



Musicmaker's Kits Inc.

Hwy. 36 behind Joseph's Restaurant

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Stillwater, MN 55082

(651) 439-9120

www.harokit.com

1 set of assembly instructions

Wood Parts:

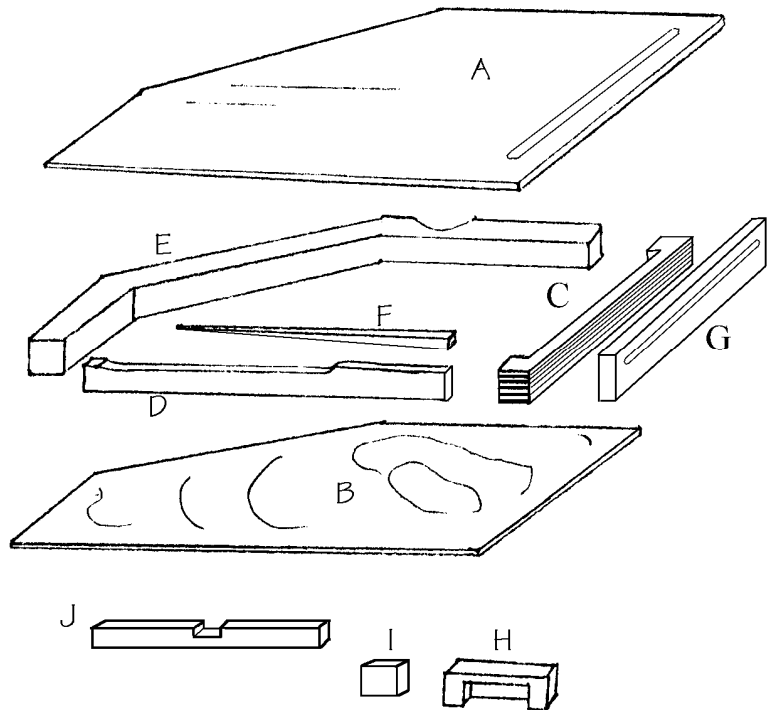
- a. 1 Redwood soundboard
- b. 1 Plywood back
- c. 1 Laminated tailblock
- d. 1 Laminated straight side
- e. 1 Laminated curved side
- f. 1 Bass bar
- g. 1 Cherry Tailpiece
- h. 2 Cherry chord bar covers
- i. 15 Cherry chord bar buttons*
- j. 15 Cherry chord bars
2 Chord bar test blanks

*packed with hardware

Hardware parts:

- 38 Tuning pins
- 38 Guide pins
- 1 Flatpick
- 1 Set of 38 strings
- 30 springs
- 4 Protector feet
- 60" black delrin rod
- 1 Brass bridge tube
- 2 Threaded rods (3" long)
- 2 Brass Knurled nuts
- 2 Small washers
- 15 Ft chord bar padding
- 1 Ft thin felt padding
- 1 Sheet chord bar markers
- 1 L-handle tuning wrench
- Drill bits, 1 each - 1/8, 3/16, 5/32

**AUTOCHORD
UNASSEMBLED KIT**



PRELIMINARY CAUTION

BE VERY CAREFUL WHEN HANDLING THE REDWOOD SOUNDBOARD IN THIS KIT. IT IS VERY SOFT AND SUSCEPTIBLE TO DENTS AND SCRATCHES.

I RECOMMEND HAVING A SOFT TOWEL OR SCRAP OF CARPETING HANDY ON YOUR WORK TABLE FOR PADDING. THEN YOU NEED NOT WORRY ABOUT SCRATCHING OR DENTING YOUR INSTRUMENT AS YOU WORK ON IT.

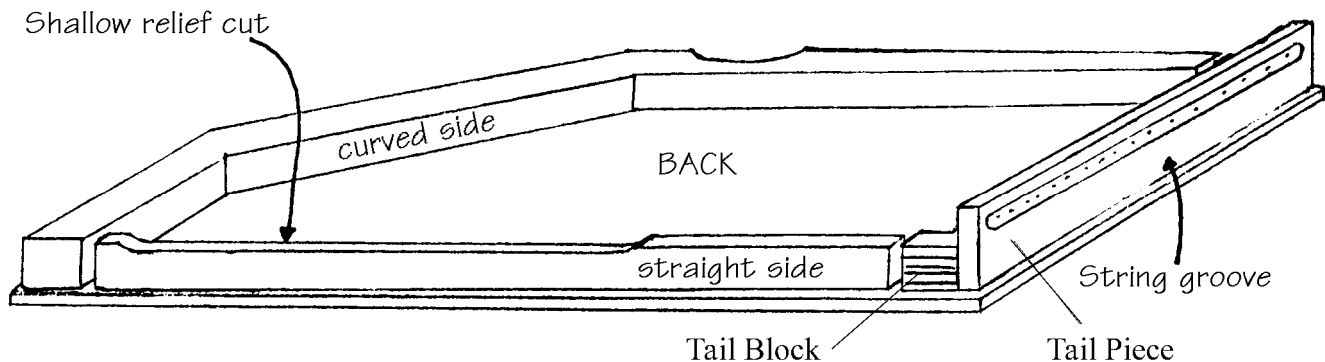
____ 1. Check over the parts in your kit against the list above to make sure we didn't goof up when packing your order. If you find a problem, just call us. We are happy to take care of it.

CAUTION: PLEASE USE A DRILL PRESS FOR MOST DRILLING OPERATIONS ON THIS PROJECT, unless otherwise noted. The location of all pins is important for correct spacing to ensure proper operation of the moving parts.

LEFT-HAND OPTION

IF YOU WISH TO MAKE A LEFT-HAND INSTRUMENT, you may return your SOUNDBOARD in exchange for a reversed one before proceeding with assembly. You may get started on the framework and BACK as provided in this kit, but you will need to wait for a SOUNDBOARD that is cut in reverse.

____ 2. Begin by gluing the TAILPIECE to the TAIL BLOCK, making sure to line up the bottom of these pieces carefully. Note that the string groove stands above the height of the laminated TAIL BLOCK.



____ 3. Place the PLYWOOD BACK on your work table, as shown above (reverse if building a left-hand model):

Arrange the TAILBLOCK/TAILPIECE assembly, STRAIGHT SIDE, and CURVED SIDE on the back, separating the ends with 1/4" spaces. The BACK has been cut to exact size, so you may line up the parts just to the edge of the plywood.

IMPORTANT: The STRAIGHT SIDE and TAILBLOCK could be glued in either of two ways. Be certain that the shallow relief cut of the STRAIGHT SIDE and the string groove of the TAILBLOCK will face the SOUNDBOARD (top) of the instrument, and the shallow relief cut is positioned as shown in the drawing.

POINT OF INFORMATION: You may be wondering why we do not call for tight joints at the corners. We purposely designed these open spaces to allow for more resonance in the soundchamber. It also makes the kit easier to build. Closed joints are unnecessary for strength when we have such thick **SOUNDBOARD** and **BACK** material.

4. Glue and clamp the three large laminated pieces (**STRAIGHT SIDE, CURVED SIDE, AND TAILBLOCK**) to the **BACK**, using a good woodworking glue (Titebond, or Elmer's Carpenter's Glue). Be careful to make sure the parts do not slide out of position under the pressure of the clamps.

Use enough glue so that a little bit squeezes out around the parts when pressure is applied. Then you know you have a strong bond.

