

BOAT HARP KIT



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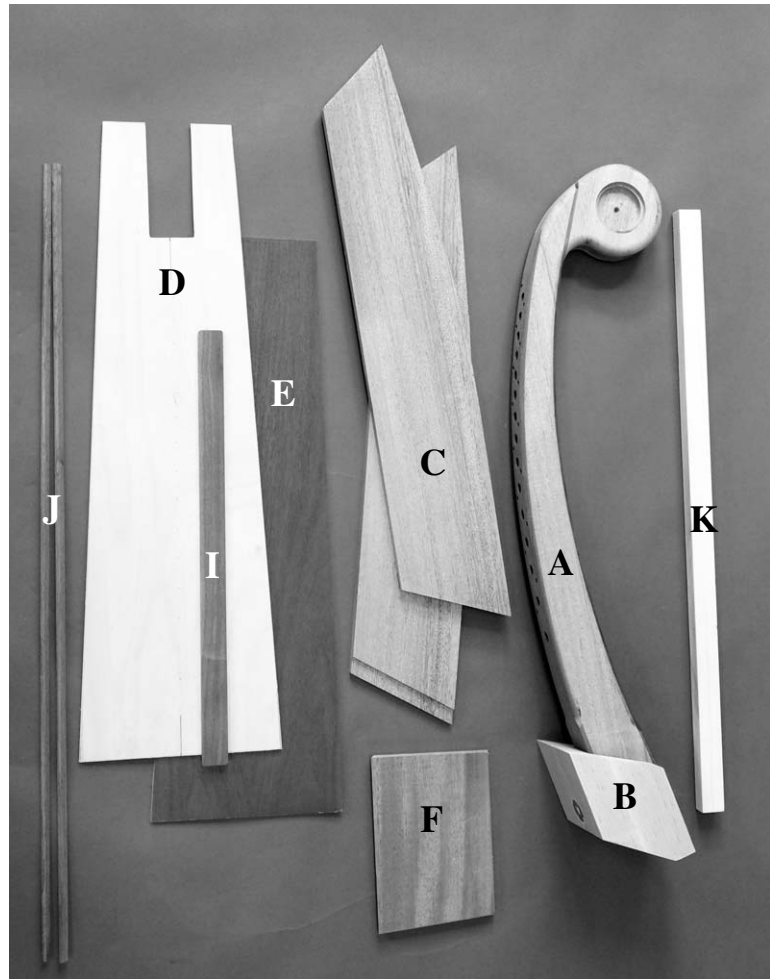
Boat Harp Kit

WOOD PARTS:

- A - Neck (Mast), pre-drilled
- B - Neck Block, pre-drilled with T-nut
- C - 2 Sides, Port & Starboard, mirror image
- D - Soundboard (Deck)
- E - Bottom
- F - Tail End
- G - Forward Cover Plate (not shown)
- H - Decorative surround for neck (not shown)
- I - Inner String Rib
- J - 2 Decorative edge trim pieces
- K - Scrap piece for Go-Deck

HARDWARE:

- 30 Brass Eyelets, medium
- 15 Nylon Bushings
- 15 Zither Tuning Pins
- 1 - Hex Bolt, 3/8" X 3"
- 1 - Washer, 1/4"
- 1 Tuning wrench
- 1 Set of 15 strings, nylon or wire, with beads
- 5 Nylon Rods, 1/8" dia, for "Stilts"



BOAT HARP ASSEMBLY SEQUENCE:

Prepare a flat Working Board about 7" wide and 25" long. Screw or clamp one end of board to a table or desktop so most of the board extends over open space, allowing you to clamp along both sides.

