Regency Harp Kit

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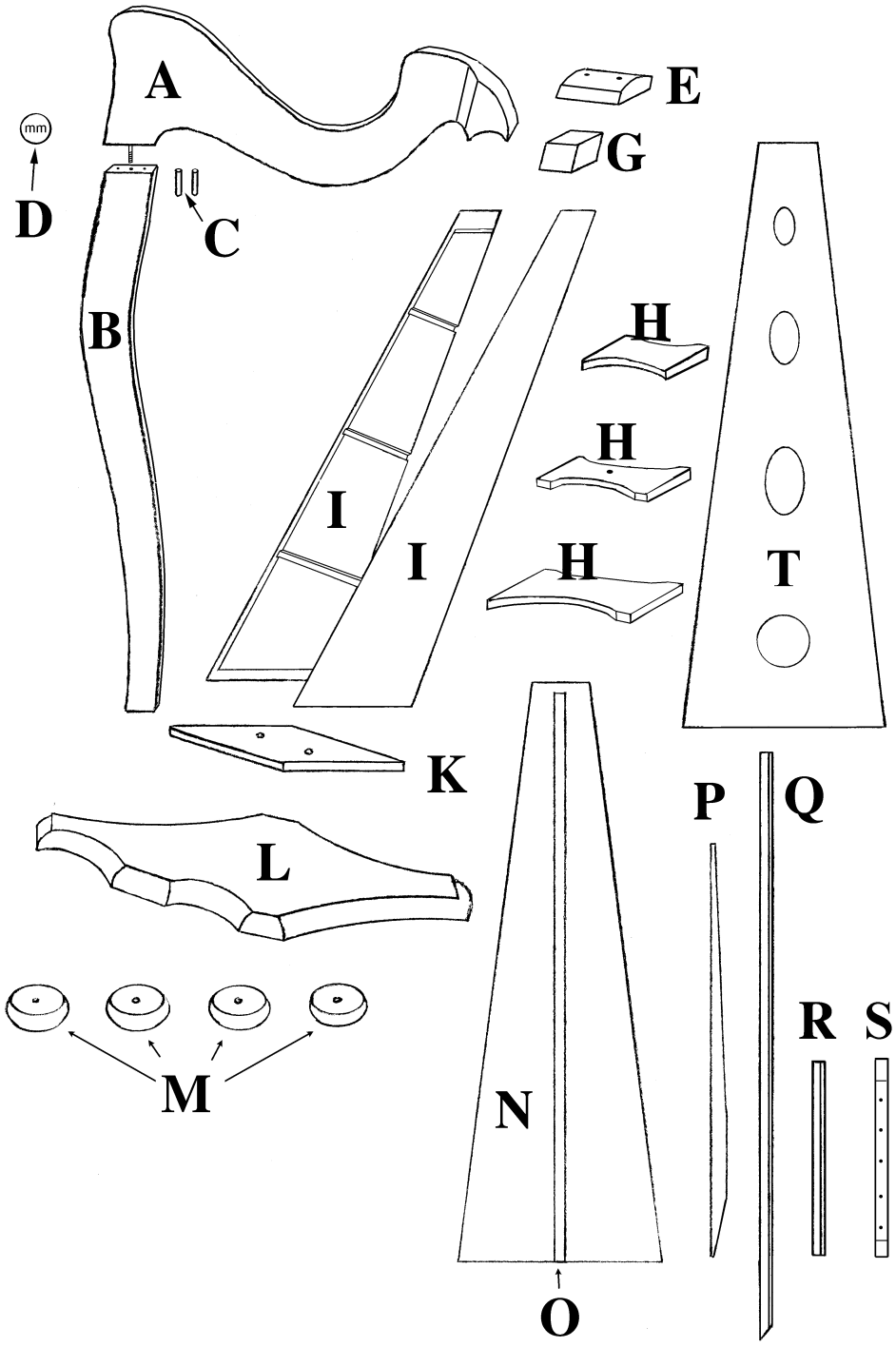
Regency Harp Kit

WOOD PARTS:

A - 1 pre-drilled neck, solid hardwood
B - 1 pillar, solid hardood
C - 2 dowels for neck
D - 1 Musicmakers cover disc
E - 1 arch piece, hardwood
G - 1 top block, laminated maple
H - 3 inner braces, laminated
I - 2 sides, solid hardwood
K - 1 base, laminated maple
L - 1 large bottom deck, hardwood
M - 4 round feet, solid hardwood
N - 1 soundboard, aircraft birch
O - 1 outer center strip, hardwood
P - 1 inner reinforcement bar
Q - 4 long trim strips, hardwood
R - 1 short trim strip, back
S - 1 short trim strip, front (drilled)
T – 1 back panel, plywood

HARDWARE:

1 set of 34 Harp Strings
34 Threaded Tuning Pins
1 Brass Driver
1 Tuning Wrench for threaded pins
34 Brass Eyelets, medium
34 Threaded Bridge Pins
1 Allen Wrench 5/64" for bridge pins
1 Allen Wrench, 5/16" for neck bolt
2 oz Wire Nails, 3/4" X 18
2 Machine Bolts, 5/16" X 2-1/2"
2 Nuts, 5/16"
4 Washers, 5/16"
5 Wood Screws, 1-1/4" drywall
4 Wood Screws, 1-5/8" drywall
2 Wood Screws, 2" drywall
8 Wood Screws, 2-1/2" drywall
2 Drill Bits, 1/8" & 7/64"
1 Small Dowel Pin, 3/8" X 2"
4 Round-felt Pads for feet
1 Spacing Guide
5 Wood Plugs, 3/8" dia for bottom trim
1 Tapered Plug, 7/16" for top of neck
1 set Assembly Instructions



If you have any questions about the assembly of your kit - please visit our online Builder's Forum
www.harpkit.com/forum

BEFORE YOU BEGIN

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

A NOTE ABOUT GLUE

DO NOT ASSEMBLE THIS PROJECT WITH EPOXY OR SUPERGLUE OR HOT MELT GLUE!
Find a good woodworking glue. Many luthiers (guitar & violin makers) still use the natural hide glues that have been around for centuries, carrying on a fine old tradition, but that does not mean that you should do the same. Animal glues require lots of experience for successful use. WE BUILD THIS INSTRUMENT WITH MODERN WOOD-WORKING ADHESIVE, SUCH AS ELMER'S CARPENTER'S WOOD GLUE OR TITEBOND (yellow aliphatic resins) because they hold the parts even more securely than the old hide glues. The few advantages that some people claim with hide glue are more than offset by the strength, durability, ease of application, and availability of the modern woodworking adhesives.

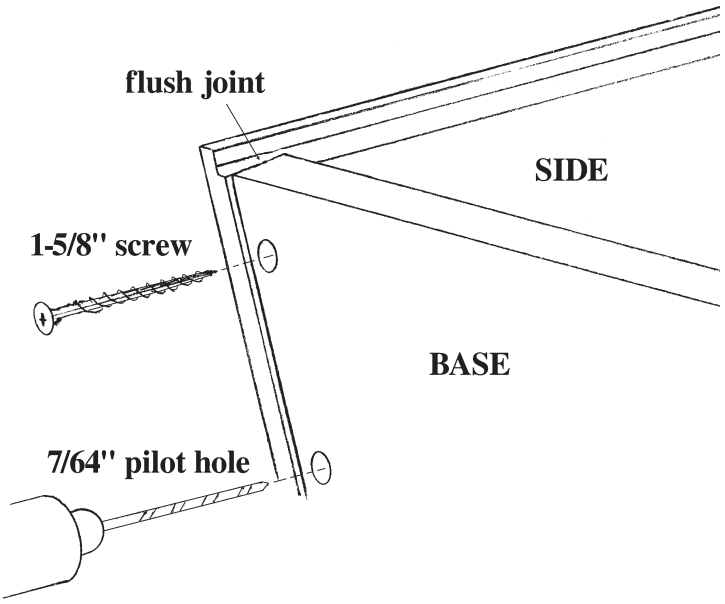
When gluing parts together, be sure to put enough glue on the joint to wet the entire surfaces to be joined. A good sign of proper gluing is that a little excess will squeeze out around the joint when clamping pressure is applied. Too little glue may cause the parts to separate later, whereas too much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

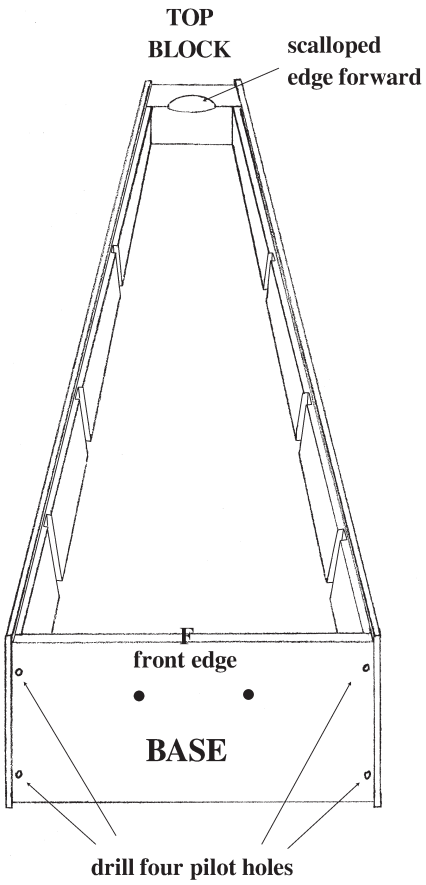
THE SOUNDCHAMBER FRAME

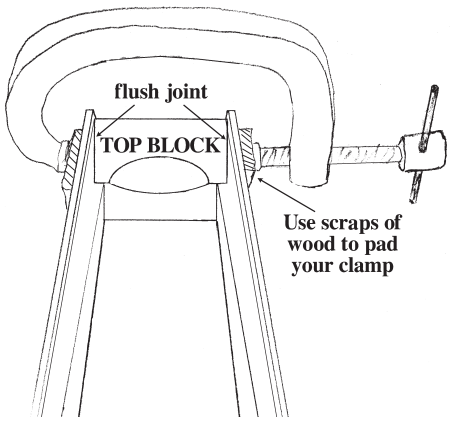
_____1. Check all parts of your kit against the parts list. Note that we have written the letter "F" on certain pieces to indicate "front".