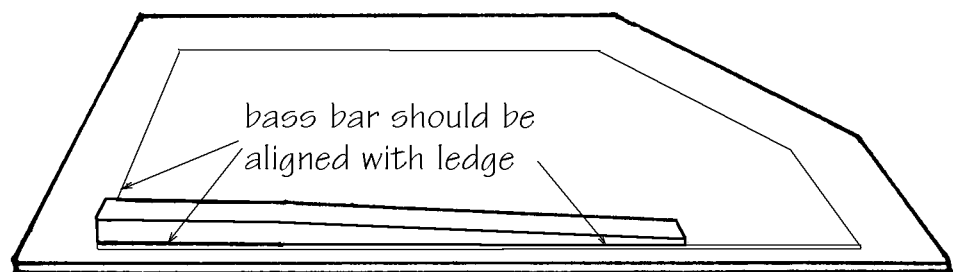
6. You may cut a soundhole in the redwood **SOUNDBOARD** now if you wish, although it is not necessary. There are sufficient other openings in this box to allow the sound to escape, so the hole in the middle is purely decorative. We have marked the center point for your convenience. You may want to show some creativity by cutting a unique shape here, or glue one of our large laser cut rosettes. (more rosette styles available at www.harpskit.com)



If you cut a soundhole in the redwood top, I recommend that you sign and date the inside of the **BACK** so your signature can be seen through the soundhole. Do this now, before gluing the **SOUNDBOARD** in place.

7. The **BASS BAR** must be glued to the underside of the **SOUNDBOARD**, near the longest edge, as shown. Take care to position it exactly so it will not interfere with other parts. Glue and clamp until dry.

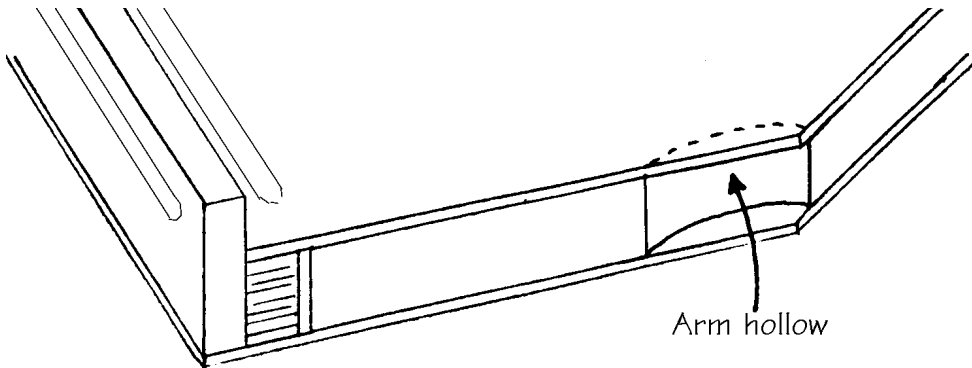
NOTE: The thicker end of the **BASS BAR** should lie directly under the 15 punch marks for **CHORD BAR POSTS** (on reverse side of **SOUNDBOARD**).



8. Glue the **SOUNDBOARD** to the box, taking care to line it up around all sides. This is important in order to ensure that the strings will line up properly with the predrilled holes in the **TAILBLOCK**.

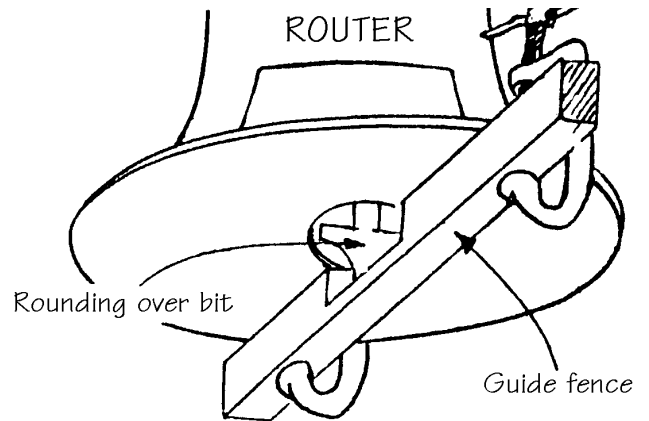
Use plenty of weights or clamps to ensure a sturdy bond.

___ 9. I like an electric sander when it comes to smoothing off the edges of this instrument. A drum sanding attachment to your drill would be helpful for removing the excess **SOUNDBOARD** and **BACK** material where the "arm hollow" is cut in the **CURVED SIDE**.

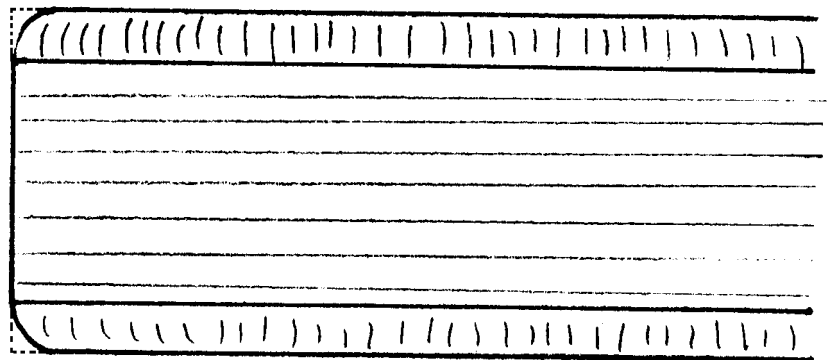


Be sure to sand enough to clean up any glue smudges and drips that might be lurking on the surfaces of those laminated parts. They may be unnoticeable now, but will show up like egg on your face when you apply your first coat of finish.

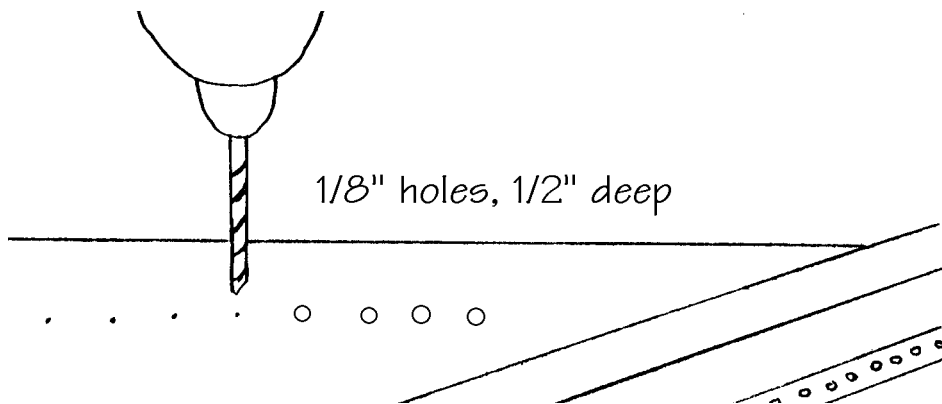
CAUTION: If using a router on this box, be careful not to let the router bit "fall into" the gaps in the sides. A good way to prevent this from happening is to clamp a guide fence to the router base, as shown here.



___ 10. This would be a good time to round over all edges of the box so it feels good to handle. A rounded corner always looks more finished than a sharp corner. You may use a router with 1/4" round-over bit, but move slowly on the redwood -- it pulverizes if worked too quickly. You may also accomplish the rounding by hand with coarse (80-grit) sandpaper wrapped around a wood block.

