



#### WOOD PARTS

- ☐ ☐ A. Soundboard, Aircraft Birch
- ☐ ☐ B. Back Panel
- ☐ ☐ C. (2) Sides
- ☐ ☐ D. Pre-drilled Neck
- ☐ ☐ E. Pillar
- ☐ ☐ F. Arched Cap Block
- ☐ ☐ G. Top Block
- ☐ ☐ H. (2) Inner Braces
- ☐ ☐ I. Base Reinforcement
- ☐ ☐ J. Base Block
- ☐ ☐ K. Inner Reinforcement Bar
- ☐ ☐ L. (2) Feet
- ☐ ☐ M. Short Trim Strip, Front (Drilled)
- ☐ ☐ N. Short Trim Strip, Back
- ☐ ☐ O. Long Trim Strips, Sides

## JOLIE HARP KIT

Updated August 2023

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#### HARDWARE

- ☐ ☐ Scrap Soundboard Piece
- ☐ ☐ (33) Threaded Tuning Pins
- ☐ ☐ Brass Driver for Tuning Pins
- ☐ ☐ (12) Large Brass Eyelets
- ☐ ☐ (21) Medium Brass Eyelets
- ☐ ☐ (12) Large Threaded Bridge Pins
- ☐ ☐ (21) Small Threaded Bridge Pins
- ☐ ☐ (2) Allen Wrenches, 5/64" & 3/32"
- ☐ ☐ (2) #14 x 2" Wood Screws, square drive
- ☐ ☐ #3 Square drive bit
- ☐ ☐ (12) Wood Screws, 1-1/4"
- ☐ ☐ (10) Wood Screws, 1-5/8"
- ☐ ☐ Wood Screw, 2"
- ☐ ☐ (2) Wood Screws 2-1/2"
- ☐ ☐ (2) Wood Plugs, 3/8" dia, cherry
- ☐ ☐ Wood Plug, 1/2", cherry
- ☐ ☐ Harp Medallion, 3/4" dia
- ☐ ☐ Wood Dowel, 3/8" x 2"
- ☐ ☐ (4) Drill Bits, #24, 5/32", 1/8", 7/64"
- ☐ ☐ (2 oz) Wire Nails, 3/4" X 18
- ☐ ☐ (4) Rubber Bumpers for Feet
- ☐ ☐ (4) Round-head black screws, #6 X 3/4"
- ☐ ☐ Tuning Wrench
- ☐ ☐ Set of 33 Harp Strings w/dowels
- ☐ ☐ Spacing Guide for Bridge Pins
- ☐ ☐ Assembly Instructions

## TIPS TO MAKE THIS A SUCCESSFUL PROJECT

- \_\_\_A. Inventory and inspect all your parts carefully. If anything is missing or defective, please call or email us right away.
- \_\_\_B. Read through the entire assembly instructions before you start, just to get an overview of the project.

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Pay special attention to notes in these boxes. These notes highlight crucial aspects of the build or steps that, done incorrectly, can really mess up your project.

Take your time and enjoy the process. Building a musical instrument is an experience to be savored, not a race to be won.

If you make a mistake somewhere along the way - **please don't worry about it**. Every mistake can be fixed and the majority of mistakes won't be noticeable by anybody but you.

## A NOTE ABOUT GLUE

We recommend assembling this kit with standard woodworker's glue (such as Elmer's Carpenters Glue or Titebond Wood Glue). Don't use Hotmelt glue, Superglue, 5-minute Epoxy, or plain white School Glue for assembling the major wood parts -- those adhesives are not strong enough for a high-tension instrument. There is no need to look for any special instrument-maker's adhesive.

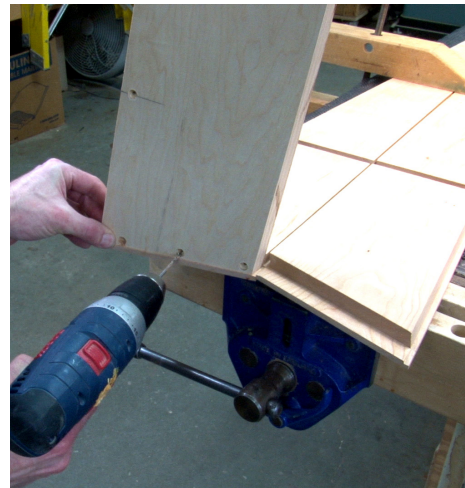
Every time you use wood glue on this project, it is wise to have a damp rag handy for cleaning up afterwards. Scrub away any excess glue that squeezes out of the joints before it dries, especially on the outside of the instrument. Keep your hands and workbench as clean as possible too. Glue smudges will show up vividly on the finished instrument.

