

The CAM User Interface Guide

RhinoCAM 2025

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MecSoft Corporation

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Quick Start



MILL Module 2025

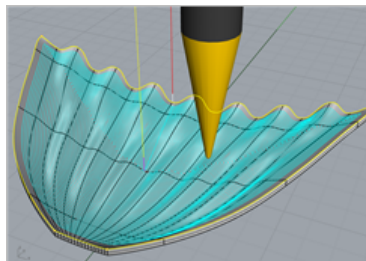
[Prefer Printed Documentation? Check Here!](#)

[What's New](#) | [Quick Start Play List](#)

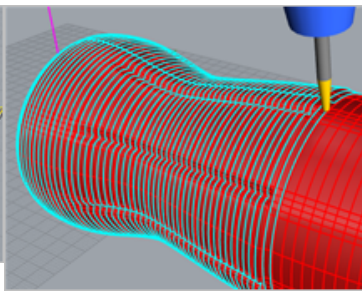
[Quick Start Guides](#) for each [RhinoCAM](#) module are available in both PDF and Video format. Refer to the following information to access these resources:



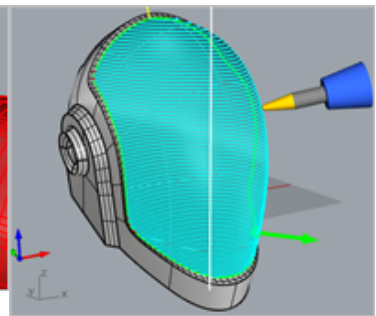
RhinoCAM Supports Sub-D Models in Rhino



3 Axis Machining with Rhino 7 Sub-D



4 Axis Machining with Rhino 7 Sub-D



5 Axis Machining with Rhino 7 Sub-D



What's New!

[What's New in RhinoCAM 2025](#)



The Complete Quick Start Video Play List

[Here is a link to the complete 2025 Video Play List](#)



How to Access the Quick Start Guide Documents

To help you quickly get started in working with each module, select one of the Help buttons located on the [RhinoCAM Learning Resources](#) dialog.

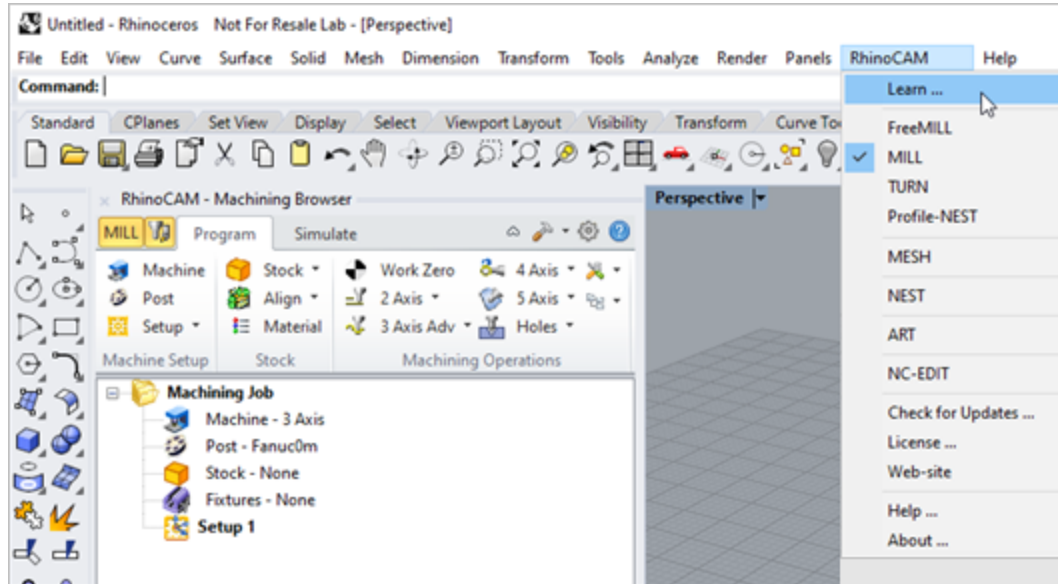
You will find:

- Quick Start Guides
- What's New documents

- Online Help links

The [Quick Start Guides](#) will help you step through an example tutorial which will illustrate how to use the module. To access the [Learning Resources](#) dialog:

1. From the [Rhino Main Menu](#), drop down the Main menu and select [Learn ...](#)

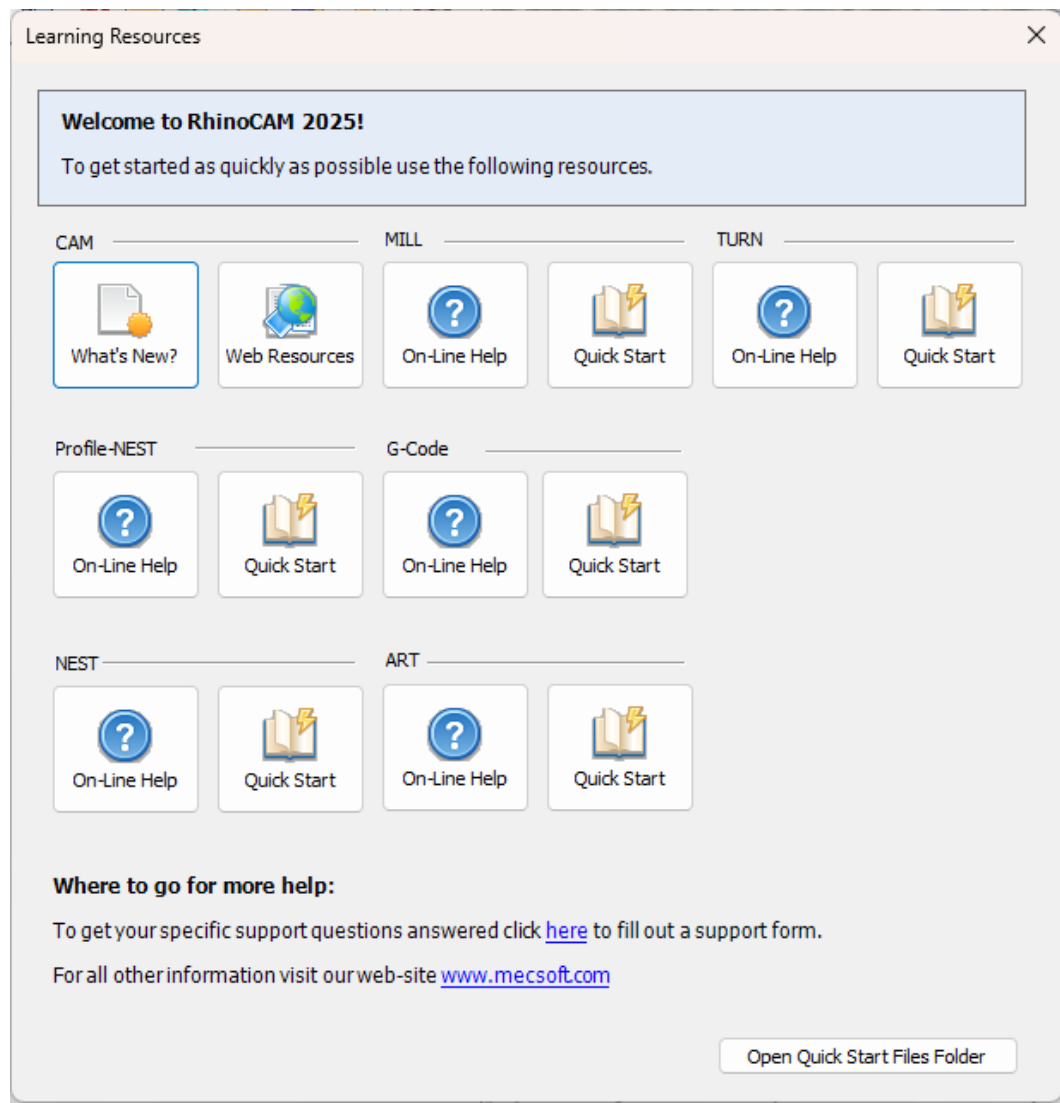


To access the Learning Resources dialog in RhinoCAM

2. Select a document from the [Learning Resources](#) dialog to get started using the module of your choice.



You can also select the [Open Quick Start Files Folder](#) button located at the bottom of the dialog to open the [Quick Start](#) folder where the source files (start and completed versions) are located.



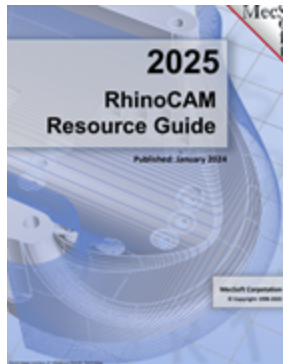
Learning Resources Dialog

Resource Guide

Download this PDF Guide for a list of the available [RhinoCAM Resources](#).



2025 RhinoCAM Resource Guide



The 2025 RhinoCAM Resource Guide!

18 Pages

Lists PDF downloads and Online resources including [Quick Start Guides](#), [Reference Guides](#), [Exercise Guides](#), [Tutorials](#) and [More](#).

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[What's New](#) | [Quick Start Play List](#)

About this Guide

RHINO CAM₂₀₂₅



Welcome to the [CAM User Interface Guide](#)! You can use this guide as a quick reference to the following automation features you will find in [RhinoCAM](#).

MILL Browsers

Learn about each tab and function on the [Machining Browser](#) and the [Machining Objects Browser](#) in the [MILL](#) module.

TURN Browsers

Learn about each tab and function on the [Machining Browser](#) and the [Machining Objects Browser](#) in the [TURN](#) module.

CAM Preferences

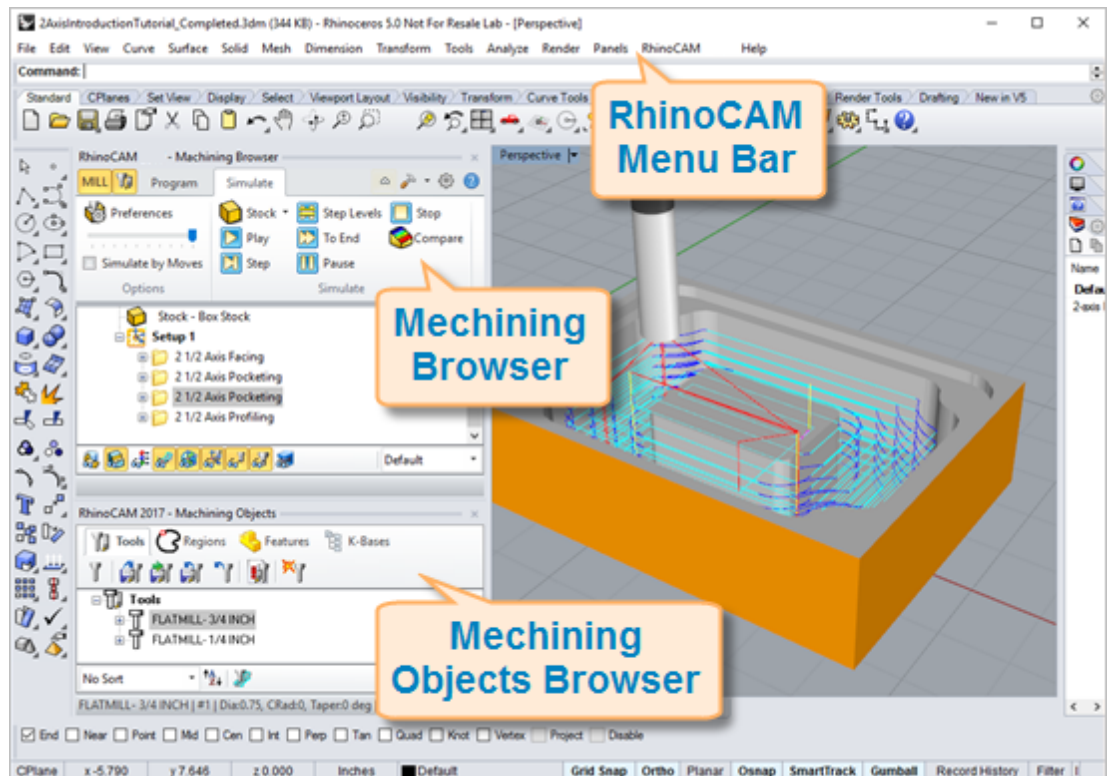
Learn about the [CAM Preferences](#) dialog and how each of these preferences can help you use [RhinoCAM](#) more efficiently.

User Interface

The **RhinoCAM MILL** module adheres to the **Windows** standard for user interface design and integrated into the **Rhino** screen seamlessly.

MILL Module Displayed

A screen shot of the **RhinoCAM MILL** module running inside of **Rhino** is shown below:



The MILL module running inside of Rhino

The RhinoCAM MILL Interface

There are 3 main interface objects created when **MILL** module is loaded.

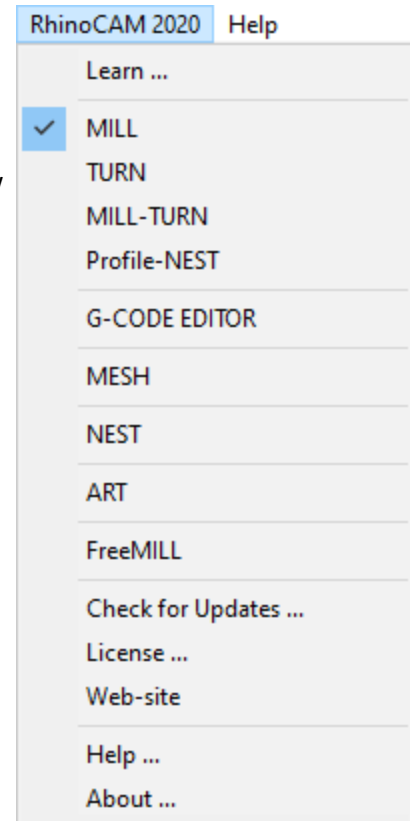
1. **RhinoCAM** menu bar entry under **Rhino** menu bar
2. **Machining Browser (Mops)** window
3. **Machining Objects (Mobs) Browser** window

RhinoCAM Menu Item

When [RhinoCAM](#) is loaded it will add a menu bar item, titled [RhinoCAM](#) to the main [Rhino](#) menu bar. Selecting this menu bar item will create a drop down menu as shown below.

To run the [MILL](#) module, select [MILL](#) from the [RhinoCAM 2025](#) drop down menu.

Selecting [MILL](#) toggles the display of the [Milling Browser](#) window from the [Rhino](#) user interface . If the [FreeMILL](#), [TURN](#), [NEST](#) or [ART Browser](#) is currently open selecting this will switch the display to the [MILL Browser](#).



RhinoCAM menu Item

MILL Browsers

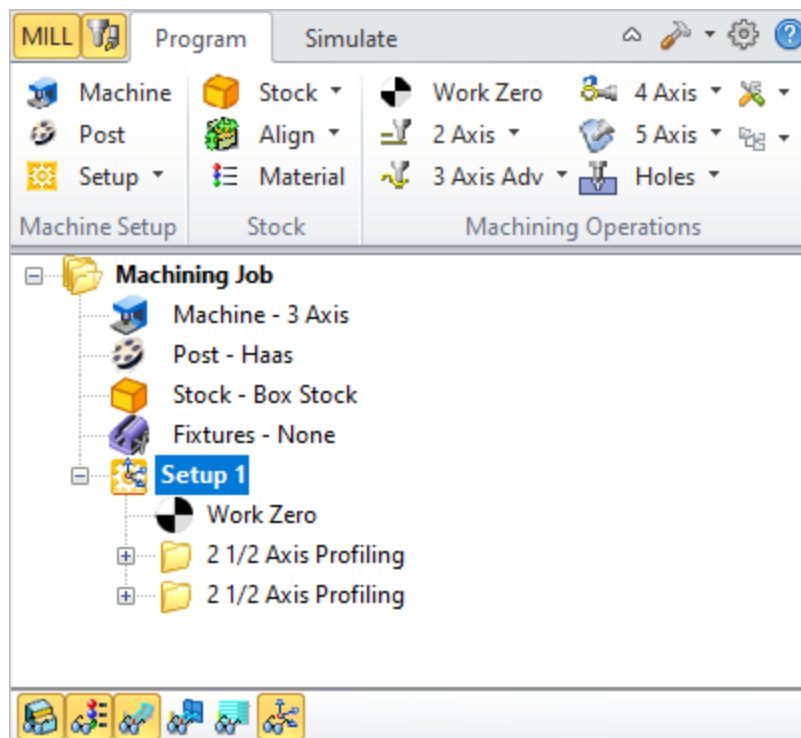
The [MILL Browser](#) is a dock-able window that allows management of various entities or objects that can be created in the [RhinoCAM MILL](#) module. There are 2 browsers in [RhinoCAM](#) – [Machining Operations Browser \(Mops\)](#) and [Machining Objects Browser \(Mobs\)](#).

6.1 Machining Browser

The [Machining Browser](#), sometimes called the [Machining Operations \(Mops\) Browser](#), has two main modes of operation represented by tabs at the top of the window. These are [Program](#) and [Simulate](#). Each tabbed view also incorporates a ribbon toolbar at the top. These toolbars group all of the functions associated with the type of object in the tab.

