GIBBSCAM 2025 CAM for Production Machining

Version 2025 : September 2024

Reporter and Reporter Commands

GIBBSCAM

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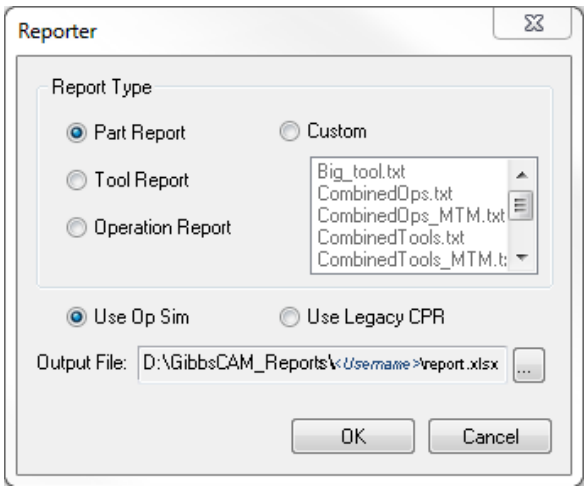
Introduction

This document provides information on the **Reporter** plug-in. Its material was formerly contained in the *Plug-Ins*, and the material in its *Basics* chapter is duplicated there.
The majority of this document discusses advanced Reporter use.
Before using the Reporter plug-in, you should be familiar with GibbsCAM terminology and functionality for Mill, Turning, and/or Broaching.

Basic Reporter Usage

Reporter is used to generate predefined or custom reports from the data in the current part in Excel. You do not need to have Excel installed to use Reporter.
Three predefined reports are provided:

- “Part Report ” on page 7
- “Tool Report ” on page 8
- “Operation Report ” on page 9



In addition to the three basic reports, you can create your own custom templates. Several pre-made custom reports are available. Please note that reports tend to be specific to machine type. For example, the “Big_tool” custom report is for Mill machines only and will create invalid output if used for a turning or broaching part.
The default rendering mode is Op Simulation. If it better suits the needs of your report or if speed is an issue, you can select the checkbox Use Legacy CPR to override the default rendering mode and render the part in CPR instead. This can be significantly faster when generating a large report.
To generate a report, open a part and, on the **Plug-ins** menu, click **Reporter**. Select the type of report to generate, and then click OK. This will launch Excel and create the report. Creating Part and Tool Reports is a very quick process. Generating an Operation Report will cause the part to be fully rendered before the report is generated (the report captures an image of the finished part for each operation). When the report is complete, the Excel file can be named, saved, and printed for record-keeping.
This applies to active operations only; inactive operations are unaffected. For more information about active and inactive operations, see *Commom Reference*, chapter "Miscellaneous", section "Lists", subsection "Active and Inactive Operations".
For full details on the standard reports, as well as using, editing, and customizing reports, see “Advanced Reporter Usage ” on page 10.

Reporter File Locations

Excel (`*.xlsx`) and text (`*.txt`) files can reside in up to three different locations:

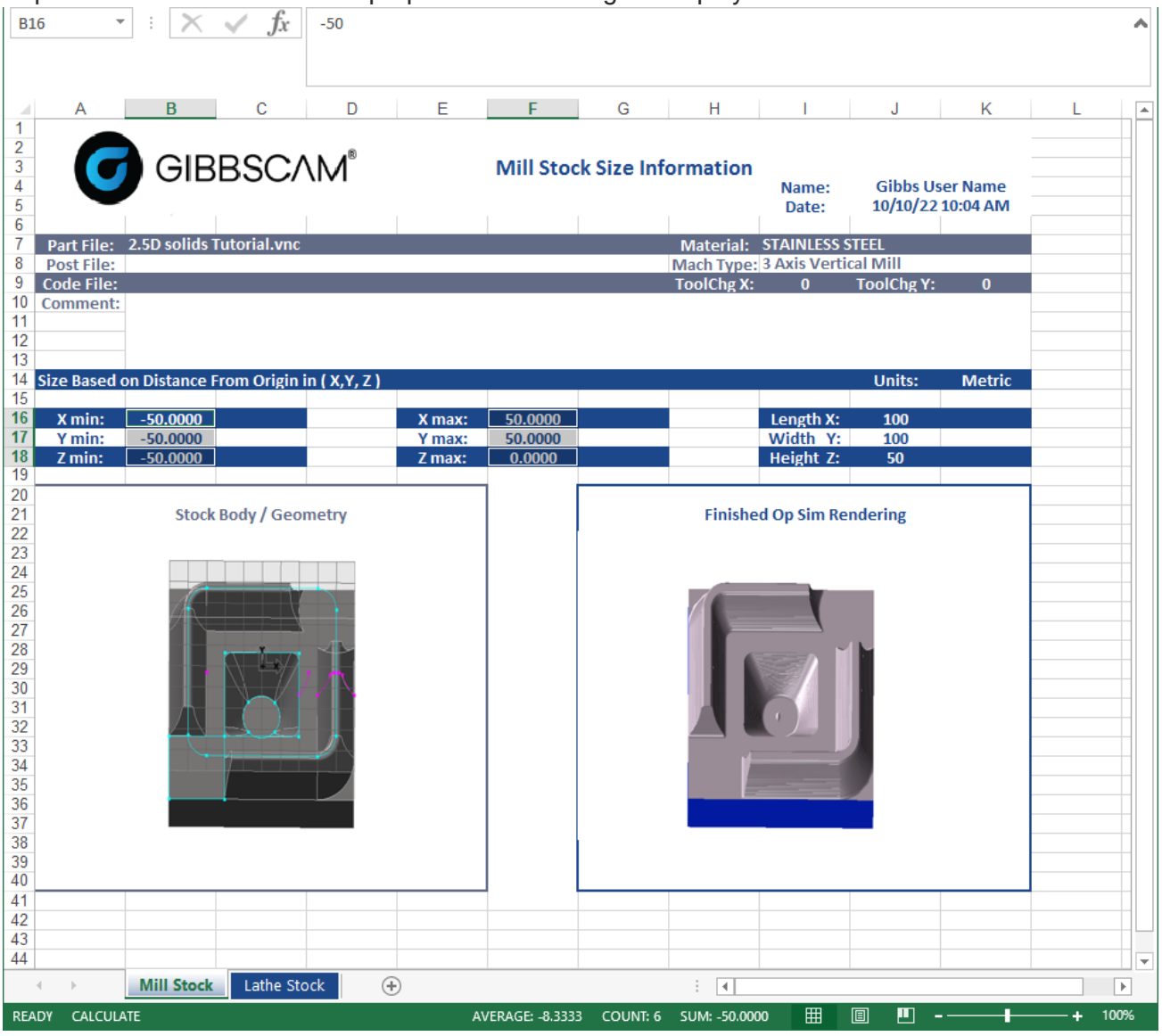
- ***User data folder***. The default location of this folder is:
  `C:\Users\`
  `<username>``\AppData\Roaming\CAMBRIO\GibbsCAM\`*`<version>`*`\PlugIns\Data\Report\`.
  If a particular user has Reporter files here, they take precedence over other Reporter files.
- ***Global data folder***. The default location of this folder is:
  `C:\ProgramData\CAMBRIO\GibbsCAM\`*`<version>`*`\PlugIns\Data\Report\`.
  If the Global data folder contains Reporter files, they will take precedence over Reporter files in the Installation data folder but will be overriden by Reporter files in the User data folder, if any.
- ***Installation data folder***. The default location of this folder is:
  `C:\Program Files*\CAMBRIO\GibbsCAM\`*`<version>`*`\PlugIns\Data\Report\`.
  Reporter files here are always present and cannot be deleted.

Imagine Company A, which prefers a custom Tool Summary report over the default GibbsCAM-supplied summary. Company A places the files `TlSum.txt` and `TlSum.xlsx` in the Global data folder (default `C:\ProgramData\...`). At company A, this is the version that most users will receive when they use the GibbsCAM Tool Summary command or they pick `Tool Summary` from the **Reporter** dialog. The Migration Tool will migrate this report from version to version.

Now imagine a user named Lee, who works for Company A. Lee has made additional changes to the Tool Summary Report, and saves these custom versions of `TlSum.txt` and `TlSum.xlsx` in the User data folder (default `C:\Users\Lee\AppData\`...). Whenever Lee uses the Tool Summary command or picks `Tool Summary` from the **Reporter** dialog, the result will use these additional changes. The Migration Tool will migrate this report from version to version.