_____2. Find the two SIDES, the BASE, and the TOP BLOCK for the soundchamber frame. Hold them together dry to check the fit of each joint. These parts will only fit properly one way!

_____3. This illustration shows the parts arranged with the front facing up, but you may want to turn them all over to make it easier to assemble them. Drill pilot holes for wood screws at each end of the BASE, as follows: Hold the BASE in position at the bottom of the SIDE pieces with all edges flush and tight. Drill through the BASE into the SIDE pieces at each corner position with a 7/64" bit.

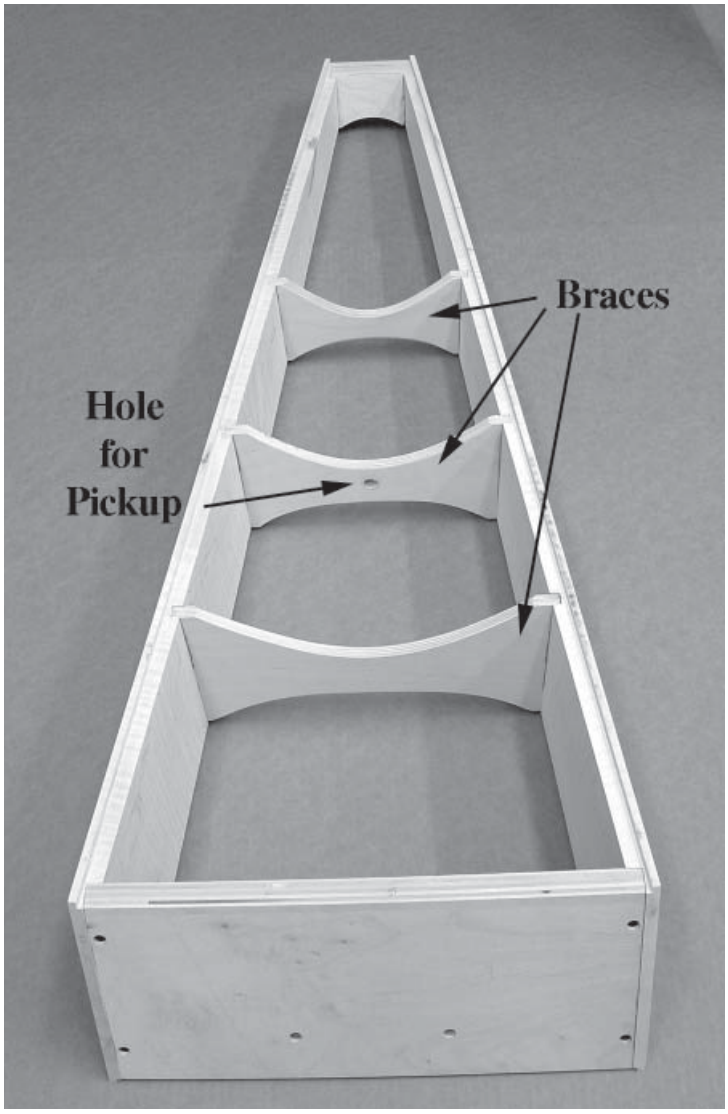






_____4. Clean all surfaces of the SIDES, BASE and TOP BLOCK. Apply glue to the joints at the BASE first, holding the pieces together while you insert the 1-5/8" screws to draw the SIDES tightly onto the BASE.

_____5. Apply glue to the edges of the TOP BLOCK that contact the SIDE pieces. Place the parts together and clamp them, making sure all edges are flush.



_____6. Turn the frame (if necessary) so the front faces down on your work surface.

Find and check the fit of BRACES #1, #2. and #3. They should fit between the SIDES, sliding into the notches.

NOTE

Sometimes the BRACES do not fit perfectly between the SIDES. This could be caused by sloppy cutting on our part, or it might be that the SIDES have bowed a little on their own. We recommend checking the outer face of each SIDE with a straight-edge and fitting the BRACES so as to push or pull the SIDES into alignment. If a BRACE is too short, you may shim it with a scrap of thin wood. If too long, use a disk sander to remove a small amount of material without changing the angle or rounding the end.

The width of the BRACES is not so critical. They do not need to reach all the way from front to back of the slot. In fact, we don't want the BRACES to interfere with either the SOUNDBOARD or the BACK panels.

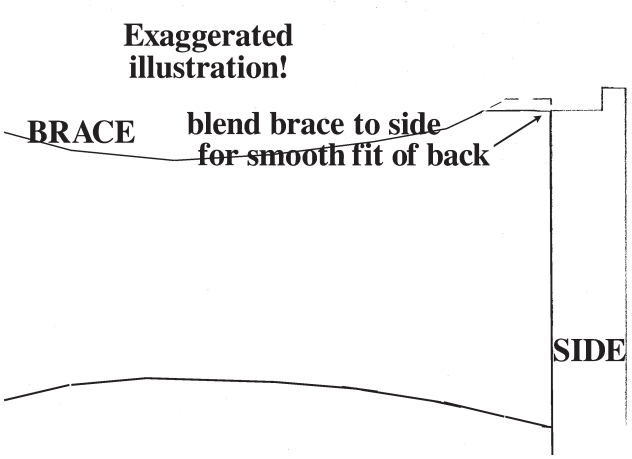
When satisfied with the fit of each BRACE, glue them in place and apply pressure (clamps or tape) to hold until dry.

Another Note: The small hole in the center brace is for installing an electric pickup in your harp, in case you ever want to do that in the future. This central location allows you to place one sensor down in the bass range, and another up in the treble range.

THE BACK

_____8. Check over the back edges of the harp frame. If any of the BRACES stand taller than the SIDES, sand them down flush with the ledge.

_____9. Test fit the BACK panel to the frame. It should seat into the ledges of each SIDE. You will have excess plywood extending beyond the TOP BLOCK and BASE of the frame which must be trimmed off later.



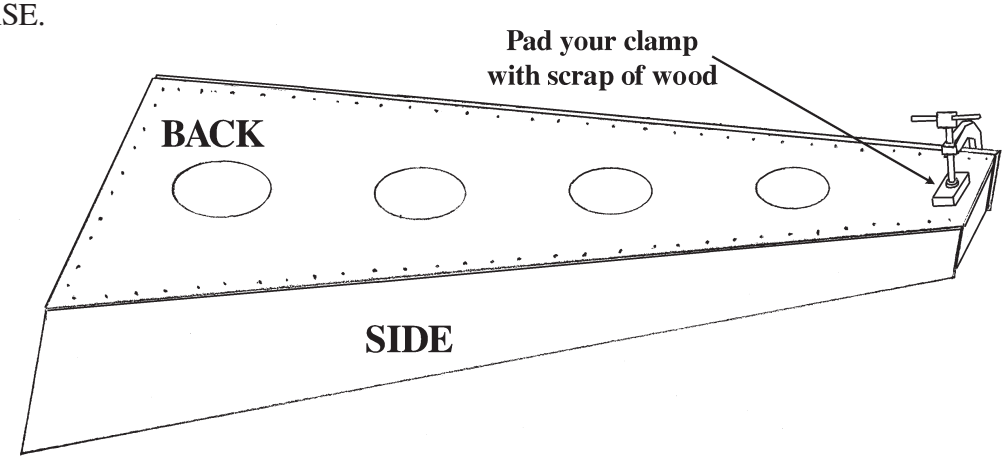
If necessary, you may sand or plane along the edges of the BACK to adjust the fit. Our parts are often generously sized. We use a hand plane to accomplish such fitting. Don't be concerned about a perfect fit, however. Slight gaps will be covered over later when you add TRIM PIECES.

_____10. Clean off all sawdust from the frame and the back panel.

HELPFUL HINT

Every time you do some gluing on your project, we advise having a clean damp rag handy for cleaning up excess glue that squeezes out of the joints. Keep your fingers clean too. Rinse the rag frequently to avoid spreading glue around as you wipe. Make sure all glue residue is removed. This will help save you lots of time toward the end of this project when you are preparing to apply the finish.

Apply a thick bead of glue to the backside of the entire frame where it contacts the BACK panel, including the TOP BLOCK and BASE.



Place the BACK in position with one clamp at the TOP BLOCK to prevent it from sliding downward on the frame. Make sure the panel fits into the ledges of each side.

