

BARITONE UKULELE TENOR GUITAR



Musicmaker's Kits

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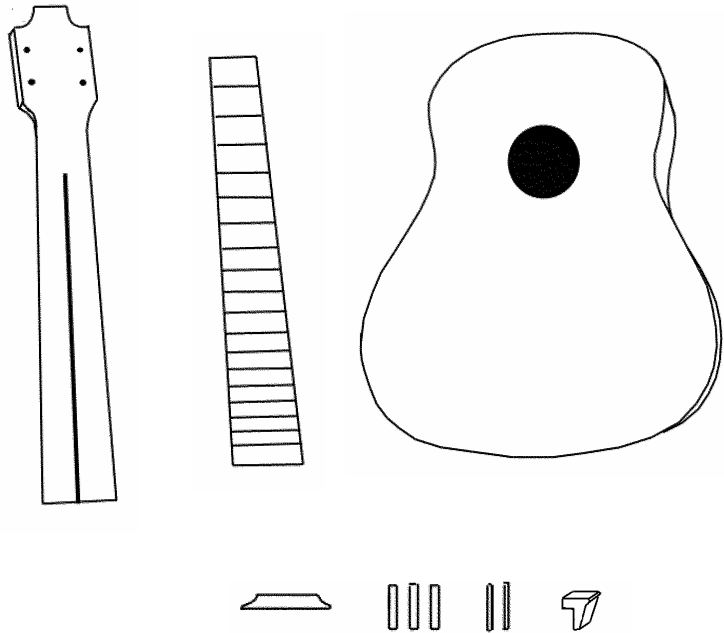
Ukulele kit

Wood Parts:

- a - Neck**
- b - Body**
- c - Fretboard**
- d - Tail Piece**
- e - Bridge**
- f - 3 dowels, 1/4" dia**
- g - 2 dowels, 1/8" dia**

Hardware Parts:

- 4 - Covered geared tuners**
- 4 - Sleeves**
- 8 - Tiny screws**
- 4 - Pearl dots**
- 1 - Set of 4 nylon strings**
- 1 - Set of 4 steel strings**
- 1 - Black plastic pick guard**
- 1 - Black plastic Nut material**
- 1 - Steel brace (in neck)**
- 2 - tiny nails**
- 1 - end button for strap**
- 1 - Assembly Instructions**



A NOTE ABOUT GLUE

We strongly recommend that you use a modern woodworking glue for this project. Aliphatic resins (such as Elmer's Carpenter's Wood Glue or Titebond I) are best because they hold the parts more securely than the old animal glues of yore. DO NOT assemble the wood parts of this project with hot melt glue, which does not adhere well, or with epoxy, which would be impossible to get apart later if you needed to disassemble the instrument. The yellow colored Elmer's or Titebond is best.

Yes, many luthiers (instrument 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 should do the same. The experts who use hide glue effectively are careful to cook up each batch to their own specifications from a high grade of granules. We have found the prepared liquid hide glues on the market to be inferior for this project.

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....

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.

___ 2. We also suggest skimming through the entire directions before beginning, just to get an overview of the project. You may want 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. Here are a few of the small items you'll want to have on hand:

sharp chisel
masking tape
straight-edge

wire cutter
razor knife
3 or 4 c-clamps

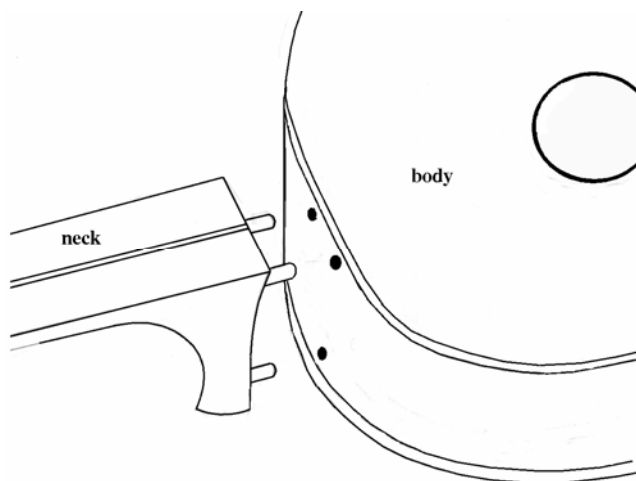
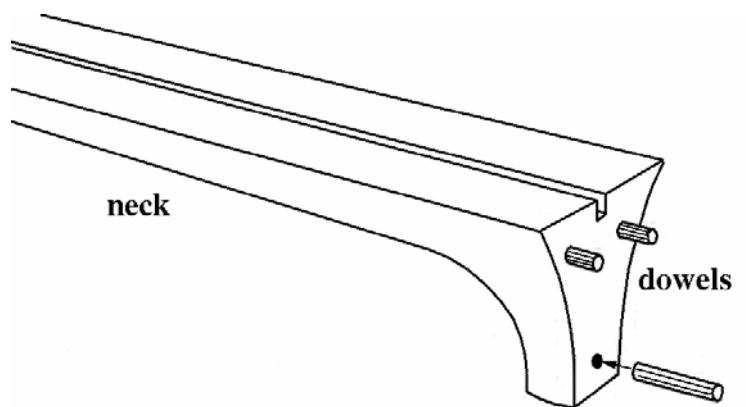
damp rag
triangle file
electric hand drill