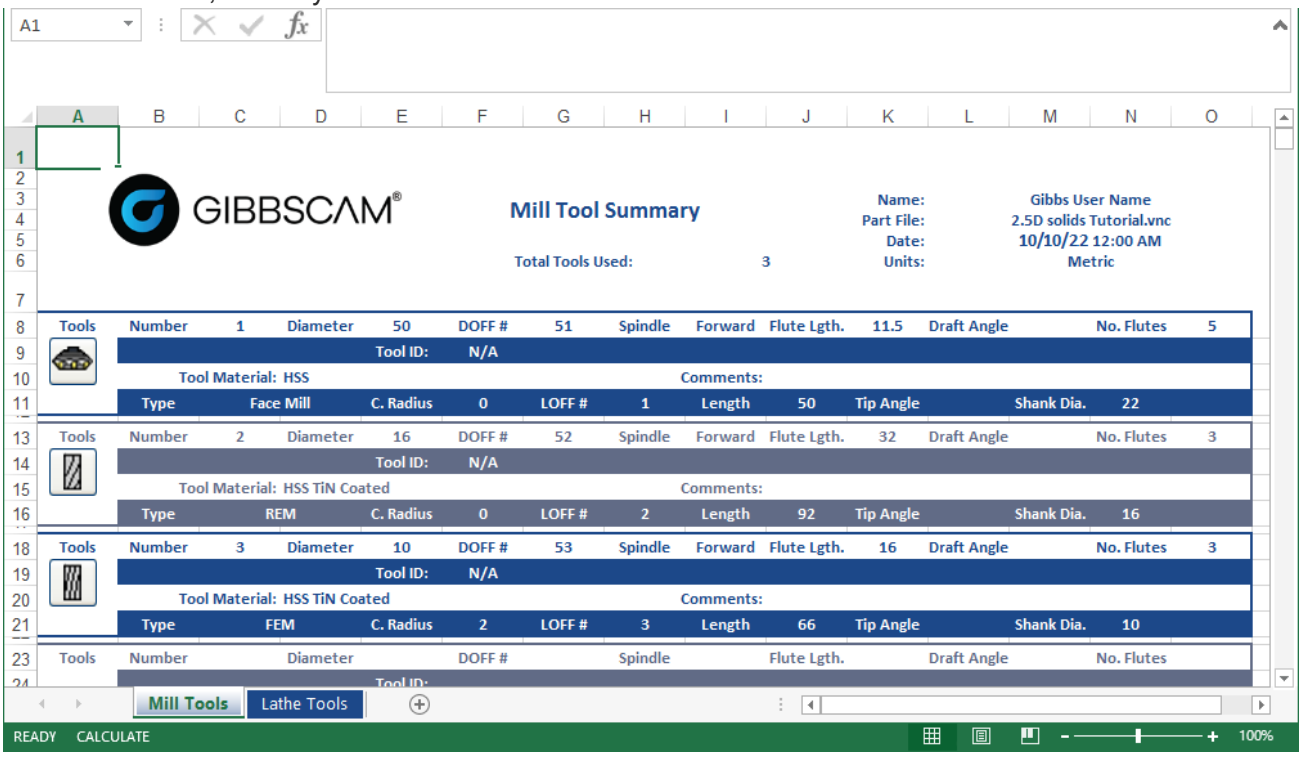
Part Report

The Part Report is an overview of the current part file and provides basic information about the part. The standard Part Report includes the user's name, the current date, the saved name of the part file, the type of machine on which the part is programmed, the part material, the name of the Post Processor used on the part, and the name of the saved NCF file for the part. Additionally, the report contains the dimensions of the stock, an image of the part geometry or solid the part is created from, and an image of the final rendered part. Note that the report uses an image of the last item rendered. It is recommended that cut part rendering be run before generating the Part Report. This will ensure that the proper rendered image is displayed.



Tool Report

The Tool Report is an overview of the tools in the Tool List of the current part file. The standard Tool Report includes the user's name, the current date, the saved name of the part file, and the part's units of measurement. Additionally, the report contains details about each tool, including a graphic of the tool, the tool type/number/size, tool material, CRC number, spindle direction, the number of flutes, and any tool comments.



Operation Report

The Operation Report is a detailed summary of the operations used to create the part. Each operation in the part is fully described, including the starting and ending condition of the stock for each operation. The standard Operation Report includes: the user's name, the current date, the saved name of the part file, the calculated cut time, and the part's units of measurement. Additionally, the report contains: tool information for each operation, the operation type (Roughing, Lace Cut, Contouring, etc.), the amount of stock left by the operation, feed rates, depth of cut, the number of cuts taken, cut times, and more. Please note that an Operation Report can take up to several minutes to generate if there are many operations in the part. This applies to active operations only; inactive operations are unaffected. For more information about active and inactive operations, see *Commom Reference*, chapter "Miscellaneous", section "Lists", subsection "Active and Inactive Operations".

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Mill Operation Summary

Total Run Time: 0:21:59

Name:	Gibbs User Name
Part File:	2.5D solids Tutorial.vnc
Date:	10/10/22 9:59 AM
Units:	Metric

Start Condition								End Condition
CRC	Off	Workgroup	1	Coordinate	1	Coolant	On	
Operation	1	Group #	2	Entry Feed	1478	Tool Dia.	50	
Tool #	1	Cut Depth	-5	Con. Feed	1478	Op. Type	Rough	
DOFF #	51	Step Depth	5	RPM	1164	Tool Type	FaceMill	
LOFF #	1	Surf. Stock		TP Length	619.5000	Time	0:00:25	
# Cuts	1	Poc. Stock	2	Isl. Stock	2	Utility Data	Unused	

Start Condition								End Condition
CRC	Off	Workgroup	1	Coordinate	1	Coolant	On	
Operation	2	Group #	4	Entry Feed	763	Tool Dia.	16	
Tool #	2	Cut Depth	-45	Con. Feed	763	Op. Type	Rough	
DOFF #	52	Step Depth	6.666667	RPM	1668	Tool Type	REM	
LOFF #	2	Surf. Stock		TP Length	##########	Time	0:03:32	
# Cuts	1	Poc. Stock	2	Isl. Stock	2	Utility Data	Unused	

Start Condition								End Condition
CRC	Off	Workgroup	1	Coordinate	1	Coolant	On	
Operation	3	Group #	4	Entry Feed	763	Tool Dia.	16	
Tool #	2	Cut Depth	-45	Con. Feed	763	Op. Type	Rough	
DOFF #	52	Step Depth	6.666667	RPM	1668	Tool Type	REM	
LOFF #	2	Surf. Stock		TP Length	466.3290	Time	0:00:37	
# Cuts	1	Poc. Stock	2	Isl. Stock	2	Utility Data	Unused	

Start Condition								End Condition
CRC	On	Workgroup	1	Coordinate	1	Coolant	On	
Operation	4	Group #	6	Entry Feed	1183	Tool Dia.	10	
Tool #	3	Cut Depth	-25	Con. Feed	1183	Op. Type	Contour	
DOFF #	53	Step Depth	0.689655	RPM	7762	Tool Type	FEM	
LOFF #	3	Surf. Stock		TP Length	##########	Time	0:07:29	
# Cuts	1	Poc. Stock	0	Isl. Stock		Utility Data	Unused	

Start Condition								End Condition
CRC	On	Workgroup	1	Coordinate	1	Coolant	On	
Operation	5	Group #	6	Entry Feed	1183	Tool Dia.	10	
Tool #	3	Cut Depth	-25	Con. Feed	1183	Op. Type	Contour	
DOFF #	53	Step Depth	0.689655	RPM	7762	Tool Type	FEM	
LOFF #	3	Surf. Stock		TP Length	##########	Time	0:07:29	
# Cuts	1	Poc. Stock	0	Isl. Stock		Utility Data	Unused	

Mill Ops

Advanced Reporter Usage

- Custom Reports
- “General Template Commands ” on page 12
- “Picture Commands ” on page 13
- “Miscellaneous Commands ” on page 16
- “Operation Commands ” on page 17
- “Part Commands ” on page 25
- “Tool and Toolblock Commands ” on page 29
- “Using and Customizing Reports ” on page 38

Custom Reports

A completed report of any type originates from a form, which is a mock-up of a final report. Operation, Part, and Tool Reports each have their own forms. Each form is generated by two items: a Template file and a Model file. The Template and Model files must be placed within this subfolder of the global data folder:
`C:\ProgramData\CAMBRIO\GibbsCAM\<version>\Plugins\Data\Report\`

Model File

The Model file is an Excel-compatible file that defines the report form. This file can contain all the information that is not dependent on the current part, such as the company name and address, the current date, and the company logo. It also contains all the formatting information for the report, including the size of each cell in the Excel file, the font size and formatting, and the general look of the report. A new model file must be generated for each custom report. To save time and effort, start from one of the pre-existing Excel files when making a custom model file.

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Mill Operation Summary

Name:	Gibbs User Name
Part File:	2.5D solids Tutorial.vnc
Date:	10/10/22 10:02 AM
Units:	Metric

Total Run Time: 0:21:59

Start Condition								End Condition
CRC	Off	Workgroup	1	Coordinate	1	Coolant	On	
Operation	1	Group #	2	Entry Feed	1478	Tool Dia.	50	
Tool #	1	Cut Depth	-5	Con. Feed	1478	Op. Type	Rough	
DOFF #	51	Step Depth	5	RPM	1164	Tool Type	FaceMill	
LOFF #	1	Surf. Stock		TP Length	619.5000	Time	0:00:25	
# Cuts	1	Poc. Stock	2	Isl. Stock	2	Utility Data	Unused	

Start Condition								End Condition
CRC	Off	Workgroup	1	Coordinate	1	Coolant	On	
Operation	2	Group #	4	Entry Feed	763	Tool Dia.	16	
Tool #	2	Cut Depth	-45	Con. Feed	763	Op. Type	Rough	
DOFF #	52	Step Depth	6.666667	RPM	1668	Tool Type	REM	
LOFF #	2	Surf. Stock		TP Length	##########	Time	0:03:32	
# Cuts	1	Poc. Stock	2	Isl. Stock	2	Utility Data	Unused	

Start Condition								End Condition
CRC	Off	Workgroup	1	Coordinate	1	Coolant	On	
Operation	3	Group #	4	Entry Feed	763	Tool Dia.	16	
Tool #	2	Cut Depth	-45	Con. Feed	763	Op. Type	Rough	
DOFF #	52	Step Depth	6.666667	RPM	1668	Tool Type	REM	
LOFF #	2	Surf. Stock		TP Length	466.3290	Time	0:00:37	
# Cuts	1	Poc. Stock	2	Isl. Stock	2	Utility Data	Unused	

Start Condition								End Condition
CRC	On	Workgroup	1	Coordinate	1	Coolant	On	
Operation	4	Group #	6	Entry Feed	1183	Tool Dia.	10	
Tool #	3	Cut Depth	-25	Con. Feed	1183	Op. Type	Contour	
DOFF #	53	Step Depth	0.689655	RPM	7762	Tool Type	FEM	
LOFF #	3	Surf. Stock		TP Length	##########	Time	0:07:29	
# Cuts	1	Poc. Stock	0	Isl. Stock		Utility Data	Unused	

Start Condition								End Condition
CRC	On	Workgroup	1	Coordinate	1	Coolant	On	
Operation	5	Group #	6	Entry Feed	1183	Tool Dia.	10	
Tool #	3	Cut Depth	-25	Con. Feed	1183	Op. Type	Contour	
DOFF #	53	Step Depth	0.689655	RPM	7762	Tool Type	FEM	
LOFF #	3	Surf. Stock		TP Length	##########	Time	0:07:29	
# Cuts	1	Poc. Stock	0	Isl. Stock		Utility Data	Unused	

Mill Ops

Model file for the Operation Report (note that the Excel menus and commands are not shown)

Template File

The Template file is a text file that contains a list of instructions describing the data to extract from the current part in GibbsCAM. Each item in the template contains a data descriptor and information on the destination of that data in the model file (the .XLS document). In the following example, the fifth line of the text file reads, “PartName 4 10.” This means that the part name will be placed in row 4 column (J) of the Excel-compatible file.