## ASSEMBLE THE FRAME

- \_\_\_ 1. Clamp the harp sides to your bench. This will prevent the sides from sliding around during the assembly process.

Dry fit the base and inner top block to ensure a good fit. If the pieces aren't perfect, you can adjust them with a hand plane or sanding block. It's easier to remove the excess **BEFORE** the parts are glued in place.

Drill 7/64" pilot holes in one side for the base block screws. (fig. 1) Apply glue to one side and insert 1-5/8" wood screws. (fig. 2)



**FIG. 1**



Be sure to tilt the drill bit to follow the angle of the sides. If you drill the holes straight down, you will split the wood of the sides.

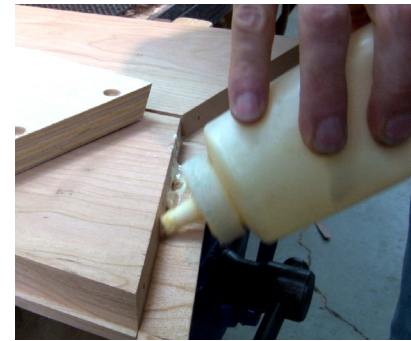


FIG. 2

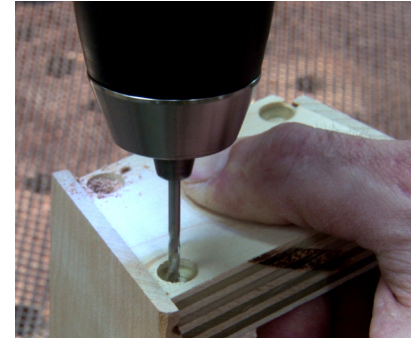


FIG. 3

- \_\_\_\_ 2. Flip the harp over so that the glued side is on top. Use the inner top block to help balance the sides together. Repeat the process to attach the base block to the other side: \_\_align the base block, \_\_drill 7/64" pilot holes, \_\_apply glue, \_\_screw the base block in place.
- \_\_\_\_ 3. Stand the frame and lean it against your workbench. Drill pilot holes for top block. Apply glue and screws to top block. (fig. 3)

Allow glue to dry for at least 60 minutes before proceeding to the next step.

### INSTALL THE INTERNAL BRACES

- \_\_\_\_ 4. Lay the frame on your work bench front side facing up. Test fit the two inner braces. (fig. 4) These braces will only fit in one direction. The braces should fit flush with the soundboard ledge on either side.

The inner bracing serves two purposes:

- 1) to straighten the sides during assembly and
- 2) to keep the body of the harp from deforming under string tension.

NOTE: Sometimes the braces are not the correct length to fit between the sides. This can be caused by sloppy cutting on our part, but more likely the sides have bowed a little from humidity changes after we prepared them. You can check that with a straight-edge and push or pull the sides into alignment as you glue the braces in place.

If a brace is simply too short you can shim the space with a thin scrap of wood. If too long, use a disk sander to remove a small amount without changing the angle or rounding the end. If the brace is too thick to slide into the dado, you can sand the edge a little at a time with an orbital sander.

Fig. 5 show clamping with bungee cord.

Fig. 6 shows clamaping with bar clamps. Note the use of scrap wood on the outside to distribute the pressure and protect the sides.



FIG. 4



FIG. 5



FIG. 6



## PREPARE THE SOUNDBOARD



The outside face, or front, of the soundboard is punch marked for drilling the eyelet holes. Mark the front with a small piece of tape or a light pencil mark so you don't accidentally glue the reinforcement bar to the front of the soundboard!



FIG. 7

5. Using a hand drill or drill press, drill **ONLY** the lowest and highest punch marks with the 1/8" drill bit. These holes will act as a guide for the reinforcement strip.

Perform the drilling on a workboard to prevent the wood from tearing out on the soundboard and hold the drill perpendicular. (fig. 7)



FIG. 8

6. **Flip the soundboard over to the inside face.** Use a straight edge to draw a line connecting the holes you just drilled. This line will act as a reference for gluing the reinforcement bar. (fig. 8)

7. Dry fit the reinforcement bar and trace around each end with a pencil on the inside of the soundboard making sure the reinforcement bar covers the highest hole. (fig. 9)

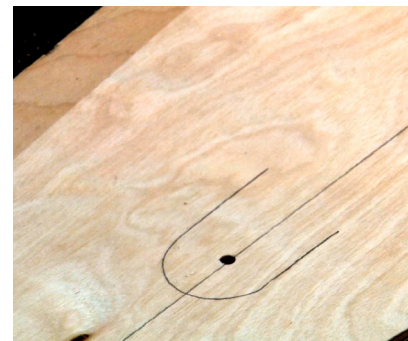


FIG. 9



Before gluing the reinforcement bar in place, double check that you are working on the inside face of the soundboard. You shouldn't see any punch marks.