Tack the plywood BACK to the frame using the nails provided. If you have a power tacker or stapler, that will be fine too. Place the nails about 1" apart and about 1/2" from the outside edge of the harp frame. This hardware will be covered over later by the TRIM STRIPS which are about 3/4" wide. Do not place tacks across the top of the harp.

GO EASY WITH YOUR HAMMER!
TRY NOT TO DENT THE SIDES OF THE HARP.

Try to work quickly, before the glue becomes too thick.

POINT OF INTEREST

We recommend 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. 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.

Clean off excess glue with your damp rags right away, making a thorough job of it.

THE SOUNDBOARD

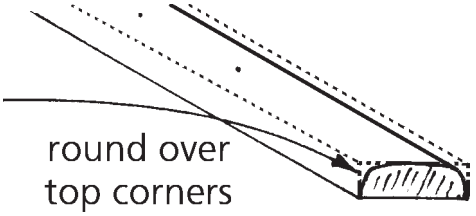
_____11. Test-fit the SOUNDBOARD to the frame of your harp. Please note that we have left this panel a little long, just in case the edges get damaged in shipment, so you can plane down the edges if necessary and still get a good fit.

Once fitted, select which face of the SOUNDBOARD has the prettiest grain, and draw a centerline down it from top to bottom.

POINT OF INTEREST

Many people ask why we use laminated wood instead of solid for the soundboard. The reason for this is that we get much more strength from laminated material than from solid, and virtually no trouble with cracking. The superior strength allows us to use a thinner soundboard than if we were to use solid wood, so you get remarkable sound with minimal risk of cracking or breakage, regardless of your climate.

If you wish to substitute a solid soundboard of your own making (say, solid spruce), you may do so at your own expense and risk. For such customization, we recommend that you orient the grain horizontally (from side to side) for strength, and that you taper the thickness from about 1/4" in the middle to about 1/8" at the edges. We also recommend that a solid wood soundboard be installed in the driest of weather conditions so to reduce the possibility of cracking due to shrinkage from humidity changes. Our warranty, of course, does not cover custom soundboards.

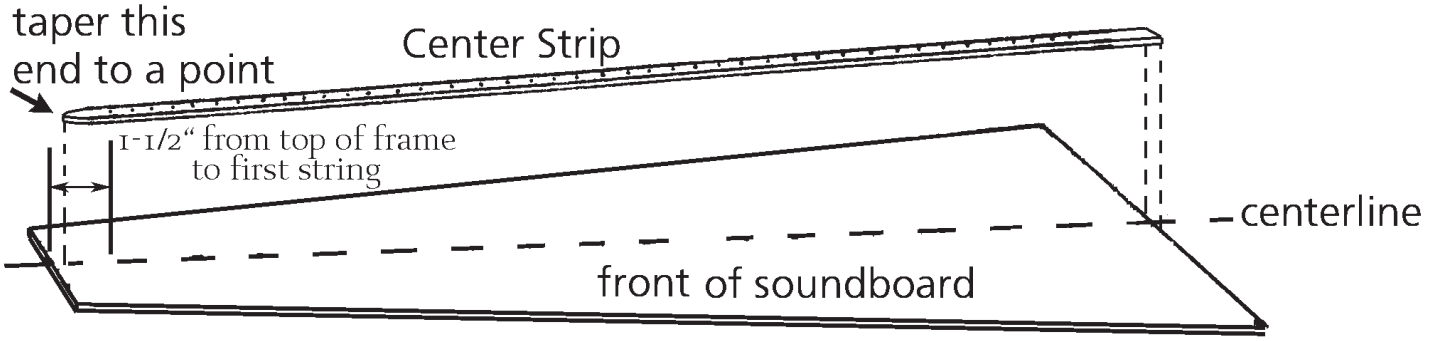


_____12. Find the CENTER STRIP for the SOUNDBOARD. It is a long narrow piece of hardwood with punch marks in it. Sand off the sharp corners of this strip as shown.

Glue the CENTER STRIP to the SOUNDBOARD as follows:

A) Be sure the top and bottom are properly oriented. You should find the word "bottom" written at one end of this piece.

B) Place the CENTER STRIP so the top punch-mark will be 1-1/2" from the top of the harp frame when the SOUNDBOARD is trimmed to the frame. You may round over or taper the top end just beyond that top punch-mark, to make it look nice, but this is optional.



C) Outline of the strip in its proper position so you can be sure to keep it properly centered when clamping.

D) Make certain string hole markings are facing up.

E) Apply only a small ribbon of glue to the underside of the CENTER STRIP so you don't get too much squeeze-out that will need to be cleaned up.

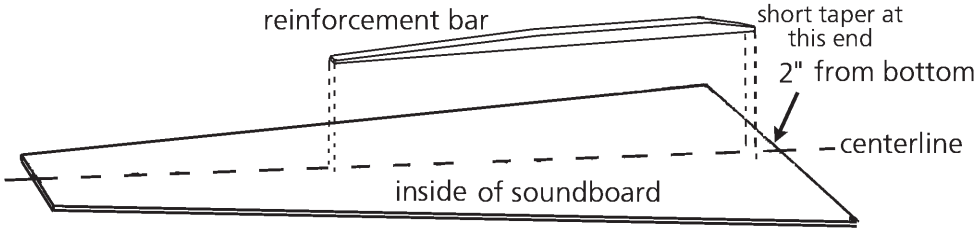
HINT: If the CENTER STRIP is not straight, hold a straight-edge against it, and use masking tape to hold it straight before applying clamps or weights.

F) Use weights or clamps (in an emergency, look for heavy sacks of flour, sugar, sand, or fertilizer to use as weights) to hold it until dry.

CUSTOMER SUGGESTION: One customer who has built several harps suggests tacking the CENTER STRIP in place with the tiny nails in the kit, instead of using clamps. Place the nails at the punch-marks, but be careful not to pound them all the way in -- leave the heads sticking up so you can pull the nails out later. We think this is a great idea!

G) Check it again for straightness, if possible. This little strip can easily slide around under the pressure of your clamps.

_____13. The REINFORCEMENT BAR is to be glued to the backside of the SOUNDBOARD, starting 2" from the bottom. Note that this piece is tapered as it proceeds up the harp. It does not reach all the way to the top of the instrument because we want the SOUNDBOARD to be thinner and more responsive at the top. Glue and clamp it in place, as shown.

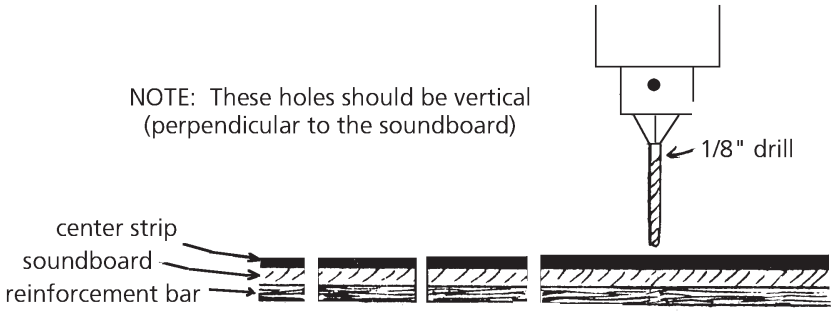


This would be a good time to sign and date your harp, on the inside of the SOUNDBOARD, where it can be seen through one of the access holes in the BACK.

POINT OF INTEREST

Some people ask about finishing the inside of the soundchamber. We do not recommend it. Guitars and violins are not finished on the inside, so this instrument need not be sealed on the inside either. We understand the concern about the effects of humidity on the wood, but this instrument box is glued firmly all around, so there is no chance of warping from humidity. Besides, varnish cannot seal the wood from humidity (water vapor). It can only prevent liquids from soaking in, and even then only for limited time.

_____14. Turn the SOUNDBOARD over and note the punch marks along the CENTER STRIP. Use the 1/8" drill bit provided to bore these 34 holes through all the layers of wood in the SOUNDBOARD assembly.



INSTALLING THE SOUNDBOARD

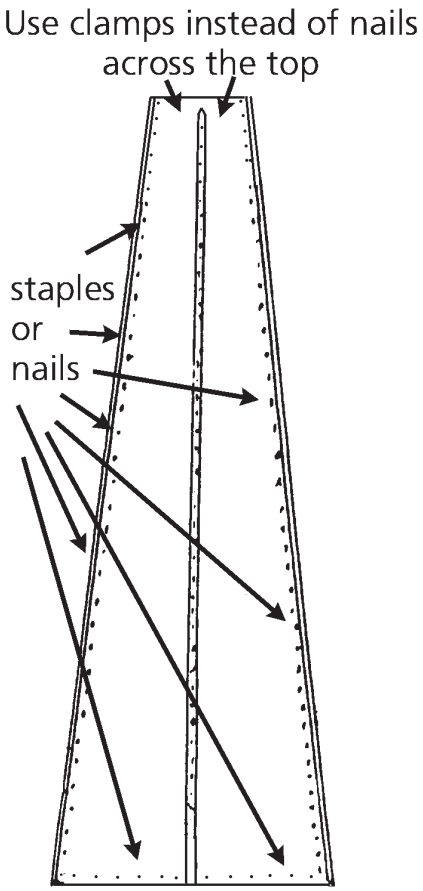
_____15. Test fit the SOUNDBOARD to the front of the frame.

