

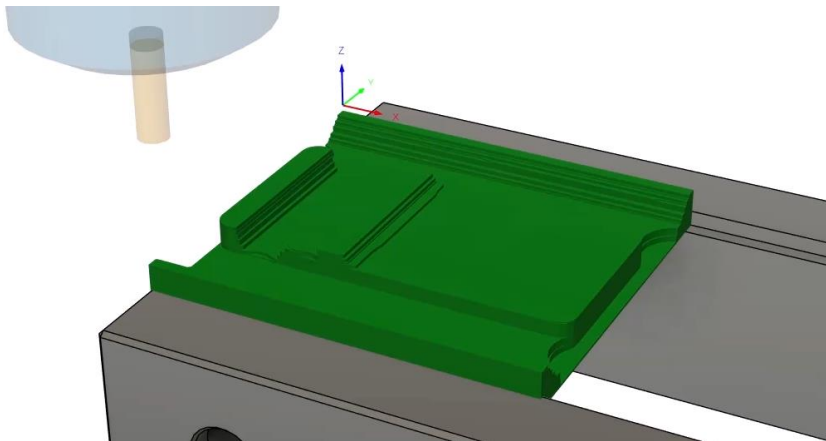
Step-by-step guide

Use roughing toolpaths to remove material from the base

Create and customize 2D and 3D Adaptive Clearing operations to rough a part's geometry.

Learning objectives:

- Create a 2D Adaptive toolpath.
- Create a 3D Adaptive toolpath.



The completed exercise

1. Open the supplied *Cell Phone Stand INCH - Rough.f3d* file or continue with your file from the previous video. Note that the supplied file does not have active links to the external parent files, so it's better to use your own file if possible.

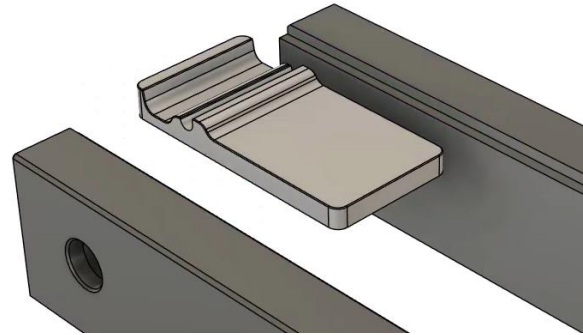


Figure 1. Open the file

2. A 2D Adaptive Clearing operation could begin roughing this part's geometry. Click 2D> 2D Adaptive Clearing.

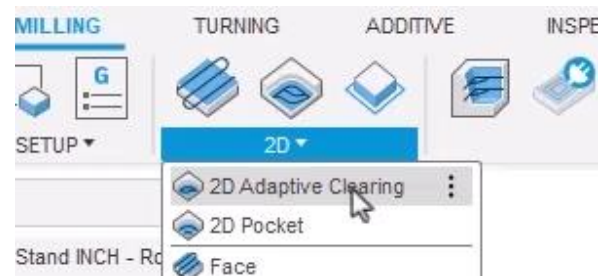


Figure 2. Create a 2D Adaptive Clearing operation

3. Make sure that the 1/2 inch flat endmill is displayed in the 2D Adaptive dialog. If you need to change the tool, click Select, navigate to the Learn CAM 90 – INCH tool library and select Tool 7.

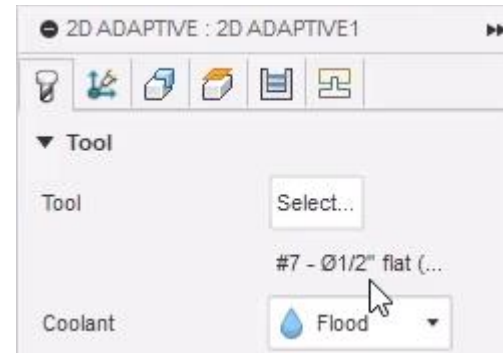


Figure 3. Verify the operation's tool

4. Continue to the 2D Adaptive dialog's Geometry tab and select the face shown in the image on the right. Notice that there is only a single dark blue edge which indicates that Fusion will treat this selection like an open pocket. Verify the default settings in the dialog's other tabs, then OK the dialog.