GLUE SIDES TO NECK BLOCK:

1. Arrange Sides and Neck Block flat on working board in proper orientation, carefully aligned.
2. Pound tiny nails partway into each side of Neck Block, and clip off heads.
3. Use C-clamps and/or Jorgenson clamp to press pieces together so nails puncture sides.
4. Cover working board with newspaper or plastic to catch excess glue.
5. Apply glue to mating surfaces and use same clamps to press parts together again, carefully checking proper alignment. Make sure sides lie flat on the working board.
6. Clean up excess glue with damp rag. Allow glue to dry before removing clamps.

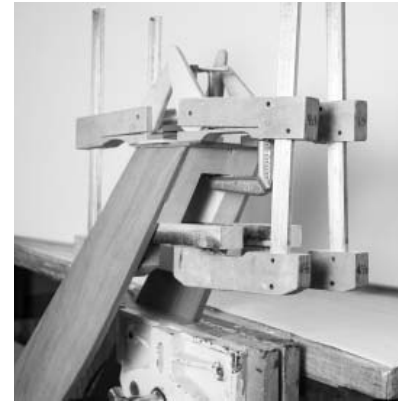
TAIL END:

1. Test-fit Tail End, sliding it downward in the rabbets of each side.
2. Glue Tail into rabbets, adding Clamps as necessary for tight fit.
3. Clean up excess glue and allow drying time (at least 30 minutes).



FRONT COVER PLATE:

1. Select thin wood for covering the front end of box. Trace around the front end onto the wood and cut slightly oversize, using the band saw.
2. Glue and clamp Cover Plate in place, taking care to avoid getting excess glue in T-Nut hole (maybe insert bolt to make sure).
3. Use tape and clamps to hold plate in place until dry.



CHECK ALL EDGES OF BOX:

1. Prepare the box for the Soundboard and Back panels. All corners should be level and edges of Sides and ends should be clean and flat. Use sanding blocks as necessary to ensure flat surfaces.

CURVED NECK (MAST):

1. Do any machine sanding/shaping now before installing the Neck. It is also easier to do the hand sanding at this point. CAUTION: No need to sand hidden bottom of the Neck – Leave it full size with square corners.
2. Use 80-120 grit for shaping, 150-180 grit for hand-sanding to smooth out scratches and machine marks, and 220 by hand for baby-bottom smooth.
3. Test-fit Neck with bolt, no glue this time. Check for clearance underneath. Neck should not extend below bottom of box (remove Neck and sand off protrusions if needed)
4. When ready, apply glue to inside of Neck Block and corresponding faces of Neck, and reposition Neck into Neck Block. Insert bolt and tighten FIRMLY (aggressively).
5. Clean up excess glue with damp rag, and allow to dry.



SOUNDBOARD (DECK):

1. Test-fit Soundboard. Notice the 15 punch-marks along the center of one face. The punched surface is meant to face upward on the boat. Sand opening around Neck if necessary to get the soundboard to fit the Neck (This fit does not need to be perfect, as you will cover over with trim later).
2. Start without glue first. At front end, make sure soundboard is not “hung up” on slope of Neck. Pound a tiny nail through soundboard, partway into Neck Block on each side and then make sure Soundboard covers entire frame, all the way to the tail end.
3. Remove Soundboard, leaving nails partway in place for easy re-alignment with glue.
4. When ready, ask 2nd person to help with installation, so you can work quickly.
5. Apply glue all the way around top of frame.
6. Replace Soundboard again, making sure nails go back into the same holes. Pound them all the way in (you’ll cover over them later).
7. Use bungee cord to clamp Soundboard, wrapping around the box AND the working board. Add tape or other clamps at the tail end as necessary to pull soundboard fully down to frame all around.
8. Clean up excess glue and allow drying time (at least 60 minutes).

INSTALL INNER STRING RIB

1. Turn harp over on your work board so back faces up. Form a “Go-Deck” over the back of the box, using a clamp at each end to hold the narrow wood stick in place, centered over the length of the opening.
2. Lay the Inner String Rib along centerline inside the Soundboard and cut a few short “stilts” of nylon rod to wedge between stick and the string rib to press rib against soundboard. Stilts should be slightly too long so they need to be flexed into position. Test this without glue first, so you have everything ready.
3. Apply glue to underside of string rib and use masking tape to hold each end in place over centerline.
Install stilts to press rib down against soundboard.
4. Clean up excess glue and allow drying time (at least 60 minutes).

