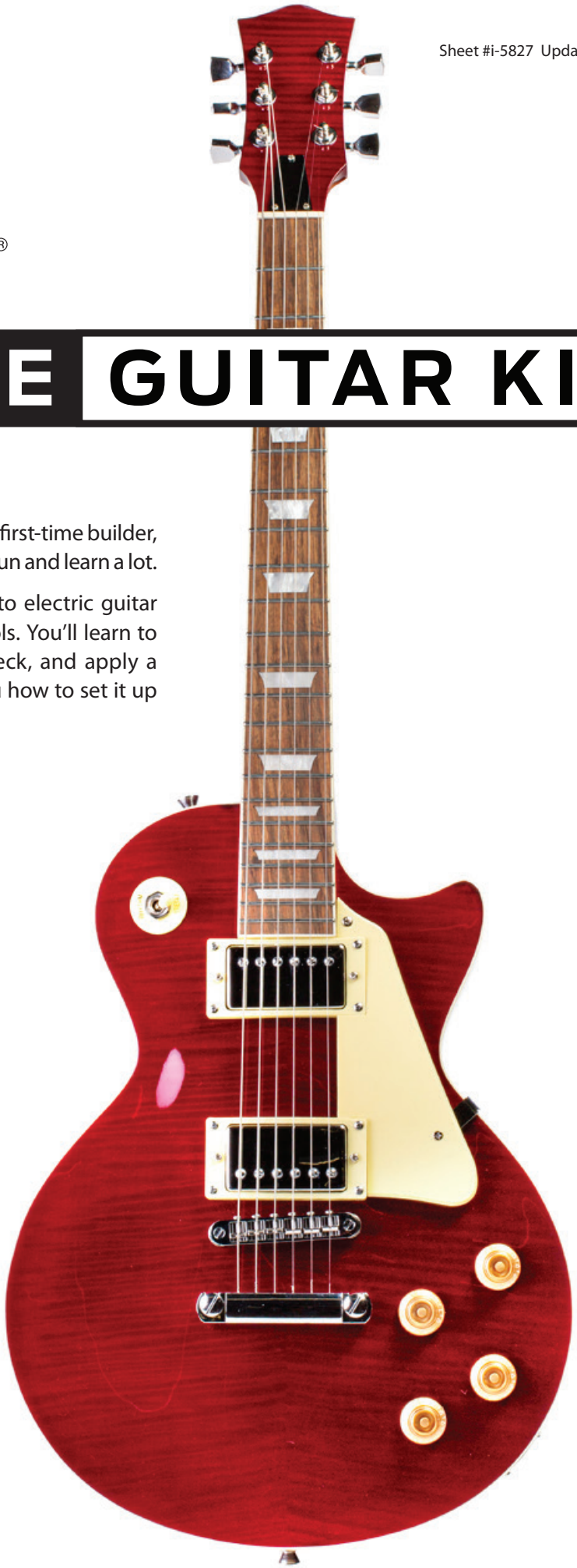
Sheet #i-5827 Updated 01/21

StewMac®

LP-STYLE GUITAR KIT



Assembly Instructions

Welcome to guitar building! If you're a first-time builder, this kit is a great way to start. You'll have fun and learn a lot.

This simple kit is an excellent entry into electric guitar assembly. It can be built with basic tools. You'll learn to cut the peghead shape, attach the neck, and apply a finish. After you build it, we'll show you how to set it up to play tip-top.

Table of contents

Tools and supplies

These are the tools and supplies we recommend for assembling this kit. StewMac item numbers are included where applicable.

Tools

Electric hand drill
Saw for peghead: band saw, jigsaw, or coping saw
Screwdrivers: Phillips, sizes #1 and #2 (#3000)
Flat blade, size 5.0mm (#3000)
Drill bits: 1/16" (#1710)
5/64" (#1712)
Nut slotting files: .013" width (#0823)
.020" width (#0828)
.035" width (#0832)
Fretting hammer (#4895)
Fret crowning file (#1602 or #4491)
Radius sanding block, 16" radius (#0404)
Swivel handle clamp (#3704)
Straightedge (#3850)
6" Steel rule (#4905)
Razor knife (#4878)
Wire stripper, for fine gauge wire (#1606)
Adjustable wrench, 4" size (#1680)
Binding scraper (#0610) or utility knife blade
Soldering iron (#0502 or #0515)
No-Chip Countersink (#1695)
Center Punch (#2529)

