RENAISSANCE GUITAR KIT

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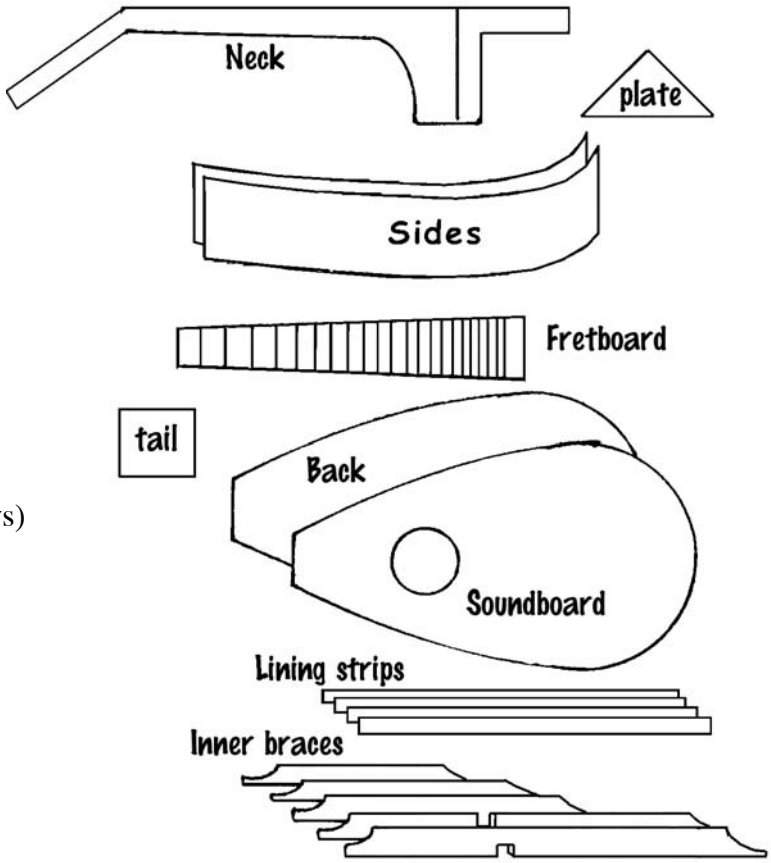
RENAISSANCE GUITAR

1 - Set of assembly instructions

Wood Parts:
1 - Neck
2 - Sides, pre-bent
1 - Slotted fretboard
1 - Soundboard (top)
1 - Back
1 - Bridge plate, hardwood
4 - Lining strips
3 - Inner braces for back
2 - Inner braces for soundboard
1 - Tail block, hardwood

Hardware Parts:
6 – Black Geared tuners (w/sleeves, washers & screws)
1 - Set of 6 strings
1 - Bridge with saddle & pegs
1 – Black Plastic nut
5 - Pearl Dots
4 - Ft medium fretwire
1 - Truss Rod, double action
1 - Allen wrench, 5/32" (for truss rod)
2 - Machine screws, wing nuts & washers, #10 X 24
1 - Truss rod cover with 3 screws
1 – Jumbo Rosette (Doily or Celtic Knot)
1 -- Assembly Instructions



BEFORE GETTING STARTED

_____1. Please take the time to check over the parts of your kit now, to make sure everything is there. If you discover a problem, call us right away so we can rectify it quickly without causing you much delay in your project.

If you have any questions about the assembly process – please visit our online builder's forum at www.harpkit.com/forum

A NOTE ABOUT GLUE

DO NOT ASSEMBLE THIS PROJECT WITH EPOXY OR SUPERGLUE OR HOT MELT GLUE! Find some good woodworking glue. Many luthiers (guitar & violin makers) still use the natural hide glues that have been around for centuries, carrying on a fine old tradition, but that does not mean that you must do the same. We build this instrument with modern woodworking adhesives (such as Elmer's Carpenter's Wood Glue or Titebond) because they hold the parts even more securely than the old hide glues. The few advantages that some people claim with hide glue are more than offset by the strength, durability, ease of application, and availability of the modern woodworking adhesives.

When gluing parts together, be sure to put enough glue on the joint to wet the entire surfaces to be joined. A good sign of proper gluing is that a little excess will squeeze out around the joint when clamping pressure is applied. Too little glue may cause the parts to separate later, whereas too much glue makes things messy. We always keep a damp rag handy for quick cleanup, as necessary. It is especially helpful to keep your fingers clean while gluing, because gluey fingerprints have the embarrassing tendency to appear on the finished product in places you never expected. Most woodworking adhesives "set" sufficiently after 30 minutes of clamping to allow you to proceed. Check your dispenser for recommended drying times.

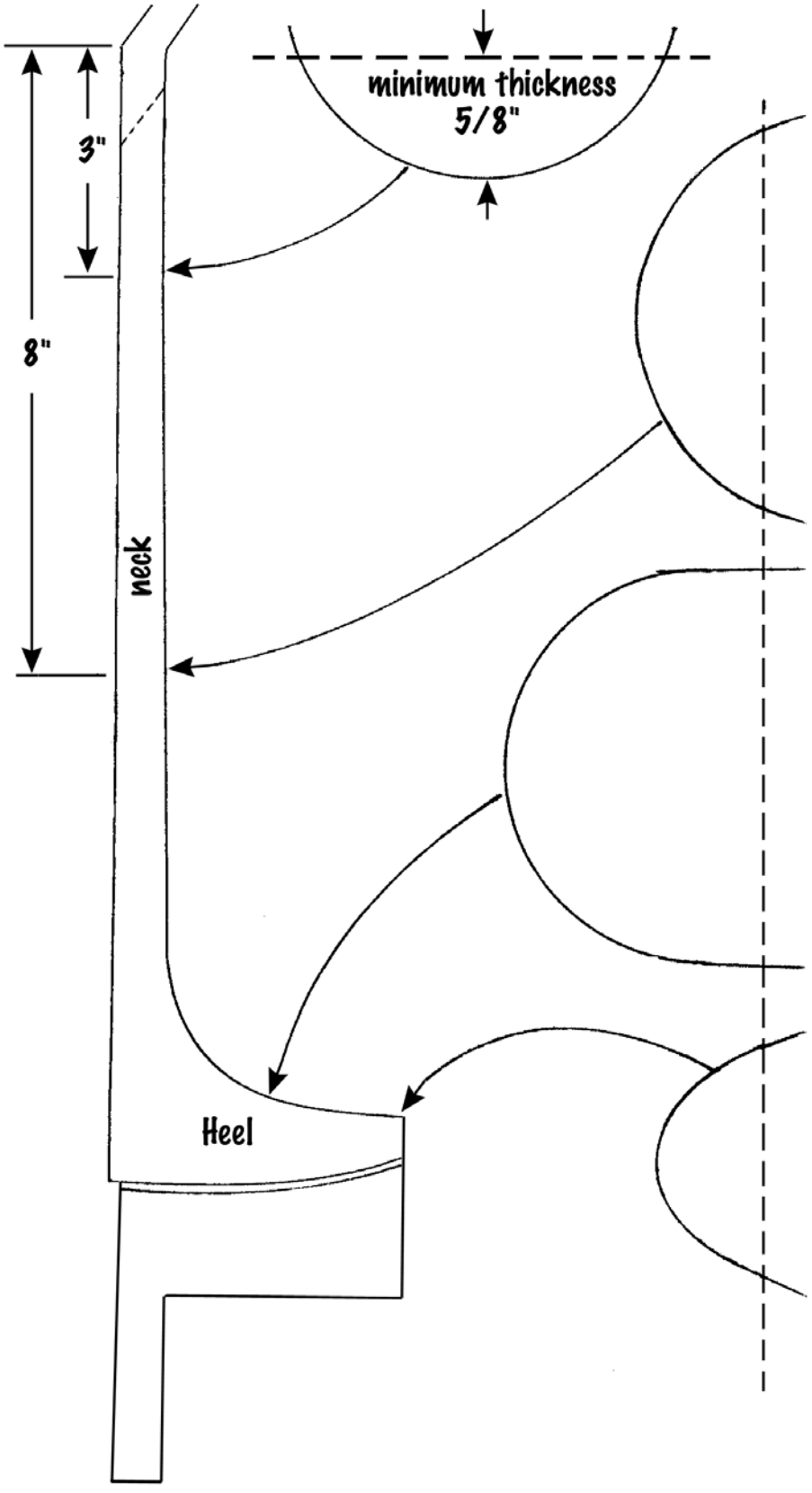
_____2. We also suggest skimming through the entire directions before beginning, just to get an overview of the project. You may decide that you need to gather more tools or purchase a few optional decorations or accessories to enhance the finished instrument. Now is a good time to make those plans so you can avoid delays later when you reach those steps of construction.

SHAPING THE NECK AND HEEL

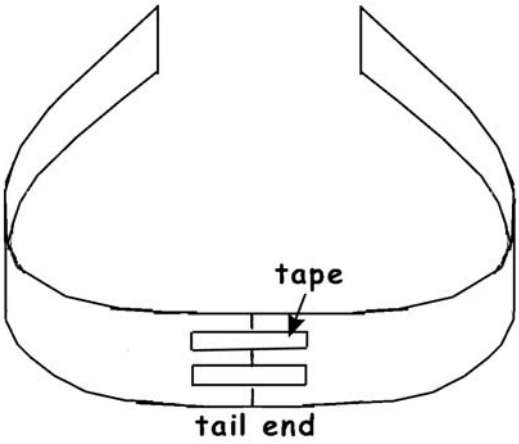
_____4. We have roughed out the shape of the NECK, HEEL, and PEGHEAD on this kit, but they still need more work. If you have another guitar to look at as a pattern, that might be helpful. You may cut out the templates drawn here and use them to guide your shaping, although you may leave the NECK thicker and/or wider if desired. Note that the finished thickness will be about 1/4" greater after the FRETBOARD is glued in place.