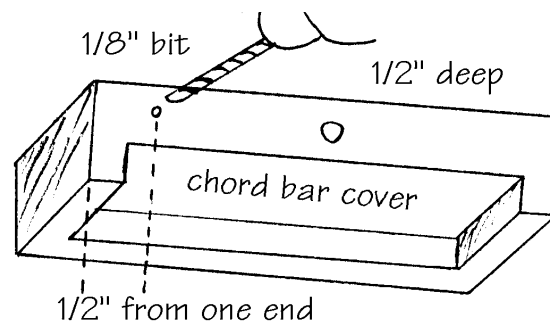


___ 11. Use the 1/8" drill bit in a drill press to bore the 30 holes for **CHORD BAR** posts, 1/2" deep. Take care to locate these holes as marked in the redwood, so the chord bars will operate smoothly.

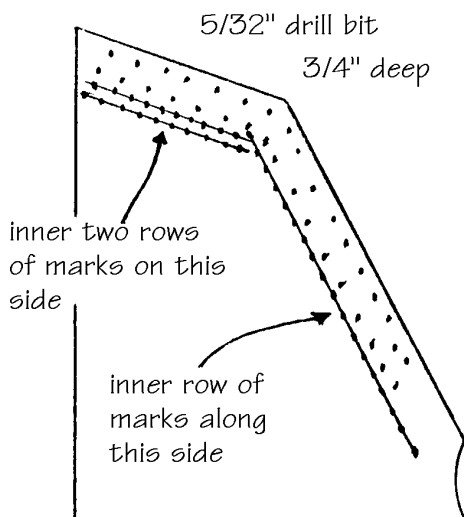


These rows of holes are meant to be 10" apart across the instrument. To ensure accuracy, I recommend clamping a guide to your drilling table and holding the edge of the instrument against the guide as you drill. That way the two rows are guaranteed to be straight.

___ 12. Use the same drill bit (1/8") to bore a hole in the underside of each CHORD BAR COVER, 1/2" deep, as shown. This will be for a locating pin that will be installed later.

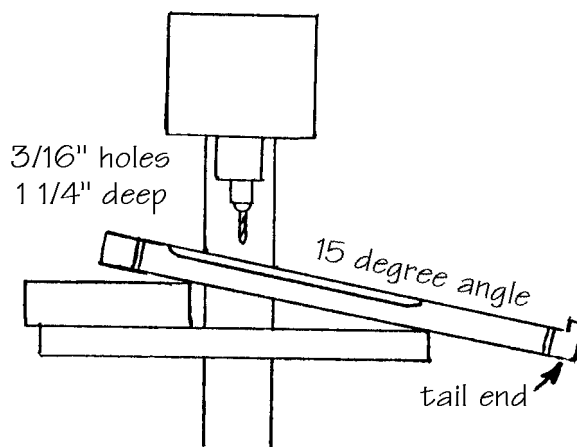


___ 13. Use a 5/32" drill bit to bore 38 holes for the GUIDE PINS, to a depth of 3/4".



HINT: Take careful note of the location of these holes so you do not confuse them with the TUNING PIN HOLES. I recommend drawing a pencil line to connect the proper punch-marks in the redwood SOUNDBOARD so you don't get confused while drilling.

___ 14. Set up your drill press for boring the tuning pin holes at a slight angle (about 15 degrees off vertical). If your drill table does not tilt, simply clamp a scrap of wood to one half of the table to hold the instrument at the proper angle.



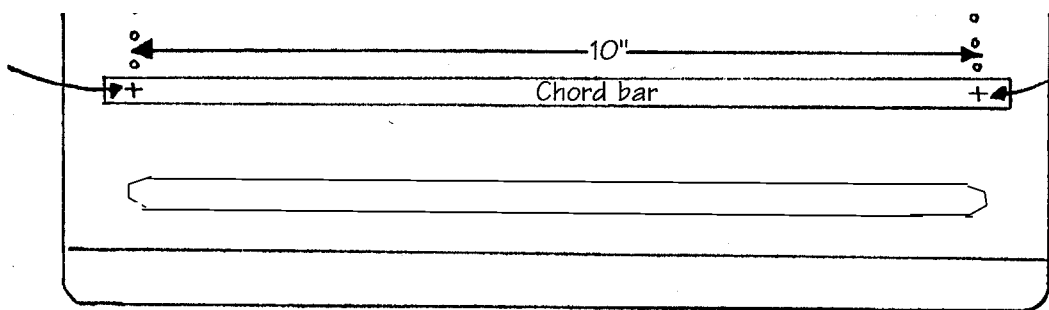
___ 15. Use the 3/16" drill bit provided for drilling the 38 holes for TUNING PINS at the location of the punch-marks in the redwood top. Take care to locate these holes as marked. Drill 1-1/4" deep.

___ 16. This would be the best time to fine-sand the entire box. We like an electric orbital sander for this operation, using about 150-grit paper. Check the entire instrument carefully for scratches or machine marks left by previous tools.

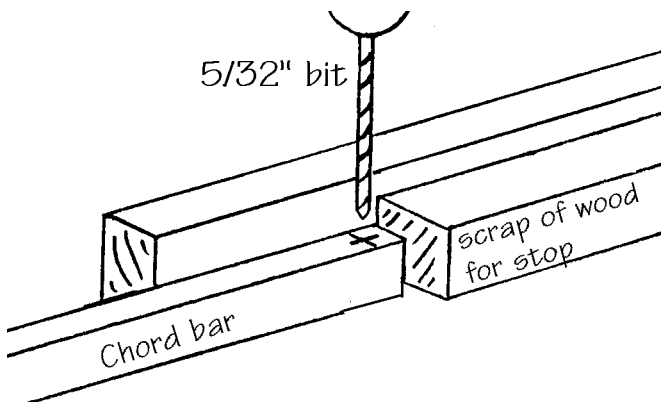
___17. Set up your drill press with the 5/32" drill bit provided for drilling the ends of the CHORD BARS, as follows:

___18. Start with one of the extra blank chord bars as a test. Hold the CHORD BAR on the SOUNDBOARD, centering it over two corresponding holes drilled for the posts.

Carefully mark the center-points of the two holes on the CHORD BAR. They should be the same distance apart (10") as the holes in the SOUNDBOARD.



___19. Clamp a stop on your drilling table that will permit you to drill all 15 chord bars in the same location as marked on the first one.



Drill one of the test bars first and check to see how the holes line up against those on the SOUNDBOARD. Test it in several different locations to be sure there is no variation. Use the second blank CHORD BAR, if necessary, to test again after making corrections to the drill press setting.

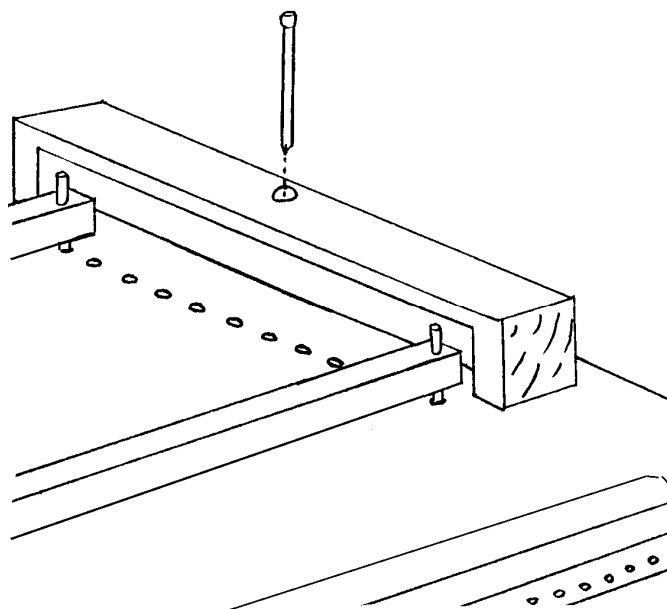
Drill through each end of the CHORD BARS with a 5/32" bit.