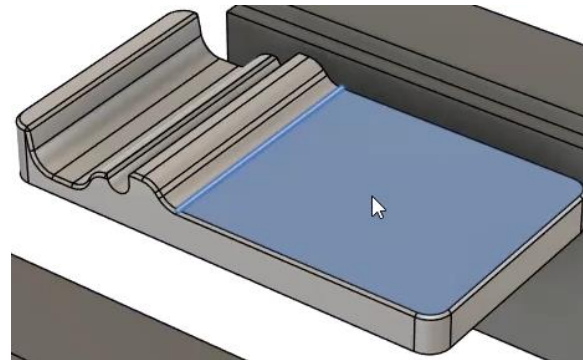


Figure 4. Select the face

5. Inspect the toolpath and notice that it focuses on cutting the face you selected. A different type of operation might be more suitable for roughing this part.

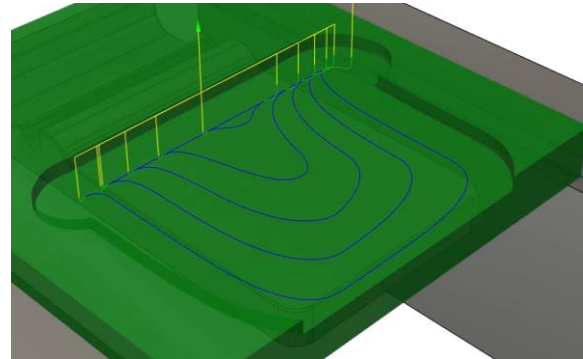


Figure 5. Inspect the toolpath

6. A 3D Adaptive Clearing operation can be added to the setup to remove additional material. Click 3D> Adaptive Clearing.

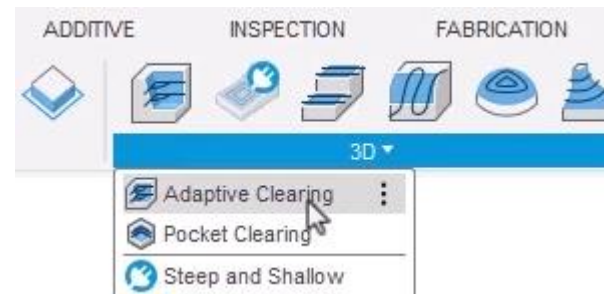


Figure 6. Create a 3D Adaptive Clearing operation

7. Continue to the Adaptive dialog's Geometry tab and notice that the bodies are colored either green or gold. The vise jaws and parallels were identified as fixtures in the setup, so Fusion knows to avoid them; that's why these bodies are gold. Instead, the operation will focus on the green body. Verify the default settings in the dialog's other tabs, then OK the dialog.

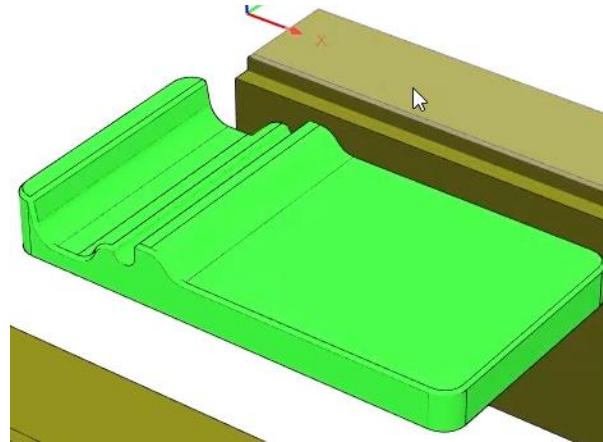


Figure 7. Inspect the default selection

8. Inspect the toolpath and notice that it uses the current tool to rough as much as it can.

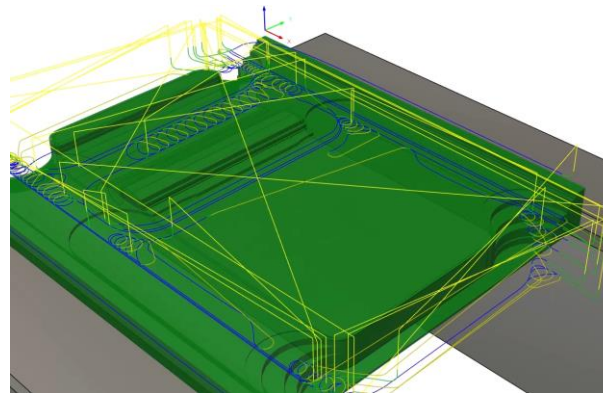


Figure 8. Inspect the toolpath

9. Also notice that the Browser has a warning icon next to the operation. Click this icon to learn more about the warning.