8. Apply glue along the reinforcement bar and position it carefully inside your lines. Use some masking tape to hold it in place and then set weights on top. A long, flat board between the weights and the reinforcement bar is helpful to distribute the pressure. (fig. 10)



FIG. 10

9. Once the glue is dry, flip the soundboard over and drill the remaining holes for the strings using the punch marks as a guide. You'll need to re-drill the top and bottom holes through the reinforcement bar.

\_\_\_\_ Drill the bottom (lowest) 12 holes with the 5/32" drill bit

\_\_\_\_ Drill the rest of the holes with the 1/8" drill bit.



Now is a good time to sign and date the inside face of the soundboard. Future generations will appreciate this!

## INSTALL THE BACK

- \_\_\_10. Before fitting the back, check to make sure the base block, braces, and top block are all flush with sides. Use a file, chisel, or sanding block to remove any spots that are too high. (fig. 11)
- \_\_\_11. Dry fit the back. This can be done while you're waiting for the glue to dry on the soundboard reinforcement strip. The back and front are cut slightly large to ensure a good fit. If you need to remove some of the excess, be aware that the board will slide further into the frame, due to the tapering of the box.
- \_\_\_12. Check for tight spots and gaps around the perimeter of the back. (fig. 12) Remove wood from tight spots using a sander, hand plane, or sanding block. (fig. 13) **Use caution with power tools. It's easy to remove too much in this way.**

You needn't worry about getting a perfect fit here because this seam will be covered with trim strips.

- \_\_\_13. Apply a liberal amount of glue to the frame everywhere the back makes contact. Don't forget to apply glue along the base and top piece. (fig. 14)

We use nails here because most people do not have enough clamps to hold the entire back in place at once. The nails do a nice job of holding the parts together until the glue dries. (fig. 15)

If you prefer to clamp the back in place, you may do so, as there is not much stress on this part of the instrument. You would, however, need a good number of clamps to span the entire perimeter of the harp.



Do NOT staple or nail along the TOP BLOCK as there is no trim to cover this area. You will need to clamp the back to the top block to be sure it gets held down.

## INSTALL THE SOUNDBOARD

- \_\_\_14. After you have allowed at least an hour for the back to dry, you can proceed to use the same techniques to fit the soundboard.



FIG. 11



FIG. 12



FIG. 13



FIG. 14



FIG. 15



- \_\_\_15. Once you have fit the soundboard, test the small front trim strip in place and mark the location of the holes in the trim strip.

You'll be screwing this trim strip in place so, when you nail your soundboard in place, you want to be sure you keep your nails at least 1/4" away from where these holes are marked. (fig. 16)

- \_\_\_16. When ready, apply glue to front of frame and nail or staple the soundboard on, positioning your nails close to the edge and about 1" apart.



There will be a lot of string tension pulling this soundboard away from the frame so it is important that you don't skimp on the nails. It's a lot of work but it is necessary. An extra set of hands will be helpful for this step.

**Do NOT nail the soundboard to the top block as there is no trim to cover this up. Use clamps here.**

- \_\_\_17. Find the small soundboard scrap and glue and nail that in the soundboard opening. (fig. 17) Keep your nails to the side so you they don't interfere with the screw for the pillar.

Use a hammer and nail set or flat head screwdriver to drive the nails or staples just below the surface. This will keep them from interfering with the trim strips. **Don't drive the nails too deep.** High humidity could cause the wood to swell over the heads of the nails, in the future. (fig. 18)

## INSTALL THE TRIM

- \_\_\_18. If you haven't already done so, this is the time to remove the overhang from the top and bottom of the back and soundboard. Use any sort of handsaw to accomplish this. (fig. 19) Follow up with a sanding block to clean up the edge.

Also use this time to double check that all nails or staples are driven down slightly below the surface of the back and soundboard.

