheimer created; as did Leonardo DaVinci. You are about to join the ranks of those that have created something. Will yours be a monster, or a work of art? I hope this helps you slay the dragon and free the artist.

So . . . Before you begin, call your local music shop. Price a Custom Shop Master Built Fender® Strat®, with a Bird's Eye Maple neck, Ebony compound radius finger board, custom frets, locking tuners, solid maple body, vintage pickups with vintage pots and wiring, a premium tremolo, and any other option you can think of. Oh, include a hand rubbed custom nitrocellulose lacquer finish. It's going to cost you at least 5 grand.

Today, Fender Musical Instruments Corporation, manufactures the Stratocaster® guitar in a variety of qualities. There are Mexican, Japanese, and American made Strats® for you to consider, and of course there are the Squires®, YUCK!!! Did you know that some parts are rumored to have come from India?

Many traditionalists suspect that if Leo Fender were alive and in control of Fender® today, he would place his name only on those carrying the Custom Shop and Master Built labels. Everything else is sub par when compared to the genuine vintage instruments so many long to own.

There are some very popular guitarists playing custom built instruments, however their show instruments bear little in common with the guitars of the same model offered by your local music store. They are supposed to be the same model as those played by these musicians but there's a dirty little secret. Their guitars have been custom assembled out of choice components to the specific design and request of the guitarist. These artists do not, and will not accept the mediocrity of an "Off the Rack" guitar. You don't have to either.

It is not unusual for a professional musician to be paid by a guitar manufacturer to play their product. Often a special guitar will be produced, with the look of the instrument the manufacturer will offer to the public, but it will be entirely different. It is a "covert custom" the musician will be playing even though

you are lead to believe it is the same guitar as the one available at your local music shop. Go take a look at the Fender® Artist Signature Series up close. You will see what I mean. Do you really believe your favorite "star" is playing a duplicate of that guitar?

An example of this kind of deceit was displayed several months ago when Tiger Woods, a professional golfer, revealed to congress, that golf balls were manufactured to his specifications, with the look and markings of the balls amateurs could purchase at their local golf store. The reality was, the amateurs could not buy the golf ball Tiger was playing even though it looked identical. This is a common practice in the world of product endorsement.

This is why so many want to build a project guitar. It is also why there are so many companies supplying after market components for Fender® Guitars.

To own the guitar of your dreams you have three choices. You can order a Master Built from Fender®, at about \$5000.00, have a Luthier custom build one, about \$4000.00, or build it yourself for under \$1000.00, and way under that if you're good at searching. When building it know this, you can use the exact same parts as the master builders use.

Even Fender® has noticed the trend toward constructing custom guitars. They now sell "Genuine Fender® Replacement" bodys and necks. They cost three times what a similar neck would cost from someone like Warmoth, and are shaped on the same type of computer controled shaper. From whom to purchase the parts from is a "no brainer".

Chapter 3

What do you need?

What does a Professional Musician look for in a guitar? Actually few of them really care what it looks like. It's the sound and feel that's important.

You may live to play a Voodoo Devil Demon 6 string with Lucifer's Voice Hot Sex pickups and a Evil Black Kostoomuch Tremolo simply because your favorite band does. What you may not realize is, in the studio they use completely different guitars. On stage they are paid by the Voodoo Devil Guitar Manufacturing Co. to play their sorry guitars. When you pay \$45.00 to go see your favorite group, you're watching a 2 hour commercial for some guitar manufacturer, and you took the bait.

The sound of the guitar is subjective, you pick what you like. Well that's true of the feel too. It is just that very few Pro's play an "off the rack" guitar. Some use custom electronics, some use mixed strings, even Banjo strings on an electric. They do all sorts of experimenting to get a sound they like.

Play a professional's guitar and the neck feels as soft and gentle as a lover's kiss. The body is as snug and warm as a mother's hug, and the sound is as sweet as your lover's whisper on a Summer's night. You just can't get that from an "off the rack" instrument. Now you know why guitars are given female names. Ever hear of Lucille?

Owning such an ultimate Strat® is much simpler than you may think. The most time consuming task is applying the finish. Other than that, it's simply screwing a few parts together and doing a little wiring. So go practice soldering.

Oh, there is the setup, did I mention that? The set-up has got to be correct, or your guitar will never sound good. The correct set-up can make a cheap guitar sound fair, and a great guitar sing like an Angel. A bad set-up will make everything sound like crap!

All the parts you need are available from companies that supply custom

guitar shops world wide. Even genuine Fender® parts are available. Often, these suppliers will give you a reduced price, all you need to know is how to ask.

As we go through the process, keep this in mind, the more time you take, the more careful you are, the better your finished guitar will look and sound. Often the most important consideration to the overall sound of an instrument is fit and finish. That IS why you are building a custom isn't it? If you want a quality guitar you will have to be patient throughout the project.

The final cost of your finished "Axe" should be around \$700.00, but you can do better by following the hints. Now sure, you can go buy an American Standard Fender Stratocaster® for about the same amount, but all you would have is a mid level instrument, certainly not of the quality found in the custom shop guitars. What we're talking about constructing here is a custom guitar like the finest professional musicians play. They typically will pay in excess of \$5000.00 for what you will be spending about \$700.00 to build. If you get good at it. . ., Humm, who knows?

By examining the catalogues from the suppliers I will be listing, and examining the web sites I list, you will be able to duplicate the Strat® of your dreams. I recommend a Vintage '62.

PARTS LIST

Neck	\$100-200.00
Tuning Machines	\$20-80.00
String Trees	\$5.00
Nut	\$2.00-\$30.00
Decal	\$20.00- ????
Neck Back Plate	\$5-200.00
Body (Alder)	\$130.00
Pick Guard	\$20.00
Pickups	\$120.00
Shielding	\$10.00
Capacitor .01, .05, or .022 mfd 250V	\$1.00
5 way switch	\$7.00
Vintage wire	\$10.00
Strap buttons	\$4.00
Jack Plate	\$7.00
Jack	\$3.00
Tremolo/Tailpiece	\$30-170.00
Tremolo Cover	\$10.00
Misc. screws	\$5.00
Lacquer	\$50.00

Now, it's easy to add the numbers and get a Strat® that costs over a thousand, so let's look at the variables.

PART

II

Parts is Parts

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Chapter 4

The Harder the Wood, The Tougher the Knot

The wooden components are but two, the neck and the body. I strongly encourage you to forget about making them in your home shop, particularly the neck. These components require a specialized skill. The savings from making them yourself simply aren't that great, you should order them pre-manufactured. Believe me, if you had to order this book or any book to make a neck, you do not have the skill or tools necessary to produce an accurately scaled fingerboard.

A raw fingerboard with frets is about \$30.00. A quality piece of lumber for the neck is also about \$30.00, a truss rod is \$10.00, position markers will be about \$10.00. That's \$80.00. They will all have to be shaped, cut, routed and bored to fit together. If you don't have the correct tools, it will cost about \$70.00 to rent them, and a hell of a lot more to buy them. All along you will never be able to produce the precision of a quality factory made neck. The factory made one will cost about \$120.00. The same scenario is applicable to the body. The wood will cost you \$60.00. The router bits, assuming you have a router, will be \$30.00 each. You will need at least three. The Excedrin for the headache will run another \$60.00, and where are you going to get the templates for the body shape, neck pocket, tremolo cavities, electronics and pick-up cavities and the jack plate cavity. For around \$100.00 you can get one of the best bodies made.

I strongly recommend purchasing a neck and body from someone that specializes in manufacturing them, and get them both from the same supplier.

THE NECK: If you want triple A flame maple neck with an ebony fingerboard, and abalone dots, you will pay a premium. Of course no vintage Strat® had such a high end neck. I purchased a bird's eye maple neck with an ebony fingerboard, and a few other custom features for \$178.00 from Warmoth®. Routing for a Floyd Rose® Locking nut alone cost \$30.00. Thus the neck with a standard nut would have been about \$150.00. I have seen specials on a similar neck for \$90.00. By shopping around the web sites I give, you can save a lot.

There are decisions to be made before ordering the neck, specifically,

as to type of wood, cross section, headstock shape, tuners, nut, frets, fingerboard radius, etc. Remember, the more unique you want it, the more it will cost.

To determine what you like, visit your local music store. Play a few different guitars to get the feel for various fret sizes and neck profiles. As to frets, they are ordered by number. The #6230's are close to the old vintage Fenders. The #6105's are the most common in use today, which speaks to their popularity. They're a safe choice. #6150 medium jumbo, these are typical of the vintage Gibson guitar, flat and wide, they're my favorite, and the #6100's are JUMBO, just plain big, but some like 'em. They're good for the Heavy Metal style.

Now comes the profile, or shape of the neck. There is the "U" or the original "baseball bat", typical of the earliest Teles. There is also a hard "V", soft "V" a "C" and a "D" shape. This is all a matter of personal preference, and you can't make a decision without trying them all. So that visit to the music shop becomes pretty important. The company supplying your neck will ask the questions regarding your preferences.

You must also determine what nut width will best suit your style of playing. 1 11/16 is standard, but if you're 6' 4" and can grasp a basketball in one hand, you will almost certainly need a larger one. Small hands may require a smaller nut width. They are available in 1/16" increments.

Ask about "specials" they may have a few that have "beauty marks" for sale at a discount. The same is true of the body. It doesn't matter because you're gonna beat it up anyway, aren't you?

To expedite everything you should have in hand the hardware you plan to use, specifically the tremolo and tuners. This will allow you to order your neck and body pre-drilled or routed for what you will be using.

You must also select the radius of your fingerboard. If your supplier offers a compound radius, order it. This feature was created to accommodate the playing styles of today's music, Rock, Country, R&B, Jazz, all of them will benefit from this contemporary design.