(OPTIONAL) We provide this instrument with a generous neck width to accommodate large hands. If you wish to narrow the NECK and FRETBOARD to match other Ukuleles you own or have seen, this is a good time to accomplish that. Just take care to keep the parts symmetrical. Use a coarse sanding block to remove an equal amount of material from each side of the FRETBOARD so the marking dots remain centered. Also be sure to restore the beveled ends of the frets with a medium or fine sanding block so the edges of the FRETBOARD are nice and smooth for sliding your hand while playing.

GLUING THE NECK TO THE BODY

___ 3. Glue three 1/4" dowels into the heel of the NECK, as shown. Use a damp rag to wipe off excess glue that drips out around the dowels. Allow 30 minutes drying time before proceeding.

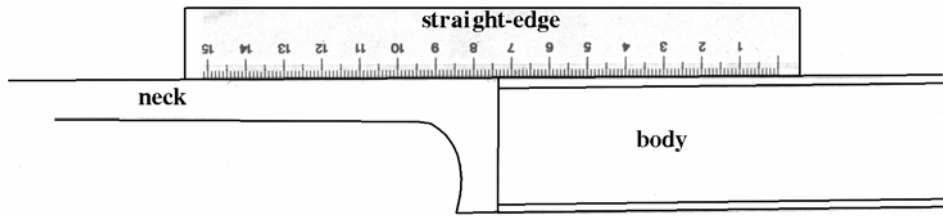
___ 4. Test fit the NECK to the BODY without glue first. If the dowels do not line up perfectly with the holes in the body, use a sharp knife or chisel to pare one or more of them down to achieve a good fit. Take care to see that the NECK will end up level with the top of the BODY, and straight.



If the NECK does not make complete contact with the BODY, you'll need to sand the surfaces to achieve a good fit.

___ 5. When satisfied with the fit, glue the NECK to the BODY, carefully pushing the parts completely together. Clean off excess glue with a damp rag, scrubbing carefully to avoid having a thin film of glue on the exposed surfaces of wood.

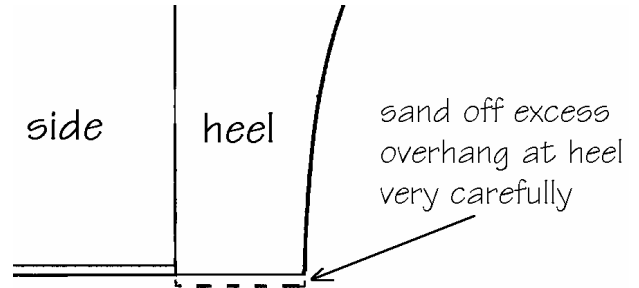
Use a straight-edge to double check that the NECK remains level and straight with the BODY, as shown.



You should be able to let this glue joint dry by simply standing the Uke on the work table for 30 minutes. If you need some clamping pressure, use masking tape help hold the parts together.

___ 6. Check over the body of your Uke to make sure there is no loose binding around the edges. Work some Superglue into the gap and use masking tape to pull the binding back in place, as necessary.

