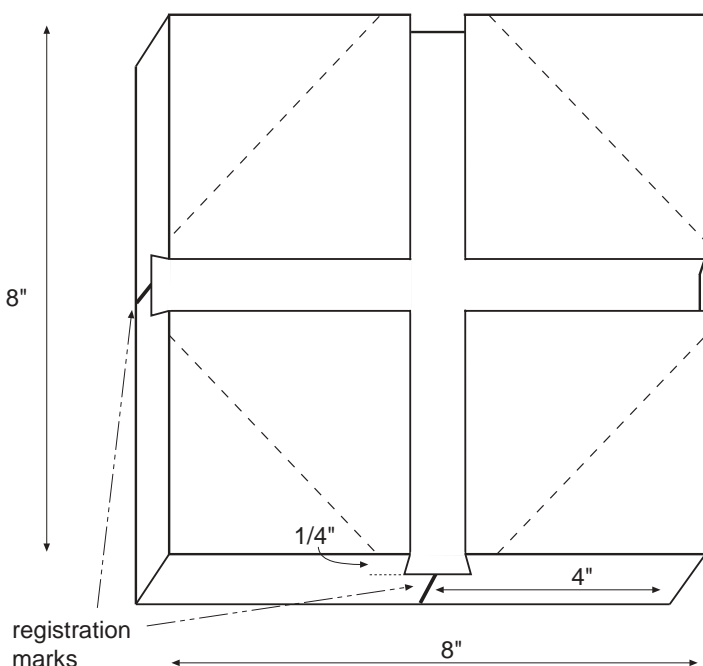




The Infinite Oval

A ROUTER JIG FOR OVALS AND CIRCLES, WITH INFINITELY ADJUSTABLE INDEPENDENT X-Y AXES

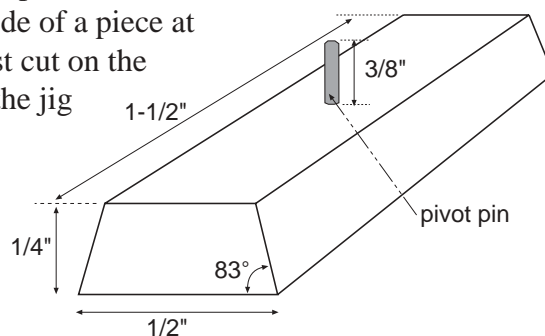


The Jig Base

Cut a piece of 3/4" plywood 8" square. Mark a substantial vertical line at the midpoint of each edge. Use a 1/2" ,14° dovetail bit to mill grooves 1/4" deep across the center of the piece. Then cut away the corners of the jig base as indicated by the dashed lines on the drawing.

Sliders

These are best made from a hard, slick material such as phenolic resin board. Set your tablesaw blade at a 7° angle and cut one side of a piece at least 3-1/2" long or longer. Flip the piece over, make a test cut on the other side and try the fit in one of the dovetail grooves in the jig base. Adjust until the slider will fit snugly, then finish cutting the strip of slider material. Cut two pieces 1-1/2" long. Drill a 1/8" hole on center through the top of each. Cut two 1/8" steel pins about 5/8" long, and file the ends clean. (10d or 16d casing nails are an inexpensive source of 1/8" steel rod stock.) Grease the holes in the sliders with epoxy cement or CA glue, and tap a pin full depth into each. Bevel the top of each pin for easier entry into the pivot bolt sockets.



T-Bolts

The jig requires two 1/4" T-bolts with pivot pin sockets. Toilet anchor bolts sold at most hardware stores are a ready source of 1/4"-20 T-bolts. Find the center of the flat bolt head and mark it with a center punch. Use a 1/4" bit to make a dimple about 1/8" deep; the beveled sides will help guide the slider's pivot pin into the socket. Then drill a 1/8" hole 1/2" deep through the head and into the bolt shank. Cut the bolts to 3/4" overall length.