Supplies

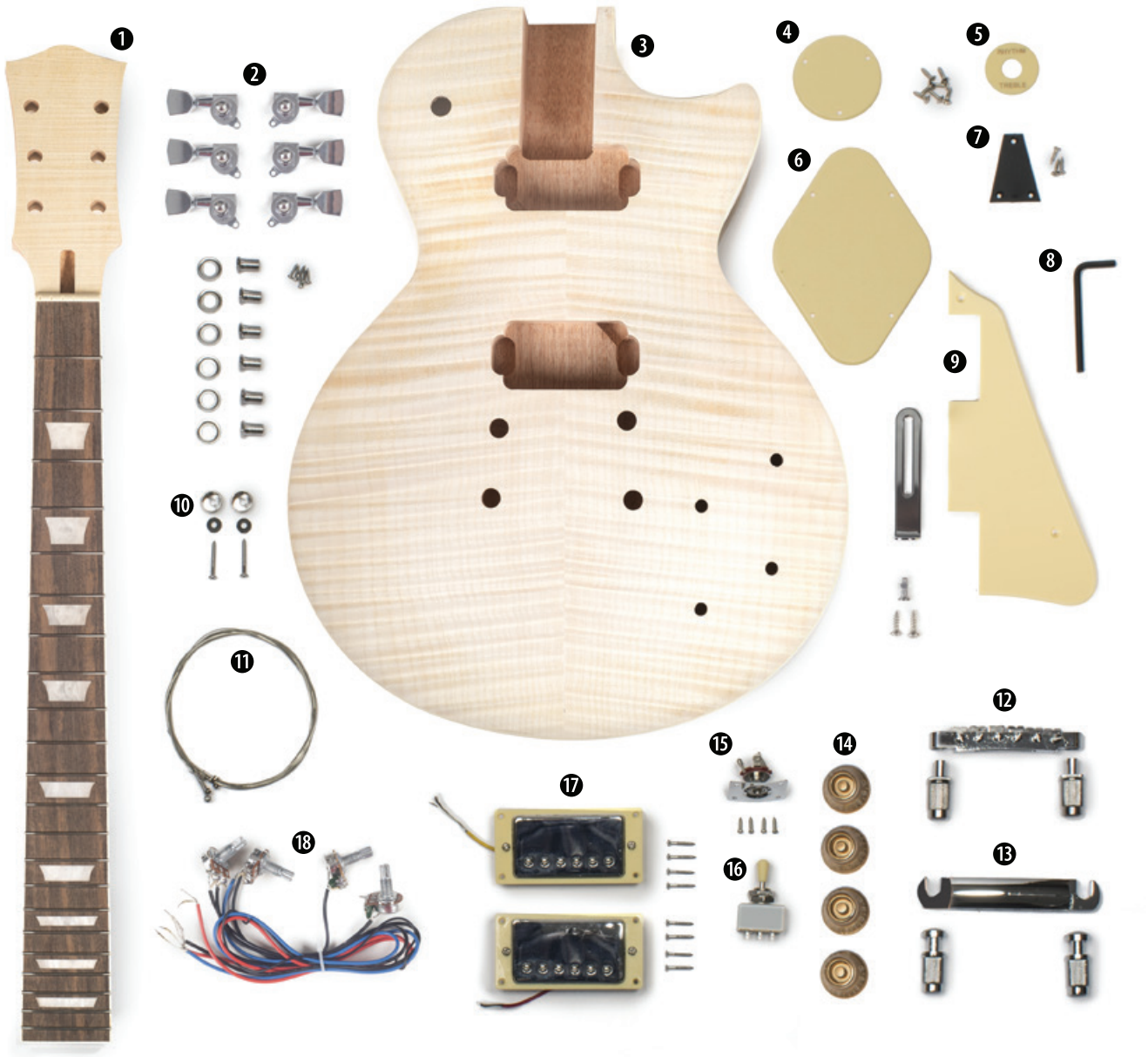
Sandpapers (#5562 starter set)
Foam sanding block (#3701 or #3699)
Wood glue (Titebond original, #0620)
Glue brush (#4167)
3M Scotch-Brite pad (#7445, light duty), or 0000 steel wool
Naphtha solvent (#0775)
Protective gloves
Blue permanent marker
Masking tape (binding tape #0678, #0671, #0660)
ColorTone Lemon Oil (#3864)
Solder (#0505-LF)

Finishing supplies

There are many finishes and application methods to choose from. We use ColorTone Aerosol Guitar Lacquers because they're easy to use and you can get a beautiful nitrocellulose finish without investing in spray equipment. The set below includes all the supplies you need for a perfect finish.

Finishing Set for Dark Back (#2317)
Finishing Set for 2-Tone Tobacco Sunburst (#2241)
Finishing Set for Cherry Sunburst (#2238)

Parts list



1. Neck
2. Tuners with bushings, washers, and screws (6)
3. Body
4. Switch cavity cover plate with mounting screws
5. Toggle switch ring
6. Control cavity cover plate with mounting screws
7. Truss rod cover with mounting screws
8. 4mm hex wrench for adjusting truss rod
9. Pickguard with mounting hardware
10. Strap buttons, with washers and screws
11. Strings
12. Bridge with posts and bushings
13. Tailpiece with posts and bushings
14. Control knobs (set of 4)
15. Output jack with mounting screws
16. 3-way toggle switch
17. Pickups: Neck (yellow wire), with mounting screws
    Bridge (red wire), with mounting screws
18. Wiring Harness

***Exact parts and materials may vary.**

Create your peghead shape

While the images show a different top wood on the kit, the steps are still the same. The peghead comes partially shaped. You can trace a favorite peghead or come up with a look all of your own.

Make a template

Sketch out your peghead design on a piece of cardboard or heavy paper and cut it to shape with scissors. Using a pencil, trace the shape onto the peghead. Use a light touch that doesn't dent or compress the wood which could make sanding out any unwanted lines difficult. Don't use ink, because it leaves permanent stains that can even bleed up through an opaque guitar finish.

Cut the shape

It's important that your saw stays square to the face of the peghead while you cut. If it tilts to an angle, you'll get a sloppy result that takes a lot of sanding to correct. Use a bandsaw if you have one; a jigsaw is also good. A hand-held coping saw can also be used, but it's tough to hand-saw smooth clean curves.

Never cut on the line

Always cut just outside the line, so you can sand to the line afterward.

Smooth your saw cuts to create your peghead shape using rasps, files and sandpaper. Don't rush: rough patches will disappear into a good final shape if you take your time.

When you're happy with your peghead shape, sand the cut edges smooth using 150-grit sandpaper followed by 220-grit, then 320-grit.

Set the neck

This is a set-neck kit with a mortise and tenon joint, meaning the heel of the neck (the tenon) is glued securely into the neck cavity (the mortise).

The tenon is offset, with a cutout on the treble side. This ensures the neck is properly aligned from side-to-side and lengthwise.

