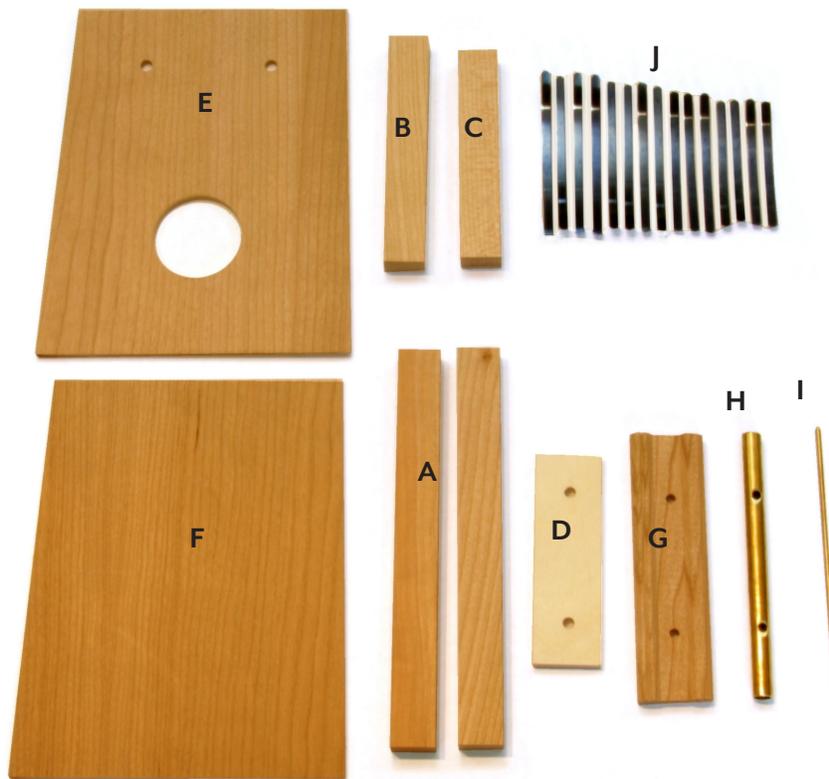




THUMB PIANO KIT Assembly Instructions

Updated March 2020



WOOD PARTS

- A - Hardwood frame sides (2)
- B - Hardwood frame bottom
- C - Hardwood frame top
- D - Inner brace
- E - Front (w/soundhole)
- F - Back
- G - Hardwood bridge

HARDWARE

- H - Brass bridge rod 3/32" dia
- I - Brass clamping tube 3/8" dia
- J - Keys (15)

not pictured:

- T-nuts (2)
- Machine screws (2)
- Assembly instructions

Musicmakers
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BEFORE YOU BEGIN

- ___A. Inventory and inspect all your parts carefully. If anything is missing or defective, please call us right away.
- ___B. It is a good idea to read through the entire assembly instructions before you start, just to get an overview of the project.

651-439-9120

ASSEMBLE THE FRAME

- ___1. Test fit the 4 frame pieces together without glue first, to see how they all fit. These parts are meant to stand on their narrow edges. Note that the shorter pieces are cut at slight angles to provide for a taper to the finished box. (fig. 1)
- ___2. When satisfied with the fit, apply some woodworking glue (such as Elmer's Carpenters Glue or Titebond) to the ends of the short BLOCKS and assemble the FRAME, using masking tape to hold the corners together firmly. Be certain to do this assembly on a flat surface, checking the corners to keep the parts flush.

Allow 30 minutes for drying.

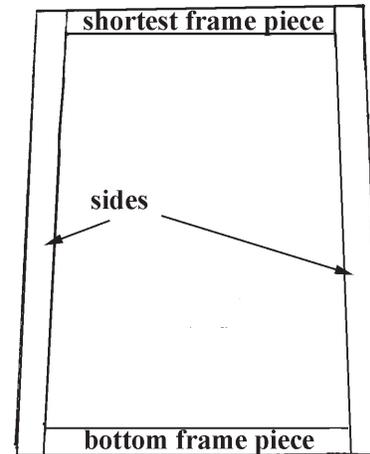


FIG. 1

PREPARE THE TOP

- ___3. Install the t-nuts. Use a hammer to pound the two t-nuts into the brace. (fig. 3a)

