

MAKING THE RIBS FOR A CORNERLESS VIOLA

Fitting ribs on a viola with a guitar-style body is a surprisingly quick process because you don't have to deal with corners, as **HELEN MICHETSCHLÄGER** has discovered



I have long had an interest in making high-quality small-sized instruments to give talented children the chance to play on something that really works. More recently I've focused on making small violas, since there are very few on the market with a back length of less than 15 inches and that can hold up in a quartet of capable young players.

A 14 1/4-inch cornerless viola by Helen Michetschläger

There are two principal problems to solve in making effective small violas: sound and price. The cornerless model I use, which I make in sizes equivalent to 3/4- and full-size violins, is successful on both counts. The outline lends itself to greater width across the C-bouts, giving an inherently darker sound. The model also allows for a set-up that uses a viola bridge (rather than a violin one), bass-bar and soundpost. If careful attention is paid to the plate thickness, the finished violas are responsive, powerful and even.

The technique described below – bending the ribs and fitting them straight on to the back – is quick in practised hands, and therefore helps to reduce the cost of the finished instrument.



The cornerless viola outline is marked directly from the template

[1] Having prepared and flattened the wood for the back and front of the instrument, I draw the outline directly on to it from the template, and then cut it out.

The viola is then purfled, arched and thickened following usual procedures. A surprising amount of time can be saved by not having to deal with corners.

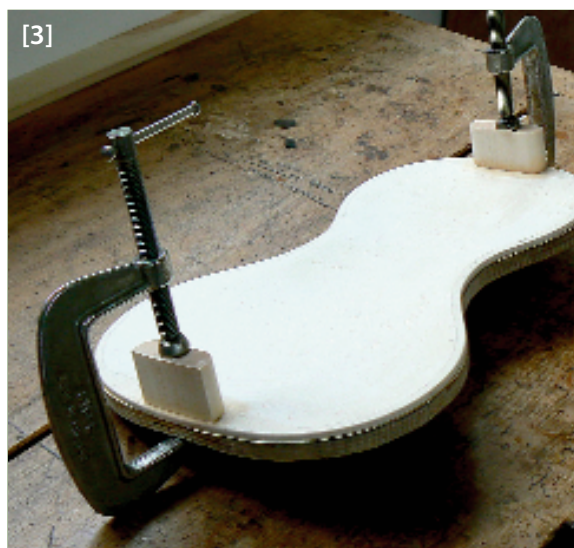
When the back is finished, I score a line 2mm in from the edge on the inside to mark the overhang, and then a further line about 3.3mm from the edge in the top- and bottom-block areas. I round over the inside edge of the back at this stage; it is easier to do this now, before the ribs are glued in place.



A birchwood jig ensures that the back remains flat while the ribs are added

[2] The arched and thickened back needs support so that it remains flat while the ribs are built on to it. I do this by making a jig from 11mm birch plywood, cut out to the shape of the back. This jig is about 10mm wide around the upper and lower bouts, and somewhat narrower in the C-bouts, so that it fits flat on to the edges of the viola.

To make it easier to split the jig off the back later, I glue paper over the face of the jig that will fit against the back. I spot-glue the back to the jig at six points: at the top- and bottom-block areas and at even spaces around the edge.



[3] The top and bottom blocks are glued and clamped in place



[4] The bent ribs are checked against the back to ensure that they fit



[5] A dry run ensures that everything fits and that the clamps are to hand

[3] I finish the blocks before gluing them to the back, leaving some extra wood in the height. I cut the external profiles to fit against the line that was scribed earlier 3.3mm in from the edge, then finish the internal profiles.

I mark the centre lines and then, having sized the end-grain, glue the blocks in place. It is usually necessary to tape clamping blocks inside the jig to make a flat surface that is sufficiently large to support the ends of the G-clamps.

[4] The choice of wood for the ribs is important, since there is a higher chance of distortion with this method than there is when using a mould. So I pick mild, evenly figured wood without spiral growth, knots or faults. The ribs will bend more evenly if they are slightly thicker than usual – about 1.2–1.3mm works well. Before bending the ribs, I plane the lower edge perfectly flat on a shooting board.

I bend the ribs on a hot iron and offer them up to the back to check that they fit against the 2mm scribed line. At intervals around the lower edge of the inside of the ribs I make pencil marks that correspond with marks on the back, so that as the bending progresses, the ribs can be repositioned accurately on the back.

