Maestro CAM Perimeter Routing Operations

If you are unsure of anything, please don't hesitate to ask UQ Innovate Staff.

Once you have finished with Maestro CAM Getting Started and you want to apply perimeter routing to vectors go to "Operations" tab.
For pocketing select the "Perimeter Routing" Button.

Perimeter routing should only be applied to closed geometry, not open geometries or cartesian points.
Be careful with this as Maestro fails to differentiate open from closed in this instance and this can cause adverse effects to the desired outcome.

Drilling should come first in order of tool-pathing priority, then routing, then pocket forming and last of all Perimeter Routing.
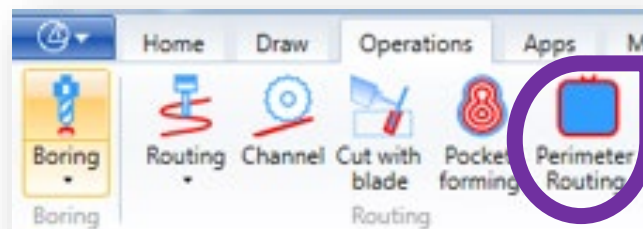
For set up select a suitable milling tool for desired outcome. In this case it will be the final depth of cut (REACH) that will drive the choice. Lead in and lead out should be selected to allow for tool entry and exit. To cut "Through" material tick passing and set it to 0.2 extra depth. To do this cut through in "Multiple Passes" this is under Strategy, Unidirectional. Pass depth should match max cut, Final pass 2mm. Don't forget to enable the "Main Hood" down position. Click "Apply" once you have configured the setup.
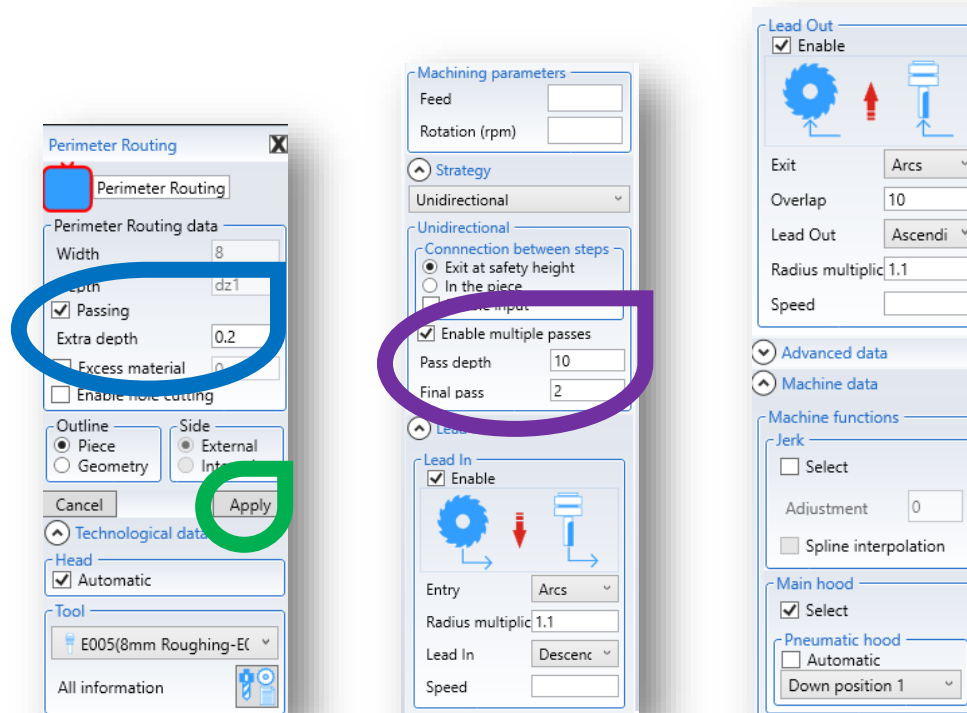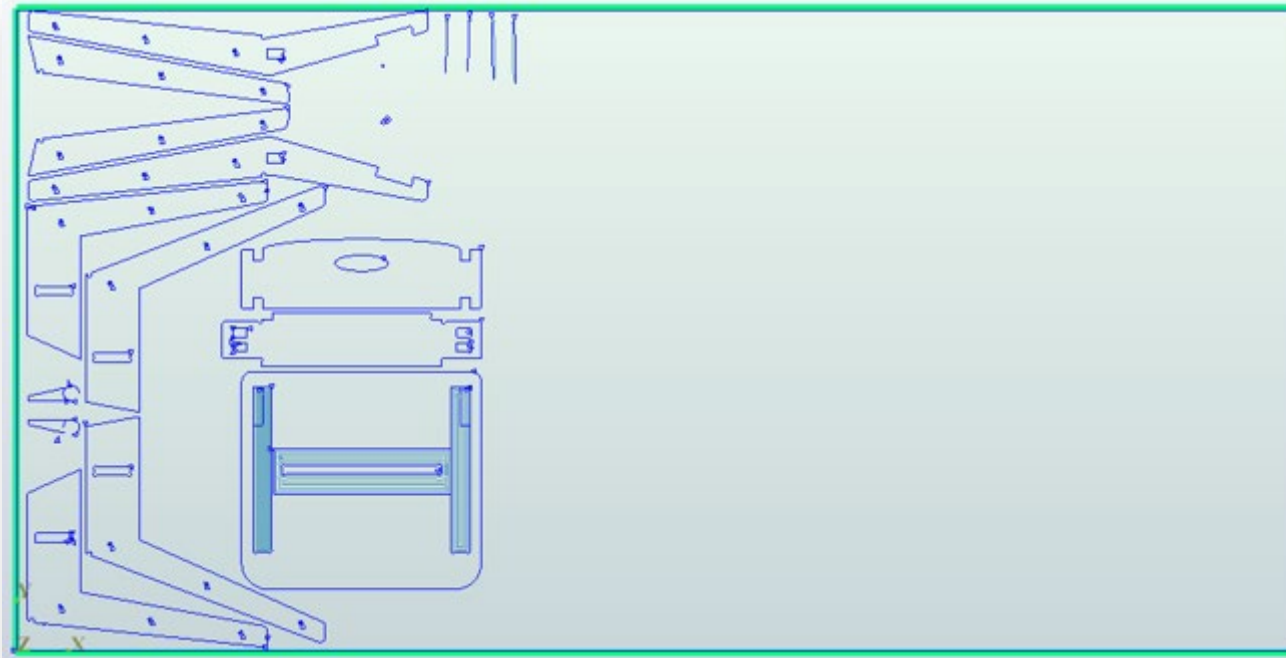
Output should look as below, tool-pathing will be representative of the tooling diameter on screen.