Make sure the SOUNDBOARD fully covers the TOP BLOCK and the BASE. Again, you may need to shave a little off each side to make this piece fit into the ledges of the SIDES. You don't need a perfect fit, however. Slight gaps will be covered over later when you add the TRIM STRIPS.

_____15. Apply a thick bead of glue around the four edges of the frame that will contact the soundboard.

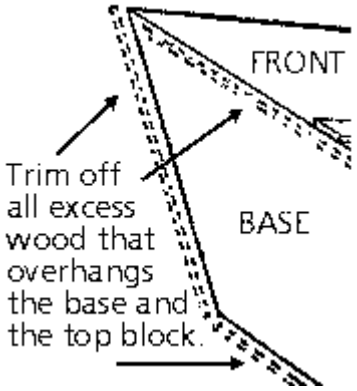
_____16. Quickly place the SOUNDBOARD in position and nail it in place along the bottom and sides, just as you did the BACK panel, using clamps at the TOP BLOCK.

Clean off excess glue with a damp rag right away, making a thorough job of it.

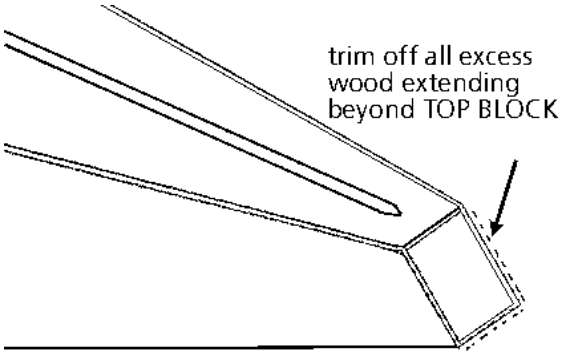


CAUTION: Be sure to use nails or staples for added security.

Some woodworkers ask if they can simply clamp the soundboard in place, but we have found that mechanical fasteners, such as nails, staples, or screws, are necessary to avoid having the strings gradually pull the SOUNDBOARD off the frame. Yes, most glues are stronger than the wood itself, but we have found that high humidity can cause even the best glues to soften enough to allow the parts to creep slowly out of position under the high tension of the strings. If you omit the nails, don't complain to us if the SOUNDBOARD comes loose!



_____17. When the glue is dry, trim off all excess wood that hangs over the top and bottom of the harp. THIS IS IMPORTANT to ensure a good fit of the ARCH and BOTTOM DECK pieces. Take the time to do a nice job with this. A belt or disk sander does this job quickly, but you can do it by hand with coarse sandpaper wrapped around a scrap 2 X 4 block of wood.



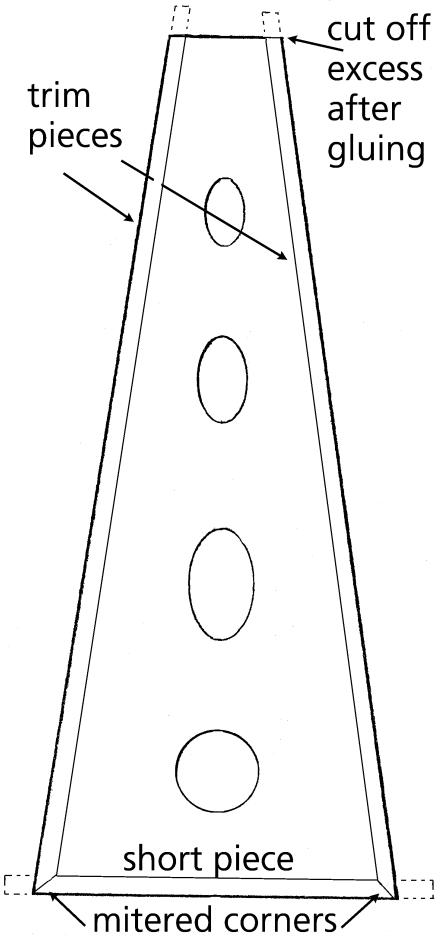
CAUTION: Take care to keep the top and bottom of the harp nice and flat. If you are not careful, you may end up rounding the surface that must make good contact with other flat parts (BOTTOM DECK and CAP).

ADDING TRIM STRIPS

_____18. Check to see if any nail heads along the SOUNDBOARD or BACK panel are raised up above the surface of the wood. If so, tap them deeper with a nail set and hammer.

_____19. The four long trim pieces will work on either the back or front. Pay attention to the grain on the trim strips. We like to match as best as possible the trim strips so that the pairs used on the front and backs match in color and grain. We like to slightly round over the top inside corner (scuffed with sandpaper) of the trim to take away sharpness. It is easier to do this now rather than after the trim is glued on.

_____20. Begin with the back of the instrument. You may fit the TRIM STRIPS with simple "butt joints" at the corners, but we recommend mitering them for the nicest appearance. We have already cut the proper angle at one end of each long TRIM STRIP, though these pieces are long enough for you to disregard those angles if you wish.



You will need to cut the short piece to fit nicely between the two long pieces at the bottom. Here's how to proceed.

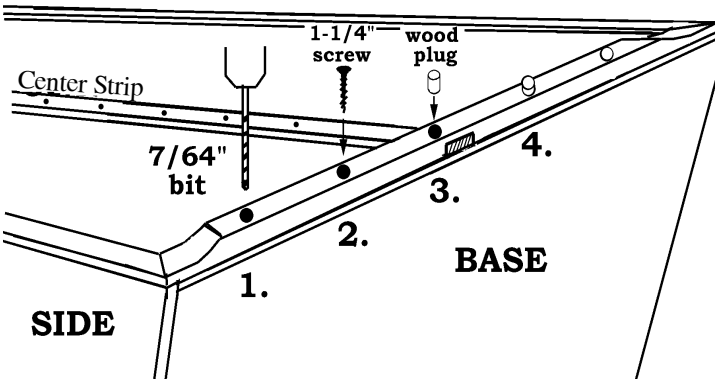
a) Use masking tape to hold the long pieces in place on the frame of the harp, flush with the outer edge.
b) Slide the short piece under the mitered ends at the bottom of the harp and line it up with the bottom of the harp.
c) Use a pencil to trace the miter angles onto the short piece.
d) Remove the short piece and cut the angles as marked.

HINT: We recommend cutting outside the lines marked, and then sanding carefully to the line using a disk sander. Take your time to do a nice job of fitting.

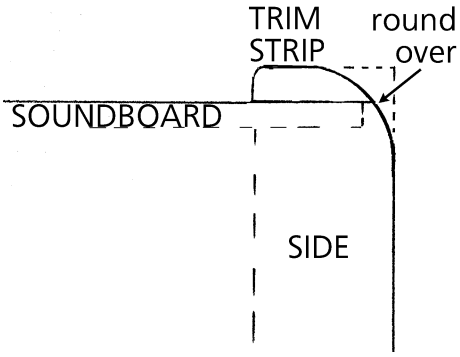
e) When satisfied with the fit, glue the TRIM STRIPS to the BACK, taking care to align them flush along the sides and bottom. You can use masking tape to hold these parts in place until dry. If you have clamps, you can also clamp the trim down. Tape every inch will suffice if you don't have clamps.

_____21. Install the BOTTOM FRONT TRIM STRIP in this sequence (NOTE: You will be trapping the CENTER STRIP under the BOTTOM TRIM STRIP as you do this):

1) Drill pilot holes into BASE
2) Add glue under the Front Trim Strip and use short wood screws (1-1/4") to fasten it snugly against the harp.
3) Glue wood plugs over screws
4) Sand plugs flush with surface of FRONT TRIM STRIP



SANDING THE SOUNDCHAMBER



_____22. We like to round over the sharp corners along the SIDES of the harp quite dramatically to soften the look of the harp. If you have a router, you can use up to a 1/2" radius round-over bit to make quick work of this step (be sure to make your router cuts in shallow steps, gradually lowering the bit with each pass to prevent chip-out). If you don't have a router, we recommend using coarse sandpaper on an electric sander or a sanding block to round over the sharp edges.

Remember that your forearms will make frequent contact with these corners of the soundchamber as you play, so make them feel comfortable. A sure sign of amateur woodworking is sharp corners. Your harp will look and feel like a professionally built instrument if the corners are softened this way.

_____23. Switch to a medium grit (120) sandpaper to smooth off the scratches made by the coarse paper. This time, be sure to sand with the grain of the wood so you don't add more scratches.

INSTALLING THE BOTTOM DECK

_____24. Place the soundchamber on a table with the bottom end hanging over the edge at any easy working height. Bolt the BOTTOM DECK in position with the machine bolts, nuts and washers, as shown. Tighten the nuts firmly with a wrench, but use no glue -- We like to be able to dis-assemble this section of the harp later if we need to. Note that the BOTTOM DECK protrudes more at the front of the harp than the back.

