

## Troubleshooting: Blanks Cracking During Assembly

Cracking during assembly is usually the result of uneven pressure, internal stress, or restricted space inside the tube. Below are the most common causes and how to prevent them.

### Improper Squaring of the Blank

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**Cause:**

If the ends of the blank are not perfectly square to the tube, pressure will be unevenly distributed during assembly, often cracking the edge that contacts first. Additionally, if the material is not trimmed flush with the tube, assembly pressure may be applied directly to the material instead of the tube, increasing the risk of cracking.

**Solutions:**

- Ensure both ends of the blank are **properly squared and trimmed flush with the tube** before assembly.

### Glue Inside the Tube

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**Cause:**

CA glue or epoxy inside the brass tube restricts the space available for the components, causing the tube to expand further when parts are forced in.

**Solutions:**

- Use a **deburring tool** to remove glue and debris from inside the tube.
- **Plug the ends of the tubes with baseplate wax** before gluing them in to prevent adhesive from entering the tube.

### Parts Entering at an Angle

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**Cause:**

Pressing components in at even a very slight angle can create uneven pressure and result in cracking.

**Solutions:**

- Make sure the component and barrel are **completely square to each other** before pressing.
- Use a **dedicated pen assembly press** to allow for more precise control and alignment.

### Internal Stress in the Material

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**Cause:**

Hard, brittle woods (such as snakewood or cocobolo), as well as some acrylics, may contain internal stress that is released when pressure is applied during assembly.

**Solutions:**

- **Chamfer the ends of the tube** to help ease components into place. A slight bevel reduces resistance and helps prevent parts from entering at an angle.

## **Excessive Heat**

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**Cause:**

Heat buildup during drilling, turning, or sanding can weaken the material, leading to heat fractures and cracks that may appear later during assembly.

**Solutions:**

- Slow down your drilling/turning speed and watch for heat buildup at all stages of the process.
- Take breaks as needed and allow the blank to **cool completely** before continuing.

## **Excessive Mandrel Pressure**

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**Cause:**

Overtightening the barrels and bushings on the mandrel can introduce stress into the wood, weakening the material or causing cracks to form.

**Solutions:**

- Tighten the barrels and bushings **only enough to hold the components securely while turning**. Avoid excessive pressure.

## **Gaps Between the Brass Tube and Drill Hole**

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**Cause:**

Areas near the ends of finished barrels where glue did not fully bond the tube to the blank are more prone to cracking. These areas are also where the material is thinnest.

**Solutions:**

- Wick **thin CA glue** into any visible gaps to reinforce the area before assembly.

## **Final Tip**

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Take your time during assembly. **Slow, even pressure and proper preparation** are key to preventing cracks and achieving clean, professional results.