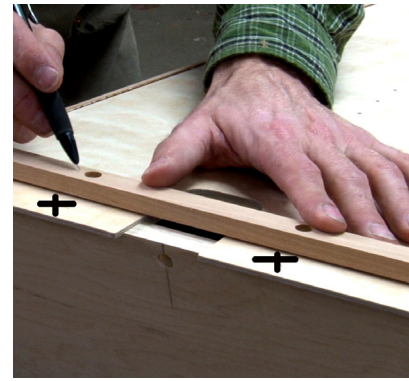


FIG. 16



FIG. 17



FIG. 18

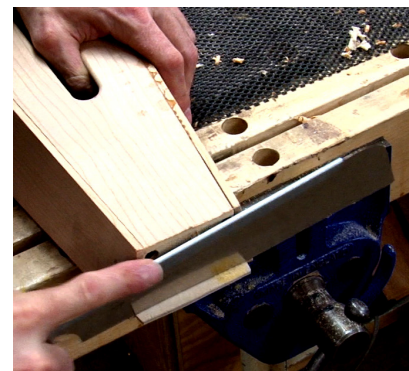


FIG. 19

- \_\_\_19. Using a sanding block or hand plane, remove the ledge of the frame that stands higher than both the back and the soundboard. (figs. 20, 21)

DO NOT use a flush trim router bit for this step. It's also best to avoid an orbital sander for this step, as this may cause an unintentional rounding of the frame.

- \_\_\_20. Sand the access holes in the back panel using a 120-then 180-grit sandpaper. Be sure to clean up the entire perimeter of each hole. This will make for more comfortable handling once the harp is finished. (fig. 22)

Use an orbital sander to lightly sand the entirety of the back and soundboard (220-grit). Take extra care to hold the sander flat.



Don't sand the back too aggressively. You want to avoid sanding through the thin cherry veneer.

Test fit the trim strips. Be sure you know which strip is going where.

- \_\_\_21. Sand along the entire inside edge (NOT the edge that will be glued down...) of the trim strips. It is easy to do this step now. The inner wood of the trim strip will be harder to access once it's glued down. This will ensure that no one will get a splinter from handling the harp near the trim. (fig. 23)

- \_\_\_22. Test fit the bottom trim strip with the pre-drilled holes. Check that the mitered edges fit properly without leaving a gap anywhere. (fig. 24)

If needed, use a sanding block or disc sander to adjust the miters on the bottom trim strip. The width of this strip should match the width of the harp's soundboard at the bottom. You may need to adjust one side more than the other to get the width and miters to match. If you run out of wood to remove from the bottom trim, the long thin trim strips can also be adjusted for miter angle.



FIG. 20



FIG. 21



FIG. 22



FIG. 23

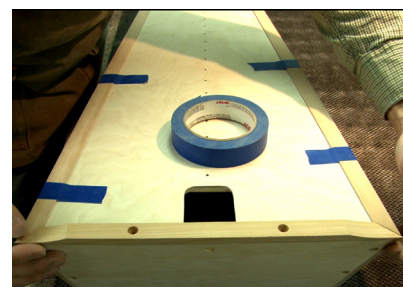


FIG. 24



- \_\_\_ 23. When you're satisfied with the fit of the bottom trim, use a 7/64" drill bit to bore pilot holes into the base block.
- \_\_\_ 24. Apply glue and use 1-1/4" screws to attach the bottom trim strip to the frame. Be sure to clean up the excess glue right away.
- \_\_\_ 25. Double check the miter angles. Sometimes a gap can occur once the bottom trim has been attached. One more dry fit should correct any problems.
- \_\_\_ 26. Use a pencil to mark the overhang of the side trim strips at top of frame. Cut with any type of saw. (fig. 25)
- \_\_\_ 27. Apply glue to the trim. Lay the trim on the body and use cam clamps or masking tape to secure it down. Space the tape about every 1/2". Use a scrap block to push the tape against the inside edge of the trim strips. If using tape, think of applying each piece like a bandage where you are pulling the gap closed. Loose tape holds nothing well. (fig. 26)
- \_\_\_ 28. Allow 30-60 minutes for the glue to dry. Then remove the tape or clamps.