Note: See [Right-Click Commands](#) for a complete list of all right-click commands available from the [Machining Operations \(Mops\) Browser](#) and the [Machining Objects \(Mobs\) Browser](#).

The Machining Operations (Mops) Browser

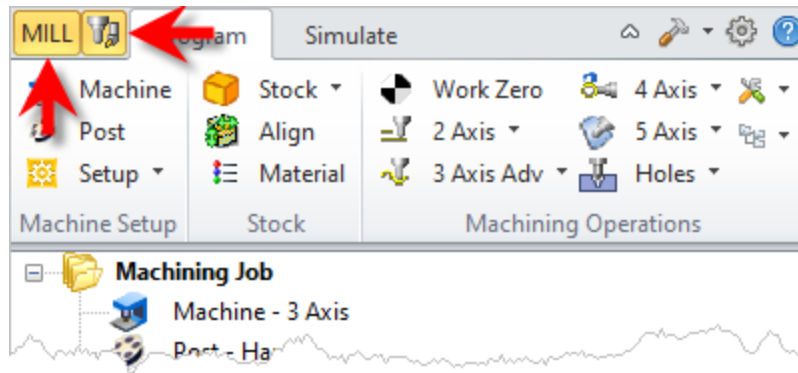


The Machining Operations (Mops) Browser, Program Tab

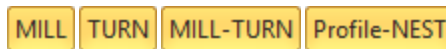
6.1.1 Browser Toggle Tabs

Tabs available on the [Machining Browser](#) that allow you to toggle the display of both the [Machining Browser](#) and the [Machining Objects Browser](#).

Browser Toggle Tabs



Locating the Browser Toggle Tabs



Selecting this tab toggles between the [MILL](#), [TURN](#), [MILL-TURN](#) and [Profile-NEST](#) Machining Browser.



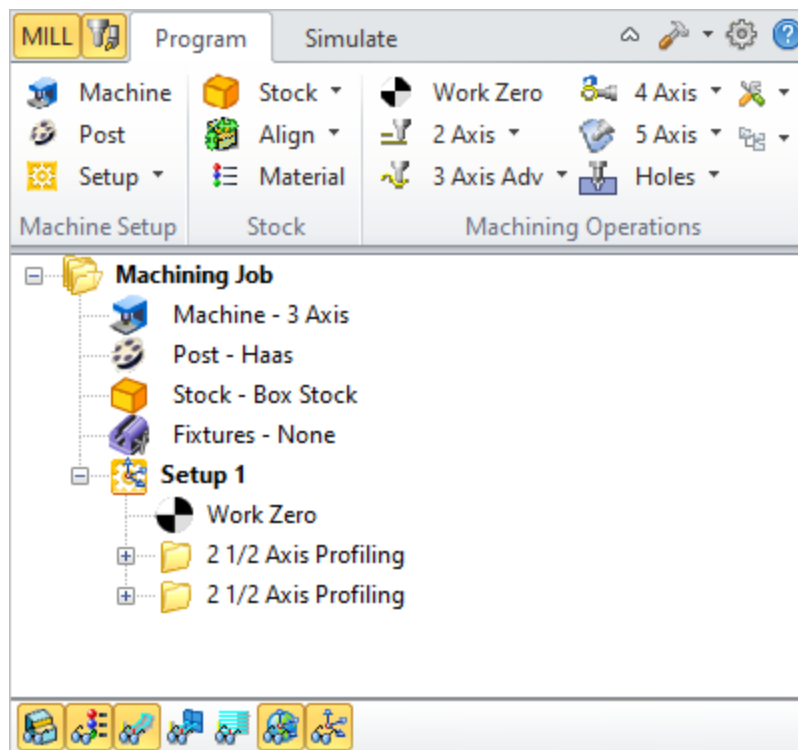
Select this tab to toggle the display of the [Machining Objects Browser](#).

6.1.2 Program Tab

Selecting the [Program](#) tab in the [Mops Browser](#) provides access for specifying [Machine](#), [Stock](#) and the definition of [Machining Operations](#).

Note: See [Right-Click Commands](#) for a complete list of all right-click commands available from the [Machining Operations \(Mops\) Browser](#) and the [Machining Objects \(Mobs\) Browser](#).



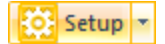
The Machining Operations (Mops) Browser, Program Tab



The Machining Operations (MOPs) Browser, Program Tab

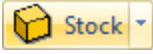
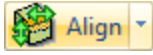



Machine Setup Pane

Summary	Available Configuration				
	Xpress (XPR)	Standard (STD)	Expert (EXP)	Professional (PRO)	Premium (PRE)
Machine Setup Pane					
 Machine	✓	✓	✓	✓	✓
Machine Tool Setup: Sets the Machine for 2½ axis, 3 axis, 4 axis and 5 axis operations.					
 Post	✓	✓	✓	✓	✓
Set Post-Processor Options: Allows you to set the Current Post Processor, posted file naming conventions, posted file extension, program to display the posted file.					
 Setup			✓	✓	✓
Create Setup Operations: Sets the Coordinate System for Machining. The orientation of the part can be set using Orient Part, orientation of the Coordinate System can be defined under Set CSYS Setup for 3+2 machining and Rotate Table Setup for 4 axis table rotate operations.					



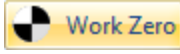
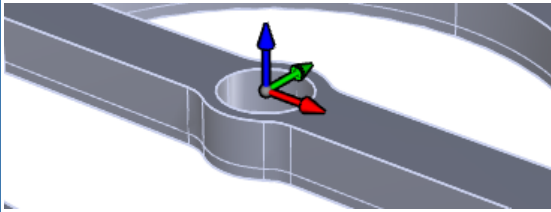
Stock Pane

Summary	Available Configuration				
	Xpress (XPR)	Standard (STD)	Expert (EXP)	Professional (PRO)	Premium (PRE)
Stock Pane					
	✓	✓	✓	✓	✓
	Create Stock Model: Allows you to create Stock geometry. User can also delete a Stock geometry by selecting Delete Stock.				
	✓	✓	✓	✓	✓
	Align: Allows you to Align stock model to part and locate WCS with respect to Part or Stock . This function is especially useful when the part model and the stock model are created without regard to their respective positional locations.				
	✓	✓	✓	✓	✓
	Define Stock Material: Allows you to select a material from the material list.				



Machining Operations Pane

This section allows you to create machining operations. **MILL** module allows you to create multiple machining operations in a part file. This is a powerful feature that allows you to create an entire sequence of machining operations that is necessary to create the part model from the stock model. This set of operations can additionally be archived with the part file and retrieved at a later time with no loss of information.

Summary	Available Configuration				
	Xpress (XPR)	Standard (STD)	Expert (EXP)	Professional (PRO)	Premium (PRE)
Machining Operations Pane					
	✓	✓	✓	✓	✓
	Set Current Work Coordinate Zero: Allows you to set the work Coordinate zero (Origin) for the part being programmed. The Work Zero triad looks like this: 				








	✓	✓	✓	✓	✓
	Create 2 ½ Axis Milling Operations : Provides access to 2 ½ Axis Machining Methods.				
	✓	✓	✓	✓	✓
	Create 3 Axis Milling Operations : Provides access to 3 Axis Machining Methods				
				✓	✓
	Create 3 Axis Advanced Milling Operations : Provides access to 3 Axis Machining Methods.				
			✓	✓	✓
	Create 4 Axis Milling Operations : Provides access to 4 Axis Machining Methods				
					✓
	Create 5 Axis Milling Operations : Provides access to 5 Axis Machining Methods.				
	✓	✓	✓	✓	✓
	Holes : Provides access to Drilling , Tapping , Boring and Reverse Boring Machining Methods.				
		✓	✓	✓	✓
	Create Miscellaneous Operations : Allows you to create Machining Operation Sets , Machine Control Cycles , Fixture Offset and XY Instance operations.				
		✓	✓	✓	✓
	Knowledge Base Operations : Allows saving and loading of Machining operations to and from a knowledge base.				
	✓	✓	✓	✓	✓
	Utilities : Provides access to G Code Editor and Post Process Generator .				
	✓	✓	✓	✓	✓
	Set CAM Preferences : Provides access to specify Color , User Interface , Machining , Simulation and Feeds Speeds Preferences.				
	✓	✓	✓	✓	✓
	Minimize/Maximize Ribbon bar : Minimizes & Maximizes the ribbon bar.				

	✓	✓	✓	✓	✓
	Display Help Content: Open On-line Help document.				



Display Toggle Toolbar

This toolbar is located at the base of the [Machining Browser](#) and has the following controls:

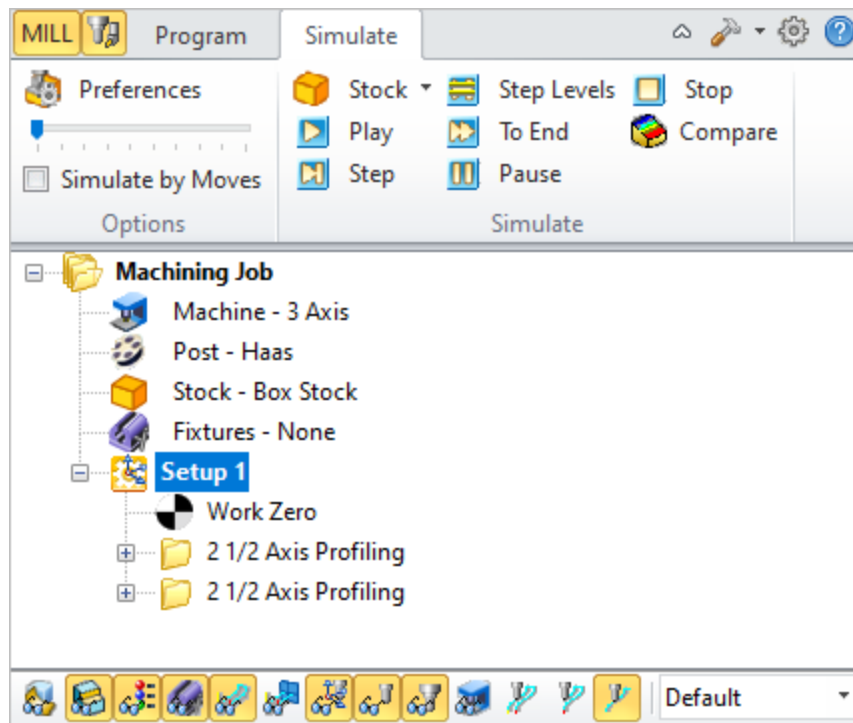
Summary	Available Configuration				
	Xpress (XPR)	Standard (STD)	Expert (EXP)	Professional (PRO)	Premium (PRE)
	✓	✓	✓	✓	✓
	Stock Model Visibility: Turn on/off stock model				
	✓	✓	✓	✓	✓
	Material Texture Visibility: Turn on/off material texture visibility				
	✓	✓	✓	✓	✓
	Toolpath Visibility: Turn on/off toolpath display				
	✓	✓	✓	✓	✓
	Hidden Toolpath Visibility: Turn the hidden portions of toolpaths on/off.				
	✓	✓	✓	✓	✓
	Display Toolpath Levels: Displays tool path by Z levels				
	✓	✓	✓	✓	✓
	World CSYS Visibility: Turns on/off of World Coordinate System display.				
	✓	✓	✓	✓	✓
	Machine CSYS Visibility: Turns on/off of Machine Coordinate System display.				

6.1.3 Simulate Tab

Select the [Simulate](#) tab to run cut material simulations and toolpath animations. This tab also provides controls to vary the simulation speed, set the simulation preferences and toggle the display state of various simulation components.

Note: See [Right-Click Commands](#) for a complete list of all right-click commands available from the [Machining Operations \(Mops\) Browser](#) and the [Machining Objects \(Mobs\) Browser](#).

Machining Operations Browser, Simulate Tab




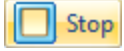

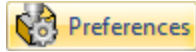
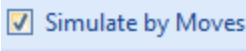


The Machining Operations (MOps) Browser, Simulate Tab

Simulate Tab Functions

The following controls are available on the [Simulate](#) tab:




Summary	Available Configuration				
	Xpress (XPR)	Standard (STD)	Expert (EXP)	Professional (PRO)	Premium (PRE)
Stock	✓	✓	✓	✓	✓
Create Stock Model: Allows you to create Stock geometry. You can also delete a Stock geometry by selecting Delete Stock .					
Play	✓	✓	✓	✓	✓
Perform Toolpath Simulation or Animation: Allows you to perform cut material simulation with tool animation.					
Step	✓	✓	✓	✓	✓
Simulate Next Toolpath Block: Simulation is performed in steps as defined by the display interval in the simulation preferences.					
Step Levels	✓	✓	✓	✓	✓
Simulate Next Toolpath Z Levels: Simulation is performed in					

	separate Z levels.				
	✓	✓	✓	✓	✓
	Simulate to End: Simulation is performed without updating the display until the end of the toolpath.				
	✓	✓	✓	✓	✓
	Pause Toolpath Simulation: Pause/Stop the simulation.				
			✓	✓	✓
	Part Stock Compare*: Compare the simulated model with the part geometry. The part geometry must contain surface/solid/mesh geometry.				
	✓	✓	✓	✓	✓
	Stop Toolpath Simulation: Exits Simulation Mode. Pause simulation before exiting simulation mode.				
	✓	✓	✓	✓	✓
	Simulation Speed: Varies simulation speed				
	✓	✓	✓	✓	✓
	Set Simulation Preferences: Provides access to simulation preferences.				
	✓	✓	✓	✓	✓
	Simulate by Moves: Switches from Simulate by Distance to Simulate by Motions .				

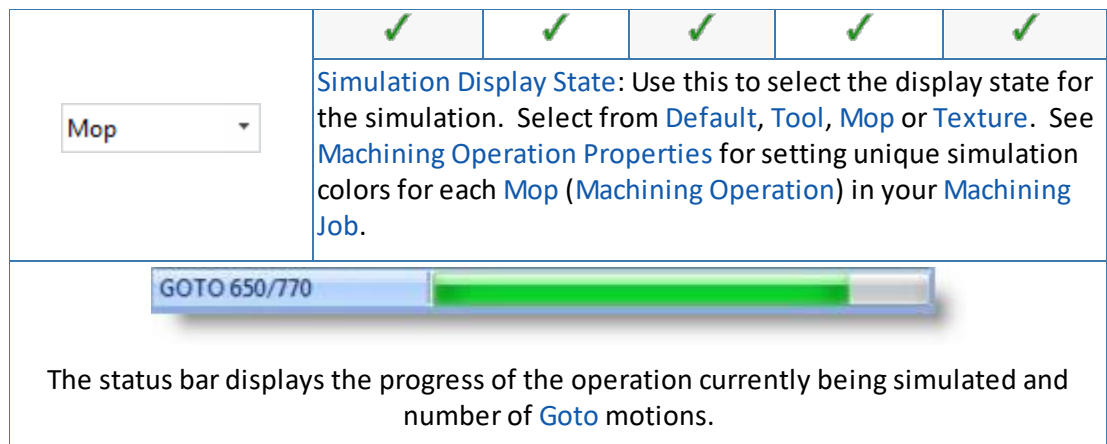


Simulate Toolbar Functions

The following toolbar controls are available on the **Simulate** tab:

Summary	Available Configuration				
	Xpress (XPR)	Standard (STD)	Expert (EXP)	Professional (PRO)	Premium (PRE)
	✓	✓	✓	✓	✓
	Part Model Visibility: Turn on/off part model display during simulation.				
	✓	✓	✓	✓	✓
	Stock Model Visibility: Turn on/off stock model				
	✓	✓	✓	✓	✓

	Material Texture Visibility: Turn on/off material texture visibility				
	-	✓	✓	✓	✓
	Fixture Model Visibility: Turn on/off stock model				
	✓	✓	✓	✓	✓
	Toolpath Visibility: Turn on/off toolpath display				
	✓	✓	✓	✓	✓
	Hidden Toolpath Visibility: Turn the hidden portions of toolpaths on/off.				
	✓	✓	✓	✓	✓
	World CSYS Visibility: Turns on/off of World Coordinate System display.				
	✓	✓	✓	✓	✓
	Machine CSYS Visibility: Turns on/off of Machine Coordinate System display.				
	✓	✓	✓	✓	✓
	Tool Visibility: Turn on/off tool display during simulation.				
	✓	✓	✓	✓	✓
	Holder Visibility: Turn on/off tool holder display during simulation				
	-	-	-	✓	✓
	Machine Tool Visibility**: Turn on/off machine tool display during simulation				
	✓	✓	✓	✓	✓
	Follow Toolpath Display: The toolpath is displayed as it follows the behind the movement of the tool (i.e., you will only see the toolpath after the tool passes.				
	✓	✓	✓	✓	✓
	Trace Toolpath Display: The toolpath is not displayed as it follows the behind the movement of the tool (i.e., you will only see the toolpath before the tool passes.				
	✓	✓	✓	✓	✓
	Segment Toolpath Display: The toolpath is only displayed for the segment that the tool is currently on.				