Select which face of the FRONT panel that you wish to show outward on the finished instrument (the FRONT panel is the one with holes drilled through). Test-fit the INNER BRACE, the BRASS CLAMPING TUBE, and the two MACHINE SCREWS to see how they fit on the FRONT panel. Use the screws to hold these parts together, without glue, as shown. The BRASS TUBE should be on the outside face of the FRONT. (fig. 3b)



FIG. 3A



FIG. 3B

- ___4. When satisfied with the fit, glue the INNER BRACE to the inside of the FRONT panel, using the screws and CLAMPING TUBE to draw the parts together. You might want to add some tape to help apply even pressure. (fig. 4a, b) A little glue should squeeze out of the cracks to indicate that the wood is clamped firmly.



FIG. 4A, B

- ___5. When the BRACE is dry, you can position the FRAME on the inside of the FRONT. Notice that the narrower end of the FRAME surrounds the INNER BRACE. (fig. 4) Glue and clamp the FRAME in place, allowing at least 30 minutes for the glue to set up before continuing.



FIG. 5

INSTALL THE BACK

- ___6. Before you close up the box permanently, we recommend signing and dating the inside of the BACK panel. Then you can go ahead and glue the BACK in place, making sure it overhangs the FRAME a little on all sides. Use clamps to hold the parts together firmly. We like to clamp the whole assembly down against a flat scrap of plywood. (fig. 6)

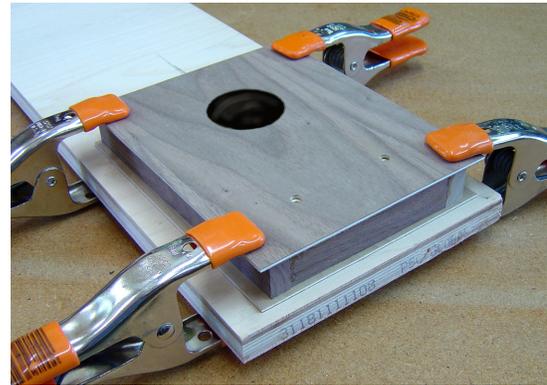


FIG. 6

- ___7. Trim off the excess wood from the TOP and BACK, to match the sides. A good tool for this is a router with flush-trimming bit, or a power sander with coarse sandpaper (80 grit). If you use a coping saw, be sure that the teeth are pulling down so you don't chip off the nice face of the veneer. We also recommend rounding all the corners. (fig. 7) The best tool for this is a disk sander -- hold each corner against the disk and rotate the box to get a smooth round shape.

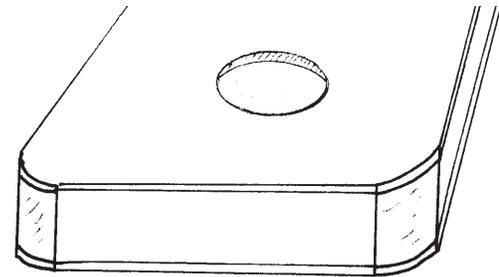


FIG. 7

- ___8. Next, we use a 1/4" round-over bit in a router to round over all sharp edges. You can do the same thing with a hand-electric sander, or a plain sanding block, but it takes a little longer. We like to give woodworkers an excuse to tool up -- a router is a neat power tool!
- ___9. This is a good time to sand the box to remove all glue residue and rough edges. Use about 180 grit sandpaper for this, being careful to sand WITH THE GRAIN to avoid scratching the wood.



It pays to be thorough and do a nice job with your sanding. Clean up any machine marks and glue spots, take the edge off any rough corners, and sand everything as smooth as you can. The work you do here will really show after you have applied a finish.

INSTALL THE BRIDGE

- ___10. Check carefully the correct position for the hardwood BRIDGE. The holes should line up with those drilled through the TOP, and the edge with the shallow groove should face the SOUNDHOLE. Trim the length of the BRIDGE, if necessary, so it does not hang over the sides of the instrument. (fig. 10)

HINT: WE LIKE TO SAND THE BRIDGE BEFORE GLUING IT DOWN. Just use a medium grit paper and sand it by hand to remove rough edges and machine marks.