Basically, you want to round the entire backside of the NECK so it is comfortable in your hand, as you play. Follow the curves around the HEEL also, to make a nice looking assembly. An electric sander with coarse (80 grit) paper will make this task quite easy, but you can also do the job by hand with files, rasps and/or sanding blocks. Follow up the rough work with a medium (150 grit) sandpaper to remove the scratches left by the coarse paper.

_____5. This is also a good time to customize the PEGHEAD, if you wish. You can cut a curved shape at the end, add some inlaid decoration to the front, or do a little woodburning.

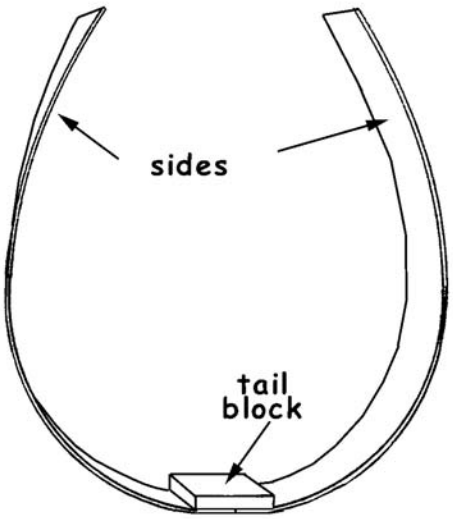


GLUING THE SIDES



_____6. We have bent the SIDES carefully from two layers of solid walnut. This means there is no paper-thin layer of veneer to worry about sanding through.

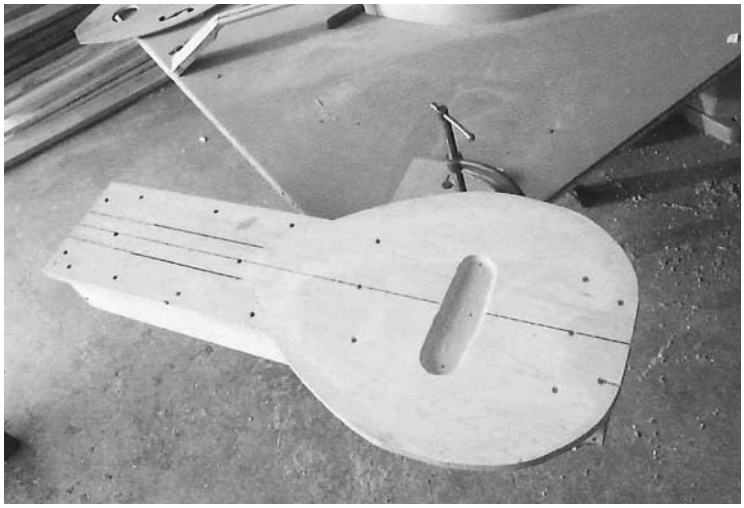
Glue the two SIDES end-to-end at the heel, as shown. Hold the joint together with masking tape on both sides to achieve a tight seam.



_____7. When the seam is dry, carefully remove the tape, and then glue the TAIL BLOCK to the inside of this seam, as shown, using clamps or weights to hold till dry. Be Careful! The joint is quite fragile until the TAIL BLOCK is glued across the seam.

CAUTION: Double check to see that the TAIL BLOCK does not "drift" out of position under the clamps or weights. You want good alignment of this piece in order to glue the SOUNDBOARD and BACK successfully.

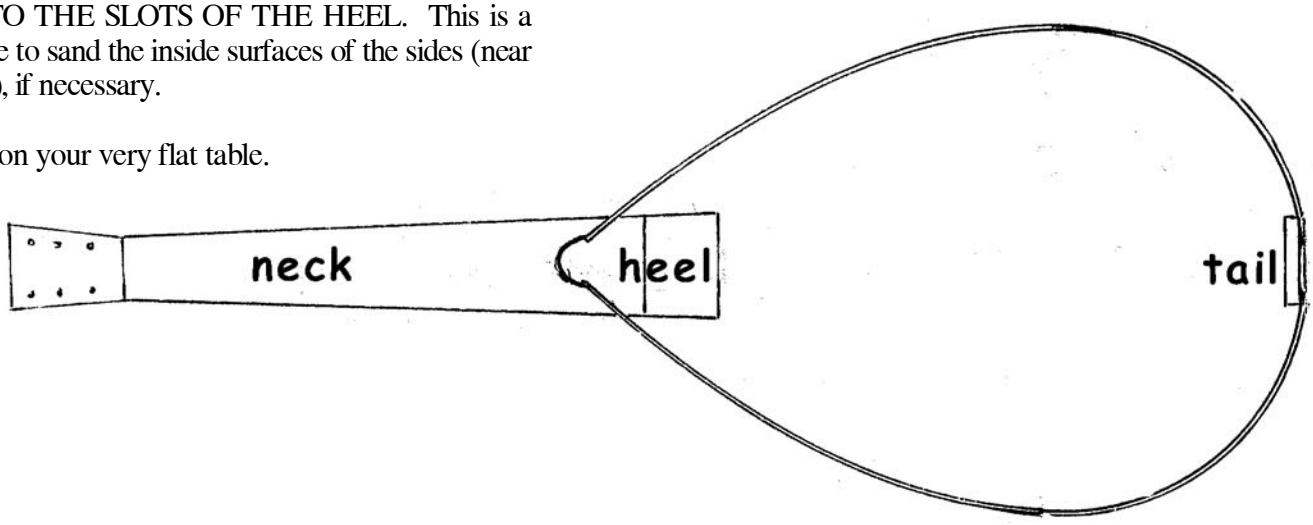
IMPORTANT: We highly recommend that you find (or make) a sturdy flat table top to work on that allows you space for clamping your instrument down against the flat surface as you work. This will be critical as you assemble the body of the guitar, helping you to keep the parts flat and straight. Otherwise you are likely to end up with an unplayable instrument or maybe one that looks a little cock-eyed.



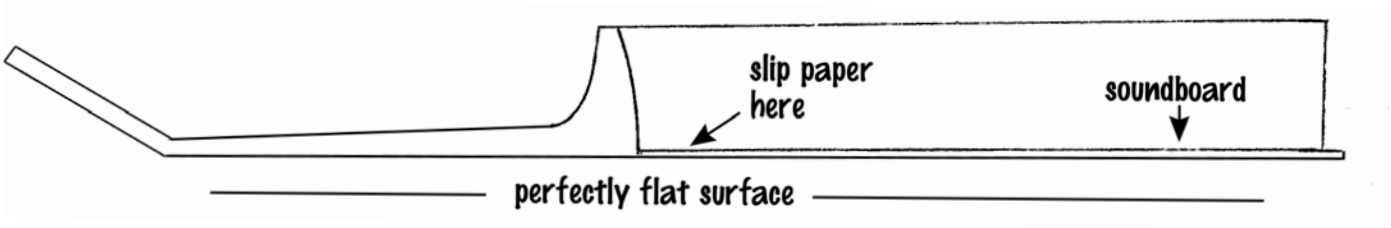
Check out the platform we made for our shop at right. It has a 3/4" plywood top and is fastened to two straight 2" X 6" support braces with a 3/4" ply "tab" that protrudes from underneath and can be clamped to the edge of a workbench.

CAUTION: MAKE SURE THE SIDES FIT EASILY INTO THE SLOTS OF THE HEEL. This is a good time to sand the inside surfaces of the sides (near each end), if necessary.

a) Work on your very flat table.



b) Place NECK ASSEMBLY face-down on the work surface.



c) Slide SOUNDBOARD under the end of the NECK so it will hold the SIDES 1/8" off the work surface. You do not want to glue the SOUNDBOARD to anything yet, so you might slip a piece of paper between the NECK and the SOUNDBOARD to prevent glue from getting on the SOUNDBOARD.

d) Test-fit SIDES into the slots again. If the SIDES fit too loosely, you may want to shim them by gluing some thick paper to the inside face. If they are too tight to slip into the notches easily, then just sand the inside face a little. Once they fit properly, proceed to glue them in place, holding them all the way in with masking tape until dry.

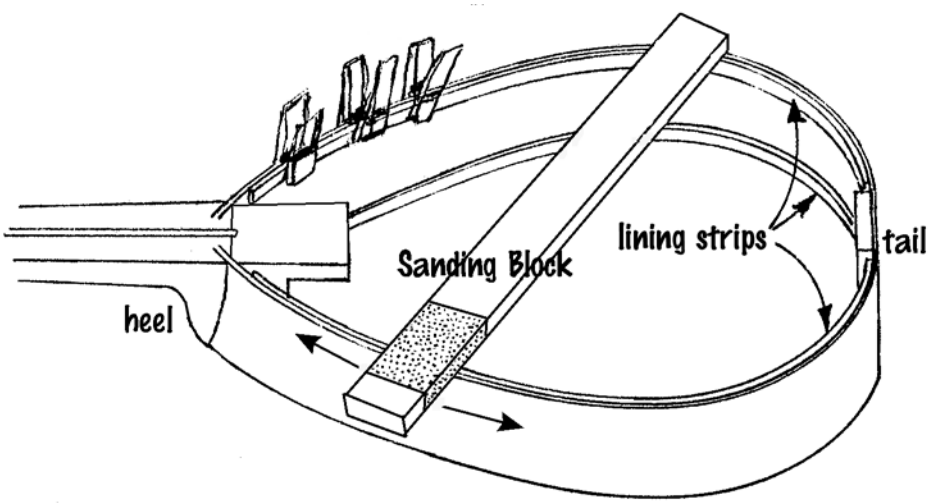
IMPORTANT: Hold all these parts down firmly against your flat work surface while gluing. Otherwise you may have trouble with string adjustments later.