Mill/Turn Operation Summary

Name: Gibbs User Name Run Time: 0:21:59
Part Name 2.5D solids Tutorial.vnc
Date: 10/10/22 Units: Metric

Start Condition	CRC	0	Workgroup	1	Step Depth	0.000	Coordinate	0	End Condition
	Operation	1	Group No.	2	Entry Feed	1478.000	Coolant	0.000	
	Op Type	Mill-Rough	Cut Depth	-5.000	Cont Feed	1478.000	Tool Dia.	25.000	
	Tool #	1	TP Length	619.500	Surf. Stock	0.000	Offset #		
	Tool Type	Face Mill	Utility Data	Unused	Pock. Stock	2	Run Time	0:00:25	
	CRC#	51	RPM	1164	Isl. Stock	2.000	No. Cuts		
Comments:					Start Time	0	End Time	0:00:25	
Start Condition	CRC	0	Workgroup	1	Step Depth	0.000	Coordinate	0	End Condition
	Operation	2	Group No.	4	Entry Feed	763.000	Coolant	0.000	
	Op Type	Mill-Rough	Cut Depth	-45.000	Cont Feed	763.000	Tool Dia.	8.000	
	Tool #	2	TP Length	2696.470	Surf. Stock	0.000	Offset #		
	Tool Type	REM	Utility Data	Unused	Pock. Stock	2	Run Time	0:03:32	
	CRC#	52	RPM	1668	Isl. Stock	2.000	No. Cuts		
Comments:					Start Time	0.000291	End Time	0:03:57	
Start Condition	CRC	0	Workgroup	1	Step Depth	0.000	Coordinate	0	End Condition
	Operation	3	Group No.	4	Entry Feed	763.000	Coolant	0.000	
	Op Type	Mill-Rough	Cut Depth	-45.000	Cont Feed	763.000	Tool Dia.	8.000	
	Tool #	2	TP Length	466.329	Surf. Stock	0.000	Offset #		
	Tool Type	REM	Utility Data	Unused	Pock. Stock	2	Run Time	0:00:37	
	CRC#	52	RPM	1668	Isl. Stock	2.000	No. Cuts		
Comments:					Start Time	0.002745	End Time	0:04:34	
Start Condition	CRC	1	Workgroup	1	Step Depth	0.000	Coordinate	0	End Condition
	Operation	4	Group No.	6	Entry Feed	1183.000	Coolant	0.000	
	Op Type	Mill-Contour	Cut Depth	-25.000	Cont Feed	1183.000	Tool Dia.	5.000	
	Tool #	3	TP Length	8861.035	Surf. Stock	0.000	Offset #		
	Tool Type	FEM	Utility Data	Unused	Pock. Stock	0	Run Time	0:07:29	
	CRC#	53	RPM	7762	Isl. Stock	0.000	No. Cuts		
Comments:					Start Time	0.00317	End Time	0:12:03	
Start Condition	CRC	1	Workgroup	1	Step Depth	0.000	Coordinate	0	End Condition
	Operation	5	Group No.	6	Entry Feed	1183.000	Coolant	0.000	
	Op Type	Mill-Contour	Cut Depth	-25.000	Cont Feed	1183.000	Tool Dia.	5.000	
	Tool #	3	TP Length	8860.979	Surf. Stock	0.000	Offset #		
	Tool Type	FEM	Utility Data	Unused	Pock. Stock	0	Run Time	0:07:29	

Combined Separate

Template file for the Operation Report.

General Template Commands

Several commands are common to all Template files. These commands often help control the flow of data in a report.

Setup Commands

Setup command	*Details*	*Options*
`SetOpExpandMode` *<mode#>*	Sets the kind of operations to output for all the commands that follow.	`0`= All operations

Setup command	*Details*	*Options*
	The specified operation type will not change until another SetOpExpandMode command is found.	1=Mill operations 2=Turning/Utility ops 3=Broaching operations 4=(reserved) 5=Probing operations
SetPage *<page#>*	Sets the page number on which to start the report. The page number corresponds to the Excel sheet number, not the actual page the data would appear on when printed. This should be the first command used in a new Template file.	
SetPartExpandMode *<mode#>*	Sets what part information to output for all subsequent commands. Will remain in effect until another SetPartExpandMode command is found.	0 All part types 1 Mill parts only 2 Turning parts only
SetToolExpandMode *<mode#>*	Sets what tool information to output for all subsequent commands. Will remain in effect until another SetToolExpandMode command is found.	0 All tool types 1 Mill tools only 2 Turning tools only 3 Broaching tools only 4 (reserved) 5 Probing tools only

Picture Commands

Working with graphics in Reporter can be challenging, because of the way that Excel handles graphics.
Picture *size* commands are straightforward, taking exactly two arguments: the vertical height and the horizontal width, in pixels.
Picture *placement* commands are complicated by Excel's behavior, where graphics are not embedded within a cell. Instead, graphics are floated over cells and data within the cells. The graphic's position is measured in pixels from the cell's top left-hand corner.
Starting with GibbsCAM 2015, which uses `*.xlsx` format exclusively, you can use the `UseNewImageOffsets` flag to greatly simplify the task of specifying a picture's placement.
When the `UseNewImageOffsets` flag is present, picture placement commands assume six input arguments, as follows:

- ***arg1*** Row of the cell that the picture's upper left corner. For example: `3` specifies `Row 3`.
- ***arg2*** Column of the cell that the picture's upper left corner. For example: `5` specifies `Column E`.

- ***arg3*** Number of rows to skip before placing the next picture.
- ***arg4*** Number of columns to skip before placing the next picture.

- ***arg5*** Vertical offset, in pixels, from the top of the cell specified by *arg1* and *arg2*. If *arg5* is not supplied, or if a value is supplied that is greater than the cell's height, then a value of `0` is used, placing the image at the cell's top margin.
- ***arg6*** Horizontal offset, in pixels, from the left of the cell specified by *arg1* and *arg2*. If *arg6* is not supplied, or if a value is supplied that is greater than the cell's width, then a value of `0` is used, placing the image at the cell's left margin.

Example: `ToolBigPict 9 2 22 0 30 0`

This specifies that the picture's upper left corner is to placed in cell B9 (row 9, column 2), 30 pixels down from the top of row 9 and 0 pixels left of the left margin of column B, with the next picture 22 rows farther down and in the same column.

We strongly recommend using the `UseNewImageOffsets` flag. However, you can emulate the pre-v11.0 behavior of the picture placement commands by omitting this flag, resulting in the following behaviors:

- All arguments after the fourth are ignored.
- The first two arguments are interpreted, ***not*** as row and column designators, but instead as *pixel offsets* from the upper left corner of cell A1.
- When spreadsheets with pictures are printed, the images might be mis-aligned. There is a workaround to this problem: (1) `CTRL+select` each picture in the spreadsheet until all are selected; (2) Right-click a selected picture and, in the context menu, choose Size and Properties; (3) In the **Format Picture** menu, open the **Properties** section and choose Move but do not size with cells.

The following table presents a subset of the various picture commands.

