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Probing Tutorial



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Probing Tutorial

Generic Option

This tutorial provides an introduction to using Probing functionality. The focus will be on the "Generic" option, which has a built in user interface integrated with GibbsCAM. Like all probing options, it requires Post modifications before it can be used on your machine.

Please Note:

In order for Probing to function, it must be enabled in Plugin Manager. If this has not already been done, go to Plug-Ins > Plugin

Manager and ensure the option " GibbsCAM Generic Probing Support" is checked.

Enabled	lcon	Name	Version		
		Compost Debugger(GibbsCAMCompostDebugAddin.dll)	13.8.36.4		
7		Contour Trace(ContourTrace.dll)	8,0,1,7		
~		Convert To Trochoidal(Trochoid.dll)	8,1,4,1		
-		CoroPlus(CoroPlusPluginInt.dll)	1.0.0.0		
~		Create DHole(DHole.dll)	8.0.0,1		
~		Create Spiral(Spiral.dl)	8.0.0.0		
~		Deburring Process(Deburring.dll)	8.0.0.0		
/		Find Ops(FindOps4.dll)	8,0,0,2		
7		Geometry properties(GeoProperties.dl)	8.0.1.1		
~		Get Draft Angle(GetDraftAngle.dll)	8,0,1,2		
		Get Section (Get Section all)	8.0.0.0		
2		GibbsCAM Generic Probing Support(GibbsCAM.Probing.Generic.dl)	1.0.0.0		
~		Harvey Teel Library(Harvey Teel Breey dl)	1.0.0.0		
/		Heix Builder(HeixBuilder.dl)	8.0.0.5		
~		High Speed Machining(HSM.dll)	8,2,4,2		
~		Import Inventor File(ReadInventor.dll)	8.0.0.0		
\sim		Import Material(MatImport.dll)	8.0.0.0		
~		Import VNC(Import VNC.dll)	8.2.2.2		
~		ISCAR Tool Advisor(ITAToolImport.dll)	1.0.0.0		
		l inal ina Intereart/I inal inalatereartione dll	8000		

The tutorial assumes you have existing knowledge of GibbsCAM machining.

Steps

1. Open the file Probing tutorial.vnc.

The part consists of a simple rectangular solid with a circular hole that we will probe to update the Work Fixture Offset in X,Y and Z. We will then Mill, Finish and probe the part again to check for accuracy. Two Milling tools have already been created.

2. Double-click tool tile #3 and choose the Ball Probing tool.





3. Enter the details as shown to create a 6mm diameter stylus probing tool.

We will now create a probing operation to update the Z work offset.

4. Drag the probing tool to Process Tile #1 and choose Shapes Probing



	ang			UST L
Probe Shape	(Generic)			
Feed Probe Touch	100 ime 0 🜩 sec.	8	8	
Cycle Type	Single Surface	\checkmark		
Result	Set Workfixture	~		
Two Tou	ch Clearance 4	mm.		
Probe Dep	th O	mm.		
Probe Dep Axis Z	th O	mm.		
Probe Dep Axis Z From F	th 0	mm.		
Probe Dep Axis Z	th 0	mm.		
Probe Dep Axis Z	th 0	ative Side		
Probe Dep Axis Z	th 0	ative Side		
Probe Dep Axis Z	th 0	mm. ative Side Mach CS: 1: X	Y plane ∽	
Probe Dep Axis Z From F	th 0 ositive Side () From Neg obe for Z work offset	mm. ative Side Mach CS: 1: X	Y plane V	

5. Enter details as shown. This will feed the probing tool to the top surface of the stock and probe the surface.

Select the circle.

6. Click Do it.



7. Render the operation

We will now create a second probing operation to set the WFO to the top of the block in X and Y.

- 8. Choose the 6mm Ball Probing tool once more and drop it onto Process Tile #1.
- 9. Choose the Shapes Probing operation.



This time we are probing the outside of the rectangular solid to set the WFO to center the block in X and Y.

10. Enter details as shown.

Once again we are probing the Stock, so we do not have to select anything.

Process #1 Probing
Probe Shape (Generic)
Feed 10
Probe Touch Time 0 sec. <u>+</u> <u>5</u> <u>25</u> <u>25</u>
Cycle Type Rectangle Boss ~
Result Set Workfixture V
Workfixture Index
Two Touch
Probe Depth -4 mm.
Boss Clearance 2.5 mm.
Axes X and Y V
Mach CS: 1: XY plane 🗸
Comment Set WFO to center of block in X and Y

11. Select Do it.

12. Render the operation



We will now create an operation to Mill the center hole.

- 13. Double-click Process Tile #1 and choose Volumill. If you do not have this option, use the Roughing Process.
- 14. Choose Tool #1, the Rough Endmill and enter the details as follows.