___20. Place two CHORD BARS in position as shown, lining them up with the holes drilled for the posts.

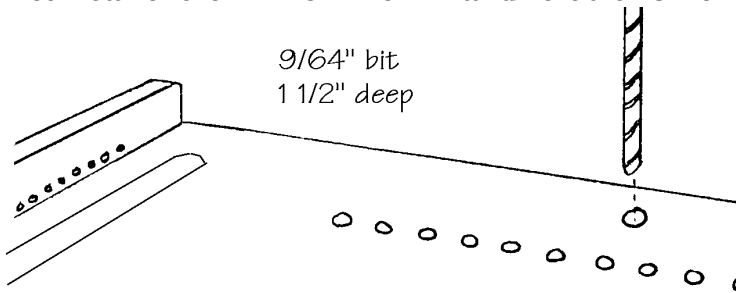
HINT: You could insert four small screws into the holes to make sure your parts do not slide out of position (or cut four 1-3/4" long posts from the BLACK DELRIN provided in the kit).

___21. Test fit the CHORD BAR COVERS at the ends of these two CHORD BARS. Allow 1/8" space between the inside edge of the CHORD BAR COVER and the CHORD BARS, as shown. If you cover too much of the CHORD BARS, you might interfere with the movement of the bars or the vibration of the nearest strings.

When satisfied with the positions of the COVERS, use a long nail to punch the location for the THREADED ROD.

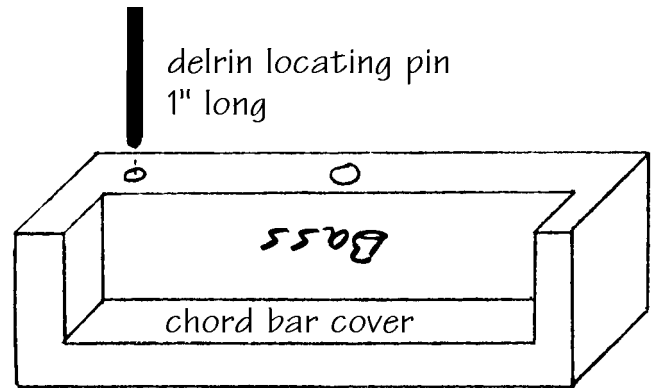


CHEAP ADVICE: It might be helpful to mark the **CHORD BAR COVERS** so you don't mix them up from one side to the other. Just use a pencil to mark "bass" on the inside of the one that fits near the **STRAIGHT SIDE** and "treble" on the inside of the other.



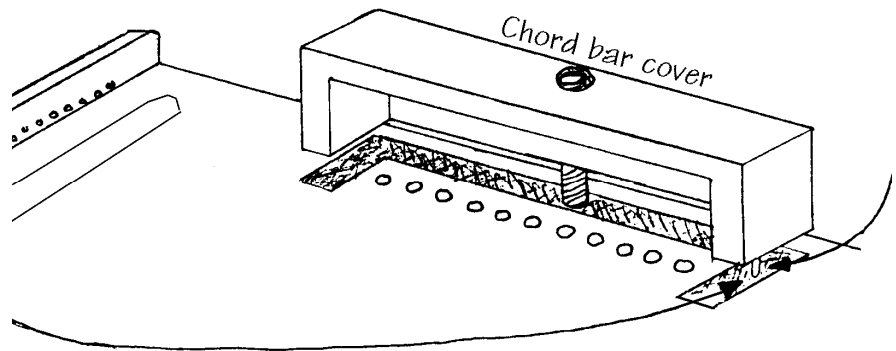
___ 22. Use a 9/64" drill bit for boring a hole for each **THREADED ROD**, 1-1/2" deep. A drill press will ensure that these holes are vertical. Yes, these holes are a little undersized because you will be screwing the rods in later.

___ 23. Use a wire cutter to cut two 1" pieces from the **BLACK DELRIN ROD** supplied with this kit and insert them into the holes you drilled in the bottom of the **COVERS** in step #13.



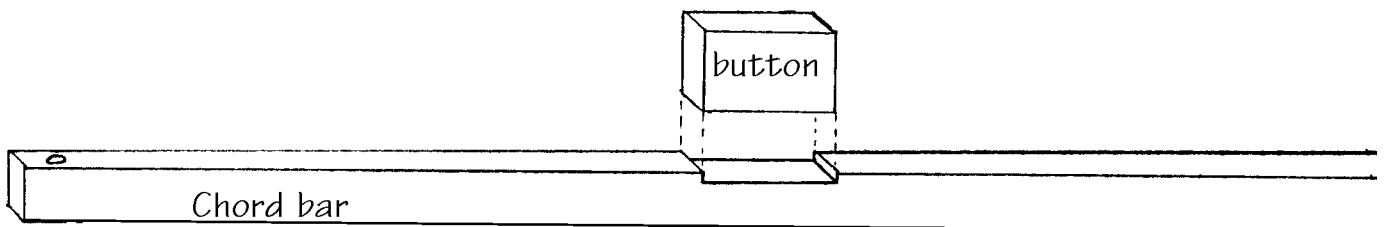
___ 24. Insert the two threaded rods into the holes in the instrument and then put the **CHORD BAR COVERS** into place again, this time gently pushing them down to mark the positions of the delrin locating pins in the redwood **SOUNDBOARD**. Make sure the **COVERS** are lined up correctly because you are establishing their permanent position in this step.

___ 25. Use the 1/8" drill bit provided to bore a hole in the instrument for each locating pin. Then your **CHORD BAR COVERS** will stay nicely in place when tightened down with just one knurled nut for each.



GOOD WORK! You have accomplished the majority of this project. Just a little finishing, stringing, and padding left before you can strum your first chords!

___ 26. The only gluing step remaining for this kit involves attaching the **CHORD BAR BUTTONS** to the **CHORD BARS**. Use woodworking glue to accomplish this, holding the parts together with masking tape until dry.

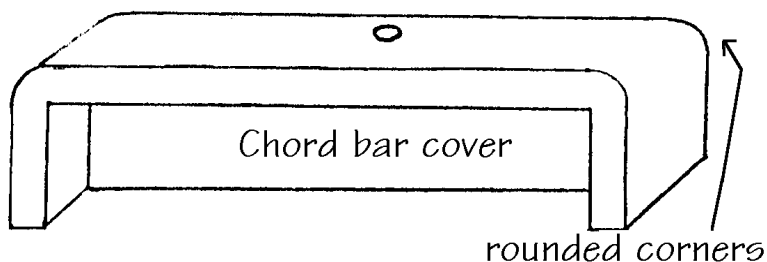


___27. Sand all parts of your instrument, as follows:

SOUNDBOX: Use fine (150-grit) sandpaper to smooth all surfaces, being careful to sand with the grain. Look for glue smudges, machining marks, dents and scratches. If you find a dent that is too deep to sand smooth, you might try wetting it with hot water and steaming it with a household iron. That often helps restore the fibers of wood to nearly their original condition.

CHORD BARS: The goal here is to knock off the sharp edges all around the CHORD BARS and BUTTONS so they feel good to the touch. Use fine sandpaper wrapped around a small block of wood so you can work easily in the corners.