Picture Command	*Details*
`BigPictSize` *`<vertPixels> <horzPixels>`*	Size of image when in big tool mode. (See Tool commands.)
`CurPict` *`<row> <column> <skipRows> <skipColumns> <pixelOffsetVert><pixelOffsetHorz>`* (Assumes that the `UseNewImageOffsets` flag is in effect.)	Use this command with the `PictSize` command to fully define the size of the picture and its location. It will output the **current display** (either geometry or the rendered part) at the location specified. If the `UseNewImageOffsets` flag is not in effect, then the first two arguments are taken as pixel offsets from the spreadsheet's upper left corner in cell A1, and the last two arguments are ignored.
`OpERender`	Outputs a picture of rendering *after* a mill or turning operation.
`OpSRender`	Outputs a picture of rendering *before* a mill or turning operation.
`OpToolPict`	Outputs a picture representing the mill or turning tool
`OptPictSize` *`<vertPixels> <horzPixels>`*	Size of image when in big tool mode and the tool has the options flag set.
`PartPict` *`<row> <column> <skipRows>`*	Use this command with the `PictSize` command

Picture Command	*Details*
<skipColumns> <pixelOffsetVert> <pixelOffsetHorz> (Assumes that the UseNewImageOffsets flag is in effect.)	to fully define the size of the picture and its location. It will output the **current picture** of the part (geometry or solid) at the pixel size specified. If the UseNewImageOffsets flag is not in effect, then the first two arguments are taken as pixel offsets from the spreadsheet's upper left corner in cell A1, and the last two arguments are ignored.
PartRender	Outputs the last picture of the part that was rendered by Simulation. (Simulation is not re-run to take a new snapshot.)
PictSize *<width> <height>*	This command specifies the **size of the picture** to be generated in pixels. A typical size is 30 30 for tool pictures and 400 300 for screen pictures.
RenderPict *<row> <column> <skipRows> <skipColumns> <pixelOffsetVert> <pixelOffsetHorz>* (Assumes that the UseNewImageOffsets flag is in effect.)	Use this command with the PictSize command to fully define the size of the picture and its location. It will output a picture of the **current state of the rendered part** at the pixel size specified. If the UseNewImageOffsets flag is not in effect, then the first two arguments are taken as pixel offsets from the spreadsheet's upper left corner in cell A1, and the last two arguments are ignored.
RenderToolSize *<width> <height>*	Rendered Tool Image size
ToolBigPict	Outputs a picture representing the mill or turning tool. Sets mode to big tool.
ToolHolderPict *<row> <column> <skipRows> <skipColumns> <pixelOffsetVert> <pixelOffsetHorz>* (Assumes that the UseNewImageOffsets flag is in effect.)	Use this command with the PictSize command to fully define the size of the picture and its location. It will output the **current picture** of the part (geometry or solid) at the pixel size specified. If the UseNewImageOffsets flag is not in effect, then the first two arguments are taken as pixel offsets from the spreadsheet's upper left corner in cell A1, and the last two arguments are ignored.
ToolOptPict	Inserts the "options" image for a mill tool.
ToolPict	Outputs a picture representing the mill or turning tool.

Miscellaneous Commands

Command	*Details*
Comment *<text>*	This command can be used to enter a comment that will be displayed to the user before proceeding with the reporting (similar to an alert box). It can describe some preparatory steps you must take before generating the report, or describe the report that will be output. The Template file will be scanned and all the comment lines will be displayed at the same time in a single dialog box. You will have the choice of proceeding or canceling the report.

MapString	This command modifies output in a report. Instead of outputting a number from a command (such as 1 for Mill or 2 for Turning), this command will change the number to text.
	The MapString command corresponds with the command which immediately follows. For example, if the following command is OpType (outputs the type of operation), `MapString` will change a `0` to Mill and a `1` to Turning.
	Note that there should be the **same number of text items as there are potential outputs.** from the command.
	`MAPSTRING “MILL” “TURNING” “UNKNOWN”`
	`OPTYPE 1 5 2 0`
	Text to be output can be separated by a single space if it consists only of a single word. The text can also be placed inside quotes, which is useful for multiple associated words. By putting text inside of quotes, more than one word can be output (“Finish Endmill”) without having to delete spaces (FinishEndmill). MapString text can be a combination of quoted and unquoted data (Mill “Mill Turn” Turning).

OnlySelectedOps	Flag when outputting operations in a report: "Should only selected ops be reported?" `0` is off, `1` is on.
OnlySelectedTools	Flag when outputting tools in a report: "Should only selected tools be reported?" `0` is off, `1` is on.
PartProgrammerNotes	Outputs programmer notes found in the Document

Command	*Details*
	Control Dialog.
`RenderOnlySelectedOps`	Flag when simulation of operation pictures is triggered: "Should only selected ops be re-rendered?" `0` is off, `1` is on.
`ShowRenderHolders`	Flag for the report to toggle the display of holders when using the "ToolRenderImage" command. `0` is off, `1` is on, ... non existent is equivalent to the value being set so you would see what is in the tool dialog.
`ToolSldHolderName`	Outputs the name of the solid used as a toolholder

Operation Commands

The Template file must be given commands in order for an Operation Report to be generated. A command specifies what to output, where to place the output, and the incremental location for the data in the next operation. The typical structure of an operation command is:
<Command> <row> <column> <row incremental change> <column incremental change>

Parameter	*Meaning*
<Command>	Command describing the information to extract
<row>	The cell row where the information for the first operation will be output
<column>	The cell column where the information for the first operation will be output
<row inc>	The increment in cell rows for all following operations
<col inc>	The increment in cell columns for all following operations

In the following example, we will create the command to output an operation's number (its location in the Operation List) in the fifth row on the third column of a report.

```
OPNUMBER 5 3 1 0
```

If we were to output an operation's number in the first row on the second column, we would use the following command:

```
OPNUMBER 1 2 1 0
```

In both examples, the subsequent operation would be in the same column but one row down.
A mostly comprehensive list of operation commands may be found below. This list does not include a special class of commands called **OpTool commands**. An OpTool command is an operation command using data from a tool command.
What this means is that any command found in the tool commands list can be applied to the current operation by prepending "Op" to the tool command. This may create a slightly different

result than simply using the tool command: for example, OpToolType for operation 2 will specify the type of tool used in operation 2, while ToolType will specify the type of tool found in tool tile 2. An example of this can be found in the Reporter section of the Plugins tutorial where four Tool commands are applied as operation commands.

Operation Commands for Mill Only

Command	*Definition*	*Output*
OpBossStock	Boss Stock value	value
OpCRC	CRC off or on 0 - 1	"Off" "On"
OpCutTol	Cutting Tolerance	value
OpCutType	Cut Type 0 - 2	see #3
OpCutWidth	cut width of the operation (mill)	value
OpDepth	Cut Depth	value
OpMThdPitch	Thread Pitch in millimeters	value
OpMThdTPI	Thread TPI in inches	value
OpMType	Mill-Only version of OpSubType	see #1
OpNumTools	Total number of operations in the part	number
OpRepeats	Number of Passes	number
OpRotPosAngle	Angle for a rotary operation (Mill Rotate tab)	value
OpRotPosOrRotary	0 = Position, 1 = Rotary Milling	number
OpRotRotaryAng	Incremental angle rotation for dups (see Mill Rotate tab)	value
OpRotRotaryDups	Duplicate number of times (see Mill Rotate tab)	value
OpStep	Z Step	value
OpSurfStock	Surface Stock value from Solids tab	value
OpToolCRCReg	Tool rad compensation register	number
OpToolDiameter	Tool diameter	value
OpTopSurf	Top surface field	value
OpWallDCSide	Swept Shape direction 0 - 1	"DC EP Left" "DC EP Right"
OpWallIslandAng	Island Wall Side Angle value	value
OpWallIslandBot	Island Wall Bottom Fillet value	value
OpWallIslandSwept	Is this an island? 0 - 1	"False" "True"

Command	*Definition*	*Output*
OpWallIslandTop	Island Wall Top Fillet value	value
OpWallPockAng	Pocket Wall Side Angle value	value
OpWallPockBot	Pocket Wall Bottom Fillet value	value
OpWallPockTop	Pocket Wall Top Fillet value	value
OpWallPocSwept	Is this a pocket? 0 - 1	"False" "True"
OpWallRidgeHeight	Ridge height value	value
OpWallShapeStep	Shape Step value	value
OpWallType	The wall type being created 0 - 2	see #4
OpWallUserStep	User D Step value	value
OpZStock	Retreive the “Z Stock” field from Operations	number
Underlined items should be used with the MapString command.		

Operation Commands for Mill and Turning

Command	*Definition*	*Output*
NumOps	Number of Operations	number
OpCFeed	Contour Feed	value
OpComment	Operation comment	text
OpCool	Coolant flag	"Off" "On"
OpCoolantType	Coolant Type	string
OpCoordSys	Op Coordinate System	number
OpCounter	Op Number (count)	number
OpCRCOffset	CRC Offset #	number
OpCSName	Outputs the CS Name used in the operation	value (string)
OpDrillCycleType	Outputs an integer to be used with MapString	see #5
OpEFeed	Entry Feed	value
OpEndTime	End time of op (returns a string in hours, min, sec)	value
OpFeedLength	Feed length of the toolpath for specified operation.	value
OpFlowNum	Returns the flow the op is in	value
OpGroupByFlow	Outputs Operations grouped by flow number	

Command	*Definition*	*Output*
OpLength	(Outputs sum of all operation times in seconds.) *Deprecated.* Use PartCutTime or PartRunTime instead.	value
OpLFinStock	Xr Stock value of a Turning Roughing operation	value
OpLocks	Is Operation Locked?	"Unused" "Used"
OpNumber	Op Number (position in Operation Palette)	number
OpPartName	Name of the Part	text
OpPathCS	Coordinate System of the Operation	number
OpProcess	Process number (Group)	number
OpProcID	Process ID	number
OpProcOp	Process Operation	number
OpRpmVal	Speed RPM	value
OpSpindle	Returns the spindle number the op is working on	value
OpStartTime	Start time of the op (returns a string in hrs, min, sec)	value
OpStock	Stock Tolerance.	value
OpSubType	Operation sub-type 0 - 5	see #1
OpTime	Time for operation	value
OpTlOffset	Tool Offset #	number
OpToolLenReg	Tool length comp register offset	number
OpToolNumber	Tool Number (position in tool palette)	number
OpToolRadius	Tool radius (Tip Radius for Turning)	value
OpToolType	The type of tool used in a given operation	see #2
OpTotalLength	Total toolpath length, including rapids, similar to OpFeedLength	value
OpType	Operation type 0 - 1	"Mill" "Turning"
OpUtilEnd	End Utilities	text
OpUtilStart	Start Utilities	text
OpWorkgroup	Op Workgroup	number
Underlined items should be used with the MapString command.		

