



# Window Sash Set

We shed some light on how to use these tricky bits

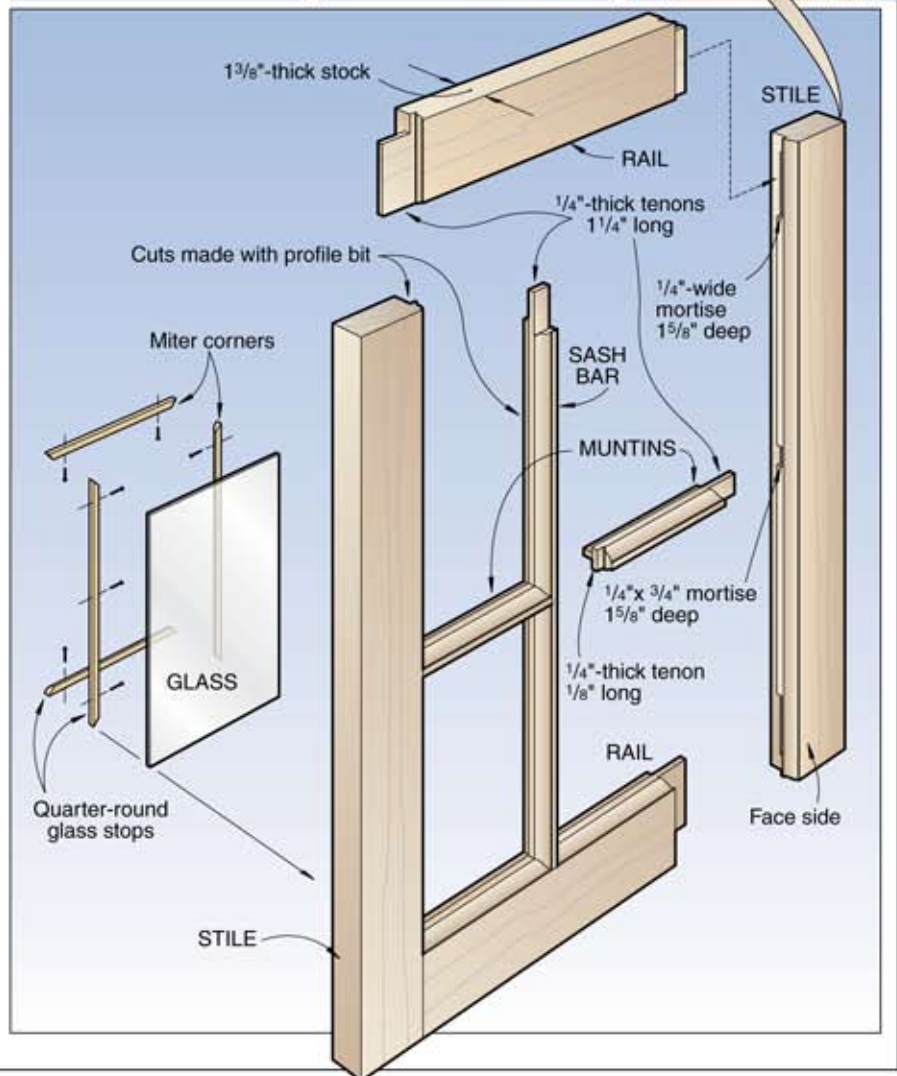
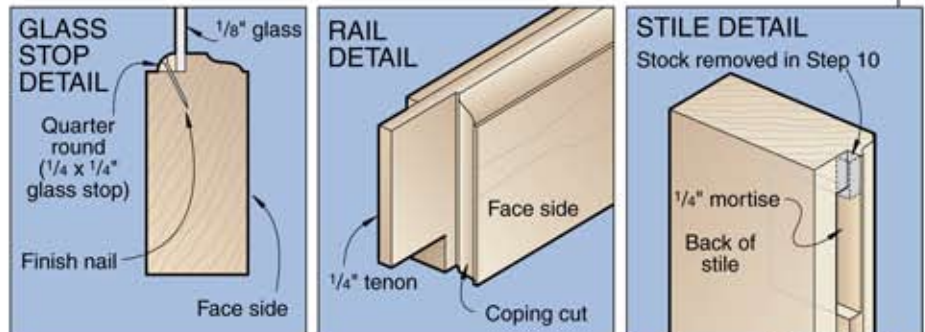
If you've considered making your own custom windows or french doors, but thought the task was a little too involved, here's a bit set that helps you get great results without a lot of fuss. Window sash sets consist of two bits like those above. With them you can make traditionally styled rail-and-stile frames with coped joints and a rabbeted side for accepting glass. You can also make the narrow sash bars and muntins for holding multiple panes of glass (our window *right* shows four panes, but your window or door may have many more depending on its size). All of the coped joints are reinforced with tenons for long-lasting durability.