SIGN AND DATE INSIDE

1. Use label or just sign and date the wood inside the soundboard.

DRILL SOUNDBOARD (DECK) FOR STRINGS (RIGGING)

1. Use 1/8" drill bit for drilling 15 holes at the punch-marks on the soundboard. Do this with an electric (or battery) hand drill, and hold the drill bit perpendicular to the surface of the soundboard. These holes will have brass eyelets in them that will cover any minor chips around the opening.

PREPARE BACK

1. Make sure bottom of box is clean and flat. Use sanding blocks if necessary to level the corners.
2. Lay back panel (inside up) on working board.
3. Apply glue all the way around bottom of boat frame. Position frame on top of back, aligning with center line. Wrap bungee cord around boat and working board to clamp in place.
5. Check for glue squeezing out all the way around. Add cam clamps if necessary.
6. Allow to dry (at least 30 minutes).

INSTALLING EDGE TRIM (GUNWHALES)

Trim is optional but fun and creative, allowing you to customize the look of your boat harp. You can use wood, leather, metal, fabric, or other materials for decorating around the neck, and along the gunwhales of the boat. Or you can simply sand the edges smooth and proceed to applying the finish.

1. Begin with trimming the gunwhales, along both sides of the soundboard (deck). We provide walnut strips for fitting along the edges, and they help hide the striped plies of the soundboard wood.
2. Cut or tear off 20 strips of masking tape, about 5-6" long and hang them off the edge of the work board so they are easy to reach.
3. Apply a thin bead of glue to groove of trim strip and place it tightly against the edge of the boat deck, using masking tape to pull it firmly into place. Pretend the tape is elastic so you pull both ends to get a tight glue seam, working your way from stem to stern along the side of the deck.
4. Repeat for second trim piece along opposite side.
5. Clean up any excess glue and allow to dry.

TRIMMING AROUND NECK (MAST)

1. We provide 2-part walnut "horse-shoes" to trim around the neck. They are oversize so you will need to trim them to fit between the gunwhales, and meet nicely on each side of the neck. You can cut them to a fancy shape if you wish. We have drawn a pencil outline of a shape we use, but you can do something different, as long as you do not interfere with the string holes in the soundboard.
2. This will be a trial-and-error fitting job. It will help to have a disk sander or large sanding block handy for making slight corrections as you go along. You can cut the major shapes with a hand saw or jig saw, but use sanders to achieve the final fit.
3. When satisfied with the fit, you can glue the trim pieces in place and use weights or clamps to hold them until dry.

FINAL SANDING AND CLEANUP

1. Check around entire boat for glue spots, rough spots, machine marks, scratches, etc.
2. Use sandpaper and/or sharp chisel to remove excess dried glue.

DECORATIVE ROSETTES

1. If your Boat Harp came with rosettes for the top of the Neck, this is the time to sand those and glue them in place, one on each side.

FINISHING

1. We use clear Shellac as our base coat. Brush it on and allow it to soak into the wood, but be careful not to allow finish to drip into the tuning pin holes – it might make the tuning pins slip. Shellac dries very quickly, which is good, but if it seems too thick for easy brushing, use alcohol to thin it out as necessary. It should be the consistency of water.
2. Glue spots will likely show up clearly as you apply the first coat of finish. Use 180-grit sandpaper to remove them right away so you can re-coat the finish and check again for any remaining glue residue. This may interrupt your progress a little, but it is well worth the effort.
3. When dry, use very fine 400-600 grit sandpaper to smooth all surfaces, sanding only the finish, not the wood. You may apply more coats of shellac, or switch to spray Deft Clear Wood Finish (lacquer) for the final coat. Deft has a very strong odor, but it dries quickly and gives a nice soft luster.