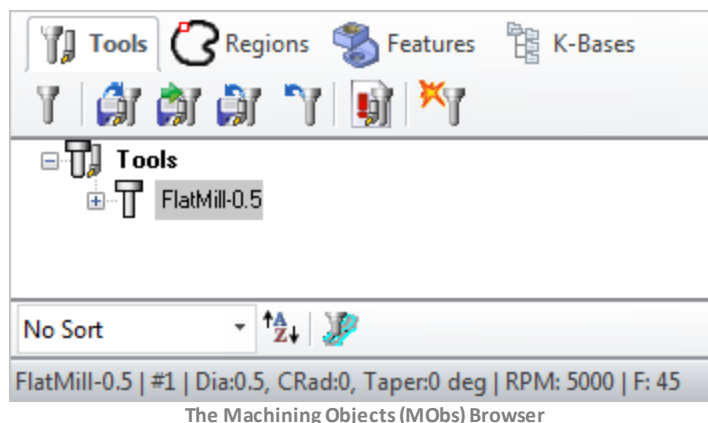
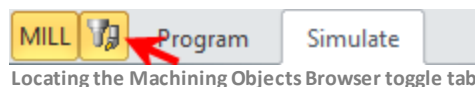
6.2 Machining Objects (Mops) Browser

The [Machining Objects Browser](#) has multiple tabs located at the top to work with different types of machining objects such as [Tools](#), [Regions](#), [K-Bases](#), etc. Each tabbed view also incorporates a toolbar at the top. The toolbars on each tab group all of the functions associated with the type of object in the tab.

The [Machining Objects Browser](#) can be toggled on and off by selecting the toggle button located at the top left corner of the [Machining Browser](#). This toggle button is shown below.

Note: See [Right-Click Commands](#) for a complete list of all right-click commands available from the [Machining Operations \(Mops\) Browser](#) and the [Machining Objects \(Mops\) Browser](#).

The Machining Objects (Mops) Browser



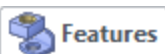
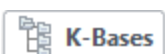


The status bar displays the currently selected tool, spindle speed and cut feedrate.

BallMill1 | #1 | Dia:0.5, CRad:0.25, Taper:0 deg | RPM: 24446 | F: 15



Machining Objects Browser Tabs

Summary	Available Configuration				
	Xpress (XPR)	Standard (STD)	Expert (EXP)	Professional (PRO)	Premium (PRE)
Machining Operations Pane					
 Tools	✓	✓	✓	✓	✓
	Tools tab: Allows you to create, edit, tools and tool libraries.				
 Regions		✓	✓	✓	✓
	Regions tab: Allows you to create and edit pre-define regions for use with machining operations.				
 Features		✓	✓	✓	✓
	Features tab: Allows you to detect machinable features and perform automatic and interactive feature machining.				
 K-Bases		✓	✓	✓	✓
	K-Bases tab: Allows you to load, edit and save machining knowledge bases.				

6.2.1 Tools Tab

Selecting the [Tools](#) tab under the [Machining Objects Browser](#) brings up the tool manager. The tool manager lists all of the tools currently defined as well as the tools that are in use in machining operations. Users can edit a tool by double clicking the tool button in the browser. A tool can be deleted by selecting the tool from the Tools browser, right click cut or use the delete key from the keyboard.

Note: See [Right-Click Commands](#) for a complete list of all right-click commands available from the [Machining Operations \(Mops\) Browser](#) and the [Machining Objects \(Mobs\) Browser](#).

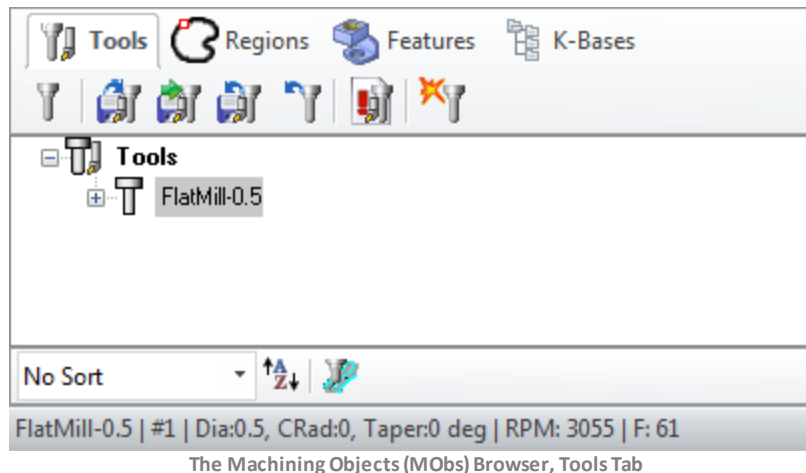


Right-Click Commands

There are [right-click commands](#) available for use in the [Tools](#) tab.







The Machining Objects (Mobs) Browser, Tools Tab






RhinoCAM supports 2 types of tool library file format ***.vkb** and ***.csv** (*.vkb is recommended).



Tools Tab Functions

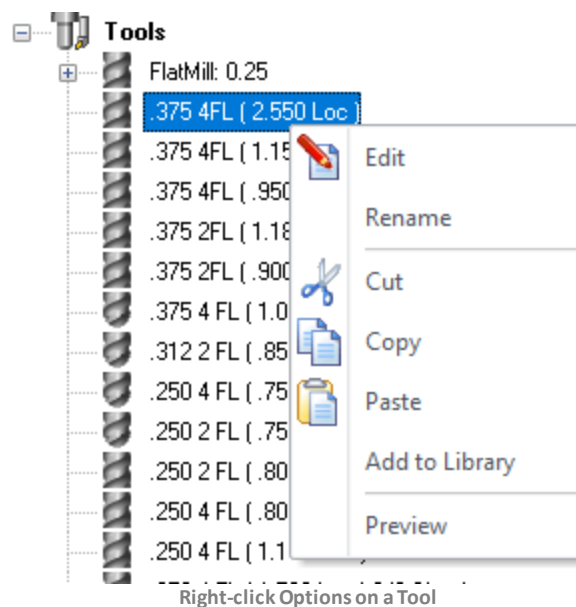
Summary	Available Configuration				
	Xpress (XPR)	Standard (STD)	Expert (EXP)	Professional (PRO)	Premium (PRE)
Tools Tab Functions					
	✓	✓	✓	✓	✓
	Create/Edit Tools: This button brings up the tool dialog that enables the creation and saving of tools. All milling, drilling and user defined tools can be created here. Refer to Tool section for a detailed description on creating tools and defining tool parameters.				
	✓	✓	✓	✓	✓
	Load Tool Library: The load tool library button enables the loading of a previously saved tool library. Refer to the following section for additional information - Load Tool Library				
	✓	✓	✓	✓	✓
	Select Tools from Library: The select tool library button enables you to select tools from a previously saved tool library. Refer to the following section for additional information - Select Tools from Library				
	✓	✓	✓	✓	✓
	Save Tool Library: This button enables the created tools to be saved in a tool library file. The file can be saved in the desired				

	directory and read in when required. Refer to the following section for additional information - Save Tool Library				
	✓	✓	✓	✓	✓
	Unload Tool Library: This button will unload the current Tool Library .				
	✓	✓	✓	✓	✓
	List Tools: The button brings up all the tool properties associated with the tools currently recorded in the current MILL session. Refer to the following section for additional information - List Tools				
				✓	✓
	Compute Tool Holder Collisions*: Determines tool holder collision with the part geometry. Refer to the following section for additional information - Compute Tool Holder Collisions . Note: This utility only supports single-segment tool holders. See Create/Select Tool Holders for more information on creating multi-segmented tool holders.				



Right-click Options on Tools

You can right-click on a [Tool](#) listed in the [Mobs Browser](#) to perform various functions. These are listed below:



**Edit**

Displays the **Create/Edit Tool** dialog allowing you to edit the **Tool** parameters.

Rename

Allows you to **Rename** the selected tool.

**Cut / Copy / Paste**

These options allow you to **Cut** or **Copy** the selected **Tool** to the **Windows Clipboard** and then **Paste** it back to the Tools list to create a new tool using the previous tool as a template.

**Add to Library**

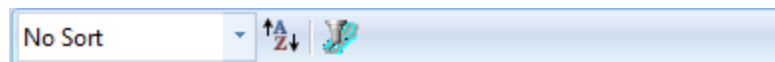
This allows you to **Add** the selected **Tool** to an exiting **Tool Library *.csv** data file.

Preview

This will display a **Preview** of the selected **Tool** in the **Graphics Window** similar to how the **Tool** displays during **Simulation**. The **Tool** will display at the origin of the **MCS** for the current operation.

**Tools Toolbar Functions**

The following **Tool Sorting** rules (when set) will apply to both the **Tools** tab of the **Machining Objects Browser** and the **Create/Select Tools** dialog.



Sorting Selector: This allows you to sort the tool list. You can select **No Sort** or sort by **Name**, **Number**, **Type** and **Diameter**.



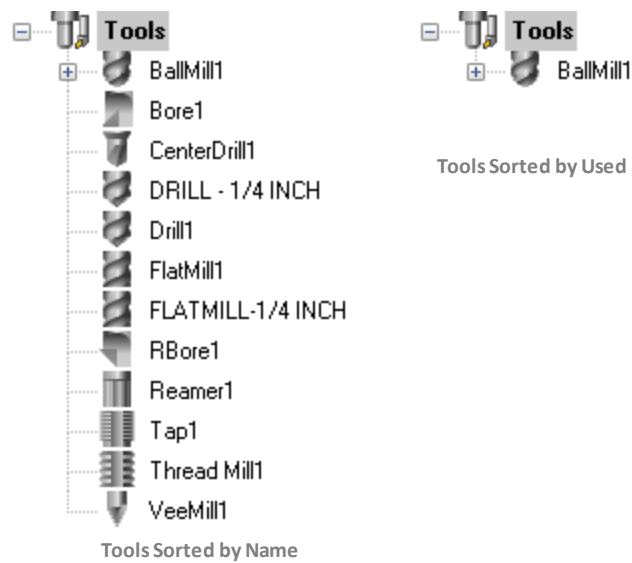
Sort in Ascending/Descending Order: This icon acts like a toggle to switch between Ascending and Descending sort order.



List on the Tool used in Machining Operations: Toggle this icon to list **ONLY** the tools currently assigned to an operation. **Note:** You must **Generate** an operation for the assigned tool to be listed.



If you do not see any of your tools listed, check to make sure this icon is toggled OFF. If no operations are using tools yet and this icon is ON, then no tools will be listed!



Tools Status Bar

The status bar displays the currently selected tool, tool tip radius & angle, spindle speed and cut feedrate.

Flat Mill-0.5 | #1 | Dia:0.5, CRad:0, Taper:0 deg | RPM: 3055 | F: 61

Status Bar, Tools Tab, Machining Objects Browser

6.2.2 Regions Tab

Selecting the [Regions](#) tab under the [Machining Objects \(Mobs\) Browser](#) displays the [Machining Regions](#) manager.

Note: See [Right-Click Commands](#) for a complete list of all right-click commands available from the [Machining Operations \(Mops\) Browser](#) and the [Machining Objects \(Mobs\) Browser](#).

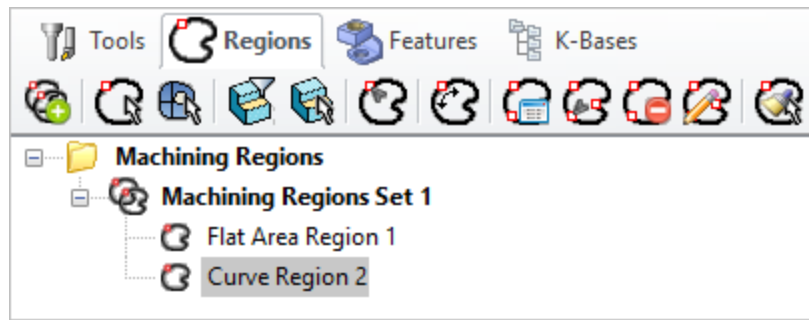


Right-Click Commands

There are [right-click commands](#) available for use in the [Regions](#) tab.



Regions Tab, Machining Objects (Mobs) Browser



Regions Tab, Machining Objects (MOBs) Browser



The Regions tab allows you to:

- Create [Pre-defined Machining Regions](#) from curves and flat areas
- Specify [Start Point](#) for closed curves
- [Reverse Curve](#) Direction
- Create [Automatic Bridge Points](#)
- Manually [Define Bridge Points](#)
- Edit [Bridge Points](#)
- Edit predefined regions
- Delete [Bridge Points](#)

These can then be selected as machining features for generating machining operations.



Regions Tab Functions



Create Machining Region Set

Creates a group that can contain one or more machining regions.



Select Curve

Allows you to select curves as pre-defined machining regions. Each contiguous region is listed as a sub-region of the [Machining Regions Set](#). You can edit each sub-region independently.



Select Surface Edge Areas

Select surface edge curves to create a region.



Flat Areas Selection Filter


Displays a flat area region selection filter dialog which allows you to choose the type of boundary areas to select for flat area selection.



Select Flat Areas

Creates a curve forming the boundary of select flat areas. The flat area could be

a face of solid or a plane.

 If the **Flat Area** contains multiple closed curves (such as a flat rectangle with a hole in the middle of it) and no **Flat Area Selection Filters** are set then each closed curve is defined as a separate **Curve Region** and placed under one **Machining Region Set** in the **Mobs** browser. Each **Curve Region** can then be edited separately such as deleting, reversing direction or changing the start point.



Select Start Point

Allows you to pick a start point for a selected curve region.



Reverse Cut Direction

Allows you to reverse curve direction for a selected curve region.



Automatic Bridge Points on Selections

Automatically creates bridge points for a selected curve region.



Manual Bridge Points on Selections

Allows manual selection of bridge points for a selected curve region.



Delete All Bridge Points in Selections

Deletes all bridge point for a selected curve region.



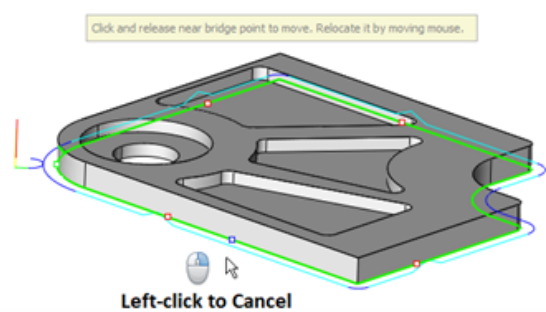
Edit Bridge Point in Selections

This allows the editing of a bridge point for the selected curve region.

Note: If you **double-click** on this icon, the command remains modal (i.e., active) until you **right-click** in the drawing window to cancel it. This functionality allows you to quickly edit all of your bridge points without having to re-execute the command.



Edit Bridge Points in Selected Region - Modal

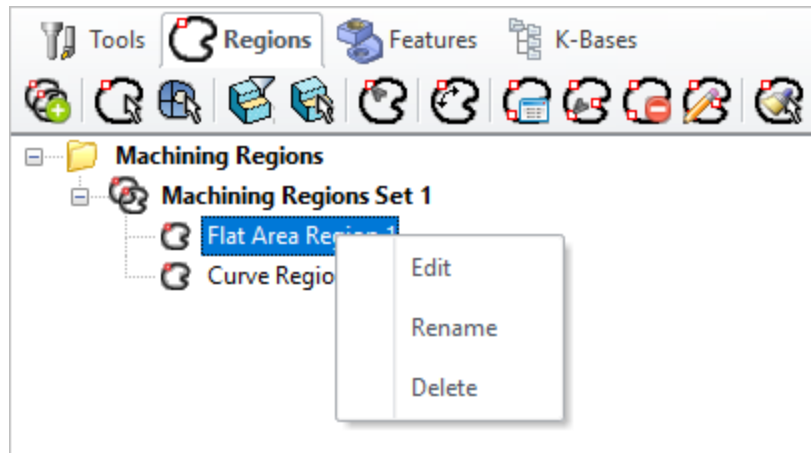


Clone Region

Allows you to clone selected machining regions for geometrically identical curves.

Right-click Options on Predefined Regions

You can right-click on a [Curve Region](#) listed in the [Mops Browser](#) to perform various functions. These are listed below:



Right-click Options on a Tool

Edit

You can right click on a [Region](#) ([Curve](#), [Surface Edge](#), or [Flat Area](#)) to edit and then add or remove geometries to the region.

Rename

This allows you to [Rename](#) the selected [Region](#).


Delete

Use this [Delete](#) the selected [Region](#) from the set.

6.2.3 Features Tab

Selecting the [Features](#) tab under the [Machining Objects Browser](#) displays the Feature [Manager](#). It allows you to create and work with detected features from your 3D solid model. See [Understanding Feature Machining in RhinoCAM](#) for important information about [Machining Features](#).