Operation Commands for Turning Only

Command	*Definition*	*Output*
OpCSSMode	CSS or RPM mode	"RPM Value" "CSS Value"
OpCSSVal	CSS value	value
OpEntryClr	Entry Clearance	value
OpExitClr	Exit Clearance	value
OpHolderAngle	Holder Angle value as specified in Rotate tab of process	value
OpLDepth	Turning Depth (Roughing)	value
OpLThdPitch	Thread Pitch in millimeters	value
OpLThdTPI	Thread TPI in inches	value
OpLType	Turning Only version of OpSubType	see #1
OpLXStock	Material left on part in X	value
OpLZStock	Material left on part in Z	value
Underlined items should be used with the MapString command.		

Operation Commands for Broaching

Command	*Definition*	*Output*
OpBBFeed	Broaching feedrate	value
OpBDepth	Broaching depth	value
OpBEFeed	Broaching entry feedrate	value
OpBTopSurf	Top surface field	value
OpBType	Broaching-Only version of OpSubType	see #1
OpBXFeed	Broaching exit feedrate	value
Underlined items should be used with the MapString command.		

#1 Mill	"Mill-Drill" "Mill-Contour" "Mill-Rough" "Mill-Thread Mill" "Mill-Surface"

#1 Turning	"Lathe-Contour" "Lathe-Rough" "Lathe-Thread" "Lathe-Drill" "Lathe-Utility"
#1 Broaching	"Broaching-Linear" "Broaching-Rotary"
#2	"REM" "FEM" "BEM" "Shell Mill" "Face Mill" "Key Cutter" "Drill" "Center Drill" "Spot Drill" "Bore" "Tap" "Countersink" "Reamer" "Spot Face" "Fly Cutter" "Single Point Thread Mill" "Back Bore" "Rigid Tap" "Roundover" "2D Form" "3D Form" "Full Profile Thread Mill" "Lollipop" "Convex Tip Mill" "Barrel Mill" "Dovetail" "Inserted Mill" "Custom Mill" "80 Deg Diamond" "55 Deg Diamond" "35 Deg Diamond" "Round" "Square" "Triangle" "Trigon" "Pentagon" "Parallelogram" "Rectangle" "Groove" "Cutoff" "Thread N" "Laydown Thread" "Profile VN" "2D Form" "3D Form" "Utility Tool" "Custom Lathe" "Unsupported"
#3:	"Climb" "Conventional" "Center line"
#4:	"Straight Wall" "Swept Wall" "Taper Wall"
#5:	"Feed In - Rapid Out" "Feed In - Feed Out" "Tap" "Rigid Tap" "Peck, Full Out" "Peck, Chip Breaker" "Feed In - Stop Off Wall - Rapid Out" "Feed In - Stop - Rapid-Out" "Back Bore" "Feed In - Stop - Manual Out" "Feed In - Rapid In - Feed In - Rapid Out" "Rapid In - Rapid Out" "Rough Bore" "Finish Bore" "Custom" "Helix Bore"

OpTool Commands

This is a list of supplemental commands to the Operation Commands. All tool commands can be prepended with the prefix “op” to change the context of the command. The modified command refers to the tool used in the current operation.

OpTool Commands for Mill Only

Command	*Definition*	*Output*
OpToolCorner	Tool corner radius	value
OpToolCRCReg	Tool rad compensation register	number
OpToolDiameter	Tool diameter	value
OpToolDraft	Tool draft angle	value
OpToolFLength	Flute Length	value
OpToolFlutes	Number of flutes	number
OpToolINCDiam	Non-Cutting Diameter of a tool	value
OpToolLeadTip	Tip Depth of a tool	value

Command	*Definition*	*Output*
OpToolLength	Tool Length	value
OpToolShank	Tool Shank diameter	value
OpToolSpin	Tool rotation direction 0 - 2	“CW" "CCW" "Unknown”
Underlined items should be used with the MapString command.		

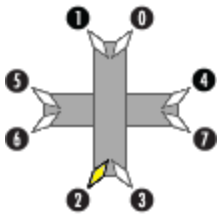
OpTool Commands for Mill and Turning

Command	*Definition*	*Output*
OpToolComment	Comment associated to the tool	text
OpToolCounter	Tool Number (count)	number
OpToolID	Tool ID	number
OpToolLenReg	Tool length comp register offset	number
OpToolMat	ID number for the tool material 1 - 8	see #2
OpToolNumber	Tool Number (position in tool palette)	number
OpToolNumTools	Total number of tools in the part	number
OpToolOrient	Tool Orientation 0 - 8	see #6
OpToolPitchTPI	Pitch/TPI	value
OpToolRadius	Tool radius (Tip Radius for Turning)	value
OpToolThreadTpi	Threads Per Inch	value
OpToolTipAngle	Tool tip angle (Mill and Turning)	value
OpToolType	Type of tool used for this operation 1 - 35	see #1
OpToolUseID	User Tool ID	number
Underlined items should be used with the MapString command.		

OpTool Commands for Turning only

Command	*Definition*	*Output*
OpToolIC	Insert Size	number
OpToolLDRelief	Diameter Relief Angle	value
OpToolLFaceAng	Face Angle (Turning)	value
OpToolLFRelief	Face Relief Angle	value
OpToolLHolder	Turning Tool Holder	number
OpToolLInsertAng	Insert Angle (Turning)	value

Command	*Definition*	*Output*
OpToolLLength	Tool Length (Turning)	value
OpToolLMidAng	Mid Angle	value
OpToolLSideAng	Side Angle (Turning)	value
OpToolLThreadEdgeH	Thread Edge H position	value
OpToolLThreadEdgeV	Thread Edge V position	value
OpToolLThreadFlatLen	Thread Flat Length	value
OpToolLThreadInsertW	Thread Insert Width	value
OpToolLTipLength	Tip Length (Turning)	value
OpToolLTipOffset	Turning tool tip offset	value
OpToolLTipWidth	Tip Width (Turning)	value
OpToolPresetX	Preset X position	value
OpToolPresetZ	Preset Z Position	value
OpToolShiftX	Tool change shift amount	value
OpToolShiftZ	Tool change shift amount	value
OpToolSize	Tool Size	number
OpToolTCShiftH	Tool Shift H position	value
OpToolTCShiftV	Tool Shift V position	value
OpToolThick	Turning Tool Thickness	value
OpToolThreadDir	Thread Directions 0 - 2	see #5
OpToolThreadIDOD	Thread Type, ID or OD 0 - 2	“ID" "OD" "Either”
OpToolThreadStyle	Thread Style 0 - 18	see #3
OpToolThreadType	Thread Type 0 - 6	see #4
OpToolTipRad	Tip Radius	value
OpToolToolPresetH	Preset H position	value
OpToolToolPresetV	Preset V position	value
OpToolTopCornerRad	Top Corner Radius	value
Underlined items should be used with the MapString command.		

#1	"REM" "FEM" "BEM" "Shell Mill" "Face Mill" "Key Cutter" "Drill" "Center Drill" "Spot Drill" "Bore" "Tap" "Countersink" "Reamer" "Spot Face" "Fly Cutter" "Single Point Thread Mill" "Back Bore" "Rigid Tap" "Roundover" "2D Form" "3D Form" "Full Profile Thread Mill" "Lollipop" "Convex Tip Mill" "Barrel Mill" "Dovetail" "Inserted Mill" "Custom Mill" "80 Deg Diamond" "55 Deg Diamond" "35 Deg Diamond" "Round" "Square" "Triangle" "Trigon" "Pentagon" "Parallelogram" "Rectangle" "Groove" "Cutoff" "Thread N" "Laydown Thread" "Profile VN" "2D Form" "3D Form" "Utility Tool" "Custom Lathe" "Unsupported"
#2	"HSS" "HSS TiN Coated" "Carbide Insert" "Carbide Insert Coated" "Carbide Solid" "Diamond" "Other"
#3	"UN" "UNJ" "ISO" "NPT" "Acme" "STACME" "API" "Part60" "Part55" "Whit55" "BSPT" "TR" "RD" "BSUN" "AB_PFL" "AB_PFT" "NTF" "NJF" "Undefined"
#4	"None" "Cresting" "Full" "MultiForm" "Partial" "Positive" "Utility"
#5	"LeftHanded" "RightHanded" "Neither"
#6	

Part Commands

The Template file must be given commands in order for a Part Report to be generated. A command specifies what to output, where to place the output and the incremental location for the data in the next operation. The typical structure of a part command is:
<Command> <row> <column> <row incremental change> <column incremental change>

Parameter	*Meaning*
<Command>	Command describing the information to extract
<row>	The cell row where the information for the first operation will be output
<column>	The cell column where the information for the first operation will be output
<row inc>	The increment in cell rows for all following operations
<col inc>	The increment in cell columns for all following operations

In the following example, we will create the command to output the material alloy group of the part to be machined in the fifth row on the third column of a report.

```
PARTALLOY 5 3 1 0
```

If we were to output the part's alloy in the first row on the second column, we would use the following command:

```
PARTALLOY 1 2 1 0
```

In both examples, any subsequent reference to the alloy would be in the same column but one row down.
A comprehensive list of part commands may be found in the following table.

