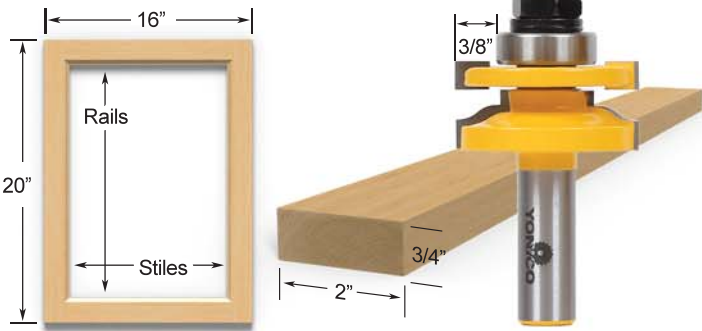


Rail and Stile Door Frame Making Instructions

Note: The dimension used in these instructions are for demonstration purposes only. Use the rail length worksheet below to determine the rail length needed for your rail & stile door project.

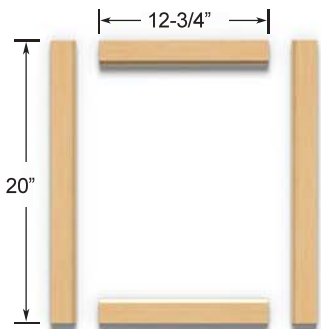
Step 1.

Determine the door size you wish to create, the size of the wood stock you will be using and the cutting depth of the router bits being used. When choosing stock, be sure that the thickness extends beyond the groove and the design by at least 1/8", and does not exceed the total cutting height of the bit. For the bits being used in these instructions (Yonico 12243) the stock should be between 3/4" and 1" thick. For this project we will be creating a door with the dimensions of 16" wide x 20" high, stock which is 2" x 3/4" and router bits that have a cutting depth of 3/8".



Step 2.

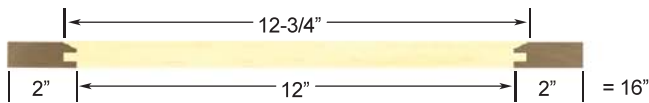
Trim the stock down to the following lengths:
 2 pieces at 20" long (these will be used as your stiles)
 2 pieces at 12-3/4" long (these will be used as your rails)
 View the equation below to see how to determine the rail lengths.



$$\begin{array}{ccccccc} \text{Door Width} & - & (\text{Stock Width} \times 2) & + & (\text{Depth of Cut} \times 2) & & \\ \downarrow & & \downarrow & & \downarrow & & \\ 16'' & - & (2'' \times 2) & + & (3/8'' \times 2) & = & 12-3/4'' \end{array}$$

$$16'' - 4'' + 3/4'' = 12-3/4''$$

Equation Explanation.
 Once assembled, the rails will span the area between the 2 stiles and continue into the stiles, filling the area cut out by the profile bit. The additional length needed, is determined by the depth of cut of the router bits being used.



Rail Length Work Sheet

Door Width - (Stock Width x 2) + (Depth of Cut x 2)

(x 2) (x 2)

= =

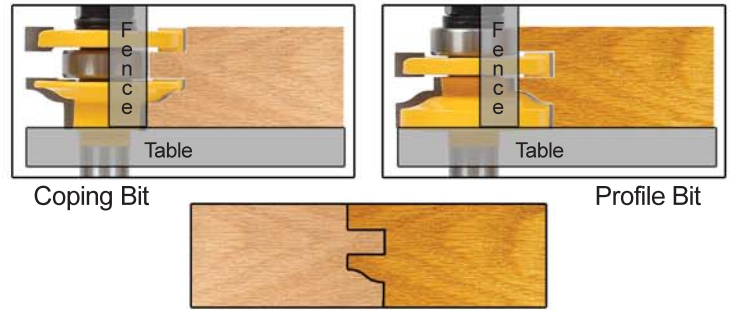
- + =

Router Bit Height Setup.

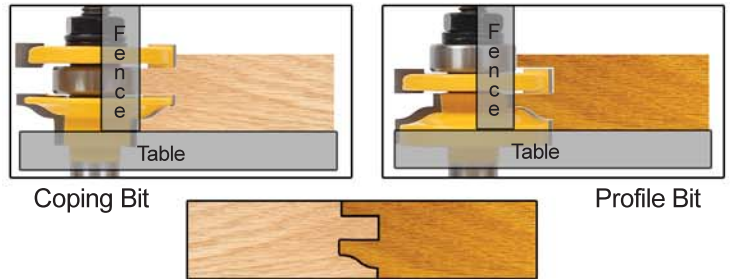
The height of the router bit is dependant on the thickness of the stock and sometimes on personal preference as well. Router bit height setup is best measured on the coping bit.

Note: Once the height has been determined on one bit there is no need to adjust the router's height when swapping bits. (This only applies when the bit is inserted fully into the router's collet.)

To achieve the strongest joint the top of the stock should be even with the top of the upper cutter of the coping bit.

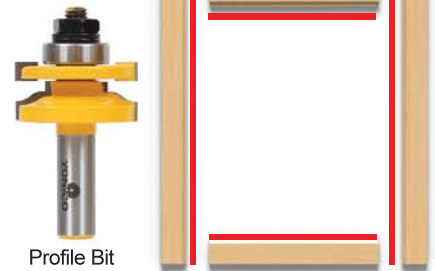


When using thinner stock, the top cutter should be situated at least 1/8" down from the top of the stock. Any less than 1/8" would likely result in a flimsy joint.



Step 3.

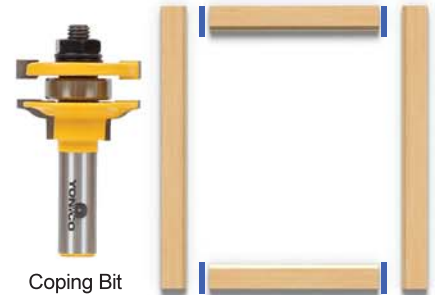
Route ALL the inside edges of the stock (indicated by the red lines) using the profile bit. (The bit with the bearing above both cutters.)



Tip: Use a backer board or a chaser to prevent unwanted tear-out.

Step 4.

Route ONLY the ends of the rails (indicated by the blue lines) using the coping bit. (The bit with the bearing between the two cutters.)



Step 5.

All of the routing is done. Just assemble the rails and stiles together and resulting finished product is a beautiful door frame.



Please refer to other Yonico instructions for directions on creating door panels and using stacked rail & stile router bits.