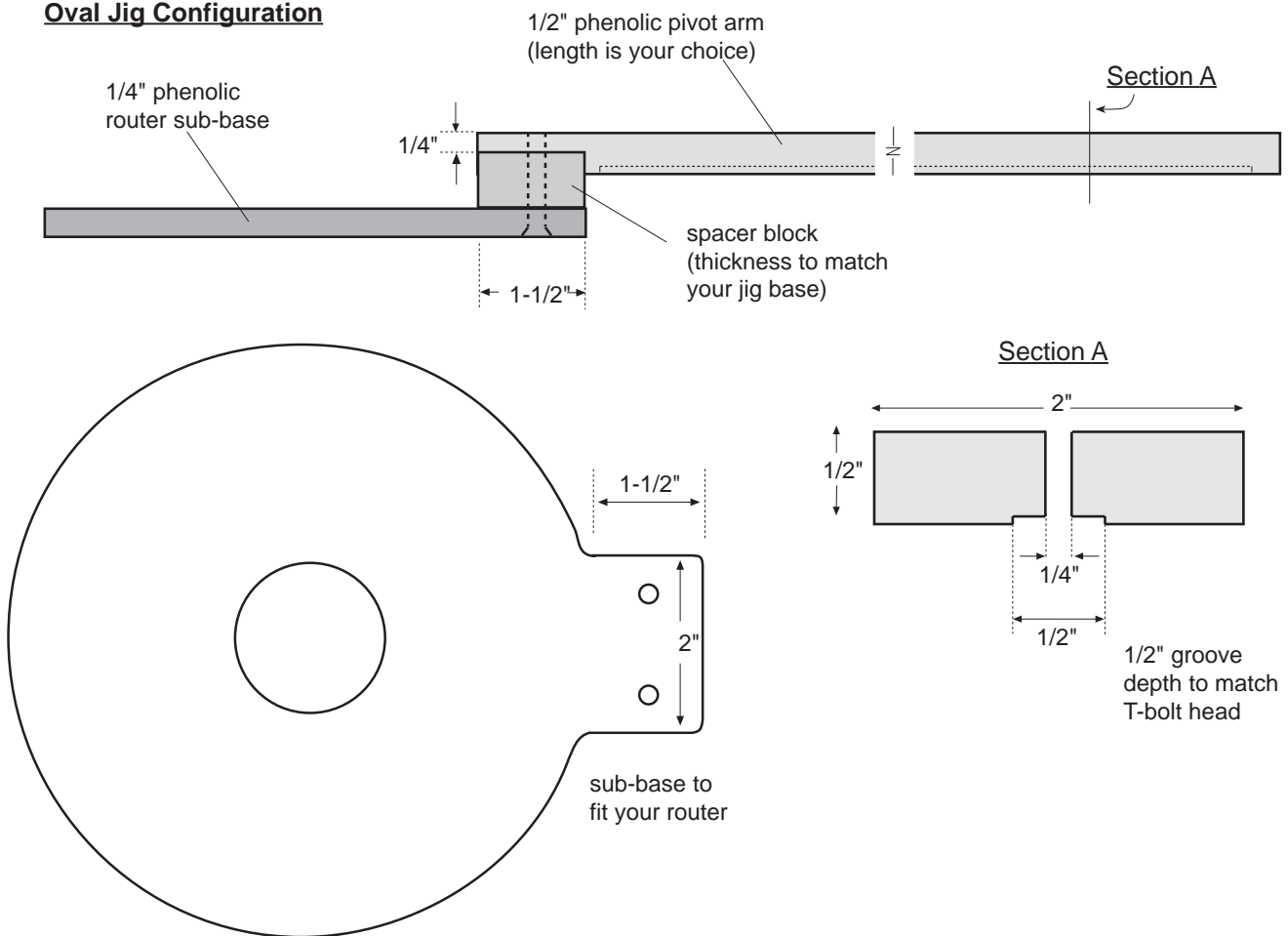
The Jig

This is a 3-piece assembly, including a custom sub-base for your router, a spacer block, and a pivot arm. The sub-base may be any size and shape that suits you and fits your router, as long as it incorporates the 1-1/2" x 2" tongue shown below. Phenolic resin board as recommended in the plan makes a very durable jig. If you wish, however, acrylic plastic, polycarbonate, or plywood may be used instead.

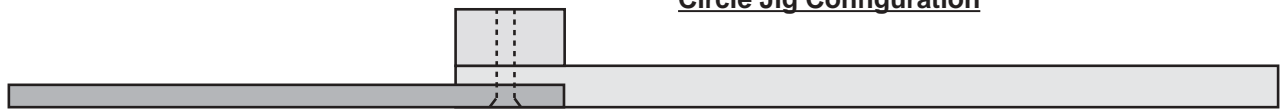
Make the pivot arm 18" long or longer, depending on the size ovals and circles you may wish to cut. Note that you can make a longer arm if a special project arises. When cutting the 1/2" & 1/4" grooves in the pivot arm, stop the grooves 3/4" from the outboard end and 1/2" from the rabbet on the inboard end.

The two flat-head bolts used to assemble the jig must be secured in the sub-base. Drill counter-sinks for the bolt heads, and drill through at 3/16". Then tap the holes with 1/4"-20 threads. Dab a bit of epoxy cement into each hole, then firmly screw in 1/4"-20 flat-head screws.

Oval Jig Configuration



Circle Jig Configuration



For routing circles, set the pivot arm flush with the sub-base as shown. Drill an 1/8" hole for a steel pivot pin (or simply drive a nail and clip it off 3/8" high) in the workpiece or in a piece of scrap attached to the work. Use a single T-bolt pivot, and adjust the cutting radius as needed.