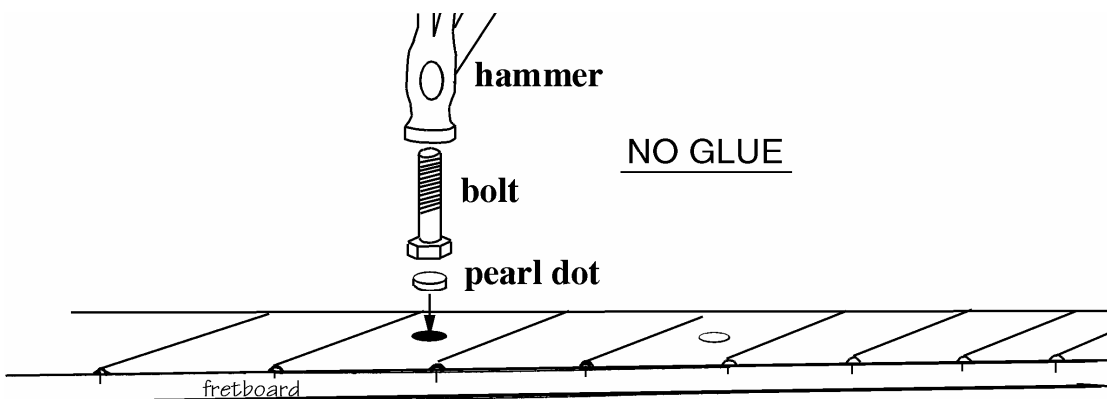
___ 7. Now that the NECK is permanently installed, you can sand off the excess material at the bottom of the HEEL. Be careful not to sand through the outer veneer of the BACK panel! We recommend placing a strip of masking tape on the BACK so that you will see when your sanding block comes close to touching that thin veneer.



___ 8. Be sure the Steel Reinforcement Rod is fully seated in the NECK. If it stands above the surface of the NECK, just use a hammer to tap it down flush.

PREPARING THE FRETBOARD

___ 9. The FRETBOARD is already drilled for round pearl marking dots. Use a hammer to tap the pearl pieces into the holes *without glue*, so as to avoid making a mess. It might be helpful to use a large bolt or other hard material to help tap the dots down until fully flush with the surface, as shown. Take care not to mar the playing surface, because you want to avoid sanding the fretboard – it is just painted hardwood.



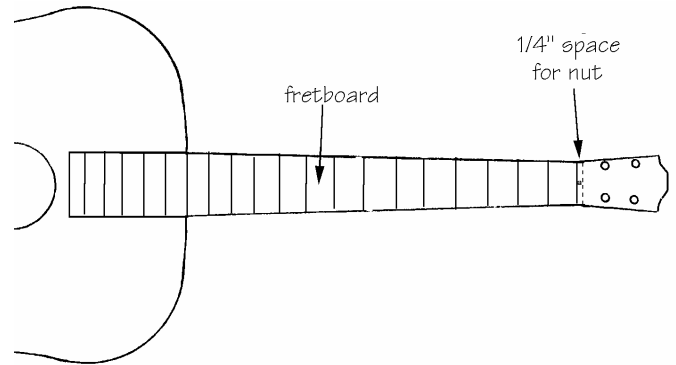
NOTE: The pearl dots fit quite tightly in the pre-drilled holes, so they will stay put without glue. Try to get them level with the surface of the wood, so you don't have to sand the area. Sanding will remove the black paint on the fretboard.

10. Special care must be taken as you prepare to glue the FRETBOARD to the NECK. Read this entire step before proceeding:

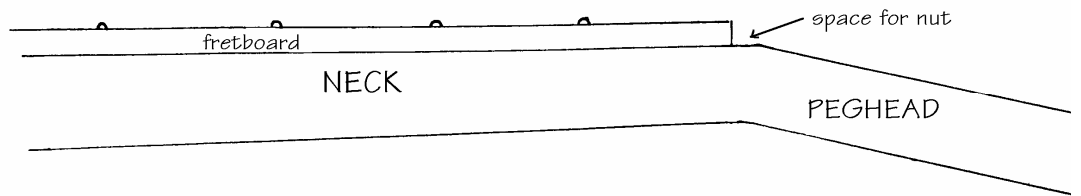
- a) Test-fit the FRETBOARD to the NECK. The narrow end of the FRETBOARD should begin about 1/4" from the point where the PEGHEAD angle begins, to allow space for the PLASTIC NUT. Make pencil marks to help you re-position the parts accurately when clamping.

NOTE: We like to darken the laminated edges of the FRETBOARD with dark stain or a black marking pen before varnishing over it. It looks sharp with dark edges.