- ___11. Glue the BRIDGE in place, taking care to spread glue out over the entire underside of the bridge. We find that the highest notes sound good only if the full length of the bridge is securely glued and clamped.

Use the BRASS TUBE and the two mounting SCREWS included in the kit to hold the BRIDGE in place while the glue dries. (fig. 11) This will ensure that the BRIDGE does not slide out of position while being glued. Add a spring clamp at each end of the bridge to ensure a good bond.

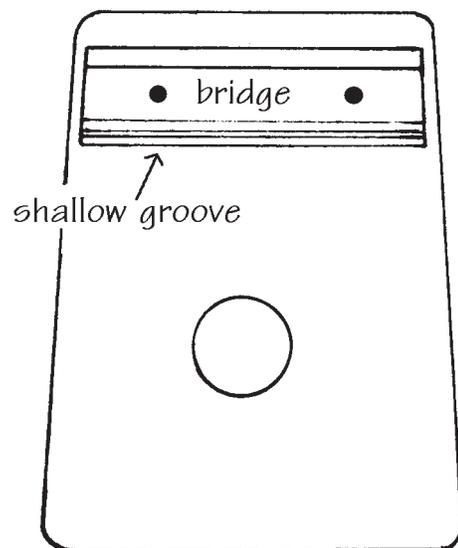


FIG. 10

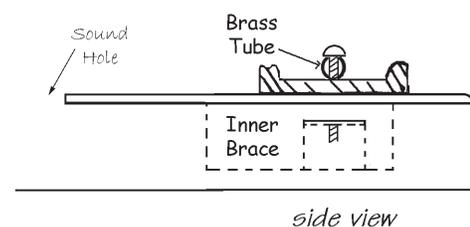


FIG. 11

APPLY A FINISH

- ___12. Check over everything one more time and make sure you don't need to do any more sanding. Apply the finish of your choice. We recommend a clear varnish or lacquer, in a semi-gloss sheen, as that is the easiest and most successful.

This is also a fun project to paint and/or decorate!

OPTIONAL ROSETTE

- ___13. If you purchased the optional rosette, don't forget to finish that! You'll want to lightly sand the top to remove any smoky residue left over from the laser cutting process.

When all the finish is dry, you can apply Superglue to the around the edge of the rosette and glue it in place over the soundhole.

INSTALL THE METAL KEYS

When the finish is dry you can install the metal keys. NOTE: We also have a helpful video on our web site for installing and tuning the keys. www.harpkit.com/thumb-piano-kit.html

- ___14. Place the small brass rod in the groove of the BRIDGE.
- ___15. Position the BRASS TUBE over the BRIDGE and start the machine screws into place, leaving the rod loose enough to lift up so you can slide the keys under it.

- ___16. Slide the KEYS under the BRASS TUBE tube, with the longest ones in the middle and the shortest ones toward each side. NOTE: One end of each key is bent downward, and that's the end you will pluck. It should be pointing toward the sound hole. (fig. 16)