Over the years the style of playing has changed dramatically. Listen to any early rock, The Ventures, Dwayne Eddy, Buddy Holly, etc., These are the guys that played the '54 Strats® when they were new. They play the majority of their music at the lower register. Nothing like the music of today. For this reason I really wouldn't recommend a true vintage shaped neck, particularly if you're into contemporary rock.

Many players have commented about the difficulty of bending strings at the higher registers on a traditional Strat®. This is due to the radius of the neck, otherwise known as the curve of the fret board. The more dramatic the curve, the more difficult to bend.

Strats® of the 50's and 60's had a radius of about 7 1/4 inches, great for the style of that day, chording and low register lead. As the style moved up the neck, a flatter radius became more appropriate, 10 inches, 15, even 20 inches were common. They aren't particularly comfortable at the lower registers, but you can bend the string right off the neck as you move up. The compound

radius was developed to allow for comfort at the lower registers and ease of bending strings at the higher notes.



Illustration of a compound radius neck

THE BODY: You should order it from the same dealer that supplies your neck. This isn't mandatory, just a good idea. The specifications for the necks and bodies made by the premium companies are right off the original Fender® blueprints, therefore cross compatible. Be sure to ask about specials. Know what tuners and tremolo you will be using, again it's better yet, have them in hand. That way, the tuner mounting holes can be drilled for your specific needs. Also the tremolo can be accommodated, and any special routing can be professionally done. Really, this is the only way to go.

These companies are familiar with most tuners and tremolo units and for a few dollars more they will rout and bore to accommodate them. Now if you have selected something exotic and unknown such as the Super Shinen Gotchabux Whammen Flanger Tremolo, or the Megabux Gozenround Tuners, expect problems. Choose standard components, something they are familiar with and will be able to accommodate. Surprises after waiting as long as six weeks for a custom neck aren't funny.

There are any number of variables to consider when choosing a body. Few have any thing to do with the sound. It's pretty much your call. You may want to note, you do not have to choose a standard Strat® body shape, but the standard Strat® front rout with a pick guard is the easiest to build and there are many sources for the parts you will need. The rear routs such as a Jackson or Les Paul require careful attention to many aspects for everything to fit.

Do pay attention to what wood the body is made out of. If you are exploring E-Bay, many of the components are junk. Be careful, some of the cheap stuff might be made of plywood, or worse, pressed wood product. There are a lot of counterfeit products out there too. This is why I recommend cruising the web sites, it will help you identify the junk. Most of the quality names **burn** a brand into the neck pocket and on the back of the neck heel. If someone tells you it's a Warmoth®, All Parts®, Mighty Mite®, etc., for instance, and there is no brand, either it's a fake, or so much wood has been removed that it will be unusable.

As to which wood to select for your body, well there are many to choose from. The body of the vintage Strats are either Alder or Swamp Ash. These are the traditional woods, they're light and give the guitar the classic Strat® sound. **Again Note:** there are a lot of bodies being sold on E-bay. Most are from Japanese or Mexican Strats®. These are made from plywood, YUCK!! or some mystery wood from some obscure corner of the planet, YUCK!!! Again. Study the websites so you will know how to identify the real thing, and be careful.

Swamp Ash is a pain to paint. It is an open grain wood which requires filling before the lacquer goes on, more about that later. I prefer Maple. I'm not trying to build a replica of a 45 year old guitar so it doesn't matter to me. I just build the best quality guitar I can. Maple is a few pounds heavier than Alder and requires no pre-filling of the grain. The weight gives the guitar a nice feel so the finished guitar has the weight and feel of quality.

THE TUNERS: There isn't much to say here, the repro Klusons® will be about \$30.00, locking Schallers® or Sperzels®, about \$60.00. The type finish will affect the final cost, black chrome and gold plating are the most expensive. If you spend more than that you're nuts, and if you buy the \$10.00 cheepos you're equally nuts.

STRING TREES: Fender® originals, 5 bux, what can I say? Oh, only that Warmoth's® are nicer but not original, and only 3 bux. There are several styles, be sure you get what is correct for your vintage. Please check the illustrations on the web sites for correct placement. Really, that is so simple. The same goes for the decals.

NUT: Hey it's your choice, but remember there are no '62 originals with \$30.00 locking nuts. A standard bone nut will be about \$2.00, but I recommend brass, better string tone balance, it's only \$2.00 too. I use sterling silver, about \$10.00. It's just a nice touch. Get your Sterling Silver here: <http://www.metalworks.com/>

DECAL: This is tough. First, it is illegal to apply a registered trademark to your creation. In fact, let me be a little more emphatic. Placing a registered trademark on a fake anything is a Federal crime. Realistically, Fender is only going after the Big Boys of trademark infringement, but, they still can come after you. It would mean they will confiscate any fake you may have created, anything relative to the fake, and slap you with a pretty hefty fine. If your parents are responsible for paying the fine, you are going to find yourself without any guitar, and if you want to play music, it will be with a rented violin and your criminal butt will be in some Suzuki music class playing Mozart. So if you do what to make a counterfeit guitar, keep it a secret. SHUT-UP!!!!!!!!!!

Now, since I am pragmatic and know what you really want to do, keep this in mind. If you are refinishing a genuine Fender®, and can supply photos of the headstock with decal and a shot of the serial number there are suppliers that can get you one. Cost will be about \$20.00. DO NOT send a photo of an original vintage Strat® telling them you are going to re-finish it. They will come and put you in the psyche ward. You can explore the black market where a Fender® repro will be about \$30.00, and a Fender® original on e-bay can be anything, but typically around \$100.00.

NECK PLATE: Warmoth® has a nice plain one for \$5.00 or you can surf E-Bay. Occasionally a vintage plate with a genuine serial number will show up, but you know, they aren't going to be cheap. All Parts® has plates available with a serial number. They aren't exact copies of the Fender®, but if you want a number on your project try this site: <http://www.allparts.com/>. The Genuine Fender® plates are considerably heavier and thicker than the others, I use Fender® plates exclusively. Get them from: www.partssmart.com

OH, when you place the string trees and decals and whatever other small detail items, check the photos on the web sites for correct placement, I have seen some pretty lame attempts. It looked as though they never saw an original Stratocaster®. They don't have to be exact. Different Fender® employees were placing them on the originals in the '50's so there were inconsistencies from one guitar to the next, but they did appear basically in the same position on each guitar.

PICKGUARD: Get a real Fender®, they're about 5 bux more than copies and it's genuine Fender®. Get it here: www.partssmart.com

PICKUPS: Jeezus!! There are about a billion choices, most of 'em good. You can spend as little as \$10.00 each, but your guitar will sound like that lame K-Mart® special your friend got for Christmas last year. Get good pickups: the electronics are among the most important parts you will use. Again, surf E-bay for good prices. I bought a set of Fender® Texas Specials® (not the Tex-Mex®) for \$50.00. These retail for almost \$200.00 and were the pick-ups of choice for Stevie Ray Vaughn and other professional guitarists. Here is an E-Bay hint. Look for items that will conclude in the hours between 9:00 AM and 5:00 PM. There aren't many people around at those hours to bid an item up. This is simply because everyone is at work or school.

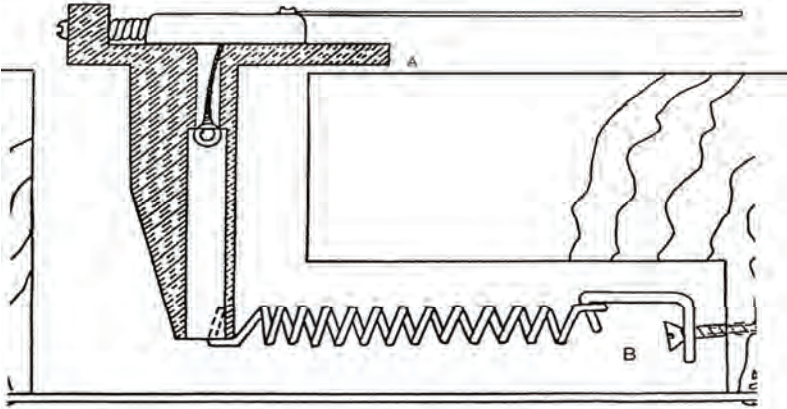
POTENTIOMETERS: These are the volume and tone controls. Get CTS®, don't be lame, they're what Fender® used originally, and there only \$5.00 each, you will only need 3 and Radio Shack® doesn't carry the kind you need. The cheap ones are \$3.00 each. Need I say more? Oh, you also need one (1) .01 mfd or maybe a .022 mfd capacitor it depends on what wiring instructions you are looking at, and again get quality, that eliminates Radio Shack®. The capacitor will be less than a buck. Check this site before you buy your electronics. <http://www.guitarnuts.com/wiring/index.html>

Do not let wiring the guitar scare you. If you survived sticking a paperclip in the wall socket when you were a kid, you can wire a Strat®. If, on the other hand, putting fresh batteries in your Sony Walk-Man® gives you trouble, perhaps you may want to re-think this project. Hey, you could ask your dad to help.

TREMOLO: There are Professional Musicians that never use the whammy bar and still insist on one being installed on their guitar? Why? Well as one stated, "You have this big hole in the body of a Strat®. It's full of metal with the strings attached to it. Do you think that might just have something to do with the way a Strat® sounds?" Enough said? A Strat's® gotta have a twanger.

The Vintage Strat® has to have a vintage tremolo. An original repro is about \$80.00. A really good copy is about \$45.00 from Stewart-McDonald®. I

prefer the Wilkinson® which isn't vintage, I don't know why, I just like it, it's about \$80.00. I have seen them as low as \$20.00 on E-bay. The exotics like the Floyd Rose®, the Kahler® and a few others usually require special routing and a hundred more dollars to buy them. If you are not proficient with a router, forget it. You can screw up a darn nice guitar in a nanosecond with a router.