Blue grey when unselected and bright green when selected.

In this case a geometry hasn't been applied so this has a toolpath around the piece which can be used to quickly cut out something.

To apply to geometry, see below.

To delete anything make sure it is selected and hit the Delete key on the keyboard.

At the 1st dialogue click "OK" at the 2nd choose either "Machining" or "Geometry and Machining", then click "Apply".
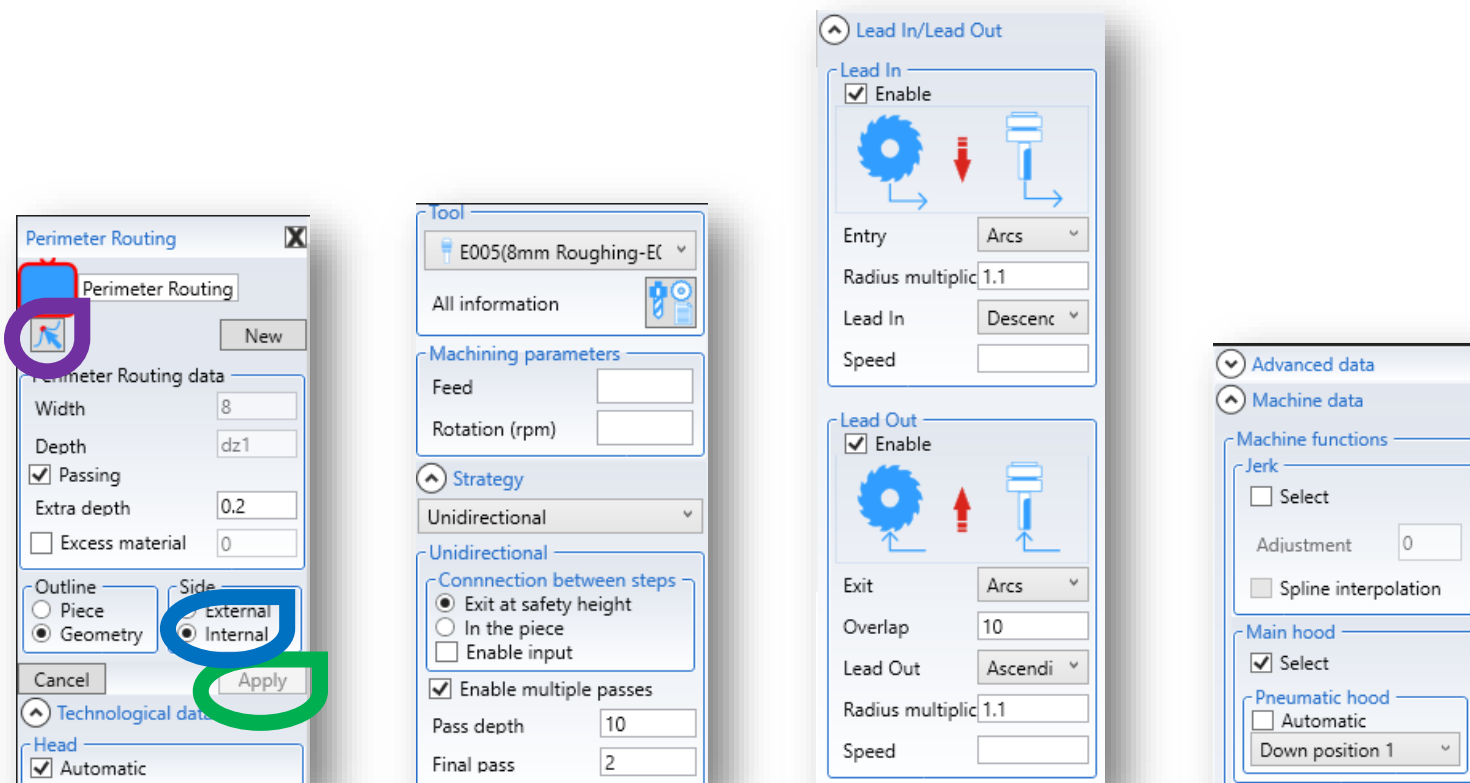
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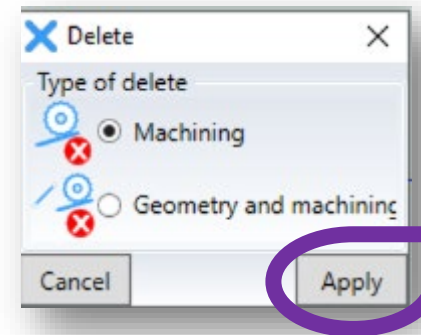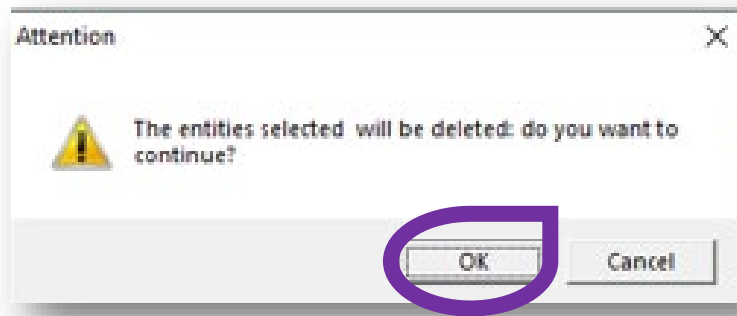
To cut "Internal" geometry select a suitable tool for desired outcome. In this case it will be the final depth of cut that will drive the choice. Drills can't be used for these operations but any milling tool can be selected. Don't forget to enable the "Main Hood" down position.