Part Commands for Mill Only

Command	*Definition*	*Output*
PartMachPos4d	Machine D position	value
PartMachPos4h	Machine H position	value
PartMachPos4v	Machine V position	value
PartMachPos5d	Machine D position	value
PartMachPos5h	Machine H position	value
PartMachPos5v	Machine V position	value
PartMachRange4Xmax	X Max	value
PartMachRange4Xmin	X Min	value
PartMachRange5Xmax	X Max	value
PartMachRange5Xmin	X Min	value
PartMachVec4d	Machine D position	value
PartMachVec4h	Machine H position	value
PartMachVec4v	Machine V position	value
PartMachVec5d	Machine D position	value
PartMachVec5h	Machine H position	value
PartMachVec5v	Machine V position	value

Part Commands for Both Mill and Turning

Command	*Definition*	*Output*
PartAlloy	Material Alloy Group	text
PartComment	Part Comment	text
PartCPX	X CenterPoint	value
PartCutTime	Total run time for the part, output in `seconds / 86400.0` (for easy handling by Excel's "Time" format).	value
PartFamily	Material Family	text
PartFile	Returns full path and filename of the part	text
PartFMddFile	MDD filename	value
PartFMddName	Mdd name (as displayed in the DCD menu)	value
PartFOutput	Post output filename	value
PartFPost	Post name	value
PartHardness	Material Hardness	text
PartMachFlows	Number of flows in the part/machine	number
PartMaxX	Max X Stock Dimension	value
PartMaxY	Max Y Stock Dimension	value
PartMaxZ	Max Z Stock Dimension	value
PartMddFile	MDD filename	text
PartMddName	MDD name	text
PartMinX	Min X Stock Dimension	value
PartMinY	Min Y Stock Dimension	value
PartMinZ	Min Z Stock Dimension	value
PartName	Saved name of the part	text
PartOffsetX	Will output the X part offset as defined in the DCD. Works for cubic and cylindrical stock types.	value
PartOffsetY	As above , Y	value
PartOffsetZ	As above, Z	value
PartOutput	NCF File name	text
PartPost	Post file used	text

Command	*Definition*	*Output*
PartRadiusVal	Stock diameter or radius (depending on whether the DCD uses diameter or radius)	value
PartRunTime	Total run time of the part displayed in hrs:mins:secs	value
PartSMddFile	MDD filename without path or extension	value
PartSMddName	MDD name without path or extension	value
PartSOutput	Output filename without path or extension	value
PartSPost	Post filename without path or extension	value
PartTlChangeX	X Tool Change Position	value
PartTlChangeY	Y Tool Change Position	value
PartToolGroups	Number of tool groups in the part	value
PartTotalTPLen	Sum of all non-rapid toolpath lengths for all operations in the part.	value
PartType	Mill or Turning 0-20	see #1
PartUnit	Metric or Inch	text
Underlined items should be used with the MapString command.		

Part Commands for Turning Only

Command	Definition	Output
PartAutoClear	Value of Auto Clearance	value
PartAutoClrB	Auto Clearance On or Off 0-1	“Off" "On”
PartClrRad	Clearance Radius	value
PartDistFromSpindle	To retrieve "Distance of the face of the stock from the chuck or spindle" from the Document Control dialog for MTM parts.	value
PartMachAxes	Number of Axes	number
PartRadius	Diameter or Radius0-1	“Diameter" "Radius”
Underlined items should be used with the MapString command.		

#1	"Lathe75Shk" "AVertMill" "AHorMill" "4AVertMill" "4AHorMill" "5AVertMill" "5AHorMill" "EDM" "MAT" "Lathe1Shk" "Lathe15Shk" "Lathe5Shk" "VLathe75Shk"

	"VLathe1Shk" "VLathe15Shk" "VLathe5Shk" "MillTurn1Shk" "MillTurn5Shk" "MillTurn75Shk" "MillTurn15Shk" "NoPartType"

Tool and Toolblock Commands

The Template file must be given commands in order for a Tool Report to be generated. The commands specify what to output, where to place the output, and the incremental location for the data in the next tool. The typical structure of a tool command is:
<Command> <row> <column> <row incremental change> <column incremental change>

Parameter	*Meaning*
<Command>	Command describing the information to extract
<row>	The cell row where the information for the first tool will be output
<column>	The cell column where the information for the first tool will be output
<row inc>	The increment in cell rows for all following tools
<col inc>	The increment in cell columns for all following tools

As an example, if we were to output a tool's diameter in the fifth row on the third column, we would use the following command:

```
TOOLDIAM 5 3 1 0
```

If we were to output a tool's diameter in the first row on the second column, we would use the following command:

```
TOOLDIAM 1 2 1 0
```

In both cases, the subsequent tool would be one row down in the same column.
A comprehensive list of tool commands can be found in the following tables.

Tool Commands for Mill Only

Command	*Definition*	*Output*
ToolCorner	Tool Corner Radius	value
ToolCRCReg	Tool rad compensation register	number
ToolDiameter	Tool Diameter	value
ToolDraft	Tool draft angle	value

Command	*Definition*	*Output*
ToolFLength	Flute length	value
ToolFlutes	Number of flutes	number
ToolLeadTip	Tip Depth of a tool	value
ToolLength	Tool length	value
ToolMNeckDia	Neck diameter for stepped or tapered shank neck	value
ToolMNeckLen	Neck length for stepped or tapered shank neck	value
ToolMShankTaperAngle	Taper angle for tapered shank	value
ToolMShankTaperLen	Taper length for tapered shank	value
ToolMTlGageLen	Gage length	value
ToolMTlHolderBack	Length of non-custom toolholder back	number
ToolMTlHolderFront	Length of non-custom toolholder front	number
ToolMTlHolderMaxDia	Maximum diameter of the profile of a non-custom toolholder	number
ToolMTlHolderStr	Block of text in Mill Tool dialog	string
ToolMTlStickOut	Length out of holder	number
ToolNCDiam	Non-Cutting Diameter of a tool	value
ToolNCDiamOpt	Only valid for ball end mills - returns the non-cutting diameter	value
ToolNecRad	Only valid for lollipop tools - returns the neck diameter	value
ToolNumTools	Total number of tools in the part	number
ToolShank	Tool shank diameter	value
ToolShankLen	Only valid for lollipop tools - returns the shank length	value
ToolSpin	Tool rotation direction 0-2	"Forward" "Reverse"
Underlined items should be used with the MapString command.		

Toolblock Commands

Command	*Definition*	*Output*
ToolBlockAttachmentCSName	Name of the CS (coordinate system) for the toolblock's attachment point. Interactively, this is selected in the **Toolblock Attachment Data** dialog.	text
ToolBlockAttachmentCSNum	ID of the CS for the toolblock's attachment point	number
ToolBlockLibrary	Name of the library containing the toolblock	text
ToolBlockName	Name of the toolblock	text
ToolBlockOrientation	Orientation of the toolblock. Interactively, this is selected in the **Toolblock Attachment Data** dialog.	number
ToolBlockShank	Shank size of the toolblock; the text indicates values that the block is suitable for	text
ToolBlockType	Examples include: adapter blocks (turn blocks, drill blocks, boring bar blocks), cutoffs, right angle heads, and live blocks.	text
Underlined items should be used with the MapString command.		

Tool Commands for Mill and Turning

Command	*Definition*	*Output*
OnlyUsedTools	Only outputs Tools if they have been used by Operations	
ToolBAngle	Will always return the B Angle of the tool, `0.0` if the ability to change the B Angle is not available for the part.	value
ToolComment	Comment associated with the tool	text
ToolCounter	Tool number (count)	number
ToolFluteOrTPI	To specify if using Flutes, Pitch, or TPI.	"# Flutes" "Pitch" "TPI"
ToolGroupByTG	Outputs Tools grouped by Tool Group number	

Command	*Definition*	*Output*
ToolHasSubPos	Uses a MapString - Only 2 valid values 0 and 1	"No" "Yes"
ToolID	Tool ID	number
ToolLenReg	Tool length comp register offset	number
ToolMat	ID number for the tool material `1 - 8`	see #2
ToolNumber	Tool Number (position in tool palette)	number
ToolNumTools	Total number of tools	number
ToolOrient	Tool orientation `0 - 8`	see #6
ToolPitchTPI	Pitch (mm) or TPI (inches)	value
ToolRadius	Tool radius (Tip Radius for Turning)	value
ToolRenderedImage	As ToolBigPict but uses the rendered tool image from the tool dialog	picture
ToolSpindle	WP tool is cutting on	value
ToolSubPos	Tool subposition	value
ToolSubPosVal	Tool subposition defined in the tool or in the MDD	value
ToolTGNumber	Tool Group number	number
ToolTGPosition	Position in the tool group	value
ToolTipAngle	Tool tip angle (Mill and Turning)	value
ToolType	List of tools used in a part `1 - 35`	see #1
ToolTypeBool	Returns `0` for mill, or`1` for turning	number
ToolUnit	Unites of measure: `0`=metric, or `1`=inch	number
ToolUseID	User Tool ID	number
Underlined items should be used with the MapString command.		

