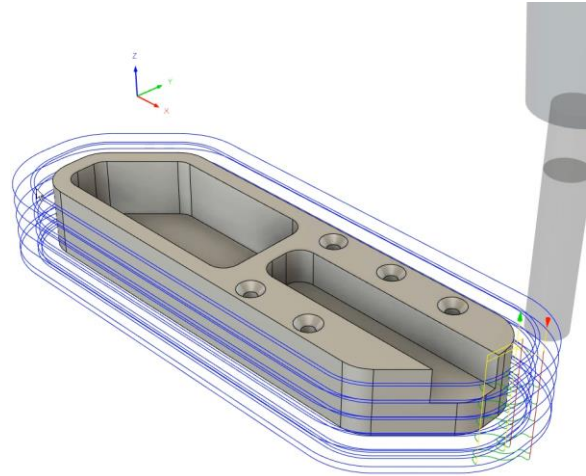


Lesson: Create an External Contour

In this lesson, you'll create a 2D Contour operation to cut a part's perimeter.

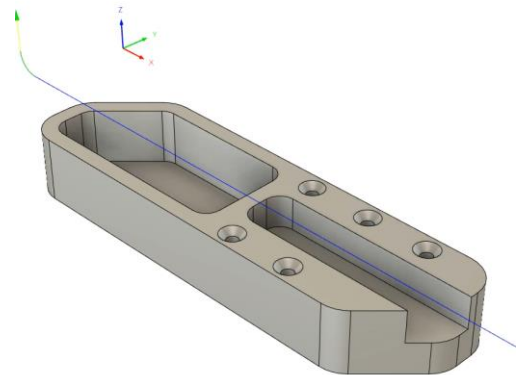
Learning Objectives

- Show how to create a 2d contour toolpath.



The completed exercise

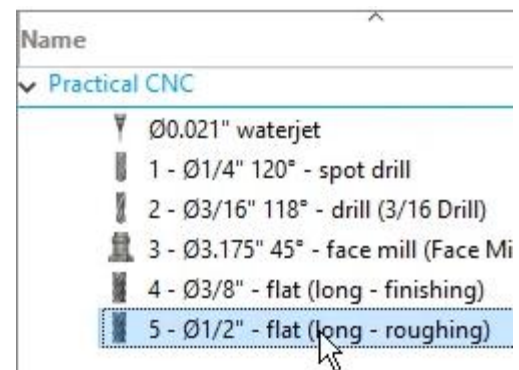
1. Continue with the *Introduction to Milling* file from the previous module.



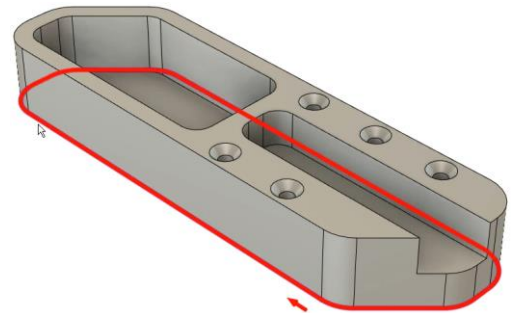
2. A new operation needs to be created to begin cutting the part's geometry; click 2D> 2D Contour.



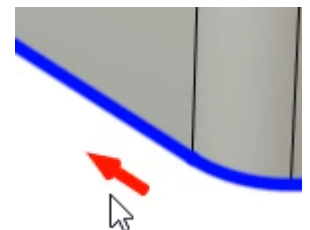
3. Click the dialog's Select to choose an appropriate tool for the operation. Navigate to the Practical CNC library and choose Tool 5. Click OK to accept this selection.



4. Continue to the Geometry tab. Select the part's bottom edge shown in the image on the right as the dialog's Contour Selection.



5. The red arrow indicates the direction of cut and on which side of the selected geometry the operation will cut. If needed, the arrow's direction can be flipped by clicking it. Make sure the arrow is on the outside of the selection.

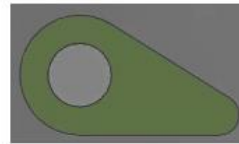


6. Learn about the various options in the Geometry tab by hovering your cursor over them and reading the tool tips.

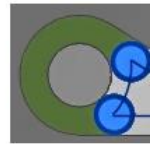
Rest Machining

Limits the operation to only remove material that a previous tool or operation

Rest stands for **RE**maining **ST**ock.



Area to machine.
Pocket shown in green.



Previous Operation.
Not all stock is removed.

With a smaller tool you can machine the entire pocket, or use Rest Machining to machine remaining stock.



7. Continue to the Heights tab. The Bottom height is currently set to the selected contour. This means the operation will cut down to the contour you selected. In order to cut slightly past the selection, enter **-0.1 in** into the Offset field.

Bottom Height

From

Offset



OK

Cancel

8. Continue to the Passes tab and activate the Leads on all Finishing Passes option. To cut the geometry using multiple passes, activate the Roughing Passes option. Decrease the Maximum Stepover value to **0.25 in**, then increase the Number of Stepovers to **2**.

Roughing Passes

Maximum Stepover

Smoothing Deviation

Number of Stepovers

9. Activate the Multiple Depths option and enter **0.25 in** into the Maximum Roughing Stepdown field. Continue to the Linking tab and inspect all the options but don't make the changes. Click OK to generate the toolpath.

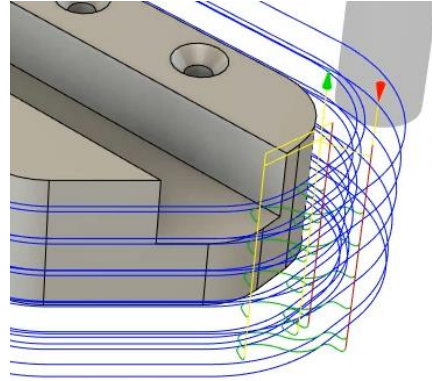
Multiple Depths

Maximum Roughing Stepdown

Finishing Stepdowns

Finishing Stepdown

- 10.** Inspect the new toolpath and note that it cuts the geometry at several different heights and in several different passes.



- 11.** In the Browser, select Setup1. Click Actions> Simulate, then activate the dialog's Stock option. Press the play button at the bottom of the screen to watch the animation. After the animation finishes, navigate to the top view notice that a chunk of material remains in two of the corners. These pieces will fall off the part during the machining process. Click the dialog's Close to end the simulation. Save the file and continue to the next module.

