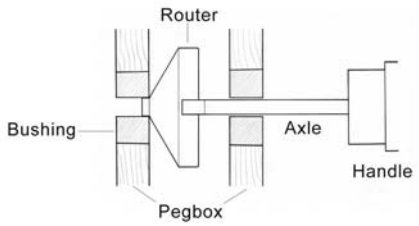
# Instructions for conical bushing process

1. Clean, prepare and glue the pegbox crack. (In the case of a cello pegbox a conventional bushing is needed to fill the hole then drill a small guide hole of 5mm diameter).




Cello router in bushing guide hole

2. Place router bit into the pegbox and connect to handle

Figure 1

3. Route the hole with the thumb placed on the outside of the pegbox for support and control, turn by hand at a slow speed, clearing out the cracked wood. (Figure 1)

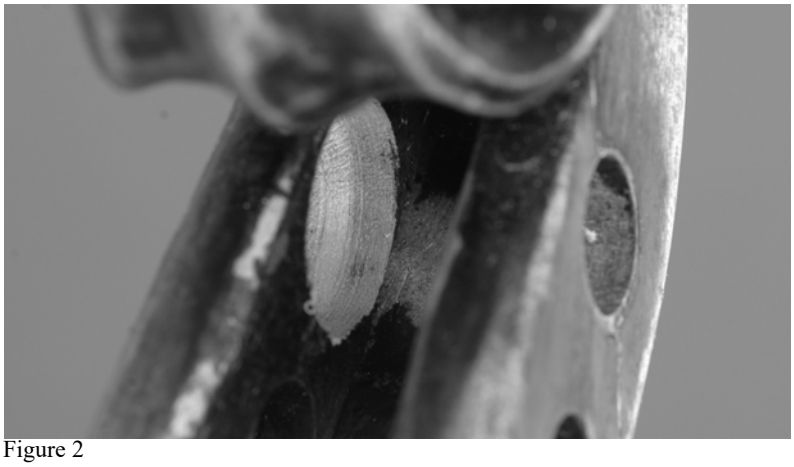
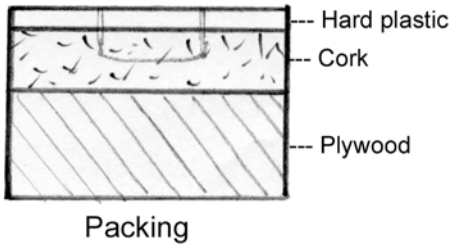


Figure 2

4. Make hard-surfaced, clingfilm covered packing to surround the cracked peg hole. The packing should allow the centre of the bushing to protrude.



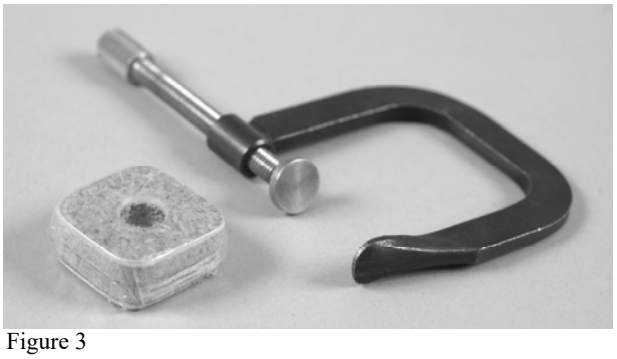



Figure 3

5. Warm the scroll and bushing with a hairdryer, and cover both surfaces with plenty of relatively thick glue, inset the bushing and secure with a clamp. (Figure 4)

   NB: The glue should be so thick that the endgrain quickly gets saturated and does not absorb any more glue. In this way we can avoid glue sizing as this could distort the drilled hole and the bushing.

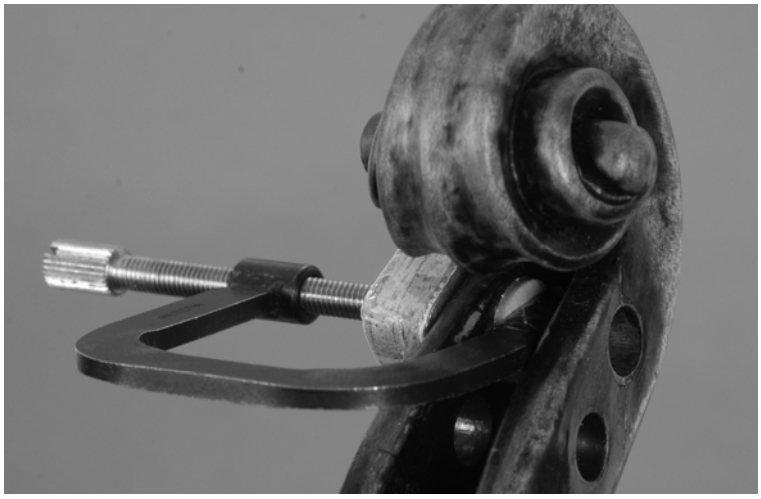


Figure 4

6. Allow the glue to dry. Once the inserted bushing is dry, the peg hole must be re-drilled in its original position. The conical bushing, invisible from the outside, must now be cut back to the thickness of the pegbox. Sometimes it's better to leave the bushing in the pegbox a little thicker in the centre for maximum strength, particularly if the pegbox has especially thin walls.

7. The bushed pegbox should now be finished by strengthening with spiral bushings.

8. The shavings are produced using a plane, It is advisable to use a hot, damp cloth on the wood to steam it. This enables the wood to be cut evenly without

breaking up. Many shavings can be done at the same time and stored. Trim the bushing to about 8cm length, width about 3-4mm more than the thickness of the pegbox wall.

Figure 5

9. To prevent the crack from opening, apply clamp pressure while gluing the shaving bushings. (Figure 5)

10. Cover both sides of the shaving and the peg-hole with hide glue and place in position. To secure the bushing, carefully insert and turn a warmed mandrill in the opposite direction to the wind of the bushing so that the bushing unwinds inside the hole and pushes tightly against the sides of the peg hole. Hold in this position for a minute, until the glue dries slightly; do not allow the glue to completely dry while the mandrill is still in the hole. The warm mandrill stops the glue from congealing and leaving thick glue lines. To keep the mandrill warm, immerse it in the hot water that surrounds the glue pot.

Turning the bushing pieces

Turn very-well-seasoned boxwood to round dowel 13mm diameter. Turn top to angle of 45º leaving 3mm flat part on the end. Cut off and turn the next piece.

For cello turn the boxwood to 23mm diameter dowel, turn the top to 27º angle with 5mm flat end.