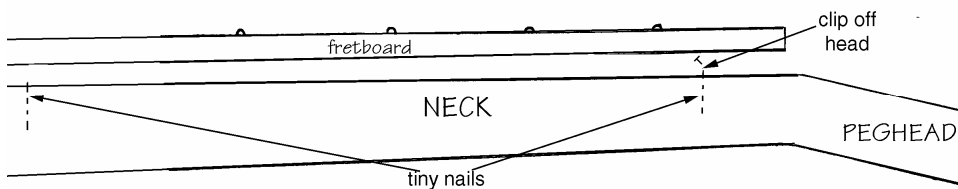
- b) Check the surface where the fretboard will be glued with a straight-edge. If this area is not flat, then the playing surface of the FRETBOARD will not be flat, and that could cause a problem for playing the finished instrument. To correct the problem, you can either sand the surface with a long flat sanding block (being careful not to sand through the thin veneer of the Body), or find some thin wood to use as a shim under the FRETBOARD wherever needed. Taking the time to do this will ensure that your instrument plays easily.



- c) One helpful technique for preventing the FRETBOARD from sliding out of position when clamped (the glue makes it slippery) is to insert a "barb" near each end of the fretboard. Do this by

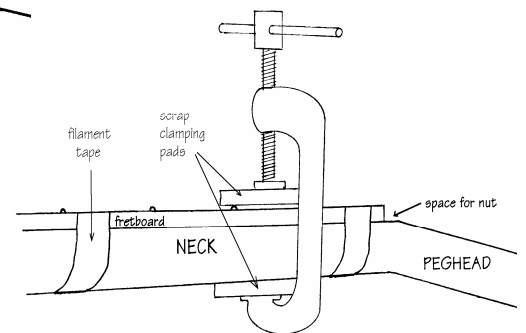


by pounding a tiny nail (included) into the NECK and clipping off the head so that only a short barb sticks up to poke a dent in the FRETBOARD. This will be enough to keep the parts from sliding around as you clamp them together.



Gather enough clamps and filament tape to hold the FRETBOARD in place while the glue dries. Plan your clamp placement ahead of time and pad your clamps with scrap wood to avoid denting or scratching the FRETBOARD or the NECK.

- d) Now apply glue to the FRETBOARD and position it on the NECK. Wrap tape around the NECK and FRETBOARD first to hold the parts in position. Then add clamps to press them firmly together along the entire length.



DOUBLE-CHECK TO SEE THAT THE FRETBOARD DOES NOT SLIDE OUT OF PLACE AFTER THE CLAMPS HAVE BEEN APPLIED. Also look for any gaps in the joint. Apply more clamps or tape, as needed.

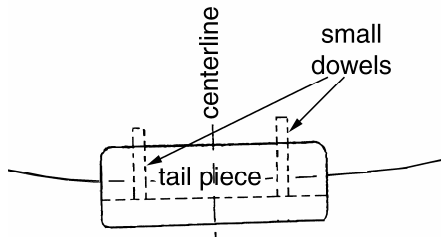
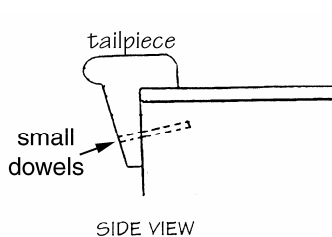
___11. When dry, remove the tape & clamps and smooth off the seams. You can sand the edges of the fretboard, but if you sand the ends of the metal frets, you'll want to restore the bevel that was there originally, to make it easy to slide your hand along the edge of the **FRETBOARD.**

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.