Click the button for "Select Geometry" once you have configured the setup. Hold down shift key for multiple selections.

Then click "Apply". Make sure you do the selection & application in the correct order.

Output should look as below, tool-pathing will be representative of the tooling diameter on screen.

Blue grey when unselected and bright green when selected.

The tool diameter is represented by the circle with the arrow at the beginning of the tool path.

Note that with this setting the tool diameter is centred on the toolpath for its full length. This should appear on the inside of geometry.

Note the position of lead in and lead out, these should never cross centreline towards geometry. Under Draw tab use "Starting point" to change.
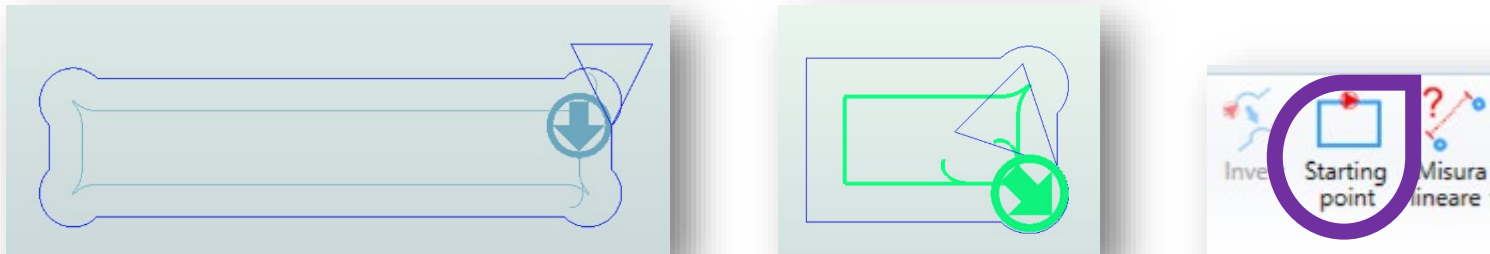
Also be mindful of broken "open" geometry. Perimeter Routing should never be applied to open geometry.

