

Rest Machining Technique

Second Finish Cut – Shorter Time



Fig. 1

1. Create your 3D Model in Aspire (Fig. 1)
2. Open the Toolpath tab (Fig. 2), click on the 3D Roughing Toolpath Icon if required. There are times when you do not need to use a Roughing Toolpath.

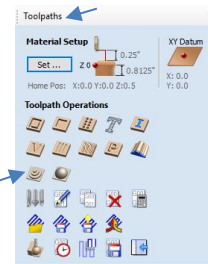


Fig. 2

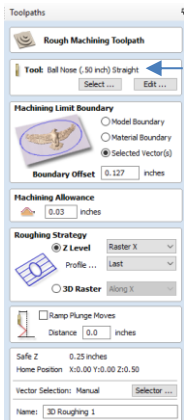


Fig. 3

3. Select a Large End Mill or Ball Nose (.50" or larger) cutter to rough out the excess material (Fig. 3), complete the Roughing pass. (Fig. 4)
4. Create the First of Two 3D Finish Toolpaths. Click on the 3D Finishing Toolpath Icon (Fig. 5).
5. Check your Material Setup, make sure that the Model Position in Material is at the top and that the Modeling Plane "Z" is 0.00 (Fig. 6). By adjusting the value in "Set" option in Model Position section.

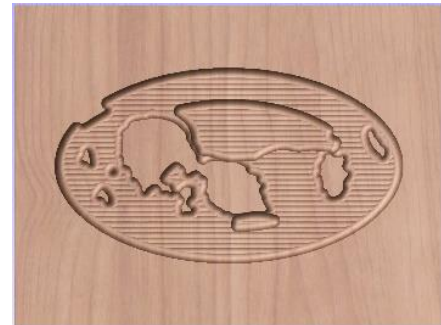


Fig. 4

6. Select an Oversize Ball Nose (.25" example) Finish Cutter for the first "3D Finish Toolpath" in the Rest Machining (RM) process, Choose Selected Vector (Fig. 7). Run the Tool Preview. This will leave a Large Radius at the bottom of your image and in the corners. Your cut Image will not be well detailed (Fig. 8).

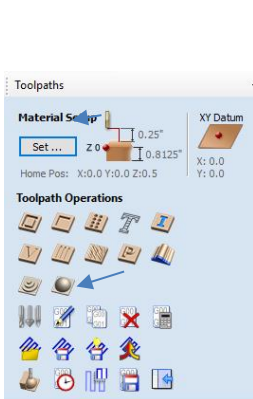


Fig. 5

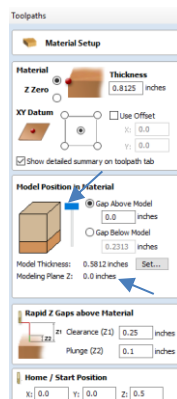


Fig. 6

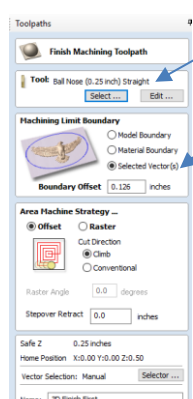


Fig. 7



Fig. 8

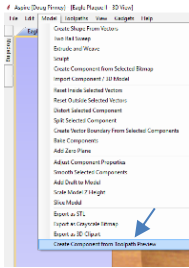


Fig. 9

7. While in the “3D View Screen” (Fig. 8).
8. Click on the “Model” drop down menu (upper left corner), go to the bottom of the menu. While holding down the “Control Key” on the keyboard, click on “Create Component from Toolpath Preview” (Fig. 9).

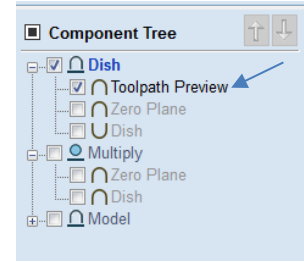


Fig. 10

9. Go to the Modeling Tab (left side), turn off all components in the “Component Tree” except the new “Toolpath Preview”. (Fig. 10)

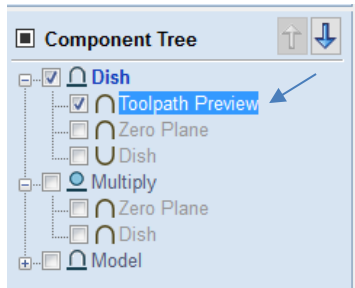


Fig. 11

10. Click on the “Toolpath Preview” (turn blue) in the Component Tree (Fig. 11).
11. Your 3D image should look like (Fig. 12).
12. Click on the 2D view (tab, top left).