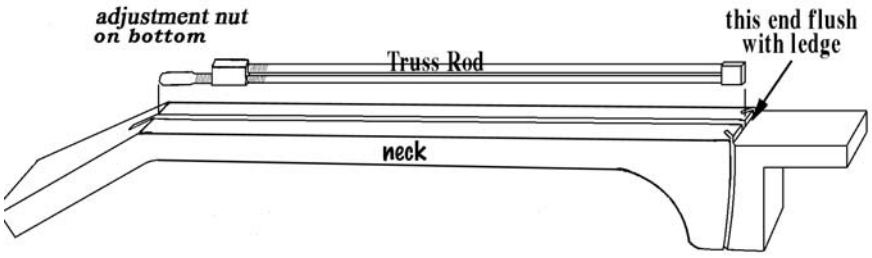
_____9. Glue the four LINING STRIPS to the inside of the SIDES, as follows:

a) Use clothes pins to clamp them so the edges are flush, as shown.

b) Carefully sand all four edges so that they are flat and smooth, ready for gluing the SOUNDBOARD and BACK.

We like to wrap sandpaper around the end of a long stick, and then rest the stick across the instrument while sanding. This ensures a flat sanding action.





_____10. Check the fit of the TRUSS ROD before gluing the SOUNDBOARD in place. The TRUSS ROD should rest in the channel of the NECK with the adjustment nut on bottom and facing the PEG HEAD, as shown.

THE SOUNDBOARD

_____11. Select which side of the SOUNDBOARD you wish to show outward on the guitar. This is a reversible piece so you can choose whichever face you like better for the outside.

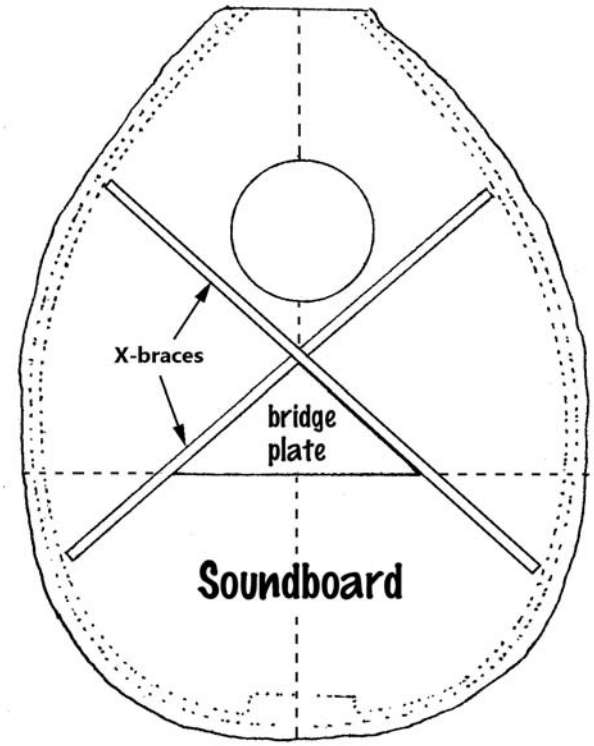
You may need to push the SIDES one way or the other to center them on the SOUNDBOARD. Measure the distance from the centerline to each SIDE. Push or pull the SIDES into symmetry. When aligned, draw the outline of the SIDES, inside and out, on the SOUNDBOARD. Now you can work on the SOUNDBOARD bracing.

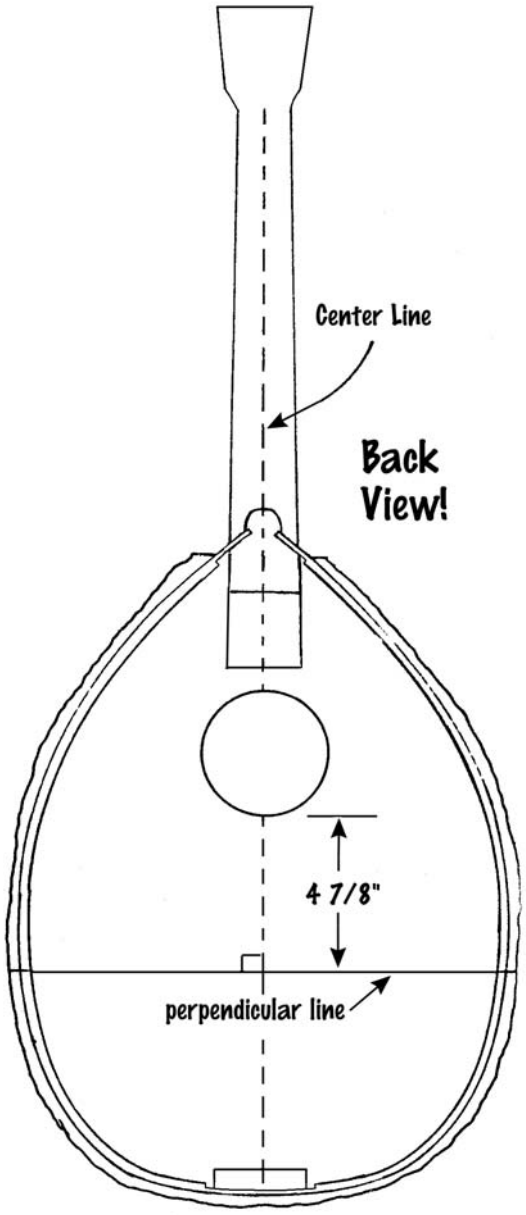
_____12. Draw a centerline down the length of the inside (the poorer face) of the SOUNDBOARD. Then draw a line at right angles to that line, exactly 4-7/8 inches from the large soundhole, as shown. Use a square to test for accuracy.

Hold the frame of the guitar onto the SOUNDBOARD again (without glue) on a flat work surface, just as before. Make sure the SOUNDBOARD reaches all the way to the end of the ledge cut in the NECK.

This time you must line up all the parts carefully so the guitar will be straight and symmetrical. The best way to accomplish this is to mark the center of the NECK, the HEEL, and the TAIL BLOCK. Then use a straight edge to line up all these marks with the centerline on the back of the SOUNDBOARD.

CAUTION: it is entirely possible to assemble a crooked guitar! Take care to straighten it out as you prepare the parts. We clamp the neck down against our flat table (facing down) carefully aligned wtih the centerline first. Then we can see how the body needs to be shifted into alignment with the same centerline.



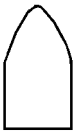


_____13. Glue the BRIDGE PLATE to the inside of the SOUNDBOARD, with the point on the center line and the longest side on the perpendicular line that you drew earlier. Hold it with weights until the glue dries.

_____14. The bracing on this guitar is very simple, compared to most guitars.

Begin by test-fitting the two longer braces together to form an "X". You can do this two different ways, but only one way will match the angle of the BRIDGE PLATE, and fit correctly on the SOUNDBOARD, as shown.

These braces are not rounded on top yet because we want you to glue them together first and then shape the top edges to match the other three braces in cross-section, as shown here.



Cross-Section of Brace

Glue this assembly to the inside of the SOUNDBOARD, right up against the BRIDGE PLATE, and hold it with weights or clamps until dry.

CAUTION: BE SURE TO DO THIS CLAMPING TO A FLAT SURFACE! Otherwise your SOUNDBOARD may end up twisted or bowed.

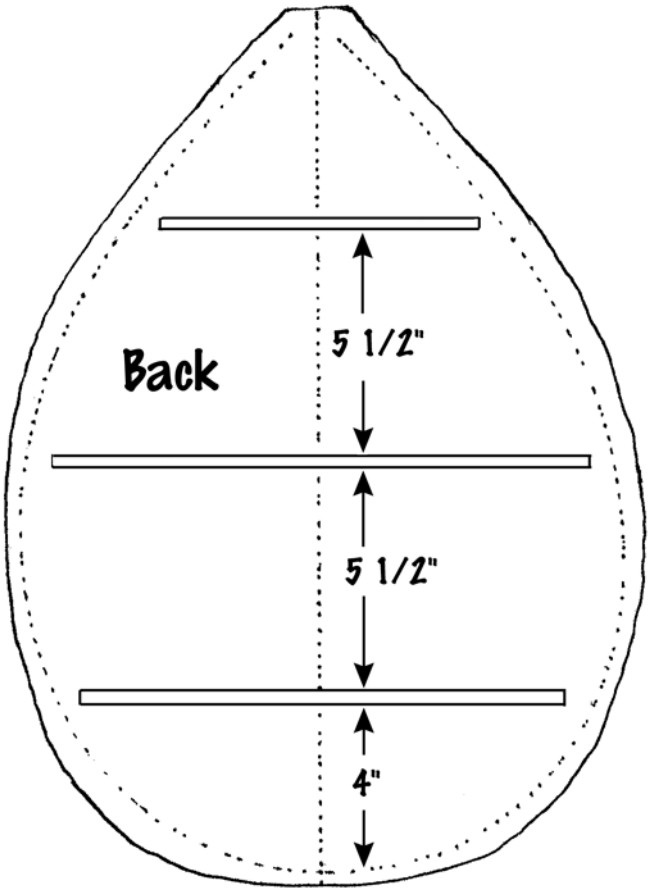
_____16. Now you may glue the SOUNDBOARD to the guitar frame. Do this carefully on your flat surface, making sure to line up all the parts again in symmetry. The inside bracing should not interfere with the SIDES of the instrument. Look for glue to squeeze out all around the circumference of the instrument. That will prove good contact.

