

## Fine-Tuning Your Rail & Stile Bits and Techniques for Perfect Joints

CMT's matched Rail & Stile Sets are designed to deliver perfect joints, right out of the box. There are many factors that effect the fit of these joints, however. These include the condition of your router, the species of wood you choose, your routing technique, and more. Of course, resharpenering the bit can also effect the final fit. In order to allow you to compensate for these variables, CMT makes both bits out of two separate sections, which can be shimmed to adjust the fit. Please note that only shimmed cutters can be corrected in this fashion.

There are six common problems that can occur when using your Rail & Stile Sets. Here are the solutions that we have developed through years of experience:

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### Problem #1:

The joint doesn't close

Profiles seem to match, but there is a consistent gap the full height of the joint.



### Solution:

The stock probably is not coming in contact with the bearing as you make the cut. Be sure you are cutting the full profile.

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### Problem #2:

The stock does not lay flat when the joint closes

The profiles match, but the faces of the stiles and rails are not flat.



### Solution:

The edge of your stock is not cut or planed square to the face.

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### Problem #3:

Joint is too loose or too tight in the Mortise & Tenon

The pattern portion of the joint matches, but the tenon is too thick or too thin.



### Solution:

Add or subtract shims in this portion of the cope cutting bit, either above or below the bearing. Adding shims will make the tenon tighter. Subtracting shims will loosen the joint.

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### Problem #4:

Joint is too loose or too tight in the pattern area

The mortise and tenon fits well, but the pattern is too tight or too loose.



### Solution:

First, be sure the tenon is fitting correctly. Now add or subtract shims in this area of the pattern cutting bit. If there is a gap between the pattern cuts, remove shims. If the profiles are too tight, add shims.

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### Problem #5:

Joint is misaligned

The profiles match, but the faces and backs of the rail and stile are offset.



### Solution:

This joint usually results from the cutters being misaligned. Raise or lower the pattern cutting bit to adjust the joint.

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### Problem #6:

Surfaces are not flat

One surface is flush (either the face or the back), but the other surface is offset.



### Solution:

This problem is caused by two pieces of stock of different thicknesses. Be sure that all stock used for rails and stiles is of the identical thickness, and always rout with the "good" or "face" side down. We recommend 13/16" stock.