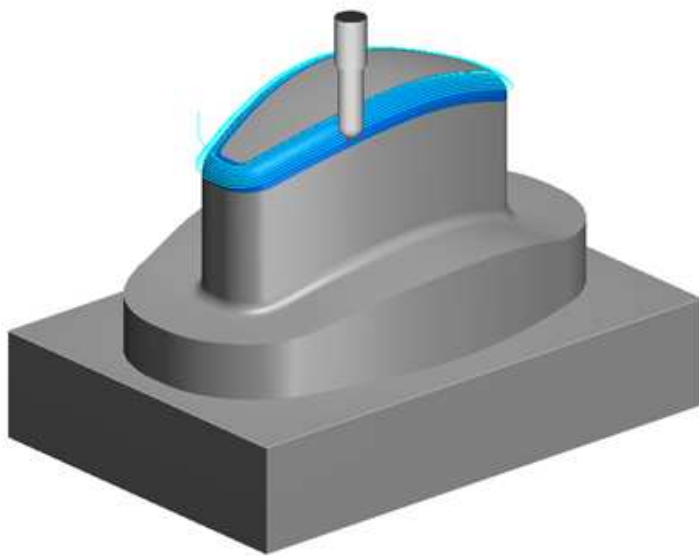


## Generating a 3-Axis finishing Flowline toolpath

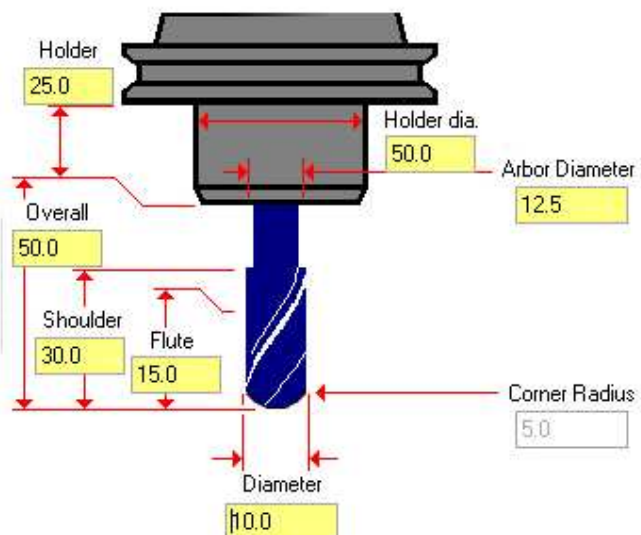
This example looks at 3-axis Flowline machining techniques for finishing a component. Flowline machining is popular when machining a group of similar surfaces with the toolpath following the flow of the U or V parameter lines to give excellent surface finish.

This example uses a 3-Axis toolpath, however ModuleWorks can also generate a 5-Axis version of the cycle, varying the tool angle to maintain optimum contact point and allow shorter series tooling to be used.

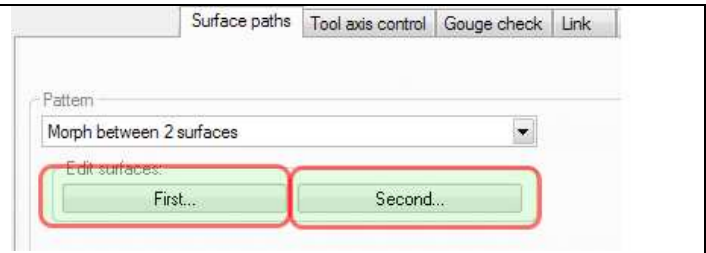


This example uses a 10mm ballnose cutter as shown in illustration on the left.

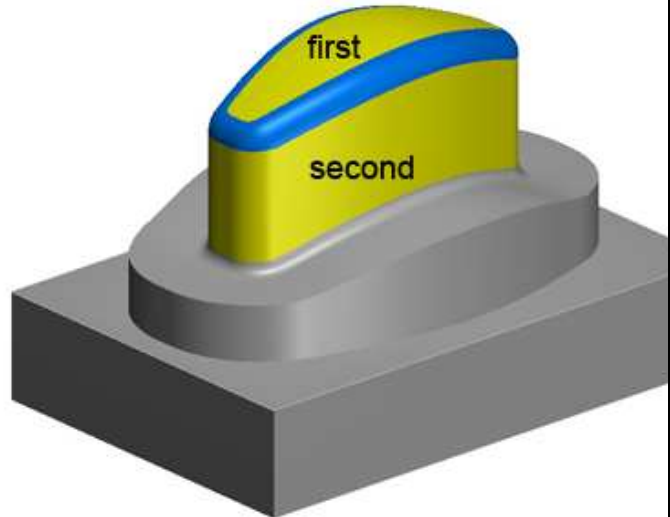
Open the base geometry file 3axflowline.iges and load this into ModuleWorks.