Figure 9. Note the warning

10. Fusion has lifted the operation's Retract height to the Safe height. Close the dialog.

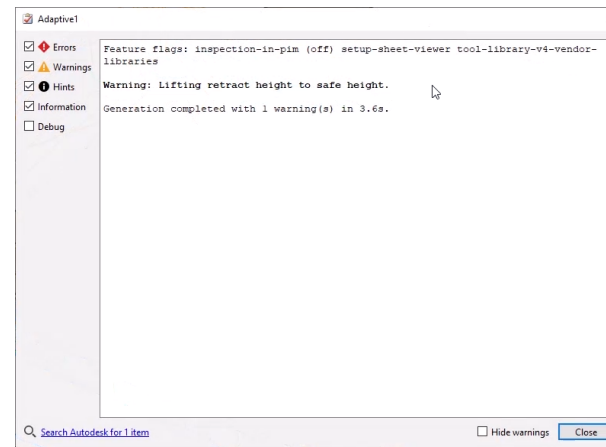


Figure 10. Inspect the warning

11. Right-click the Adaptive operation and choose Edit from the menu.



Figure 11. Edit the operation

12. Navigate to the Heights tab and increase the Retract Height section's Offset value to **0.4 inches**. OK the dialog to update the toolpath.

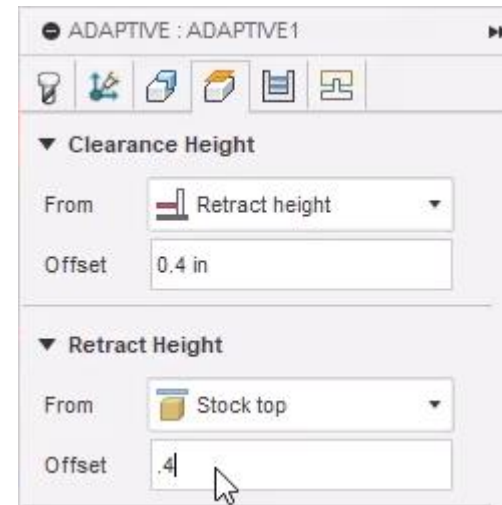


Figure 12. Adjust the Retract height

13. Inspect the Browser and notice that Fusion removed the warning icon.



Figure 13. Inspect the Browser

14. In the Browser, right-click the Adaptive operation and choose Duplicate from the menu.

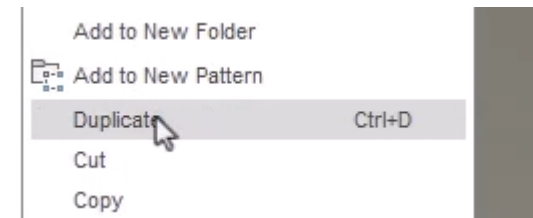


Figure 14. Duplicate the operation

15. Edit the new Adaptive operation by right-clicking it and choosing Edit from the menu.

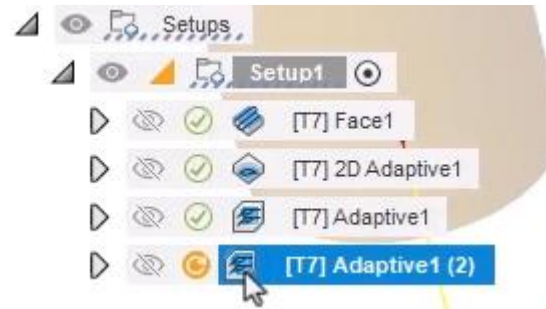


Figure 15. Edit the new operation

16. Click Select to choose a smaller tool for the new operation.



Figure 16. Click Select

17. Navigate to the Learn CAM 90 – INCH tool library and select Tool 6. This 1/4 inch flat endmill will be able to remove some of the material that the 1/2 inch end mill could not reach. Click the Select Tool dialog's Select.



Figure 17. Select the tool

18. Continue to the Adaptive dialog's Geometry tab and make sure the Remaining stock option is selected in the Define Stock By menu. This option allows the operation to ignore the material removed by previous operations.