Cross section of a typical Strat type tremolo

WIRE: If you want a Vintage Strat® you have to have vintage wire. Get the wax impregnated, cloth covered vintage wire, black and white, available at Clark Parts, www.clarkparts.net or All Parts, www.allparts.com/. If you're building a contemporary Strat®, that's one with all the newest stuff you can find, the wire doesn't matter. Well, yes it does, do get good wire. I mean, you will know what it's made of in there won't you? You only want the best.

STRAP BUTTONS: Hey! your choice, but the Fender® originals are cheap, same for the jack plate, and the jack, which should be a Switchcraft®, again, cheap.

SHIELDING: You have several choices. For the body cavities, I like the adhesive backed copper foil. Conductive paint works fine but it will cost \$20.00 at Stewart-McDonald®. The vintage Strats® didn't have any cavity shielding, just a sheet of aluminum under the pick guard. If that's your thing, get Fender®, it's a cheap part. If you want to make one yourself, go to your local hardware store, purchase a couple of feet of aluminum flashing, about 5 bux, and cut it out. Plain old scissors will work, of course your mom will kill you when she tries to use them the next time. Here again let me insist that you go to: <http://www.guitarnuts.com/wiring/index.html>. It contains some of the best info around on this topic.

TREMOLO COVER: Get it wherever, I like Warmoth's® white/black/white plastic, there about \$8.00, or All Part's chrome plated brass, it's \$38.00 though, \$19.00 if you're good.

SCREWS: I get mine from a hardware store. I use stainless steel exclusively. I chuck the stainless screws in a drill and spin them while touching the

heads with a piece of fine sandpaper. It gives them a nice precision look.

The vintage Strat® will require chrome or nickel plated repro screws. They are available from the suppliers I will list. The Vintage Strat® has to have vintage screws. No problem, they're cheap. Just note, there are Chrome plated parts and Nickel plated parts. Chrome has a brighter, colder (blue) appearance, Nickel is a little more warm (yellow) in appearance. Know what you want, and what to order.

LACQUER: Nitrocellulose lacquer is THE finish for the great guitars, PERIOD. Even a Democrat and a Republican wouldn't argue that point. I love working with it. Fender®, Gibson®, PRS®, Martin®, and anyone else making guitars use it on their finest instruments. Nitro-cellulose breathes with the wood and actually contributes to the resonant qualities of the wood. Just don't sniff it. Jeeze, you're building an incredible guitar. It would be a shame to become brain damaged before you can play the first chord. I use Sherwin-Williams®. To use it, you have to know how to use a compressed air spray gun. The Wagner's your dad bought to spray the garage door will not work. It's designed for latex. Don't paint your guitar with latex house paint OK? NOT COOL, not cool at all.

Get your lacquer from Sherwin-Williams®, check the Yellow Pages®. A gallon is about \$18.00 and they can mix custom colors. Or you can buy the pigments (\$1.00 per ounce) and mix them yourself. One ounce will do several guitars. Do not get it on anything you don't want a permanent stain on, this stuff is intense.

Other equally good nitro-cellulose lacquers are also available from other suppliers I will be listing. To spray it you will be mixing it 50/50 with thinner, so get a couple of gallons of lacquer thinner too.

Originally Fender used Dupont DUCO which was a nitro-cellulose finish. Lucite was used in many shades also, however it is an acrylic lacquer. Dupont no longer manufactures DUCO, but they do have Lucite acrylic lacquer, almost certainly a different product than that available 45 years ago.

However, if you would like to duplicate the original Fender colors here are the original shades and Lucite numbers. Thanks to Keith Schuler, who worked at Fender In Fullerton from '65 to '72.

Lake Placid Blue Metallic	Lucite #2876-L	'58 Cadillac
Daphne Blue	Lucite #2804-L	'58 Cadillac
Inca Silver Metallic	Lucite #2436-L	'57 Corvette
Olympic White	Lucite #2818-L	'58 Cadillac
Burgundy Metallic Mist	Lucite #2936-L	'59 Oldsmobile
Inca Silver Metallic	Lucite #2436-L	'57 Corvette
Fiesta Red	Duco #2219-H	56 T-Bird
Dakota Red	Duco #2590-H	"58 Cadillac
Blue Ice Metallic	Lucite #4692-L	'65 Ford
Firemist Silver Metallic	Lucite #4576-L	'64 Cadillac
Firemist Gold Metallic	Lucite #4579-L	'64 Cadillac
Charcoal Frost Metallic	Lucite #4618-L	'65 Lincoln
Ocean Turquoise Metallic	Lucite #4607-L	'65 Mercury
Teal Green Metallic	Lucite #4297 L	'64 Lincoln

Black	Duco #1711	All makes
Sonic Blue	Duco #2295	'56 Cadillac
Shell Pink	Duco #2371	'56 Desoto
Foam Green	Duco #2253	'56 Buick
Surf Green	Duco #2461	'57 Chevy
Sherwood Metallic Green	Duco #2526-H	'57 Mercury
Candy Apple Red	Undercoat was Inca Silver 50%, Shoreline Gold 50%	
	Topcoat was Fiesta Red 1/3, Clear 2/3	

The Yellow of the Sunburst was actually and undercoat called "Fullerplast" (Clear with a yellow stain mixed in)----This was used only on ASH bodies. Alder bodies were stained yellow and the later sunburst sprayed on. "Fullerplast " was named for the company that made it (Fuller/O'Brien) not the city of Fullerton. Still Available @ phone #: 1-800-368-2068. All of these names and numbers were DuPont, but any good paint company can cross-reference and mix a matching color, probably in nitro-cellulose.

Should you want to duplicate one of the above original shades any good nitro-cellulose or acrylic lacquer supplier should be able to duplicate the shades with the numbers above.

If you want to paint your guitar with one of the new colors seen on custom cars, take note. Those finishes are not nitrocellulose lacquer. While they may be available in something called lacquer it is not nitrocellulose lacquer. It is a modern acrylic and not at all compatible with nitro-cellulose. Kind of like saying Barbara Streisand and Yngwie Malmsteen are the same because they're both entertainers. The automobile finishes are available at your local body shop supply. Acrylic Lacquer is very expensive prices start at about \$80.00 a gallon and require a lot of equally expensive stuff to mix in them.

Chapter 5

Where to get the stuff

Now this is secret, don't tell anyone. If you have a mature voice, and can speak like a business man, some of these suppliers will discount their prices.

You must convince them you are a guitar repair shop. This isn't hard. There are a lot of small one man shops around the country. Usually all you need is a State Tax Certificate from your State. There usually about \$10.00. Just call your State Tax Bureau and ask. Actually this is very easy, and can result in discounts of 50% on a lot of stuff. You can also start a small business working on your friend's guitars. Just pay your State taxes. State Tax Narcs make the IRS look like pussies.

If you are good, if enough information sinks in after reading all the info I have suggested, you can keep the cost really low by surfing E-bay. Simply type "Fender" in the search, and watch. Now, be careful. There's plenty of junk available, and if you buy a neck from one person and a body from another, fitting them together may be a challenge. I have seen Warmoth® necks and bodies available, but I would not buy a neck and body from e-bay unless I could save 50% of the cost. They may require extra work to repair the flaws the seller isn't telling you about. Watch out for statements like, "I'm selling this Genuine Fender??? Neck for my buddy" or "May be an original, I'm not sure." or " Not sure where it came from". These are all code words for, "I'm trying to screw you." I always want to ask those "I'm not sure where it came from," what??? Did space aliens just beam it into your room?

I can't emphasize this enough. Call the suppliers first and order their catalogues. The Stewart-McDonald®, Warmoth®, and Luthier's Mercantile® catalogues, have volumes of detailed hints. They're free too. Just remember, they really don't want to send catalogues to a 16 year old who has saved up \$103.38 and thinks he can duplicate Eric Clapton's "Blackie". So act mature.

Order your neck and body from any of the following: Warmoth (253) 845 0403 (warmoth.com) these guys are my choice. Other good suppliers are the

B. Hefner Company (edenhaus.com) (562) 945-9490, and Musickraft (musikraft.com) (856) 728 6262, or All Parts (allparts.com) (281) 391 0637. Any of these suppliers make excellent parts.

Just a thought, but you may want to give consideration to what type finish you would like on the metal parts, the choices are: Chrome, Black Chrome, Nickel, Gold Plating and some anodized color. Here is my opinion of each. They suck, but, good news, some suck less than others.

Gold: I've never seen a guitar with gold plating that survived more than a few years without fading or being worn through, never. That said, A guitar with gold plated hardware is awesome. They are some of the most beautiful examples of industrial art around. Chrome: probably the toughest, but on steel, it will pit and corrode in areas where your skin touches it, such as the bridge. Try to find chrome plated brass. Nickel: looks a little "richer" than chrome but it will pit too. The nice thing about chrome and nickel is you can use a very fine steel wool and remove a lot of the pitting. The addition of a good car wax will help prevent pitting on all the surfaces too. Black Chrome: Pits the fastest of them all, and a lot of the "black chrome" is a heat applied powder finish, it's not particularly good either. Anodized color: really, that stuff really looks like crap. It's almost always put on an aluminum part. Do you really want aluminum parts on your guitar? So, use what you like, they all have their problems.

Tuners: Atomic Music (atomic-music.com) (301) 474-8217. They have really good prices. You can get other stuff here too, and they will sell you perfectly good used stuff at great prices. All Parts® is another great source particularly if you got the State tax certificate.