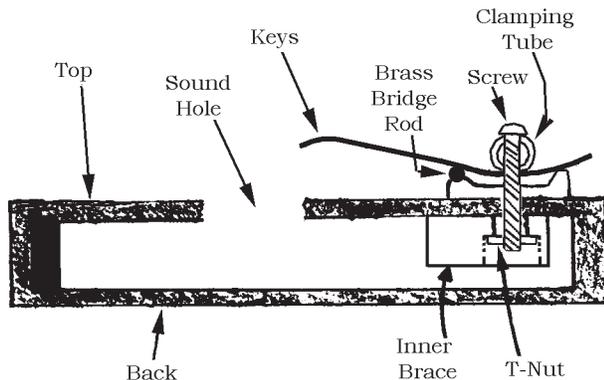


FIG. 16

- ___17. Use one of the TUNING CHARTS (see page 7) to arrange the keys to match the image, and “hand tighten” the BRASS TUBE to hold them lightly as you arrange them. Notice there are three keys to the left of the left screw and four keys to the right of the right screw --- this is helpful for getting them spaced evenly. Set the length of each prong to match the TUNING CHART on page 7 to help get them close to proper pitch.
- ___18. When you get them close to position, tighten the screws about one full turn so you can pluck the keys and check each one for pitch. If you have a piano or keyboard available, the longest note in the center should match the G3 to the left of Middle C on the keyboard. You may also consult our free ONLINE TUNER at www.harokit.com/freetuner.
- ___19. Tune the longest one to G below Middle C and then go up the scale, alternating from left to right, as shown, for two octaves, pushing each prong upward to raise the pitch, or pulling it down to lower the pitch.
- NOTE: The thumb piano is tuned to the Key of G. You'll notice that the F notes have a # symbol behind them, and that indicates F-sharp, which is the black key immediately to the right of the F note on the piano keyboard.
- ___20. When you have the prongs in tune, you can tighten the screws to secure the prongs more permanently and to raise the ends up for easier plucking.

FINE TUNING

The higher notes may go a little sharp when you tighten the screws. You can still adjust their length, but you'll probably need to push them with a scrap of wood or a pair of pliers when they are so tightly held in the bridge.

TROUBLESHOOTING

If you hear a buzz or rattle as you play, just tighten the screws a little more.

If one of the highest prongs has a “dead” sound, that means there is an air gap under that end of the wood bridge. You may not be able to see the crack, but try squirting some Superglue along the end of the bridge so it soaks into the thin cavity under the bridge. Or, if you can see the crack, try sanding a scrap of wood to a sharp low-angle wedge and tapping the point into the gap. That should support the bridge so the tone sounds clear.

HISTORY OF THE THUMB PIANO

The Thumb Piano is also known as an Mbira and a Kalimba, and it originates in Africa. It is technically a “linguaphone” and is from the family of instruments known as sansas. These instruments are often made from gourds or turtle shells, with the keys (prongs or tongues) made of split cane or bamboo, or even bicycle spokes. The length of the prong determines the pitch of the note. Some sansas include extra metal rattles attached to the keys to make them sound louder.

The age of the sansa is not known, but Jao Dos Santos mentioned the “ambira” as early as 1586, and Buonannin referred to the “kafir piano” in 1722. Sansas are widespread throughout Africa and are also found in Jamaica, Central and South America, as well as in the United States. More names for sansas include: ambira, bamboli, biti, chiasanchi, dimba, diti, ikembi, jimba, kalimba, marimbua, pokido and zimba.

PLAYING THE THUMB PIANO

Hold the instrument with both hands. A good place to start is to practice playing the major scale, starting by plucking downward with your right thumb on the longest key (G) and following with your left thumb on the adjacent key to the left (A), then your right thumb on the next B on the right side, and so on alternating thumbs as you go back and forth up the scale, right-left-right-left-right, and so forth.