STRINGING (RIGGING)

1. Find the brass eyelets and push them into the 1/8” holes along the top of the soundboard and the inside edge of the Neck (Mast).
2. Insert the 15 nylon bushings into the larger holes on the opposite side of the Neck.
3. The Boat Harp can be strung with either steel or nylon strings. Both string charts are included with your kit. They are installed slightly differently, as follows:



NYLON STRINGS:

- A. Make sure to install them in order! The thickest strings are the longest.
- B. The Nylon strings will be pushed through the soundboard from the front side so you can “catch” them with a finger through a sound hole in the back. You’ll put a plastic bead on the the string and then tie an overhand knot in the string to prevent the string from being pulled back through the soundboard. We also like to add a drop of Superlue to the knot, just to make sure the slippery nylon doesn’t slowly untie itself under tension.
- C. Thread the end of the string through the small hole in the first tuning pin, leaving some slack to allow you to turn the tuning pin clockwise to wind some string around the pin until it just begins to come taut.

STEEL STRINGS:

- A. Make sure to install them in order! The thickest strings are the longest.
- B. Each string needs a plastic bead before installing.
- C. These steel strings have “ball-ends” already, so you don’t need to tie knots in the end. But you must poke these strings through from the back side of the box. We find a small flashlight to be helpful for seeing the thin wire inside the dark body.
- D. Thread the end through the corresponding hole in the Neck and then through the small hole in the corresponding tuning pin. Leave enough slack in the wire to allow you to turn the tuning pin a few revolutions before it pulls taut. Don’t try to tuning it yet -- just get the slack out. and move on to the next string.

TUNING:

When the strings are installed, begin tuning at the bottom (longest) string. It should be one octave below Middle C (the technical designation is "C3"). We have a free tuner on our web site if you have need a reference for finding the correct pitch (harpkit.com/freetuner).

Follow the notes shown on your tuning chart -- notice that some notes are omitted (F and B) from each octave. This gives you a Pentatonic (5-tone) scale that is very user friendly. You can stroke the strings with your eyes closed and produce a beautiful harp-like sound. There are a number of 5-tone melodies that can also be played, such as Amazing Grace, Go Tell it on the Mountain, Camptown Races, Shortnin' Bread, etc.

It will take several tunings before the strings stabilize. Don't give up! The strings stretch and the neck flexes a little with each tuning.

Nylon String set:

String	Note	Diameter	Code	Vib Length
1	C6	.025	Nyl025	5-1/2"
2	G5	.025	Nyl025	7-1/2
3	E5	.025	Nyl025	9-3/8
4	D5	.032	Nyl032	11
5	C5	.032	Nyl032	12-1/2
6	A4	.032	Nyl032	14
7	G4	.036	Nyl036	15-1/5
8	E4	.036	Nyl036	17
9	D4	.036	Nyl036	18-1/2
10	C4	.040	Nyl040	20
11	A3	.040	Nyl040	21-1/4
12	G3	.040	Nyl040	23
13	E3	.050	Nyl050	24-3/4
14	D3	.050	Nyl050	26-1/4
15	C3	.050	Nyl050	28

Steel String set

String	Note	Diameter	Code	Vib Length
1	C6	.010	Ball010	5-1/2"
2	G5	.010	Ball010	7-1/2
3	E5	.010	Ball010	9-3/8
4	D5	.010	Ball010	11
5	C5	.012	Ball012	12-1/2
6	A4	.012	Ball012	14
7	G4	.012	Ball012	15-1/5
8	E4	.014	Ball014	17
9	D4	.014	Ball014	18-1/2
10	C4	.016	Ball016	20
11	A3	.018	Ball018	21-1/4
12	G3	.018	Ball018	23
13	E3	.022	Ball022	24-3/4
14	D3	.022	Ball022	26-1/4
15	C3	.025	Ball025	28