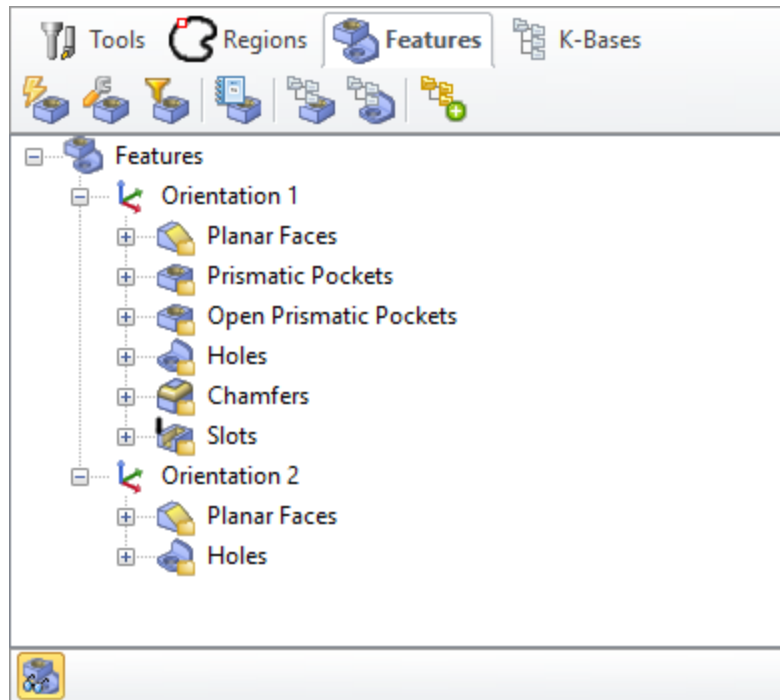
Note: See [Right-Click Commands](#) for a complete list of all right-click commands available from the [Machining Operations \(Mops\) Browser](#) and the [Machining Objects \(Mops\) Browser](#).

 **Important:** [Machining Features](#) can ONLY be extracted from poly-surface models (i.e., solid models). If your part model is not a solid, you must "stitch" all surfaces into a poly-surface prior to [Creating Machining Features](#)!

Right-Click Commands




There are [right-click commands](#) available for use in the [Features](#) tab.






The Features tab (Machining Objects Browser)



The Machining Objects (MOBs) Browser, Features Tab

Features Tab Commands

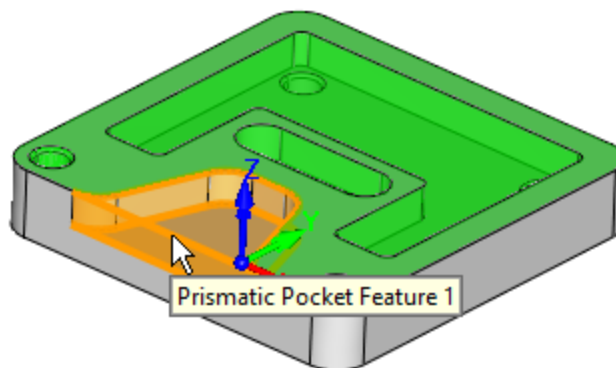
Summary	Available Configuration				
	Xpress (XPR)	Standard (STD)	Expert (EXP)	Professional (PRO)	Premium (PRE)
Features tab Command Icons					
	-	✓	✓	✓	✓
Performs Automatic Feature Detection (AFD) from your part model based all possible machining Orientations . See Automatic Feature Detection (AFD) for more information.					
	-	-	✓	✓	✓
Performs Interactive Feature Detection (IFD) by selecting a face from your part model to define the machining Orientation . See Interactive Feature Detection (IFD) for more information.					
	-	✓	✓	✓	✓
Allows you to Set Filters for Feature Detection so that only certain feature types or hole diameters are detected. See Set Filters for Feature Detection for more information.					

	-	✓	✓	✓	✓
	Allows you to list all of your detected features. See List Features for more information.				
	-	✓	✓	✓	✓
	Allows you to setup a features knowledge base. See: Setup Features Knowledge Base .				
	-	✓	✓	✓	✓
	Allows you to create a hole feature machining operation. See: Create Hole Feature Machining Operation .				
	-	✓	✓	✓	✓
	Allows you to perform Automatic Feature Machining (AFM) based on the default (AFM) Knowledge Base defined in the Features section of the CAM Preferences dialog. See Automatic Feature Machining (AFM) for more information.				
Features tab Toolbar Icons					
	-	✓	✓	✓	✓
	This icon Toggles the display of Features in the drawing window. It is located at the bottom of the browser when the Features tab is active.				



Feature Identification on Cursor Highlight

After you have performed either [AFD](#) or [IFD](#) on your part model, you can move the cursor over a part feature and its identification name will display. This is the name created for the feature and listed in the [Features](#) tree.

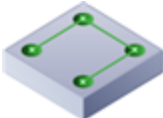
















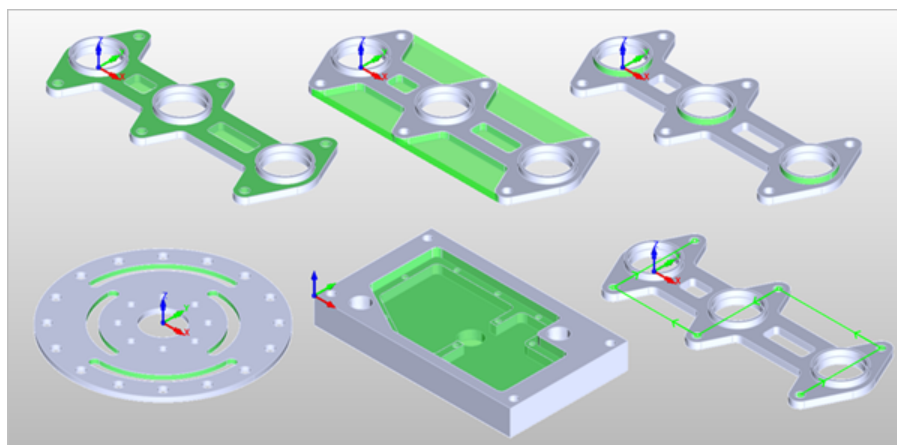
Feature Identification on Cursor Highlight



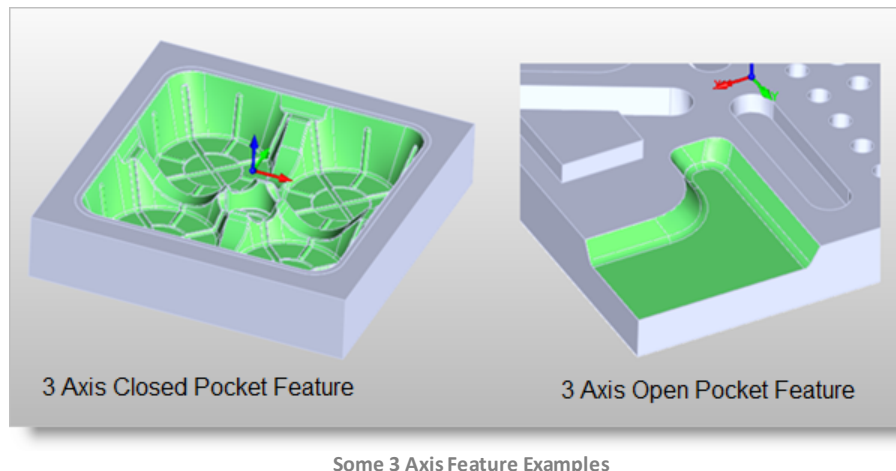
Feature Types Recognized

The feature types recognized are listed in the table below:

Feature Types Detected				
 Hole	 Prismatic Pocket	 Open Prismatic Pocket	 Boss	 General Pocket (3 Axis)
 Slot	 Open Slot	 T-Slot	 V-Slot	 Open General Pocket (3 Axis)
 Planar Face	 Fillet	 Chamfer	 Stepped Prismatic Pocket	 Silhouette



Some 2 Axis Feature Examples



6.2.4 K-Bases Tab

Selecting the **K-Bases** tab under the **Machining Objects Browser** displays the **Knowledge Base** manager.

Note: See [Right-Click Commands](#) for a complete list of all right-click commands available from the **Machining Operations (Mops) Browser** and the **Machining Objects (Mobs) Browser**.

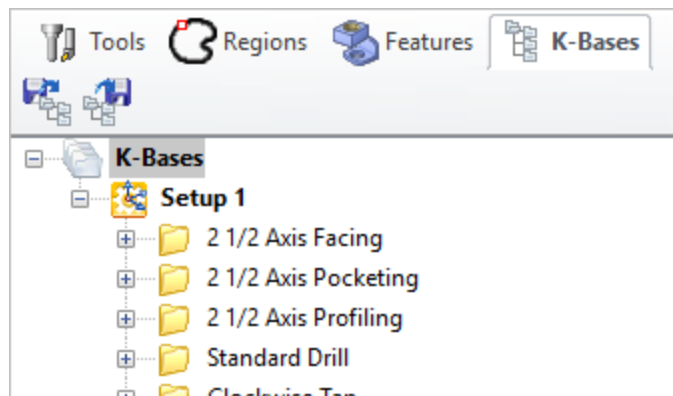


Right-Click Commands

There are [right-click commands](#) available for use in the **K-Bases** tab.



The Machining Objects (Mobs) Browser, K-Bases Tab





The Machining Objects (MObs) Browser, K-Bases Tab



K-Bases Tab Functions

Summary	Available Configuration				
	Xpress (XPR)	Standard (STD)	Expert (EXP)	Professional (PRO)	Premium (PRE)

Features tab Command Icons					
	-	✓	✓	✓	✓
	Load Knowledge Base : Allows you to select a machining operations knowledge base to load.				
	-	✓	✓	✓	✓
	Save Knowledge Base : Allows saving of knowledge bases which can be archived and used across other files.				

Refer to the following sections for a detailed description on Knowledge base

- [Knowledge Base](#)
- [Load Knowledge Base from Machining Objects Browser](#)

Docking Browsers

Both [Machining Operations Browser](#) and the [Machining Objects Browser](#) windows are dock-able windows. This means these windows can be docked in any position in [Rhino](#). This section describes the procedure to be used to dock both of these windows such that they are stacked vertically.



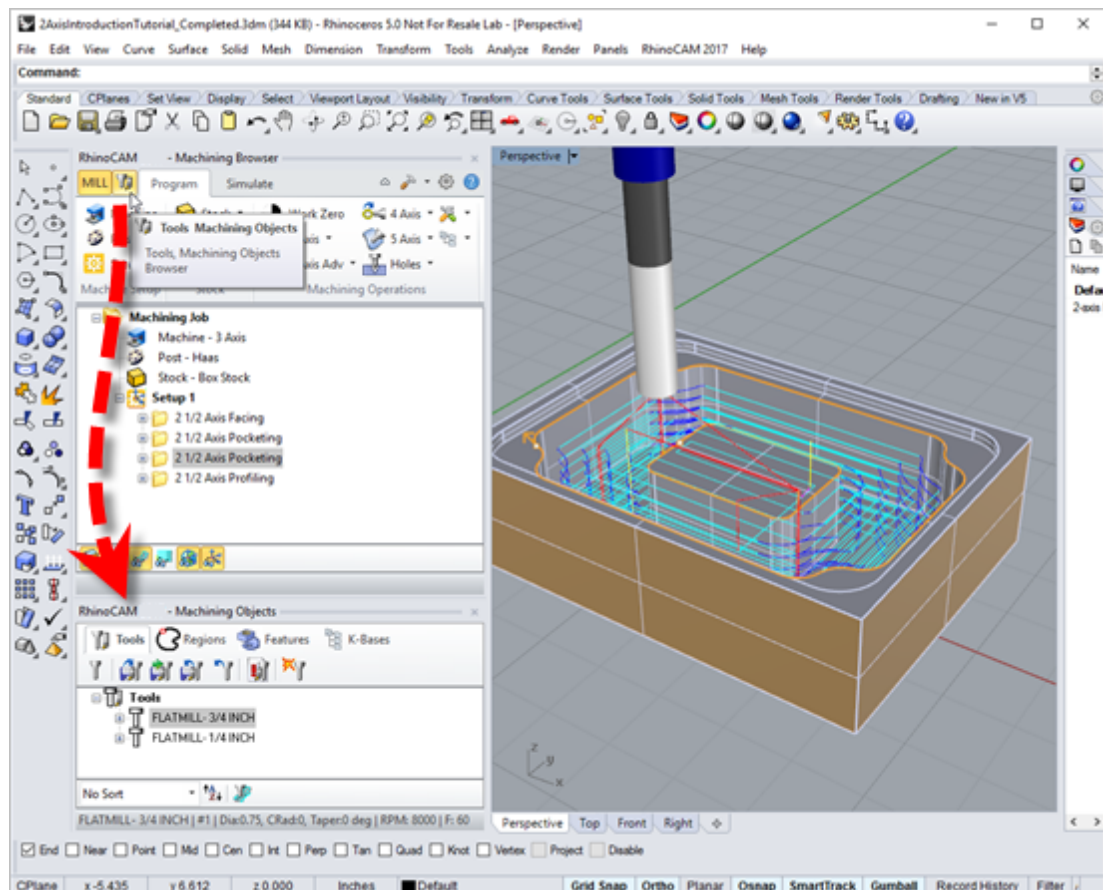
Step 1: Launch the MILL Browser

From the [Rhino](#) main menu, select the [RhinoCAM](#) menu and then pick [MILL](#). This displays the machining operations browser and by default is docked to the left half of the application window next to the view bar.



Step 2: Display the Tools, Machining Objects Browser

Select the [Tools Machining Objects](#) button located on the [Machining Operations Browser](#) just to the left of the [Program](#) tab. This displays the [Machining Objects Browser](#) next to the operations browser.



Step 2: Display the Tools, Machining Objects Browser - Premium Configuration shown



Step 3: Drag & Drop the Browser















Selecting the title bar and holding the left mouse button down and dragging the browser window allows you to dock the browser to desired location. You can dock a browser inside of another browser or have them docked side by side.





Right-Click Commands

You can perform a variety of commands by right-clicking on items within the [Machining Browser](#) and [Machining Job](#). The tables below lists each of the available commands.



from the [Machining Operations \(MOPs\) Browser](#)


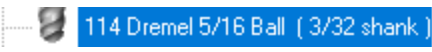
RhinoCAM Right-Click Commands - MILL Module	
Action Item	Right-Click Commands
Machining Browser	Regenerate All
 Machining Job	Post All
 Machine - 3 Axis	Simulate All
 Post - AbilitySystems	Save to Knowledge Base
 Stock - Box Stock	Information
 Fixtures - Count 2	Shop Documentation
 Fixture 2	Delete All
 Fixture 1	Delete All Dirty MOPs
 Setup 1	
 Horizontal Roughing	
 Parallel Finishing (with mask1 on)	
 3D Offset Pocketing	
 Machine - 3 Axis	Machine Tool Setup Dialog
 Post - AbilitySystems	Set Post Options Dialog
 Stock - Box Stock	Box Stock Dialog
	Part Box Stock Dialog
	Cylinder Stock Dialog
	Part Cylinder Stock Dialog
	Part Offset Dialog
	Extruded Stock Dialog
	Stock from Selection
	Export Stock to STL

	Delete Stock
	Remove Simulations
 Fixtures - Count 1	New Fixture
 Fixture 2	New Fixture
	Edit
	Rename
	Delete
 Setup 1	Regenerate
	Post
	Simulate
	Information
	Shop Documentation
	Rename
	Suppress
	Cut
	Copy
	Paste
	Save to Knowledge Base
	New Setup
	Align
	Delete All Dirty MOps
 Horizontal Roughing	Regenerate
	Post
	Simulate
	Simulate Until

	Simulate to End
	Information
	Edit
	Rename
	Suppress
	Cut
	Copy
	Paste
	Clone
	Save to Knowledge Base
	Save As Defaults
	Machining Operation Properties dialog



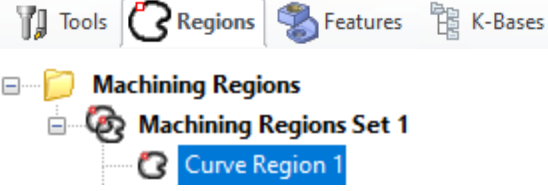
from the Tools tab of the Machining Objects (MObs) Browser

RhinoCAM Right-Click Commands - MILL Module	
Action Item	Right-Click Commands
Machining Objects Browser / Tools Tab	Cut
	Paste
	Tool List
	Create Edit Tool
	Rename
	Cut
	Copy
	Paste

	Add to Library
	Preview

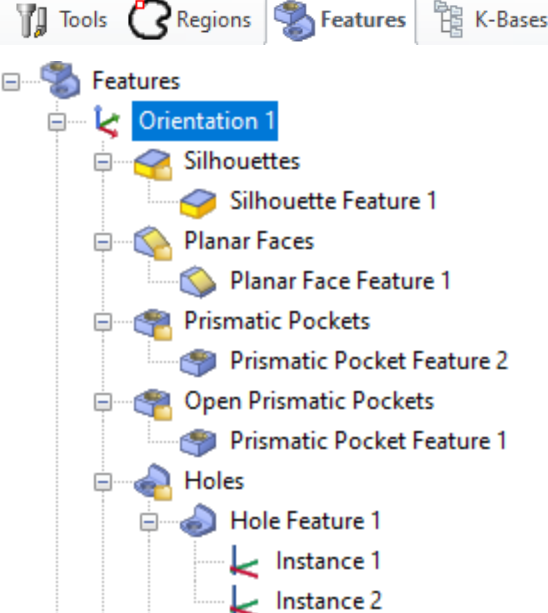








from the Regions tab of the Machining Objects (MObs)

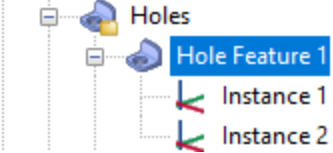
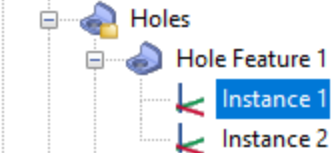
RhinoCAM Right-Click Commands - MILL Module	
Action Item	Right-Click Commands
Machining Objects Browser / Regions Tab	Edit
	Rename
	Delete



from the Features tab of the Machining Objects (MObs)

