In our step-by-step example of panel door construction, we used the following:
- CMT Rail & Stile set (item #891.502.11)
- CMT Reverse Glue Joint (item #855.501.11)
- pre-cut to length stiles - 19mm thick x 57mm wide
- pre-cut to length rails - 19mm thick x 57mm wide
- panel - 16mm thick
- scrap stock

The CMT Rail & Stile set was designed ideally for the construction of panel doors from 19mm thick stock, however any variation of size up to 22mm thick can be used. Remember to adjust your measurements and cutting depths according to the wood thickness you use.
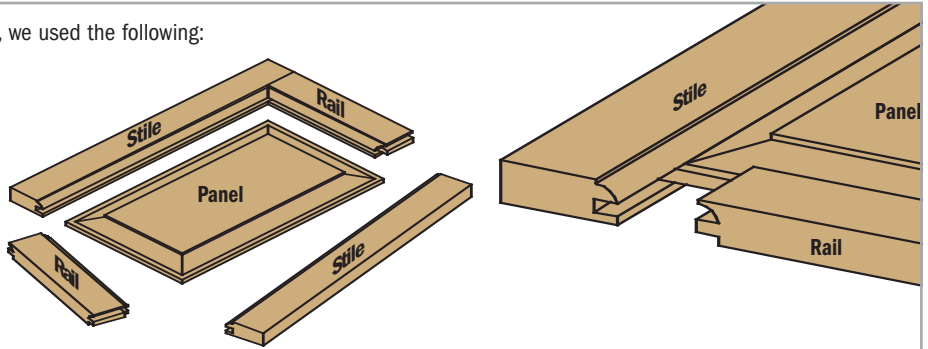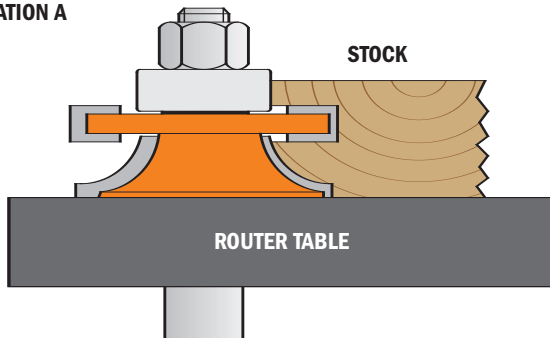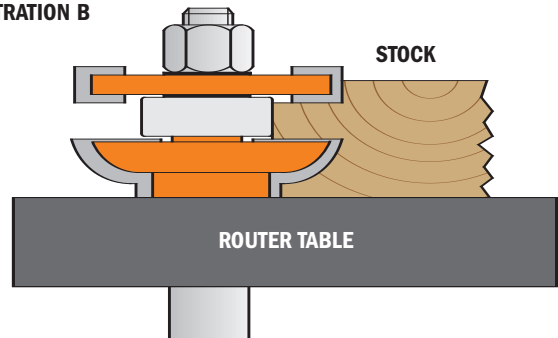
ILLUSTRATION A

STOCK

ROUTER TABLE

ILLUSTRATION B

STOCK

ROUTER TABLE

MILLING THE RAILS AND STILES

First make trial cuts of the cope profile (rail) and the stick profile (stile) in scrap stock and check the accuracy of the joint. This is extremely important when working at maximum thickness (22mm). Make sure your stock is flat and cut straight with square edges. Using the CMT Stile Bit shown in illustration A, place the stock front face-down on the router table and mill the stick profile in the stile and rail pieces. To mill the rails, use the CMT Rail Bit shown in illustration A, position the rails face-down on the router table and mill the cope profile in the ends. If you are milling cope and stick profiles before cutting the rails and stiles to length, be sure to make the proper calculations before cutting the rails. The stiles are the same length as the door. The rails must be calculated by the following equation (CMT standard tenon length is 22mm):

(total door width - sum of stile widths) + sum of 2 tenons = total rail length

therefore, using our example measurements listed above, for a 300mm cabinet door:
300 - 111 + 11 = 200mm

FENCE

ILLUSTRATION C

ROUTER TABLE

GLUEING UP PANELS

If the panel requires a width greater than the width of your stock, you will need to edge glue stock for the central floating panel. This is simply accomplished using the CMT Reverse Glue Joint bit. For making a two panel glue joint, place the first panel front face down on the router table and accurately centre the wood to the bit: Adjust the bit according to the thickness of the wood you are cutting by lining up the cut edge of the wood to the centre point of the bit as illustrated in illustration B and mill the cut edge of the wood. Place the second panel front face up and repeat the milling process. This assures you will have the best side of your stock as a front face. If a third panel is required, mill one cut edge of the piece as instructed above, turn the piece over and run the other edge. Assemble the reverse cut pairs together for beautiful, strong joints that match up perfectly.

MILLING THE FLOATING PANEL

Make trial cuts in scrap stock to create a tongue that fits snugly into the groove in the stile without forcing it. To cut your panel to size be sure to make the proper calculations, taking into account the length of the tongue. The CMT Raised Panel Bit in our example has a standard tongue length of 8mm (The New CMT Raised Panel Bit profile has a 9,5mm tongue).
Use the following equation:

(Total door length - Sum of Stile widths) + Sum of 2 Tongues = Overall Panel Length

Therefore, using our example measurements listed above for a 600mm long cabinet door: (600 - 116) + 16mm = 510mm
And accordingly:
(Total door width - Sum of Stile widths) + Sum of 2 Tongues = Overall Panel Width.
Once the panel has been cut to proper dimensions, position the panel front face side down on the router table tongue as shown in illustration C and use the CMT Raised Panel Bit to mill the tongue. ATTENTION: this bit is capable of removing large amounts of stock. To safely and effectively produce the profile you want, we suggest making several shallow passes. It can be dangerous to try to mill the entire profile in a single run.

ROUTER TABLE