Suitcase Bass



Musicmaker's Kits

14525 61st St. Ct. N. PO Box 2117 Stillwater, MN 55082 www.musikit.com info@musikit.com 651-439-9120 IMPORTANT - Please use the following check list to carefully go through your kit. If you find anything to be missing or defective - please call us right away so we can take care of the problem now thus avoiding delays during constructions. This will also help you familiarize yourself with the pieces of the project.

Suitcase Bass

Parts List:

- A. ____ Soundboard aircraft birch
- B. ____ Back lam. walnut
- C. ____ 2 Sides walnut
- D. ____ Bottom hardwood
- E. ____ Top walnut
- F. ____ Neck walnut
- G. ____ Fingerboard walnut
- H. ____ Bridge maple
- I. ____ Tailblock *walnut*
- J. ____ Halfmoon piece
- K. ____ Nut walnut
- L. ____ Soundpost (not pictured)
- M. ____ Bass Bar hardwood
- N. ____ 2 Soundpost Pads plywood
- O. ____ Tailpiece hardwood
- P. ____ 8 Trim Pieces walnut
- (4 long, 2 medium, 2 short
- Q. ____ 2 Peghead rings, walnut

Hardware List:

- ____ Assembly Instructions
- _____ 4 Geared Bass Tuners w/screws
- ____ 10 woodscrews 1-5/8"
- ____ 10 walnut wood plugs 3/8"
- _____ 4 butternut wood plugs 3/8"
- _____ 1 butternut wood plug 3/4"
- ____ Wood Knob
- ____ Carriage bolt (5/16" x 4-1/2")
- _____ 1 Oz. Tiny Nails
- ____ Set of 4 Bass Strings
- _____ 18" leather thong
- _____ 22" Steel Tailgut cable
- _____ 2 Aluminum ferrules
- ____ T-nut, 5/16" (installed in Top)
- ____ Washer (5/16")
- _____ Suitcase handle w/screws
- ____ Endpin
- _____ Rosette (for tailpiece)
- _____ 2 leather scraps to pad bridge



Assembly Instructions

A NOTE ABOUT GLUE

We strongly recommend that you use modern woodworking glue for this project. Aliphatic resins (such as Elmer's Carpenter's Wood Glue or Titebond I) are best because they hold the parts more securely than the old animal glues of yore. DO NOT assemble the wood parts of this project with epoxy or superglue or hot melt glue. The yellow colored Elmer's or Titebond is best.

Yes, many luthiers (instrument makers) still use the natural hide glues that have been around for centuries, carrying on a fine old tradition, but that does not mean you should do the same. The experts who use hide glue effectively are careful to cook up each batch to their own specifications from a high grade of granules. We have found the prepared liquid hide glues on the market to be inferior by comparison.

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....

ASSEMBLE THE BODY

____1. Test-fit the two SIDES to the TOP and BOT-TOM. Note that the TOP and BOTTOM pieces have a small BASS BAR NOTCH near one edge. *This edge is the front edge. It is important that the front edges of these two pieces face the same direction!*

_____2. Carefully line up the edges of the BOTTOM and TOP piece with the edge of the rabbet joint on the SIDE pieces. The SIDES are symmetrical so you don't have to worry about a left and right side. Drill pilot holes through the TOP and BOTTOM into the SIDES. Use a drill bit that has a slightly smaller diameter than the 1 5/8" wood screws provided in your hardware pack. An extra set of hands during this process will come in quite handy.

When you have the pilot holes drilled it is helpful to mark the front edge of each piece with a small piece of masking tape so you can be sure your pilot holes will line up again.

____3. Once your pilot holes are drilled, assemble the four pieces WITHOUT glue. When you are satisfied with the fit - go ahead and apply glue to the joints and then draw them together with the 1 5/8" screws provided. A small bit of glue should squeeze out at the seams indicating you have a tight fit.







_____4. Glue the SOUNDPOST PADS to the insides of the SOUNDBOARD and BACK in the position indicated by the corner pencil marks. You can "clamp" these in place using a suitable weight such as some heavy books or even a sack of sugar.