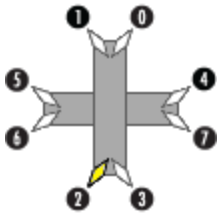
Tool Commands for Turning Only

Command	*Definition*	*Output*
ToolCutSide	Get the value of a Turning Tool Cut X+/Forward. 1 = Cut X+/Forward, 0 = Cut X-/Reverse	number
ToolFaceAng	Face angle	value
ToolIC	Insert size	value

Command	*Definition*	*Output*
ToolInsertUp	Returns the value of the "Insert Face Up" check box of a turning tool	value
ToolLDRelief	Diameter relief Angle	value
ToolLFRelief	Face Relief angle	value
ToolLHolder	Turning Toolholder	number
ToolLHolderLen	Holder length for a boring bar, toolholder, or ATC toolholder	value
ToolLInsertAng	Insert angle	value
ToolLLength	Tool length	value
ToolLMidAng	Mid angle	value
ToolLSideAng	Side angle	value
ToolLThreadEdgeH	Thread Edge H position	value
ToolLThreadEdgeV	Thread Edge V position	value
ToolLThreadFlatLen	Thread flat length	value
ToolLThreadInsertW	Thread insert width	value
ToolLTipLength	Tip length	value
ToolLTipOffset	Turning tool tip offset	value
ToolLTipWidth	Tip width	value
ToolPresetX	Preset X position	value
ToolPresetZ	Preset Z position	value
ToolShiftX	Tool change shift amount	value
ToolShiftZ	Tool change shift amount	value
ToolSize	Tool size	number
ToolTCShiftH	Tool Shift H position	value
ToolTCShiftV	Tool Shift H position	value
ToolThick	Turning tool thickness	value
ToolThreadDir	Thread direction 0-2	see #5
ToolThreadIDOD	Thread Type, 0-2	"ID" "OD" "Either"
ToolThreadStyle	Front end type of tool holder o-18	see #3
ToolThreadType	Thread type 0-6	see #4

Command	*Definition*	*Output*
ToolTipRad	Tip radius	value
ToolToolPresetH	Preset H position	value
ToolToolPresetV	Preset V position	value
ToolTopCornerRad	Top corner Radius	value
Underlined items should be used with the MapString command.		

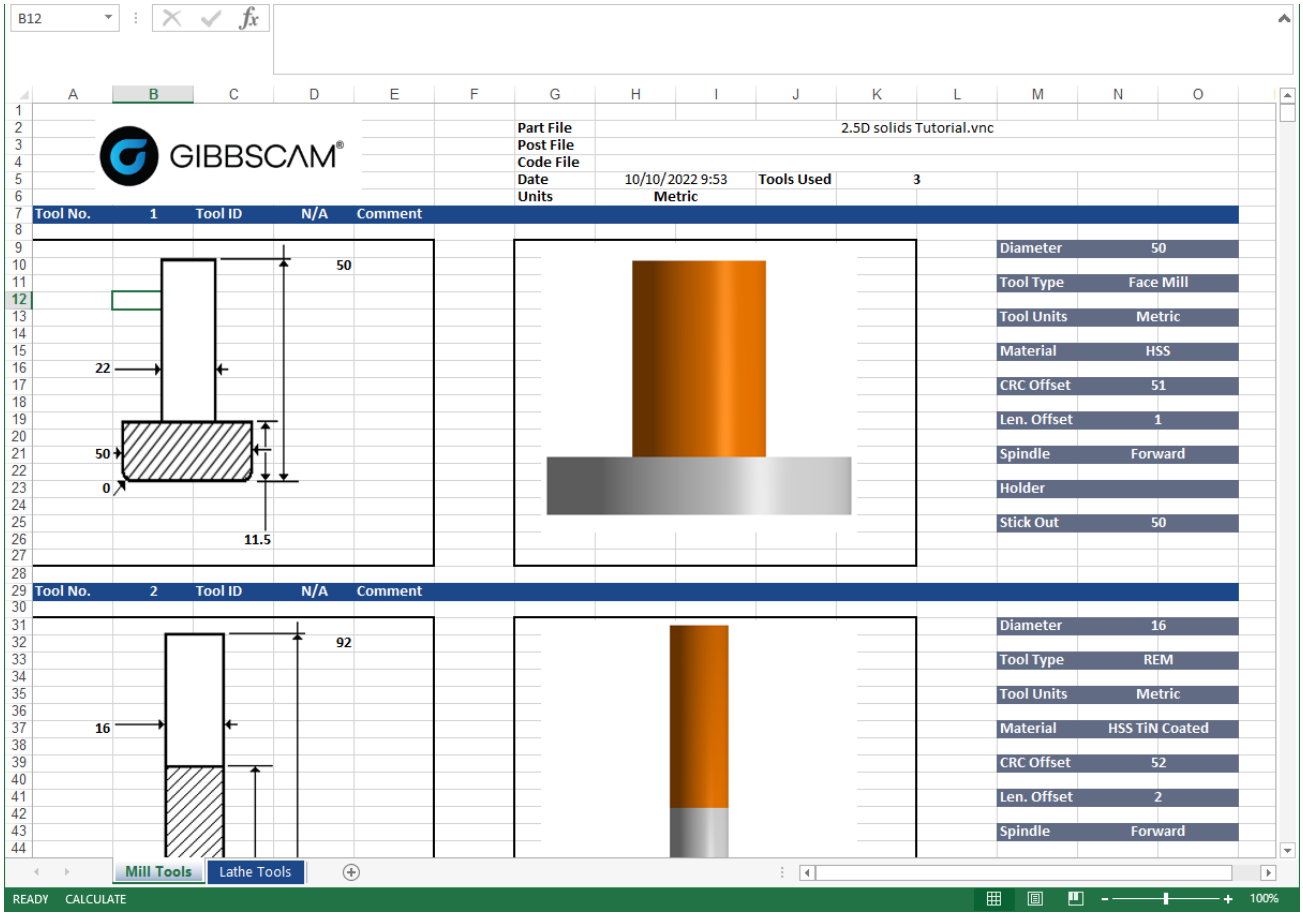
#1:	"REM" "FEM" "BEM" "Shell Mill" "Face Mill" "Key Cutter" "Drill" "Center Drill" "Spot Drill" "Bore" "Tap" "Countersink" "Reamer" "Spot Face" "Fly Cutter" "Single Point Thread Mill" "Back Bore" "Rigid Tap" "Roundover" "2D Form" "3D Form" "Full Profile Thread Mill" "Lollipop" "Convex Tip Mill" "Barrel Mill" "Dovetail" "Inserted Mill" "Custom Mill" "Generic Laser" "Generic Probe" "Tangent Mill" "Tapered Barrel" "Custom Mill" "80 Deg Diamond" "55 Deg Diamond" "35 Deg Diamond" "Round" "Square" "Triangle" "Trigon" "Pentagon" "Parallelogram" "Rectangle" "Groove" "Cutoff" "Thread N" "Laydown Thread"

	"Profile VN" "2D Form" "3D Form" "Utility Tool" "Custom Turning" "Unsupported"
#2	"???" HSS "HSS TiN Coated" "Carbide Insert" "Carbide Insert, Coated" "Carbide Solid" Diamond Other
#3	"UN" "UNJ" "ISO" "NPT" "Acme" "STACME" "API" "Part60" "Part55" "Whit55" "BSPT" "TR" "RD" "BSUN" "AB_PFL" "AB_ PFT" "NTF" "NJF" "Undefined"
#4	"None" "Cresting" "Full" "MultiForm" "Partial" "Positive" "Utility"
#5	"LeftHanded" "RightHanded" "Neither"
#6	

Tool Commands for Broaching Only

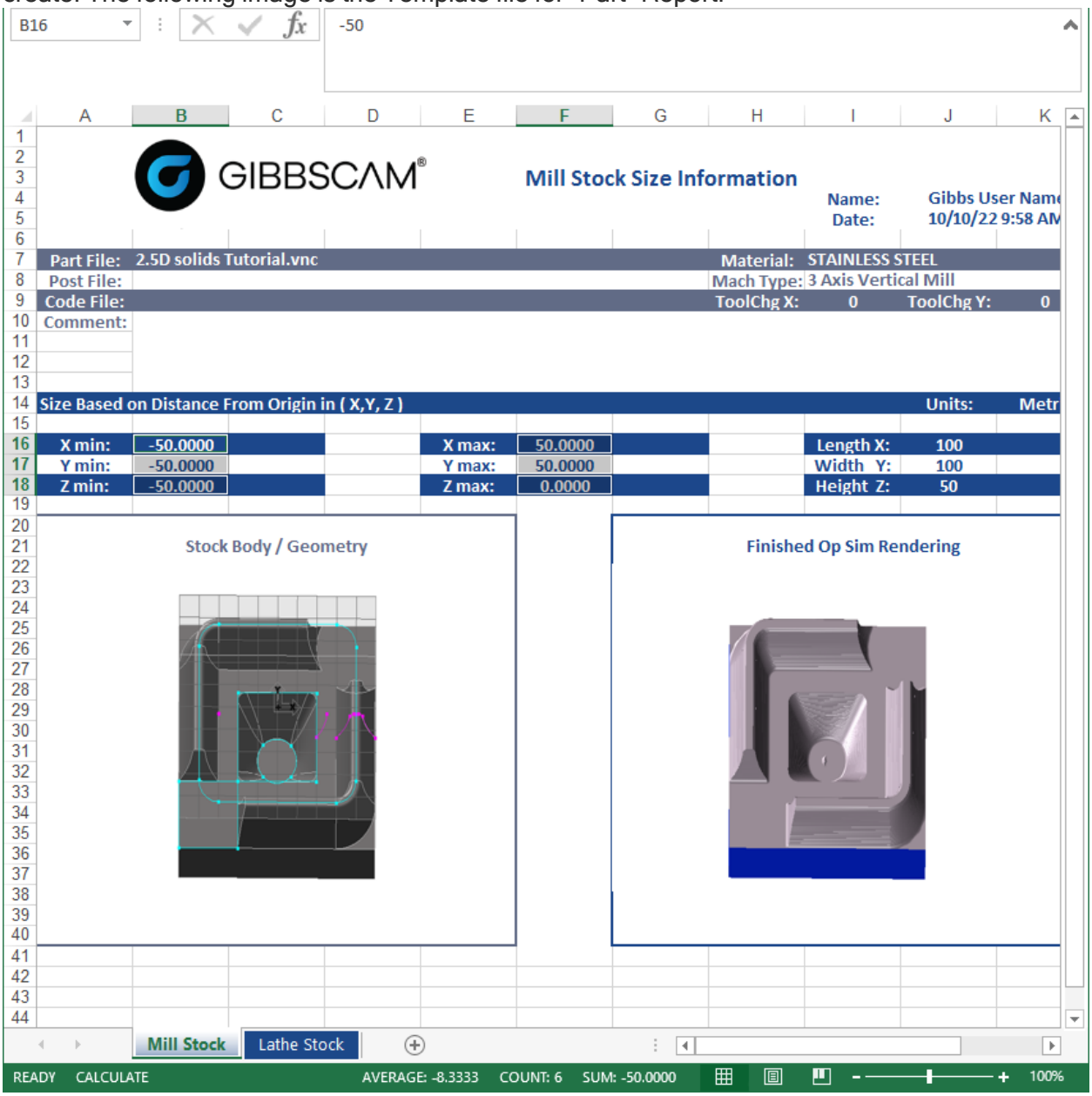
Command	*Definition*
ToolBigToolBTLinChamferDia	Big broaching tool, linear chamfer diameter
ToolBigToolBTLinChamferHeight	Big broaching tool, linear chamfer height
ToolBigToolBTLinChamferSide	Big broaching tool, linear chamfer side length
ToolBigToolBTLinChamferWidth	Big broaching tool, linear chamfer width
ToolBigToolBTLinCornerAngle	Big broaching tool, linear corner included angle
ToolBigToolBTLinCornerHeight	Big broaching tool, linear corner height
ToolBigToolBTLinCornerSide	Big broaching tool, linear corner side length
ToolBigToolBTLinKeywayDia	Big broaching tool, linear keyway diameter
ToolBigToolBTLinKeywayHeight	Big broaching tool, linear keyway height
ToolBigToolBTLinKeywayWidth	Big broaching tool, linear keyway width
ToolBigToolBTRotRectHeight	Big broaching tool, rotary rectangle height
ToolBigToolBTRotRectWidth	Big broaching tool, rotary rectangle width
ToolBTCornerRad	Broaching tool, corner radius (for hex, double hex, keyway, and rectangle tools)
ToolBTCutLen	Broaching tool, cutting length (shown in side view)
ToolBTDiameter	Broaching tool, diameter or nominal diameter (for form tools)
ToolBTEdge	Broaching tool, tool edge (for linear corner tools)
ToolBTFlats	Broaching tool, distance across flats (for hexagonal and double-hexagonal tools)
ToolBTHeight	Broaching tool, tool height (for linear keyway, chamfer, and corner tools and for rotary rectangle tools)
ToolBTIncAng	Broaching tool, included angle (for linear corner tools)
ToolBTSetupDeg	Broaching tool, setup angle in degrees; CCW is positive
ToolBTShankDia	Broaching tool, shank diameter (shown in side view)
ToolBTSize	Broaching tool, tool size (for linear and rotary hexalobular tools)

