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# Making Your Own **Diatonic** Model

My own personal suggestion is that you use native timbers for the construction of your Psaltery. These are often the cheapest and most economical.

## The Frame

For the wrest plank I suggest maple or its equivalents as it needs to hold the tuning pegs firm enough, but for the two sides I have drawn a method that uses an outer side piece glued to an inner frame. This is not a veneer, but a band sawn piece of wood from the same timber as the wrest plank. You can think of the inner frame as a continuation of a violin's corner and end blocks.

For my first model I used solid figured Sycamore, which made for a heavy but beautiful instrument. For my next few instruments I used Willow, with the shape sanded on a disk sander 2-3mm undersize to allow for the outer skin. As I used quite flexible timbers (walnut, recycled mahogany, maple) and modern adhesive I didn't need to heat bend them to shape (I think it makes it a little easier to cramp it if you do though) I have also used pine for this frame structure, combined with the maple wrest blank with total success. As the zither pins have to hold the string and do not rotate, the lack of density is not so much of a problem. Be careful of very soft softwood, and make sure you use a Drill bit a bit smaller than the one used in the wrest plank.



Of course you might find it easier to make it out of solid hardwood, as I did, alternatively you could try bending the frames if you are familiar with this method, my only concern being the built in stress and the wood movement.

## **The Top**

I have used Finnish pinewood ( very close growth rings) quarter sawn, selected from a stack of DIY timber, re sawn and jointed to make up the size. I have also used with great success Hemlock 4"x4" as used for staircase parts, again knot free and quarter sawn, but a little thicker as it is slightly softer and less stiff. My only reservations about this wood is the difficulty in cutting a clean rose in it.

The easiest way to make a top is to use guitar timber tonewood, but it is very expensive. You could use other woods. Willow might be worth trying, quarter sawn, a little thicker, with banding to protect its edges, it has been used on Hammered Dulcimers and Irish harps and gives a good tone. The two bar struts drawn are not really necessary on the front as they are on the back but mine help to give the front some 'belly' which adds life visually.

### **Wrest Plank**

This is the only vital part of this instrument, the precise drilling of which determines the instruments ability to keep in tune.

Although the holes are drilled after assembly this part is used as the datum for the other parts (see building board.)

### **The Bridge**

As this post modern instrument uses lute iconography in its shape and rose I developed a design based on late renaissance, and on my main plan is the rounder early shape which I am using now. As these details are decorative you could use an uncarved bridge, however, I feel it adds a nice delicate touch to the instrument.

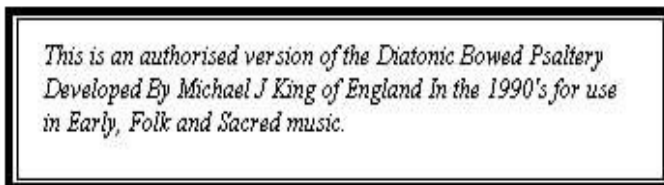
### **The Building Board**

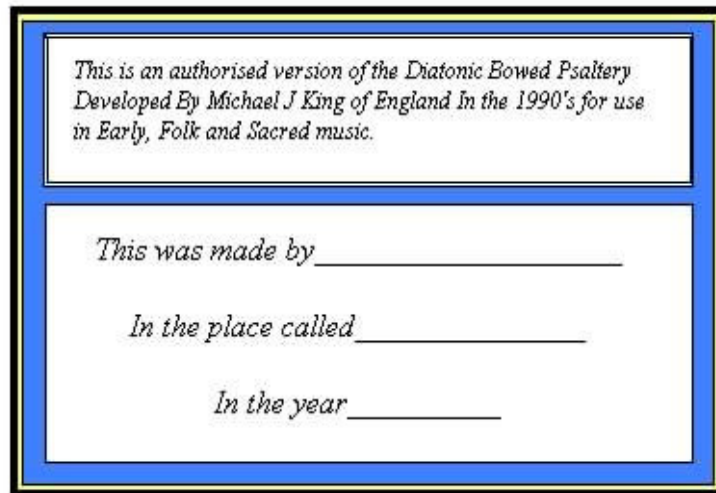
A piece of 15/18mm MDF will do. It needs to be flat. Paste or draw a copy of the outline on it and mark the centreline, wooden dowel or blocks can be fixed to it to make sure everything stays in place.

### **The Label**

Here is the insert on its own, which can be placed just under your own label.

Alternatively you could simply use this single label below.





### **Construction Order** ( my suggestion)

Study the drawing and measurements

Prepare all the hardwood for the project and joint the top and back

Make a template for the frame sides minus 2 mm

Cut out the wrest plank and mark the centre line

Sand to shape and glue to the paper ( stuck on the MDF with weakened glue)

Screw tiny screw to hold it fast from underneath the MDF.

Cut out the framework and sand to shape ( disk sander)

Plane the side timber to 2mm and glue to the frame. Clamp and leave to dry.

Sand the joints to fit

Glue the frame together and finish the top and back.

Carve the rose then plane and glue the struts

Plane the frame flat while still attached ready for the top.

Remove the frame from the board and prepare the bottom for the back.

Glue the top cramping with violin makers cramps

Affix the label, Glue on the back

When dry clean up

Ideally varnish with violin oil based varnish or thinned Danish oil, clear or stained to taste. ( you can finish with spirit based varnish as well for a quicker result)

Mark all the holes to be drilled with a square bradawl accurately. Note that the spacing of the string holders is equally 28 mm between each string

Drill all the holes on a a drill press if possible, for 5 mm pins use 3/8" drill bit at the tuning end. ( you may need to use a smaller bit for softer woods and larger for denser ones.

Carve the grooves in the 16 pins to be used for the string holders. Use a hacksaw and needle file.

Hammer the pins in place carefully ( or turn them by hand) all the string holders need to be level with each other, about 12-mm high, and the tuning pins the same. ( 15 mm might be appropriate here, depending on your tuning pins.)

Attach the strings, place the bridge and tune up!( make sure you tuck under the cut ends of string as they are like miniture chisels!)

## Making The Bow

The simplist way of making the bow is to make it from Greenwood, like ash for example, splitting it in two and drying the wood on a mould of the shape required. You only need it to rise about 4.5cm in the middle. It is probably best to drill and cut the slot before bending.

I make my bows mainly from Yew wood that I steam over a large pan for half an hour.

Be careful as steam can be very dangerous.

There are differnt opionions about the amount of hair needed, some say as little as 25 , some 80 . I use around 50 , all seem to work just make sure you add powdered rosin to the hair while it is loose.

Split/cut/ bend your stick

Select your hair( horse or synthetic)

Secure one end with a knot and glue

Comb the hair and tie it 1 cm too short, add rosin dust

Bend carefully to fit and add/ subtract to get it taught, Rosin well!

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