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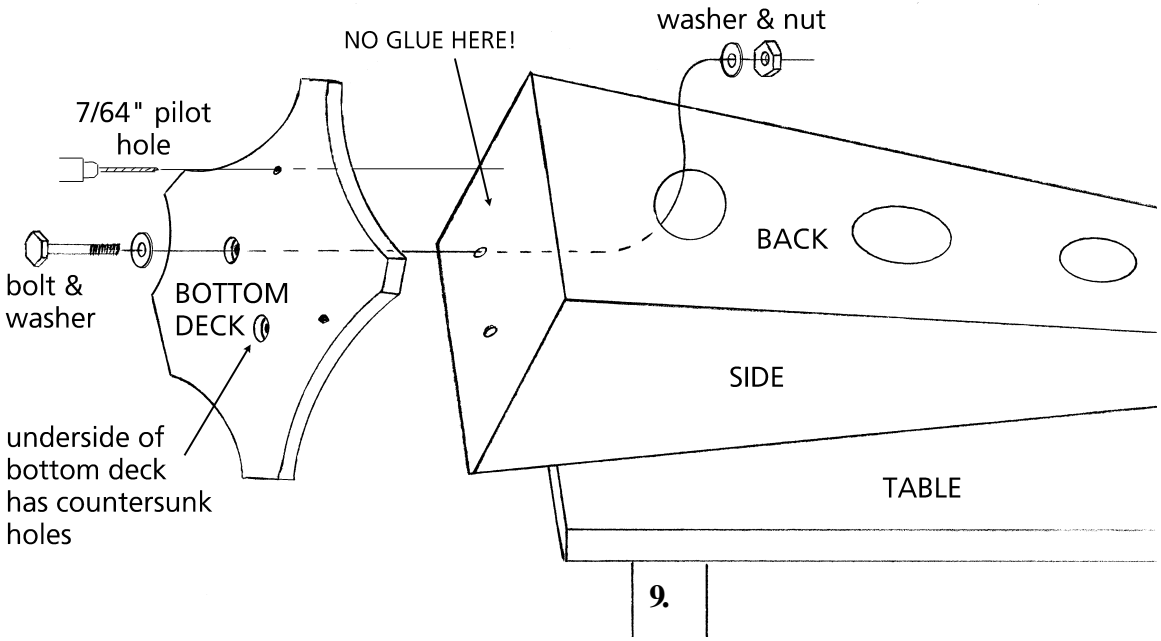
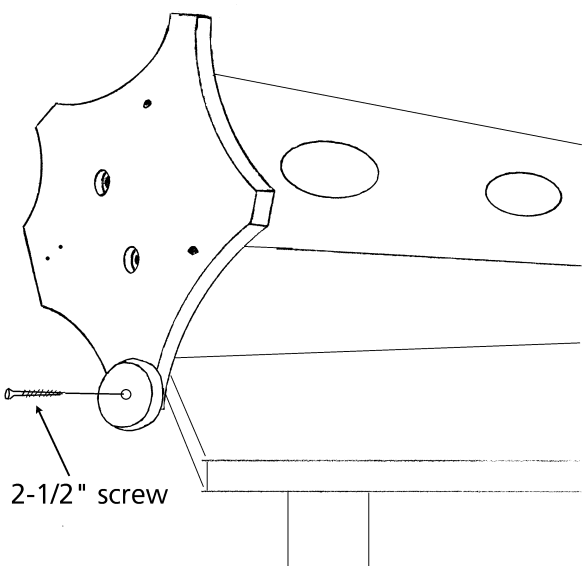


_____25. Use a 7/64" bit to make pilot holes for the two wood screws, and then Install 2-1/2" screws through the BOTTOM DECK into the BASE of the harp. This will prevent any rocking motion of the harp on the heavy platform. No need for glue on this step.

_____26. We recommend sanding the curved edges of the BOTTOM DECK and the FEET before gluing and screwing the FEET in place. A quick way to sand the FEET is to put a long thin bolt through the hole, tighten a nut down against the wood, and then spin the piece in an electric drill while holding sandpaper against it.

When ready, position the four FEET as you like them at the corners of the BOTTOM DECK. Use a 7/64" bit to drill pilot holes for the mounting screws, and then attach the FEET. We add glue to this step just to make sure the FEET don't come loose later.

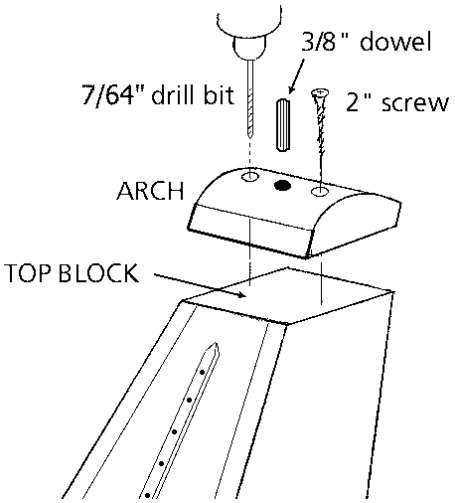
Now the soundchamber will stand up on its own four FEET!



_____27 Fit the ARCH piece to the top of the harp, making sure to orient the angled front and back to match the body of the harp. Align the corners of the ARCH over the TRIM pieces as well as possible. Drill two 7/64" pilot holes through the CAP and into the TOP BLOCK for screws.

Then glue and screw the ARCH to the top of the harp, using two 2" screws to clamp them tightly to the TOP BLOCK. You may need to sand off a little overhang to get it all flush -- we use an orbital sander to blend and round over the parts nicely after the ARCH is firmly fastened.

_____28. (OPTIONAL) The 3/8" DOWEL PIN shown here is an optional piece that you can hide inside the NECK and the ARCH. It helps you hold the parts in alignment as you string the instrument, before the string tension pulls everything down tightly. This dowel pin is NOT structurally necessary, so if you decide not to install it, just be sure to center the NECK on the ARCH as you install the strings.



If you would like to use the DOWEL PIN, here is how to install it. The trick is to drill the holes in the ARCH and NECK so they line up. Set the NECK on the ARCH (holding the NECK at the proper height) and mark a pencil line on the NECK and the ARCH (Image A). From these two lines, square a line across both the NECK and the ARCH (Image B). Find the center of these linee and mark it for drilling. Drill the holes slightly larger than the dowel to insure a comfortable fit.

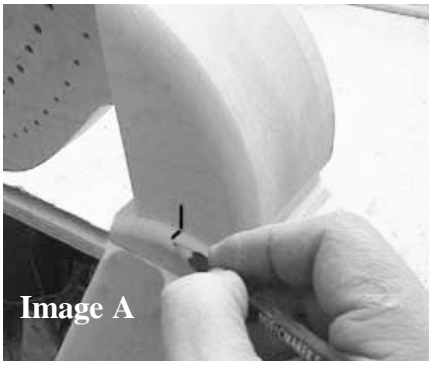


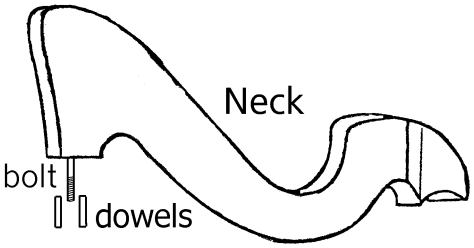
Image A

Enlarge the holes if you need to get the DOWEL PIN to fit easily inside this joint -- a tight fit is not necessary.

DO NOT GLUE THE DOWEL PIN IN PLACE.


Image B

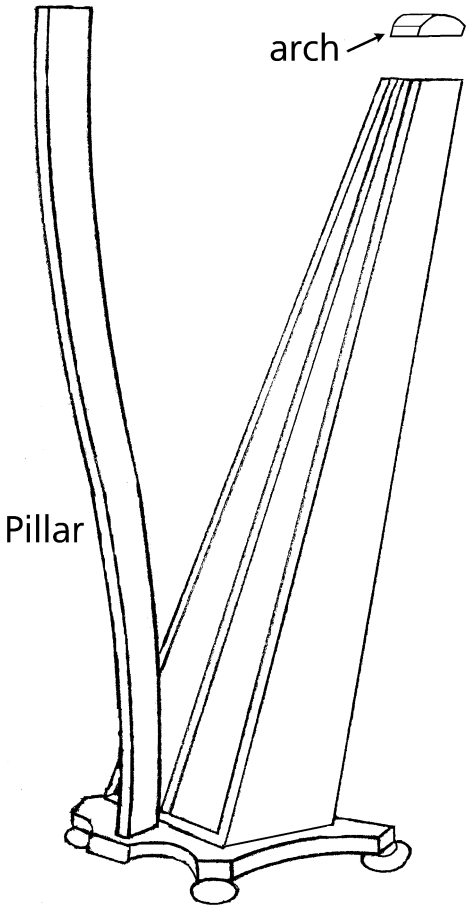
ASSEMBLING THE NECK AND PILLAR



_____29. Test fit the NECK and PILLAR to the sound-chamber, as follows:

a) Place the two DOWELS into the fitted holes in the NECK and PILLAR, making sure they are not too tight. If necessary, you may need to sand the dowels a little so they go in easily.

b) Rest the back of the NECK on top of the CAP and ARCH pieces, on top of the harp body, as shown.



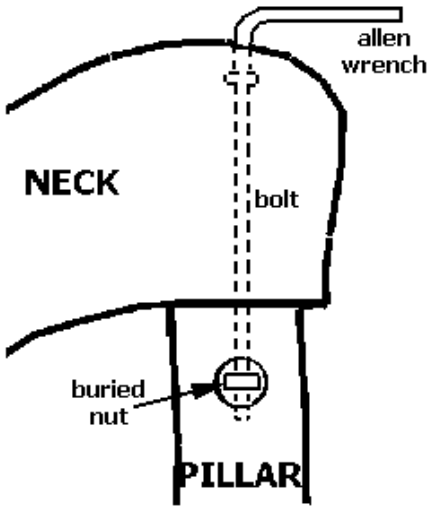
c) Use the large ALLEN WRENCH to screw the bolt into the pillar to draw all the parts together without glue first, just to make sure everything fits well. **CAUTION: Don't let this assembly fall to the floor! The neck is very heavy and could cause major damage if it falls.**

d) We have test-fitted these parts to a harp body in our factory before packing the kits, so they should fit well. You can move the bottom of the PILLAR forward or back a little on the BOTTOM DECK to adjust the fit at the back of the NECK.