GLUING THE BACK

_____17. Select which face of the BACK you prefer to show outward. You will be gluing the bracing to the other (reverse) side.

Place the BACK piece on a flat work surface so the inside faces up. Draw a center line from one end to the other, and then position the frame of the guitar over it, aligned to the center marks. There should be some excess BACK material extending beyond the SIDES all the way around the assembly.

Draw the outline of the guitar on the BACK. Then you can set the guitar assembly aside for awhile.



_____18. The exact location of the bracing is not critical for the BACK. We simply like to space these braces evenly for supporting the thin plywood material. Draw 3 lines perpendicular to the centerline in the positions illustrated. Then trim the remaining three braces to fit inside the guitar frame at those positions.

NOTE: You'll need to cut these braces to fit nearly 1/2" inside the penciled outline, to allow for the thickness of the SIDES and LINING STRIPS.

_____19. After trimming these braces to length, taper the raw end to match the finished end, and glue them in place. Use weights or clamps to hold these braces firmly down to the BACK on a flat work surface.

CAUTION: Double check to make sure all three braces are clamped firmly. Some glue should squeeze out all along each brace. It is aggravating to have an internal brace come loose after the guitar has been assembled! If necessary, just glue and clamp one brace at a time.

_____20. Sign your name and the date to the inside of the BACK before gluing the back in place. Select a place for your signature that will be visible through the soundhole. Check the Musicmaker's catalog for Heat Transfer patterns for fancy signature boxes. You can make your own special "manufacturer's label"!

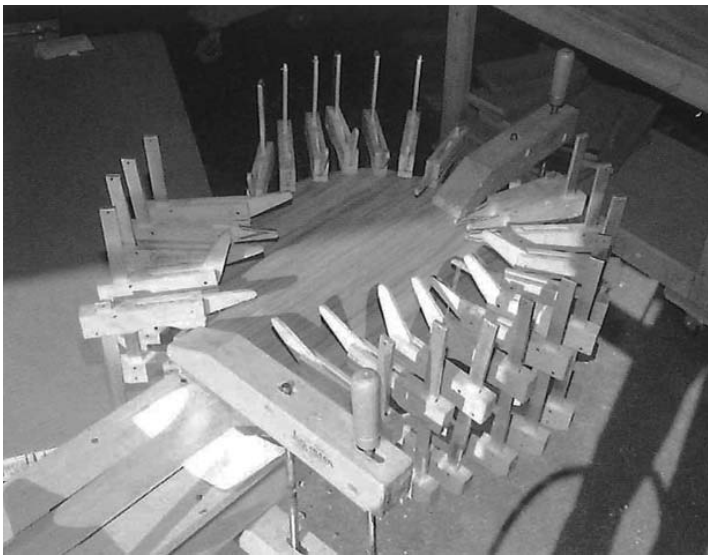
_____21. Test-fit the BACK of the guitar again. If any braces interfere with the SIDES of the assembly, you can still trim them off with a sharp chisel or knife.

IMPORTANT: It is still possible to glue this instrument out of alignment! The Neck can be flexed up or down as the sides are pulled apart or pressed together. So you need to hold the neck and soundboard firmly against your flat table as you install the BACK panel. Once the BACK is glued in place, the box will be rigid, and the guitar should be stabilized in that flat position.

_____22. When you understand what needs to be done to achieve a level surface at the top, you may glue the BACK to the guitar. Spread glue around the back edge of the SIDES (and Lining Strips) and then set the back in place.

Start clamping at the heel and tail ends, carefully centered, as shown at left.

Then add a bunch more clamps around the edges -- you don't need a lot of pressure to pull the parts together, but you need lots of clamps, as shown at right. Look for glue to squeeze out all around the circumference of the instrument. That will prove good contact.



NOTE: Position the clamps near the edge of the BACK (right over the SIDES) -- that's where the glue joint is. Some people push the clamps too far in, over the cavity of the body, and that can damage the BACK panel.

_____23. When the guitar body is dry, you can trim off the excess soundboard and back material flush with the sides of the guitar. We like using a router with a flush-trim bit for this job. It's a great excuse to purchase a router if you don't have one already. We offer a router bit that you can use for both flush-trimming and cutting a ledge for inlay bandings.

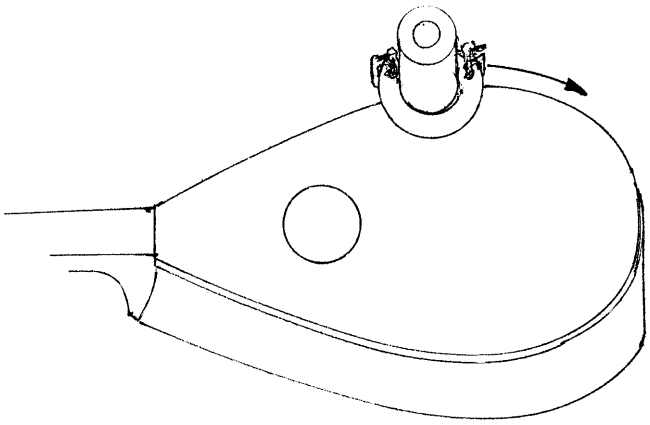
OPTIONAL DECORATIONS:

_____25. (OPTIONAL) You may add some decorative inlay banding to the edges of the guitar body, around both the top and back, if you have access to a router. Edge banding adds significantly to the appearance (thus, the value) of the finished instrument. You'll need nearly 60 inches of decoration to reach around the circumference of the instrument once. Double that if you wish to edge both the SOUNDBOARD and the BACK.

Router Bit Set

Routing is not so difficult if you have the tool and our special bit for flush cutting and installing inlay banding (see www.harpkit.com/inlays). This bit cuts along the side edge, with the roller bearing following the curved sides of the guitar. We provide two different bearings: one for trimming the soundboard and back flush with the sides of the box, and the other for cutting a small ledge for gluing inlay banding around the perimeter of the guitar body.

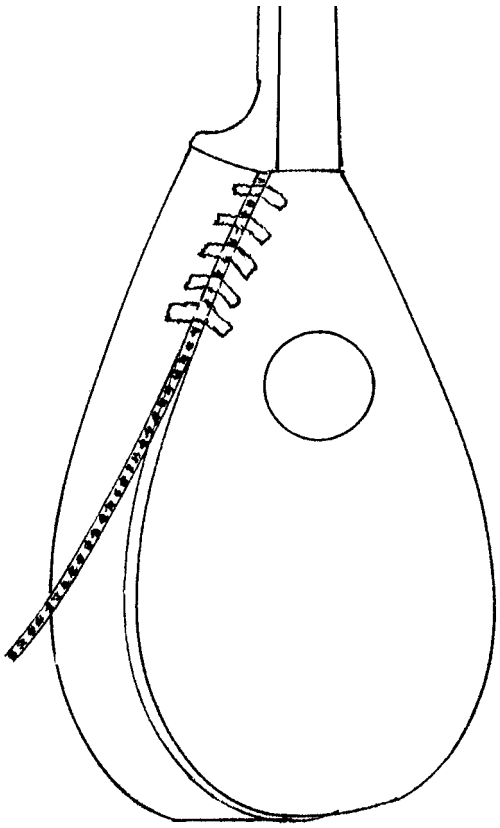
Use the smaller roller bearing for cutting a ledge for inlay banding. Test your cut on scrap wood first and make adjustments as necessary so the inlay strip fits properly in the groove.



CAUTION: When you cut the grooves on the guitar, we recommend pushing the router in a clockwise direction around the circumference. This is opposite the normal direction, which would be to move the router against the spin of the bit. By moving the router with the spin of the bit, you eliminate any chance of splintering the wood as you cut. It may sound odd, or even unsafe, but it works beautifully, and does not cause a safety problem with such a small cut.

Go ahead and rout the groove, and then take a good look at it to see if it is cut to full depth and width all the way around. We usually run the router at least twice around the guitar to ensure a complete cut. You need not worry about cutting too deeply -- the roller bearing prevents that.

NOTE: You'll need to use a sharp chisel or razor knife to finish cutting the ends of these grooves where the body joins the NECK of the guitar.



If you are installing wood inlay strips, then standard woodworker's glue (such as Elmer's) is the best adhesive. Be sure to have plenty of masking tape on hand for holding the binding in place while the glue is drying.

Squirt a bead of glue along 8-10" of the groove at a time, beginning at the neck end of the body. Don't apply glue all the way around the guitar at once -- it'll be dry before you get all the banding material wrapped around.

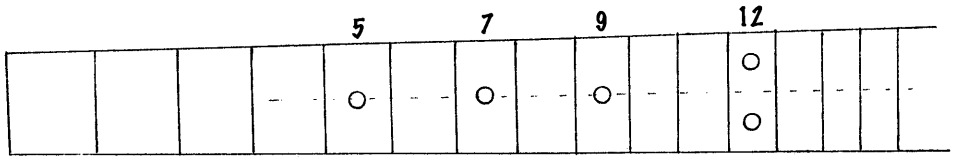
Place the end of banding into the groove and use short pieces of masking tape about one inch apart to hold it securely in place. Work your way around the perimeter, squirting glue into the groove as you go. If you need to make a joint in the banding material, use a razor knife to cut the parts cleanly at a logical part of the pattern where the joint will not be noticeable.