Because you will plow these bits through 1 3/8"-thick stock, they come with sturdy 1/2" shanks. For safety and good results, use them with a router rated at 1 1/2 hp or more mounted in a table. All set? Let's go through the easy steps in using this bit.

1 Cut your stiles, rails, sash bars, and muntins to width and length from 1 3/8"-thick stock. Here's how to calculate the lengths of your parts, using an 18x24" window with 3"-wide rails and stiles as an example.

First, cut the stiles to the full height of the window (24"). To figure rail length, subtract the combined width of the stiles (6") from the finished width of the window (18"). To this number (12"), add the length of two tenons (1/4" + 1/4")

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## ROUTER BIT REVIEW

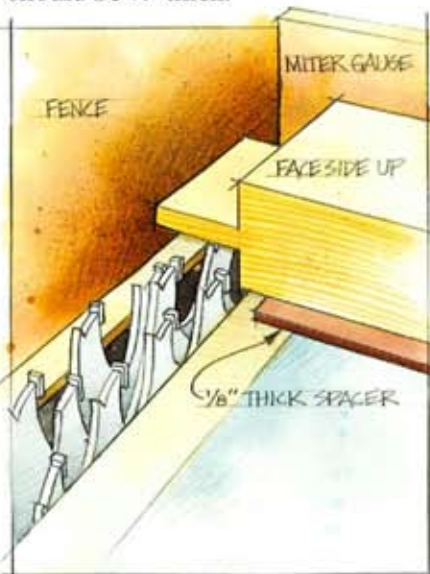
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and  $\frac{1}{2}$ " (for the coped joint). So, for our example we cut the rails 15" long. Cut the sash bars and muntins  $\frac{3}{4}$ " wide and calculate their lengths as you did the rails. (Plan to cut  $1\frac{1}{4}$ "-long tenons on both ends of the sash bar and muntins; you'll trim the muntin tenons that intersect with the sash bars to  $\frac{1}{8}$ " long later.)

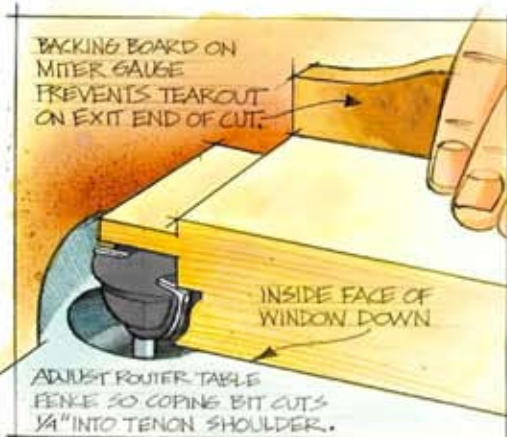
**2** Mark the face side of your workpieces (the inside surface of your window or the most-viewed side of your door). Also mark the outside edges of the rails and stiles, and place marks centered on the rails and stiles where they intersect with the muntins and sash bar, and on the sash bar where it intersects with the muntins.

**3** To cut  $1\frac{1}{4}$ " tenons on both ends of the rails, sash bars, and muntins, install a full-width dado set in your tablesaw and adjust it for a  $\frac{5}{8}$ "-high cut. Position the saw's fence  $1\frac{1}{4}$ " from the side of the dado set farthest from the fence. Place the workpiece on the tablesaw face down with one edge against a miter gauge, and one end against the fence. Make the cut in multiple passes as shown *below*.

**4** Position the rail, sash bar, or muntin face side up on the tablesaw. Place a  $\frac{1}{8}$ " spacer between the workpiece and tablesaw top as shown *below*, and make the same cut as described in the previous step. Your tenons should be  $\frac{1}{4}$ " thick.