The lower ends of the ribs are planed to make the joint on the bottom block. The ends of the ribs must be cut accurately at right angles to the lower edge. The angle of the joint controls the angle of the ribs on the back; if the joint is out of square, the ribs will be too.

[5] It is important to do a dry run of gluing the ribs, to check that everything is going to fit well and that all the clamps are to hand.

As there is a lot to think about at once, the gluing sequence must be well prepared. I start by gluing the joint on the bottom block, and fitting one closing clamp on either side. The ribs must fit snugly against both the block and the back, so I use something like the flat end of a burnisher to push the ribs hard down on to the back against the bottom block before tightening the G-clamp.

I apply glue with a knife to about three closing-clamps'-worth of rib at a time, on alternate sides of the ribs. I am careful not to overtighten the clamps, or the ribs will buckle. When the top block is reached, I brush and knife glue between the block and ribs, and then G-clamp the ribs to the top block before the final two closing clamps are put in place. I then press the ribs down against the back in the block area with the burnisher. ▶



Straps and linings reinforce the ribs at points where they are least curved

[6] When the glue has dried, the top edge of the ribs can be flattened with a block plane. I check against a flat surface that there are no high spots.

It is wise to reinforce the ribs in the areas where they are least curved, and therefore most prone to damage. This is where, on a conventional instrument, the corner-blocks would be. I glue straps of spruce here, about 8mm x 2.2mm in section, sized on the end-grain.

The next stage is to fit the linings. My original instinct was to strengthen the joint with the back as soon as possible and to begin with the lower linings. But in fact it works better to fit the upper linings first, which then offer some support when clamping the lower linings. So I start by bending and gluing the upper linings in the usual manner.



Gluing the lower linings and securing with purpose-made aluminium clamps

[7] The lower linings for the upper and lower bouts have to be sprung into place. I start by cutting the joint for the end that fits against the blocks, and then very carefully trim down the joint against the strap until the lining is just the right length. The fit needs to be tight, so that when the lining is snapped and glued into place, there is no gap between it and the strap. Before gluing the linings, I flatten the edge that will fit against the back by drawing it across the sole of a plane held blade-side-up in a vice.

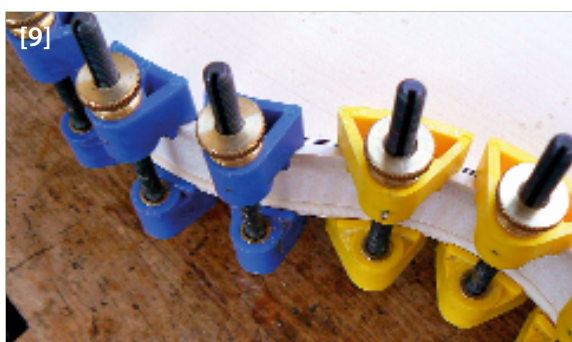
To glue the linings, I favour the purpose-made aluminium lower-lining clamps made by Brian Hart. When clamping the linings in place, I push them down with the burnisher as the clamps are secured, to ensure that they are snug against the back. If these specialised clamps are not available, small-repair G-clamps are an alternative, but if you are using these it's vital to have the upper linings in place or they will pull the ribs out of shape. You are unlikely to have sufficient clamps to glue the whole set of linings in one go, but the job can easily be done in stages.



After chamfering and cleaning, the finished rib structure is revealed

[8] Once the straps and all the linings are glued in place, they can be chamfered. It's tricky to shape the straps and the lower linings, but if I use a small chisel and small thumb planes, a neat job can be achieved. It can be helpful to line the inside of the ribs with masking tape to prevent the edge tools and finishing paper from marking them.

Finally, I clean up the inside of the body and size the top surfaces of the blocks and straps before carefully separating the back from the jig and gluing on the front.



The front of the instrument is glued and clamped to the ribs

[9] When the front is offered up to the finished ribs, a minimal amount of adjustment should give an even overhang, and the front can then be glued to the ribs.

From there, the work on the viola continues as it would for a conventional instrument. The guitar-style body feels light but strong, and it is quick and efficient to make in its simple form. ■

NEXT MONTH >> Hans Pluhar looks at cutting the neck mortise and setting and gluing the neck