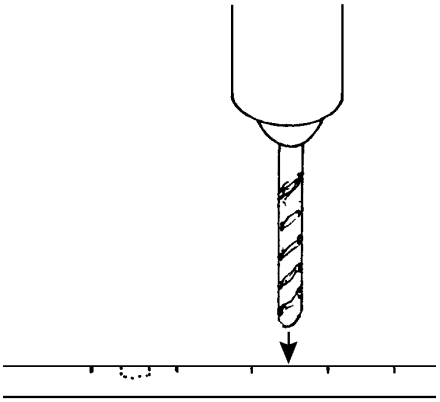
When you get within 8 or 10 inches from the other end of the groove, cut the strip carefully to fit before squirting glue in that last section. Leave the tape on for at least 4 hours for wood inlay banding.

_____26. When the glue is dry, remove all the masking tape and sand the edges of the guitar to remove excess glue and to smooth the inlays with the wood. Just be careful not to sand the surface of the BACK too much -- you may cut through the surface veneer.

_____27. (OPTIONAL) Another decorative option is to inlay marking dots at certain positions of the FRETBOARD. This is a simple and attractive detail, requiring only an electric drill.

Place scraps of masking tape on the FRETBOARD at the positions shown, so you can clearly draw some pencil marks.





Mark the center of each space in pencil, and then use an awl or sharp nail to punch a depression at each point. Drill shallow holes of the size that matches your marking dots (1/4" diameter is normal). The depth of the holes is not too critical, as you will see next.

Use medium thick CA adhesive (Superglue), or some "5-Minute Epoxy" for inlaying the dots. Put some glue into a hole, nearly filling the cavity, then push a marking dot into the hole until it comes nearly flush with the wood surface, but still stands slightly high. The dots may "float" on the adhesive.

When the glue sets up, sand the dots flush with the surface of the FRETBOARD.

INSTALLING THE FRETS

_____28. Test-fit the FRETBOARD to the NECK of the guitar first. The narrow end should begin 1/4" from the sharp angle (to allow room for the NUT), and the wide end should come close to the soundhole. NOTE: If you plan to install a rosette over the soundhole, you may need to cut a curve at the wider end of the FRETBOARD to accommodate the rosette, as shown on cover photo.

Check the width of the NECK and FRETBOARD when they are in proper position. Whichever piece is wider must be sanded to match the narrower one. This is most easily done now, before the frets are installed. Take care to make this shaping smooth and gradual, because this is the "playing" area of the instrument.

NOTE: This is your opportunity to make the NECK and FRETBOARD narrower, if you prefer. Typically, steel-strung guitars are about 1-3/4" wide at the NUT, and nylon-strung ones are about 2" wide. If you own another guitar you may want to match the width of the FINGERBOARD to that instrument.

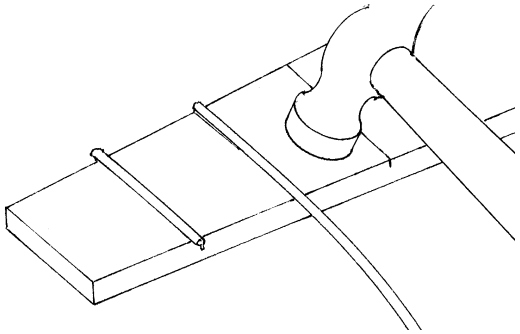
_____29. It is best to install the frets into the fretboard BEFORE gluing the fretboard onto the instrument.

Place your FRETBOARD on a good firm surface for this operation. A flimsy table top will not do. Better to work on a concrete floor or a cement block. Otherwise, your wood will just bounce around as you try to tap the frets into place.

a) Begin by placing the long length of fretwire over one of the slots cut in the fretboard, so the end hangs over the edge of the wood just 1/16" or so.

b) Position the fretwire so that the "tang" will be driven down into the fret slots.

c) Use a hammer to lightly tap the fretwire into the slot, until the "crown" of the fret contacts the wood surface.



HINT: Tap one end of the wire in first, then the other end, and finally give one or two taps in the middle, checking to see that it is fully seated. Try not to overwork this wire. Too much pounding in the middle may cause the ends to curl up. When you get the hang of it, 3 or 4 taps is all it should take to set each fret.

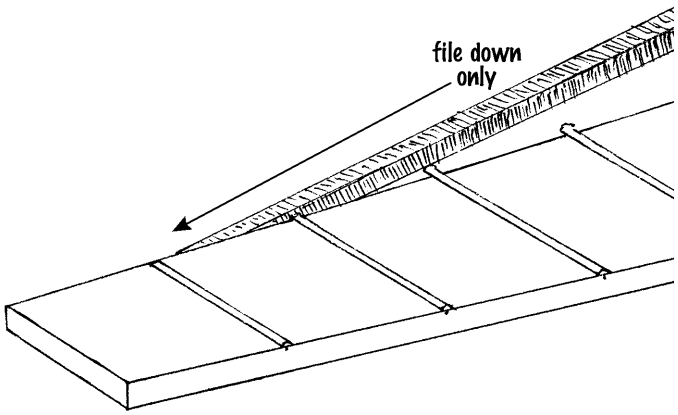
d) When the fretwire is securely held by the wood, use a wire cutter to clip off the excess, as close to the wood as possible.

e) Proceed to the next fret slot in the same way, and so on until all frets are installed.

HINT: Some experts prefer to glue the frets in place, using 5-minute epoxy. This can be especially helpful if you have trouble with one or two pieces and end up overworking the wire or enlarging the slot so it no longer holds the wire firmly. Use a c-clamp and a scrap of wood to hold the errant fret in place while the epoxy sets. Then clean off excess adhesive with a sharp knife.

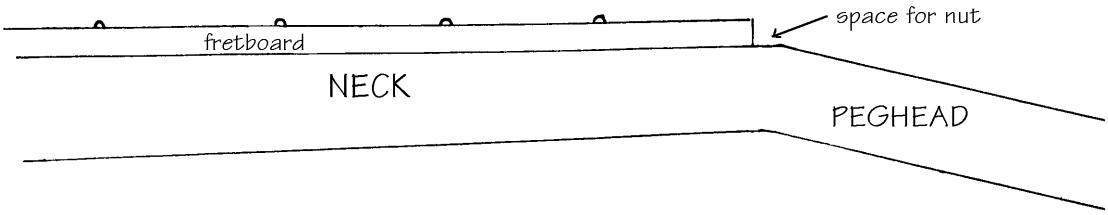
_____30. After the frets are all installed, we like to look them over very carefully to make sure each one fits all the way down against the wood. If one fret stands higher than another, it may cause buzzing problems later when playing the instrument. Try to tap it down fully into the slot. Do your best to get them all held down firmly. Later, when the FRETBOARD is installed, you'll have one more opportunity to level the tops of the frets with a file.

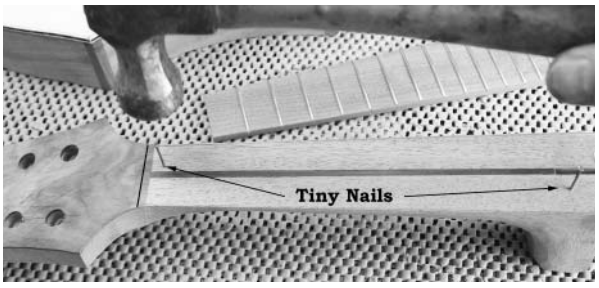
_____31. File (or sand) the ragged ends of the frets down until they are smooth and flush with the sides of the FRETBOARD. If you happen to have access to a belt sander, you'll find it very helpful for this part of the project. The fretwire is a soft metal that can easily be sanded, and a power sander does the job very quickly.

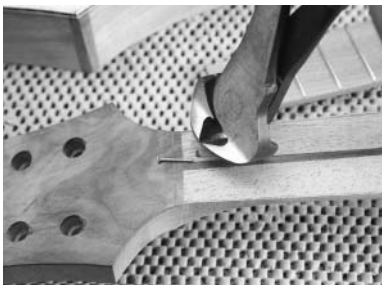


_____32. File (or sand) a 45 DEGREE BEVEL at the ends of the frets, as shown, working the file in a downward motion only, to avoid lifting the frets up.

_____33. Now you may glue the FRETBOARD to the NECK, being careful to line up the parts and leave 1/4" space for the NUT at the end by the peghead.







HINT: It helps to place two tiny nails under the fretboard (one near each end) to act as "locator pins" to keep the fretboard from sliding out of position when clamped. Clip off the heads close to the surface.

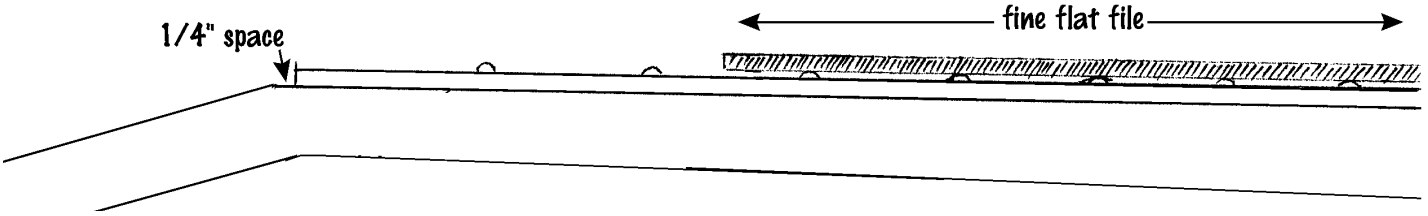
When ready, glue and clamp the FRETBOARD firmly in place so that some glue squeezes out along the seams.