_____5. Test fit the BASS BAR into the 2 notches in the TOP and BOTTOM. The hump in the BASS BAR will be directed into the box. You may need to sand the ends of the BASS BAR so that it sits flush with the edge of the TOP and BOTTOM piece. When satisfied with the fit - glue the BASS BAR in place at each end.

_____6. Now it is time to glue the SOUNDBOARD to the frame of the body. This would be a good time to round up an extra set of hands as this process is much easier with 2 people.

A. Test fit the soundboard to the frame. We have cut the SOUNDBOARD slightly long on purpose to give you plenty of room to work. You will trim off the excess length later. If the SOUNDBOARD is too wide you will need to reduce the width with a hand-plane or some sandpaper.

B. Wake up that extra set of hands at this point and have them gather the package of TINY NAILS, 2 hammers, and a wet rag. Next apply a bead of glue to one SIDE and about 4 inches up the sides of the TOP and BOTTOM. Then attach the SOUNDBOARD with the TINY NAILS. Hammer in a nail every inch or so. Use the wet rag to clean up any glue that squeezes out on the top. Don't worry about the glue that squeezes out on the inside.











D. Once the first edge of the SOUNDBOARD is secured by nails you can go ahead and apply glue to the edges of the TOP, BOTTOM, BASS BAR and the other SIDE. Don't forget to put glue on the BASS BAR or this piece may rattle later. Have that extra set of hands bend the SOUNDBOARD over the frame and hold it there while you install some TINY NAILS. Secure the SOUNDBOARD with the TINY NAILS around the entire frame but DO NOT nail the SOUND-BOARD to the BASS BAR.

E. Once the SOUNDBOARD is completey nailed down - wipe off any excess glue and flip the body over. Set a large weight (a sack of water softener salt, some physics books) on the BASS BAR, just to make sure to get full adhesion to the SOUNDBOARD.

_____7. Once the glue has dried you can repeat this same procedure and install the BACK to the body. Be sure to remove the those physics books before fastening the BACK to the body.

_____8. When the glue has dried you may remove any excess length from the SOUNDBOARD and BACK. The easiest way to do this is with a router with a flush-trim bit. If you don't have a router use an electric handsander. If you don't have an electric handsander convince that extra set of hands that sanding is fun. For a detailed description on how to convince someone that something like sanding is fun I would suggest reading the chapter in <u>Tom Sawyer</u> where Tom has to paint his white picket fence.

_____9. Now is a good time to glue the 8 wood plugs in place over the countersunk screw holes in the TOP and BOTTOM. Put some glue in the hole and then tap in the wood plugs with a hammer.

____10. Once the glue is dry you will want to sand everything flush. Be careful when sanding the SIDES flush to the SOUNDBOARD and BACK so that you don't sand through the veneer on the SOUNDBOARD and BACK.











_____11. Locate 2 of the LONG TRIM PIECES. Glue these in place on the BACK to cover the nails. If you don't have adequate clamps to securely hold the TRIM in place then use some tape. Because of the bend in the body we recommend using a quality strapping tape rather than ordinary masking tape. When you are taping the trim to the body use a small block of wood to firmly hold the tape down on the body while you pull the other end of the tape over the trim. This will help to apply more even pressure. Use a piece of tape about every inch.

Special Hint - When applying glue to the TRIM PIECES - smear the glue out with your fingers. Smear the glue all the way to the outside edge of the trim but don't smear the glue all the way to the inside edge of the TRIM. The goal is to avoid any squeeze out on the inside as it would be extremely difficult to sand in those areas.

_____12. When the 2 LONG TRIM PIECES are dry you will need to fit the SHORT and MEDIUM TRIM PIECES. Hold them in place and make some marks with a pencil and then trim them to fit, noting the slight angles. Be careful to take off just a little at a time and keep testing the fit. When you are satisfied with the fit you can glue these trim pieces in place.