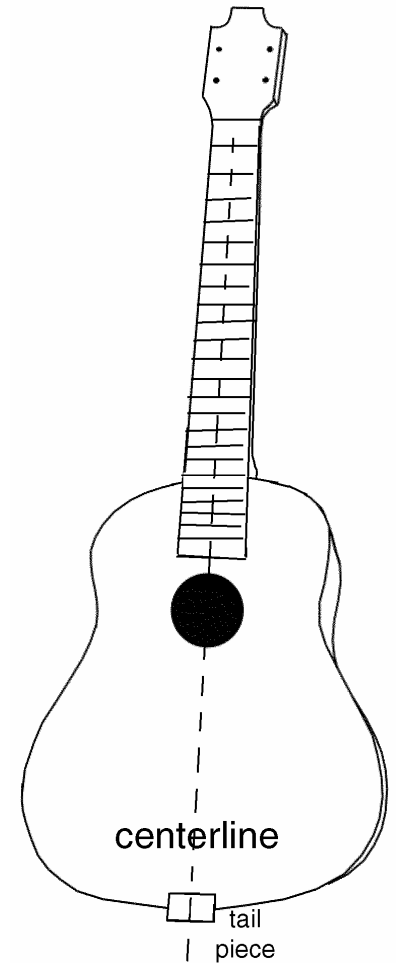
INSTALLING THE TAILPIECE

___12. Find the center of the tail end of the instrument by laying a straightedge down the center of the **FRETBOARD,** as shown.

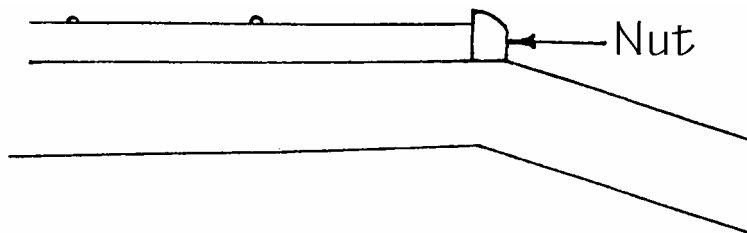
___13. Glue the **TAILPIECE** to the end of the body, centering it on the line you just drew. Use strong tape to hold it until dry.



Once the **TAILPIECE** is glued, you need to reinforce it with two small dowels. Use a 1/8" diameter bit to drill two holes for the dowels at a slight angle, as shown. Then glue the dowels in place and trim them flush with the **TAILPIECE.** 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.



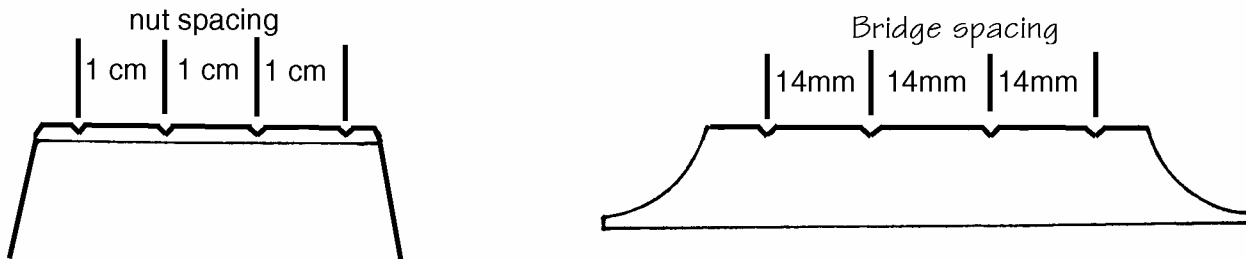
___14. Test-fit the plastic **NUT** to the end of the **FRETBOARD.** We use a disk sander or belt sander to trim the length so the ends are flush with the **NECK.** We also like to round over one edge of the **NUT,** as shown.



The top of the **NUT** need only be a little more than 1/16+" above the **FRETBOARD.** If it is much higher than that, you will have to file deeper notches for the strings later.

___15. When trimmed to size, the plastic NUT can be glued to the end of the FRETBOARD. Use Super Glue or 5-minute epoxy for this piece.

___16. Use a triangle file to cut notches in the NUT and the BRIDGE for the strings, as shown. These notches should be shallow at this point. You will cut them deeper as needed after installing the strings. If you narrowed the FRETBOARD considerably, you may reduce this spacing, as needed, to fit your instrument.



FINAL SANDING AND FINISHING

___17. Clean up any glue residue around the entire instrument. 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 you find them.

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

___18. Sand the entire instrument (except for the top of the FRETBOARD) with about a 220 grit sandpaper to smooth out all surfaces so they feel good in your hands. We like to knock off the sharp edges of the plastic edge-binding slightly too, just by sanding it a little.

WA-LA! YOUR INSTRUMENT IS NOW 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 INSTRUMENT.

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. 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. We like good quality oil-based stains or alcohol-based aniline dyes for darkening the wood without obscuring the grain. Our 3-color powdered dyes (code *FINI-40*) can be mixed with denatured alcohol to the desired shade. The advantage of these dyes are quick drying time, deep colors, even penetration, and the opportunity to create a "sunburst" shading effect.