Volumill Pr	ocess		I	Roughing	g Proce	ess	
				Process #1 Roughing			✓ 즉 平
VoluMill		I	S 🖻 🕂 - 🗙	Pocket Mill Featu	re Solids Or	pen Sides Offset/Trim 1	ntry/Exit Rotate
VoluMill Mill Feature	Solids	om Feature		Offset	~	 Depths from Feature Depths From Tool 	
Chip Control	Material	om Tool	t	Speed: RPM	Material 3000	↓ 2.5	2.5 t
Feedrate	80.25	── ── ──└ ── ───		Entry Feed	10	Rapid In	ℤ_ ℤ 0°
Cut Width Side-Mill Only Overrides	0			Cut Width	3		
Side-Mill Cut Width	Z Step Desired	Actual #	t Passes	Line 90° Radius	0.05	Z Step Desired Actual 6 6	# Passes
XY Stock ±	0.25	First Prefer Subs		○ 90° Line ○ Advanced		Retracts Dept	h First 🗹 Prefer Subs
Z Stock ± Min. Toolpath Rad.	0 Hit Flats 2.7 Minim	um Flat Size 50	% of Tool Size	Pocket Stock ±	0	Helix ~	
Min. Feedrate Repositioning Parameters Floor Clearance	0.25 Plunge 1	and Forth	×	Z Stock Overlap	0	Round Corners	Break 0
High Feedrate Wireframe Only Cleanup After Previous Previous Tool Dia.	Tool Conv D	antional Feedrate % 100		Spring Passes	0	☑ CRC On ☑ Clim ☑ Coolant ☑ Flood	b
Prev. Min. TP Rad.	Patter	1: Workgroup	~	Use Stock		Pattern: 1: Workgr	oup 🗸
O Use Stock Material Only Comment Rough mill cin	cular pocket	I. AI plane	0	Ignore Prio Outermost Sh Comment	r Tool Profiles ape As Boss		^
							×

15. Select the circle geometry and click Do it.

We will now create a contouring operation to finish the part.

16. Double-click Process Tile #1 and select the Contouring operation.



17. Select Tool #2, the Finish Endmill and complete the dialog as shown.

18. Select the circle geometry and click Do it.

We will now create another probing operation to measure the accuracy of the pocket.

19. Choose the Shapes Probing Process.

Process #1 Contour		✓ 平 – ×
Contour Mill Feature	e Solids	Open Sides Offset Entry/Exit
Speed: RPM Entry Feed Contour Feed Entry And Exit © Line 90° Radius) 90° Line) Advanced No. of Extra Offsets Extra Stepover Stock ± Z Stock Overlap Spring Passes] Use Stock] Material Only] Ignore Prior T	Material 8000 10 20 1.25 6 0 0 0 0 0 0 0 0 0	 ○ Depths from Feature ● Depths From Tool ↓ 2.5 t Rapid In ● Pearsed C 2 Step Desired Actual # Passes 6 1 ○ Retracts ○ Depth First ○ Prefer Subs ○ Ramp Down ○ Back & Forth ○ Do not hit flats ○ Actual # Prefer Subs ○ Ramp Down ○ Back & Forth ○ Do not hit flats ○ Coolant ○ Flood
		□Pattern: 1: Workgroup Mach. CS: 1: XY plane
Comment finish mil	l 50mm bore +	/-0.025





Process #1 Probing	– 🗆 🗙
Probe Shape (Generic)	
Feed 10 Probe Touch Time 0 🔄 sec. 6 6	
Cycle Type Circular Pocket V	
Result Measurement V	
Undersize Alam v -0.025 mm.	
Oversize Alarm v 0.025 mm.	
Two Touch	
Probe Depth -4 mm.	
Points Three Point	
3 Point Bore/Boss Angles 0 120 120	
Mach CS: 1: XY plane V	
Comment In process inspection of dia. 50.00 circular pocket	^
	\sim

21. Click Do it.

22. Render the operations.

20. Enter the details as shown.

checking three points.

We will measure the pocket, then output an alarm if it is under or oversize by more than 0.025mm, probing at a depth of 4mm and



We have a Utility operation type that can be useful when probing, which is Goto. In this case we will use Goto to tell the machine to go back to the Contour operation if the part is undersize. Which will enable us to redo the Contour it if the pocket is not correct. In order to use this function we will first create a Goto Operation.

1. Double-click Process Tile #1, and in the Select Process Type menu, choose Goto from the Utility sub menu.



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Generic Option

The operation is named automatically. You are free to rename it, as long as the name is unique you must not have two Goto targets named the same. This Utility is output to G-code, but as stated on the dialog, is not validated or simulated by GibbsCAM.

Process #1	🗸 🗆 – 🕂 🔊 🛇
Name New Goto Target_1	
Warning: GoTo or Jump statemer validated or simulated by GibbsC	nts in G-Code will not be CAM

2. Click Do it.

- Ø
- 3. We want the Goto operation to point to before the contour operation, so drag the tile to position #4 in the operation list.

Now we must edit the Probing operation to use the Goto.

		Cycle Type	Circular Pocket \lor	
		Result	Measurement ~	
4. Double-c edit it as	Double-click the Probing operation #5 and	Undersize	GoTo ~ -0.025 mm.	
	edit it as shown.		New Goto Target_1 \sim	
		Oversize	Alam ~ 0.025 mm.	
			ch	

5. Click redo.



6. Render the operations.

You will note that there is no visible difference between the previous render and the render including the Goto Operation. This is because GibbsCAM will not render Goto operations, they are simply output to the code.