DOUBLE-CHECK TO SEE THAT THE FRETBOARD DOES NOT SLIDE OUT OF PLACE AFTER THE CLAMPS HAVE BEEN APPLIED.

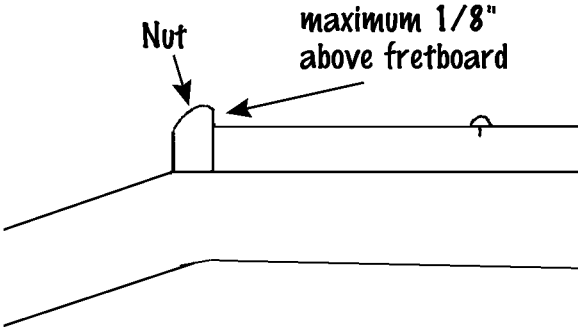
_____34. When dry, remove the clamps and sand the edges of the NECK and FRETBOARD to remove dried glue and to smooth off the playing surface.

Also, clean up any excess glue that shows on the soundboard at either side of the fretboard. We use a sharp chisel or knife for that.

_____35. Now is a good time to "level" the tops of all the frets. Use a large flat mill file, resting on the FRETBOARD, to wear down any frets that are too high. Check your progress frequently to see which frets are being cut and which ones are not. As soon as each fret has been scratched lightly with the file, you may consider them all level.



_____36. Test-fit the plastic NUT to the end of the FRETBOARD. We use a disk sander or belt sander to trim the length so the ends are flush with the NECK. We also like to cut the height and round over one edge of the NUT, as shown.



_____37. When trimmed to size, the plastic NUT can be glued to the end of the FRETBOARD. Use Superglue or epoxy for this piece.

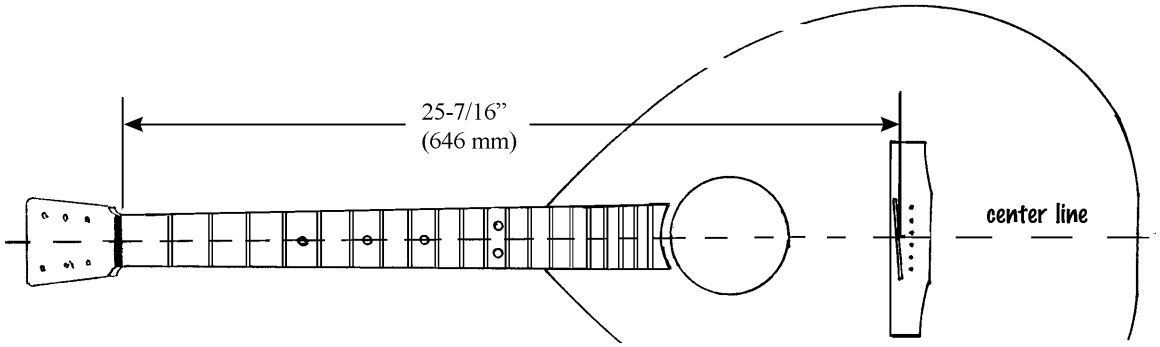
INSTALLING THE BRIDGE

_____38. Lightly draw a centerline on the top of the SOUNDBOARD in the approximate location of the BRIDGE. Mark the center point of the bridge also.

Test fit the BRIDGE to the SOUNDBOARD of the guitar, making sure that the distance from the inside edge of the nut to the middle of the plastic saddle is precisely 25-7/16" (646 mm) at the centerline.

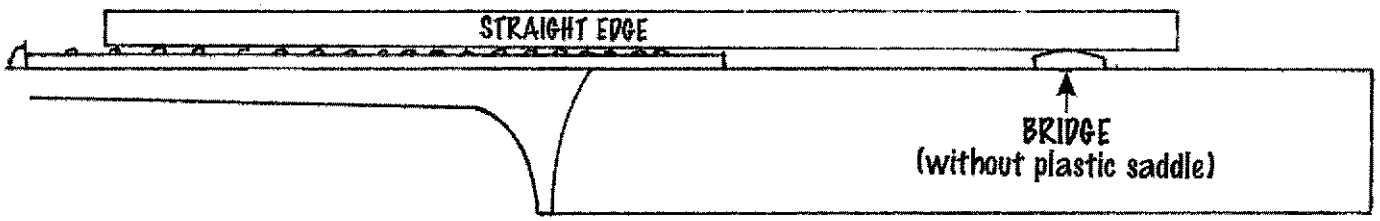
Note that the saddle is not parallel to the edge of the BRIDGE. That's OK. You are making this measurement at the center of the BRIDGE. The slight angle of the saddle is meant to compensate for the differences in the stretch of bass strings versus treble strings as they are pushed down against the frets. Use a square to make sure the front (wood) edge of the BRIDGE is perpendicular to the centerline on the SOUNDBOARD.

IMPORTANT: CHECK THE ALIGNMENT OF THE BRIDGE WITH THE FRETBOARD ALSO. THIS IS ACTUALLY MORE IMPORTANT THAN CENTERING IT ON THE SOUNDBOARD. Do this by marking the center of the FRETBOARD at each end and then laying a straightedge on those marks to see if the BRIDGE is centered on the same line. If not, MOVE THE BRIDGE! It is better to have the strings follow the FRETBOARD to an uncentered BRIDGE than to have them "fall off" one side of the FRETBOARD to a perfectly centered BRIDGE....



When you have the BRIDGE located and squared at the proper distance from the NUT, outline it in pencil so you can easily re-position it when you get ready to glue it down.

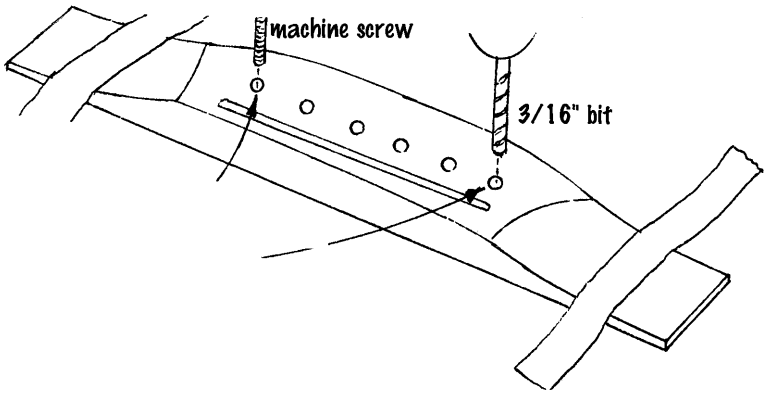
CAUTION: BEFORE GLUING THE BRIDGE IN PLACE, test the height of the BRIDGE in relation to the FRETBOARD. Lay a streaight-edge across the top of the frets and over the BRIDGE, as shown, WITHOUT THE PLASTIC SADDLE. Ideally, the BRIDGE would almost be able to slide under the straight-edge without lifting it off the frets, although a small amount of lift (1/8") is OK. If the BRIDGE is too high, sand it thinner before installing it. You can sand as much as 1/16" off the bottom and another 1/8" off the top of the BRIDGE without hurting anything.



_____39. Check the fit of the underside of the BRIDGE to the SOUNDBOARD. You may need to sand the BRIDGE to flatten it to make good contact with the soundboard all the way around.

_____40. Use masking tape to hold the BRIDGE in its proper location, as outlined on the SOUNDBOARD. Double-check your measurement to the NUT one more time, just for safety. It should be 25-7/16" (that is just 1/16" before the 25-1/2" mark) to the center of the plastic saddle in the BRIDGE. Don't make the mistake we once did of starting the measurement at the 1" mark on the ruler and ending up one inch short! The guitar will not play in tune if this distance is not accurate.

_____41. With the BRIDGE held steadily in place, use a 3/16" drill bit to drill through two of the peg holes in the BRIDGE, right through the top of the guitar, one hole at each end of the BRIDGE. Go ahead and wince as you do this -- we always do!



_____42. Test-fit the two machine screws with washers into the two holes just drilled. The wing nuts will be installed on the screws inside the body to help clamp the BRIDGE to the SOUNDBOARD when you glue it in place.

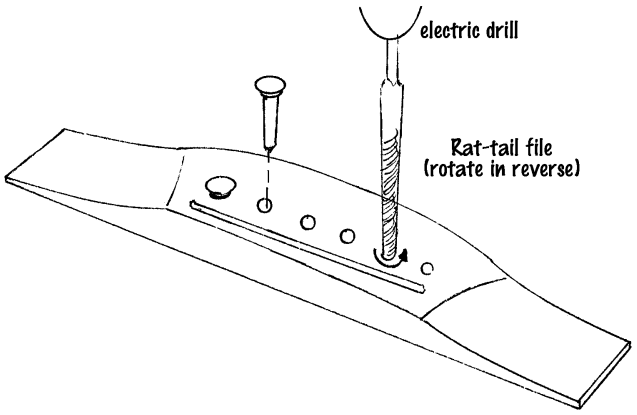
_____43. Remove the tape that is holding the BRIDGE and check carefully to see if it sits flat on the SOUNDBOARD. If you can rock it by pushing alternately on each end, then you still need to sand the underside of the BRIDGE to fit the surface of the SOUNDBOARD.

