NOTES ON TENON FIT

* Keep in mind that sometimes a tenon joint may be loose only because the tenon is bent or misshapen and expansion of the tenon may not be necessary. Rather, it may only need to be straightened and put back into round to achieve a proper fit. In such cases very minimal pressure of the compression roller would be necessary; just use enough pressure to allow the expander to reform the tenon.

* When the neck is inserted into the receiver and the neck tension screw is tightened, the area of the tenon which gets clamped or gripped the most is the area closest to the tenon's shoulder or ferrule. This is generally the area of the tenon which should be expanded. Note that the width of the compression roller is approximately 0.375" (9.525mm), sufficient to completely cover this area of the tenon.

* In cases where the entire tenon is undersized it may be necessary to expand further down the length of the tenon. Begin expansion as above with the area closest to the shoulder and when this area is expanded sufficiently, position neck on guide pin so the compression roller will contact tenon approx. 0.375" away from shoulder. IMPORTANT: the area of the tenon closest to the shoulder requires the most amount of force to achieve expansion. The further away from the shoulder that you proceed the less force required to expand. Proceed cautiously!

MOUNTING THE GORILLA JOINT EXPANDER

The Gorilla Joint Expander comes supplied with a mounting stand for bolting the expander to a bench top. If permanent mount is not desirable, the stand is made of thick walled, heavy duty steel and can be easily clamped in any standard vise (removal of the bottom plate may be necessary if it interferes with vise).
OPERATING INSTRUCTIONS

Before proceeding make sure the tenon and receiver, as well as the compression roller and guide pin, are perfectly clean and free of any foreign particles.

INITIAL PRESSURE SETTING

1) Move cam lever to upright position and place the neck tenon onto the guide pin so that the shoulder or ferrule of the tenon is against the compression roller (see page 4 regarding area of tenon to expand). If there is not clearance for the tenon to fit between the compression roller and the guide pin then turn the pressure adjustment wheel counterclockwise to open the gap.

With the tenon in position gently push the cam lever down until it reaches full horizontal position. Depending on the position of the pressure adjustment wheel the lever may stop before going all the way down and it may be necessary to turn the wheel counterclockwise. If, on the other hand, when the lever is all the way down there is any gap between the tenon and the compression roller, turn the pressure adjustment wheel clockwise to close the gap and bring the compression roller against the tenon.

Raise the cam lever to full vertical position and rotate the pressure adjustment wheel clockwise about 10 clicks. The pressure setting is now at a good starting point for beginning the expansion procedure.

2) Make sure the tenon is in proper position (tenon shoulder against compression roller) and lower the cam lever to full down position. You will feel resistance on the lever, this is ok, continue to press lever all the way down. With one hand steadying the neck, turn the expansion crank one complete rotation (360°). It is important to note that as the crank is being turned the neck should be turning right along with it and it may be necessary to help guide and rotate the neck while turning the crank. Before expansion is started, position the crank handle and the neck pointing in the same direction (both down for example). This allows for easy visual confirmation that the neck is turning right along with the crank and after one complete revolution both will again be in down position.

After first expansion, raise the cam lever to upright vertical position, slide neck off of guide pin, and test tenon for fit in instrument.

3) If the fit is too loose and more expansion is needed, reposition neck back onto guide pin as in Step 2. Because the cam mechanism allows the tenon to be removed and tested without changing the pressure setting, you know exactly where you left off on first expansion attempt. Turn the pressure adjustment wheel clockwise the desired number of clicks to increase pressure, lower cam lever to full down position, and turn crank to expand. Note that pressure adjustment wheel should only be turned when the cam lever is in vertical position (attempts to turn the wheel with the lever down and pressure against tenon puts undue strain on the wheel mechanism). Repeat steps 2 & 3 as necessary.

IMPORTANT

Experience will dictate a greater or lesser initial pressure setting (Step 1) as well as how much to increase pressure after first expansion. One increment or click on the pressure adjustment wheel will lower the compression roller a distance of 0.0015" (one and one half thousandth of an inch / 0.0381mm).

Also note that if the tenon is very close to fitting it may not be necessary to increase pressure in order to achieve further expansion. Instead, just turning expansion crank one or two complete rotations at existing pressure setting may be enough to expand the tenon further.

The important thing to remember is that by proceeding slowly overexpansion is virtually impossible. It’s easy to expand by just a small amount - correcting an over expanded neck is takes work!