This can be problematic as maestro allows this and will imply a full rapid return to the start point.
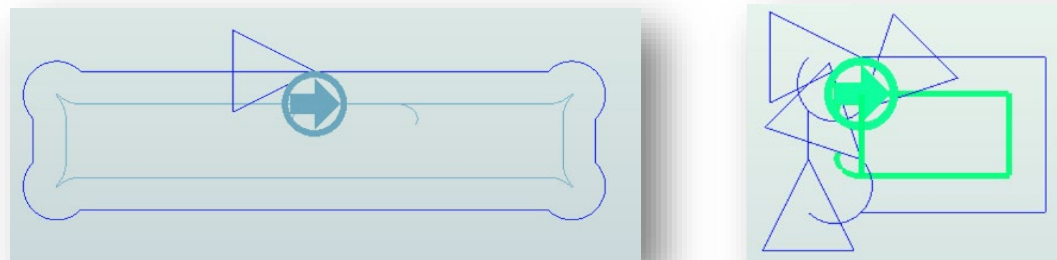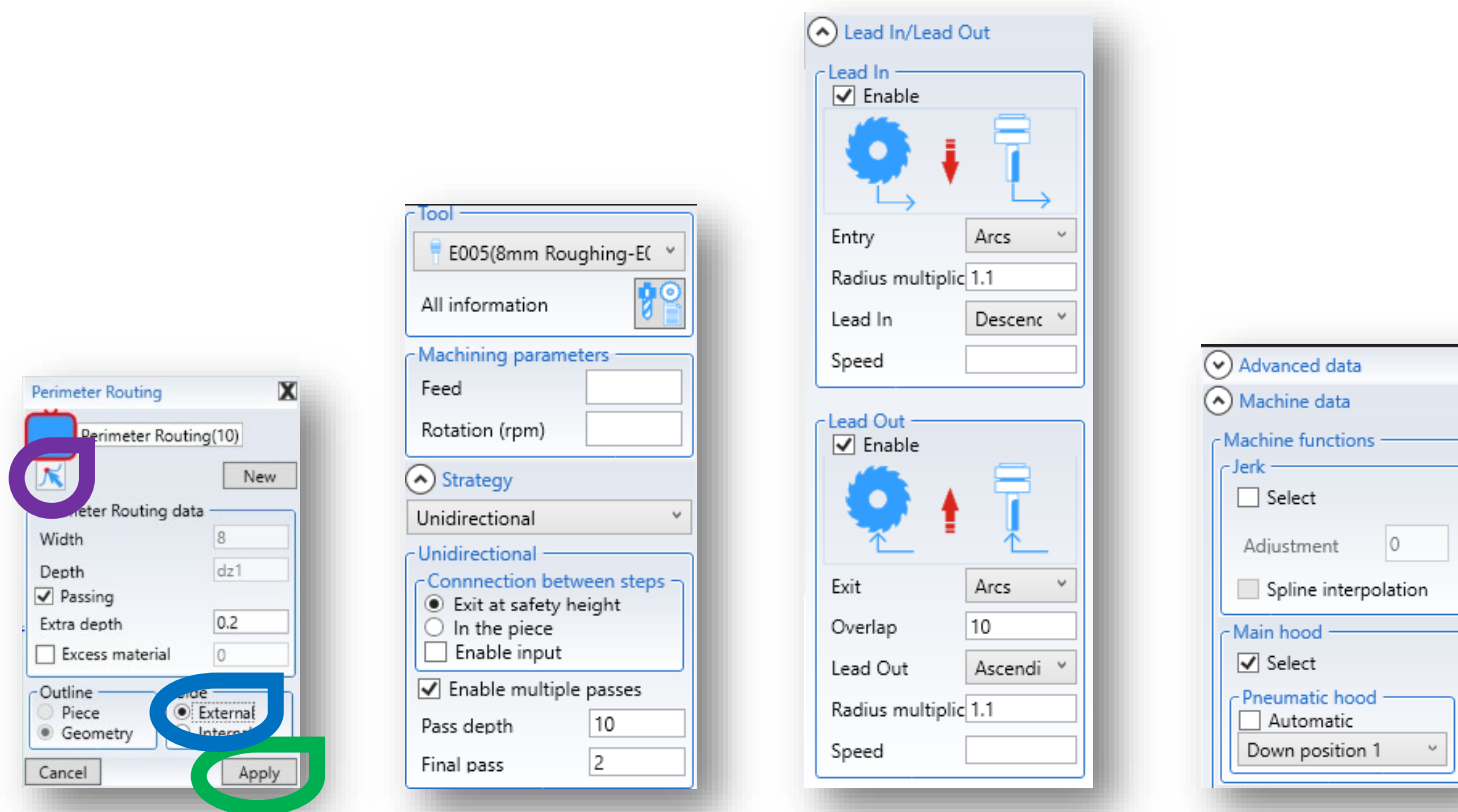
To cut "External" geometry select a suitable tool for desired outcome. In this case it will be the final depth of cut that will drive the choice. Drills can't be used for these operations but any milling tool can be selected. Don't forget to enable the "Main Hood" down position.

Click the button for "Select Geometry" once you have configured the setup. Hold down shift key for multiple selections.

Then click "Apply". Make sure you do the selection & application in the correct order.

Output should look as below, tool-pathing will be representative of the tooling diameter on screen.

Blue grey when unselected and bright green when selected.

The tool diameter is represented by the circle with the arrow at the beginning of the tool path.