_____44. When finally satisfied with the fit of the BRIDGE, glue it to the SOUNDBOARD, using the two machine screws and wing nuts to clamp it down firmly. Make sure there is enough glue so that a little squeezes out around the BRIDGE when clamped. We like to add more clamping pressure to each ends of the BRIDGE, using two long (6-1/2" reach) Cam Clamps. This will ensure a permanent glue joint. If you don't have clamps that will reach, just place some weights on each end of the BRIDGE.

When the glue has begun to set up (after about 30 minutes), use a sharp chisel to remove the excess that squeezed out around the BRIDGE.

_____45. After the BRIDGE is dry, you can drill through the remaining holes for the BRIDGE PEGS, using the same 3/16" drill bit.

_____46. The holes in the BRIDGE must now be tapered slightly to fit the BRIDGE PEGS. We use a small (6") rat-tail file for this task. The simplest method is to chuck the file into your electric hand drill and run it in reverse as you push the file into the holes in the BRIDGE. Test the size of the holes frequently by inserting one of the BRIDGE PEGS to see if it fits snugly all the way in.



FINAL SANDING AND FINISHING

_____47. Clean up any glue residue around the entire guitar. Nothing points to an amateur woodworker more than a project with glue blobs and fingerprints on the surface. They are difficult to see now, but will stand out prominently after applying the finish. We recommend wiping the guitar with a clean damp rag to help highlight them.

Use sandpaper, a sharp chisel, knife, or scraper to remove all glue residues.

_____48. Sand the entire instrument with about a 180-220 grit abrasive to smooth out all surfaces so they feel good in your hands. We like to knock off the sharp edges of the edge banding slightly too.

WA-LA! YOUR GUITAR IS READY FOR THE FINISH. HERE ARE A FEW SUGGESTIONS FOR SELECTING A NICE-LOOKING COAT TO PROTECT YOUR HANDIWORK AND TO ENHANCE THE BEAUTY OF THE WOOD.

STAIN -- Stains are coloring agents and should only be used if you dislike the natural color of the wood. We usually do not apply stains to our projects, especially when they are made with naturally beautiful hardwoods such as cherry or walnut. These woods look very nice with just a clear finish. But, if you want to color the wood differently, your staining should be accomplished before applying a surface finish such as oil, varnish, or lacquer.

OIL -- An oil finish will give your wood a low luster appearance, bringing out the natural color of the grain, but it tends soak into the wood and to appear dry and "thirsty" after awhile. The principal advantage of an oil finish is that it can be applied and wiped dry immediately, so you can proceed to installing hardware (and strings) right away. The disadvantage of oil is that it usually does not give much surface protection or sheen, although there are some brands that include waxes and/or varnishes to give more surface build-up and luster.

VARNISH -- Any regular varnish will work fine on this project, but we recommend our wipe-on polyurethane called MUSICMAKER'S INSTRUMENT FINISH. Our finishing kit includes detailed instructions, sandpaper sheets, foam applicator, and a half-pint can of satin wipe-on gel urethane varnish. The advantages of this finish are its simple application, durability, and deep, soft luster.

LACQUER -- Many professional instrument makers still use lacquer for their finish. The most readily available lacquer is called Deft Clear Wood Finish. It is best to purchase a can of liquid to brush on as a sealer coat first, and then use an aerosol can of the same product to spray on the final coats. The advantage of this finish is its quick drying time, but the disadvantage is the strong odor of the toxic lacquer fumes.

_____49. Apply your finish to the entire guitar except for the top of the FRETBOARD (which can be lightly oiled later). We recommend masking off the FRETBOARD before beginning.

We also suggest stuffing some newspaper into the soundhole to catch any drips or spray that might get into the inside of the guitar body. No sense letting this thing look sloppy....

Don't forget to finish the little TRUSS ROD COVER plate too!

Sand between coats with fine (600 grit) sandpaper or steel wool (consult instructions on the can for drying time).

If you want to change the sheen of the finish after it dries, you can dull it slightly by rubbing with 0000 steel wool or with a Scotchbright scrubber. We often follow this procedure with a coat or two of paste wax (the same product that you would use on a wood floor) to bring out a nice shine.

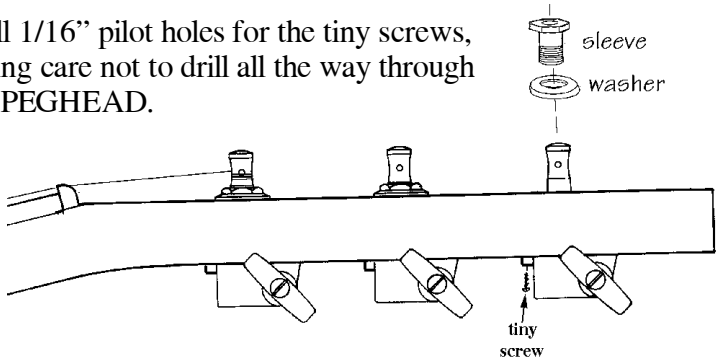
_____50. Now you can remove the masking tape from the FRETBOARD and coat it lightly with some oil. We use boiled linseed oil or tung oil for this.

_____51. This is also a good time to install the TRUSS ROD COVER plate. Use a 1/16" drill bit to make pilot holes for the three mounting screws. NOTE: We like to "finger-tighten" the truss rod nut so it does not vibrate loose.

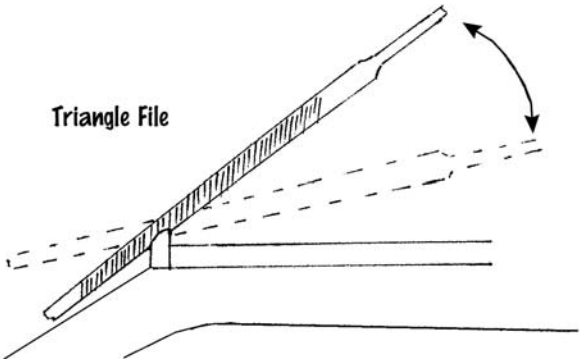
INSTALLING HARDWARE AND STRINGS

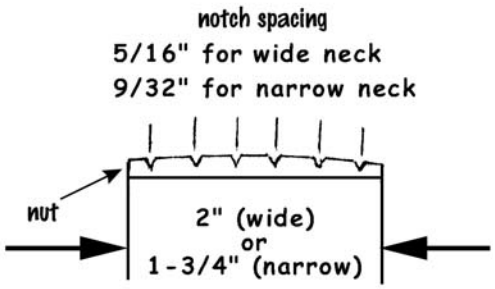
_____52. Install the individual GEARED TUNERS to the PEGHEAD, as shown, taking note that three are meant for the right side and three for the left.

Drill 1/16" pilot holes for the tiny screws, taking care not to drill all the way through the PEGHEAD.



_____53. Use a triangle file to cut notches in the NUT for the strings, as shown. Note that the notch spacing will depend on the final width of the neck. You may make slight adjustments to the dimensions given here. File these notches in a slight curve so the strings will follow an easy rounded corner from the PEGHEAD to the FRETBOARD. This will minimize string breakage.

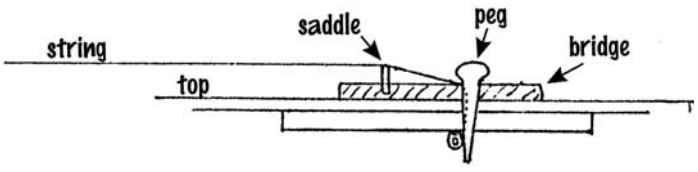




_____54. Make sure the plastic saddle is in the BRIDGE. We will test its height by installing one string.

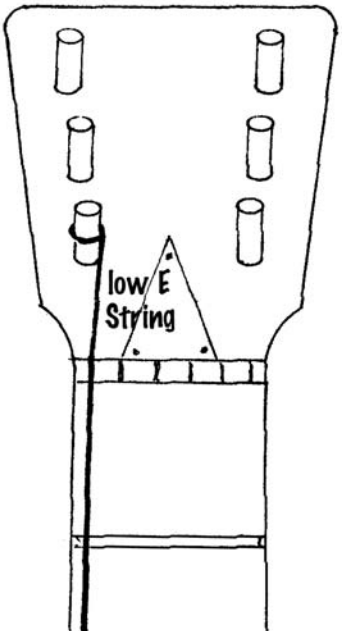
_____55. Fasten just one string (the heavy "E" - 6th string) to the bridge as follows:

a) Push the "ball" end down into the hole so the ball is inside the guitar.



b) Insert one plastic peg, oriented so the groove in the peg shaft lines up with the string.

c) When properly installed, the peg shaft should prevent the ball end from pulling back up through the hole.



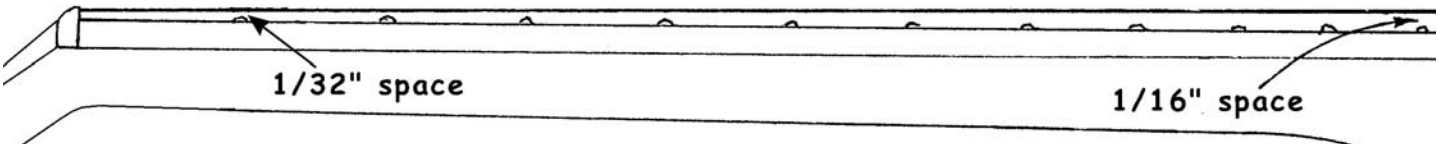
d) Thread the other end of the string through the hole in the first geared tuner (closest to the "nut" on the left side) and turn the button to wind the string until it is tight enough to vibrate clearly. **Be sure to wind the string to the inside of the post, as shown**.