CHORD BAR COVERS: We like to round over the corners of these covers quite dramatically, as shown. This may require a power sander for the heavy work. Then switch to fine sandpaper and work by hand to remove scratches and machine marks.



___28. When satisfied with the sanding, you may apply the finish of your choice. Here are some recommendations:

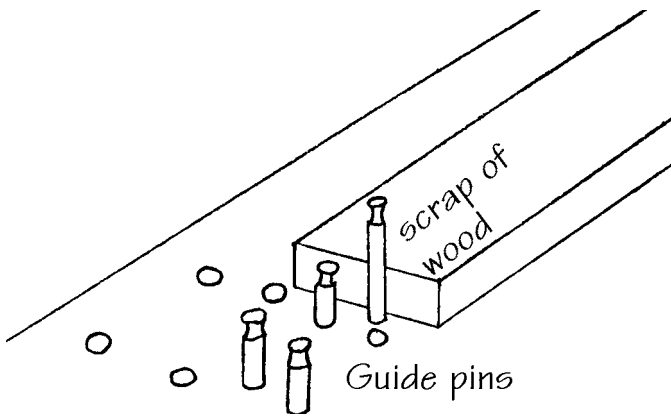
STAIN -- STAINS are coloring agents and should only be used if you dislike the natural color of the wood. We usually do not apply stains to our projects, especially when they are made with naturally beautiful hardwoods such as cherry or walnut. These woods look very nice with just a clear finish. But, if you want to color the wood differently, your staining should be accomplished before applying a surface finish such as oil, varnish, or lacquer. We like 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 a while. 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 disadvantages of oil are 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 1/2 pint can of semi-gloss polyurethane varnish. The advantages of finish are its simple application, durability, and deep, soft luster. It also works well for protecting 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 Heat Transfer decorations -- it dissolves the toner.

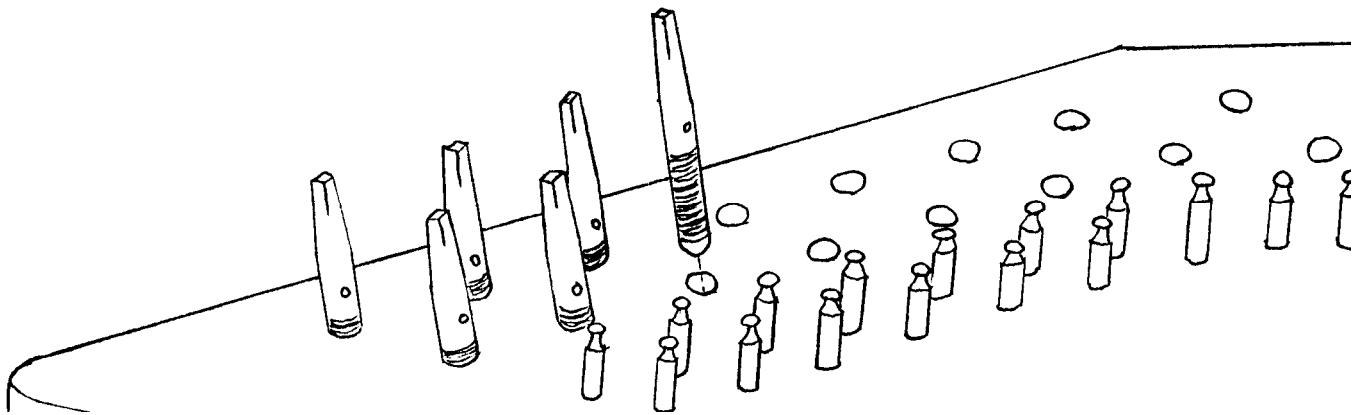
Don't forget to finish the CHORD BARS and CHORD BAR COVERS (yes, even the bottom edges of these parts).



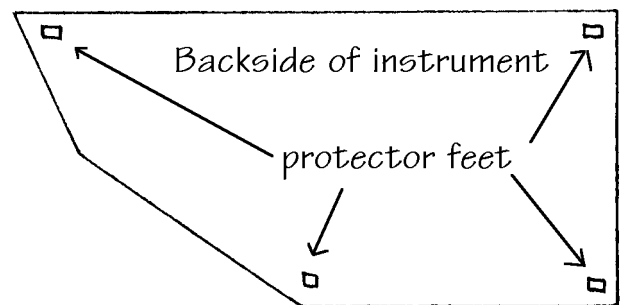
___ 29. When the finish is dry, you may begin installing hardware. Start with the 38 GUIDE PINS. Use a hammer to tap them into the smaller holes along the curved side of the instrument. They should all stand the same height, about 3/8" above the **SOUNDBOARD**.

HINT: It's a little scary to wield a big iron hammer around your freshly finished instrument! We recommend placing a scrap of wood on the redwood near the pin holes, in case you miss once or twice. You might even wrap that scrap of wood with fabric for extra protection. We also like to put a towel underneath the instrument to avoid scratching the bottom as we work.

___ 30. Install the 38 TUNING PINS next. Remember that the holes are drilled at a slight angle, as shown. Pound these pins in with a hammer, making sure the threaded ends go into the wood, about 3/4" deep.



___ 31. When the heavy pounding is done, you may attach the 4 PROTECTOR FEET to the underside of the instrument, as shown.



___ 32. We like to install the strings now, before putting the CHORD BARS in the way.

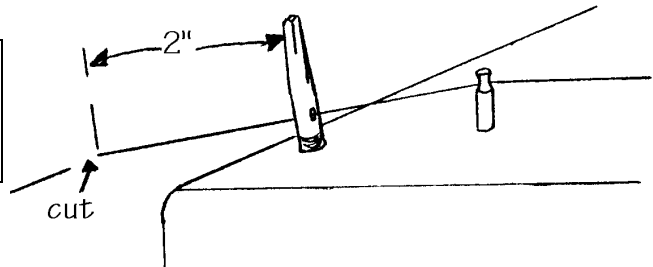
Place the brass BRIDGE TUBE in its groove. We like to shine up this tube before installing the strings -- you can rub it with fine steel wool and then spray one coat of lacquer to prevent tarnishing later. Use tape to hold the TUBE in place until a few strings are installed.

Begin stringing with the heaviest string (#38). Push the end through the last hole in the TAIL BLOCK, near the long STRAIGHT SIDE, as shown. Draw it through all the way until the "ball end" stops against the cove in the wood.



Pull the wire across to the last TUNING PIN near the point of the instrument, and push the end through the small hole in the pin.

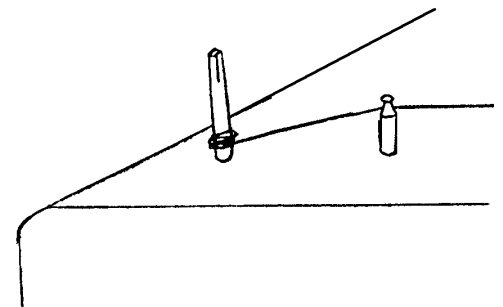
NOTE: The heaviest strings may be difficult to thread through the hole. We use a pliers to “peel” back the outer windings about 2-3” to expose the steel core.



Before winding the pin, we cut the wire so that only about 2" protrudes past the pin (just enough to make about three windings around the pin). Pull the wire back until the end is even with the pin (just showing through the hole) and begin turning the pin clockwise* with the TUNING WRENCH. This technique hides the sharp end of the wire flush with the TUNING PIN where it cannot jump out and poke your fingers or snag your sweater later.

Guide the wire around the first GUIDE PIN. It is important for the wire to rest in the groove, as shown.