Do a dry test to check the fit. Line up the cutout on the tenon with the edge of the mortise on the treble side and press straight down from the top until seated all the way down into the mortise.

There may be some gaps and chips around the joint; this is normal for a production guitar. These will get filled when you prep for finishing.

Pull the neck straight up out of the mortise and prepare your glue, clamp, and cauls. Spread the glue generously over the sides and bottom of the tenon and the bottom of the mortise. Install the neck as you did during the dry test fit. Move fast because the moisture in the glue will swell the tenon and make it difficult to fit if you wait too long.

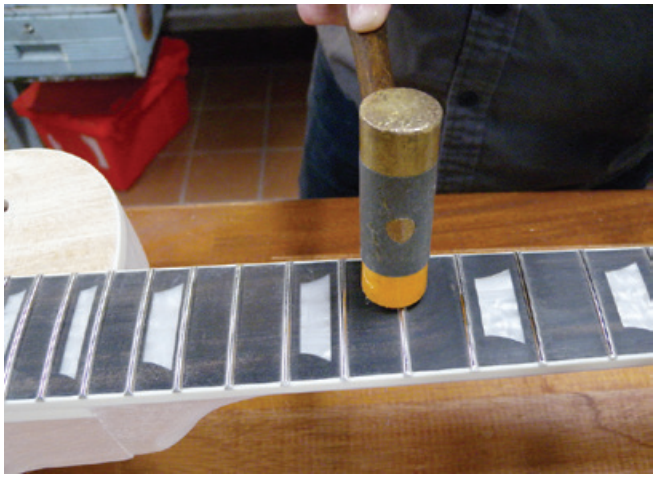
Once the neck is seated, use a damp cloth to remove any excess glue squeeze out. Use a radius block as a clamping caul on the fretboard, and a piece of scrap on the back to prevent denting the wood and clamp tightly. Watch for additional squeeze out over the next 15 to 30 minutes and clean it up with a damp cloth.

Let dry overnight.

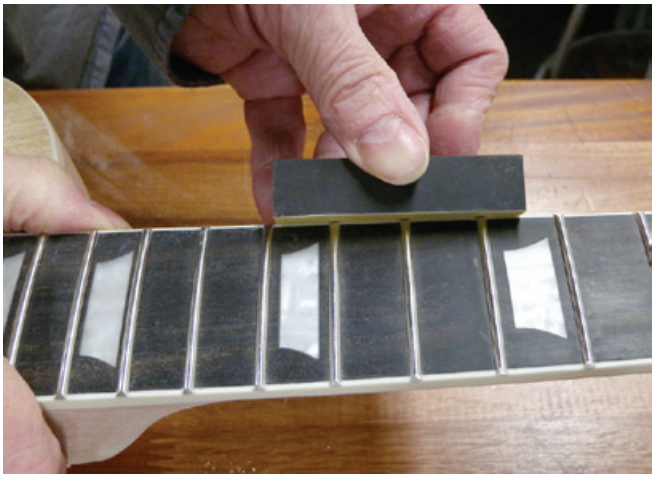
Fretwork

Seat the frets

The frets come installed, but they need a little work to achieve the best playability. Use a fretting hammer to make sure the frets are all seated properly. The more even your fret tops are, the less leveling work there is to do later.

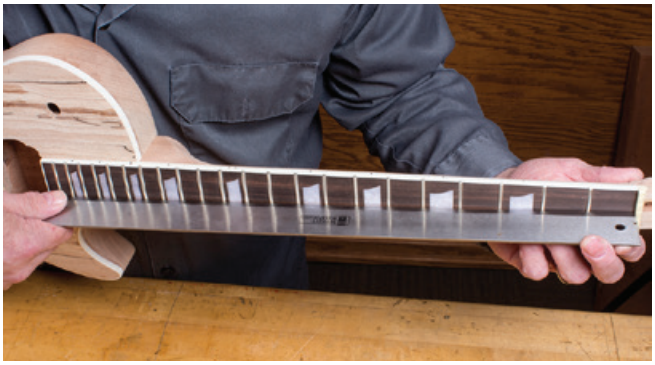


Run your fingers lightly along the edge of the fretboard and feel for sharp fret ends. If the fret ends feel sharp where they meet the edge of the neck, gently sand them back with 320-grit sandpaper using long strokes down the length of the neck. Use care not to change the bevel of the frets in the process.



Straighten the neck

Use the 4mm hex wrench to adjust the truss rod. With a straightedge on the frets, adjust the truss rod until the straightedge touches all of the fret tops without rocking.



Turn the truss rod nut counterclockwise (viewed from the peghead end) to loosen the truss rod, allowing the neck to bow upward. Turning it right tightens the rod, pulling the neck back.

For more information, see our Trade Secrets article #33 "Don't be nervous about adjusting that truss rod!" at stewmac.com.

stewmac.com search: ts33

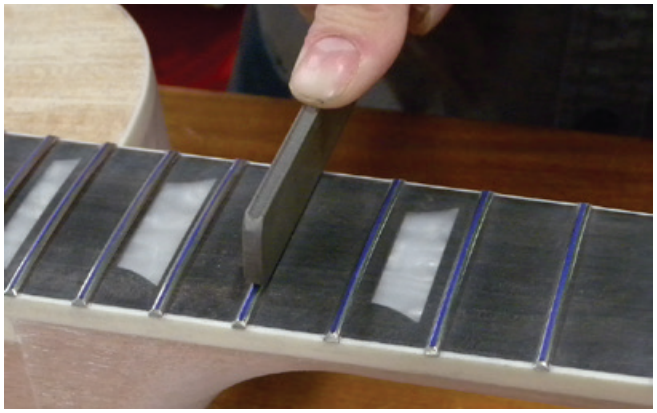
Color the fret tops with a blue permanent marker to prepare them for leveling. The blue ink will show your progress: the frets are level when sanding has removed some of the blue across all of the fret tops.