_____13. When all the glue dries, remove the tape and sand off any excess trim. Now is also a good time to sand all of the edges and take the sharpness off the corners.

_____14. Glue the half moon piece to the end of the TAILBLOCK as shown. Align the HALF MOON piece so that it overlaps the T just slightly. Also be sure to glue it to the side of the TAILBLOCK with the countersunk holes.

____15. Take this opportunity to do any final sanding on the TAILBLOCK before you install it to the body. Draw a centerline on the BOTTOM to help you line up

the TAILBLOCK properly. Insert the ENDPIN into the TAILBLOCK to make sure it fits through the hole in the BOTTOM. When satisfied with the fit, you can glue and screw the TAILBLOCK to the BOTTOM.

_____16. Use a hammer to insert the CARRIAGE BOLT into the WOOD KNOB, tapping it all the way in so the squared portion of the shank is buried firmly into the wood. Glue the 3/4" dia. WOOD PLUG into the hole. Sand the top of the WOOD PLUG so it matches the curve of the knob.











ASSEMBLE THE NECK

<u>17.</u> Begin by rounding over the sharp edges on the peg head. You can use a router, a file, or some sand paper for this. Note the pencil line on the neck 1/2" from the opening in the PEGHEAD indicating the position of the NUT and FRETBOARD. Leave the edges square where the NUT will be installed.

_____18. Mark centerlines on the NECK and underside of the FINGERBOARD. You will aslo want to put a center line on the heel of the NECK. Grab 2 of the TINY NAILS and pound them halfway into the neck - 1 near the peghead and 1 near the heel. Then snip of the top of the nail with a wire cutter. Carefully line up the FINGERBOARD on the neck WITHOUT glue and then firmly press down so the broken nails bite into the underside of the FINGERBOARD. This will guide the FINGERBOARD into the correct position and will help hold the FINGERBOARD in position while you are clamping the FINGERBOARD to the NECK.

_____19. Go ahead and glue the FINGERBOARD to the NECK using clamps to hold firmly until dry.

_____20. You will notice that near the peghead the NECK is wider than the FINGERBOARD and that near the heel the FINGERBOARD is wider than the neck. We like to sand the NECK to the same width as the FINGERBOARD near the peghead but leave the FIN-GERBOARD wide near the heel, overhanging the neck on each side.

_____21. Now you can round over the nut and glue it in place against the fingerboard.

<u>22</u>. Glue the 2 PEGHEAD RINGS in place on the PEGHEAD, using clamps to hold firmly.

_____23. Glue the rosette in the TAILPIECE for decoration.

_____24. Now it is time for a final sanding before applying your finish. The better job you do sanding - the better your instrument is going to look. Work your way down to a fine sandpaper and make sure to sand out all of the machine marks.











APPLYING THE FINISH

____25. Note that you may also wish to paint or woodburn the little parts of the "f" holes in the soundboard that are connected by a tab of wood, for strength. A little black paint in these places will make the holes appear to be fully cut (when looking from a good distance on a dark night while riding by on a fast horse).

____26. One more detail: Glue leather scraps to the feet of the BRIDGE so it does not scratch up the front of your beautiful bass. No, the leather will not dampen the sound. We've tested the sound with and without leather, and there is no audible difference.

<u>27</u>. Before applying the finish, cover the playing surface of the FINGERBOARD and the inside of the large hole in the TAIL BLOCK with masking tape. The finish would interfere with gluing the END PIN into the TAIL BLOCK later. We also find that varnish or lacquer on the FINGERBOARD can become sticky under your fingers as you play. We recommend just a plain boiled linseed oil on there, but wait until you have completed the finish on the rest of the instrument.





Here are some thoughts about finishing:

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 to 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 hard-ware (and strings) right away. The disadvantages of oil are that it usually does not give much surface protection or sheen, although there are some brands that include waxes and/or varnishes to give more surface build-up and luster.