_____56. Check the height of this string above the frets. Initially, you should set up the strings so they clear the frets by about 1/16" at the first fret (near the PEGHEAD), and about 3/16" at the 12th fret.

Sight down the FRETBOARD to make sure it has no bow to it. You can adjust that by tightening or loosening the TRUSS ROD, using the allen wrench provided. Tightening the rod pulls the PEGHEAD backward, loosening the rod allows the string tension to pull the PEGHEAD forward (although it may take some time for the strings to accomplish this).

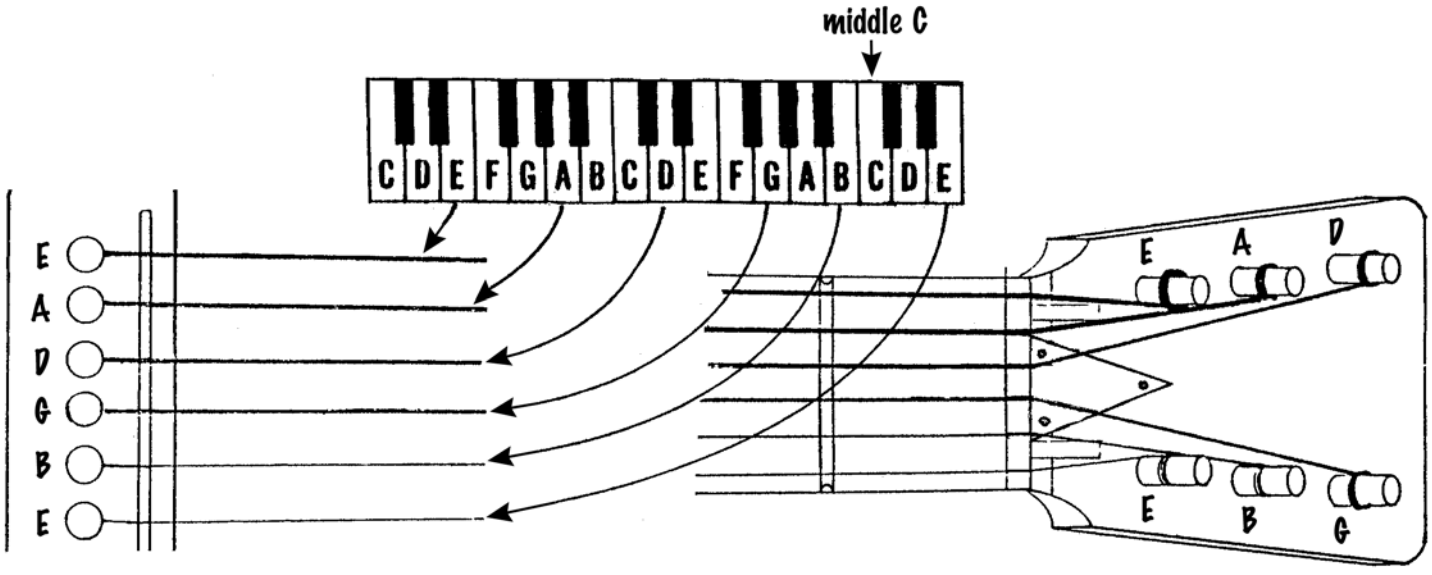
Once the FRETBOARD is straight, you can adjust the 1st fret clearance more precisely by filing down the groove in the NUT where the string rests, but be careful not to file too far. The only way to raise the string at that position is to remove the nut and glue a shim underneath it.

You can adjust the height of the string over the 12th fret by raising or lowering the plastic saddle in the BRIDGE. Lower it by removing the saddle and sanding the bottom of it, or raise it by placing a thin shim underneath the saddle.



Your style of playing will dictate how low to adjust the string action. Heavy strumming requires rather high action to avoid excessive buzzing or rattling, whereas light finger picking is easier with low action. Most people find the guitar easier to play with low action, so we set the strings to about 1/32" (thickness of matchbook cover) above the first fret, and about 1/16" above the 12th fret.

_____57. When you are satisfied with the height of that first string, go ahead and install the other five strings in the same way. Tune them to the pitches shown.



FINE ADJUSTMENTS AND TROUBLESHOOTING

_____58. There may still be some fine adjustments needed to make your guitar work its best. Test each string by plucking it with one hand while you press it down at each playing position (fret) along the neck. Here is what to check for:

a). If the string is difficult to push all the way to the fretboard, it is too high. Filing the grooves deeper in the nut will lower the string at the head end, and sanding the saddle in the bridge will lower the strings near the middle of the guitar.

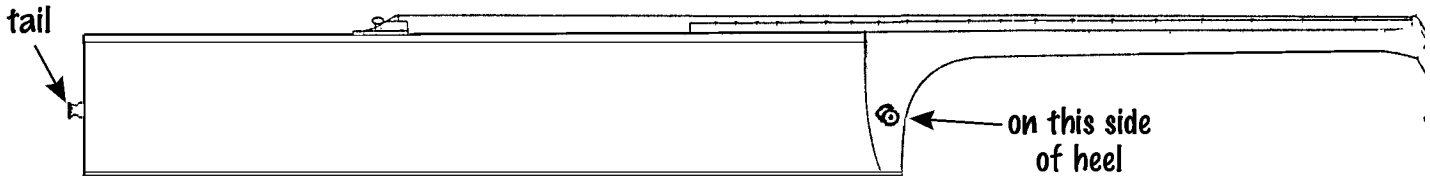
b). If a string buzzes when plucked in the OPEN POSITION ONLY (when not held down to a fret), then the notch in the NUT is too deep. Raise the entire NUT by gluing a shim underneath it.

c). If your strings buzz and rattle in general as you play, sight down the FRETBOARD first. Some seasonal changes may cause it to bend backward. Loosen the TRUSS ROD to allow the strings to pull the NECK forward. You may also shim up the saddle in the BRIDGE to raise the strings a little higher, or change to heavier gauge strings to exert greater tension on the NECK.

d). If a string rattles or buzzes at just one or two positions (frets), or if you discover that two or three frets all give the same pitch, then look for a fret that stands up higher than its neighbors. You will need to either tap that fret back down into its proper slot in the fretboard or use the long flat file to level the tops of the frets some more. Just loosen the strings, lift them out of the grooves in the nut, and hold them along either side of the fingerboard as you work the file lengthwise along the tops of the frets. You can easily see which frets are the highest, as they are the ones that receive the most filing.

OPTIONAL ACCESSORIES

_____59. If you wish to attach a strap to your guitar, you can install mounting buttons in the locations shown here. Use a 7/64" drill bit for pilot holes for the mounting screws.



_____60. You may apply a plastic pick guard to the SOUNDBOARD to protect the finish from the scratching action of strumming with a pick. Pick guards come with self-adhesive backing so they stick to the finished instrument.

_____61. We also offer a precision cut Wooden Rosette that can be glued over the soundhole to give the instrument a more authentic Renaissance Lute appearance. We like to glue it with only a few dots of "5 Minute Epoxy" on the rim of the soundhole in case you ever want to pop it off again for access to the inside of the instrument.

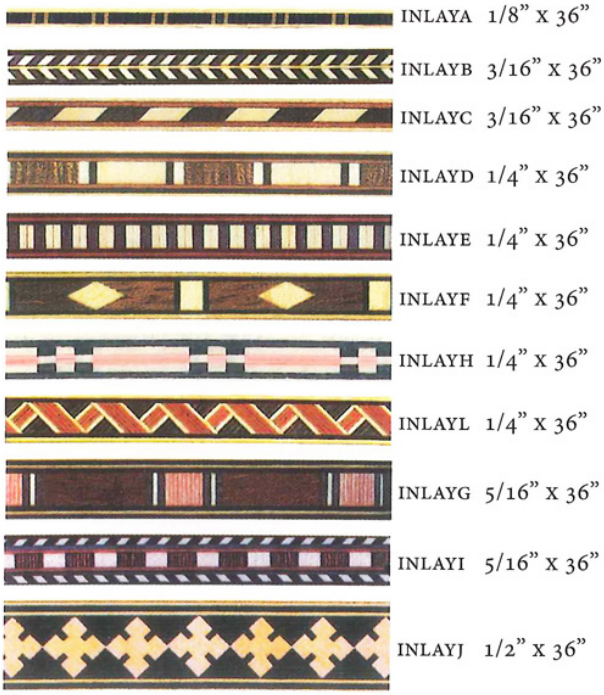
CONGRATULATIONS! We hope you have enjoyed building this guitar and that you receive many years of musical pleasure from it. Don't hesitate to contact us for any further help that you may need. We also appreciate hearing suggestions and hints that you think might help another kit-builder in the future. Thank you.

ACCESSORIES AVAILABLE FOR GUITAR

Please see our current catalog or web site for pricing (harpkit.com)

FINISHKIT	Musicmaker's finishing kit
GUITSTRG	Spare set of 6 steel strings
GUITSTRGNY	Spare set of 6 nylon strings
STRAP-2	Guitar strap with 2 mounting buttons
RENBAG	Padded carrying bag for Renaissance Guitar
Wood Rosette	You'll need our jumbo size (4-1/4" dia)
Pick Guard	Contact us for availability

Customize your project with inlay banding (harpkit.com/inlays)



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