

## MAKE A ROUND BOTTOM TRAY

### Material:

Thickness must be less than length of flutes on cutter

Fasten to table with screws – **NOTE: Use screws only ½” longer than material thickness!!!**

### Cutter:

I usually use a ¼” 2-flute spiral upcut bit with a 1 inch cut length:

[https://www.amazon.com/EANOSIC-Cutting-Diameter-Carbide-Trimming/dp/B0BX3D71C5/ref=sr\\_1\\_7?keywords=upcut%2Brouter%2Bbit&sr=8-7&th=1](https://www.amazon.com/EANOSIC-Cutting-Diameter-Carbide-Trimming/dp/B0BX3D71C5/ref=sr_1_7?keywords=upcut%2Brouter%2Bbit&sr=8-7&th=1)

[Trimming/dp/B0BX3D71C5/ref=sr\\_1\\_7?keywords=upcut%2Brouter%2Bbit&sr=8-7&th=1](https://www.amazon.com/EANOSIC-Cutting-Diameter-Carbide-Trimming/dp/B0BX3D71C5/ref=sr_1_7?keywords=upcut%2Brouter%2Bbit&sr=8-7&th=1)

Position in collet so that a little of the solid shank is exposed

### Feeds and Speeds:

Conservative numbers for a ¼” bit are:

Feed Rate: 40 in/min

Spindle Speed: 12,000 RPM

Depth of Cut: 0.3 inches per pass

The goal is to make chips, not sawdust.

Desired chip thickness is .0015 to .005

### Geometry:

Find a line drawing that you like and import it into Inkscape

Use Path/Object to Path to create nodes

Use Path/Offset to expand the distance between the inside and outside paths

Set the Height and Width to the desired values (if you use millimeters, then be sure to use ‘Metric’ when bringing into SheetCAM)

Save as a DXF file then import it into SheetCAM ( I usually use the center origin and Inch or Metric as appropriate to get the desired size.)(You may need to use ‘Custom’ scaling to get the desired size in SheetCAM.)

### In SheetCAM:

Layers: ‘pocket’, ‘’ and ‘outside’

(Note: Put the inner line on the (New Layer) ‘pocket’ and copy the same line to ‘round’ layer.)

### Tools:

T1: Mill/Router 5/16 (8mm) round, 1” cut length, 0.3 in per pass, 40 in/min

T2: Mill/Router ¼ flat 1” cut length, 0.3 in per pass, 40 in/min

T3: Mill/Router .5625 dia., 1” cut length, 0.31” per pass/ 40 in/min

(Note: T3 is a ‘virtual’ bit. Only the ¼” bit is actually used for the pocketing.)

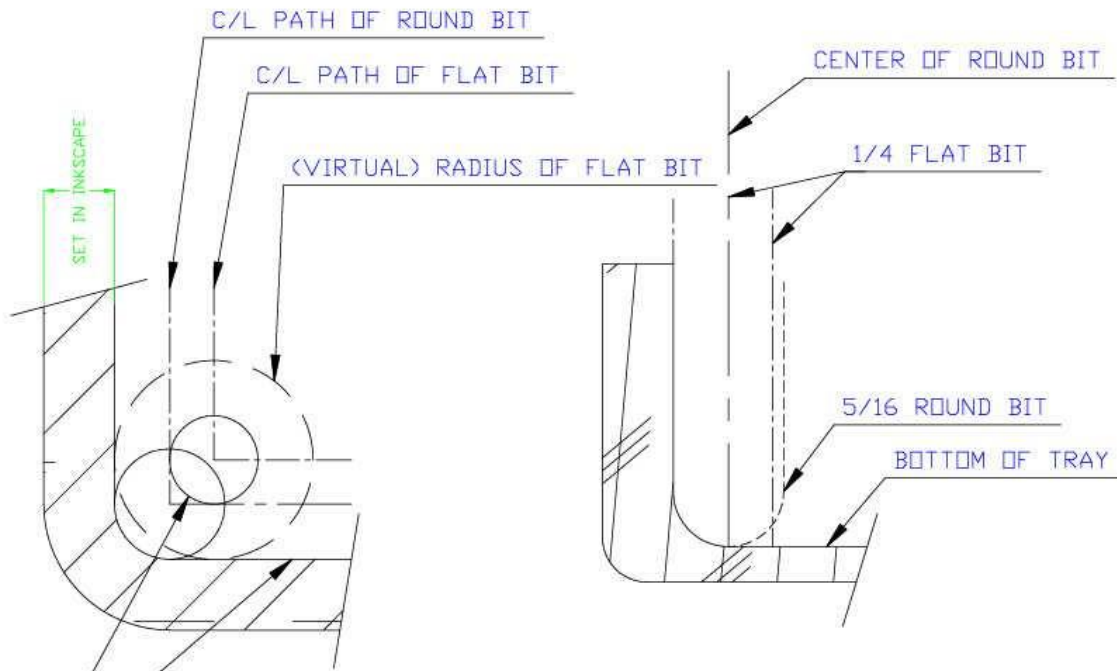
### Operations:

Pocket – spiral pocket, ‘pocket’ layer, T3, cut depth .8 in, **Step over 30%**

Contour – ‘round’ layer, inside offset, T2, cut depth .8 in

Contour – ‘outside’ layer, T1, cut depth .92 in (Place Tabs .2 wide X .15 high)

Below is a drawing to illustrate the tray geometry.



NOTE: IF INCLUDED ANGLE IS LESS THAN 90 DEGR.  
 THEN THE 1/4 BIT WILL MISS THE CORNER OF THE ROUND BIT CUT

## TRAY GEOMETRY