*NOTE: If you have made a left-hand instrument, you must turn the pins counter-clockwise. You may need to tap the pins a little deeper into the holes because they will rise up as you turn them.



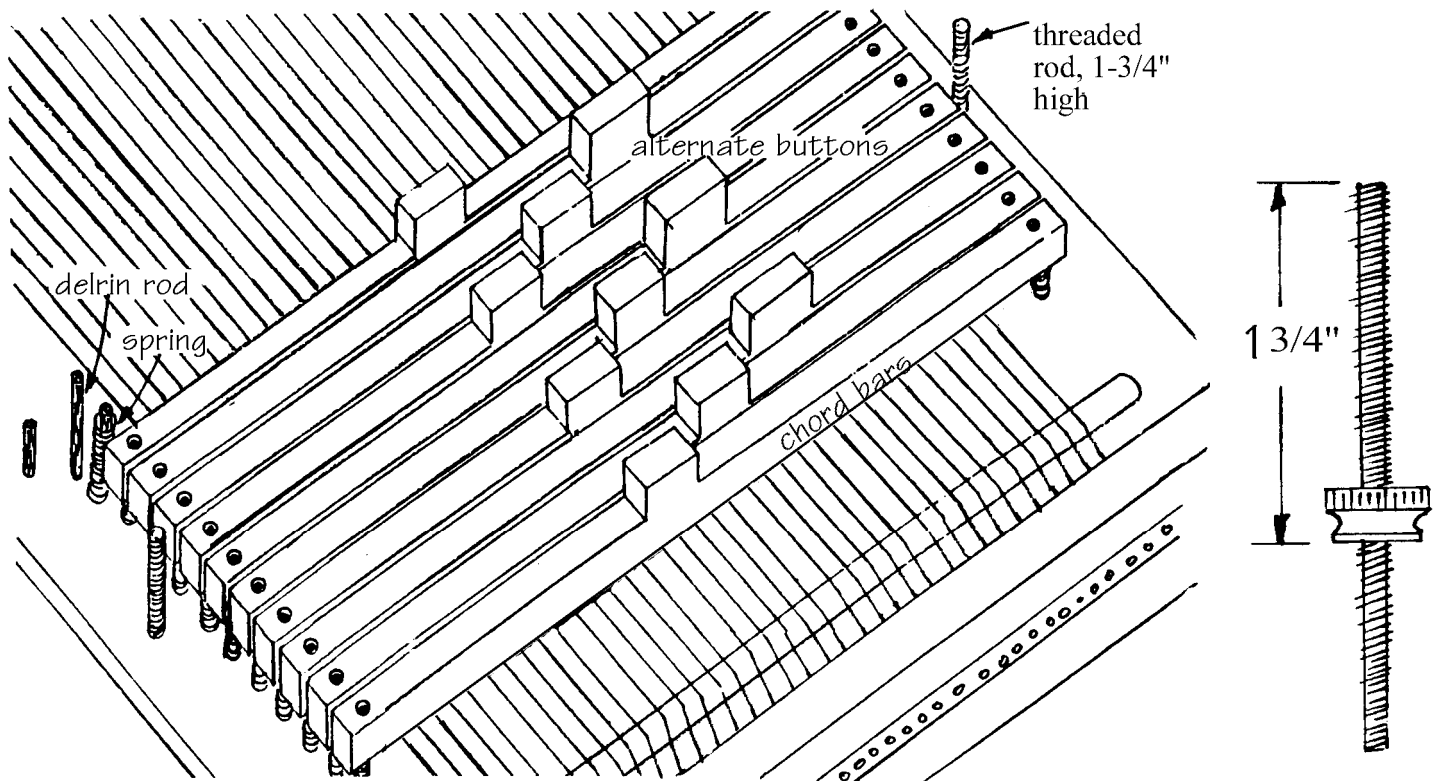
Install all the strings in this same manner, following the chart included with your strings. No need to tune the instrument yet -- just get the strings in place and proceed to the other hardware.

___ 33. Find your BLACK DELRIN RODS and use a wire cutter to cut them to 1-3/4" lengths. You will need 30 such short pieces to use as CHORD BAR POSTS.

Insert these rods into the holes in the SOUNDBOARD, so they stand 1-1/4" above the surface of the wood.

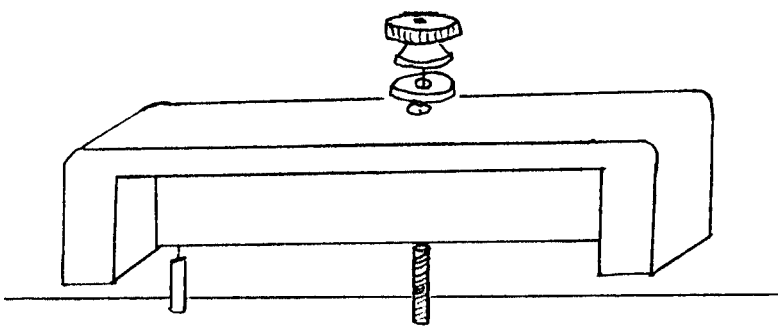
___ 34. Ask a patient friend to separate all the little springs and drop one over each CHORD BAR POST. (Turnover in our spring-counting department is high, as you might imagine.)

___ 35. Test-fit the CHORD BARS, arranging them with buttons alternating, as pictured.



___ 36. Screw a **KNURLED NUT** onto each **THREADED ROD** to a depth of 1-3/4" from one end. Use masking tape to hold the nut in place. Then use an electric hand drill to screw the **THREADED RODS** into the holes next to the **CHORD BARS**, to the depth of the nuts, so the rods stand 1-3/4" above the surface of the wood. If you mar the threads slightly with the drill chuck, you will restore them again when unscrewing the **KNURLED NUTS**.

___ 37. Insert short lengths (1") of delrin rod into the two holes in the **SOUNDBOARD** for locator pins, as shown. These will keep the covers from twisting out of position. They should stick up about 1/2".

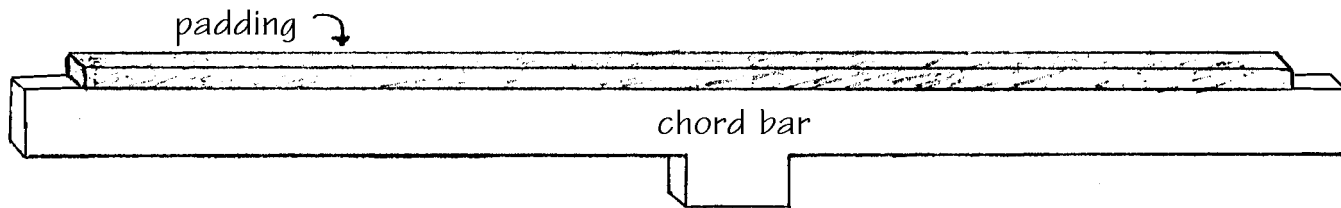


___ 38. Test-fit the **CHORD BAR COVERS** onto the **THREADED RODS**, so that the locator pins fit into the corresponding holes in the **COVERS**. You may need to drill out the holes near the end of the covers with 9/64" bit to ease the fit of the locator pins. Use the knurled nuts and washers to hold the **COVERS** in place. If all fits well, you are ready to begin padding the **CHORD BARS**!

___ 39. Cut the **CHORD BAR PADDING** into 10" lengths. You'll need 15 strips. Find a way to hold a **CHORD BAR** upside-down firmly so you can use both hands for laying the padding down carefully. I clamp it in a small wood clamp.