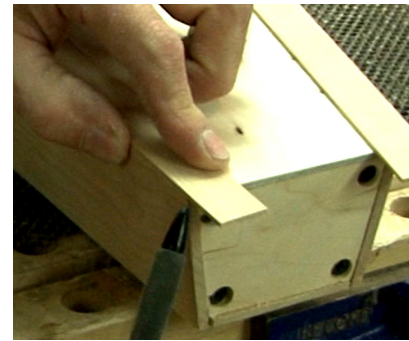


FIG. 25

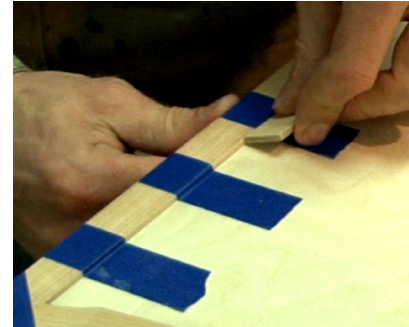


FIG. 26



FIG. 27

- \_\_\_ 29. Repeat trim process for the back:
  - \_\_\_ Dry fit the trim
  - \_\_\_ Adjust the miter joints as needed
  - \_\_\_ Glue the bottom trim strip in place
  - \_\_\_ Trim the excess from the side trim
  - \_\_\_ Glue the side trim pieces in place
  - \_\_\_ Remove excess glue.
- \_\_\_ 30. Use an 80-grit sanding block or disc sander to flatten the top of the inner top block. (fig. 28)



FIG. 28

Check the block with a straight edge to make sure it's flat across the entire top surface. This will eliminate gaps when fitting the arched cap. (fig. 29)



FIG. 29



## INSTALL THE ARCHED CAP BLOCK

- \_\_\_ 31. Orient the arched cap block on top of the harp and check for best fit. Use two 2-1/2" wood screws and a hammer to make punch marks into the top block for locating your pilot holes. Notice that the back of the block is taller than the front. (fig 30)
- \_\_\_ 32. Use a 7/64" drill bit to bore two pilot holes, using the punch marks you just made with the screws as a guide.
- \_\_\_ 33. Apply a liberal amount of glue and screw the arched top block into the top block with the same 2-1/2" screws you used as punches. Be sure to clean excess glue! (fig. 31)
- \_\_\_ 34. Apply glue and insert the 3/8" tapered wood plugs into the arched cap to cover the screws. Remove the excess with a sanding block. **Do NOT not flatten the top of the arched cap or change radius.** You need this piece rounded on the top to match the underside of the neck.



FIG. 30



FIG. 31

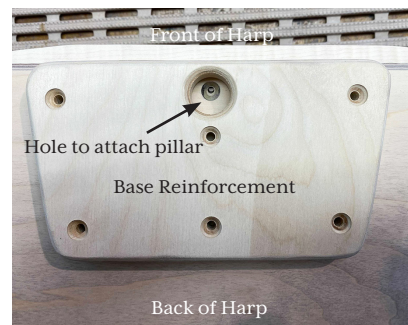


FIG. 32

## REINFORCE THE BASE

The tension from the strings causes the pillar to exert a tremendous amount of concentrated force on the base. The base reinforcement piece is added to the bottom of the base to provide extra support.

- \_\_\_ 35. Position the base reinforcement on the bottom of the base lining up the hole to allow access to the pre-drilled hole where you will attach the pillar. (fig. 32)

Apply wood glue to the base reinforcement and screw it to the base using six 1-1/4" screws. (fig. 33)



FIG. 33

## ASSEMBLE THE NECK AND PILLAR

- \_\_\_ 36. Begin by rounding the shoulder of the neck with a hand held belt sander or sanding block. (fig. 34)

Clean up any pointed areas with a chisel, rasp, or sand paper. The goal here is to create a smooth flow across the entire neck. (fig. 35)



FIG. 34

\_\_\_ 37. For the rest of the neck, follow these guide lines:

a) the edge below the guide pins must NOT be rounded over. You will need a flat space there for installing sharpening levers. (fig. 36)

b) Do NOT over sand the front of the neck where the neck and pillar connect. Also, avoid rounding the pillar. The chamfers are meant to be there.



It is much easier to sand the neck and pillar before they have been assembled. Do the majority of your sanding before you put these parts together.

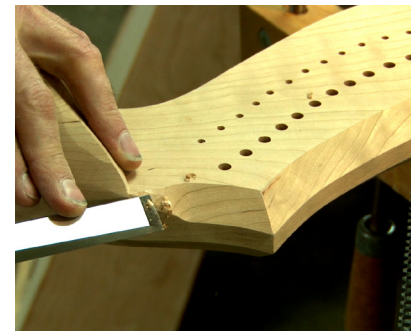


FIG. 35



FIG. 36

Do NOT round over this edge

\_\_\_ 38. Test fit the neck to the pillar without glue first, to make sure the joint is easy to assemble. If the wood has swollen a little from humidity, you can lightly sand the area to allow a little room for glue.

Also, make sure your power screwdriver has enough torque to turn the 2 large #14 screws into the wood. Try it out dry first, using the #3 square-drive bit provided. Change batteries now, if needed.