Let me mention here, most of these suppliers have many of the things you will need, for instance you can get just about everything you need from either Warmoth®, All Parts® or Stewart-McDonald®. Just not the original Fender® stuff.

For any Fender® original part, contact: Smart Parts® (partssmart.com) 847-342-8266. They have the decal too, but do not order one unless you are refinishing a genuine Fender® guitar and/or neck. The supplier will demand photographs before they will sell it to you. They have very good prices and will e-mail you a price sheet. Just don't put a registered trademark on something that is not genuine.

With the suppliers I have listed, you now have sources for everything you need. The web sites have additional links. You can explore the internet and find some really bazaar stuff. I would recommend spending several weeks exploring the internet. You will find many very exotic guitars. A few of the suppliers I have suggested will create a unique design if you supply a drawing. Be original.

There are a number of web sites you should, should?? No.. You MUST, explore. They will help you become familiar with what is required to do a professional job. This may come as a shock to many of you, but knowledge of many different topics can actually be an advantage.

For painting the guitar try, <http://home.flash.net/~guitars/>. Also, Stewart McDonald® Guitar Shop Supply (www.stewmac.com) will send you the free

catalogue you should have already ordered. It's full of stuff including tips you need to know. Luthiers Mercantile® (www.lmii.com/) likewise has excellent information, and a free catalogue too.

For details on what to look for to make your guitar as close as possible to an original vintage guitar, here is the bible: <http://www.geocities.com/Hollywood/1375/index.html>. Study those photographs for details on accurate placement of small detail parts. If I see another Strat® with the decal on crooked or the string trees in the wrong place, I'm gonna hurl chunks. This stuff is so easy to get right.

Other Sites:

<http://members.home.net/pickguards/pw1.htm>

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

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

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

http://www.guitarnotes.com/links/guitars/guitar_parts1.shtml

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

http://shop.pbnet.com/bg_usr1/

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

<http://hoffmanamps.com/>

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

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

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

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

<http://www.wdmusicproducts.com/Replacements%20For%20Strat.htm>

<http://www.gate.net/~swampamp/>

<http://www.newtube.com/default.htm>

<http://www.geocities.com/Hollywood/1375/Fenderc.html>

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

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

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

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

OK, if you can't get enough info from those sites you're hopeless. Read as much as you can stand, make notes about what you want to do. Then plan your project. Then repeat, and double check everything.

Chapter 6

Financing the Project

The money to build this guitar is easy. Just raise hell for those new \$150.00 Nike®, Reebok® or what ever, till your parents give you the money. Then go to K-Mart® for those 9 dollar look-a-likes. A couple of times and bingo, you're rich. If they ask, "Where are the shoes," tell them some big ugly guy with orange hair, a hundred tattoos, and pieces of metal sticking out of his nose, tongue, ears, eyelids, cheeks, and lord knows where else, stole them from you. Oh, you don't have orange hair, a hundred tattoos, pieces of metal sticking out of your nose, tongue, ears, eyelids, cheeks, and lord knows where else, do you? If so, the above alibi won't work. You're on your own.

Enough with the comedic relief, on to building the booger.

Chapter 7

What to do with all the stuff

The neck will arrive ready to paint, all you have to do is spray it, stick on a name decal, if you like, install the tuning machines, attach the string trees, and shape the nut. This should take about three weeks. THREE WEEKS!!! Yes, at least three weeks.

You will be applying lacquer, in multiple coats. Lacquer dries to the touch in about 1 minute. BUT!!!! Note this!!! It takes weeks to dry and shrink completely. READ THAT AGAIN. It has to be completely dry to maintain the polish of hand rubbing. Just a thought, that shrinkage concept is applicable to all but the most exotic finishes, and absolutely to anything you can squirt out of a spray can.

The one thing that visually separates a quality guitar from a "no name" discount special is the finish. If you rush it and use cheap parts . . . well you can figure it out.

Before you begin painting, place the neck mount back plate on the body in position and mark where the mounting screw holes go. Remove the plate and drill the holes all the way through to the neck pocket. Now insert the neck in the pocket, and make sure it is aligned correctly. Wait, here's how I do this: Insert the neck, looking down at the face of the guitar, tape a string to the center of the neck at the nut location. Extend it all the way down to where the strap button will mount in the body. This will indicate the centerline of your guitar.

You can move the neck to either side till the string is centered on the 21st fret. At this point, take the same drill bit you drilled the body with and insert it into each of the 4 mounting bolt holes. Allow it to gently touch the neck while the drill is rotating so that it makes a slight mark on the base of the neck where the mounting screws will attach it to the body. This is where you will drill the pilot holes in the neck. This doesn't have to be exact. The length of the neck will allow you to move it to either side about 1/4" when the guitar is assembled. This is more than enough to get the neck aligned with the strings. You just want the pilot holes close to exact.

Remove the neck, take a drill bit smaller in diameter than the screws

you will be mounting the neck with, mark the depth so that it will not drill through the fingerboard, and carefully drill the pilot holes. Hint: put tape around the drill bit so you know when you are deep enough. Remember, there are no vintage Strats® with holes drilled through the fingerboards, well not by the Fender® factory anyway.

You may want to check the drill bits you will be using for size. Use a piece of scrap wood before you drill the holes. It's always nicer to screw up a 50 cent piece of pine than a \$150.00 neck.

Place the neck in the pocket on the body and lightly mark where the body contacts the neck. You will only want one or two coats of lacquer here. Too much paint and the neck will not fit without forcing it. Seeing a piece of your custom Strat® body break off and scoot across the floor when you force the neck in the pocket is a real bummer.

Mask off the finger board. I allow the masking tape to come half way down the fingerboard edge. Some people try to cut it right along the upper edge, either is ok.

If you have a Blondie, i.e. a maple fingerboard, you have to mask all the frets or be prepared to clean the lacquer off all of them after the finishing is complete. This is reason enough to have a Rosewood or Ebony fingerboard, neither of those require finishing.

Once the masking is complete, you will need to fasten a handle on the neck. This is so you can manipulate it while you spray the lacquer on it. Make it about a foot long and drill a hole in the end so you can hang it to dry. Be certain you have a place to hang it before you spray it. Use at least two screws for attaching the handle to the neck. Use two of the pilot holes you have previously drilled.

Be certain the handle covers the complete bottom where the body will contact the neck. The reason is, that multiple coats of lacquer can build up in this area and become quite thick. If it is along on one side or otherwise un-even, the neck will not sit perfectly flat in the pocket, and your final string action will be a bitch to set-up. Remember to have at least 2 coats of lacquer in this area before you attach the handle. It is required by most neck manufacturers to validate the warranty.

I'm not going to teach you how to become a master spray painter, but with a little practice you can get great results. If you know someone that works at a body shop or some other facility that does a lot of spray painting, ask for their help. You can take the body to a auto paint shop and have them paint it. It wont be nitrocellulose, but it will be professionally done.

Now a word about spraying. For best results, an air compressor and spray gun should be used. Since you probably don't have one, you will be happy to know that great results can be had with spray cans of nitrocellulose lacquer. It's just that two cans of spray nitrocellulose lacquer costs the same as a gallon of the Sherwin-Williams®. It will take about 10-20 spray cans to complete the guitar or 1/2 a gallon of the Sherwin-Williams®. You can rent a sprayer and practice till you get it right for the difference in cost.

Now, once you are a competent spray gun operator you simply do it. Oh, don't practice by re-finishing your fathers '62 Strat®, the one his Dad bought when he was 16. You have a long life ahead of you. There's no reason to be killed this early.

Your neck should be maple, if so you will not have to fill the grain. While other woods are available, most require filling the grain, additional sanding, and more cussing.

Once the neck is ready, apply a coat of lacquer, wait about an hour and apply a second, another hour, and a third. See the web site: <http://home.flash.net/~guitars/Fenderneck.html> it contains great instructions. After about 6 coats, let it dry for several days and then wet sand it with 400 wet or dry paper. Now apply the decal. Once the decal is dry resume spraying the neck, 10 to 15 coats total will be enough.

If you will be applying a decal, apply 5-6 coats to the headstock, wait about 4 days, then wet sand the face of the head stock. See the web site above. After applying the decal, let it dry for 24 hours. It allows all the water to evaporate from beneath the decal before you begin spraying again. If you trap moisture with a fresh coat of lacquer, you're screwed. Let's see. . . how much did you pay for that decal you just ruined? See this site for great info: <http://home.flash.net/~guitars/ReRanch101.html#clear%20coats> See Chapter 12 for more detailed information.

After there are about 10 coats on the neck, I'd let it sit for at least a week. Then begin the wet sanding. Be careful at the edges, the sanding can remove all the lacquer quickly. Do that and you will have bare wood exposed. If it takes you a week to do the sanding, great! The longer it takes the more the lacquer will have dried. Actually it takes several months for lacquer to completely dry.

Where the masking tape line is along the fingerboard, gently "feather" the edge down with 400 grit sandpaper until the edge can't be felt. You want it to feel like the lacquer finish flows into the fingerboard.

Again, let me re-emphasize, read all you can about finishing and re-finishing. You will be glad you did.

You will use the same finishing techniques on the body, with this exception, you may be using a color. Sherwin-Williams® can custom mix a color or you can purchase a color lacquer from the suppliers I have listed.

Let's start on the body. You will need a handle for the body also. Mount it in the neck pocket. Run a few screws through the holes you drilled earlier. Remember to drill a hole in the end to hang it to dry. Oh, I think I neglected to tell you before you start spraying, find a place to hang both the neck and the body before you spray them.