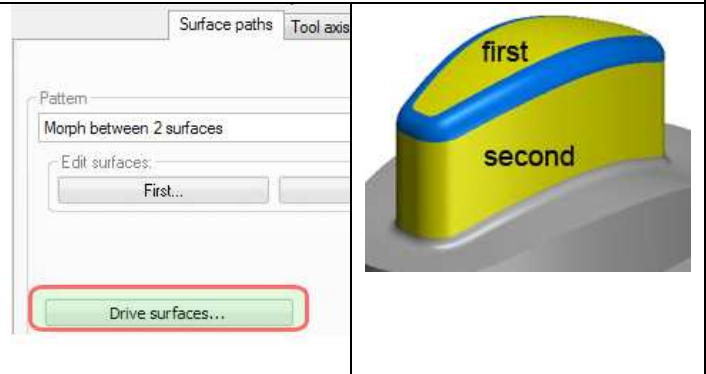
In the parameters dialog, go to the surface tab and specify a pattern of 'Morph between 2 surfaces'.



Next, specify the 2 surfaces to form the basis of the toolpath by using the 'First' and 'Second' selection buttons. The first selection is the upper yellow surface and the second is the vertical yellow surface.



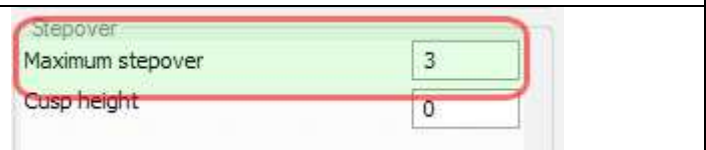
The next stage is to select the drive surfaces. The toolpath will be generated along these surfaces – select all of the blue surfaces which make up the fillet around the component.



Moving down the parameter page, specify the cutting method as spiral and request climb milling for one way machining. These options will generate a spiral toolpath on the drive surfaces using a climb milling direction.

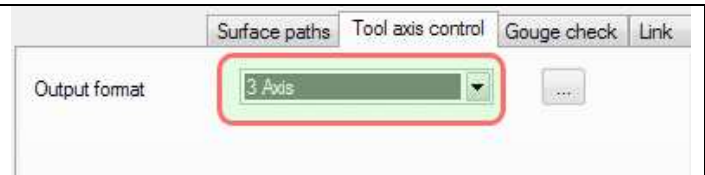


Specify a 3mm stepover, this is the distance between cuts. Alternatively a cusp height value may be used to control the toolpath separation.



Move on the tool axis tab of the parameter dialog and set the output to 3-Axis (4-Axis and 5-Axis options are also supported).

The tool axis cutting direction must also be defined, in this case 0, 0, and 1 – putting the tool axis in the Z of the top view. Tool axis can be varied to generate the toolpath from any side of the component.



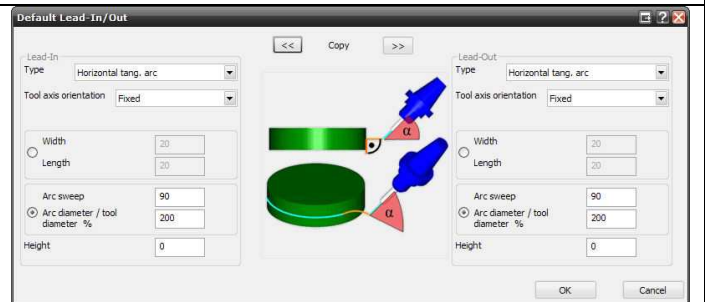
Select the link tab on the dialog and activate the lead in and lead out for both the first and last exit of the toolpath.

Lead values can be set for all link motion types (first entry, last exit, gaps along cut, links between slice and links between passes).

Select the default values by clicking the 'Default Lead-In/ Out' button.



Use the horizontal tangential arc with default settings. With this setting the tool enters the drive surface on the same horizontal level as the slice of the cut. The arc orientation is independent to the tool orientation



Finally calculate the toolpath as shown on the right.