Level the frets

Use adhesive backed sandpaper or double-stick tape to attach 320-grit sandpaper to the 16" radius sanding block. With this, level the frets using full length strokes down the fretboard.

Leveling will leave flat tops on the frets. Use a fret crowning file to restore their rounded shape.

Reapply blue marker to the fret tops. By filing the sides of the frets, bring in the edges of the flats left over from leveling. With a rounding motion, keep bringing in these edges until all that remains of the top is a very thin line. Don't remove this line entirely; filing the fret tops would undo your leveling.



Sand the frets

Using 400-grit, then 600-grit sandpaper wrapped around a foam block, run up and down the entire length of the fretboard.

You'll put a final polish on the frets later, after applying the finish.

Prep for finishing

Preparing the neck and body for finish is just as important if not more important than the final spray. The key to a great looking finish is patience and lots of it. Be thorough when sanding and follow the finishing schedule on page 9 for the best results.

Inspect the body and neck for any dents, chips, or other imperfections and repair them. Small dents can be steamed out by placing a damp cloth over the dent and applying heat with a soldering iron. Chips, knotholes and gaps will need to be filled. We recommend filling them with a thick viscosity super glue.

Fill the grain (optional)

The figured top and peghead face of your guitar kit is maple, a tight grained wood that does not need grain filling. The body and neck are made of mahogany, which is an open grained wood and will need to be filled before finishing. We suggest using our Neutral ColorTone grain filler following the instructions on the label. Three applications are recommended to get a nice flat surface to build finish coats over.

Let dry for 4-5 hours after final application.

For a modern "faded" style finish that shows the topography of the grain, do not fill, simply start building coats after sanding.

For more information on grain filling, see our article #i-5035 "Using ColorTone Grain Filler" at stewmac.com.

stewmac.com search: i-5035

Sand the body

Using 150-grit sandpaper on a foam sanding block, sand only the back and neck of the body—making sure to sand in the direction of the grain. Do not sand the top of the body or the face of the peghead with the coarser grits. The figured veneer is very thin and easy to sand through.

After the initial sanding, wipe the back of the body and neck with a damp cloth. This will raise the grain to reveal fibers that need additional sanding. Let the damp areas dry, then sand the raised grain with 220-grit sandpaper. Next, take a damp cloth and raise the grain over the entire instrument. Using 320-grit sandpaper, sand the guitar, going very lightly over the top of the body and peghead face.

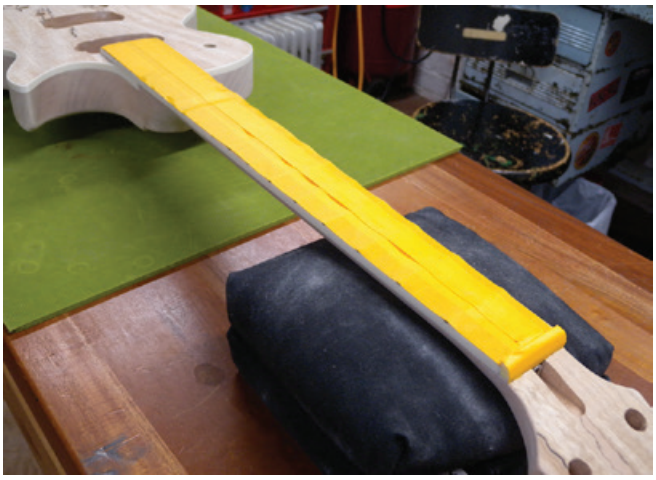
Apply the finish

There are many types of finish and application methods to choose from. For these instructions we used our #2317 Color-Tone Aerosol Guitar Lacquer Dark Back set . We prefer these aerosols because they are a fast way to apply a quality finish.

Using a clear satin topcoat is recommended for the inexperienced finisher. Satin doesn't require much sanding or any buffing the way a gloss finish does. If you choose to spray a gloss finish, it will involve more steps. For those steps and more, see our book, *Guitar Finishing Step-By-Step* (#5095).

A brushed-on finish like tung oil, waterbase lacquer, or shellac works great too. Any of these finishes will seal and protect the wood from dirt and moisture.

Drill a 5/64" hole for the lower strap button and install an eyebolt to serve as a hanging hook during finishing. As an alternative, a hanging hook through one of the tuner holes works as well.

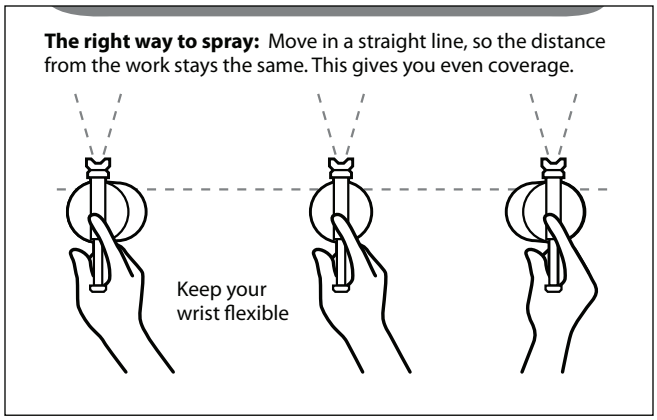


Mask off the face of the fretboard and nut.