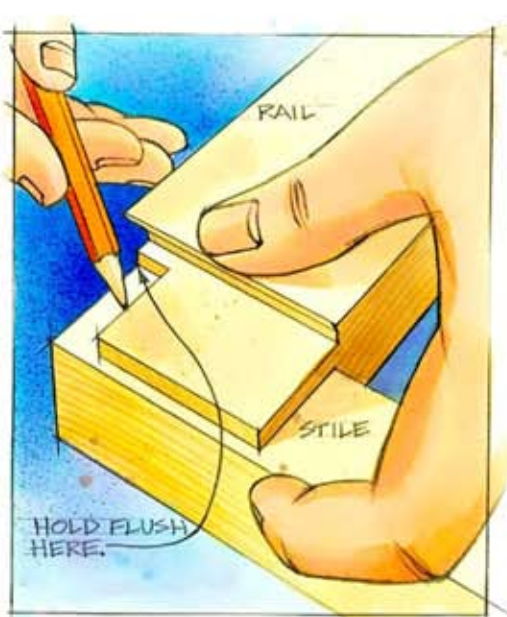
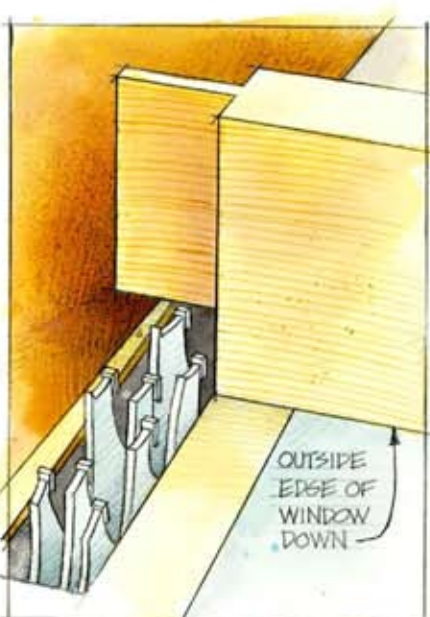
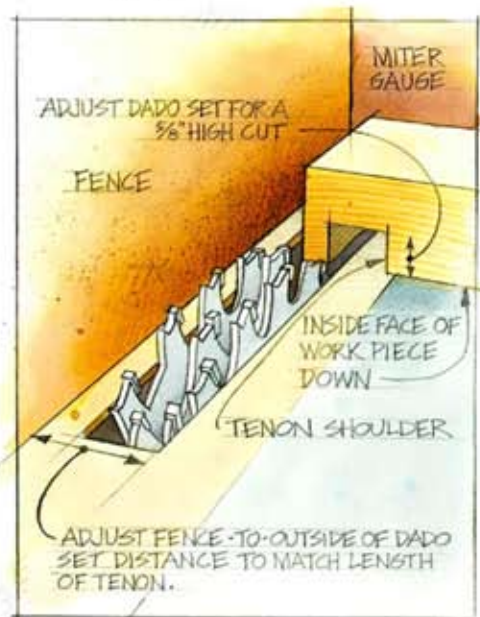


**6** Install the coping bit in your router table. Place the face side of a rail on the table and adjust the coping bit up so the tops of its cutters contact the tenon. With the fence adjusted so the coping bit cuts  $\frac{1}{4}$ " past the tenon shoulder, cut both ends of the rails, sash bar, and muntins. (For a  $1\frac{1}{4}$ "-long tenon, set the fence  $1\frac{1}{2}$ " from the cutter tip with the tip rotated to its farthest distance from the fence.)



**5** Complete the tenon cuts on the rails by placing them outside edge down on the tablesaw. Make multiple cuts with the dado set  $\frac{5}{8}$ " high as before

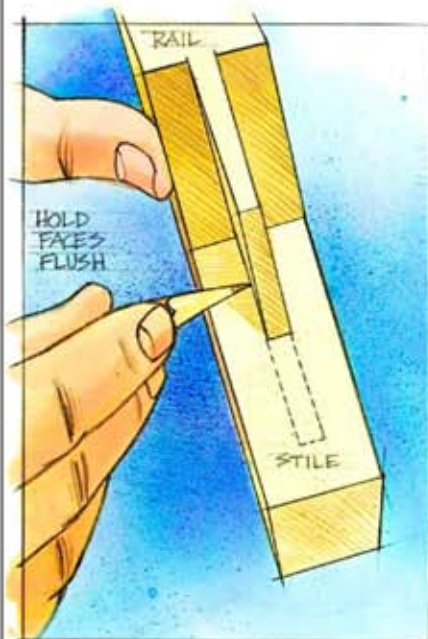
**7** Mark the positions of the mortises on the stiles by using the tenon that mates with it. First, as shown *below*, stand the stile inside edge up on a work surface