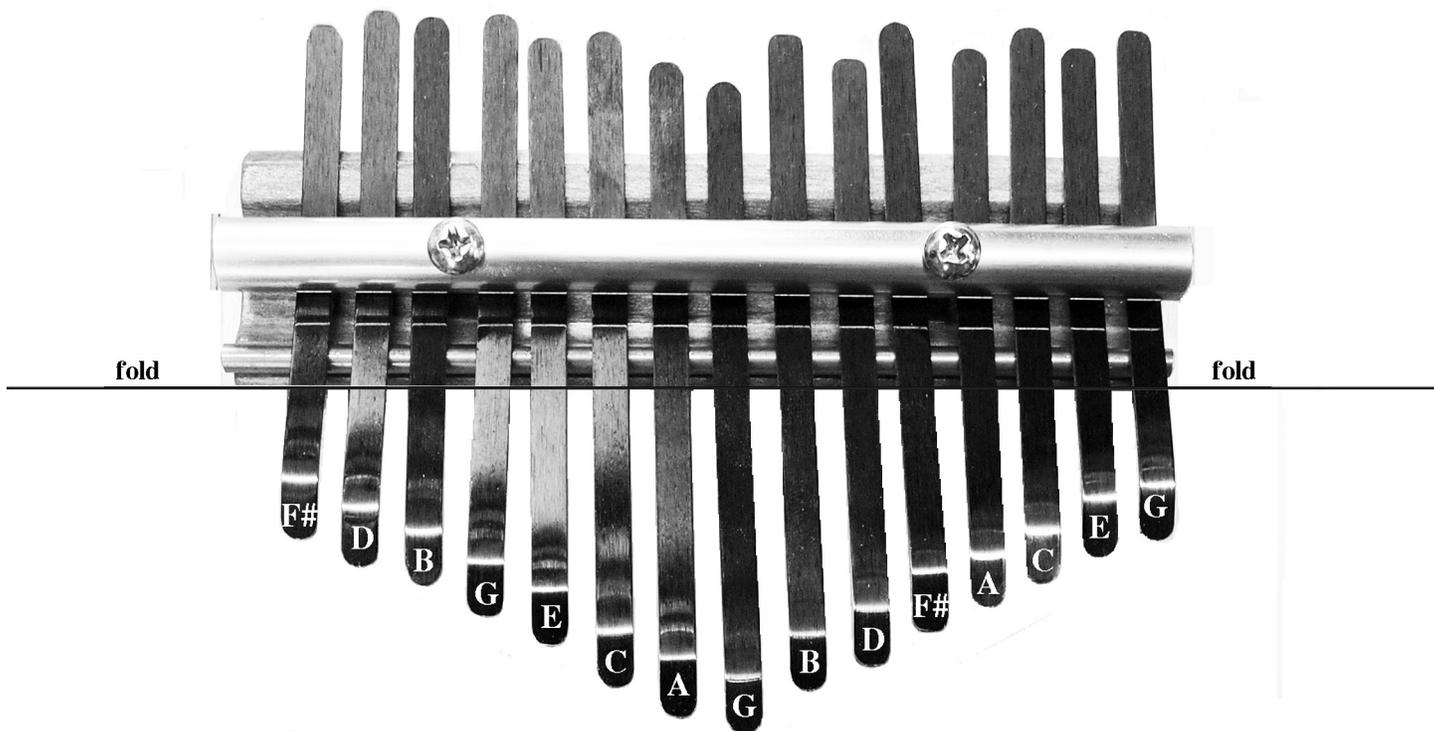
Try plucking two keys at a time (e.g. G/B, A/C, B/D, C/E, etc.) and listen to the harmonies as you go up the scale.

Try playing a simple melody like the ones shown on the page 8. The letters just above the words identify the notes, starting with the longest one (G) in the center, and going up as high as the octave G above it on the left side. The “R” and “L” above the note names refer to right or left thumb.