Note that with this setting the tool diameter is centred on the toolpath for its full length. This should appear on the outside of geometry.

Note the position of lead ins and lead outs, these should never cross other toolpaths.
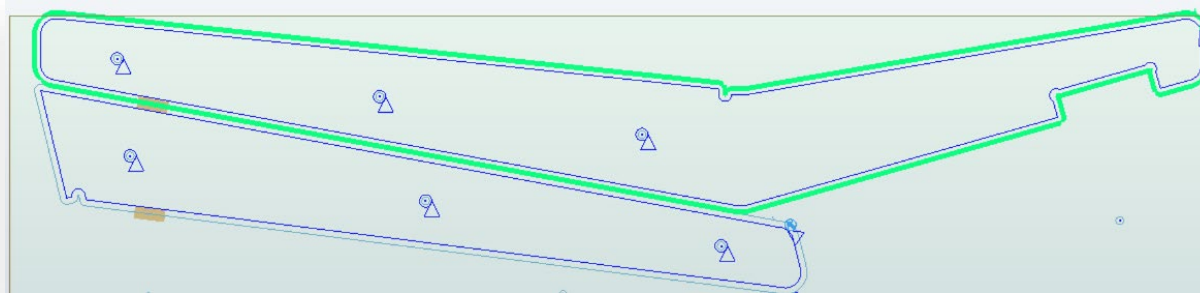
Also be mindful of broken "open" geometry. Perimeter Routing should never be applied to open geometry.

This can be problematic as maestro allows this and will imply a full rapid return to the start point.
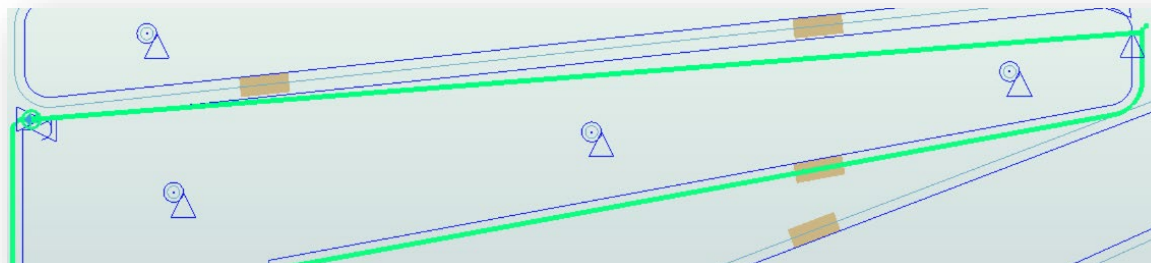
Micro-fastener application.

With "External" perimeter cutting the parts may be too small to be held in place with the vacuum pump once they are cut.

This can be resolved by clicking "Micro fasteners" found on the "Operations" Tab. Use the tab key to set up "x, y".