Prepping the body should be pretty easy too. If you ordered it from one of the suppliers I suggested, it will be ready to paint out of the box. Just do not get any greasy fingerprints or other crud on it. If you do, they will show through the paint. A point to remember, while the neck and body may be ready

to paint out of the box, you should remove all wood particles and dust prior to spraying. Wipe the entire body with a clean rag and lacquer thinner, this will remove any greasy fingerprints, etc. Allow it to dry, about 5 minutes then apply a light sealer coat, just one, allow to dry 20 minutes, give it a light sanding, then begin the finishing.

If there are minor dings in the wood, apply a little water and let dry. That will allow the wood fibers to swell. Once dry, simply sand with 220 grit paper. If the ding is too deep for the water treatment, try this. Do not use plastic wood or lacquer based wood fillers. They take too much time. Get a small can of automotive body filler and use it. It hardens in about 5 min and you keep on going. Of course that only works if you aren't using a clear finish. If you are, then the water treatment is best.

Hint: Put a couple of clear coats on the body before you apply color. That way when you decide the black spider web design with the skull and crossbones and all the profanity has lost it's appeal, particularly when you get to be 30, and your 9 year old son asks, "Daddy, what does that word on your guitar mean?", you can remove the finish and have the pristine wood to work with again.

Apply the color coats, one at a time, allowing ample time for each to dry. You only want enough color on the guitar to give a complete even appearance usually about 5 coats. After wet sanding examine thoroughly. If the color is consistent, begin applying the clear coats. Use the same techniques, you want about 15 to 20 light coats. After they are dry, begin the wet sanding, and follow-up with polishing. See the web sites discussing the many different techniques.

As with the neck, allow plenty of time for the lacquer to dry and harden on the body. If you get to anxious, the final appearance will suffer. If you try to rush everything, the finish will look great for about a week, then as the lacquer shrinks, the imperfections from beneath will become apparent. So just wait. Actually I have assembled guitars, played them for several months, then disassembled it for final polishing. Just be careful if you do this. You will have open screw holes in the body and neck, If water gets in the holes during wet sanding, the wood will absorb it and swell. The only way to repair it is to strip the finish and start over. It looks like. . . Well, again, you know where I'm going with this.

While the lacquer is drying, you can work on the pick guard, pickups and electronics. Do the mechanical assembly. Mount the pots, switch, and pickups, and jack in the jack plate. And tighten everything down. Be careful. One slip, and you put a nasty scratch in a \$20.00 pick guard. Use a socket to fit the pot, and jack mounting nuts. It keeps everything pristine.

I have included the basic Vintage Strat® wiring diagram along with web sites for others. Just follow the illustrations. Do remember to run a ground (black) wire from one of the ground contact points, any of the pots cases will work, to the tremolo spring claw. This is visible in many of the photos on the various sites I have listed. You are checking them aren't you?

The pots today often have an electro-plated surface that will not receive solder. If yours are of this type, simply file a small area for soldering. Keep the filings out of the pot too. If you aren't proficient at soldering, find an old

piece of electronic equipment, disassemble it, find the electronics and solder and un-solder it till you get the feel for it. Always use a rosin core solder on electronics, NEVER an acid core, Acid core solder is for plumbing. Check this web site: <http://www.epemag.wimborne.co.uk/solderfaq.htm>

The electronics are quite simple, Just remember the soldering gun/pencil is hot. When you sit it down, place it away from any of your plastic or lacquered surfaces, or anything else that you don't want holes melted in.

Once the electronics are assembled, and the lacquer has dried, it's time to assemble the thing.

WWW.RONKIRN.COM

Chapter 8

Final Assembly

Remember to drill pilot holes for all the screws. It will prevent splitting, cracks and stripped screws. The woods used in quality guitars are pretty hard. The small screws are delicate. If you have to apply force to screw them in, the heads will be damaged, or the wood will split. The screw driver can slip and scratch the surface. If you aren't careful to avoid this, your guitar will have that classic home-made piece of crap look. It wouldn't be a bad idea to buy new screwdrivers, the crisp edges will reduce the chance of distorting the screws.

If you're getting discouraged, don't be. You can assemble the thing and play it un-finished. Plenty of pickers do. Its just that the guitar gets really funky fast. Other than the tediousness of painting, sanding and polishing, it's amazingly easy.

I just love it when I let a professional musician play one of my guitars. These guys all have nice instruments, Les Pauls®, Paul Reed Smiths®, Strats® all over the place. The response is always the same. They all grab it like, "What's this, a fake Strat® you made? Cute." Then they sit down to play it. Then comes the WHOA!!! I love it. . . how much?. There is nothing quite like a custom guitar. Just do your research, get your stuff together, and don't rush it.

Now lets assemble it. Assuming everything has dried at least two weeks, or longer if you can stand it, and you have sanded and polished it to perfection.

The tuning machines are pretty simple. Press them in from the back, place the guide washer over the post, and screw the retainer on finger tight. Repeat 5 more times. If the lacquer has built up in the holes carefully clean it out, I use a Dremel Hobby Tool and a small sanding wheel.

Now from the back of the head stock, align the tuners so that they look straight relative to each other. Drill a small pilot hole if required, and screw the little screws in. Oh don't lose any. They're #2 Philips head wood screws and not

easy to find locally. Don't forget the pilot holes, and sure as heck don't drill the pilot holes all the way through the headstock. Use the tape around the drill bit trick again to get the depth correct.

Use a socket to tighten the retainers unless you are using vintage tuners. Vintage retainers are simply pressed in. Using pliers or a wrench will increase the probability of scratching the face. Be careful. Just do not over tighten, they only have to be snug. That's it for the tuners.

If the neck wasn't ordered with a nut you will have to shape and fit one. See Chapter 11. That means carefully sanding and/or filing it to final shape, then cutting the string notches. This is pretty important, if you don't know much about the mechanics of the guitar action, take it to your music shop and have it done there. Relax, if you screw the nut up, a new one costs \$3.00. I'll discuss this in more detail later.

Once you are happy with the nut, use ordinary string to show where the guitar strings will run from the nut to each tuner, check a photo to get proper location and install the string tree. Drill a pilot hole first and don't slip and don't drill through the headstock. I can't tell you how many I see that have that little mistake patched.

Before attaching the neck to the body, adjust the truss rod so that there is a very slight backward bow to the neck. The pull of the strings will straighten the bow when the guitar is tuned. You will repeat this adjustment several times to get the action perfect. More about that later. The neck is complete. Do not install it until the pick guard is installed. Now on to the body.

I hope you ordered your body from the same company as the neck, and had it set-up for your specific tremolo. If you did, your kid sis could assemble it from here.

Temporarily attach the neck, and sit the tremolo in its proper place. The Strat® has a scale length of 25 1/2 inches. The 12th fret is exactly half way or 12 3/4 inches from the nut. Likewise it will be 12 3/4 to the center of the first string bridge travel. Mount your tremolo in that position.

If you ordered your body and tremolo from the same company, it will be pre-drilled and/or routed. Simply run the screws in. If you ordered a tremolo with two studs, you drive them in the pre-drilled holes until they're flush with the surface of the body. Screw in the studs and that's it. Hint: find extra screws that fit into the stud mounts and hammer on them, then remove them and insert the tremolo studs, no damage that way. Oh, They may be metric threads. Protect the guitar surface from the tremolo with a soft cloth. Leave it there until you string it.

Shielding and Electronics

First, there are a myriad of different electronic configurations that can be applied to a solid body guitar. Most are relatively simple, the key word here is relative. If you are electronically astute, peruse any you feel competent to complete, but if you are only comfortable with basic electronics, rest assured the traditional Strat set-up is within your skill level.

If you have ever heard an original vintage Strat®, the hum as you get the guitar close to other electrical equipment is quite noticeable. There are several solutions to the problem.

Before you begin, check this web site: <http://www.guitarnuts.com/wiring/index.html>. It contains some of the best info I have ever read on shielding.

Purchase some conductive paint, or adhesive backed copper foil from Stewart-McDonald®. While the original Stratocaster® only had an aluminum shield under the pick guard, most custom guitars line all internal cavities with some kind of electrically conductive shielding. I use copper foil from Stewart-McDonald®. The website I just mentioned shows a few more advanced methods of shielding the guitar electronics. If you use humbucking pick-ups the most basic approach will be adequate.

There are many different pickup manufacturers making noiseless pick-ups. Seymore-Duncan® makes some of the best. They produce the vintage Strat® sound without the hum, and they come with instructions.

Flip the guitar over, mount the spring claw, with two screws, "B" I suggest 2" screws to allow for ample adjustments. (See the illustration) Drill pilot holes first. Solder the ground wire to the claw, attach 3 springs and you're through. It will not be tight, that's because you haven't put the guitar strings on it yet. Do not put the back tremolo cover on yet.

Flip the body over, mount the jack plate, complete with jack and two wires soldered. The white wire to the center contact, the black to the shield. Leave about 8 inches of lead, and pre-tin (apply solder) the ends. Run the two wires through the hole to the electronics cavity. Place the jack plate in position and drill pilot holes. Carefully run the screws in. Again, don't let the screwdriver slip.

Soldering tip: The secret to good solder joints is the correct solder, a good soldering gun or pencil, and a little patience. You can get the rosin core solder and a soldering pencil at Radio Shack®. I recommend one of about 30 watts and a standard wedge tip. The patience. . . well you're on your own. Just take it slow and hold everything motionless for the 10 seconds it takes the solder to harden. Practice on some old wire.

Place the pick guard in place. You will have to play around with the wiring to get everything to fall in place. I use a wax coated cotton string to tie the wiring neatly together this preserves the vintage look, but any method of binding the wiring will work. Be sure the pick guard is snug around the neck. Now carefully drill the 11 pilot holes for the mounting screws. What? Only 8, Oh, you're building a '54 Strat®.

