

## Windows & Mullions

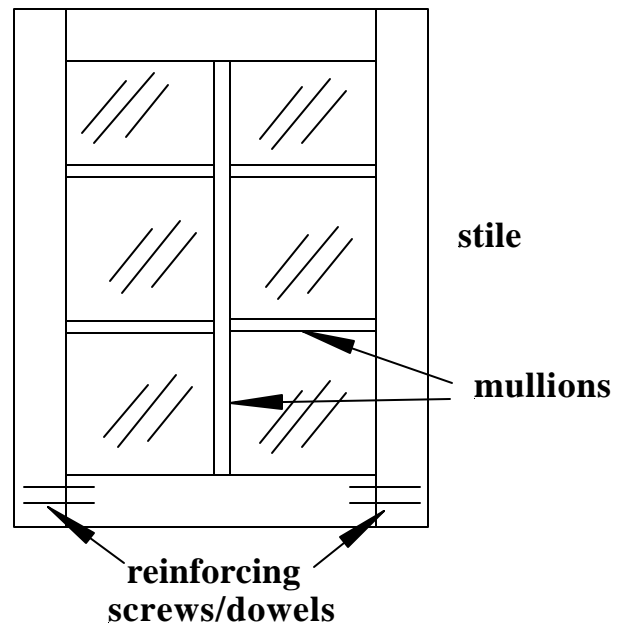
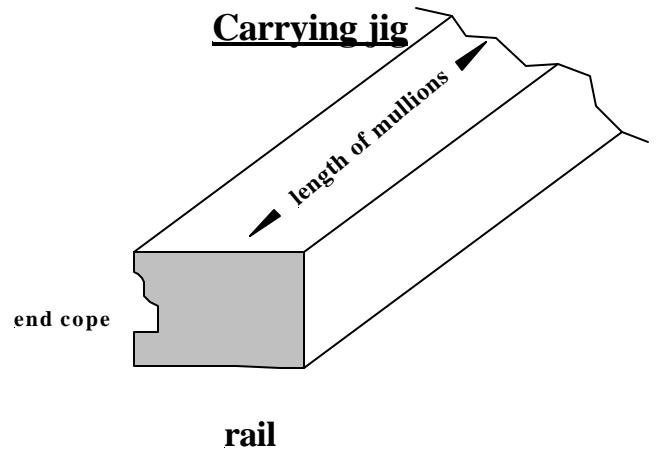
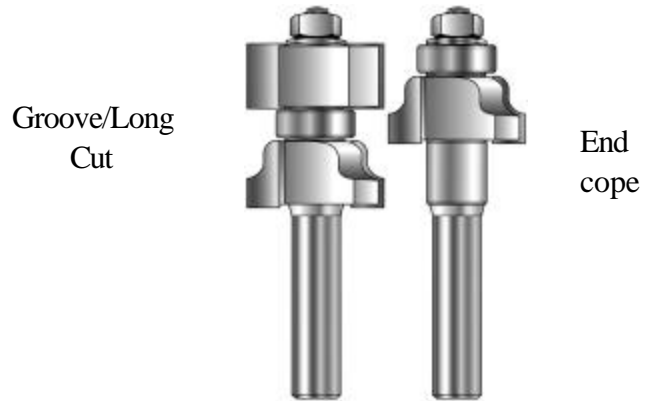
Items #1024, #8848, #8893, 8894

The MLCS Window Sash and Miniature Rail & Stile Bits will make replacements for the common “double hung sash” windows, unusual size windows, and the “mirror window,” which is a popular interior design element. It is not practical to make the full through mortise and tenon corner joint found on the original windows in the home shop. Instead, a cope and stick is cut with the bits. Then the joint is strengthened with dowels, biscuits, or screws. The bits will also make mullions as true divided lites or as a decorative grill over the glass.

Decide on the thickness of stock for the window. Use #8893 or set #8894 for 7/8” to 1-1/2” thick stock and #8848 for 1/2” – 3/4” stock. Prepare enough material for all the rails and stiles that you need, plus material for mullions. The mullions are made one at a time from a wide (3” – 5”) board. For best results, all stock should be exactly the same thickness.

Make the outside frame of the window first. Most likely it will need to be a specific size. Cut the rails, or cross pieces, to exact length based on the width of the window. Remember to allow for the width of both of the stiles, and for the joint overlap. See the “Rail & Stile Doors” instructions on pages 4-8. Next set up the bit for the end cope, and cut all of the rail ends. While the bit is still set up, cut this end cope along the long edge of a board 3” wide, as long as your mullions, and the same thickness as the window. This will become a jig for carrying the narrow mullions through the router table. Put this board aside for now.

Change the bit over to the groove/long cut, and run the stiles and rails through. This is the inside edge detail of the door, and interlocks with the “end cope” at the corners, leaving a rabbet on the back of the window for the glass. Dry-clamp the window frame together and check it for size and square. The easiest method for reinforcing the corners is to drill and countersink screws through the outside of the stiles into the rails, then plug the holes. Glue and screw the frame together. Now you are ready to add the mullions.



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**MULLIONS**

Make the vertical mullions first. Take the wide board reserved for the mullions and cut it to the exact length needed to fit into the window frame. The easiest way to measure this length is from the back rabbet cut. After the board is cut, set up the sash bit in the end cope configuration, and cut the ends of this board, just like you did on the rail ends in the frame. Re-arrange the bit in the groove/long configuration, and run the mullion board through the bit. You should now have the wide board with the ends coped, and the profile cut along one edge.

Set your table saw to rip the mullion from the wide board. Since this is a narrow cut, be sure to use push sticks and a zero-clearance insert in the saw. The piece should measure about 3/4" wide. That is the depth of the profile detail on both sides (1/4") and some wood (1/8" – 1/4") in the middle. Finally, you must rout the profile cut on the other edge of the mullion. Take the 3" board that you cut earlier, with the cope on the long edge. Fit the profile of the mullion into that edge, and use it to carry the mullion through the cut. It should be a friction-fit, or you can use a little double-faced tape. To make the job even easier, add a couple of handles and a stop on the back of the carry-board. This is a very safe way to cut the profile on this narrow piece.

The mullion should now be a good fit in your window frame between the top and bottom rails. Glue it in place and drill a small hole at an angle into it from the back for a dowel or brad for extra strength. For the rest of the mullions, follow the exact procedure as this one, starting with a wide board cut to the length of the mullion. Use the board to make two mullions at a time, (one off each edge) until it is too narrow to be safe.

If you would like some or all of the mullions to go over the glass instead of dividing it, simply remove the back part with a bandsaw, hand plane and sander.