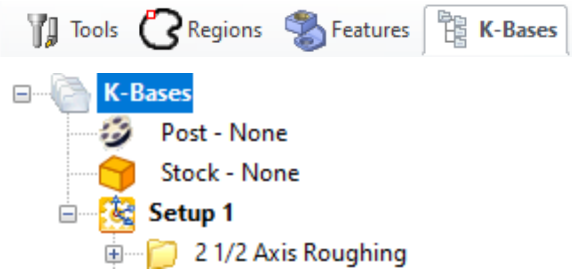
RhinoCAM Right-Click Commands - MILL Module	
Action Item	Right-Click Commands
Machining Objects Browser / Features Tab	3 Axis Horizontal Roughing (feature dependent)
	3 Axis Horizontal Finishing (feature dependent)
	3 Axis Parallel Finishing (feature dependent)
	Automatic Feature Machining (AFM)
	Automatic Feature Machining using KBs >
	DefaultAFM_INCH
	DefaultAFM_MM
	Rename
	Delete

	Suppress
 Silhouettes Note: Feature group may vary.	2 Axis Roughing (Feature Dependent)
	Profiling (Feature Dependent)
	Automatic Feature Machining (AFM)
	Automatic Feature Machining using KBs > DefaultAFM_INCH DefaultAFM_MM
	Delete
 Silhouette Feature 1 Note: Feature type may vary.	2 Axis Roughing (Feature Dependent)
	Profiling (Feature Dependent)
	Automatic Feature Machining (AFM)
	Automatic Feature Machining using KBs > DefaultAFM_INCH DefaultAFM_MM
	Delete
 Holes  Hole Feature 1  Instance 1  Instance 2	Drill
	Tap
	Bore
	Rev. Bore
	Hole Pocketing
	Hole Profiling
	Threading
	Chamfering
	Automatic Feature Machining (AFM)

	Automatic Feature Machining using KBs > DefaultAFM_INCH DefaultAFM_MM Delete
	Drill Tap Bore Rev. Bore Hole Pocketing Hole Profiling Threading Chamfering Create Hole Feature Machining KB Automatic Feature Machining (AFM) Automatic Feature Machining using KBs > DefaultAFM_INCH DefaultAFM_MM Rename Delete
	Automatic Feature Machining (AFM) Automatic Feature Machining using KBs > DefaultAFM_INCH DefaultAFM_MM Delete



from the K-Bases tab of the Machining Objects (MObs)

RhinoCAM Right-Click Commands - MILL Module	
Action Item	Right-Click Commands
<p>Machining Objects Browser / K-Bases Tab</p> 	Set Selection Rules

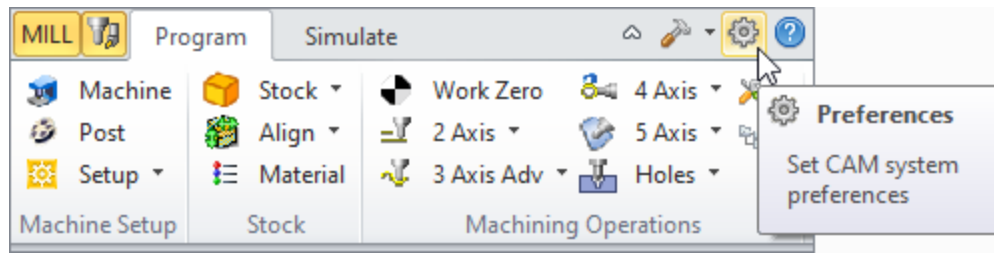
CAM Preferences



You can set various [CAM Preferences](#) that will be saved even after you exit the program. Select the [Preferences](#) icon from the [Machining Browser](#). When you install a new [RhinoCAM](#) update you are choose to import your [CAM Preferences](#) from one version to the next.



The CAM Preferences Icon



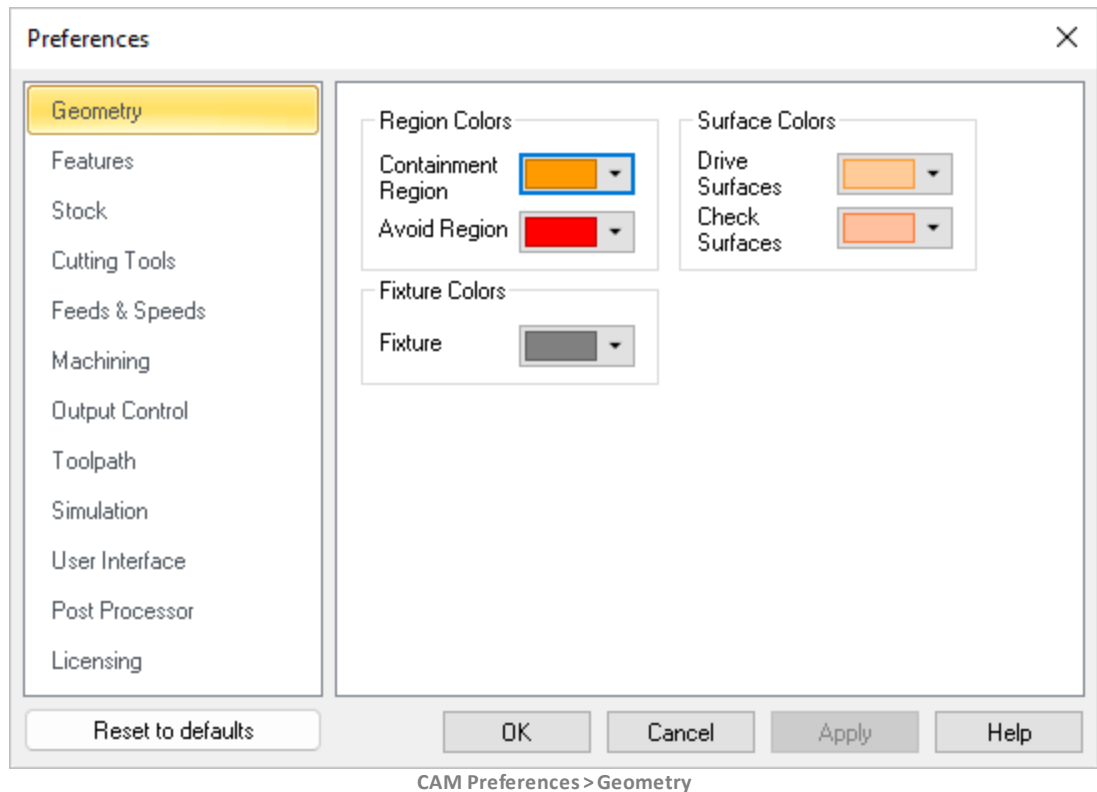
Set CAM System Preferences menu item

9.1 Geometry

You can set the colors to display various objects using this dialog. To change each of the color settings in this dialog select the colored button next to the item of interest. This will bring up the color selection dialog, which can be used to choose the color needed. Once a color has been selected the button will change its color to the selected one. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.



Dialog Box: CAM Preferences > Geometry



Region Colors

Containment Region

Use this color selector to set the display color for [Containment Regions](#) (i.e., your [Control Geometry](#)).

Avoid Region

Use this color selector to set the display color for [Avoid Regions](#) (i.e., your [Control Geometry](#)).



Surface Colors

Drive Surfaces

Use this color selector to set the display color for [Drive Surfaces](#) (5 Axis).

Check Surfaces

Use this color selector to set the display color for [Check Surfaces](#) (5 Axis).



Fixture Colors

Fixture

Use this color to represent fixture geometry.

9.2 Features

Here you can set preferences related to [Features](#) (for [MILL](#) module only). **Note:** These preferences are not available in [XPR \(Xpress\)](#) configuration. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.



Dialog Box: CAM Preferences > Cutting Tools

Preferences

Geometry
Features
Stock
Cutting Tools
Feeds & Speeds
Machining
Output Control
Toolpath
Simulation
User Interface
Post Processor
Licensing

User Interface

☒ Show Features Tab
☒ Show Features Tab in Machining Objects browser

Display Colors

Feature color:
Selected feature color:

Display Transparency

Opaque Transparent

Feature Graphical Selection

☒ Turn on pre-selection highlighting
☒ Turn on pre-selection informational tooltips

Automatic Feature Machining (AFM) Knowledge Base

C:\ProgramData\MecSoft Corporation\ ...

Reset to defaults OK Cancel Apply Help

CAM Preferences > Features



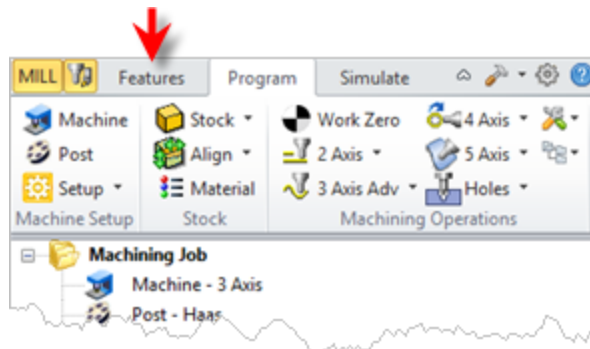
User Interface

Show Features Tab

Check this box to display the [Features](#) tab. If this is not checked, then you will not be able to perform [Feature Recognition](#).

Show Features Tab in Machining Objects Browser

Check this box if you prefer to have the [Features](#) tab appear in the [Machining Objects Browser](#) (to the right of the [Regions](#) tab). If this box is not checked, the [Features](#) tab will appear in the [Machining Browser](#) (to the left of the [Program](#) tab) as shown below.



Display Colors

This section allows you to set the default **Feature Color** and default **Selected Feature Color**.

Feature Color

Here you can set the default **Feature Color**. When an operation is selected from the **Machining Job** tree of the **Machining Browser**, that is derived from a **Machining Feature**, the feature is highlighted using this color.

Selected Feature Color

Here you can set the default **Selected Feature Color**. When a **Machining Feature** is selected from the **Features** tab of the **Machining Objects Browser**, the feature is highlighted using this color.



Display Transparency

This refers to how transparent feature colors (see **Colors** above) on the screen when features are displayed.

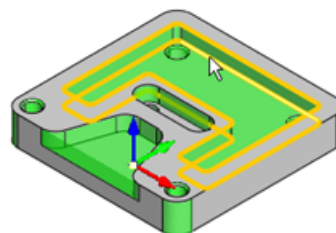


Feature Graphical Selections

This section allows you to set selection preferences for detected Features.

Turn on pre-selection highlight

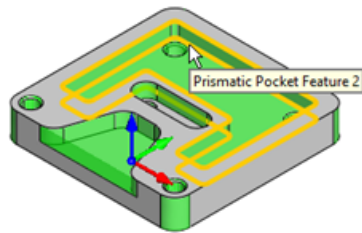
Check this box to highlight detected **Features** when the cursor moves over them in the graphics window.



Feature pre-selection highlight

Turn on pre-selection tips

Check this box to display **Feature** section tips when the cursor moves over a detected **Feature** in the graphics window.



Feature pre-selection tips



Automatic Feature Machining (AFM) Knowledge Base

This field displays the path the default [Automatic Feature Machining \(AFM\) Knowledge Base](#). Select the ... button to select a different path.

*C:\ProgramData\MecSoft Corporation\RhinoCAM
2025\FeatureBasedMachiningKBs\DefaultAFM_INCH.vkb*

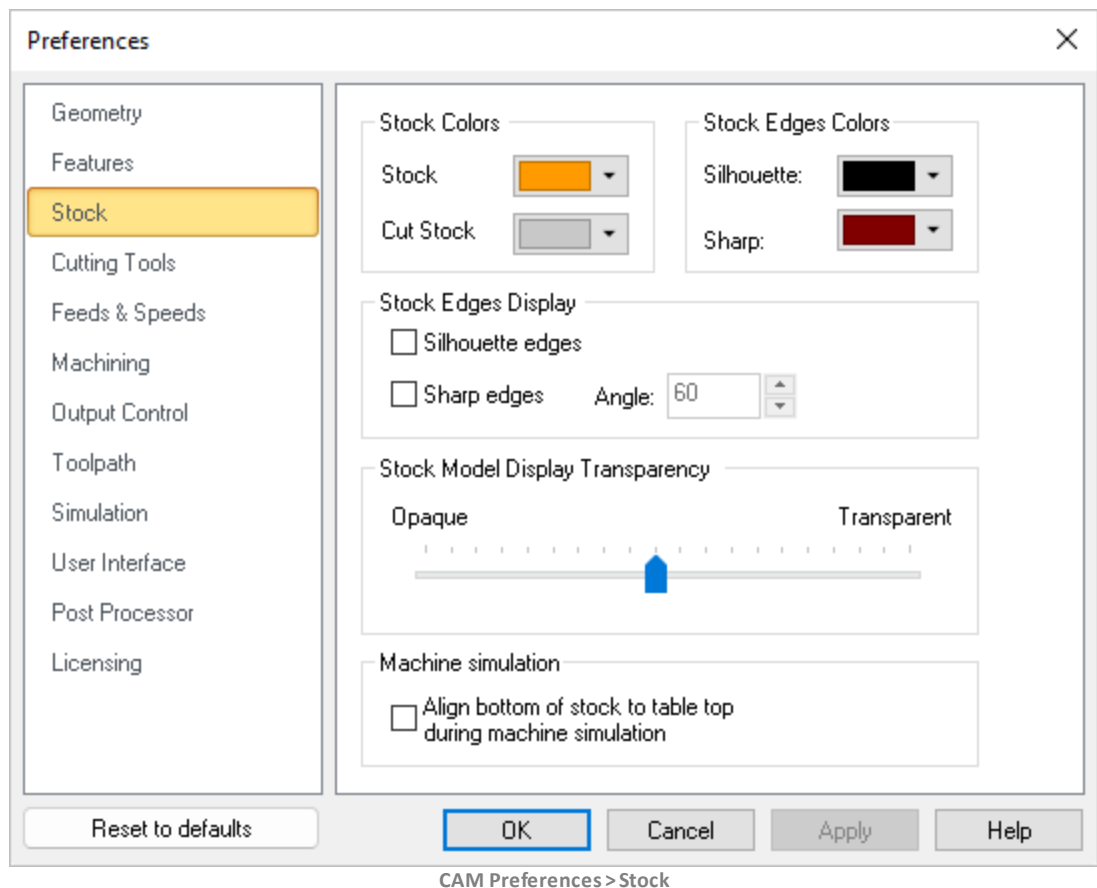
9.3 Stock

You can set the simulation preferences using this dialog. **Note:** Some options are not available in [XPR \(Xpress\)](#) configuration. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.



Dialog Box: CAM Preferences > Stock

Users can set the simulation preferences using this dialog:



Stock & Stock Edge Colors

Here you can set the stock colors. You can differentiate between uncut [Stock](#), [Cut Stock](#), [Silhouette Edges](#) and [Sharp Edges](#) by specifying different colors for them here.

Note: If the [Simulation Display State](#) is set to [Mop](#) then the [Color](#) assigned using the [Machining Operation Properties](#) is used to display the cut stock. Right-click on an operation in the [Machining Job](#) tree and select [Properties](#) to set this color.

Stock Edges Display

This section allows you to control the [Stock Edges Display](#) states. For example, you can check the boxes to display [Silhouette Edges](#) and [Sharp Edges](#) as well as the [Angle](#) to display for stock edges. [Silhouette Edges](#) and [Sharp Edge](#) colors are set using the [Colors](#) section of this dialog. Experimentation is advised until you are comfortable with the way your stock display.

Stock Model Display Transparency

Use this slider to adjust the [Stock Model Transparency](#) when the [Program](#) tab is selected (i.e., when you are not simulating).



Machine Simulation

During [Machine Tool Simulations](#), you can check this box to automatically position the bottom of the in-process stock on the top of the machine bed.

9.4 Cutting Tools

You can set the [Tool Library](#) to load on startup and also specify the location of your [Tool Library](#) files. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.



CAM Preferences > Cutting Tools

Preferences

Geometry
Features
Stock
Cutting Tools
Feeds & Speeds
Machining
Output Control
Toolpath
Simulation
User Interface
Post Processor
Licensing

Cutting Tool Colors

Tool Flutes Tool Shank

Tool Holder

Tool Display

☒ Solid ☐ Transparent ☐ Wireframe ☐ None

☐ Display Tool Holder

Tool Library Preferences

☒ Always load last loaded tool library on startup

Default Tool Library

C:\ProgramData\MecSoft Corporation\VisualCA ...

Clear

Reset to defaults OK Cancel Apply Help

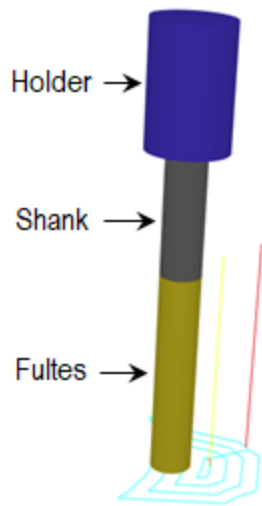
CAM Preferences > Cutting Tools

Note: Menu selections on the left may change depending on module and configuration



Cutting Tool Colors

Use the color selectors to set the default display colors for the cutting tool. The [Tool Flutes](#), [Tool Shank](#) and [Tool Holder](#) can each be assigned a different.