Now, lay a towel over the surface of our guitar, for protection. Solder the other end of the ground wire from the tremolo claw to a ground point. See the diagram. Now solder the leads from the Jack plate to the appropriate points, black to a ground point, white to the center lug on the top pot. Now, plug it into your amp, turn the volume down, and lightly tap the pickups with something steel. You should hear the taps through the amp. If not, re-check your wiring. You can check each pickup by attaching the leads directly to the amp cord, and

tapping the pickup to see if there is any sound. Be very careful around the pickups, particularly if the very fine wound coil is exposed. The wire here is as fine as hair, touching it with anything could break any one of the thousands of exposed wire wrappings and leave the pickup useless. It is almost impossible to repair without special tools.

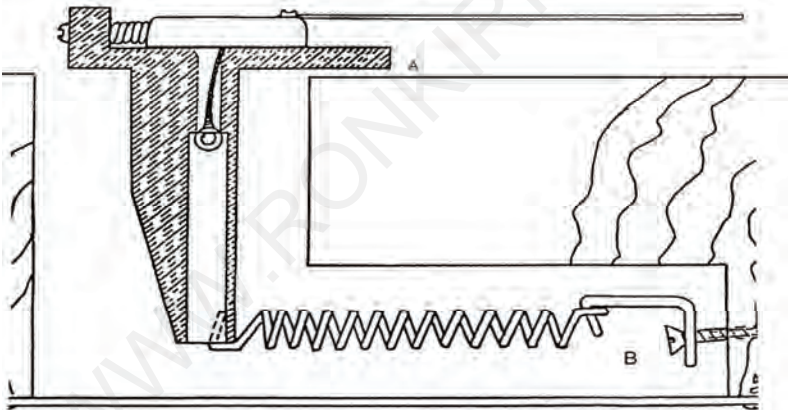
Once you have verified that the pickups are working. It's time for final assembly. Flip the pick guard over, work everything into place, and screw the pick guard mounting screws in. Check it through the amp again. If it worked before and doesn't now, there is probably a ground wire shorting out. It's easy to fix. Simply remove the pick guard, check all the connections and re-assemble. Now carefully run the 11 screws in to secure the pick guard.

Now mount the neck. Slip it into the neck pocket on the body, flip it over place the neck back plate in place, run in the screws, not to tight at this point. Move the neck from side to side to get it centered along the centerline of the body, now tighten the screws. It's starting to look pretty good isn't it?

You know what a guitar begging for strings looks like don't you? Well what are you waiting for?

Decide now what strings you will be using. Always use the same size and brand of string. It doesn't matter if they're Ernie Ball's®, Fender's®, Dean Markley's®, or whatever. Just always use the same kind. A guitar is set-up for a specific size string. Should you change, you must go through the entire set-up process again if you want your guitar's intonation perfect.

As you string the guitar, and before tuning the strings to full tension, note the position of the E 1st and E 6th string relative to the edge of the fingerboard, There should be an equal distance from the string to the fingerboard



edge. If not, slightly loosen the mounting bolts and move the neck sideways until everything is even then re-tighten. Now tune the guitar, it doesn't have to be perfect, just close. All you want is the correct tension on the neck and tremolo.

Flip the guitar over and adjust the tremolo springs and claw until the

base of the tremolo is parallel to the top surface of the guitar "A". Take a look at the tremolo illustration again. This applies to most tremolos. If you have something unusual, I hope you have instructions for it. Once this is done, you can drill pilot holes for the back tremolo cover and mount it. If you have the Vintage tremolo cover, make sure the six string holes are aligned over the appropriate holes in the tremolo block.

Once the strings are tuned, look down the neck from the nut to the bridge. There should be a very slight concave bow in the neck. If you place a capo at the first fret and press the same string at the 21st fret simultaneously, there should be a slight space between the string at the 8th fret. It should be about 1/2 the thickness of a dime, about 1/32 inch. Of course different strings, neck parameters, and playing style will affect this dimension. You will have to use the trial and error method to arrive at your optimal settings. The lighter your touch, the closer you can set your action. If there is no space and the strings touch, you will have to disassemble the guitar and loosen the truss rod. If there is too much space, you will have to tighten it.

You will also have to adjust the overall tremolo bridge height by adjusting the studs and each individual string height with the small adjusting screws at each string. All of these adjustments work in relationship to each other to achieve the correct setup. See Fender's <http://www.mrgearhead.net/>

This is a trial and error method until you get it right. It is one of the reasons Fender® has tried several different ways to have the truss rod adjusted from the machine head. Strange, despite being a pain, most Fender® loyalists prefer the traditional butt end location for the adjustment. It is also why you will play the same brand and gauge strings for a very long time. Change, and you're disassembling your guitar and doing a set-up again.

Once the truss rod is set, you need to set the overall string height. Measure the distance from the bottom of each string to the top of the 17th fret, and adjust the bridge height. It should be about 1/16 inch. Your playing style will effect this dimension. Just play around until you get the feel you want without string buzz.

Now adjust the pickup height. The distance should be the greatest at the 6th string and smallest at the 1st. Remember, you can over do it here. The type pickup you selected will dictate the optimum distance. Experiment a little, a small adjustment can change the overall sound of the guitar. See Fender's <http://www.mrgearhead.net/>

Note here, all these adjustments should be pretty easy, If you feel too much resistance, or don't feel too comfortable doing what you are doing, take your guitar to your music shop for setup, or check to see what is causing the problem. Also remember; you are using tools around a polished finish. Protect it. I always place a clean towel with several folds between my tools and the guitar's surface.

Now for intonation.

Remember there are many types of bridges. Most are similar for the Stratocaster®, therefore setup will be pretty much the same for whatever tremolo

you have. A hard tail is setup the same way.

What is intonation? It allows corresponding notes of the same key to be harmonious up and down the fingerboard. For instance low E, 6th string open, has to be the same as any other "E" on the neck even though it may be one or more octaves higher. Without proper intonation, the guitar will never sound good, never!

Begin by measuring the distance from the nut to the center of the crown on the 12th fret along the 1st string. This will be 12 3/4 inches. Now measure from the same exact spot on the 12th fret to the 1st string bridge. Adjust it so that it is exactly the same distance from the 12th fret as the nut is. The total will be the scale length, 25 1/2 inches for a Strat®. See <http://www.mrgearhead.net/> for Fender's instruction on intonation.

If you have a chromatic tuner, you can check the first string now. Simply tune the open 1st string to E, then fret the string at the 12th fret. It should be a perfect E also. If it is a little sharp, move the bridge away from the fingerboard, if flat, move it closer. These will be very slight movements, perhaps 1/4 turn at a time on the bridge length adjustment screws. Continue adjusting until the chromatic tuner indicates a perfect E in both positions. Actually, with a chromatic tuner, you can check any note along the string you're working on.

As you move to the 2nd string, note that the bridge must be slightly further away from the neck than the 1st string bridge, but only by about the diameter of the string. The same for the 3rd. However the 4th will be about even with the 1st. The 5th and the 6th will be slightly longer again.

Your bridge should resemble two sets of 3 steps each. You can check it further by fretting the 1st string at the 5th fret to see if you get a perfect A, or the 7th for a B. As a test I will pluck a string open and see if it is harmonious when I fret the next string at the 7th and again at the 19th fret. There should be no "beat." Just remember to move up one fret on the 2nd string, as you pluck the 3rd.

When you have completed these steps you will be ready to rock. Now let's see where is that book? Mel Bay's Guitar Primer #1

Chapter 9

Other Stuff you may want to know

There is an aftermarket pickup frenzy in the retail world of music. It seems as though everyone has a "vintage" sound or "noiseless" pickup for sale.

There are a few common sense things to keep in mind. First, you will never be able to duplicate the sound of your favorite recording artist in your garage or bedroom. Their recording studio processes the sound through multi-million dollar digital consoles. It is mixed, re-mixed, digitized, equalized, processed and edited at the molecular level, then all those ones and zeros are smashed onto a CD for your listening pleasure. You are not going to be able to do that to your music at home for quite a while.

Recall the opening of this book, these "Rock Stars" also are playing custom assembled masterpieces, built to their whiney, spoiled brat tastes. Just use common sense.

Now that doesn't mean your guitar can't sound good, 'cause it sure as heck can. Just don't go drop \$500.00 each for 3 pickups because some over loud rock demon uses them. He has the \$1500.00 you don't. Actually, he got 'em free from the pick-up manufacturer. They're hoping you will want to pay for a set because he is playing them.

There are plenty of excellent pickups out there in the \$50.00 each range. Fender® Texas Specials® are available at many of the sites I have listed for less. Then there are several other varieties of Fender® vintage pickups, including noiseless ones, but what's a vintage Strat® with out a little hum?

You could order an exact duplicate of your favorite guitarists instrument, and it wouldn't sound exact. It would be close, but not exact. That is because a guitar, or any instrument is a composite of many different components. There are multitude of variables that will effect the final sound.

For my money, the most important parts are the electronics and neck. You can mount them in a piece of pine 2x12 and it will sound pretty good. It just

won't fool anyone into thinking you have a real custom Fender® Strat®.

Take a look at the diagram of the traditional vintage pickup setup. While it doesn't matter much, the ground wires should be black, all others are white. If you use a reverse wound middle pickup, i.e. Texas Specials®, the center pickup will have a yellow lead. Solder it where the center white would go. There are more exotic diagrams available at www.guitar-parts.com/schemati.htm. If you aren't proficient in solid state electronics, and custom routing, stay away from the Elite®, or Eric Clapton circuitry.

One final acquisition, the case. Sure your local music shop has a cheap plastic molded one for \$59.95, and the Vintage Tweed Fender® original is \$149.95 from musiciansfriend.com/, but Jeezus, look at what you have just gone through. Hey, it's your call.