Don't worry if there is a small gap (1/8" or so) between the back of the NECK and the ARCH -- the string tension will draw the parts together nicely. If the back of the NECK hangs too high above the top of the harp, however, you may trim a little length off the bottom of the PILLAR to lower the entire assembly a little. Use a disk sander for that sort of trimming so you can get the PILLAR to rest flat on the BOTTOM DECK.

If, however, you have not trimmed the excess length of the SOUNDBOARD, SIDES, and BACK that extended beyond the BASE or the TOP BLOCK, your harp body will be longer than it should be, and that will affect the fit of the NECK/PILLAR. Go back to STEP #17 and finish that trimming before proceeding with the NECK and PILLAR installation.

_____28. When satisfied with the fit, proceed with permanent assembly as follows:



a) Get some damp rags ready for quick cleanup. Take the NECK and PILLAR apart and pull out the dowels.

b) Squirt some glue into each dowel hole in the PILLAR and insert the DOWELS into that first. Then apply glue to the top of the PILLAR and to the exposed length of each DOWEL. Stand the NECK & PILLAR back in place quickly and screw the BOLT down completely, wiping off any excess glue that squeezes out as you tighten.

TIGHTEN THE BOLT VERY FIRMLY! THE BOLT IS YOUR MAIN STRUCTURAL REINFORCEMENT FOR THE NECK/PILLAR JOINT.

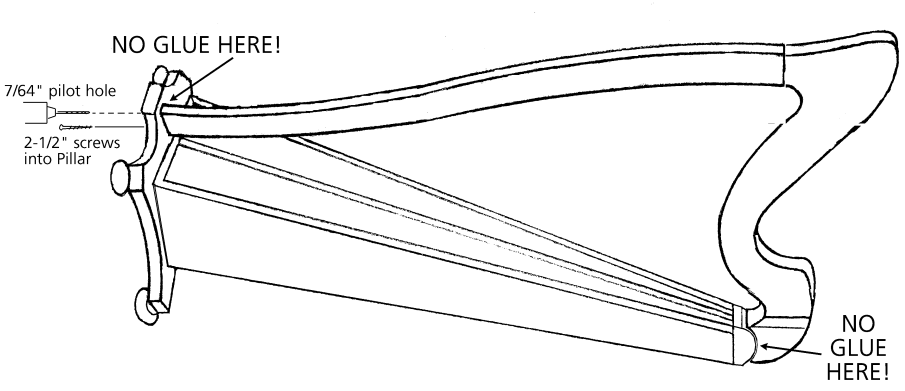
Find the tapered wood plug for filling the 7/16" dia hole at the top of the NECK. You may glue that in place and sand it flush.

c) Test fit the MUSICMAKERS COVER DISC into the shallow hole in the back side of the PILLAR. This will cover the opening where we have buried the nut. You may show either the plain side or the inscribed side outward on the harp. Sand the edges of the disc, if necessary, to get it to fit the hole. Then you can go ahead and glue it in place.

POINT OF INTEREST

The joint at the back of the NECK is meant to be a kind of knuckle joint that allows for some movement in the future. If we were to attempt to glue the NECK to the body permanently here, the string tension would eventually cause a crack to open as the harp frame flexes in response to the strings. So we simply create a joint that allows for slight movement. Another benefit of this type of joint is that you will always have the option of taking your harp apart for future repair or refinishing. Just removing the strings and a couple screws at the bottom of the PILLAR will allow you to lift the NECK/PILLAR assembly off the body of the harp.

_____31. Now you can install the screws that hold the PILLAR to the BOTTOM DECK. This requires only two screws (no glue). The string tension will provide the most holding power to draw the instrument together.



Lay the harp on its back on a carpeted floor. Fit the NECK/PILLAR assembly in place on the harp and then drill pilot holes in the PILLAR through the holes in the BOTTOM DECK, using 7/64" drill bit.

Insert the screws to secure the PILLAR in place. Now you can stand the harp on its feet and admire your work!

YET ANOTHER OPTIONAL STEP:

_____32. The latest gadget for harps is installing a set of HARP LIGHTS under the curved neck. In order to prepare your harp for this accessory, you can drill a hole through the ARCH and TOP BLOCK into the inside of the body for threading the wires down to the power source inside the harp.

Check our web site for installation instructions for the HARP LIGHTS and plan where you want the wires to run.

Once you determine the optimum location for the wires, remove the NECK/PILLAR assembly from the harp body and drill a 3/8" diameter hole down through the ARCH and the inner TOP BLOCK into the cavity of the harp.

DO NOT INSTALL THE LIGHTS YET, however. You need to wait until the harp is fully finished and strung before you can add the light strip.

_____33. This is the best time to do final sanding and shaping of your project. Please don't get into a hurry with this part of the project -- you'll regret it if you don't smooth the wood nicely! Here are some guidelines:

Sand all the edges to remove machining marks, scratches, and glue residue. A medium sandpaper (150 grit) should suffice for this. Hold the parts in different lighting to check for scratches and glue spots. They can be elusive!

Note that we have rounded over all edges of the NECK except one. This lower edge on the string side of the NECK should be left square so you have room for mounting sharping levers later.

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 Elmer's glue mixed to a consistency of putty (thin it with a few drops of water). Another option is to use filler that is light in color and then darken it later with touch-up pens. Musicmaker's offers four colors of fine-tip touch-up pens for this purpose.

Do your final sanding with about 220 grit sandpaper, working with the grain if possible, to avoid scratching the wood. Some people use even finer sandpaper, and that is OK, but we wait until the harp is sealed with a first coat of finish before switching to ultra-fine sanding. Dust the instrument well with a clean rag or tack cloth before applying the finish.

FINISHING

Here are some finishing options, along with a few hints from our experiences with finishing materials.

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

OIL -- An oil finish will give your wood a low luster appearance, bringing out the natural color of the grain, but it tends soak into the wood and 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 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 satin or semi-gloss polyurethane varnish will work fine on this project, but we recommend our wipe-on satin gel urethane called MUSICMAKER'S INSTRUMENT FINISH. Our complete finishing kit includes instructions, sandpaper sheets, and a half-pint can of satin gel urethane varnish. The advantages of finish are its simple application, durability, and deep, soft luster.

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

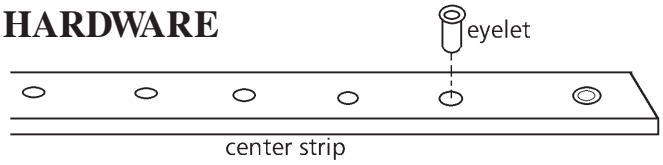
OPTIONAL DECORATING

Hand painting or woodburning are fun ways to decorate your instrument. Light painting can be applied between coats of varnish or lacquer very nicely and will not harm the sound of the harp. Some people use acrylic paints, and others decorate with colored pencils or pastels. This is a great way to personalize your harp.

If you showed the veining grooves outward on the TRIM STRIPS, you may want to highlight these "pinstripes" with some colored paint. This is especially easy to do between coats of clear finish. Just brush the paint into the grooves and then wipe/sand off any excess that spills out over the top surface of the TRIM.

_____34. So, go ahead and apply the finish of your choice, sanding lightly between coats with very fine sandpaper or steel wool. It is easiest to do the finishing when the harp is dis-assembled. You can remove the BOTTOM DECK from the harp body too.

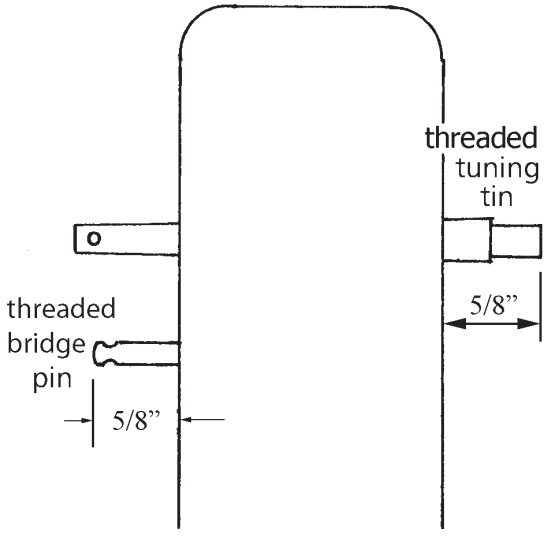
ATTACHING HARDWARE



_____35. Find the BRASS EYELETS and push them into the holes in the front of the SOUNDBOARD.

_____36. You can install the 34 THREADED BRIDGE PINS into the lower row of holes drilled in the NECK. Just tap them part way in with a hammer and turn them the rest of the way with a 5/64" Allen wrench, until the top of the pin stands about 5/8" above the surface of the wood. Use the 5/8" SPACING GUIDE to double-check the pin height.

NOTE: Our THREADED BRIDGE PINS are adjustable in depth, allowing you to change the space between the harp string and the wood surface of the neck, using a 5/64" Allen wrench . This will be important later when you want to install sharping levers.



