Custom Groups In Insight

SOFTWARE / PRODUCT / FINISHING

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Although most models can be built using the default toolpath parameters, there are times when certain features are too small to fill. One option would be to use a thinner layer for the whole part, since the default toolpath width is based on the slice thickness, but this would require changing tips on the machine and recalibrate, and would also add extra time to the build. Therefore, the first solution to try is to create what is known as a Custom Group. Custom Groups specify different toolpath parameters for individual curves.

Figure 1 demonstrates inner and outer toolpaths that do not meet each other, causing a hollow area in the center. This is an undesirable fill because the two disconnected walls will be weak. However, this condition can be corrected by modifying the toolpath widths. Both the Contour Width (the "outline" of the part) and the Raster Width (the zigzag fill inside the part) can be changed separately.

There are two ways to fix this problem. The first method, is to measure the total width of the wall and make the contour one-half of the total width (figure 2).

Modify Tool Path Widths

STEP 1: Select "Custom Groups" from the Toolpaths menu click on "New" to see the toolpath parameters popup box.

STEP 2: Select a different size from the drop-down menu next to Contour Width and click on the green check mark

STEP 3: Drag the cursor over the curves to select them.

STEP 4: Click on the "Add" button to apply these new parameters to the selected curves.

Changing Contour and Raster Fill Widths

The second way to ensure a proper fill in this feature is to use a narrower width for both the Contour and the Raster fill. The thinner contours allow enough room in between to fit the smaller raster fill (figure 3).
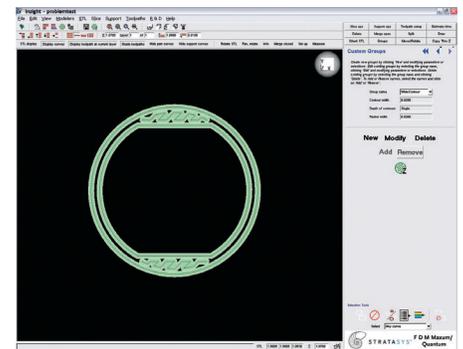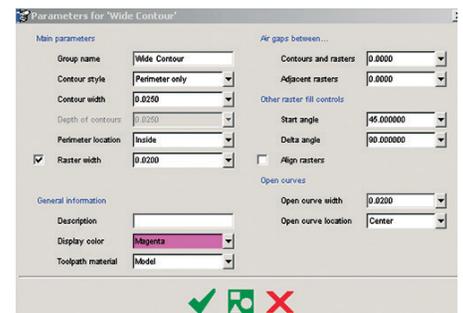

Figure 1: Tool paths that do not touch

Figure 2: Parameters for wide contour

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STEP 1: Select "Custom Groups" from the Toolpaths menu.

STEP 2: Click on "New" to see the toolpath parameters popup box.

STEP 3: Select smaller sizes in both drop-down menus (minimum allowable widths was selected in this example)

STEP 4: Add these curves to the new group and click on the "Create Toolpaths at Z" button. The walls are now completely filled in.

Modify Tool Path Widths for Bosses or Holes

Another instance when a custom group can be use is when there are features such as a boss or a hole that needs to be drilled, bored or tapped. When using the standard Contour/Raster fill style, there will be air gaps in the model between the outer wall and the raster fill. To create a more solid wall, create a custom group using extra contours.

STEP 1: Select "Contours to Depth" from the Contour Style drop-down

STEP 2: Select 0.0600" under Depth of Contours to create a .060" shell, consisting of three concentric .020" contours, around the hole.

Although the standard perimeter and raster fill is designed to build a quality part in the majority of circumstances, these methods can be very helpful on occasions where the normal fill is not completely sufficient. This ability is just one of the advanced features of the Insight software (figure 4).

Note
Descriptions of all the options in the parameters sheet are available through the Insight Help. Please be aware, however, that many of these settings can have detrimental effects on your parts if not used properly. Therefore, it is recommended that only experienced or advanced users make any changes to these values. To insure the best possible part quality, Stratasys recommends that you always review the toolpaths on your parts, and make modifications if necessary, before downloading them to your Fortus system.
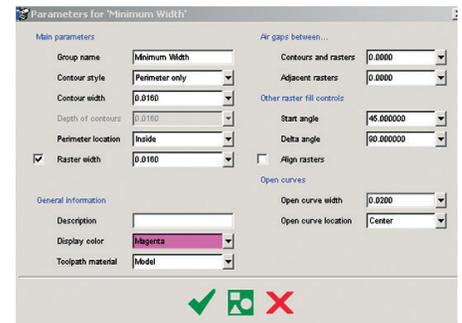

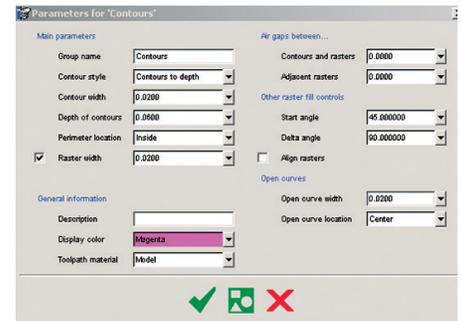Figure 3: Parameters for minimum width

Figure 4: Parameters for contours

CONTACT

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