It helps to clamp the neck in a vise (with padding) or to your work surface so you can push hard on the power screwdriver. It is important to draw the parts fully together.



FIG. 37

\_\_\_ 39. When satisfied with the fit, apply glue and fit the neck to the pillar. (fig. 37)

Use the provided #14 x 2" wood screws to draw the neck and pillar together firmly. (fig. 38) We pre-drill these pilot holes with a 3/16" drill bit, before it leaves our shop, so they should line up perfectly.

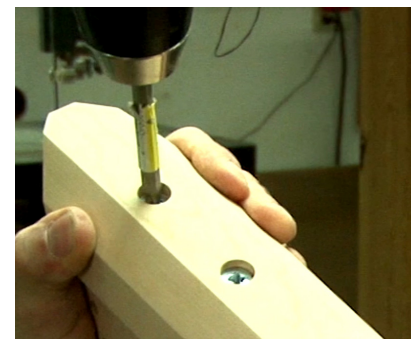


FIG. 38

\_\_\_ 40. Clean up any excess glue residue using a damp cloth and dull point to get into cracks. A screwdriver or dull chisel will work perfectly for this application. (fig. 39)



FIG. 39



- 41. Once the glue is mostly dry (at least 30 minutes), glue the 1/2" wood plug and the 3/4" harp medallion in the holes in the front of the pillar and allow ample drying time before removing the excess plug material. (fig. 40)



FIG. 40

## FITTING THE NECK AND PILLAR

NOTE: We do our best to ensure the neck and pillar will fit the body of your harp, before it leaves our shop. However, as a result of the building process, sometimes slight variations can occur that will require you to adjust the final fitting at the end of the building process.

- 42. Place the body of the harp on its back on your workbench. Hold the neck and pillar assembly in place on the body. Check the fit at the back of the neck where it meets the arched cap block, and then check how the bottom of the pillar meets the base block. Look at the photos and make minor adjustments as needed to achieve a good fit.



FIG. 41

Figure 41 shows a perfect fit. If yours looks like this, you may proceed to the next step.



FIG. 42

Figure 42 shows a small gap of about 1/8" between the pillar and the base block, and this is acceptable. When you install the screw it will draw this gap closed very easily. If the gap is wider than an 1/8", however, you may want to fit and glue a shim under the pillar to fill the gap.

Figure 43 shows a pillar that is too long and needs to have some wood removed at the bottom. In some cases you may need to remove a significant amount of wood using a hand saw first, then following up with a sanding block or flat file as needed.



FIG. 43

## INSTALL THE CONNECTING DOWEL PIN

- \_\_\_ 43. Stand the harp up, leaning it against your work table, so you can check the fit of the back of the neck on top of the soundchamber. Mark hash marks on both sides of shoulder and top of the arched cap. (fig. 44)

Connect the marks across both pieces using a straight edge. Be sure that the marks match on both the arched cap and shoulder. (fig. 45)

Mark the center of this connecting line and punch with an awl or other sharp tool. This is where you will drill for the hidden dowel that keeps the neck centered on the body.

- \_\_\_ 44. Use masking tape to mark a 1-1/4" depth stop on your 3/8" drill bill. (fig. 46)

Using the guide lines you just marked, drill both the top of the arched cap and the under side of the neck to the depth of your tape. Rock the drill front to back about 10° to give the dowel potential for a little movement. (figs. 47, 48)

**Do not rock the drill bit left/right.**

- \_\_\_ 45. Lay the body of the harp on your workbench and insert the 3/8" dowel in the hole in arched cap piece

Slide the shoulder of the neck onto the dowel to position it on the top of the body and bring the bottom of the pillar into contact with the base of the harp.

- \_\_\_ 46. Use a 7/64" drill bit to bore a hole through the base block into the bottom end of the pillar, aiming it upwards to match the angle of the pillar.

Use a 2" wood screw to secure the pillar to the base block. (fig. 49)



Do NOT glue the neck/pillar assembly to the body.

At this point, the pillar will likely feel a little wobbly on the body. This is normal. Once you install the strings and bring them up to pitch, the pillar will be held firmly in place by the string tension.

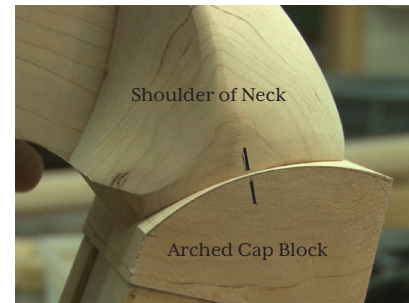


FIG. 44

Be sure to mark both sides!