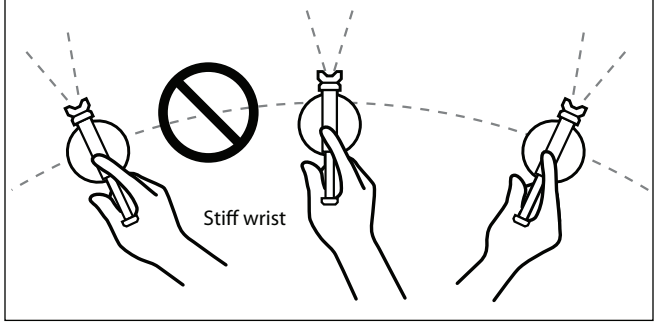
Test on scrap!
Conducting a test on a piece of scrap wood will help you achieve the desired results. If it looks good on your test piece, it will look good on your guitar! Make sure the scrap is similar in color to your body and neck.

Use warm lacquer, not cold. Professional finishers spray heated lacquer because cold lacquer spatters, requiring extra sanding. Warm up your aerosols before spraying by placing the cans in a sink filled with warm tap water.

When spraying, keep the spray parallel to the surface of the guitar for even coverage as shown below.



The right way to spray: Move in a straight line, so the distance from the work stays the same. This gives you even coverage.



The wrong way: Swinging in an arc moves the spray closer and farther from the work. Center coverage is heavy, edges are light.

Spray schedule with ColorTone aerosol lacquer

This finishing process can be completed in as little as 5 days, followed by a week of curing. Remember that patience is the key to a successful finish job. Don't rush it! Spray the lacquer using light passes to prevent runs. These instructions are for the 2317 ColorTone Aerosol Finishing Set for Dark Back.

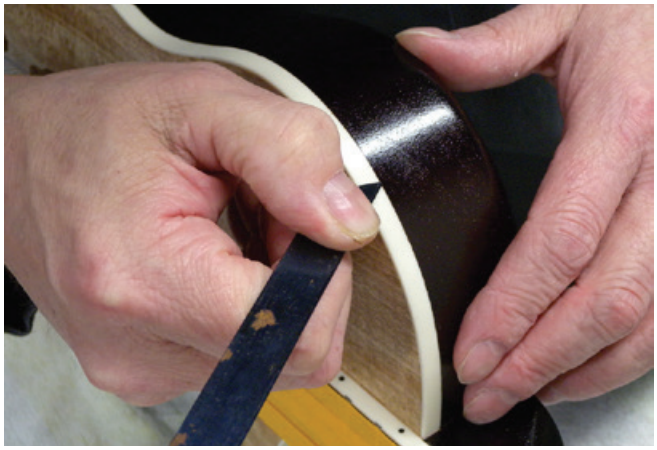
Day 1

Spray 1-3 coats of aerosol Vinyl Sealer over the entire body and neck, waiting 1-2 hours between coats. Let dry overnight.

Day 2

Mask off the peghead face, the top of the body and the binding on the body and neck. Use care when masking to make sure the tape stops where the binding meets the body. This will prevent any excessive scraping or unwanted touchups.

Spray 2-3 coats of Tobacco Brown over the back of the body and neck, allowing 1 hour between coats. Wait two hours after your last coat and remove the masking off the top and bindings, leaving the masking tape on the face of the fretboard.



Inspect the binding and scrape off any brown overspray that might be on the binding.

Spray 1-2 coats of Aged Clear over the entire body and neck, allowing 1 hour apart. Let dry overnight

Day 3

Spray 3-4 coats of Clear Satin lacquer, 1 hour apart over the entire body and neck. Let dry overnight.

Day 4

Lightly sand the body and neck with 400-grit paper to remove any finish spatter or dust. BE CAREFUL: The figured veneer is thin and easy to sand through.

Spray 3-4 additional coats of Clear Satin, 1 hour apart.

Allow the finish to cure for a week in a cool, dry room. Around 70° at 50% humidity is recommended.

After the finish has dried for one week, peel the tape off the fretboard. Use a razor blade or scraper to remove any overspray on the board, then polish the frets using extra fine Scotch-Brite or 0000 steel wool. Follow up by cleaning the fretboard with ColorTone Lemon Oil (#3864) or your favorite conditioner. For a nice satin appearance, go over the body and neck with the extra fine Scotch-Brite Pads or 0000 steel wool.

Assemble your guitar

Assemble your guitar on a soft pad or cardboard to prevent denting or scratching the instrument.

Install the tuners

Starting with the bottom set of pegholes, lay out the tuners with a ruler to make sure they are in line with one another. Mark out the mounting holes with a scribe or transfer punch.

Tuner mounting screws are very delicate. Use a 5/64" drill bit to make pilot holes for the screws; if these holes are any smaller you risk shearing off the screw heads. Lubricate the screw threads by dragging them across soap or wax for smooth installation.

With the tuners in place, install the screws in the pilot holes with a #1 Phillips screwdriver. On the tuner string post, add a washer then the threaded bushing. Tighten with a 10mm nut driver or wrench.

Install the body bushings

Install the tailpiece bushings. It's a good idea to slightly chamfer the holes for the bushings to prevent chipping or lifting the finish. Cut the edge back just larger than the outside diameter of the knurling.

Note that there is a small hole running from the treble side hole running into the control cavity, this is for the string ground. The 7" ground wire needs to be installed before the bushing. Strip 1/2" off of both ends and run the wire through the hole into the cavity leaving the stripped end to come in contact with the bushing once installed.

Install the tailpiece bushings. Pressing them in with a drill press is the preferred method but they can also be installed with gentle hammer taps using a block of wood between the bushing and hammer.

Install the bridge bushings in the same fashion.

