First I modelled a tail that is .497” wide, .446” tall and .254” deep. Now all I have to do is copy it as may times as needed in Alibre Design. I also had to create a board face of .0018” in length and .5150” in thickness so that 3D Cut knew it had a boundary to cut up against. The model is imported as a .stl file into 3Dcut.

The models orientation and size wouldn’t need any adjustment. The center of the material is the XY origin. I found the rough toolpath too rough, so I create my own later in V-Carve 6.5. I used an 1/8 End Mill for the finishing toolpath, the feed rate is set at 80 and the stepover setting is 0.025”. This needs to match the spindle and the type of material being cut, I have an HD with a Bosch 1617 and I was cutting spruce. The raster angle was set along X. The file was then saved. Once you find the best tool settings for your cutter, you will only have to import the .stl file and set the tool settings and calculate the finishing toolpath.

Import this toolpath into V-Carve. I wanted to create a template so that I could just import the different sizes and not worry about recalculating cuts. I also wanted an easy way to align the bits when it came time to cut. The material width is set to the width of the drawer; the height (y) is .278”, with an origin offset of 0.21”. The XY origin position is set to the center of the material and Z zero is the top of the material. I set my Y zero at cutting time with a flute of the bit touching the edge of the wood for both the tails and socket cuts. The X zero is the midpoint of the material for all cuts, so it never has to be changed. The material thickness has to be .5” for this to work and the width must be a value set to an even inch. The imported finishing tool path is positioned with its midpoint at X: =0, Y: =0, it will need to be move up so that the top of the tail pin is at Y=.3416. (The cutter can’t cut that fine, but because of rounding, that was number I used. It may have to be adjusting for number rounding on another computer. See note at the bottom) do not change the X position.

Delete the imported 3D Cut rough tool path. Create a polygon with the polyline tool that fits the shape between the first and second tails of the finishing toolpath. The top of the polygon needs to be placed at Y=.3345 and the bottom at y=:0. (Again the Y setting is what worked with rounding on my machine) The polygon can now be copied as many times as needed to fit between all of the tails and one before the first tail and one after the last tail. Use a copy setting of X:= 1” and Y:= 0”. Select all of the polygons and create a pocket toolpath. Set the cut depth to 0.53” and a 1/8” End Mill cutting tool with the feed rate, pass depth and Stepover that best suits your spindle. This can now be used as a template to make whatever width of drawer you need. (You will need one for even width and one for odd width drawers as the position is offset by .5” at the midpoint). Both the rough and finishing toolpaths use an 1/8” End Mill so they can be saved as one .tap file.

The socket cuts are simple Keyhole tool paths. Create a Polyline ½” from the left edge of the material. The start Y:= -.125” and the end Y:=0”.
Make as many copies of the line as needed for the size of the drawer. The copy offset is X: 1.0, Y: 0.0. Create a keyhole toolpath with a slot depth of 0.26”, slot length of 0.626”, entry hole diameter 0.5”, a slot diameter of 0.25” and the selected tool is a .5” Endmill. (The actual tool is a .5” 14 degree dovetail) If the fit is too loose or tight, adjust the toolpaths start depth.

This next step is what makes this whole thing fly. It is impossible to cut the tight/square corners on the inside of the tails, so you have to generate a second socket cut to round the top edges of the sockets for the 'knobs' to sit in. I created a second keyhole toolpath with a slot depth of 0.125", slot length of 0.626", entry hole diameter 0.625", a slot diameter of 0.25" and the selected tool is a .625" Endmill. (The actual tool is a 5/8" Core Box)
I used the same Y Zero that I set for the dovetail bit. You can adjust the toolpaths start depth if the groove is too deep or too shallow.

In hindsight, the second edge rounding toolpath could have been done with a simple profile toolpath. I had the calculations done so I used them for the second keyhole toolpath. Making changes to a profile toolpath would be a lot easier.

I built a very simple jig roughly based on a coping sled. I mounted 4 toggle clamps to a piece of ¾" plywood and mounted a guide along the y axis to square up the wood. I squared the plywood edge of the jig to the cutter so that the stock could be mounted flush to this edge.
The jig was then clamped to the table. After a few practice cuts I moved the y axis guide to the right hand side as I found that the dovetail bit had quite a bit of kick to the right.
The stock thickness has to be consistent and flat, I used a piece of angle iron clamped in the front toggle clamps to give an even and constant pressure along the front edge. The jig must be level with the cutter or you will end up with some good fitting joints and some not so good fitting joints all on the same board cut.
I cut the tails first and then make the depth adjustments to the sockets until I have a good fit.

Note: There is a consistency issue with either the importing of the .stl file or the creation of the toolpath in 3D Cut with different size models. I think it has to do with the numbers rounding when the calculations are made. The space between the top of the toolpath and the top of the tail is out by 1000's of an inch so I decided to align the imports to the top of the tail and I used the number of the first working model that I cut. The same thing applies to the top of rough toolpath polygon. I wanted to have the rough cut as tight as possible to the finished cut without going to deep. Once I achieved that, I just adopted that number. Another place that it shows up is the board length of .0018" and thickness of .5150" that was modeled in Alibre. At the end of the finishing tails cut, the cutter will trace across the top of the piece a couple of times cutting the top of the modeled wall. I played with this number to get it as thin as possible without losing it all. The stock thickness when imported into 3D Cut is .5171" but the model thickness is .5150". I am working on a sample of one computer so these numbers may have to be changed on a different system.