OIL -- An oil finish will give your wood a low luster appearance, bringing out the natural color of the grain, but it tends to soak into the wood and 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 complete finishing kit (code *FINI-20*) includes detailed instructions, sandpaper sheets, tack cloth, foam applicator, and lint-free wiping cloth, along with a pint can of semi-gloss polyurethane varnish. The advantages of finish are its simple application, durability, and deep, soft luster. It also works well in conjunction with our Heat Transfer decorations.

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. **CAUTION:** Lacquer finish will not work over our Heat Transfer decorations -- it dissolves the toner.

___ **19. Don't finish the top surface of the FRETBOARD. It is already finished.**

We also suggest stuffing some newspaper into the soundhole to catch any drips or spray that might get into the inside of the body. Sand between coats with fine (600 grit) sandpaper or steel wool. Consult instructions on the can for proper drying time.

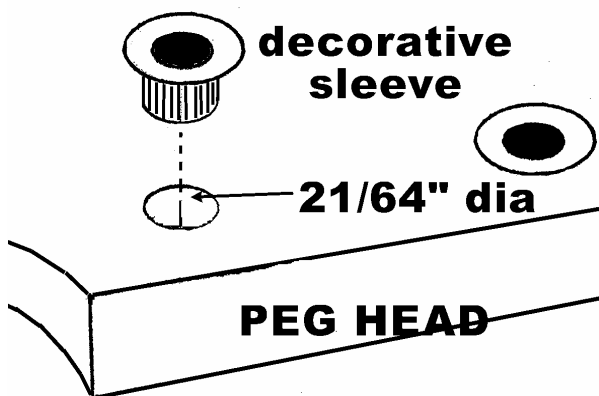
OPTIONAL DECAL RING: You may add the decal ring around the soundhole for decoration if you like. Soak the decal in warm water for 30 seconds and then slide it into place around the hole. After it is thoroughly dried, you can varnish over it for protection.

___ **20. If you want to change the sheen of the finish after it dries, you can smooth it out 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.**

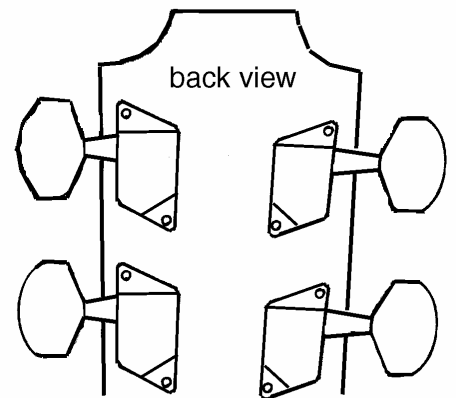
OPTIONAL PICK GUARD: The plastic pick guard is self-adhesive. When you are completely done finishing the instrument, you may peel off the protective backing and put the pick guard in place.

INSTALLING HARDWARE AND STRINGS

___ **21. Now you can remove the masking tape from the fretboard and install the individual GEARED TUNERS to the PEGHEAD, as shown. Note that two are meant for the right side and two for the left.**



Push the decorative sleeves into the holes from the front side, and then position the geared tuners as you like them. Use a $1/16$ " bit to drill pilot holes for the tiny screws, taking care not to drill all the way through the PEGHEAD.