Bushing hole before chamfering

Bushing hole with chamfer

Ground wire in bushing hole

Drill for cover plates

Use a sharp pointed tool, such as a scribe (#1672), to mark out the mounting holes for the control cavity and switch covers. Then, drill pilot holes for the screws using a 1/16" bit stopping at 3/8" deep. The cover plates will be installed after the wiring process.

Drill for the jack plate

Mark the mounting holes for your jack plate, then drill pilot holes using the same 1/16" bit and 3/8" depth as above. The jack will be installed during the wiring process.

Install the strap buttons

Mount the tail strap button, then choose your location for the remaining strap button. Drill a 3/32" pilot hole, 1/2" deep.

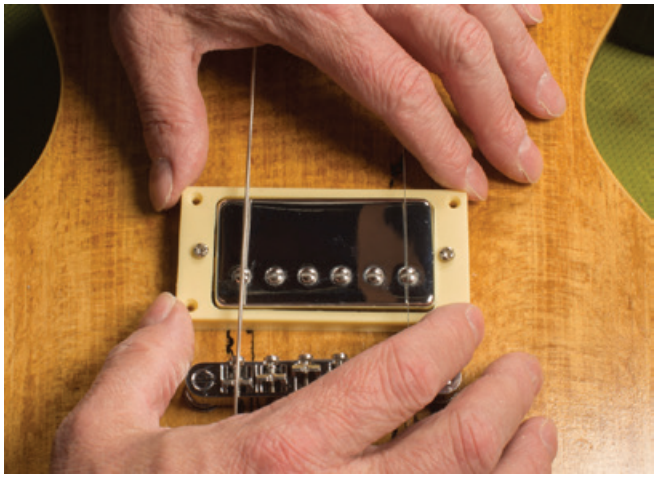
Drill for the pickups

Drop the bridge and neck pickups in place. The pickup with the red lead and taller mounting ring is the bridge pickup, the pickup with the yellow and short ring is the neck pickup.

Install the tune-o-matic bridge and tailpiece. String up the low and high E strings to use as reference.

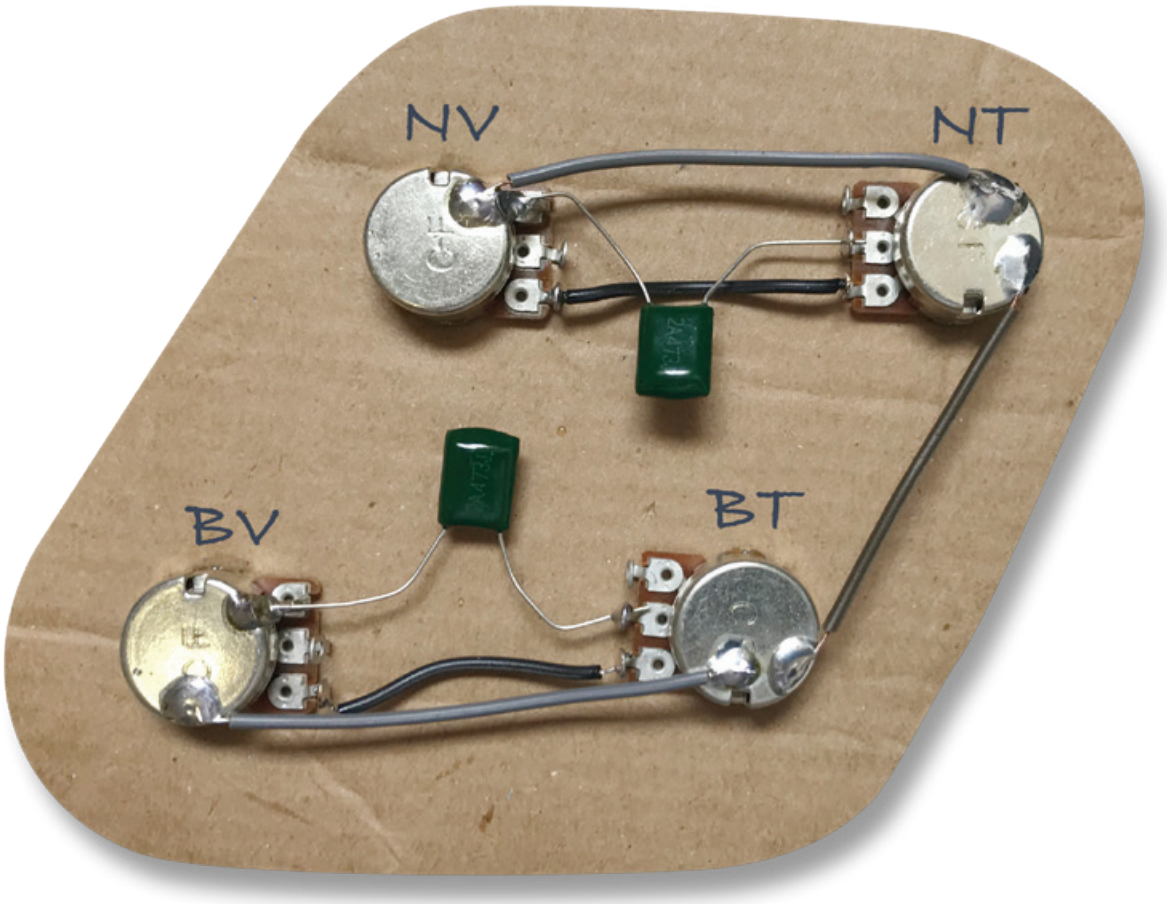
Line up the neck pickup so it is square to the end of the fretboard and the E strings are evenly above the polepieces. Mark the locations of the holes.

Now carefully line up the bridge pickup to make sure it is square to the neck pickup. After you've marked the holes, remove the strings and pickups. Then drill the holes with a 1/16" bit, 3/8" deep.