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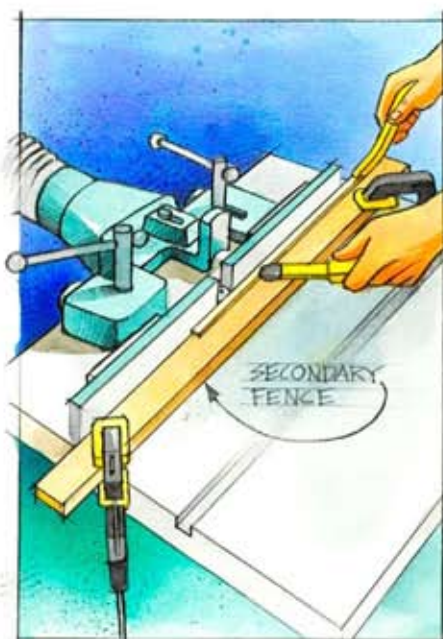
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and position the rail to mark the length of the mortise. Then, rest the rail on top of the stile as shown *above* to mark the mortise width. Use the same steps to mark the position of the mortises that hold the sash bar and muntin tenons.

Cut the mortises  $\frac{3}{8}$ " deeper than the length of the tenons. The mortise in the sash bar will go completely through it.

**8** Install the profile bit in your router table and adjust it as shown *below*. With the face side down, mold the inside edges of the rails and stiles.



**9** To perform the same operation on the sash bar and muntins, clamp a secondary fence onto the router table as shown *above*. Make this fence from  $1\frac{1}{4}$ "-thick stock, and position it so the sash bar and muntins slide snugly between it and the main fence.

**10** Mold both edges of the sash bar and muntins. Use pushsticks to pass the stock between the fences.

Use a fine-toothed saw to remove the small amount of material on the outside end of each stile mortise as shown in the illustration

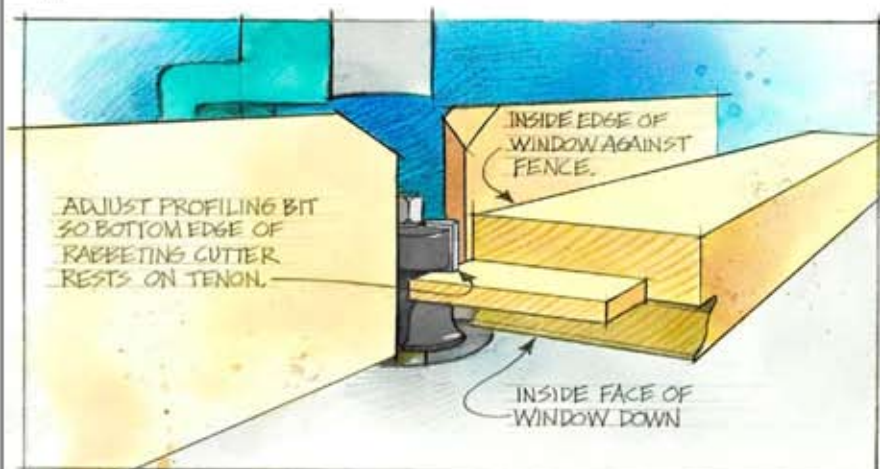


*above* and in the Stile Detail drawing on *page 8*. If you make more than one window or door you may want to set up a router table with a straight bit to do this more quickly.

Now's a good time to trim the muntin tenons that intersect the sash bar. Cut them to  $\frac{1}{8}$ " long.

**11** Assemble the project without glue to check for fit and squareness. Disassemble, apply glue to all mating surfaces, and clamp. Check for square again before the glue sets up.

**12** Install the glass in the rabbeted openings on the back face of the door or window. Each pane should be  $\frac{1}{8}$ " smaller in width and length than the rabbeted opening it fits into. Mount the glass in place with glazing points and glazing putty, or with quarter-round strips of wood mitered on their ends and nailed down (see the Glass Stop Detail drawing on



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