



# Flag Box

## Materials:

(1) 3 5/8" x 55" x 1" - Sides

## Router Bits:

1 1/2" Surface Planing

1 1/2" Rope Molding

## Techniques:

X, Y, Z-axis Milling



**Preparation:** Use the surface planing bit to mill the surface of each side of the workpiece. It's not necessary to mill very much off of the surface, all you're really trying to achieve is a perfectly flat and smooth surface. This procedure will take out even the slightest bow in the stock and will make the mitered corners come together much cleaner. After the stock has been prepared so that both sides are straight and smooth, determine which side will be used on the inside of the box. The inside will be milled first.

**Machine Setup:** Use the flat milling table and position the stock with spacers so that the stock is parallel with the bedrails. Mount the stock on the table with double-sided tape.

**STEP ONE:** On the inside of the box you will use a 1/8" upcut spiral bit to mill a groove for the glass front to set into. This groove should be positioned approximately 3/16" from the edge you determine will be the front. Mill the groove approximately 3/16" deep and wide enough to allow the glass to set comfortably inside the space. (Fig A - Right)

**STEP TWO:** Use the surface planing bit to mill out the corner on the opposite edge of the workpiece. This notch is for the back panel of the box. The width and depth should be determined by the size of the back panel. (Fig A - Left)

**STEP THREE:** Flip the workpiece over and align it so that it is parallel with the rails. With the 1 1/2" rope molding bit mounted in the router, set the plunge depth so that the shoulder of the bit plunges into the stock about 1/16" deep. Lock the router into place so that it is in the center of the workpiece (Fig B). You may want to use a piece of scrap material and make some test cuts to determine the proper depth and spacing. The piece shown was indexed down the length of the stock with 10 dimples placed every 1". With the router turned on, and the plunge depth set, use your x-axis measuring guide to determine the spacing. Simply plunge down, pull up, move the router 1", plunge, pull up, move the router 1", and so on.

Fig A - End View - Inside cuts of box

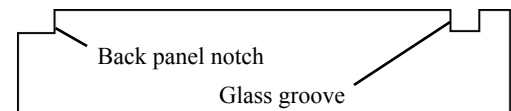


Fig B - Center cut

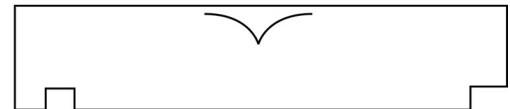


Fig C - Outside cuts

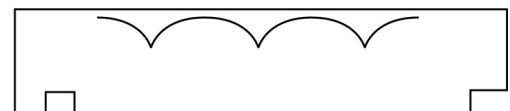
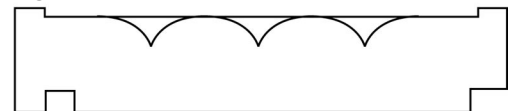


Fig D -





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**STEP FOUR:** For the two outside rows (Fig C) you will offset the router to either side of the center row by  $\frac{3}{4}$ ". To create the quilting effect, you will need to plunge every 1" on the  $\frac{1}{2}$ " scale. Whereas the center row contains 10 dimples, the outside rows will have 11 dimples.

**STEP FIVE:** The two top panels of the box are 13" long, and the mitered ends  $1\frac{1}{2}$ " from the center of the dimples on the ends. This means that along the length of the workpiece you will need to mill three sections of the quilted pattern. The bottom section will cut out to  $18\frac{1}{4}$ " and will have 15 dimples in the center, and 16 on the outside edge.

**STEP SIX:** When you have completed milling the three sections of quilted patterns, you will want to use the  $1\frac{1}{2}$ " surface planing bit to lightly mill the surface around the pattern. Set the stops on your y-axis so that you leave a  $\frac{1}{4}$ " wide section on the outside edges. (Fig D)

**STEP SEVEN:** The miters are cut at 45 degrees on the top joint, and  $22\frac{1}{2}$  degrees on the two bottom corners. Before the final assembly you will want to assemble the pieces with masking tape so that you can measure the cuts on the glass and the back panel.