Unfortunately, this can't be applied to toolpaths with multiple pass strategy applied, meaning a modification of to do external cuts.
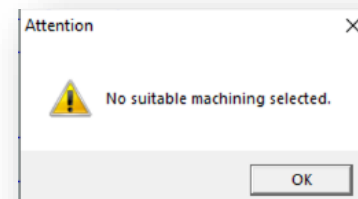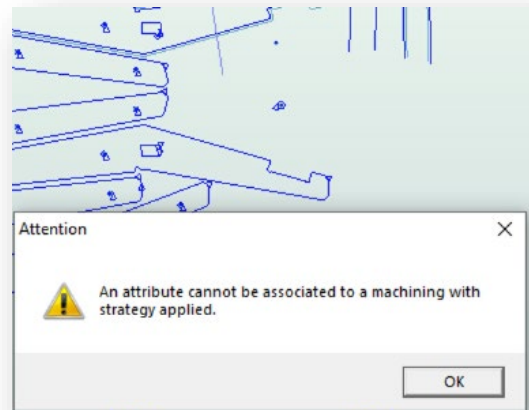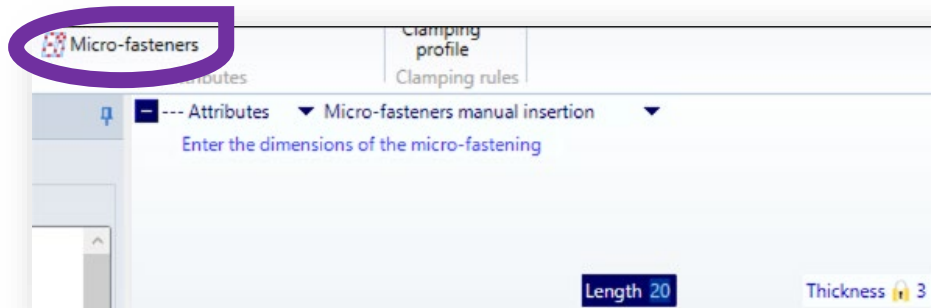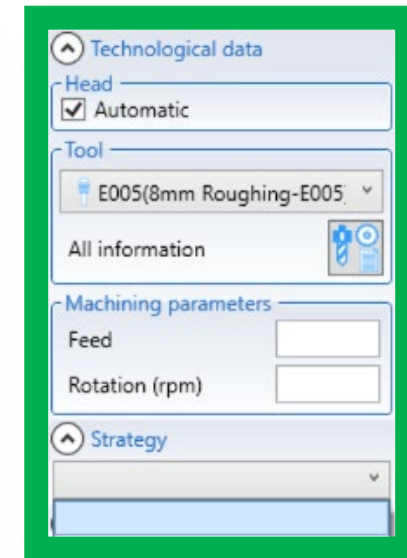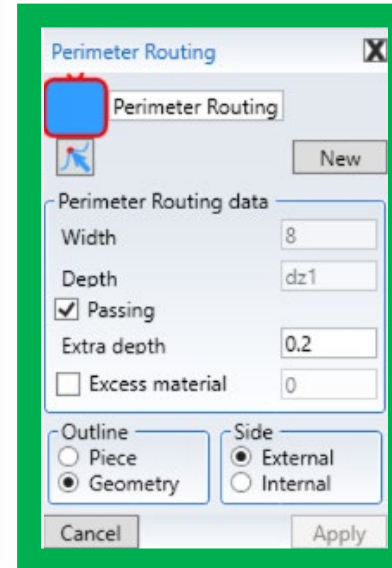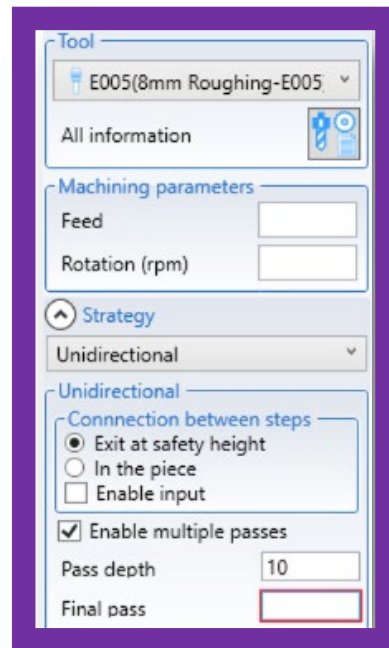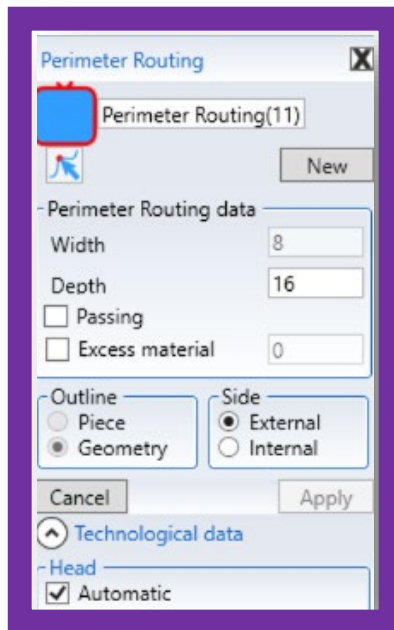
A 2-part approach is needed.

