



## Using Baker-style mechanics on a double bass

How to fit these brass pegs, gears and tuners, as used by English bass makers in times gone by

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Shortly after arriving in London, I started using copies of the old 'Baker-style' tuners for my basses. For me, it was inspiring to see how the English craftsmen of the 18th and 19th centuries were masters at working with brass.

Since my pegbox narrows quite a bit towards the scroll, the first three brackets with the worm gear are the same size, whereas the last one, for the A string, has a smaller worm gear. I start the fitting with the G-string tuner, because the G string has the smallest diameter of the four strings and it can run at a steeper angle from the upper saddle into the tuner's string hole, more easily than the thicker E string.

For the G string it is important not to be too close to the end of the pegbox at the upper saddle, so that the strings can be tuned without touching any of the pegbox.



Top-bottom Brass worm gears, pegs and tuners



Positioning the tuner



Making the mark

I place the worm gear on the pegbox, with the same distance to the upper and lower edges (1a). Then I mark the middle of the peg by holding the tuner upside down. The little pointy ornament of the wheel makes a clear mark to indicate where I should drill the peghole, with the help of a little knock with the hammer (1b).

The pegs are tapered to a diameter of around 14–16mm. So I use a 14mm drill bit for the side where the worm gear sits, and a 12mm bit for the opposite pegbox wall. I start with the 16mm bit from the worm gear side, first fixing a flat piece of wood with two clamps inside the pegbox, to avoid any wood breaking when the drill comes through the wall.

Next, I push the bit on to the inner surface of the opposite wall to mark the middle of the hole. It is important to get the right direction because there is not much leeway to change the given angle of the tuner. Then I use the 12mm bit, which I have put into my second drill (this avoids having to change the bit every time) and drill from the inside out, having again fixed a piece of wood on the outside.



Drilling a hole in the pegbox



Tapering with a peg reamer

3 Then I use two different peg reamers: a straight cello reamer, tapered at 1/25 with a maximum diameter of 16mm, and the same sized brass spiral reamer to finish the job. Also, since the tuner's maximum diameter is 16mm, I know exactly when to stop – at the end of the reamer! After the first peg is fitted I do the E string, and work my way up to the A, and finally the D string.

The side shape of my pegbox is a medium curve. I need to be careful that the strings do not touch the other pegs while running from the tuner to the upper saddle. Therefore I leave more distance between the E-string tuner and the D-string tuner than between the other two. This is similar to how it is done on cellos and violins.



Paper template for one brass plate



Template outline on the brass sheet



Cutting out the plate with a bandsaw



Chamfering the plate

4 English basses used to have a brass plate covering the pegbox wall. This is merely decoration. The worm gear could also sit without a plate. However, since I am heavily influenced by the English bass makers, I use a brass plate on my basses as well.

My brass plates are 2.5mm thick. This is rather on the thick side. They used to be thinner, but the factory where I get the blank brass sheets from doesn't have these any more, so I have to use the thicker plates. The advantage is that thicker plates don't make any noise or buzz so easily, although they put more weight on to the pegbox. Brass is quite a heavy metal as it is.

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First I draw a template using some thick paper or card (4a). I have to do this with every new bass, because my pegboxes always turn out differently, which is not always intended.

The next step is to draw the outline of the pegbox template on the brass plate with a felt-tip pen (4b).

The machine I bought after selling my first bass (having just started my own workshop in London) was a Hema bandsaw running on three wheels and using the normal 240V mains electricity. This was useful, because my garden flat in Kensington didn't have a strong power supply.

The bandsaw can run at two different speeds, so I can put a metal blade on the machine and cut the brass plates on a slower speed beautifully (4c). After that I shape the roughly cut plates on a circular disc sander and then fit them on to the pegbox individually, using different shaped files. I leave about a 1mm space to chamfer the pegbox wall (4d). ▶



5a  
Marking the other side of the pegbox



5b

**5** Once they fit, I fix the plates with two clamps on the outside wall and mark the outline of the pegholes – with a pointed drill bit – from the opposite pegholes (5a). Taking the clamps off, I make a circle to mark the middle of the hole to be drilled (5b).

Next, fixing the plates on the drill table, I prepare to drill the holes. Once again, I use a 14mm and 16mm bit, since the holes are tapered and need to have different diameters. This is tricky and doesn't always work as I wish. That said, I do leave some spare space for fitting the holes to the pegbox later on.



Pre-drilling the holes for the screws

**6** I make the tuner holes using a knife made of very hard Tyrolean steel, which makes it easier to cut the softer brass. Then I finish the chamfer of the plate, firstly with a fine metal file and then with sandpaper. Finally I polish the plate until no toolmarks can be seen.

I put the whole set of tuners in the dishwasher and run it on a short cycle. The brass will lose some of its shininess, which I prefer.

Lastly it is time to fix the whole gear permanently on the bass. I fix the tuner with the worm gear on to the brass plate, so that I can drill the holes for the screws and secure the tuner. Then I pre-drill the holes for the screws with a drill bit of smaller diameter, because the brass screws are quite soft and tend to break if you force them too much.



7a  
The finished and washed tuners



7b  
How the tuners look when fitted

**7** Finally, I may need to shorten the pegs if they are still too long. As for the counter-screw of the pegs, I put some felt discs on them so they don't buzz. ●