_____37. 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 electric hand drill to push and turn the 34 THREADED BLACK TUNING PINS into the upper row of holes in the NECK, from the opposite side of the BRIDGE PINS. Note that these pins have a fine thread.

DO NOT LUBRICATE THE TUNING PINS! When you push firmly as you turn them slowly, they will drive in quite quickly, and that is good. Don't just rely on the microthreads to seat these pins – that takes too long and it only serves to heat up the pins to extreme temperature. Push hard and turn slowly, skipping threads, until the square end stands about 5/8" above the wood.

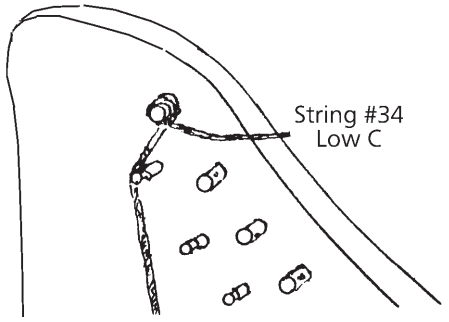
STRINGING & TUNING

_____38. Stringing a harp is somewhat of an art. We recommend that you read through these last pages of directions completely before beginning, so you know what to expect.

It is not uncommon for people to call us in a panic because their harp either a) won't stay in tune, or b) keeps breaking its strings. Careful installation will do much to eliminate these problems. We string this model harp regularly and tune it up to concert pitch right away with rarely a broken string, but it takes a little patience and concentration.

The strings are numbered from 1 (for the smallest) to 34 (for the longest), and they are color-coded to help guide you as you play. "C" strings are all red, and "F" strings are blue.

_____39. Start at the bass (longest) end of the harp with string #34, a long red string that is very thick. Push the plain end of the string through the lowest hole in the SOUNDBOARD from back to front. Pull it all the way until the knotted end contacts the REINFORCEMENT BAR inside the harp.



_____40. Thread the other end of the string through the last TUNING PIN near the point of the NECK, pulling it through the pin, but leaving enough slack below the pin to allow several windings before coming taut.

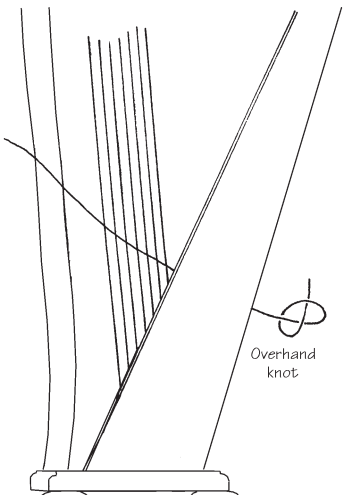
_____41. Use the TUNING WRENCH to turn the pin clockwise (from the viewpoint of the tuning wrench on the backside of the NECK) and guide the windings neatly around the TUNING PIN.

_____42. As the string begins to tighten, place it in the groove of the BRIDGE PIN as shown.

CAUTION!

These WOUND STRINGS are very fragile and expensive to replace. Some people break the first one they install by over-tightening. They don't expect it to come up to pitch so quickly. Take care to avoid that costly mistake. It is very helpful to pluck the string as you tighten it, so you can hear the pitch go up as you increase the tension.

_____43. Thread the other 6 wound strings in the same way, taking care to keep them in the correct order. When you are satisfied with installation of these strings, use a wire cutter to clip off the excess wire, close to the TUNING PINS. These sharp ends are dangerous! Cut them short so they won't poke you or catch on your clothing.



_____44. The remaining 27 strings are plain (monofilament) nylon that have no knots tied in them yet. You may insert these strings from the front of the harp, if that is easier, and then reach inside the back to find the end. Tie a simple overhand knot at the end, as shown.

Put a drop of Superglue or Krazy glue on the knot, then pull the knot tightly against the inside of the SOUNDBOARD (right away, before the glue has set up). No, we don't want to glue string to the harp, we just want to "freeze" the knot itself, so the slippery nylon doesn't untie itself when the string is tuned up to pitch.

NOTE: Pull straight through the hole, not at an angle, to avoid scratching the nylon against the brass eyelet.

Thread the other end of the string through the next TUNING PIN, pulling it through the hole until there is only a little slack in the string below the PIN. How much slack? About 2-4 inches. You'll catch on—too much slack makes for bulky accumulations

of string around the TUNING PIN, and too little means you won't have enough to even wrap once around the PIN. Ideally, you'll have 3 to 5 wraps of string around each TUNING PIN for security.

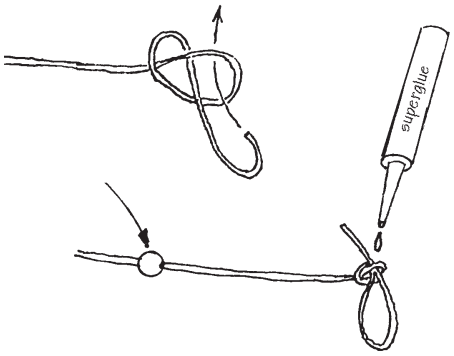
Turn the PIN clockwise with the tuning wrench as you take up the slack with the other hand, guiding the string as it winds around the pin. As the string begins to tighten, place it in the groove of the BRIDGE PIN.

Helpful Hint: Do not accumulate a lot of windings of string around the TUNING PINS, especially with the thick bass (low) strings. They become bulky and cumbersome. If you have that problem, turn the TUNING PIN backwards to unwind the string, then pull more of the string through the hole and tighten again.

Once the string is satisfactorily installed, you may clip off the excess nylon close to the pin (leave ¼" stub), and tune the string up to its proper pitch (no, it won't stay in tune yet, but it helps to begin stretching it right away).

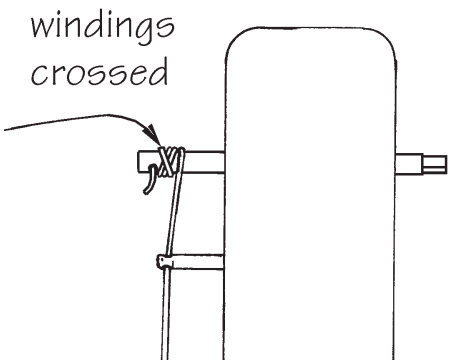
_____45. Install all six of the large (.060") strings this same way, taking care to put the colored ones in the proper positions. We have included one spare clear string in each bundle in case you break one.

_____46. When you come to the mid-range strings (sizes .050" and .040"), thread a small plastic bead onto each string, as shown, and then tie the bottom knot a little differently to give it more bulk. Start with the same overhand knot, but before tightening it, push the loose end part way back into the knot, just to add one more thickness of string to the knot.

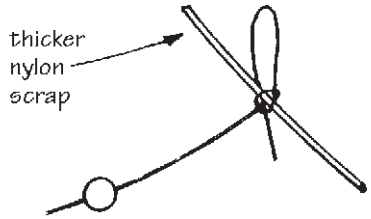


IMPORTANT: It is necessary to also anchor the tops of these strings (and all the lighter ones) securely to the tuning pins, as follows:

Guide one or two windings of string on the TUNING PIN, then guide the next winding over the others so the string helps "pinch" itself tightly to the PIN as you tune it up to pitch. If you don't do this, you will surely experience string slippage and breakage, especially in the upper half of the instrument.



_____47. The next two sizes of strings (sizes .036" and .032") are thinner and more fragile. Take care to avoid scratching them as you install them, and don't forget the PLASTIC BEADS and the Superglue!



_____48. The last five strings are the most delicate. Take your time with them. This nylon is so thin that even a double knot will sometimes pull through the hole in the bead. The solution is to insert a short piece of thicker nylon into the knot to make it bulkier, as shown at left.

When all the strings are installed, tune the entire harp up to pitch so the instrument begins to adjust itself to the tension.

The strings should all be tuned to the natural C major scale (white keys on the piano). All the red strings will be C notes and the blue ones F notes. Middle C is string number 20 from the top. The lowest note is two octaves below middle C.

Many people are not certain if they are tuning their harp strings to the correct octave. Tuning the strings an octave too low will result in flabby harp strings that don't provide much volume. Tuning the strings too high will cause strings to break. To make sure you are tuning your harp strings to the correct octave, you can double-check the pitch on our website with our "online tuner": www.harpkit.com/freetuner

NOTE: Expect it to take 50 tunings before the harp will stay in tune well. That means if you only tune the harp once a week, it will take a year for it to settle in! So we recommend tuning it two or three times a day. Persevere, and be patient! It should get better each day. If you find that it does not get better each day, then something else may be wrong. Take a good look at the "Care and Feeding" page at the end of these instructions. There is no reason for this harp to be unstable in tuning.

CONGRATULATIONS! We hope you have enjoyed building this harp and that you enjoy many years of musical pleasure from playing it. We stock a good number of teaching materials and accessories to help you get started playing music. Don't hesitate to call us for more information or for help if you encounter difficulties with your instrument.

SHARPING LEVERS

Sharping levers are used on folk harps to facilitate key changes. Installing a lever over a string allows you to raise the pitch of that string one-half step by engaging the cam against the string. Thus an F-string can be raised to F# by a simple flick of the lever. Similarly, a B-string may be tuned to Bb so that the lever will raise it to B-natural and release it back to B-flat, as needed.