Command	*Definition*
ToolBTTipOffset	Broaching tool, tip offset distance (for form tools)
ToolBTTotalLen	Broaching tool, total length (shown in side view)
ToolBTWidth	Broaching tool, tool width (for linear keyway, linear chamfer, and rotary rectangle tools)
ToolBTLabels	Follows a list of text labels to be used for broaching values that share the same cells in the report but are used for different parameters according to broaching tool type. This list also includes the labels for angles to show the direction. ToolBTLabels expects seven values. If this command is not used, then the following defaults will be used: `"A-Flats" "Nom. Dia" "Width" "Height" "Size" "° CW" "° CCW"`
Underlined items should be used with the MapString command.	



Using and Customizing Reports

The basic custom reports provided with the system merely serve as examples of what can be done. Many users will want more specific reports, and Reporter is designed to meet this need. Users can create their own Model and Template files.
The Template file consists of text commands that specify the data that is to be output and where the output goes. A separate Template file must be generated for each custom report you wish to create. The following image is the Template file for "Part" Report.



The Model files are Excel-compatible spreadsheets (`.xlsx`) that form the template into which the report data will be inserted. The Reporter section of the *Plugins Tutorial* will take you through a basic report setup (but is not designed to teach Excel and page layout).

GIBBSCAM®

Mill Operation Summary

Total Run Time: 0:21:59

Name:	Gibbs User Name
Part File:	2.5D solids Tutorial.vnc
Date:	10/10/22 10:02 AM
Units:	Metric

Start Condition									End Condition
	CRC	Off	Workgroup	1	Coordinate	1	Coolant	On	
	Operation	1	Group #	2	Entry Feed	1478	Tool Dia.	50	
	Tool #	1	Cut Depth	-5	Con. Feed	1478	Op. Type	Rough	
	DOFF #	51	Step Depth	5	RPM	1164	Tool Type	FaceMill	
	LOFF #	1	Surf. Stock		TP Length	619.5000	Time	0:00:25	
	# Cuts	1	Poc. Stock	2	Isl. Stock	2	Utility Data	Unused	

Start Condition									End Condition
	CRC	Off	Workgroup	1	Coordinate	1	Coolant	On	
	Operation	2	Group #	4	Entry Feed	763	Tool Dia.	16	
	Tool #	2	Cut Depth	-45	Con. Feed	763	Op. Type	Rough	
	DOFF #	52	Step Depth	6.666667	RPM	1668	Tool Type	REM	
	LOFF #	2	Surf. Stock		TP Length	##########	Time	0:03:32	
	# Cuts	1	Poc. Stock	2	Isl. Stock	2	Utility Data	Unused	

Start Condition									End Condition
	CRC	Off	Workgroup	1	Coordinate	1	Coolant	On	
	Operation	3	Group #	4	Entry Feed	763	Tool Dia.	16	
	Tool #	2	Cut Depth	-45	Con. Feed	763	Op. Type	Rough	
	DOFF #	52	Step Depth	6.666667	RPM	1668	Tool Type	REM	
	LOFF #	2	Surf. Stock		TP Length	466.3290	Time	0:00:37	
	# Cuts	1	Poc. Stock	2	Isl. Stock	2	Utility Data	Unused	

Start Condition									End Condition
	CRC	On	Workgroup	1	Coordinate	1	Coolant	On	
	Operation	4	Group #	6	Entry Feed	1183	Tool Dia.	10	
	Tool #	3	Cut Depth	-25	Con. Feed	1183	Op. Type	Contour	
	DOFF #	53	Step Depth	0.689655	RPM	7762	Tool Type	FEM	
	LOFF #	3	Surf. Stock		TP Length	##########	Time	0:07:29	
	# Cuts	1	Poc. Stock	0	Isl. Stock		Utility Data	Unused	

Start Condition									End Condition
	CRC	On	Workgroup	1	Coordinate	1	Coolant	On	
	Operation	5	Group #	6	Entry Feed	1183	Tool Dia.	10	
	Tool #	3	Cut Depth	-25	Con. Feed	1183	Op. Type	Contour	
	DOFF #	53	Step Depth	0.689655	RPM	7762	Tool Type	FEM	
	LOFF #	3	Surf. Stock		TP Length	##########	Time	0:07:29	
	# Cuts	1	Poc. Stock	0	Isl. Stock		Utility Data	Unused	

Mill Ops

Occasionally, an Operation Report will mistakenly place Mill information on the report's Turning sheet. To fix this, redo the operation that is being incorrectly reported. Just click the Redo button and run the report again. Note that selecting Redo All Ops does not fix the error.

Conventions

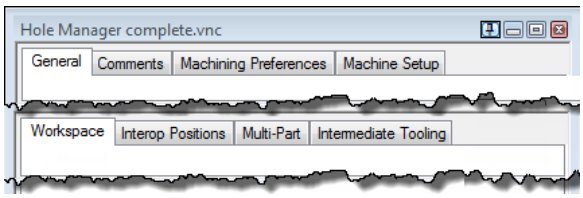
GibbsCAM documentation uses two special fonts to represent `screen text` and `keystrokes or mouse actions`. Other conventions in text and graphics are used to allow quick skimming, to suppress irrelevancy, or to indicate links.

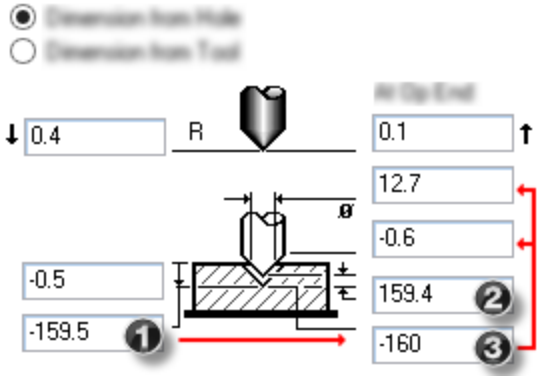
Text

`Screen text`. Text with `this appearance` indicates text that appears in GibbsCAM or on your monitor. Typically this is a button or text for a dialog.
`Keystroke/Mouse`. Text with `this appearance` indicates a keystroke or mouse action, such as `Ctrl+C` or `right-click`.
`Code`. Text with `this appearance` indicates computer code, such as lines in a macro or a block of G-code.

Graphics

Some graphics are altered so as to de-emphasize irrelevant information. A “torn” edge signifies an intentional omission. Portions of a graphic might be blurred or dimmed to highlight the item being discussed. For example:





Annotations on a graphic are usually numbered callouts (as seen above), and sometimes include green circles, arrows, or tie-lines to focus attention on a particular portion of the graphic.

Links to Online Resources

Please contact your reseller for support.

Link	URL	Action / Description
Go	http://www.GibbsCAM.com	Opens the main website for GibbsCAM.
Go	https://online.gibbscam.com	Opens Gibbs Online page to download GibbsCAM and all supported material.

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