Don't install the pickups—that will happen after the guitar is wired.

Wire the electronics



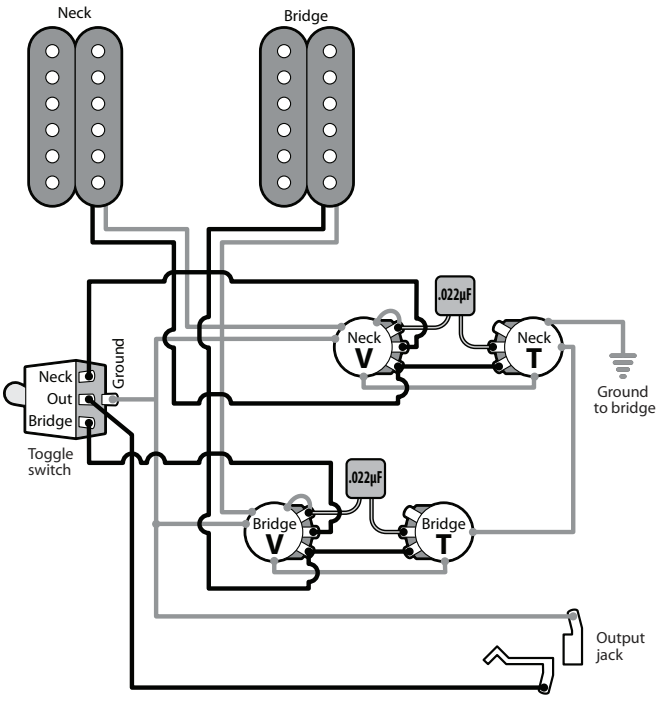
If your kit came with a prewired harness, wire the pickups to Neck the pots and the output to the jack as shown in the wiring diagram.

If your guitar came with a parts kit, make a cardboard template that matches the hole pattern of the controls for proper parts spacing and easy soldering. Peel the wires apart and cut to length giving yourself a little slack between components. Strip about 1/8" of the insulation off of the ends of each wire, twist each end tight then coat them with a little solder; this is called “tinning”. Tinning the wire ends as well as the lugs on the switch, pot, and jack will help your solder joints flow together quicker and cleaner.

Solder up your circuit following the wiring diagram to the right.

For help with soldering, see our Trade Secrets video #186 “How to get a good clean solder joint!” at stewmac.com.

stewmac.com search: **ts186**

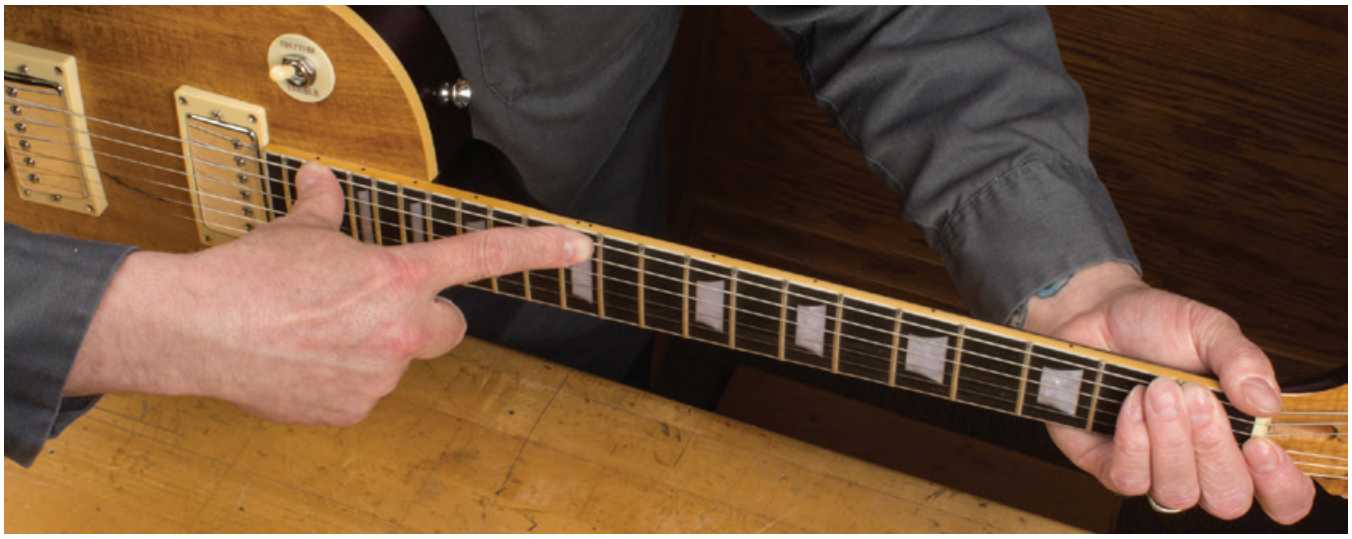


Install the pickguard

Install the pickguard bracket onto the pickguard and snug up the nut by hand.

Line the pickguard up on the face of the guitar with the pick-ups and fretboard. Use a scribe or transfer punch to locate the hole. Drill a 1/4" hole using 3/32" drill bit.

Install the screw, holding the guard to the face of the guitar. Line up the bracket with the bottom edge of the binding and locate your hole. Drill a 1/4" deep hole using a 3/32" bit and install bracket screw.