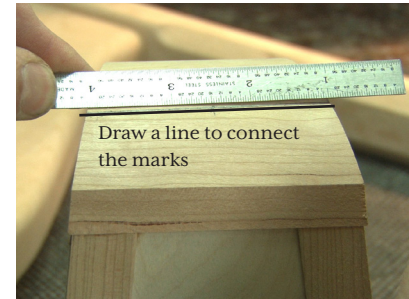


FIG. 45



FIG. 46

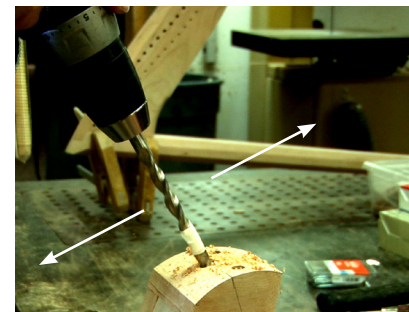


FIG. 47

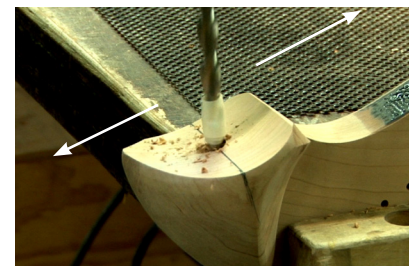


FIG. 48



FIG. 49



- 47. Stand the harp up again and trace the outline of the shoulder onto the arched cap in pencil. (fig. 50)

Remove the neck/pillar assembly in preparation for a final, and very thorough sanding of the harp before applying a finish.

We use a hand held belt sander to taper and round the arched cap block to reach the pencil marks you just made. (fig. 51, also see photos on back cover)

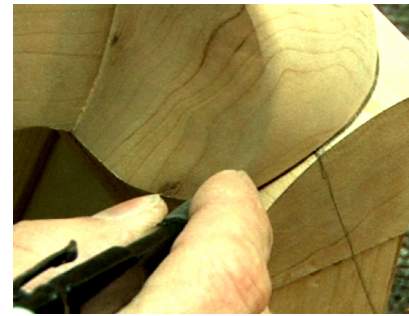


FIG. 50



FIG. 51



FIG. 52



FIG. 53



Any minor cracks can be filled with your favorite wood putty. If you have trouble finding a paste filler that will match this wood, make up your own out of fine sawdust (from sanding the harp) and epoxy, wood glue, or super glue mixed to a consistency of putty (wood glue can be thinned with a drop or two of water). Another option is to use filler that is light in color and then darken it later with wood-tone touch-up pens.

Don't forget to sand the feet!



- 48. Use sanders/planes to create a 1/4" round-over along all four long corners of the box. (fig. 52)

With the body separated from the neck/pillar, take time to smooth all corners and remove any machining marks from the entire harp.

Be sure to sand the neck/pillar joint flush with each other. This will make for a much nicer looking finished harp. (fig. 53)

## APPLY A FINISH

- 49. Apply the finish of your choice, sanding lightly between coats with very fine sandpaper (600 grit) or steel wool (#0000). Don't forget to sand and finish the feet too!

### General Finishing Guidelines

**STAINS or DYES** -- These are coloring agents and should only be used if you want to change 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 best with a clear finish. But, if you want to color the wood, your staining should be accomplished before applying a surface finish such as oil, varnish, or lacquer.

**OIL or WAX** -- Be very cautious about using an oil or wax finish. If this type of finish gets into the tuning pin holes, it will act as a lubricant, and you may have trouble keeping the instrument in tune. Oil finishes 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. Some people are fond of a beeswax finish for a natural look, but it can show water spots if it gets wet, so you may end up needing to re-wax or touch up the surface in the future.

**POLYURETHANE VARNISH** -- Any regular varnish will work fine on this project, but we think a wipe-on, semi-gloss polyurethane is the easiest to apply because it does not drip or sag. Just wipe on a thin coat and wipe off the excess. The advantages of this finish are its simple application, minimal odor, good durability, and deep, soft luster.

**LACQUER** -- Many professional instrument makers 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 are the toxic lacquer fumes.

## INSTALL THE HARDWARE

Keep the neck/pillar separate from the soundchamber for the majority of the hardware installation.

- 50. Locate the brass eyelets in your hardware pack. Install the eyelets in the soundboard. The 12 large eyelets will go in the bass (wider end) of the soundboard, near the bottom.