Just to keep things in perspective, my latest Quasi Strat®, is now 2 months old, I just spent all morning disassembling it to adjust the truss rod 1/4 turn, While I had it apart, I did a little re-polishing. I also re-adjusted the tremolo bridge. The action, which was good, is now even better, but still not perfect. That said, I'm betting that even as it sits now, it will play and sound better than anything at the local guitar shops.

I just took a cruise through E-bay. There is a limited set of Fender® reissue vintage pickups available. They are already up to \$200.00 with six days to go. The sad thing is, I can buy the same pickups, new, from some of the sources I listed for \$150.00. You have to shop around or you will spend far too much money. Be careful on eBay.

I also found a "Warmoth" neck. The creep selling it swore it was a genuine Warmoth. When I asked about the lack of a burned in Warmoth logo, he said it was sanded off during painting. That's pretty lame. Warmoth's burned in brand leaves a mark in the wood about 1/8" deep. So either it was a fake or he had shaved 1/8" off the bottom of the neck. What do you think?

Let me encourage you to go back and review the web sites I listed. There are volumes of information in those sites.

The site <http://www.guitarnuts.com/wiring/index.html> has some of the best simple to understand info on wiring, and electrical protection I have seen. [Read this stuff.](#)

As I'm writing this, I'm building another "Strat®". This one will have a bird's eye maple neck, ebony fingerboard, medium jumbo frets, a sterling silver traditional nut, Schaller® locking machines, mother of pearl dots, and a compound radius. The body will be lacquered mahogany, I haven't decided on a color.

The electronics will be traditional vintage, with Fender® Texas Specials® pick-ups. The neck plate will be an original Fender®. The back tremolo cover will be chrome plated brass, and both will be set into a routed recess in the surface, as is the front jack plate. Such touches really make a nice guitar look very special.

Chapter 10

Miscellaneous Ramblings

I was informed today that Warmoth® will no longer be offering discounts to custom shops, so what you see on the web site is what you pay. I wonder. . . I'll give B. Hefner® a try, they're rumored to have great stuff too. WD® will set you up, but you have to have a State tax resell number, about \$10.00 in most states.

Now about the choice of finish for the neck. There is an ever increasing trend towards satin or semi-gloss finishes.

The semi-gloss concept was introduced about 30 years ago, as a production cut. It was a cost saving measure. A manufacturer doesn't have to pay someone to buff something that isn't going to shine. On some guitars, Martin for instance, it was offered so the reflections of studio lights wouldn't effect television cameras. You know, Martin does not pay any musicians to play their instruments. They have to buy them.

Some guitarists noticed that the hands moved up and down the neck easier on a satin finish, so the finer guitar manufacturers embraced the idea and began offering it as an option. Some actually charged MORE for a satin neck.

If you notice, the really expensive custom guitars shine. If you look close you will see that the headstock, front and back are highly polished, it is only the back of the neck that is satin.

How I accomplish this is by preparing the complete neck as though it was all to be polished, I just don't polish the back of the neck, Therefore the final wet sanding, with 1200 grit wet or dry paper, wet of course, on the back of the neck is all that is required. This leaves a nice subtle satin finish, and actually looks like it took special effort to get it that way. Special effort = custom. Cool eh?

Choosing a Color

I'm actually building a Fender® Strat® "look a like" as I'm writing this, so as I proceed through my project, the light goes on (idea) and I come put it down in print.

The color you choose can add dramatically to the difficulty of the project. The most difficult to get correct are the metallic finishes. If you know how they are created then you will know why.

Metallic finishes have metal flakes in them, Duh! Simple enough? Not on your life. To get the metallic appearance consistent the paint has to remain wet long enough to allow all the metallic particles to flow out. This is why a metallic finish sprayed from a aerosol can is so identifiable by the irregular swirls in the finish. It dries too fast. I avoid this by keeping a second spray gun ready with pure lacquer thinner, (assuming you're using lacquer) and I will spray the wet finish several times after applying the finish coat to keep it wet long enough for the metallic particles to flow. You can see the appearance change and become more consistent. The nice thing about lacquer thinner is it also dries to the touch very fast. Don't do this outside in a dust storm, during a bug invasion, or around an open flame. Your parents don't want to hear you use such language, and certainly don't want to hear the BOOM and see your flaming butt flying over the neighbors house. Oh yeah, clear coat all metallic finishes. In fact, clear coat all finishes.

A candy apple finish is a metallic, gold or silver, base coat with a transparent tinted clear coat. The clear coat can be tinted any shade, but getting the metallic base coat correct is paramount. Once the transparent color has been applied and dried, it is simply a matter of wet sanding and polishing.

The simplest finish is a solid color. Simply squirt it on, wet sand, and polish. BUT, I still recommend a clear coat. Did you know that in a solid color or a clear, a pretty nasty "run" can be wet sanded and polished until it disappears? You can't do that with metallic paint.

The reason I recommend a clear coat on all finishes is this: all paint begins as a clear binder. To get the color they put pigment in it. The pigment is billions of minute colored particles suspended in the binder, that is the clear. The effect these particles have on the surface of the paint is best visualized by thinking of putting sand in a clear lacquer and painting something with it. Ugly Humm? Well the pigment is just like the sand, just that it is made up of much finer particles.

A clear coat covers the minute irregularities the pigment leaves in the surface with a solid unbroken surface that will take a beautiful polish.

To complete the finish, you simply wet sand with progressively finer grits until you are using 1200 grit paper. Then you polish, I use cleaner car wax. It's quite easy.

Chapter 11

Nuts!

Now let's look at the nut. Just a simple piece of plastic. Well yeah, except if it isn't right, the guitar will suck. The nut is a very important part of the neck, it can make or break the overall action. Having the nut cut correctly is as important as having the bridge set-up correctly.

This process for shaping will work for most nut materials. If you buy some exotic esoteric material, I hope it came with a diamond edge file to cut it with.

First thing, DO NOT PERMENANTLY GLUE THE NUT IN THE NECK SLOT. You will screw up the first couple of dozen and will need to get the little booger out of the slot. Not gluing it makes this a lot easier. When you finally get it right, then, and only then, do you glue it in. The nut blank only costs a few dollars. Get a couple so you can experiment. Professional luthiers use special files to cut the string slots. That set of files costs over a hundred dollars. Here's a much less expensive alternative.

Begin by cutting the nut blank to the correct length. Slide it into the nut slot mark it and cut and sand till it's the prefect width. Once that is done, slide it into the slot again and take a pencil and trace along the top of the finger-board. Place something about 1/8" thick so that your line leaves ample nut material above the fingerboard. Now file or sand the material down to that line.



Your rough cut nut should look similar to this illustration

Now, start all the slots with a razor knife or needle file. Just a small indent will do. Be certain to get the spacing and position correct.

Now to cut the 4th 5th and 6th string. Take an old guitar string and drag it across the nut while applying down pressure. Don't forget to slope it down

on the back side, or headstock side so there is a nice crisp edge at the front edge or the fingerboard side. This cuts a perfect slot because the slot should have a round bottom for the string to sit in and be the same width as the diameter of the string. Just continue dragging the old string back and forth until the slot is deep enough. Repeat this for the 5th and 4th strings

When the guitar is strung and tuned, there should be about 1/64th of an inch between the string and the first fret. Fret the string at fret one and notice how much clearance there is between the string and the 2nd fret. That is about what the clearance should be between the first fret and the open string. Trial and error will give you the exact dimension. You did buy several nuts didn't you?

The first 3 strings require a little more ingenuity. I have used a utility knife blade. Take it and run a file across the sharp edge, this is because a sharp edge cuts a slot that is too narrow for the 1st string.

Take a second utility knife and chop the edge of the dulled blade, this creates a quasi saw tooth edge. Use it to saw the 1st string slot. Practice on an old piece of plastic. Just be sure its wide enough for the size string you will be using.

The 2nd string is a repeat of the above process, simply file a little more off the edge of the blade you are using and chop again to rough the edge, then saw away. For the 3rd string, flip the blade over and use the back edge. The thickness of the blade is about right for a 3rd string slot. You can experiment with various objects to get the correct slot width. Just don't cut yourself. Put tape on the back of the blade to protect your finger.

When you are through, take a piece of string, apply some rubbing compound, car cleaner wax will work too, and drag it through the slots to polish them. This will also round the bottom of the first three.

If you're using some funky size strings, you can experiment with different things to find something that will cut a slot of the correct width. That antique super fine gold chain your mom has cherished for all these years is about right for the 4th. The little edge on your dad's Rolex watch clasp is about right for the 3rd. Your parents will appreciate your ingenuity too.

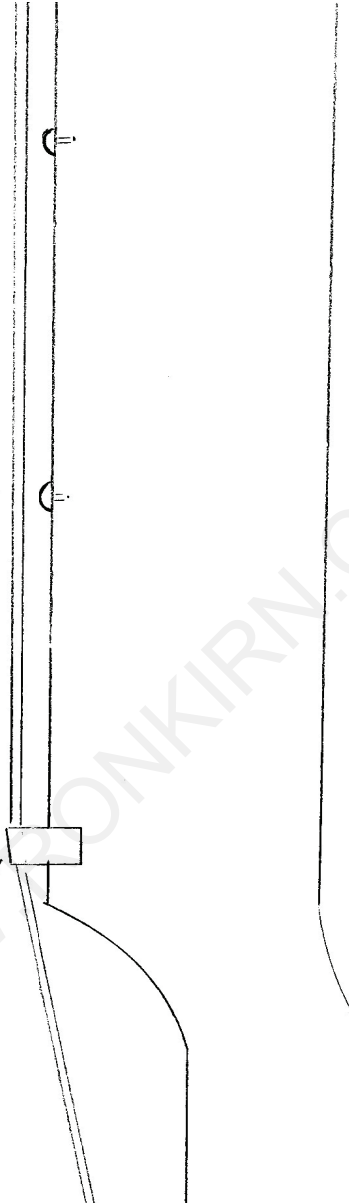
You could just go buy a set of those hundred dollar files to use once. A good way to get them: First, get a hundred dollars, after that it's easy you just order them. The same process can make you rich, first get a million dollars. See how simple it is? Wanna know how to become a trillionaire? You will need a big room to hold a trillion dollars. Your parents will be suspicious too.

