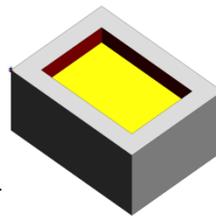


# Roughing & Pocketing

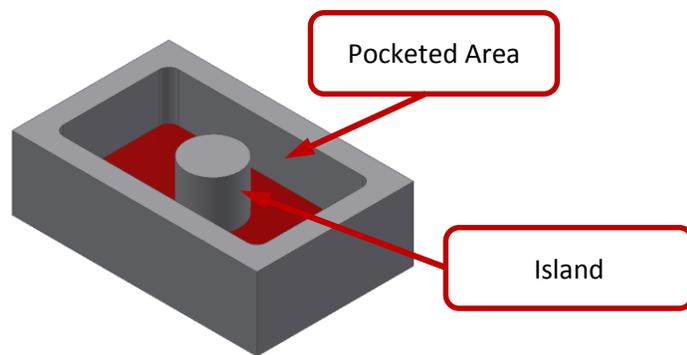


## Definition

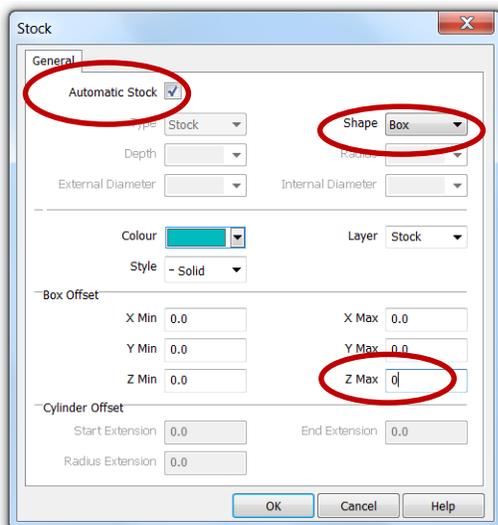
Roughing means to machine a lot of material without concern for surface finish.

[www.CNCCookBook.com](http://www.CNCCookBook.com)

Roughing and Pocketing is a common milling process. It is the process of removing a large amount of material from a defined area. Roughing can either clear out the material to create a POCKETED area or the opposite of clearing an area to leave an ISLAND or a combination of the two.

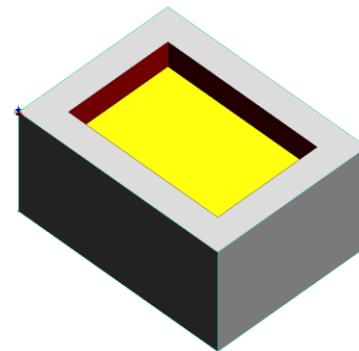


A roughing or pocketing operation is the process of clearing an area that is too large to be completed in one pass. The tool either travels in parallel lines, concentric rings, or in a helix pattern to remove area from a defined field. If the area is deep, a roughing process can be repeated in several in repeated steps until the bottom of surface of the area is reached. We most commonly compare this type of operation to the process of cutting the grass.



Create the stock for the part

- Select AUTOMATIC STOCK
- Select a SHAPE of [BOX]
- For this activity we will leave all the stock box offsets at ZERO





Evaluate and redefine the part reference zero PRZ or CPL

-For this example, the PRZ should not need to be reset. It has been created in Autodesk Inventor with the correct PRZ as we would like to assign it.

Nothing needs to be done at this step.



Use the feature finder to allow EdgeCAM to evaluate the 3D CAD model in order to break the model into manufacturable features