1St Set up an "External" cut to go all but the last 2mm of material with multiple pass strategy applied.

2nd set up a Passing perimeter Routing to go through the last 2mm in one pass.

It is important that these steps are in the correct order or the full depth, chip load will either break the part or the cutter.

This may also be required for "Internal" cuts where the waste is of a size that could be lifted off the table, becoming a projectile.

Once you have routings that can have "micro-fasteners" applied, it is just a matter of left-clicking, dragging across and click again.

These "micro-fasteners" can also be termed as a bridge or tab in other CAM software.

They can be removed by use of either chisel and mallet or a flush-cut, trimmer.

Another method for small parts is to not cut all the way though and trimming out afterwards. This is known as onion-skinning.

Before moving on to the next stage it is important to inspect your routing for the following problems.

Is your geometry internal or external and does the toolpath match? This may cause wasted material.

Has there been perimeter cutting applied to open geometry? This will break cutters.

Is there enough space between parts or do tool-paths cross each other or leads? This will compromise outcomes.

Is there enough room for the tool size in your geometry? This will cause unwanted leads.

Tool Ø+1mm is the rule for spacing in your geometry.

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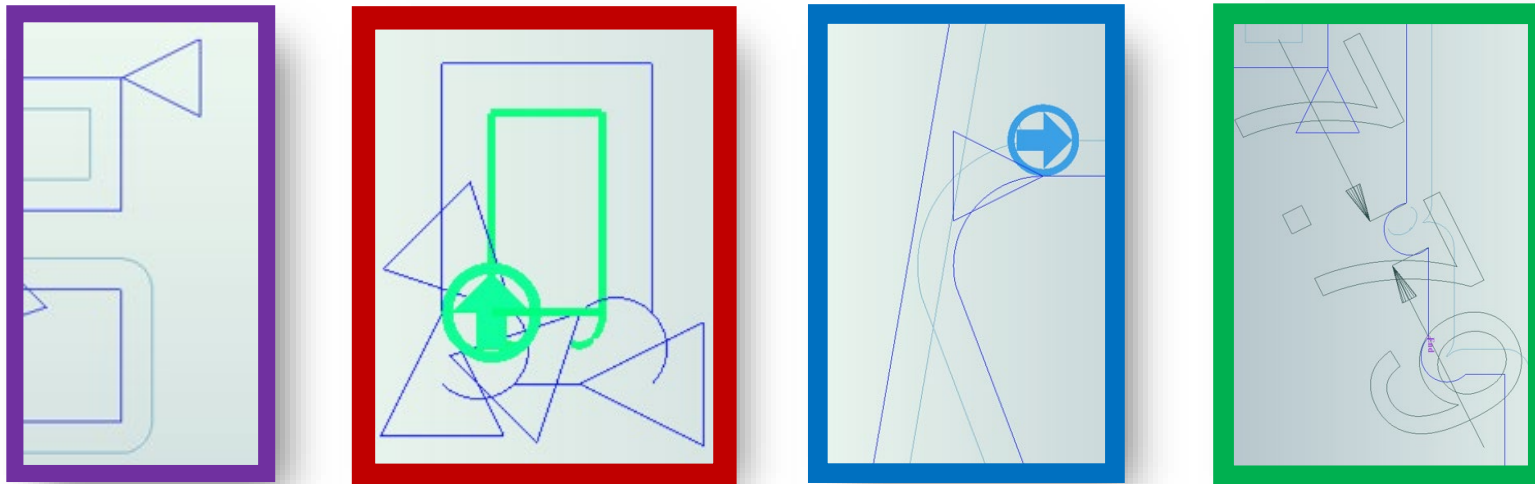
If done successfully you should see a nice long list of Perimeter Routings under the "Machining" tab.

Before applying the next kind of "Operation" (tool-path) ensure the last previous is highlighted in this list.