Final setup

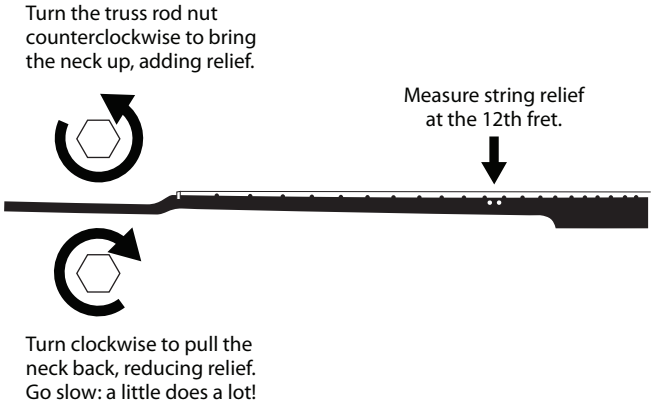
Install the remaining strings and tune to pitch.

Neck relief refers to adjusting a neck so that it has a very slight upbow, rather than being perfectly straight. This relief allows a little more room for string vibration, reducing the chance of hitting the lower frets and causing fret buzz.

Depending on your playing style, and how perfectly level your fret tops are, a neck should be anywhere from perfectly straight to having 0.012" of relief. This measurement refers to additional string height over the 12th fret, compared to a perfectly straight neck.

A straight neck tends to play and sound better, but very few guitars end up with no relief at all, and several thousandths of an inch or more is perfectly normal.

You can use a straightedge or the low E string to get you in the ballpark. Using your index finger, hold down the E string at the first fret. With the other hand, hold down the string at the 17th fret with your thumb and use your index finger to check for relief. The smaller the gap between the bottom of the string and the top of the frets, the straighter the neck.



Final setup

Lower the nut slots

Once the neck is adjusted to the desired straightness, the nut slots will need to be lowered for the best playability. Measure the gap between the bottom of the string and the top of the 1st fret.

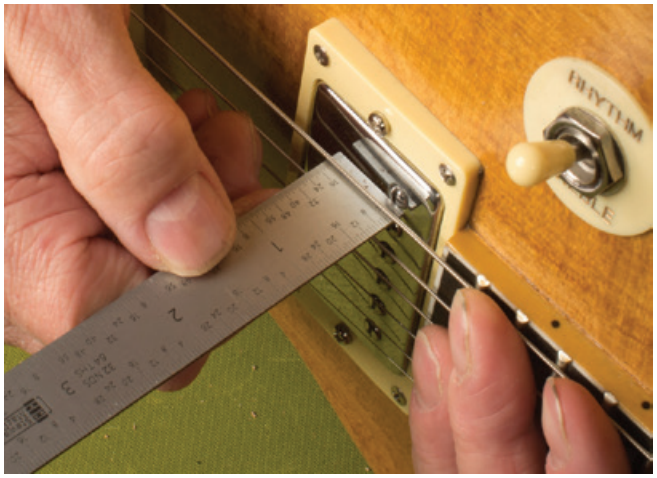
A comfortable medium action over the first fret is .012" for the plain strings (G,B,E), and .020" for the wound strings (E,A,D).

Use feeler gauges to measure the gap or use guitar string scraps whose gauges match the measurement you are shooting for. Using just a few file strokes at a time, stop filing when the string sits on the top of your feeler gauge, whatever it may be. Take your time and check your work frequently. It is easy to go too far lowering the slots thus ruining the nut.

Set the bridge action

Adjust the bridge action using the thumbwheels on bass and treble sides. Measure the gaps between the bottom of the low and high E strings and the top of the 12th fret.

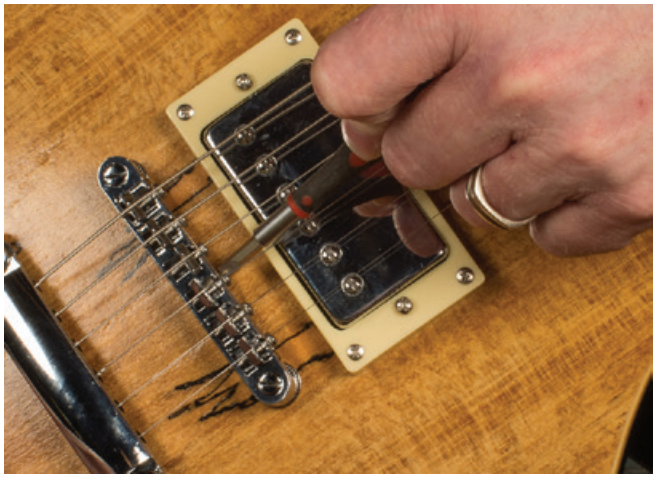
Standard action for the high at the 12th fret is 1/16" for the bottom of the high E string to the top of the fret, and 5/64" for the low E. This a good place to start, you can further adjust action to taste.



Adjust the pickup height

One at a time, hold the low and high E strings down at the 22nd fret.

Adjust the neck pickup to 1/16" between the bottoms of the low and high E strings and the top of the pole pieces. Adjust the bridge pickup to 3/32".



Set the intonation

The last step is intonating the guitar by adjusting the string lengths at the bridge saddles. This will help ensure that the guitar plays in tune all the way up the neck.

Tune the strings to pitch using a strobe or other accurate tuner. Then, press the high E string lightly at the 12th fret with just enough pressure on the fret to sound the note. Check it with your tuner.

If the note reads flat, the saddle needs to be adjusted forward towards the nut, shortening the length of the string. If the note reads sharp, the saddle needs to be adjusted back away from the nut, increasing the string length.

You’re done!

Congratulations!
Your guitar is ready to play. We hope this guitar will be the first of many that you have fun assembling and customizing.

Be sure to get a gig bag or case, so it doesn’t get banged around!

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USA & Canada call toll-free: 800-848-2273
9am-6pm weekdays Eastern time

How can we help?
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