Fig. 12

Create Rest Machining Image

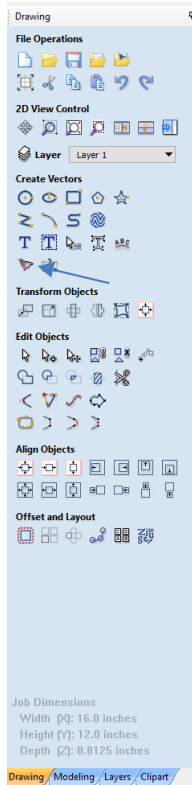


Fig. 13

13. Go to the “Drawing Tab” lower left corner (Fig. 13).

14. Select the “Trace Bitmap” Icon (chicken) under “Create Vectors” (Fig. 13). Make sure the “Toolpath Preview” is still blue in the Modeling Tab. (Fig. 11)

15. Make sure that you are in the 2D View.

16. You will now create a vector around the unfinished areas. Check that Black / White is checked. Use the “Number of Color / Threshold” slid the blue slid-bar all the way to the left (Fig. 14) (everything will turn white) in the 2d View (Fig. 15).

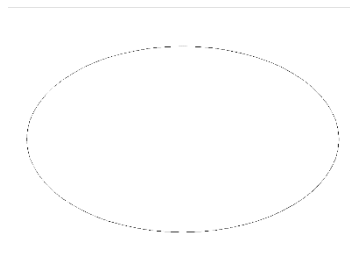


Fig. 15

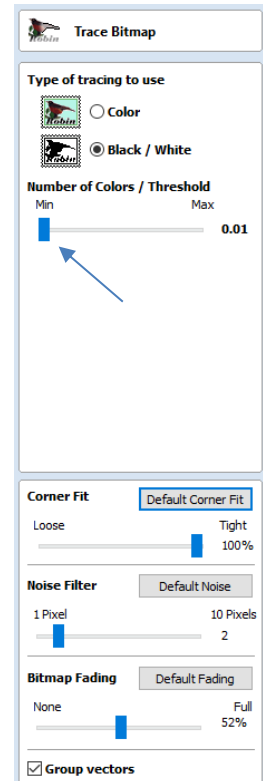


Fig. 14

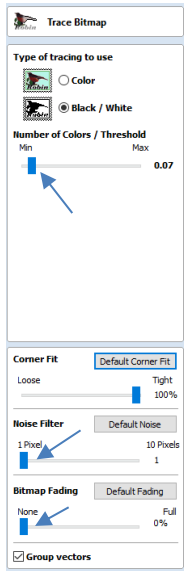


Fig. 16

17. Now move the Threshold blue slide-bar back to the right slowly in the Trace Bitmap window (Fig. 16). You can use the arrow keys to do this.

