

Music Box Notes

These notes are specific to the clear plastic encased music movement. (with an extended key as an accessory). If you insert another music movement from another company you'll have to change the dimensions to suit that movement. I start out with a blank sized 4"X4"X5 ½" long. I try to use dense close grain hardwood.

Mount the blank between centers and true to 3 ¾". Put a tenon on the right end. Turn the blank around mounting the tenon into a scroll chuck, I lightly touch up the blank ensuring it stays true. Turn another tenon on the right end. If you started off with a piece around 5 ½" long then after both tenons are cut on either end you should have a workable piece around 5" long plus a tenon on each end. I will then cut the piece about 2" from the chuck which leaves the top of the box in the chuck and a 3" parted off section to become the bottom.

Now let's work the top – slightly undercut the rim inward (this is so when both the top and bottom come together it provides a tight fit). I then hollow out the top; I use a spindle gouge in a sweeping motion from the center outward leaving a dome in the interior. Once the dome is roughed out we need to make the sides parallel (3 ¼" diameter and about 1" deep); using a square end scraper. This step is very important – make sure the sides are parallel, I use an internal spring caliper and it gives me a "feel" for it being parallel. We now need to clean up the rough surface on the inside of the dome. I will use a round end scraper with a very light touch sweeping from the center to the outside, if this is done correctly very little if any sanding will be necessary on the inside dome (end grain). I prefer not to sand the inside parallel sides. While the top is held by the scroll chuck is a great time to start to shape the very outside of the top, if you wait later it will be held via a jam chuck and not nearly as secure.

Set the top aside and chuck up the bottom. Even though it should be true, I think it is a good habit to re-true the bottom. Now it's time to hollow out the bottom part. If we measure the music movement diagonally it is almost 3", so if we make

a 3" diameter cavity the movement should fit into it and give us a little wiggle room. How to do this? First I mark a pencil line 1" up from the bottom of the base. I then use a Forstner bit around 1 ½" – 2" and drill down to the pencil mark. I finish up the hollowing of the cavity with the spindle gouge and square end scraper. It's also important to have the sides of this cavity parallel for a jam chuck later.

This should leave me about 1 inch above the very bottom of the blank (this way when the shaft of the extended key is positioned down through the inside bottom of the box the key shaft will not extend past the bottom of the box). Sand and finish the inside of the bottom. Lengthen the taper with a skew slightly making a dome shape with the burnish mark as the highest part of the dome. This is another very important step in that you need to take very light cuts (almost like dust off the skew) until you get a good tight fit (not tight enough that it is difficult to remove). We will be making the final fit later after the top is complete, this is for us to have the top secure while we finish it.

We now cut a taper just a short distance (perhaps ¼") from what will be the opening. With a skew flat on it's side we cut this taper angled just a few degrees until the top with the parallel sides will just barely fit over this taper. Turn the speed of the lathe down and burnish a mark on the tapered portion with the top parallel piece. We now know that the burnished mark on the taper is the exact diameter of the inside of the top (if we correctly made the sides parallel).

Fit the top on while the bottom is held in the chuck and bring up the tail stock. True up both pieces together with a spindle roughing gouge and turn to final shape. For extra security I will also wind that blue painters tape around the seam. Turn the top down to it's final shape keeping the tail stock in place as long as possible. Sand the top. Pull the top off and redo that tight piston fit we did to hold the top while finishing it and adjust it to the final fit you are comfortable with.

We now need to drill a hole through the bottom for the shaft to pass through. I made a template which I position on the bottom of the cavity and it tells me where to mark where the hole goes. The diameter of the extended key shaft is ¼", however I want to give it some breathing room so it will not rub against the side

so I drill the hole oversized at about 5/16". Once the hole is drilled we need to mount it and work on the bottom, this is usually done in a jam chuck. My jam chuck consists of 2in.X 2in. flexible coupling from Lowes cut like a gasket so the chuck jaws won't mar the inside of the box. Keep the tail stock against the bottom as long as possible using light cuts to finish the bottom. Remember we measured the bottom of the inside to be about 1" up from the very bottom so if we want about a 3/8" thick floor on which the music movement sits we can hollow out the bottom cavity of the box about 5/8" deep.

I check out everything before gluing. I have found the easiest way to do this is to have the music movement inverted in your hand and the bottom of the box inverted and sight through the hole in the bottom of the box and bring it down over the shaft, screw in the key and check the fit. If it binds in the hole, you can enlarge the hole. Make sure the key doesn't extend below the profile of the box, if it does you can use the grinder and grind off a little so it doesn't extend past the bottom. Once comfortable with the dry fit, it's now time to epoxy the box. I have tried a number of glues, however I think the strongest is the West Systems 650Flex Epoxy Adhesive . Before applying the epoxy adhesive scratch up the bottom of the plastic box with some sandpaper. This gives it some "legs" that the epoxy can adhere to and let it set up overnight. Apply the finish of your choice and enjoy the music.

Skip Wilbur