As an alternative, you could boogie on down to your local music shop, ask for the name of a guitar repairman and have him cut the nut slots. Of course that way all you learn is the location of a local guitar repairman and the cost of having him cut your nut string slots. Oh! Don't tell the repairman how awesome you are at playing a few Metallica riffs. To him, until you can play NOLA, you can't play jack.

The clearance at the first fret, should be the same as at the second fret when the string is fretted at the first



Note the slope toward the headstock



Chapter 12

Decals and Other Details

Applying a registered trademark to any fake product is a violation of a book full of laws. If you are applying a decal to your guitar it is supposed to be the genuine article. So don't go showing your fake Stratocaster® to your FBI agent uncle bragging about your creation.

I just received a genuine Fender® 1962 decal. It took 4 weeks and a lot of sending photos back and forth to get it. Previously when re-finishing Fender necks, I had used several reproduction decals. I was always disappointed by the quality. When examining them under a magnifying glass, you could see the pixels that gave away the fact that they were reproduced using a computer scanner to create the artwork.

Well that disappointment pales compared to the disappointment I felt after examining the genuine Fender® decals. They also have the pixels and are of much poorer quality than the reproductions. The lesson learned, buy reproductions, they're of better quality and less expensive.

When applying a decal there are several things to keep in mind. First, many of the original vintage guitars had the decal applied last. No clear coat. As a result you will see many today that have been scratched, bug eaten, (they're gelatin) or other wise damaged. Today most of the finer guitar manufacturers apply a clear coat to protect it.

Never apply a decal to un-finished wood. The water will cause the grain to raise, not a big problem under normal conditions, you simply sand it once dry. You can see the problem if a delicate decal is in the way. Apply several coats, 4-5, to the headstock with an hour to dry between coats, and allow to dry for a week, wet sand it till the surface is flat. Apply the decal.

Wet the decal in a very slightly soapy water. When it begins to move freely, DO NOT FORCE THIS, slide it from the backing paper to the surface you want it applied to. Take your wet finger and gently, GENTLY!!! Move it around

until it is in position. Use a soft tissue, NOT PUFFS, they have oil in them, to dab the excess water from it. GENTLY!!! Move the tissue from the center of the decal outward to force excess water from beneath the decal. Now allow it to dry for 24 hours.

Once the decal is dry, spray a very light coat of lacquer over it and let it dry about one hour. Do not make it too wet, get it to wet with fresh lacquer and the ink will dissolve, inspiring your creative talents to spawn new cuss words. Repeat as many times as needed until there is a thick coat over the decal. You want this thick enough so you can sand the surface until the outline of the decal has disappeared. Of course you will wait for 2 weeks after you finish spraying and before you wet sand. Then you polish the little booger. That wraps up the decal application section.

Another nice touch

Really, don't try this unless you are very good with a router.

Well I spent the day making templates to do a little custom work on the Strat® I'm building now. If you aren't completely competent with a router, forget this section. Remember this formula: Incompetence + Power tools + Guitars = a ruined guitar and loud profanity.

Something I always do that sets my guitars apart from other fine Strat-like Customs is recess the tremolo cover plate, the neck plate, and the front jack plate. To do this you need to make a template and have the appropriate router tools and bits to do so. If you have all these items, or if you know what to ask for to buy them, you are probably router literate and can get through the job. You will also already know how to make your templates. If such things are alien to you, I strongly recommend that you forget this feature.

One thing to watch out for is when you make the templates for cutting the recess, be certain that it's slightly oversize to allow for paint build up. I allow about 1/64th inch all the way around.

The front jack plate is very difficult. On a scale of one to ten, if a one is blindfolded brain surgery, I'd say it's about an eight. You better know what you're doing. If you do, then I don't have to explain it. If you need me to explain it, you shouldn't be trying it. But everyone that knows quality and sees one, says, "Damn nice touch."

About Painting

The thought occurred to me that many of you will not have a filtered air paint booth to spray your guitar. In fact about as close as many of you will come is, perhaps, the back porch, Patio in the Midwest, and who knows what the chic avant guard call it in California.

The problem of foreign material blowing into your wet finish may have to be addressed. Therefore, spray in the early morning, or late evening. The wind has a habit of subsiding at these times. Needless to say I hope, do not spray on a windy or rainy day. Other than that, the lacquer dries fast enough so you don't have to worry about junk falling into your finish.

What do you do if something flies onto your wet paint? In the South, if a bug flies in to the paint, don't stop spraying. Finish that one coat, then let it dry. Once dry, use some 600 grit Wet or Dry and sand the bug or whatever out, once this has been completed, resume painting.

In the Midwest, If a little desert sand gets blown in, use the same method as indicated for the South.

The Far West presents another problem. Bugs and sand aren't the problem, it's when you start spraying stuff into the atmosphere a flock of Liberal Democrats may accumulate around to protest your contributing to the decay of the environment.

When they get hyper and start flailing their arms around, one may get stuck in your lacquer surface, I would suggest just keep spraying over them. It will take a few more coats, but the uniqueness of a genuine liberal deep inside the finish of your Strat® will be an awesome conversation piece.

Finally

I have read a number of books discussing building guitars. One reoccurring problem I have seen is, they assume you have a complete shop and \$50,000.00 worth of specialized tools. I have tried to create a publication that will allow someone with limited space and basic tools to assemble a guitar, one that can rival some of the finest made.

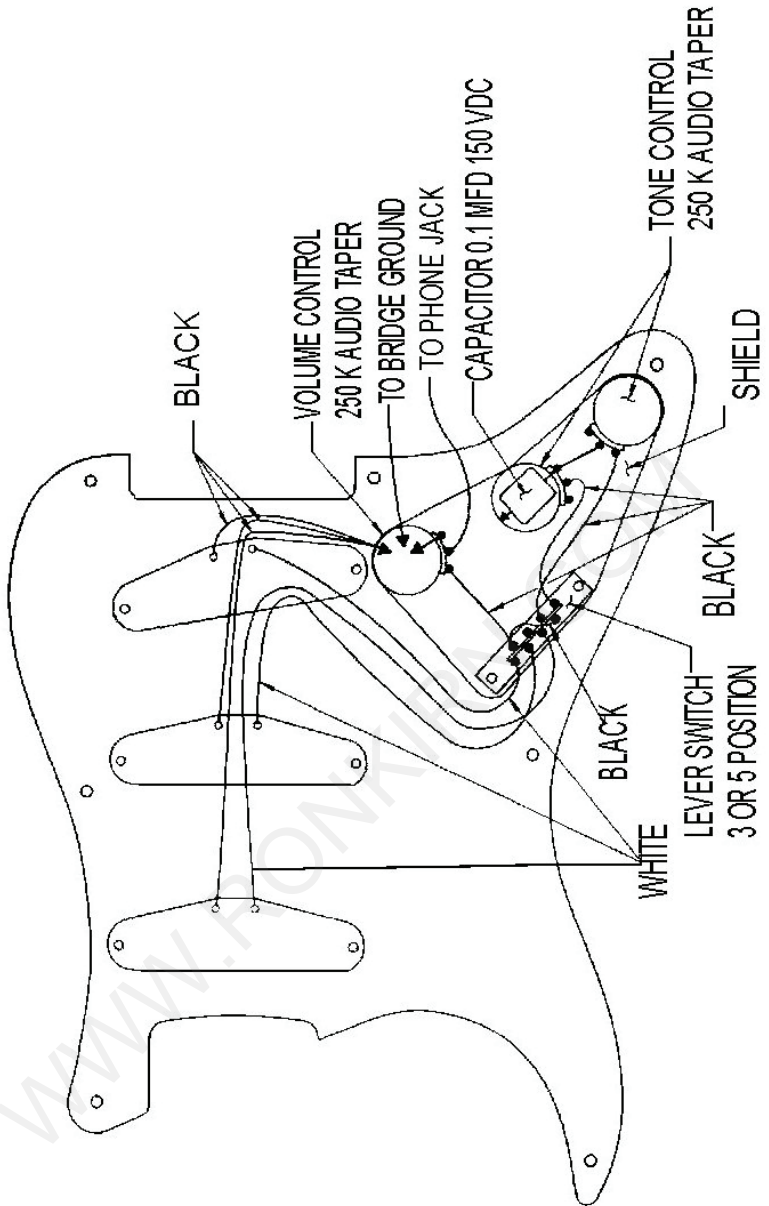
Regarding the electronics: There are thousands of combinations for the electric guitar. They range from one bridge pickup, a volume control and no switch, to a very esoteric MIDI setup. I wrote this for someone with limited knowledge. If you want to build a computerized Strat, that is your prerogative, but, please don't rag on me because I didn't publish 2000 pages of exotic schematics. The internet is full of `em. Just build `em and have fun.

So, choose quality parts, build the guitar slowly, and set it up correctly. The results will be an axe that is superior to most available at your local music store.

Oh, if I forgot anything, e-mail me at: rnkirk@yahoo.com I'm trying to help, don't get mad, just ask.

The Classic Stratocaster Wiring

Notes



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Notes

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