

## How to make Left Hand extensions by Jennifer Cluff

### Materials:

- Dremel Tool (optional) for shaping the wood pieces
- A pair of pliers to break wood (if not using Dremel) or to hold wood.
- 1 inch wide strips of wood that are thinly cut but rigid (2mm thick or more)
- A new fault-free wine cork; to be cut into two thick slices (discard fault lines).
- An x-acto knife or razor to cut the cork
- Sandpaper: medium and fine to finely shape and smooth both wood and cork.
- Contact Cement (ask for it by name; other kinds of glue don't work)
- Q-tips for applying glue neatly and sparingly.
- Acrylic or cork hole-plugs to permanently plug the G and A keys of the flute.
- Isopropyl alcohol (from drugstore) to remove excess glue or clean up glue
- Paper towel pieces to use for alcohol clean-up.

### Before you start:

- Note: Sample or 'preview' extensions can be made by cutting breadbag ties with scissors and gluing them on temporarily.
- Avoid dust, scratching flute, rough handling or messy gluing.
- Put plugs in A and G keys and be sure they fit air-tight and do not hang down inside the flute. They should be removed and trimmed if they are too tall.
- Cover work area with newspaper or drop cloth on which to lay flute.
- Finger oils should be removed from silver surfaces about to be glued by dipping Q-tip in alcohol and cleaning area of flute keywork lightly.
- Avoid getting any glue on pads or mechanism. Work slowly and cautiously.

### Cutting and shaping wood extensions:

If using a Dremel tool, hold wood pieces with pliers to avoid sanding your fingers, and shape to match photos and drawings, or to suit. If no tool available, break wood into pieces larger than finished shape, and sand down by hand to desired shape. Sandpaper can be on a block, or laid down flat, and piece of wood rubbed across until corners sufficiently rounded and correct size has been reached.

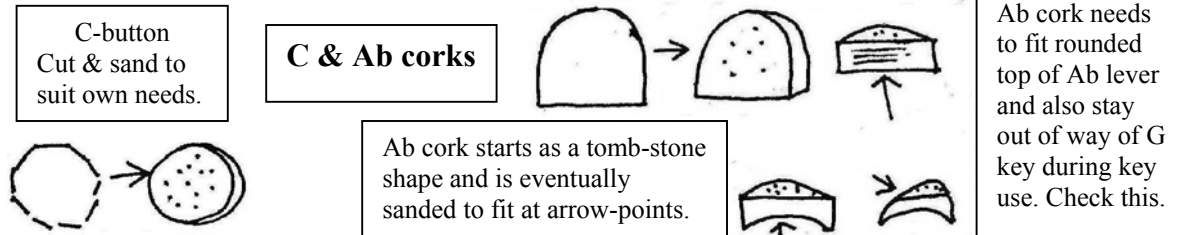
You will make three pieces; two ovals for A and G, and one apostrophe shaped piece for the underside of the Ab lever:



### Cutting and shaping cork extensions:

Cut and shape two pieces of cork. One for the C-button (to raise its height to un-cramp the hand when playing if necessary) and one for the top of the Ab key.

The C-button is a simple round disk, whereas the Ab cork-top must be carefully sanded to shape it. See drawings below and side view of finished shaping:

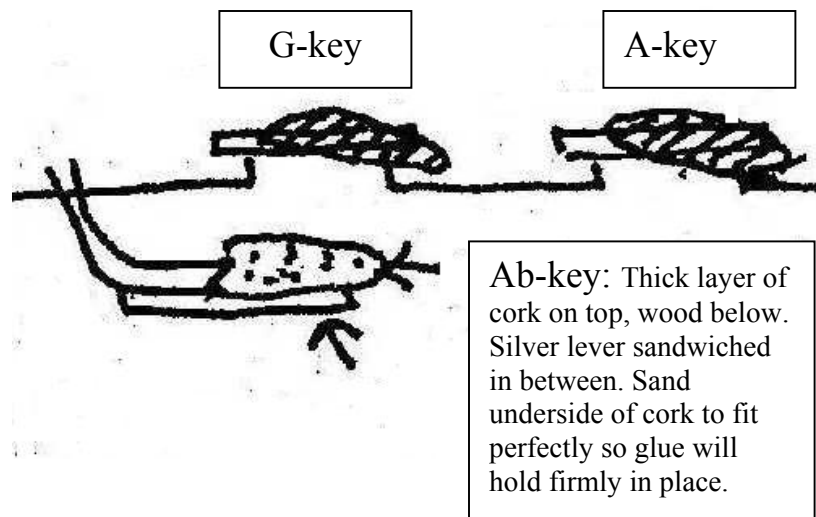


**Important:** Notice the heights of the extensions. They have been sanded to fit perfectly so that they do not touch while flute is in use.

### Careful testing:

Before gluing anything to anything, test play all the positions of all the keys against each other. Pay special attention to whether the Ab cork accidentally will rub against the wood extension of the G-key when the either of the two keys is down. Continue to sand down the Ab cork to fit within the confines of the G-key motion. Only when all pieces fit perfectly and have been fully tested should you begin the gluing process.

The Ab extension makes a sandwich shape. Wood underneath on the flat part of the Ab silver keywork, and rounded cork on top. These are glued around the Ab lever:



**Gluing:**

Clean areas of flute keywork to be glued with Q-tip dipped in alcohol. Apply glue with clean Q-tip, following package directions. Apply to flute and extension surfaces, and then let dry until tacky (10 min or more). If you don't wait for "until tacky" parts will slide around while gluing.

Once glue is tacky, press and hold pieces together in pre-tested and double-checked positions. Hold for 60 seconds. Do not allow parts to slide or shift or glue bond will break.

Carefully complete gluing for each piece in turn. Let dry overnight before playing.

Sometimes the silver finish of the flute resists contact cement during first gluing, and extensions do not hold next day. Re-do the gluing next day. This process has always worked best second time after silver-finish has been roughed by first gluing.

Extensions are completely removable by experienced flute repair person. (If you attempt to break them off yourself you may bend keys, so be careful, or leave to the experts.) Glue does not hurt finish of the flute whatsoever. And glue will hold for over 8 years under heavy use.

Any tiny wet blobs of excess glue, or tiny glue strands can be removed with small piece of paper towel or Q-tips dipped in alcohol. Keep alcohol pure by pouring small amount into saucer or lid if repeatedly dipping into it.

If Ab key rubs up against G key, you can drape the flute carefully to keep dust out and sand the Ab cork extension in place until no longer touching G extension. But careful planning helps avoid this problem.

Best of luck.

Jen Cluff

[http://www3.telus.net/Garry\\_McKevitt/](http://www3.telus.net/Garry_McKevitt/)