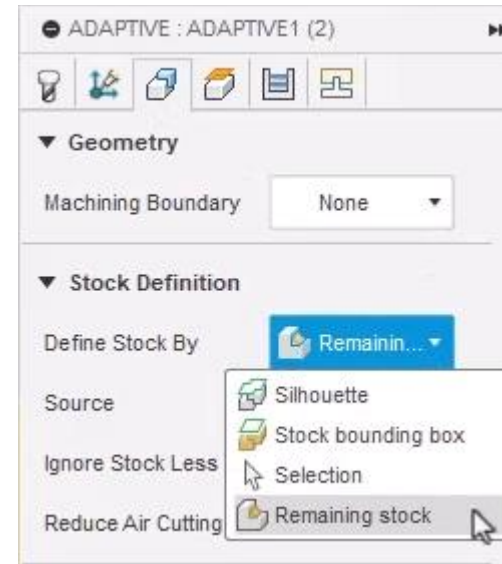


Figure 18. Make sure Remaining stock is selected

19. Navigate to the Heights tab and choose the Selection option in the Bottom Height section's From menu.

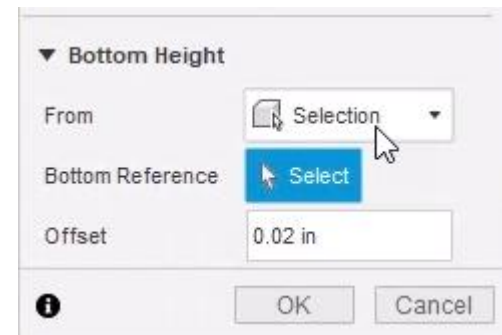


Figure 19. Inspect the toolpath

- 20.** For the Bottom Height section's Bottom Reference selection, choose the edge shown in the image on the right. OK the dialog to generate the toolpath preview.

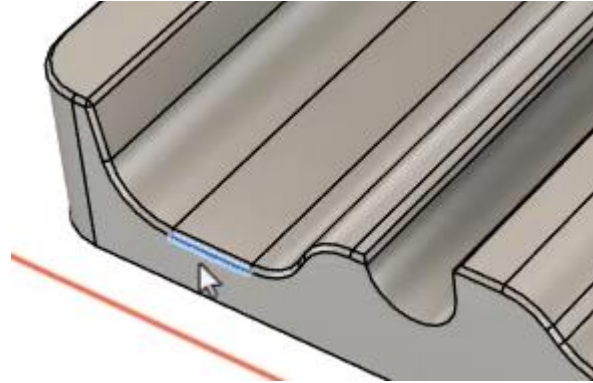


Figure 20. Select the edge

- 21.** Inspect the toolpath and notice that the stock more closely matches the modeled shape.

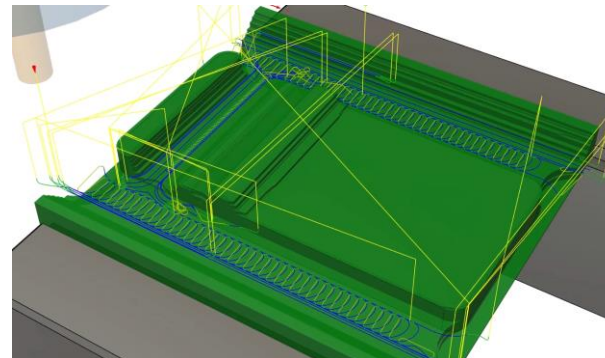


Figure 21. Inspect the toolpath

22. Toolpaths can sometimes clutter your view. You can toggle the toolpaths' visibility by using the Navigation Bar's Toolpath visibility options. Alternately, you can use the keyboard shortcut F7 to toggle their visibility.

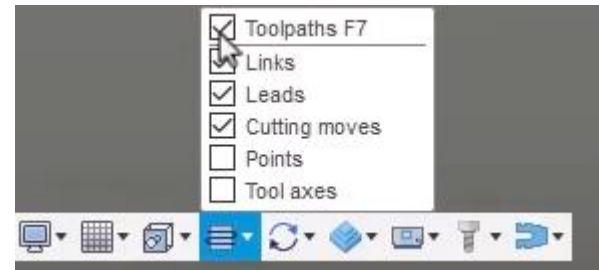


Figure 22. Toggle toolpath visibility

23. Hiding the toolpaths can make the in-process stock easier to see. Save the file.

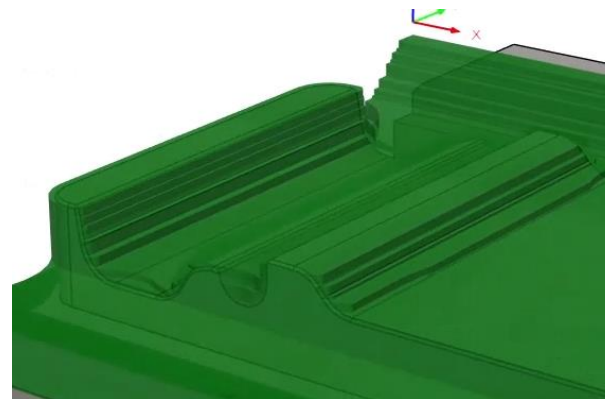


Figure 23. Inspect the in-process stock