VARNISH -- Any regular varnish will work fine on this project, but we recommend our wipe-on polyurethane called MUSICMAKER'S INSTRUMENT FINISH. Our complete finishing kit (code FINIKIT) includes detailed instructions, sandpaper sheets, tack cloth, foam applicator, and lint-free wiping cloth, along with a 1/2 pint can of semi-gloss polyurethane varnish. The advantages of this finish are its simple application, durability, and deep, soft luster. It also works well for protecting Heat Transfer decorations.

LACQUER -- Many professional instrument makers still use lacquer for their finish. The most readily available lacquer is called Deft Clear Wood Finish. It is best to purchase a can of liquid to brush on as a sealer coat first, and then use an aerosol can of the same product to spray on the final coats. The advantage of this finish is its quick drying time, but the disadvantage is the strong odor of the toxic lacquer fumes. CAUTION: Lacquer finish will not work over Heat Transfer decorations -- it dissolves the toner.

POINT OF INTEREST

Some people ask about finishing the inside of the soundchamber. We do not recommend trying it. Guitars and violins are never finished on the inside, so this instrument need not be sealed on the inside either. We understand people's concern about the effects of humidity on the wood, but even the best varnish or lacquer does not hermetically seal the wood. It blocks spilled milk from soaking in, but it does not prevent the wood from "breathing" moisture vapor from the surrounding air. This instrument is unlikely to warp or twist from humidity changes because 1) the wood is laminated with several thin layers, and 2) unlike some wood furniture, the parts of this instrument are glued firmly in place all around the circumference of the body, so they cannot move.

_____28. Now you may apply the finish of your choice and allow it to dry. Don't forget to apply finish to the BRIDGE, the TAILPIECE, and the WOOD KNOB.

_____29. When the finish is dry, remove the masking tape from the FINGERBOARD and apply a light coating of boiled linseed oil to that playing surface.

THE SOUNDPOST

POINT OF INTEREST

The soundpost is a vital element in any violin-type instrument. It stands inside the chamber near the "treble" foot of the bridge and transmits the vibrations to the back of the bass so you get the benefit of sound from both the front and the back. In a string bass, it is also vital for supporting the soundboard under all the pressure of such thick strings. Normal basses have limited access for positioning the post (through the "f" holes), but this bass has a large enough access hole in the bottom to allow you to reach right into the chamber to set the soundpost.

_____30. It is unprofessional (maybe even sinful) to glue the SOUNDPOST inside an instrument such as this, because you may wish to move it around a bit in the future to change the sound of the instrument. Here is how to install the post without glue:

a) Test-fit the SOUNDPOST into the soundchamber so it stands vertically between the BACK and the SOUNDBOARD at a position about 12" up from the bottom and 3" to the right of center. Just reach in through the 4" access hole in the BOTTOM and try standing the dowel in place, so it wedges between the BACK and the SOUNDBOARD.

b) If the dowel is too long to fit in the position mentioned, trim off a little length. If it is too short to reach, you may either cut a new dowel (available from any hardware store) or glue another small "pad" inside the BACK for the post to stand on.

c) This may not be the final position you will choose for the SOUNDPOST, but it should be a good first try. After you string up the instrument, you may wish to move the post around a little to see how it affects the tone and volume.

____31. Remove the masking tape from the hole in the TAIL BLOCK and test fit the END PIN into the hole. We try to fit these parts before packing the kits, so you should not be able to push it all the way into the hole by hand. That's good.

Put some glue on the tapered wood plug and use a hammer to drive the assembly all the way into the TAILPIECE hole.

ATTACHING HARDWARE & STRINGS

____32. Install the four GEARED TUNERS [®] as follows:

a) Note that two of the GEARED TUNERS are "left-handed" and two are "right". Take care to position them



b) Use a 1/16" drill to bore pilot holes for the tiny screws that hold the GEARED TUNERS to the wood. Fasten the TUNERS firmly into position.