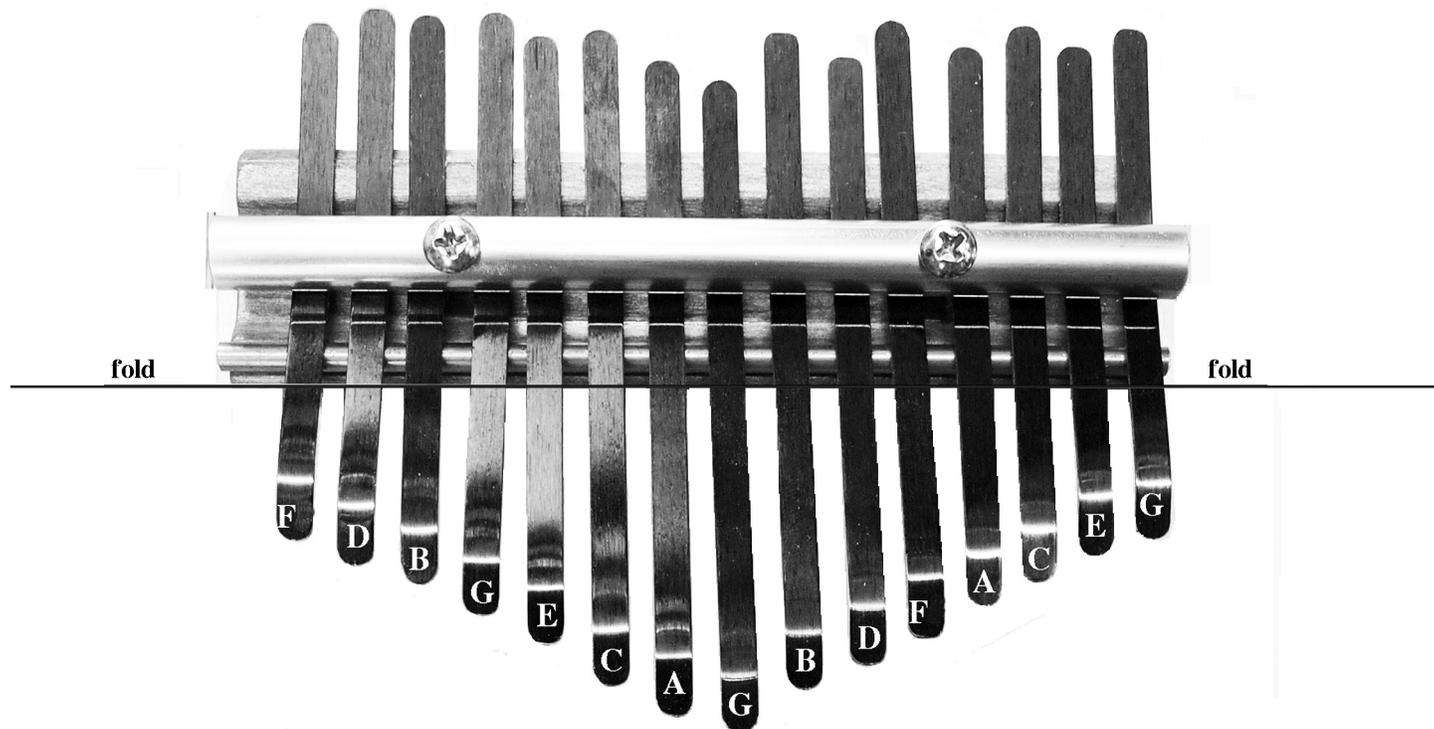
Photocopy the next page so you can cut out TUNING CHART. Then fold on the line and tape the image to the front so the fold is right up against the bridge of your thumb piano. The image is actual size, so it will help you align your prongs and get them very close to the proper tuning. As you tighten the screws, you can double-check the tuning against a piano or electronic tuner and make fine adjustments as necessary.

You can also use this diagrams under the prongs of your finished instrument to help guide you with note-reading.

KEY OF G



KEY OF C



Try these songs in whichever key you tuned your instrument. You can try playing in a low range, near the center prongs, or in a higher range toward each side where the prongs are shorter.

KEY OF G

Joy to the World Key of G

G F# E D C B A G
Joy to the world, the Lord is come.

D E E F# F# G
Let earth, receive her King.

G G-F# E-D D-C-B G G-F# E-D D-C-B
Let ev-----ery heart pre-pare Him room

B B B B B-C D
And heav'n and nature sing

C-B A A A A-B C
And heav'n and nature sing

B-A G-G E D-C-B C B A G
And heaven and heaven and nature sing.

KEY OF C

Joy to the World Key of C

C B A G F E D C
Joy to the world, the Lord is come.

G A A B B C
Let earth, receive her King.

C C-B A-G G-F-E C C-B A-G G-F-E
Let ev-----ery heart pre-pare Him room

E E E E E-F G
And heav'n and nature sing

F-E D D D D-E F
And heav'n and nature sing

E-D C-C A G-F-E F E D C
And heaven and heaven and nature sing.

On Top of Old Smokey Key of G

G G B D G E E C D E D
On top of Old Smokey, all covered with snow,

G G B D D A B C B A G
I lost my true lover, from courting too slow.

On Top of Old Smokey Key of C

C C D E C A A F G A G
On top of Old Smokey, all covered with snow,

C C D E E D E F E D C
I lost my true lover, from courting too slow.

Are You Sleeping Key of G

G A B G G A B G
Are you sleeping, are you sleeping,

B C D B C D
Brother John, Brother John

D E D C B G D E D C B G
Morning bells are ringing. Morning bells are ringing

G D G G D G
Ding, ding, dong, Ding, ding dong.

Are You Sleeping Key of C

C D E C C D E C
Are you sleeping, are you sleeping,

E F G E F G
Brother John, Brother John

G A G F E C G A G F E C
Morning bells are ringing. Morning bells are ringing

D G C C G C
Ding, ding, dong, Ding, ding dong.