Tool Display

The cutting tool can be displayed as either [Solid](#), [Transparent](#), [Wireframe](#) or [None](#) by selecting the desired option. You can also toggle the display of the [Tool Holder](#) by checking or un checking the box provided.



Tool Library Preferences

This defines your [Tool Library](#) preferences:

[Always load last loaded tool library on startup](#)

If you check this box, every time [RhinoCAM](#) loads, the last loaded [Tool Library](#) will be loaded automatically.

[Default tool library path](#)

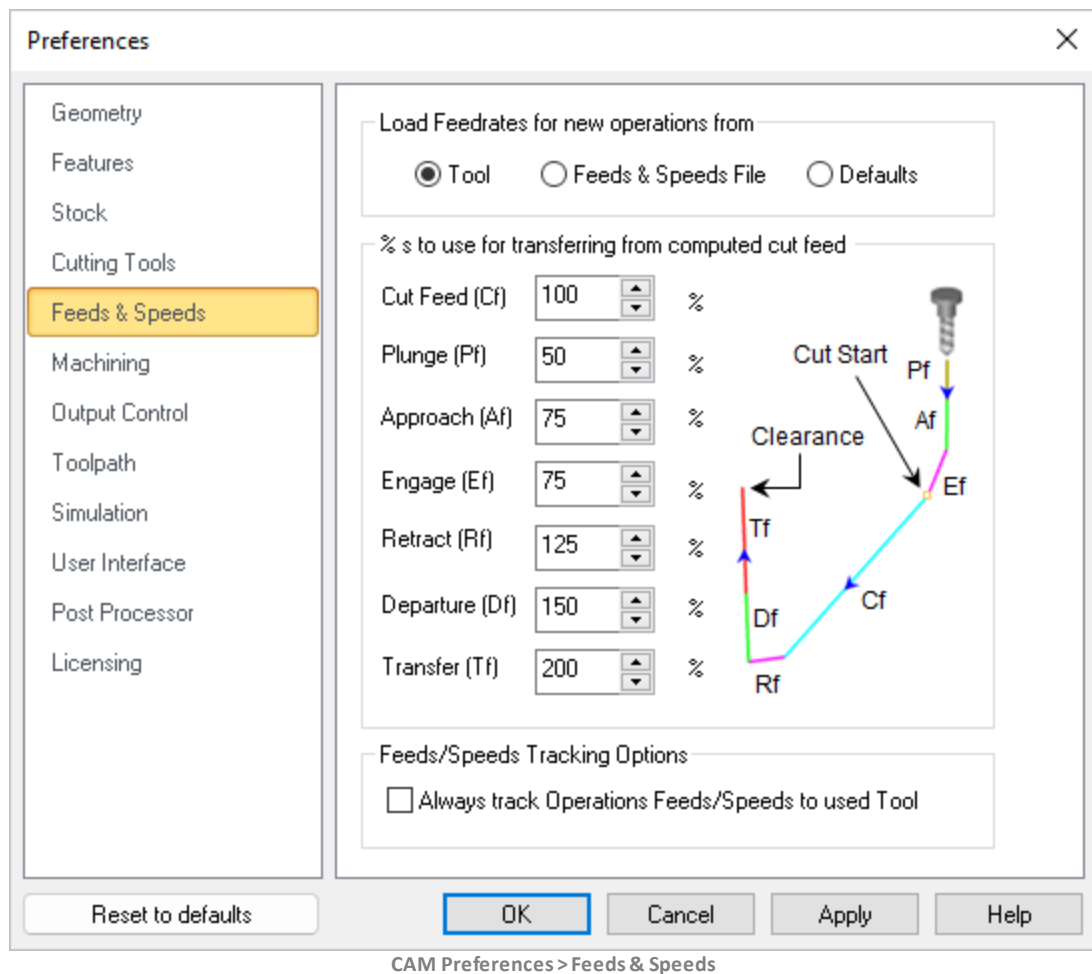
Optionally you can specify the file path for your default tool library files. **Note:** It is recommended that you save your custom tool library files to a location outside of the [RhinoCAM](#) install path. This will keep them from being overwritten when you install new updates of [RhinoCAM](#).

9.5 Feeds & Speeds

You can set the [Feeds & Speeds](#) preferences using this dialog. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.



[CAM Preferences > Feeds & Speeds](#)



Load Feedrates for operations from

This allows you to select a preference option for loading **Feeds/Speeds** from table or from tool or use defaults when creating a new operation.

Tool

Selecting this option loads the feeds/speeds saved with the tool when creating a new operation.

Table

Selecting this option loads the feeds/speeds based on the material selected when creating a new operation.

Defaults

Selecting this option loads the feeds/speeds from the default knowledge base when creating a new operation. If default knowledge base is set to undefined, the system defaults would be used for loading feeds and speeds.



% s to use for transfer from computed cut feed

These % values apply when using the [Load from File](#) option (i.e., commonly referred to as the [Feeds & Speeds Calculator](#)) from either the [Create/Edit Tools](#) dialog or from the [Feeds & Speeds](#) tab of any of the toolpath operation dialogs. 100% of the [Cut Feed](#) specified in this dialog is applied and a percentage of the [Cut Feed](#) is used to populate the remaining feedrates for [Plunge](#), [Approach](#), [Engage](#), [Retract](#), [Departure](#) and [Transfer](#). You can set the % values to use here.



Feeds/Speeds Tracking Options

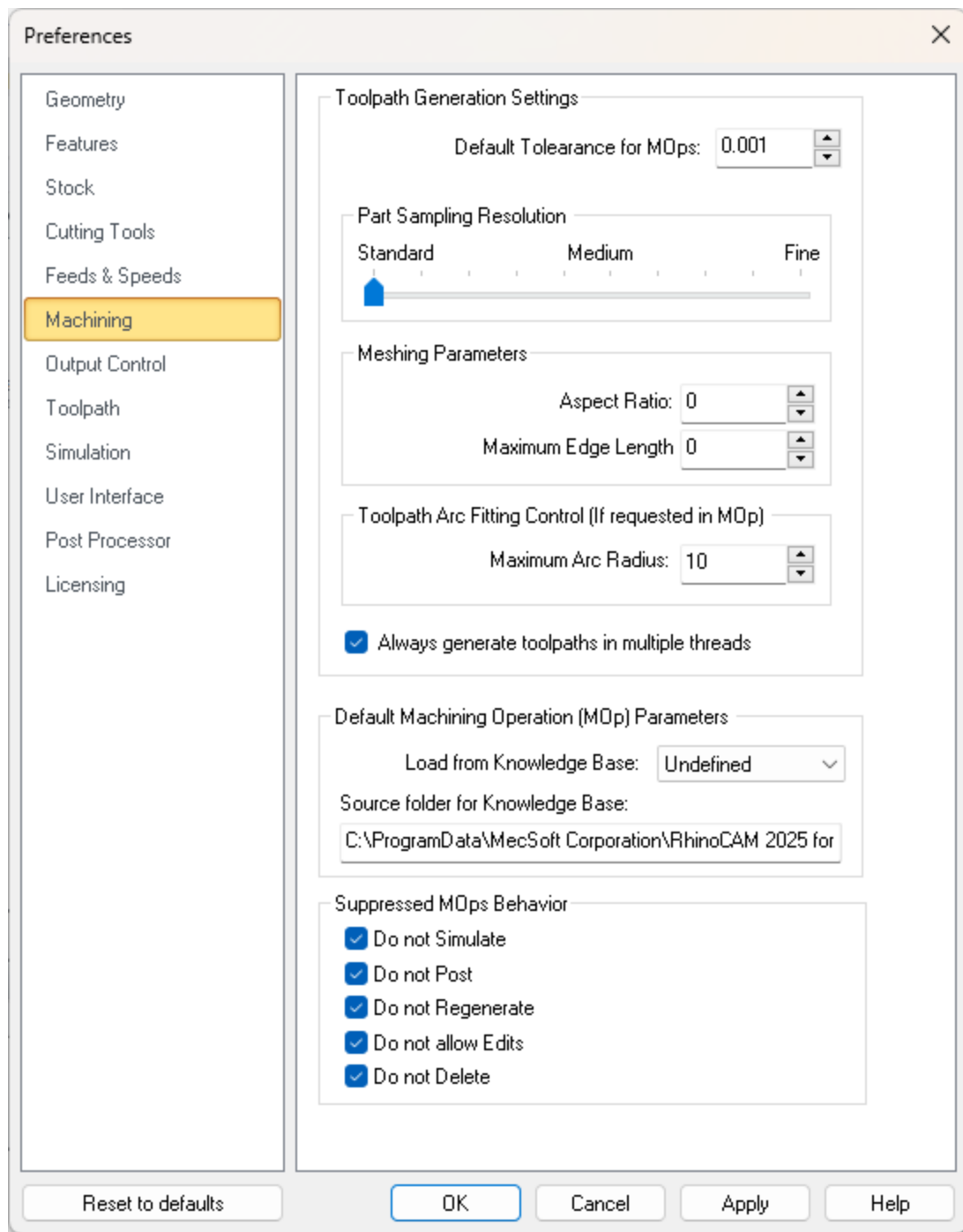
When you select the [Load from Tool](#) option from any of the toolpath operation dialogs, the [Feeds & Speeds](#) specified for the active tool are populated into the [Feeds & Speeds](#) tab of the operation's dialog. You can check this box to perform this automatically when new toolpath operations are created.

9.6 Machining Preferences

Check Meshing Parameters You can set machining preferences using this dialog. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.



CAM Preferences > Machining



CAM Preferences: Machining



Toolpath Generation Settings

Default Tolerance for Mops

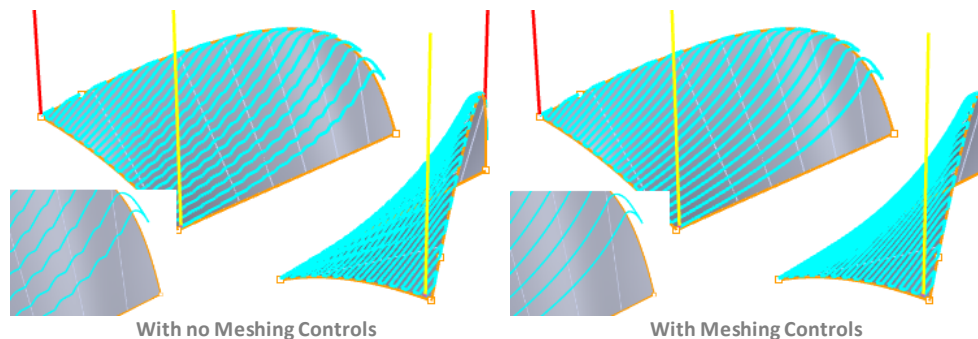
Enter the default tolerance to use for new machining operations. You can edit this parameter manually from the [Cut Parameters](#) tab of each machining operation (Mop) dialog.

Part Sampling Resolution

This slider is used to control the display quality of the simulated model. **Standard** is faster but with lower display quality. For large parts, use the **Standard** or **Medium** options, while for smaller parts **Medium** or **Fine** options would work satisfactorily.

Meshing Parameters

Meshing parameters refer to the size and shape of each triangular mesh geometry element during the following: (a) for the calculation and display in-process stock models during polygonal simulation, (b) for the calculation and display of the simulation accuracy Part/Stock Compare dialog and (c) used during 3, 4, and 5 axis toolpath calculations.



Aspect Ratio

In a mesh model, **Aspect Ratio** refers to the edge length ratio of each triangular facet in the mesh. A larger Aspect Ratio produces a mesh that is less dense and more adaptable to larger mesh features. A smaller **Aspect Ratio** produces a mesh that is more dense allowing for smaller feature to be more accurately represented.

Maximum Edge Length

In a mesh model, **Maximum Edge Length** refers to the length of any facet edge in the mesh model. A greater value will produce less facets to define the mesh model. A smaller value will produce more facets to define the mesh model.

Toolpath Arc Fitting Control (If requested in Mop)

Some toolpath operations support **Arc Fitting**. If supported, the option is located on the **Advanced Cut Parameters** tab of the operation's dialog.

Maximum Arc Radius

Some toolpath operations support **Arc Fitting**. You can enter here the **Maximum Arc Radius** that can be created.

Always generate toolpath in multiple threads

Check this box to **Always generate toolpath in multiple threads**. The system will distribute the computing of multiple toolpaths to different cores in your processor simultaneously rather than sequentially. Refer to **Multi-threading Manager** section for additional information.



Default Machining Operation (Mop) Parameters

Load from Knowledge Base

This allows you to select a [Default Knowledge Base](#) to load for creating machining operations. Selecting a knowledge base as [Default](#) loads the operation parameters when creating new operations. If no [Default](#) knowledge base is specified, the system defaults are used for machining operation parameters.

Source Folder for Knowledge Base

This is the source folder where the [Default Knowledge Base](#) are stored.

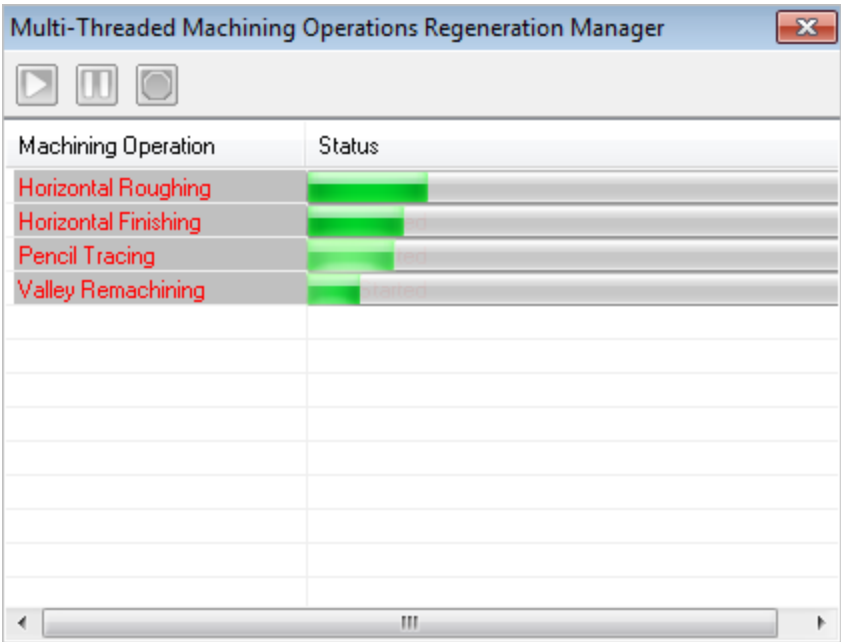


Suppressed Mops Behavior

When you [Suppress Machining Operations \(Mops\)](#) you can apply one or more of these conditions. Check each box to enable that condition and then pick [OK](#) to close this dialog.

9.6.1 Multi-threading Manager

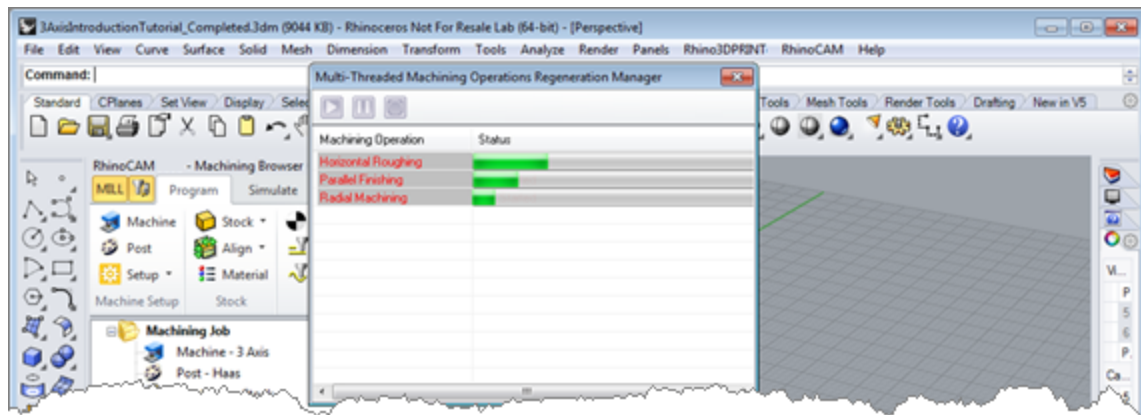
This distributes computing of toolpath to different cores in your processor simultaneously rather than process them sequentially when regenerating multiple operations.



Multi-threading Manager

To enable generation of toolpath using multi-threading manager, select [Always generate toolpath in multiple threads](#) from [Machining Preferences](#) located under [CAM Preferences](#) in the [Machining browser](#).

Regenerating the [Machining Job](#), [Setup](#) or machining operations displays the multi-threading manager window and indicates the progress of the toolpath computation.