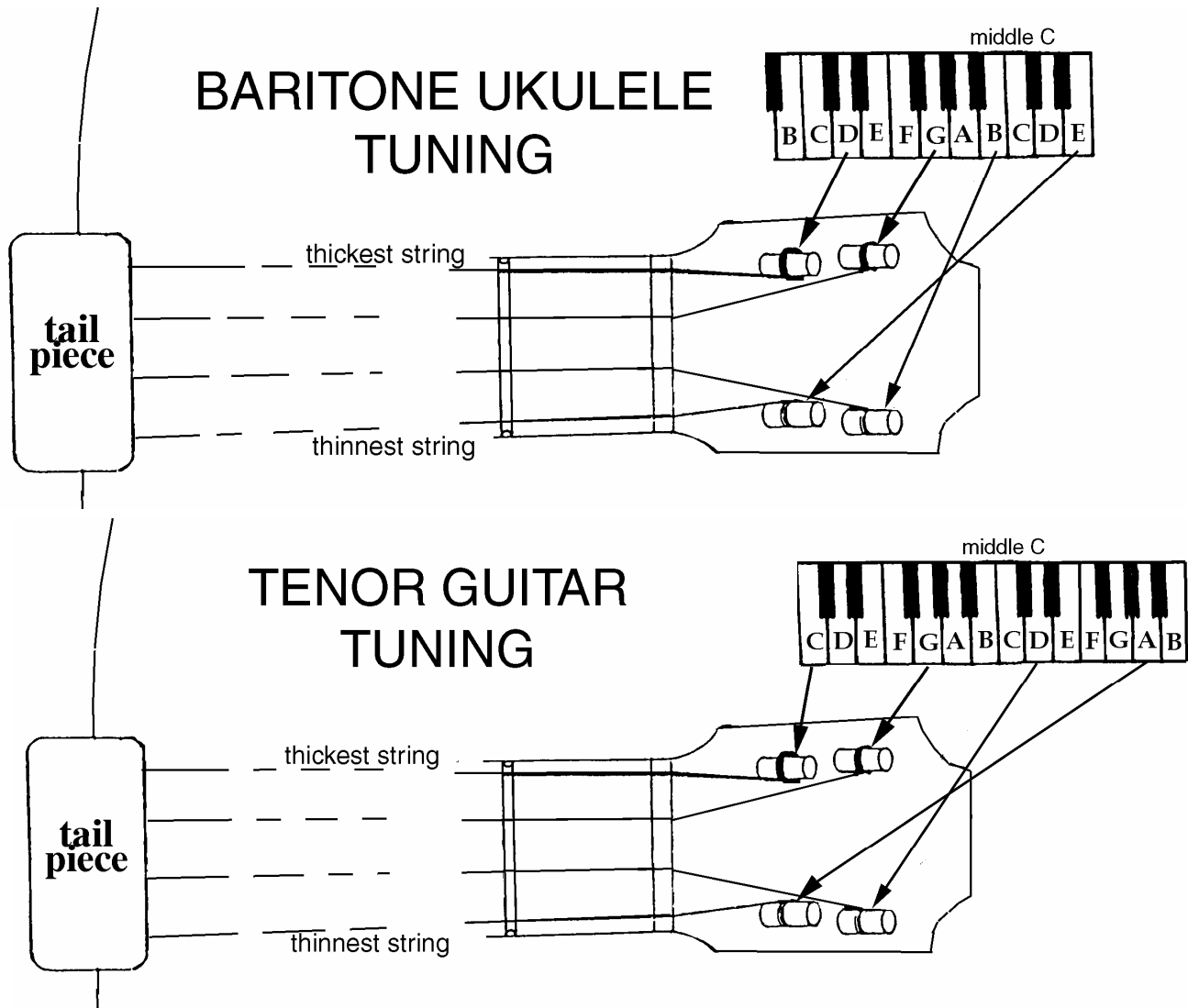


___22. You may use either nylon strings or steel strings on this instrument and tune it like a baritone ukulele or a tenor guitar. We have provided both sets of strings for you to try, and the instructions below show both tunings.

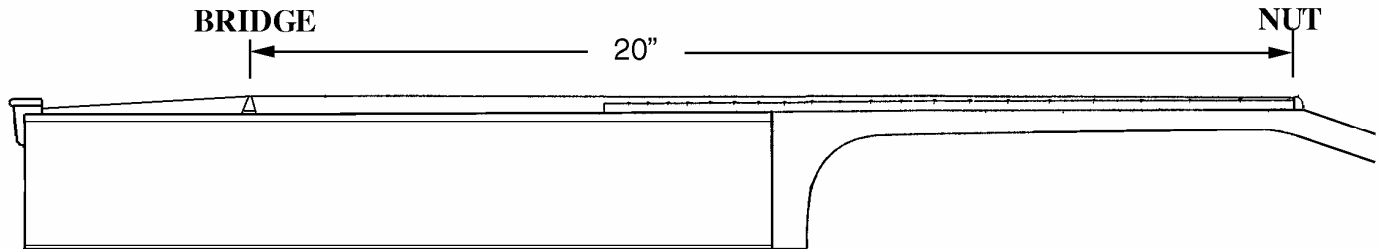
Typically, a Baritone Ukulele is strung with nylon strings and tuned the same as the top four strings of a guitar (D-G-B-E). A Tenor Guitar is usually string with steel strings and tuned in fifths like a Mandola (C-G-D-A). You may use either strings at either tuning on this instrument.