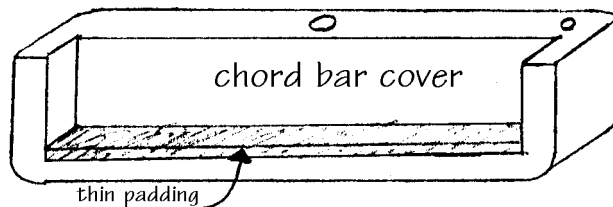
Peel the adhesive backing off the padding and press the sticky surface against the bottom of the **CHORD BAR**.

**CAUTION: DO NOT STRETCH THE PADDING, or it may begin to peel off later.
Fit padding to all 15 CHORD BARS, as shown**



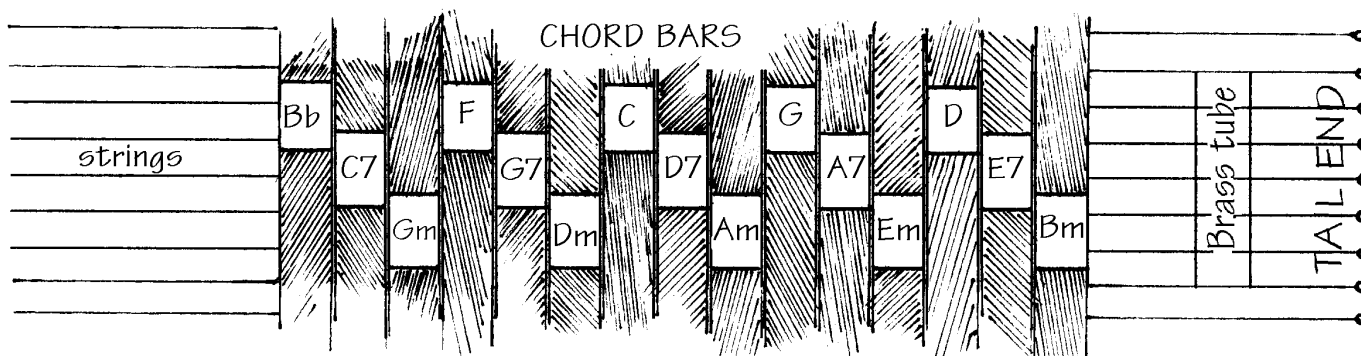
40. Cut two strips of thin felt padding to fit inside the CHORD BAR COVERS too, as shown.

PLEASE NOTE: There may be some adjustment needed on the COVERS to achieve the "playing action" that you prefer. After installing all the padding on the CHORD BARS and COVERS, test the feel of the instrument by pushing the CHORD BARS down to the strings. You need less than 1/4" of travel here. To lower the CHORD BARS, add more padding under the CHORD BAR COVERS, as illustrated above. To raise the CHORD BARS, shim up the CHORD BAR COVERS with the same kind of thin felt.



41. Replace the chord bars into position on the instrument and begin contemplating the chord arrangement you prefer. This is a matter of wild variation from one manufacturer to another. Many players like to set up the chord sequence on their harps to suit their musical tastes.

We offer here a logical chord sequence which is based on clusters of chords related to each other. You may follow this recommendation or make whatever changes you desire to accommodate the keys you wish to play in.



EXPLANATION OF SYMBOLS

A plain capital letter designates a major chord
A subscript "m" designates a minor chord
A subscript "b" designates a flat
A superscript "#" designates a sharp
A superscript "7" designates a seventh chord

C = C major
Dm = D minor
Bb = B flat
F# = F sharp
G7 = G seventh

NOTE: You may also purchase more chord bars from us and use them for extra chords that may be needed for a particular song. You would then switch chord bars between songs.

When you decide what chords you want and where to place them, cut out the appropriate symbols from the clear plastic sheet and use Superglue to adhere them to the CHORD BAR BUTTONS. Another option is to use paints or rub-on letters to identify the chords.

I like to place the labels on the flat face of the CHORD BAR BUTTON, facing the tuning pins. Then, when you hold the instrument upright, you can read all the labels.

You will want to tune the instrument before cutting the CHORD BAR PADDING. I recommend cutting out the tuning strip printed on the plastic sheet and adhering that to the wood under the strings near the BRIDGE, as shown.

42. Set the CHORD BARS back into position on the instrument and prepare for a relaxing evening of cutting chords. Here is how it works:

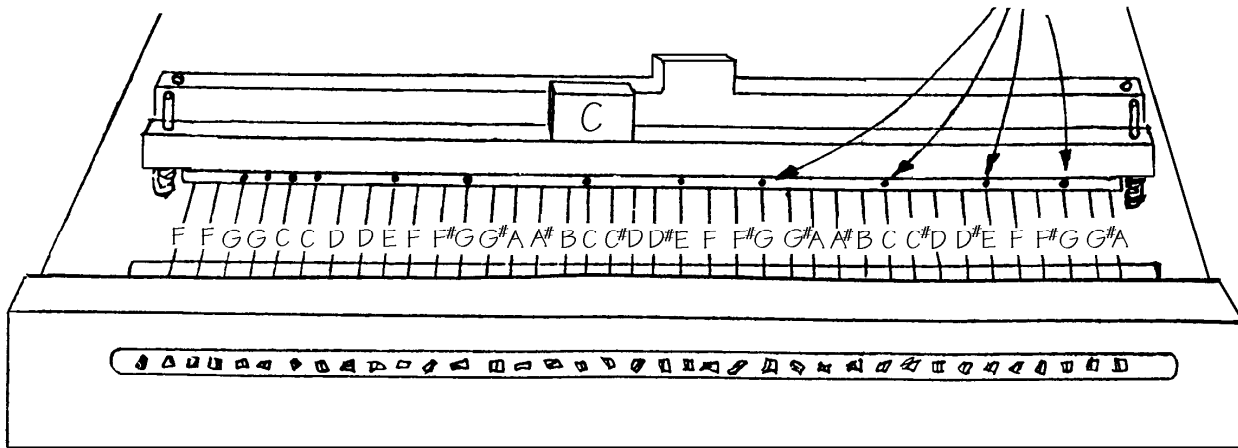
a) Without boring you with a lot of music theory, let us simply explain that each chord is made up of several specific notes of the scale. When you play that chord, you will be strumming all the strings on the instrument, but you want only those selected notes to ring clearly. The function of the chord bar, then, is to damp out the other strings that do not belong to that chord. We accomplish this by cutting out small sections of the padding here and there to allow only certain strings to vibrate freely when the CHORD BAR is pushed down to contact the strings.