The 21 medium eyelets get placed in the middle and top end of the soundboard. Notice we use an awl for pushing the eyelets fully into the holes. (fig. 54)



FIG. 54



- \_\_\_ 51. Orient the feet on the bottom of the harp with the larger portion of the foot in the front. The feet should be near the edge of the base but be sure to keep the front “toes” no wider than 14” apart so the harp fits comfortably in the case. (fig. 55)

Using an awl, mark where your screws will be located. Bore pilot holes into the base using a 7/64” drill bit. Attach the feet using the 1-5/8” wood screws.

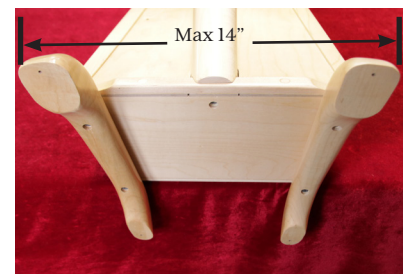


FIG. 55

- \_\_\_ 52. Install a rubber bumper under each end of each foot, being careful with placement. Make sure that the rubber at the back end of the feet will stay in contact with the floor when you tip the harp back on your shoulder to play.

Mark the placement with an awl. The pilot hole should be 3/4” away from the outside edge of the pad of the foot. Use a 7/64” bit to drill a pilot hole. Use a piece of tape to mark the depth on the drill bit so you don’t drill through the top of the foot. (fig. 56)



FIG. 56

- \_\_\_ 53. Install the 12 large threaded bridge pins into the lower row of holes drilled in the neck in the 12 bass end holes (the holes closest to the pillar). Tap them partially in with a hammer and then turn them in with a 3/32” allen wrench until the top is about 5/8” above the surface of the wood. Use the 5/8” spacing guide to check the pin height. (fig. 57)

**NOTE:** Be very careful not to drill through the top side of the foot when you are drilling the pilot hole as well installing the screw.



- \_\_\_ 54. Install the remaining 21 bridge pins into the smaller holes on the lower row. Use the 5/64” allen wrench to adjust the height to 5/8” above the harp neck.



FIG. 57

- \_\_\_ 55. Turn the neck/pillar assembly over so the bridge pins are hanging over the edge of your work table, but the neck is still firmly supported. Use the brass driver in your hand drill to push and turn the 33 threaded black tuning pins into the upper row of holes in the neck, from the opposite side of the bridge pins. **Do not lubricate the threads of the tuning pins!** When you push firmly as you turn them, they will drive in quite quickly, skipping threads. Don’t rely on the microthreads to seat these pins – that takes too long and it heats up the pins to extreme temperature. Push hard and turn slowly until the hole in the tuning pin lines up with the groove in the bridge pin. (fig. 58)

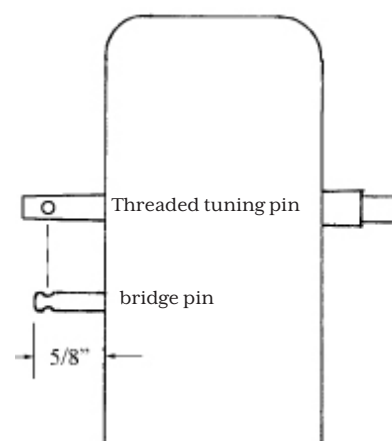


FIG. 58

## INSTALLING STRINGS

- 56. Finally you can install the strings! You will need a pair of scissors, a wire cutter, and your tuning wrench for this last operation, however, the messy part is over. So grab your favorite beverage and move to a comfortable spot in the house where you will turn this project into a musical instrument!

You'll find our stringing instructions along with a helpful video on our website

[WWW.HARPKIT.COM/RESOURCES/HOW-TO-STRING-A-HARP](http://WWW.HARPKIT.COM/RESOURCES/HOW-TO-STRING-A-HARP)

**HARP REPAIRS:** If you ever need to repair the wood parts of your harp, you will be glad to know that the neck/pillar assembly can be taken apart and removed from the soundchamber to facilitate repair work. Simply loosen the strings and unhook them from the tuning pins. Then remove the screw at the base of the harp to allow the neck/pillar to come free of the harp body.

**SCRATCHES & DENTS:** You can restore the luster to the finish of your harp with a furniture polish like Old English with lemon oil. This will help hide scratches too. We avoid using polishes with wax because the wax will interfere with future refinishing or touch-up work.

**HUMIDITY:** All acoustic instruments are susceptible to humidity. Moisture in the air can make the wood of an instrument shrink and swell. Over time, the shrinking and swelling can cause the wood to crack. The general rule for keeping an instrument from cracking is: If the weather is comfortable for a person, then it's also comfortable for wood.



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