Install the strings as follows for normal right-hand playing (reverse the order for left-hand playing):

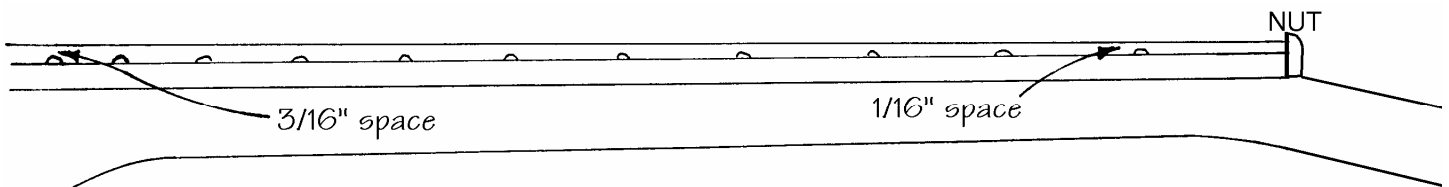
- a) Thread the strings through the TAIL PIECE in the order shown on the string package (#1 is the thinnest string and #4 is the thickest). Pull the strings until the bead contacts the wood of the TAIL PIECE
- b) Thread the strings through the holes in the corresponding geared tuners and turn the buttons to wind the strings until the slack is taken up. Note that we like to have all the strings pass to the inside edge of the tuning posts, as shown.



c) Place the BRIDGE under the string at its approximate location (about 20" from the NUT), and tighten the strings up to pitch.



d) 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.



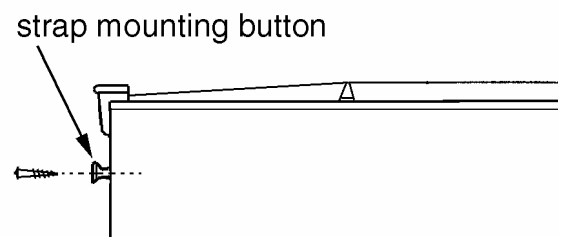
e) You can adjust the 1st fret clearance more precisely by filing down the groove in the NUT where the string rests, but be careful not to file too far. The only way to raise the string at that position is to remove the nut and glue a shim underneath it.

f) You can adjust the height of the string over the 12th fret by filing deeper notches in the BRIDGE. If you go too deep, you can raise it by shimming the bottom of the BRIDGE or by gluing a tiny scrap of wood into the notch with superglue and then filing the notch again.

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 it easier to play with low action, so we set the final height to about 1/32" (thickness of matchbook cover) above the first fret, and about 1/8" above the 12th fret.

___ 23. Check the accuracy of the BRIDGE position by fretting the strings at the 12th fret and checking the note against the open string. The 12th fret should sound a perfect octave above the open string. If the note at the 12th fret is higher than it should be, slide the bridge toward the tail end of the instrument a little bit. Vice versa if the fretted note is too high.

___ 24. If you wish to attach a strap to your guitar, you can install mounting buttons in the locations shown here. Use a 3/32" drill bit for a pilot hole for the mounting screw. The other end of the strap will be tied to the peghead.



___ 25. Add the black PICK GUARD near the sound hole if you wish to protect the top from being scratched by playing with a pick.

TROUBLESHOOTING

There may still be some fine adjustments needed to make your instrument play 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 underside of the BRIDGE will lower the strings at the other end.

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 -- the string is probably buzzing against the first fret. You'll need to loosen the strings, knock the NUT loose and glue it back with a thin shim under it (even just gluing it back again will raise it a little because of the additional layer of glue build-up).

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. You may lift the strings a little higher by glueing a thin veneer shim underneath the BRIDGE.

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 slot in the fretboard or use a long flat file to level the tops of the frets. 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.

CONGRATULATIONS! We hope you've enjoyed the building process and that you receive many years of musical pleasure from the finished product. 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 a future kit-builder.

ACCESSORIES AVAILABLE FOR THIS INSTRUMENT

<u>code</u>	<u>description</u>	<u>price</u>
FINIISHKIT	Musicmaker's finishing kit	\$15.95
UKESTRGNY	Spare set of 4 nylon strings (Baritone Uke)	4.95
UKESTRGST	Spare set of 4 steel strings (Tenor Guitar)	4.95
STRAP-2	Guitar strap with mounting buttons	10.00

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