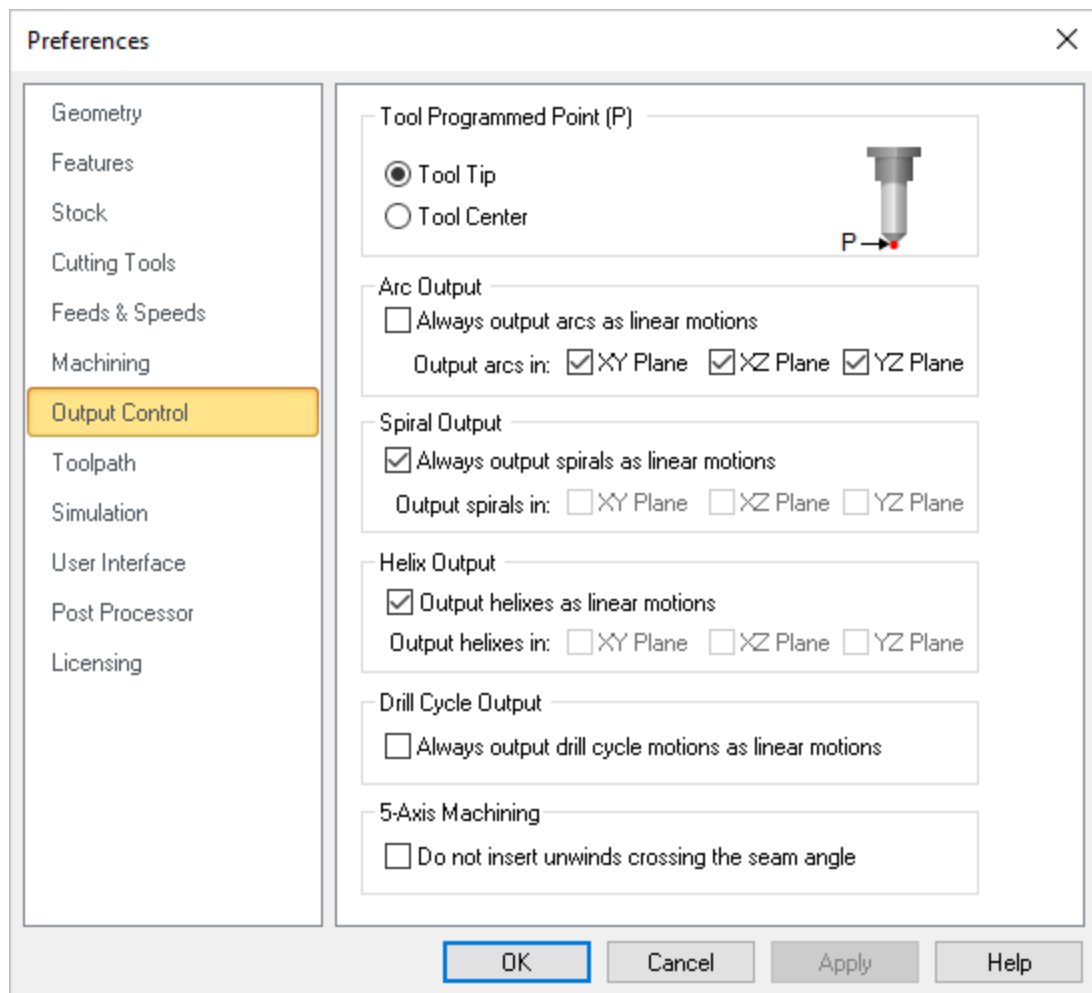
Multi-threading Manager window displayed

You can still continue working with the application when the toolpath generation is in progress with the multi-threading manager dialog active.

9.7 Output Control

You can set the output control preferences using this dialog. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.

 [CAM Preferences > Output Control](#)




CAM Preferences: Machining

Tool Programmed Point (P)

The toolpath can be output as the tool tip or the tool center. If **Tool Center** is selected, the toolpath will be offset by the difference in the height of the tool tip and tool center. The default value is the **Tool Tip**.



 Changing machining preferences requires regeneration of machining operations to apply the changes.

Arc Output

Some NC machine controllers do not have arc output. For such type of controllers, the arcs that are generated in the toolpath can be output as linear segments by selecting these check boxes.

Always Output Arcs as Linear Motions

If your controller does not support arc g-code motions, check this box to output arcs as linear segments.

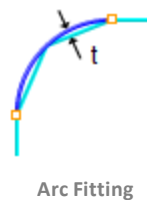
XY Plane

Check this box to [Perform Arc Fitting](#). The system will attempt to fit arcs along the computer toolpath if they lie within the three principal planes ([XY Plane](#), [XZ Plane](#) or [YZ Plane](#)).



XZ Plane

Arcs can be fitted to linear toolpaths that lie on one of the three principal planes [XY](#), [XZ](#) or [YZ](#). Check the box for which plane to fit arcs to.



YZ Plane

Arcs can be fitted to linear toolpaths that lie on one of the three principal planes [XY](#), [XZ](#) or [YZ](#). Check the box for which plane to fit arcs to.



Spiral Output

Some NC machine controllers do not have spiral output. For such type of controllers, the spirals that are generated in the toolpath can be output as linear segments by selecting these check boxes.

Output Spiral Motions as Linear Segments

If your controller does not support spiral g-code motions, check this box to output spiral

motions as linear segments.

XY Plane / XZ Plane / YZ Plane

The system will attempt to fit spirals along the computed toolpath if they lie within the three principal planes ([XY Plane](#), [XZ Plane](#) or [YZ Plane](#)). Check the box to enable spirals in each respective plane.



Helix Output

Some NC machine controllers do not have helical output. For such type of controllers, the helices that are generated in the toolpath can be output as linear segments by selecting these check boxes.

Output Helices as Linear Segments

If your controller does not support helical g-code motions, check this box to output helix motions as linear segments.

XY Plane / XZ Plane / YZ Plane

The system will attempt to fit helices along the computed toolpath if they lie within the three principal planes ([XY Plane](#), [XZ Plane](#) or [YZ Plane](#)). Check the box to enable helices in each respective plane.



5 Axis Machining

Do not insert unwinds crossing the seam angle

When this box is un checked, the spindle head will rewind when it meets a surface seam. When checked, no un-winds are performed at seams.



Drill Cycle Output

This section refers to [Hole Machining Drill Cycles](#).

Always output drill cycle as linear motions.

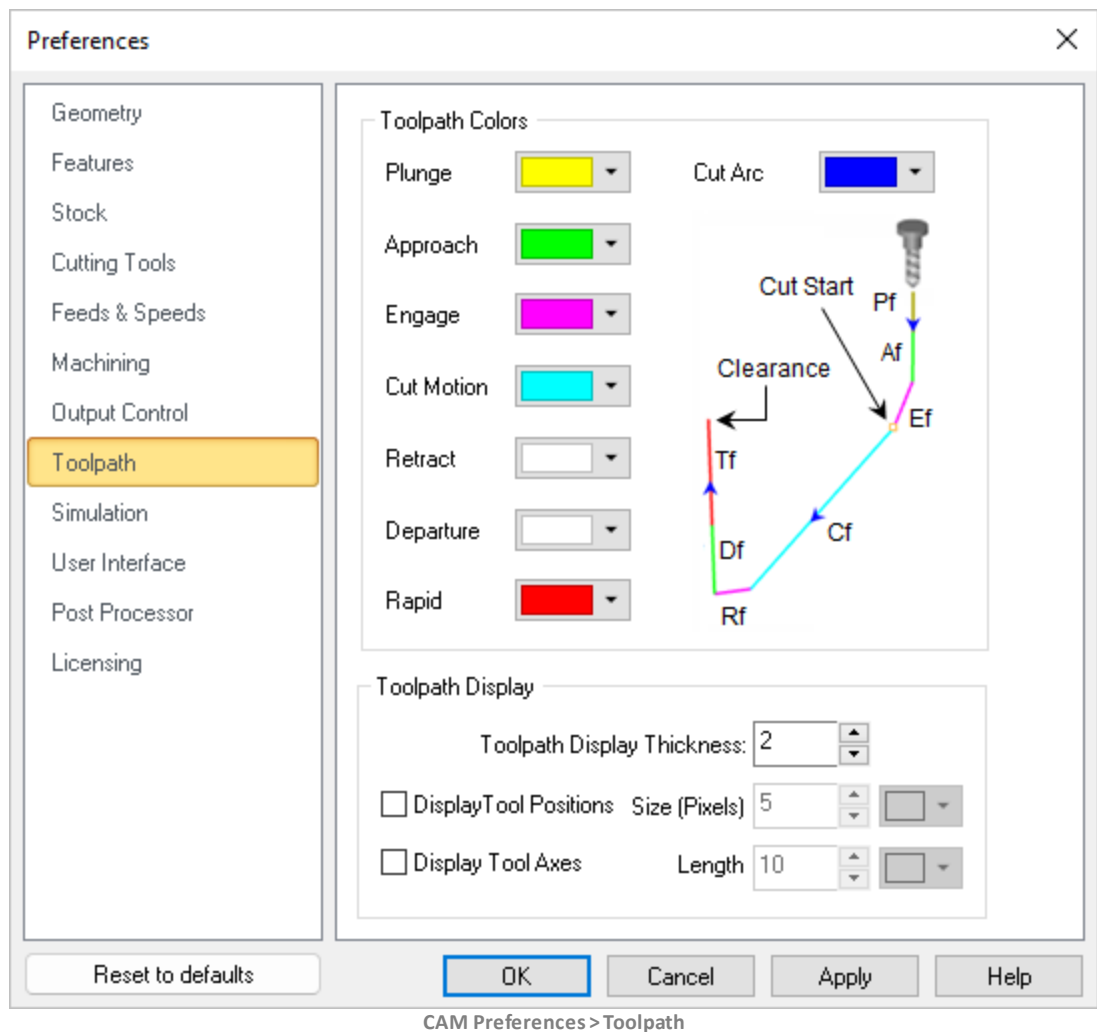
Check the box if your wish to always output [Drill Cycles](#) as linear motions.

9.8 Toolpath

These preferences relate to the graphical display of toolpath cut motions. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.



CAM Preferences > Toolpath



CAM Preferences > Toolpath

Toolpath Colors

Use the color selectors to define the display color for each motion in the toolpath. The following can be set: **Cut Motion**, **Plunge**, **Approach**, **Engage**, **Retract**, **Departure**, **Rapid** and **Cut Arc**.

Toolpath Display

These preferences control the display of the toolpath in the graphics window.

Toolpath Display

This refers to the graphical display of toolpaths. Enter a value to effect the size of the toolpath during display.

Display Tool Positions Size (Pixels)

Check this box to display tool position locators. Each coordinate represents one tool position. Then enter the pixel size for the locator point as well as the color of the position points. You can also use the color selector to assign a color to these markers.

Display Tool Axis

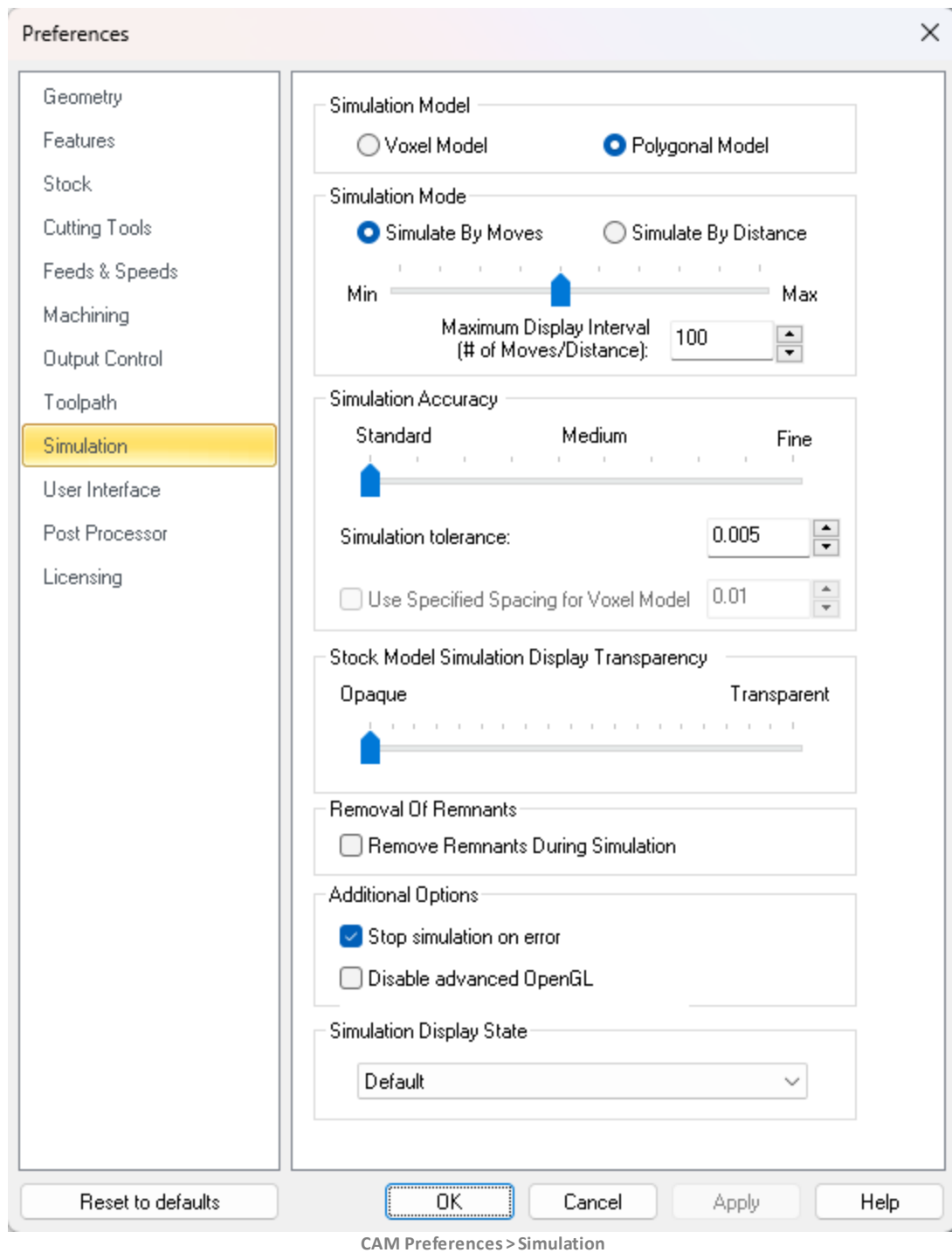
Check this box to display the [Tool Axis](#) line. You can then enter a [Length](#) for the axis line and use the [Color](#) selector to assign it a color.

9.9 Simulation

You can set the simulation preferences using this dialog. **Note:** Some options are not available in [XPR \(Xpress\)](#) configuration. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.



Dialog Box: [CAM Preferences > Simulation](#)



Simulation Model

In the [RhinoCAM MILL](#) module you can choose between two simulation models. One is called the [Voxel Model](#) and the other the [Polygonal Model](#).

Voxel Model

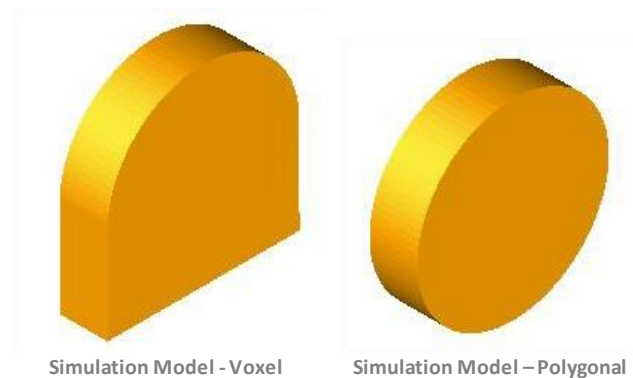
The **Voxel Model** is a fast simulation model that is primarily used for 3 axis applications. It is especially useful when there are large amounts of toolpath blocks to be simulated. This model is fast but suffers from some accuracy limitations near vertical walls. The display quality of this simulation might also be insufficient for some applications especially when simulating near vertical walls.

Polygonal Model

The Polygonal Model on the other hand is a high quality simulation model. This model uses more accurate simulation algorithms at the expense of speed. The speed of this simulation can be relatively slow when compared to the **Voxel Model**. Additionally only the **Polygonal Model** of simulation can be used for 4 and 5 Axis simulations. The **Voxel Model** is limited strictly to 3 Axis applications.

Note: * This feature is not available in Xpress configuration.

Here is an example of a cylinder stock model representation with **Voxel** and **Polygonal** model.



Simulation Mode

You can set the simulation mode to **Distance** or by **Motion**. **Simulate by Motion** simulates the toolpath based on the number of go to motions in the generated toolpath. **Simulate by Distance** uses a distance based approach.

Note: * This feature is not available in Xpress configuration.

Simulation Speed

You can control the speed of the simulation using the slider bar and the **Maximum** display interval. When using **Simulate by distance** mode, the speed is determined as **# of Motions / Distance**.

Simulation Accuracy

This setting is used to control the accuracy of display of the simulated model. You can control the accuracy of the stock model by selecting from **Standard**, **Medium** or **Fine**. The

finer the stock model accuracy results in slower performance and increases the simulation time.

Simulation Tolerance

This value also controls the simulation tolerance. While the [Simulation Accuracy](#) slider provides a high level of control, this [Simulation Tolerance](#) provides a granular control over the accuracy of the cut material simulation model. CAUTION: This value greatly affects simulation time.

Use Specified Simulation Spacing for Voxel Model

When [Voxel Model](#) is selected (see [Simulation Model](#) above), you can also specify the spacing for the [Voxel](#) model. Check the box and enter the [Spacing](#) distance desired.