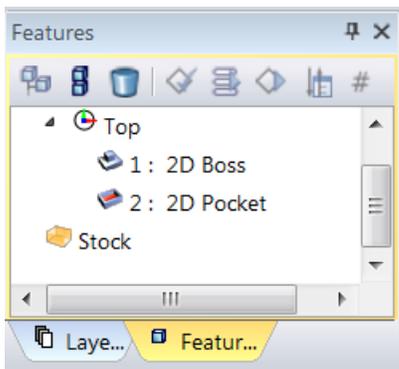
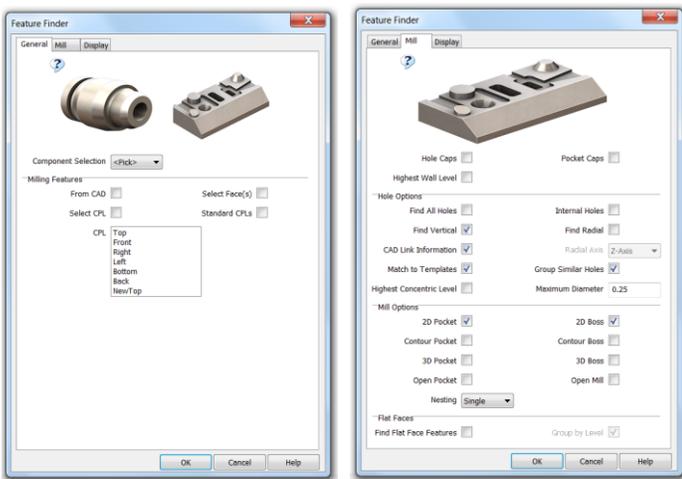
**Hole Options**

- Find Vertical
- CAD Link Information
- Match to Template
- Group Similar Holes
- Maximum Diameter = The largest tool you have to be able to drill with (Example = 0.25)

**Mill Options**

- 2D Pocket
- 2D Boss

All features found will now be displayed on the features tab

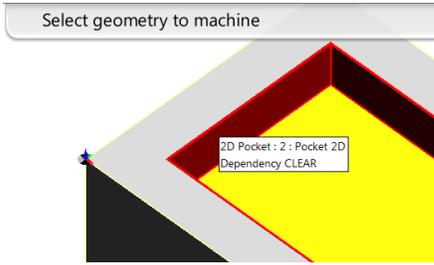


Leave DESIGN mode and enter MANUFACTURE mode

DISCIPLINE – [Mill]

MACHINE TOOL – Choose the correct POST for your machine [intelitek.mcp]

INITIAL CPL – Ensure the CPL is [Top]



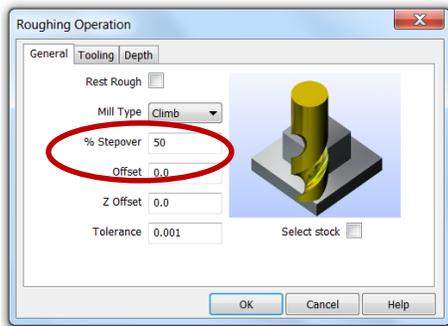
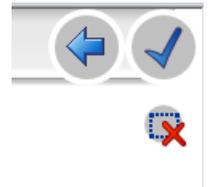
Select the ROUGHING OPERATION from the top tool bar

-Select the area to be pocketed. Since we used the feature finder to evaluate the part, the pocketed area should highlight as a 2D Pocket. Once the selection is made, either select the check mark in the top right corner, select enter on the keyboard, or right click to select DONE



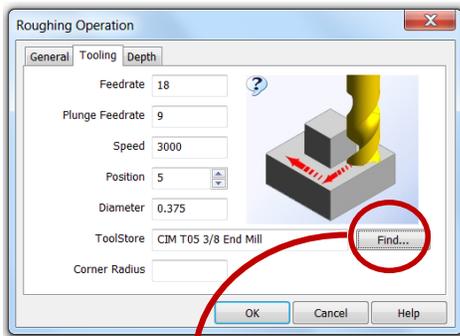
## Select boundary entities (Finish for none)

At this time we do not need to define any boundaries for this operation. Select either select the check mark in the top right corner, select enter on the keyboard, or right click to select DONE