___33. Now you may assemble your bass!

a) Slide the LARGE METAL WASHER onto the CARRIAGE BOLT up against the WOOD KNOB

b) Set the NECK into the slot and screw the WOOD KNOB down through the hole in the NECK and into the T-NUT hidden inside the body of the instrument to hold the parts together firmly.

c) Thread the steel cable TAILGUT through the two outermost holes in the TAIL PIECE, as shown. Crimp the Ferrules to each end using either a hammer or a vise to flatten the ferrules against the cable so it holds firmly. If the Ferrules will not fit into the countersunk holes of the TAILPIECE after crimping, you may sand them enough to fit.





fingerboard

_____34. Use a triangle file to cut four notches in the BRIDGE, 1" apart, as shown. These notches will keep the strings in place.

Work the file at several angles to create a smooth notch that will not damage the strings.

____35. Use the same triangle file to cut four "V"-grooves in the NUT 1/2" apart. Angle the file toward the GEARED TUNERS to make an easy path for the strings.

File them until the bottoms of the grooves are <u>almost even</u> with the surface of the FINGER-BOARD.

____36. Stringing your Bass is a bit tricky the first time because the BRIDGE is loose until held in place by the strings. You might ask a friend to help hold the parts while you install the first string.

The strings are labeled according to their notes. The lowest string, Low E (2+ octaves below middle C), is the thickest. Install as follows:

a) Thread the end through the first hole in the TAILPIECE until the "ball end" is pulled all the way up to the wood of the TAILPIECE

b) Hook the TAILGUT over the end of the TAIL BLOCK, making sure it follows the curve of the HALF-MOON.

c) Place the other end of the first string into the slot of the first GEARED TUNER on the left side of the PEGHEAD. Leave enough slack in the string to allow for passing over the BRIDGE and winding around the tuning pin a couple times.

d) Begin winding the string onto the GEARED TUNER, keeping tension on it as you turn the gear. The string should wind over the top of the gear post as you turn the knob.

e) The string is longer than it needs to be, but before cutting it shorter, install the rest of the strings and test the bridge in position, so you know you have everything working properly.

f) Stand the BRIDGE in its place about 41" from the NUT and place the string into the first groove of the BRIDGE and the first groove of the NUT. You can slide the BRIDGE up or down the SOUNDBOARD to achieve the proper 41" vibrating length.



POINT OF INTEREST

Some bass players are accustomed to a slightly longer or shorter vibrating length than 41". You may adjust the position of the BRIDGE to your liking, but you may then need to move the SOUNDPOST inside the body too.

____37. Observe how this first string lies in relation to the FINGERBOARD. This relationship will vary depending on how the NECK is positioned in the slot on top of the body. You may loosen the WOOD KNOB and slide the NECK forward or back to achieve the string height, or "action", that you prefer (You'll have to tip the BRIDGE down to release the string tension first). Just make sure the strings are high enough to eliminate any buzzing or rattling against the surface of the FINGERBOARD.

____38. Install the other three strings in the same manner. Once all strings are installed, tie the 18" leather thong around the NECK, just above the NUT. This not only adds a certain "je ne sais quoi" to the appearance of this crazy instrument, but it also helps keep the strings in place every time you loosen them to break down your Bass. (See, we think of everything!)





_____39. Install the suitcase handle with the screws provided. Position the handle so that it is *centered* on the side and the top most screw is between 5" and 6" from the top of the body.

CONGRATULATIONS! You have assembled the most unusual string bass in town! We hope you enjoyed the project and that you receive many years of pleasure from playing it.

TUNING

Tune the strings beginning with the highest one. Some people have difficulty discerning the proper octave, and this highest string is the easiest to hear. Tune it to the G that is 1-1/2 octaves below middle C on the piano. Or, if you have a guitar handy, it would be the pitch of the lowest string on the guitar when fretted at the third fret.

The other three strings are lower in pitch, by a musical fourth interval each. Compared to the guitar, your bass is tuned exactly one octave below the first four wound strings (E, A, D, G).