18. You only want the areas of you image be white that needs additional machining (Fig. 17).

19. Move the Noise Filter slide-bar and the Bitmap Fading slide-bar to the left on the Trace Bitmap window (Fig. 16).

20. Click Preview, Apply and Close at the bottom of the Trace Bitmap window.

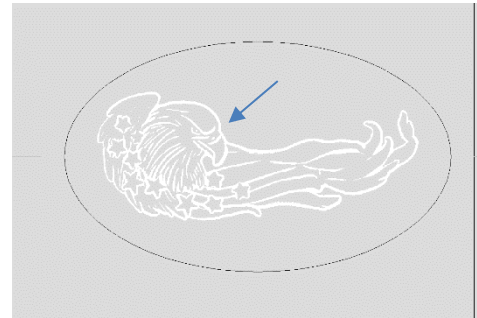


Fig. 17

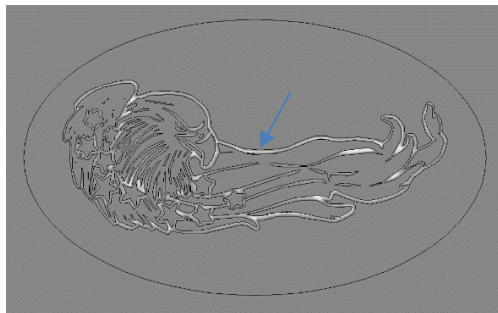


Fig. 18

21. You now have a set of vectors around the areas which need to be RM (Fig. 18).

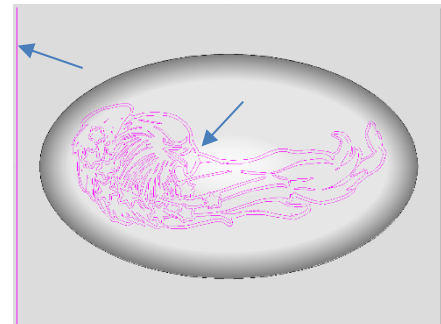


Fig. 19

22. Click on the “Modeling” Tab and turn off the “Toolpath Preview” component. Turn on all your “Components” in the “Component Tree” (Fig. 20).

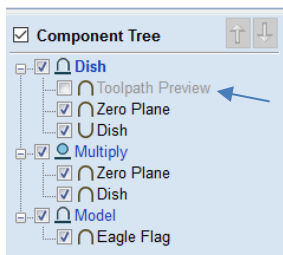


Fig. 20

23. You have a 2D vector image of the areas that need Rest Machining. You now have all the vectors and the Project Boundary in a Group (Fig. 19).

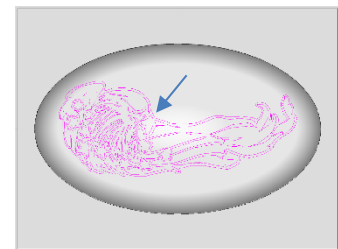


Fig. 21

24. Ungroup the image and remove the Project Boundary (Fig. 19). Re-Group the Project vectors (Fig. 21). If you do not remove the boundary, you will be machining your entire project with a very small cutter.

Create the Last 3D Finishing Toolpath

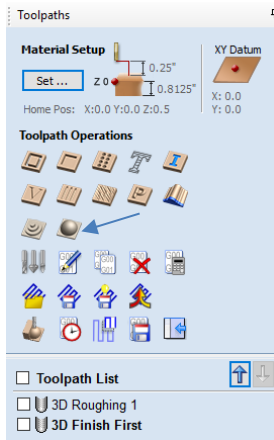


Fig. 22

25. While the traced vectors are selected (Fig. 21), create another "3D Finish Toolpath" (Fig. 22).

26. Select a small Tapered Bull Nose cutter (.0625" example) to carve the second "3D Finish Toolpath RM".

27. In Machining Limits Boundary – choose Selected Vectors. This will complete the detailing of your project (Fig. 23)

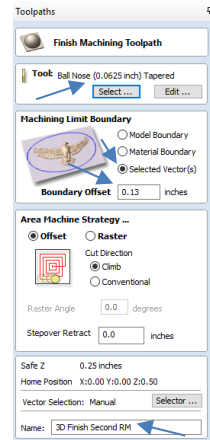


Fig.23

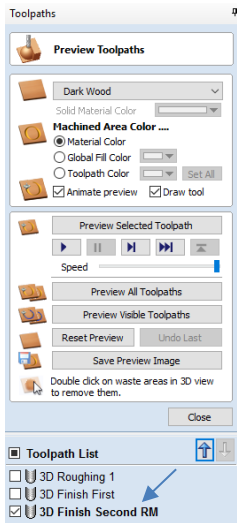


Fig. 24

28. Boundary Offset – enter the radius of your previous cutter plus .005" (.125 + .005 = .13) Add RM to the name. (Fig. 23).

29. Create your toolpath (Fig. 24)

30. Preview your RM Toolpath (Fig. 25)

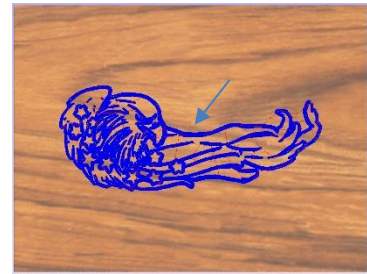


Fig. 25

