Making an ES 335 style guitar

Part II

This is a photo taken from a book by Tom Wheeler, *American Guitars, an illustrated history* that shows a maker at the Gibson factory gluing a plate onto the body. It can be seen that the first photo that there is a brace inside the plate called a contour brace that allows the plate to be glued to the block. The contour brace is really just a piece of spruce that is kerfed along its length. This is an easy way to make the solid center section.
In the Uniden plan the block does not extend all the way from neck to tail. This is perhaps a happy medium between a fully hollow body with its resonant tone and a 335 type. A little more body resonance may be heard as the body moves and breathes more yet sustain will not suffer. At any rate, I think it is a good plan and that I will stick with it.

Cut some spruce with good quality straight grain about 11mm or about 1/2 inch thick.

Cut a series of kerfs like this and leave about a 1 mm thick spine.
Align it correctly and glue it in place in the vacuum bag.

Later I discovered that a few kerfs across at the areas where the curve is greatest, helps it fit the contour better. The kerfs are best at the top towards the neck end. This brace is just showing the kerfs, not the placement on the plate.

The router on a sled levels out the excess so the contour brace sits flush with the plate bottom. This is tricky and causes the spruce to tear if I don’t rout carefully. You can barely see the remnant of the cross kerf.
Now we have the body made and we're ready for the binding, neck pocket and pickup routing. Before we rout the binding ledge lets talk about neck angle and neck set back. On the Uniden plan the neck set back is not going to work with our guitar because the plates are arched much more than in the plan. don't worry because only one modification make it work, the neck angle. Here's an easy way to measure the neck angle.

Measure the distance from the fingerboard end and neck body end.

Transfer to the plate.
Using double stick tape, apply a piece of luan plywood.

Flip it over and clamp at the very edge so the faux fingerboard sits flat on the surface. This angle is 3.5 degrees.

Place some tape at the bridge line and a piece of double sticky tape.

With the guitar body clamped in place...

See the gap where the bridge would go, between the guitar and the table.
Get some of these...carpenters shims.

Push them in with the wide ends flush and stop when you feel it start to push the guitar up.

The wedge is now stuck to the plate front.

Measure the thickness of the shim at the bridge line.
In my case 0.341 inch, and subtract the thickness of the faux fingerboard, 0.200 which gives a 0.141 inch or 3.58 mm gap where the bridge sits.

Now do a little math with some known measurements.

Standard fingerboard, standard fret height, and gap all equal 0.491 inch. Or about a half inch.

Two important things result from this exercise. First the neck angle is established at a 3.5 degree “offset” or 96.5 degrees. That will allow the fingerboard to sit flat on the top of the guitar without a gap. The second thing is, when the neck angle is 96.5 degrees, the projection of a line straight edge over the frets, out to where the bridge line is, will be 0.491 inches above the plate. The lowest setting for a Tune-O-Matic bridge (TOM) is approximately 0.50 inch. The bridge when adjusted all the way down will result in strings touching the frets. That is just what we want, to be able to take full advantage of the height adjustment of the TOM.
Now to back-track a little. Here’s how the sides are glued to the block when using the contour braces. In this case the center block will be slightly thicker than the full thickness of the ribs. 1 1/4 inch is the rib height so make the block 1 5/16.

Make the mold just as we did but omit the 1/4 inch spacers at the underside. In this case apply some very thin spacers.

I used 3 pieces of veneer and glued them down to the bottom of the plate.

This is the underside after the ribs are in the mold.

They are proud of the mold by just a bit, like this. Now flip it back over and put 2 strips of veneer down on the bench top where the centerblock will go to raise it up a little. Now glue the blocks in just as I showed in the first part. Your ribs will be thicker than the blocks by just a little bit, (1 veneer thick-
ness 0.022”) enough to use a block plane to get them smooth. Apply the kerfing a little proud as before. Then use a block plane to flush the kerfing with the sides and you can finish up with a sanding board. You only have to sand 1/32 inch each side, but that is quite a bit of sanding with a maple block this big. Stick sandpaper to plywood and sand the bottom and top until the ribs are flat and smooth. Be very careful when you sand the “garland” as it is very fragile, if you catch an edge you can break it easily. For a safety measure make your sanding board oversized. The technique is important when sanding. Be sure not to press on the ribs too much as then will sand very quickly, apply even downward pressure and sand lightly. Move the garland up, down, clockwise, counter-clockwise etc... Use a pencil to judge your work by marking in all areas, sand and look at the marks and where they are sanded away. Careful, don’t catch an edge. If you really want to be careful, and perhaps the best way would be to tack glue the garland to a piece of plywood, a false back, to firm it up when sanding, then remove the false back with a spatula and glue the plate on. Now with the plate sable on you can sand the other side.

Gluing the plates is similar to before and perhaps a little easier, but I would still suggest a go bar deck although spool clamps for the perimeter and a couple far reaching clamps for the center block will also work.

Flush trim the edge and you are ready for binding.

Stay tuned...
Making an ES 335 Style Guitar by Ken McKay kenmckay@hotmail.com