MINOR ADJUSTMENTS

There may be some small adjustments to make on your instrument for improving tone or sl playability. Here are a few guidelines:

a) Make sure the BRIDGE is centered so the strings follow the FINGERBOARD nicely. Check to see that the WOOD KNOB is tightened securely against the NECK. Then slide the BRIDGE one way or the other until the strings line up properly. If the NECK seems tilted toward one side slightly, you may sand a little bit on one side of the HEEL area, or use a little veener strip to shim up the other side.



b) You may experiment with different placements of the SOUNDPOST inside the instrument, but we recommend removing the BRIDGE each time you want to change the SOUNDPOST. That will reduce the pressure on the dowel so it will be easier to move. (See information below for collapsing the bass) It is simple to reach your hand right through the soundhole to adjust the SOUNDPOST.

c) If you hear buzzing from strings against the FINGERBOARD as you play, you may want to raise the string action a little bit. Do this by loosening the WOOD KNOB and pushing the NECK backwards a little in its slot (You'll probably have to loosen the strings and tip the BRIDGE over to accomplish this). Then tighten the KNOB and test it again.

d) If you hear buzzes or rattles from the soundchamber area, chances are that the little "ball" on the end of one of the strings may be loose in the TAILPIECE. Use a pair of pliers to squeeze the loop of wire around the ball until it quiets down.

COLLAPSING YOUR BASS FOR STORAGE OR TRANSPORT

You may occasionally wish to break down your BASS in order to fit it into the trunk of a car for transport or into a closet for storage. In these days of laptop computers and PDAs, you can feel up to date with your collapsible bass! Here is how to take it apart easily:

CAUTION: THE STRINGS MAY COME LOOSE FROM THE GEARED TUNERS OR GET TANGLED DURING TRANSIT, CAUSING AN EMBARRASSING DELAY IN RE-ASSEM-BLING THE INSTRUMENT IN FRONT OF A CROWD OF ADMIRERS. TIE A SHORT LEATHER THONG AROUND THE STRINGS JUST ABOVE THE "NUT" TO HOLD THEM FROM JUMPING OUT OF POSITION WHEN THE TEN-SION IS RELEASED.

1) Loosen the tension of the strings, just enough so they become "flabby" when plucked.

2) Slowly tip the BRIDGE over toward the FIN-GERBOARD (Yes, this is possible when the tension is lowered). Be careful not to let the BRIDGE slam against the SOUNDBOARD! Set the BRIDGE aside and unhook the TAILGUT from the TAILBLOCK at the bottom of the instrument.

3) Now you can unscrew the WOOD KNOB and remove it along with the NECK right off the instrument.

Slide the END PIN into the bass at the bottom of the instrument.

Take care to avoid tangling the strings during transport. You'll have no trouble unless the TAILPIECE gets inverted and passes through some strings. This could cost you a half hour of frustrated time untangling the mess....



RE-ASSEMBLING YOUR BASS

Thankfully, it does not take all the king's horses and all the king's men to put the SUITCASE BASS back together again! Just follow this sequence:

1) Set the NECK back in its slot on top of the bass and install the WOOD KNOB with bolt. Tighten the bolt firmly to hold the NECK in position.

2) Hook the TAILGUT over the TAIL-BLOCK, making sure the strings are not tangled or twisted. Check the strings up at the NUT also to make sure they are in the proper notches.

3) Place the feet of the BRIDGE in position under the strings (check to be sure the BRIDGE is not backwards -- when standing, the decorative rosette should face the FINGERBOARD), and slowly tip the BRIDGE back up to a standing position, making sure the strings are arranged in order on the top of the BRIDGE. Slide the BRIDGE sideways, if necessary, to make sure the strings are centered over the FINGERBOARD.

4) Tune up the strings.



Accessories available for the Suitcase Bass

BASSSTRG BASSBAG Set of 4 Bass Strings, Super Sensitive Padded Gig Bag for Bass



Your Suitcase Bass will collapse to fit into the trunk of your car, as shown here. Notice how the leather thong holds the strings in the Nut to keep them from tangling.

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