Most folk harp players set the key signature (sharps or flats) on the harp before starting each piece of music. For the key of G, you would engage the levers on all the F strings to produce the F# notes needed for that key (making sure all other notes on the harp are natural). If the following piece were then to be played in the key of F, you would then release the levers on all the F strings to produce F-natural, and also release all the B-string levers to produce Bb.

KEY OF E:	requires F# and C# and G# and D#
KEY OF A:	requires F# and C# and G#
KEY OF D:	requires F# and C#
KEY OF G:	requires F#
KEY OF C:	requires no sharps or flats
KEY OF F:	requires Bb
KEY OF Bb:	requires Bb and Eb
KEY OF Eb:	requires Bb and Eb and Ab

You may install a lever over every string on the harp, or, if you think you won't use all of them, you can save money by installing only the levers necessary for the keys you are likely to play in.

Check our website or current catalog for prices.

Loveland Sharping Lever

Universal Sharping Lever

MUSICMAKER'S KITS, INC
PO Box 2117
Stillwater, MN 55082

(651) 439-9120

www.harpkit.com

CARE AND FEEDING OF THE REGENCY HARP

TUNING TIPS: It is best to tune the harp with all sharping levers flipped down (disengaged), so there will be no interference from the levers. Please note that this means you may be tuning some strings to flats instead of natural notes. If you have levers on the B strings, for example, you should tune those strings to B-flat when the lever is flipped down. You will then flip these levers up when playing in the key of C.

If your harp does not stay in tune well, your strings may be slowly slipping around the tuning pins on the NECK or else the knots inside the soundboard may be slowly untying themselves under the string tension. Refer to steps #44-48, paying close attention to the application of Superglue to the knots, and the crossing of the windings around the tuning pins.

If you have a loose tuning pin, and it is our threaded variety, you may need to drip a little "Pin Tite" on the wood around the pin to restore its grip in the wood.

BUZZING STRINGS: Your harp need not suffer the problem of rattling or buzzing sounds when you play. If you hear such noises, you can correct them. Here are some troubleshooting hints:

Please keep the two allen wrenches with your harp so you can make adjustments, as needed.

If the buzzing sound occurs only when the SHARPING LEVER is flipped up (engaged), then you need to tighten the LEVER more firmly against the NECK of the harp.

If the buzzing occurs when the LEVER is flipped down (disengaged), the string may be vibrating against some part of the SHARPING LEVER itself. If you have Loveland brand levers, look very closely at the position of the string as it passes through the LEVER bracket. It may be rattling against the plastic cam (the part that you flip up & down), or against the small "fretpost" (the part that the cam pinches the string against when engaged.) You can change the position of the string by raising or lowering the THREADED BRIDGE PIN on which the string rests above the SHARPING LEVER. (Make sure the string is resting in the groove of that PIN.) Use a 5/64" Allen wrench to turn the BRIDGE PIN in or out, watching how that moves the string in relation to the SHARPING LEVER.

If you have Universal Levers, and a string buzzes when the lever is engaged, the string may not be making firm enough contact with the lever. Lower the string height by turning the THREADED BRIDGE PIN a little deeper into the wood, using the same small allen wrench.

If the problem is not located around the SHARPING LEVER, you may have a loose end of string or other loose material that is rattling inside the soundchamber. Put your hand inside the harp and touch the knotted ends while plucking the harp to see where the problem is located. Oftentimes you can solve it by simply trimming off a loose end of string or by twisting the knotted end in a different direction.

HARP REPAIRS:

We like to check the NECK/PILLAR joint for signs of movement. If that joint has opened up on the opposite side from the strings, use the large 5/16" allen wrench to tighten the bolt inside the front of the neck. This should draw the parts back together and straighten the joint.

If you ever need to repair or refinish the wood parts of your harp, you will be glad to know that the NECK/PILLAR assembly can be removed from the soundchamber to facilitate repair work. Simply loosen the strings and unhook them from the TUNING PINS. Then remove two screws under the BOTTOM DECK of the harp to allow the NECK/PILLAR to come free from the harp body. Don't hesitate to contact us if you have questions or problems.

MUSICMAKER'S KITS, INC.
(651) 439-9120
info@harpkit.com

34-STRING REGENCY HARP

REGSTRG **FULL SET OF 34 STRINGS**

STRING	NOTE	GAUGE	CODE	COLOR	VIBRATING LENGTH	LOVELAND LEVER SIZE
1	A6	.025	NYL025	clear	5-1/4	00
2	G6	.025	NYL025	clear	5-3/4	00
3	F6	.025	NYL025	blue	6-1/4	0
4	E6	.025	NYL025	clear	6-7/8	0
5	D6	.025	NYL025	clear	7-1/2	0
6	C6	.032	NYL032	red	8-1/8	0
7	B5	.032	NYL032	clear	8-7/8	0
8	A5	.032	NYL032	clear	9-3/4	2
9	G5	.032	NYL032	clear	10-5/8	2
10	F5	.036	NYL036	blue	11-5/8	4
11	E5	.036	NYL036	clear	12-3/4	4
12	D5	.036	NYL036	clear	13-7/8	4
13	C5	.036	NYL036	red	15	5
14	B4	.040	NYL040	clear	16-3/8	5
15	A4	.040	NYL040	clear	17-5/8	5
16	G4	.040	NYL040	clear	19-1/8	5
17	F4	.040	NYL040	blue	20-3/4	5
18	E4	.050	NYL050	clear	22-3/8	7
19	D4	.050	NYL050	clear	24	7
20	Mid C4	.050	NYL050	red	25-3/4	7
21	B3	.050	NYL050	clear	27-1/2	7
22	A3	.060	NYL060	clear	29-3/8	9
23	G3	.060	NYL060	clear	31-1/4	9
24	F3	.060	NYL060	blue	33-1/4	9
25	E3	.060	NYL060	clear	35-1/8	9
26	D3	.060	NYL060	clear	37	9
27	C3	.060	NYL060	red	38-7/8	9
28	B2	.022/6/.014 SFN	STEELB	clear	40-5/8	9
29	A2	.028/6/.016 SFN	STEELA	clear	42-1/2	12
30	G2	.022/2/.008 SFB	STEELG	clear	44-1/4	7
31	F2	.022/4/.010 SFB	STEELF	blue	45-7/8	9
32	E2	.024/4/.010 SFB	STEELE	clear	47-1/2	9
33	D2	.024/6/.010 SFB	STEELD	clear	49-1/4	9
34	C2	.026/6/.012 SFB	STEELC	red	50-3/4	12

(Set includes one spare clear string of each monofilament nylon size)

NOTE: 21 small beads added for upper strings

Musicmaker's Kits, Inc
PO Box 2117
Stillwater, MN 55082

(651) 439-9120
www.harpkit.com

REGENCY HARP WITH 5 GUT STRINGS

RegStrgGut **FULL SET OF 34 STRINGS**

STRING	NOTE	GAUGE	CODE	COLOR	VIBRATING LENGTH	LOVELAND LEVER SIZE
1	A6	.025	NYL025	clear	5-1/4	00
2	G6	.025	NYL025	clear	5-3/4	00
3	F6	.025	NYL025	blue	6-1/4	0
4	E6	.025	NYL025	clear	6-7/8	0
5	D6	.025	NYL025	clear	7-1/2	0
6	C6	.032	NYL032	red	8-1/8	0
7	B5	.032	NYL032	clear	8-7/8	0
8	A5	.032	NYL032	clear	9-3/4	2
9	G5	.032	NYL032	clear	10-5/8	2
10	F5	.036	NYL036	blue	11-5/8	4
11	E5	.036	NYL036	clear	12-3/4	4
12	D5	.036	NYL036	clear	13-7/8	4
13	C5	.036	NYL036	red	15	5
14	B4	.040	NYL040	clear	16-3/8	5
15	A4	.040	NYL040	clear	17-5/8	5
16	G4	.040	NYL040	clear	19-1/8	5
17	F4	.040	NYL040	blue	20-3/4	5
18	E4	.050	NYL050	clear	22-3/8	7
19	D4	.050	NYL050	clear	24	7
20	Mid C4	.050	NYL050	red	25-3/4	7
21	B3	.050	NYL050	clear	27-1/2	7
22	A3	.060	NYL060	clear	29-3/8	9
23	G3	.060	NYL060	clear	31-1/4	9
24	F3	.060	NYL060	blue	33-1/4	9
25	E3	.064 (5th oct.)	LEVERGUTE	clear	35-1/8	9
26	D3	.068 (5th oct.)	LEVERGUTD	clear	37	9
27	C3	.071 (5th oct.)	LEVERGUTC	red	38-7/8	12
28	B2	.073 (5th oct.)	LEVERGUTB	clear	40-5/8	12
29	A2	.076 (5th oct.)	LEVERGUTA	clear	42-1/2	12
30	G2	.022/2/.008 SFB	STEELG	clear	44-1/4	7
31	F2	.022/4/.010 SFB	STEELF	blue	45-7/8	9
32	E2	.024/4/.010 SFB	STEELE	clear	47-1/2	9
33	D2	.024/6/.010 SFB	STEELD	clear	49-1/4	9
34	C2	.026/6/.012 SFB	STEELC	red	50-3/4	12

(Set includes one spare clear string of each monofilament nylon size)

NOTE: 21 small beads added for upper strings

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