CHORD TABLE

MAJOR CHORDS	MINOR CHORDS	SEVENTH CHORDS*
A = A C# E	Am = A C E	A7 = A C# E G
Bb = A# D F	Bbm = A# C# F	Bb7 = A# D F G#
B = B D# F#	Bm = B D F#	B7 = B D# F# A
C = C E G	Cm = C D# G	C7 = C E G A#
D = D F# A	Dm = D F A	D7 = D F# A C
Eb = D# G A#	Ebm = D# F# A#	Eb7 = D# G A# C#
E = E G# B	Em = E G B	E7 = E G# B D
F = F A C	Fm = F G# C	F7 = F A C D#
F# = F# A# C#	F#m = F# A C#	F#7 = F# A# C# E
G = G B D	Gm = G A# D	G7 = G B D F

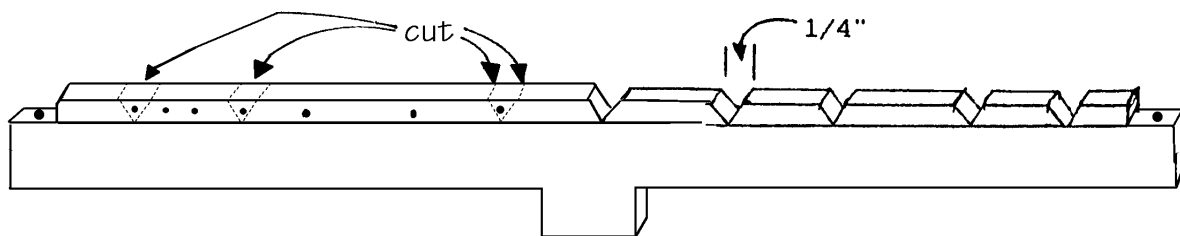
b) Determine which notes belong to the chord in question. If you are starting with the C chord, for example, you will want to have all the C strings, E strings, and G strings ring clearly. Consult the Chord Table above.

c) Use a felt-tip pen to mark the padding above each note that you wish to allow to vibrate on each CHORD BAR.



***HINT:** When cutting seventh chords, omit the last note if it happens to be available in the bottom octave (e.g. on the D7 chord, do not cut openings for the two C notes in the bass range). This will help eliminate any “muddy” sound in the chords.

d) Cut 1/4" wide V-shaped notches in the padding around each mark, using a sharp knife or razor blade to cut clean edges of the padding.



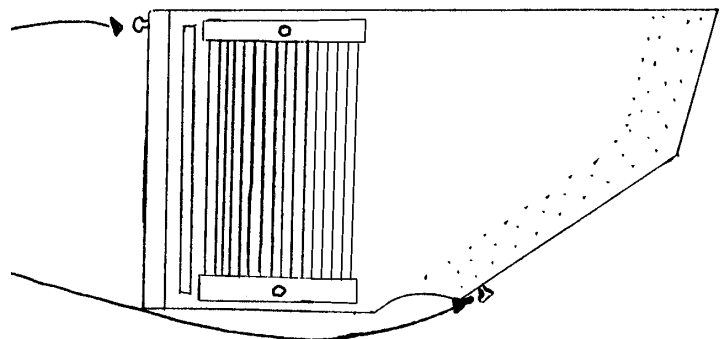
e) Put the CHORD BAR back in place and hold it firmly down against the strings while you strum across the instrument. This will be the test of your accuracy. (Make sure the instrument is in tune.) You should hear a clear chord.

f) Continue this way until all CHORD BARS are properly cut.

g) When they are all done and in place, use the washers and knurled nuts to fasten the CHORD BAR COVERS to the instrument.

CONGRATULATIONS! You have completed your Autochord. We hope you liked assembling the project and that you will enjoy many years of fun playing it.

If you choose to install a strap, attach it to the instrument at these two locations, centering the buttons on the side of the body.



ACCESSORIES & TEACHING MATERIALS AVAILABLE

AUTOBAG	Padded carrying bag for Autochord
STAP-2	Strap with two buttons
CA30	Electronic Tuner
AUTOSTRG	Spare set of strings (38)
AUTOBARS	Extra chord bars
AUTOFELT	Extra felt for chord bars

MUSICMAKER'S KITS, INC.

PO Box 2117

Stillwater, MN 55082

(651) 439 9120

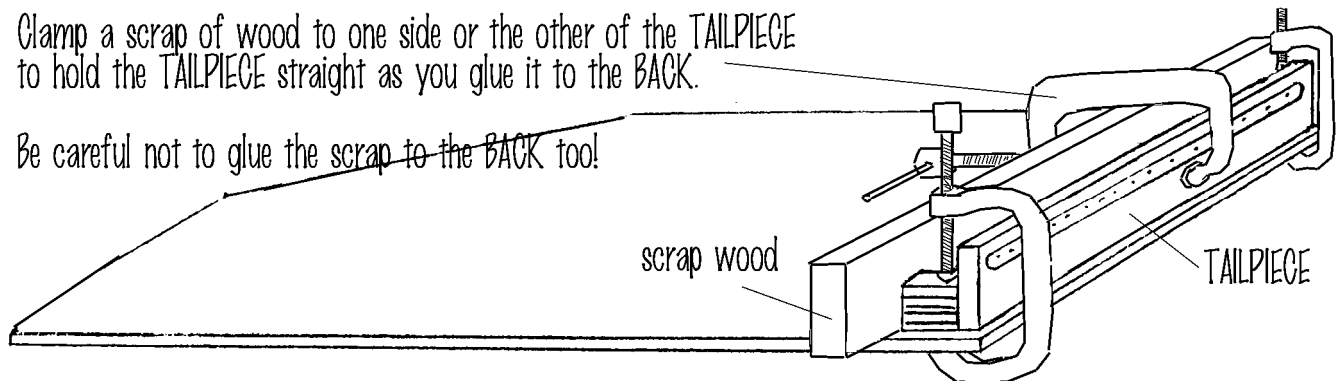
www.harpkit.com

SPECIAL HINT

We have oriented the grain on the cherry portion of the TAILPIECE vertically for extra strength and tuning stability, but this makes the part more vulnerable to warping before it gets glued in place. Once it is glued to the BACK, it will not warp. If the TAILPIECE/TAILBLOCK in your kit is not straight, you'll need to hold it straight as you glue and clamp it down to the BACK, as shown here:

Clamp a scrap of wood to one side or the other of the TAILPIECE to hold the TAILPIECE straight as you glue it to the BACK.

Be careful not to glue the scrap to the BACK too!



Use more clamps than shown here to obtain a tight glue seam between the TAILPIECE and the BACK. Then remove the scrap wood as soon as the TAILPIECE is firmly clamped in place. That way you won't risk gluing the scrapwood to your instrument!

**AUTOCHORD STRINGING AND TUNING CHART
(38 STRING MODEL)**

AUTOSTRG Full set of 38 strings for Autochord

STRING #	SIZE	NOTE	CODE
1	.010	A5	BALL010
2	.010	G5#	BALL010
3	.010	G5	BALL010
4	.010	F5#	BALL010
5	.012	F5	BALL012
6	.012	E5	BALL012
7	.012	D5#	BALL012
8	.014	D5	BALL014
9	.014	C5#	BALL014
10	.014	C5	BALL014
11	.014	B4	BALL014
12	.016	A4#	BALL016
13	.016	A4	BALL016
14	.016	G4#	BALL016
15	.016	G4	BALL016
16	.018	F4#	BALL018
17	.018	F4	BALL018
18	.018	E4	BALL018
19	.020	D4#	BALL020
20	.020	D4	BALL020
21	.020	C4#	BALL020
22	.023 W	Mid C4	BALL023
23	.023 W	B3	BALL023
24	.023 W	A3#	BALL023
25	.025 W	A3	BALL025
26	.025 W	G3#	BALL025
27	.025 W	G3	BALL025
28	.032 W	F3#	BALL032
29	.032 W	F3	BALL032
30	.032 W	E3	BALL032
31	.042 W	D3	BALL042
32	.042 W	D3	BALL042
33	.047 W	C3	BALL047
34	.047 W	C3	BALL047
35	.056 W	G2	BALL056
36	.056 W	G2	BALL056
37	.056 W	F2	BALL056
38	.056 W	F2	BALL056

NOTE: If purchasing replacement strings from another source, ask for "ball-end" guitar strings in the diameters shown above. They should be available at most music stores.

MUSICMAKER'S KITS, INC.

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 STILLWATER, MN 55082
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