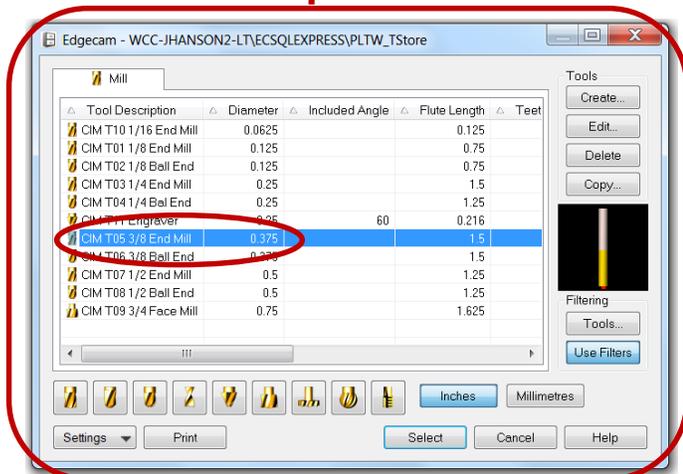
### GENERAL

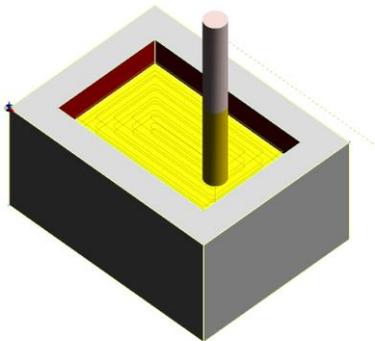
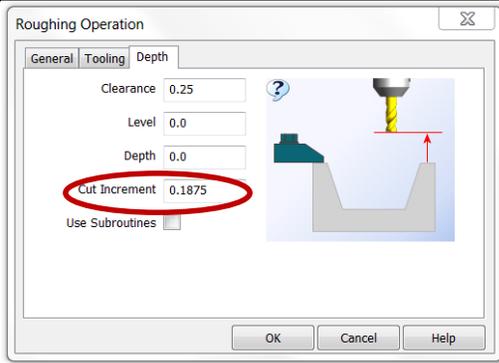
- MILL TYPE – Either select [CLIMB]
- % STEPOVER – [50%]
- OFFSET – [0] (Used to leave material on all axis (X, Y and Z). A finishing operation can then be used to remove the offset material)
- Z OFFSET – [0] (Used to leave material on only the Z Plane of the surface defined. Also used along with the offset to override the Z axis if a quantity is left from the Offset line)
- TOLERANCE – [0.001 to 0.005]



### TOOLING

- 1<sup>ST</sup> Choose the FIND box (choose the largest end mill tool you have available in your library or have available at you machine)
- 2<sup>nd</sup> Ensure the FEEDRATE, PLUNGE RATE, and SPEED are correct for the material and the tool you are using.

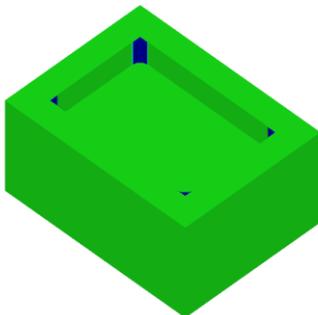
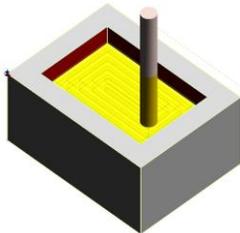




### DEPTH

- CLEARANCE – [0.25] - Retract point above the PRZ
- LEVEL – [0] – Measured from the top of the feature selected
- DEPTH – [0] - Measured from the bottom of the feature selected
- CUT INCREMENT – [0.1875] - determine a safe number for the tool you are using to go from the level to the depth. If the Cut Increment is smaller than depth, the facing operation will produce multiple passes to go from the level to the depth.

For prototyping material, use approximately 1/2 to 1/3 the bit diameter as the cut increment



Simulate the machining process

Once the simulator opens, Select PLAY

Ensure the simulator produce the results desired

Select the COMPARE tool – this option will compare the original 3D model and the results of the simulated operations. At this time since we raised the stock above the 3D model, set the facing operation to only cut the amount raised from the 3D model, the compare should show as all green

**GREEN** – Simulation and CAD model areas that Match  
**BLUE** – Areas not removed or remaining from the stock to produce the 3D model

**RED** – Areas removed from the stock that have cut into the 3D model

Close the simulator to return to EdgeCAM



*\*Note: If EdgeCAM is running in HOME WORK mode, producing the NC code is not available*

Select NC tool from the tool bar to produce the NC code using the POST Processor selected earlier