Stock Model Simulation Display Transparency

Use this slider to adjust the [Stock Model Transparency](#) when the [Simulate](#) tab is selected (i.e., when you are performing a cut material simulation).



Removal of Remnants

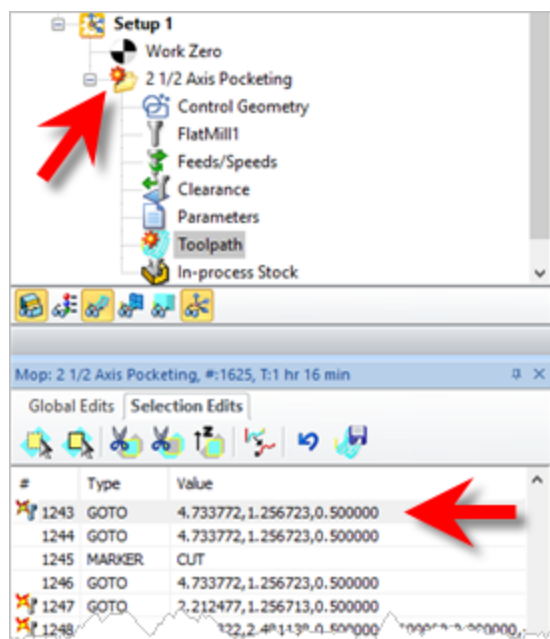
Check this box to [Remove Remnants During Simulation](#). Any disassociated stock will be removed from the simulation.



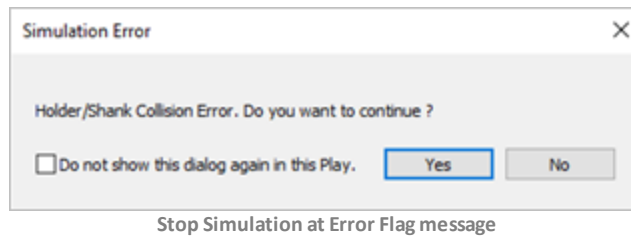
Additional Options

Stop Simulation in Error

Check this box to pause the [Simulation](#) at each error flag. If enabled, a message will display asking if you wish to continue with the simulation. Selecting [Play](#) will simulate to the next error flag and then pause. etc.



Stop Simulation at Error Flag



Disable Advanced OpenGL

Check this box only if you have an older graphics card adapter that does not support advanced [OpenGL](#) (i.e., [OpenGL 2](#)). Some older cards may only support [OpenGL 1](#) for example. If you experience graphics instability checking this box may help resolve the issue.



Simulation Display State

Select how color is applied to toolpaths during simulations. Choose from the following:

- **Default:** The CAM preferences for [Stock Colors](#) are applied. See the [Stock](#) tab in the [CAM Preferences](#) dialog.
- **Tool:** The [Cut Material](#) color assigned to the tool is applied. See the [Create/Edit Tool](#) Dialog
- **Mop:** The color properties of the [Machining Operations](#) (Mops) are applied. Right-click on the [MOp](#) and select [Properties](#).
- **Texture:** The material texture defined in the [Materials](#) dialog is applied. Select [Materials](#) from the [Program](#) tab.

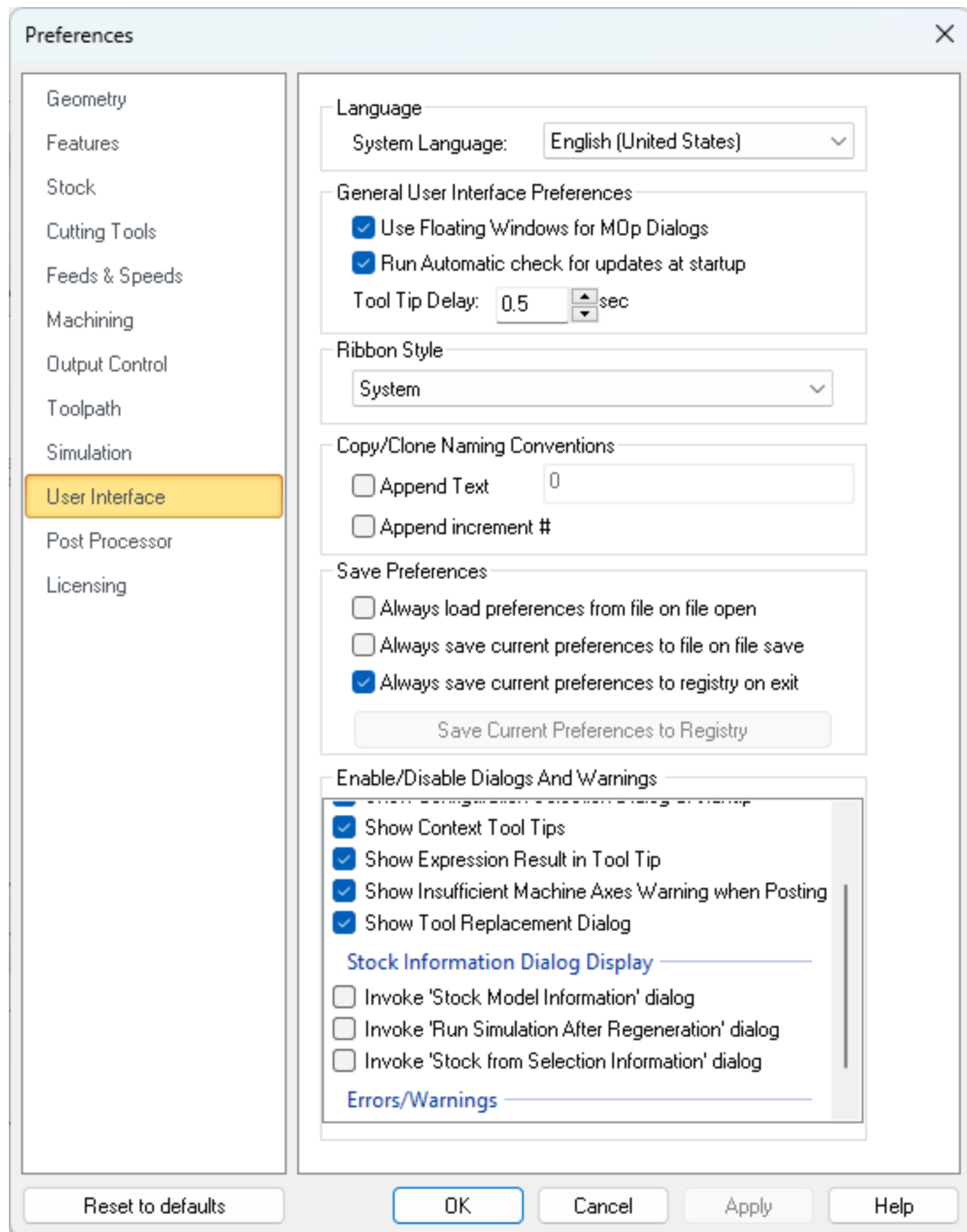
To change the display state manually, go to the [Simulate](#) tab and adjust the [Display State](#) menu located at the bottom of the [Machining Browser](#) as shown below.



9.10 User Interface

Added the Language setting. Added the Copy/Clone increment value options. From here you can set the various user interface options. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.

Dialog Box: CAM Preferences > User Interface



Preferences

Geometry
Features
Stock
Cutting Tools
Feeds & Speeds
Machining
Output Control
Toolpath
Simulation
User Interface
Post Processor
Licensing

Language
System Language: English (United States)

General User Interface Preferences
☒ Use Floating Windows for MOp Dialogs
☒ Run Automatic check for updates at startup
 Tool Tip Delay: 0.5 sec

Ribbon Style
System

Copy/Clone Naming Conventions
☐ Append Text
☐ Append increment #

Save Preferences
☐ Always load preferences from file on file open
☐ Always save current preferences to file on file save
☒ Always save current preferences to registry on exit
 Save Current Preferences to Registry

Enable/Disable Dialogs And Warnings
☒ Show Context Tool Tips
☒ Show Expression Result in Tool Tip
☒ Show Insufficient Machine Axes Warning when Posting
☒ Show Tool Replacement Dialog
Stock Information Dialog Display
☐ Invoke 'Stock Model Information' dialog
☐ Invoke 'Run Simulation After Regeneration' dialog
☐ Invoke 'Stock from Selection Information' dialog
Errors/Warnings

Reset to defaults OK Cancel Apply Help

Dialog Box: CAM Preferences > User Interface

Language

Use this to set the system language of the plugin's User Interface.

General User Interface Preferences

Use Floating Windows for Mop Dialogs

Selecting this option displays machining operation dialogs as a floating window where the dialog appears on top of the Machining Browser. If the above option is unchecked the machining operation dialog is docked and is displayed over the Machining Browser window.

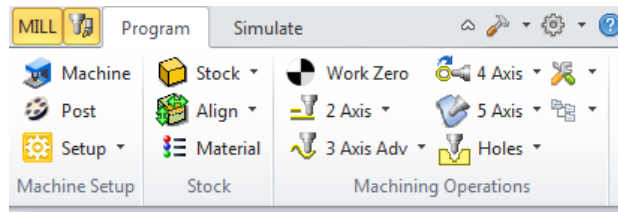
Run Automatic check for updates at startup

When this box is checked, the system automatically checks for updates and gives you the chance to install updates. An active internet connection is required to check for updates.



Ribbon Style

This allows the selection of different themes that changes how the **Browser** windows appear. The borders, colors, highlighting, and shadowing of standard buttons, dialogs, and windows are controlled by which theme is selected.



Example Ribbon Style: Office 2010 Silver



Copy/Clone Naming Conventions

Use this option to set the naming conventions when a MOP is Copied or Cloned.

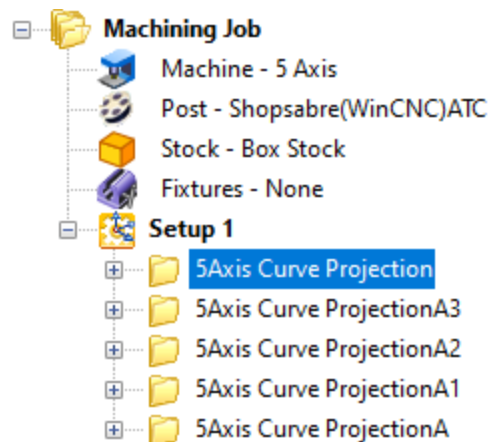
Copy/Clone Naming Conventions

☒ Append Text

☐ Append increment #

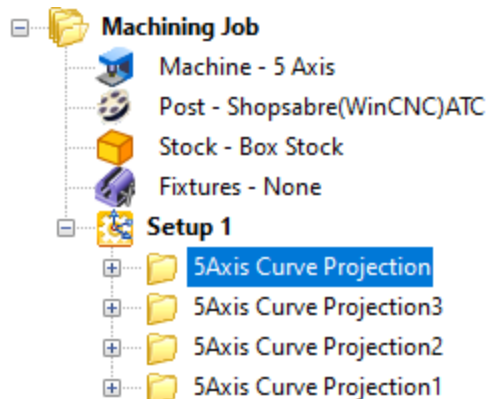
Append Text

Check this box to append text to end of each copied or cloned operation in the Machining Job tree. First check the box located to the left of "**Append Text**", then enter the text that you want appended to each copy or cloned operation.



Append Increment

Check this box to append an incrementing numerical value (i.e., 1,2,3...) to end of each copied or cloned operation in the Machining Job tree. First check the box located to the left of "**Append Increment #**", then enter the starting number for the numerical increment.



Save Preferences

Always load preferences from file when opening a new file

Check this box if you wish to always load CAM Preferences from the file you are opening. Remember, however, that your current settings including your selected post is subject to be being changed.

Always save current preferences to file on file save

Check this box if you wish to always save the current CAM preferences to the file on file save. Remember, however, that your current settings including your currently selected post will replace those preferences that were in the current file originally.

Always save current preferences to registry on exit

Check this box if you wish to always save the current CAM preferences to the Windows registry when you exit your MecSoft CAM plugin. This will ensure that your current CAM settings will always be used when starting a new file.

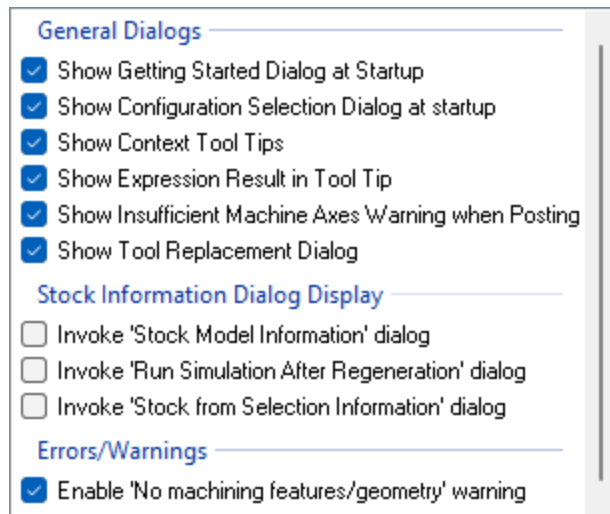
Save Current Preferences to Registry

If you have your preferences set the way you want them and do not want them to change, select this button to save the current preferences to your Windows registry. Doing this will force them to be loaded when you create new files.



Enable/Disable Dialogs And Warnings

This section contains a list of the dialog that you can disable if desired. Make sure you understand what each dialog means and what affect it will have when it is NOT being displayed.

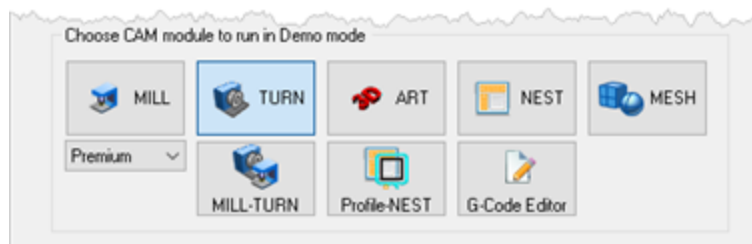


Show Getting Started Guide at startup

This displays Getting Started dialog at program startup every time the program is loaded. This dialog provides quick access to resources on MecSoft's website.

Show Configuration Selection Dialog at startup

Selecting this option displays the product configuration dialog to run when the program is loaded. You can select from the following configuration modules: MILL, TURN, ART, NEST, Profile-NEST and G-Code Editor. Additionally, you can select from the following MILL module configurations: Express, Standard, Expert, Professional and Premium.



Configuration Selection Dialog at startup

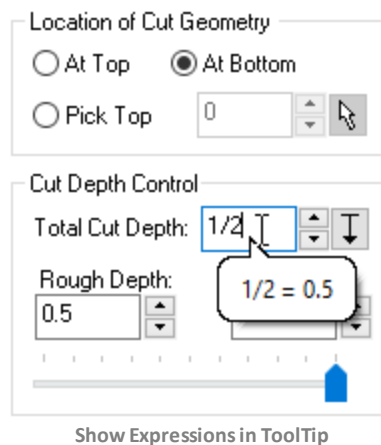
Show Context Tooltips

Check this box to display Context ToolTips when the mouse moves over a parameter in a dialog. A definition of the parameter will pop-up automatically. Note that Context ToolTips may not be available for ALL dialogs. You can also set the ToolTip Delay in

seconds. This is the amount of time it takes to display the Context ToolTip when the mouse has activated it.

Show Expression Results in Tooltip

You can enter expressions in any dialog field that expects a numerical value and the value will be computed and entered automatically. Check this box to pop-up the results of any expressions in a ToolTip balloon. An example is shown below.



Show Insufficient Machine Axis Warning when Posting

With this checked, you will receive a warning message if the Machine Setup definition is not set to the required number of axis for the operation being posted.

Show Tool Replacement Dialog

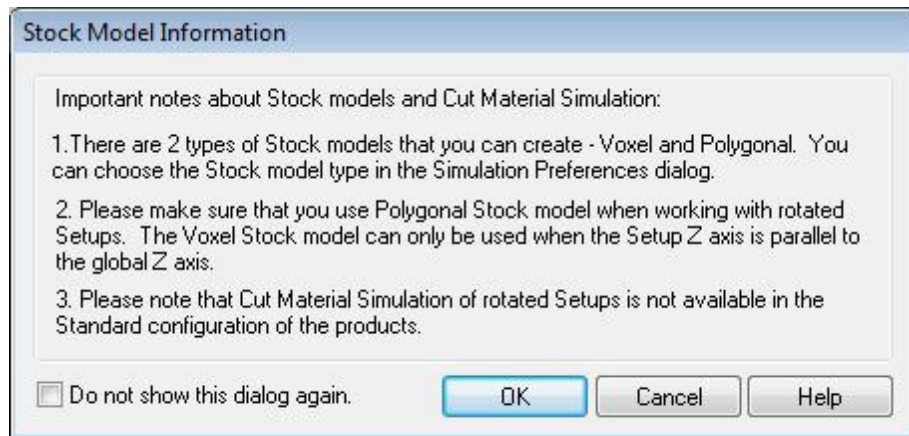
When you open a file that contains tool(s) whose names match a tool that is currently loaded, a dialog asks if you wish to replace the currently loaded tools with the tools from the file you are opening. You can check this box to replace tools by default and stop the dialog from displaying.

Enable "No machining features/geometry" warning

The ability to suppress warnings when a user regenerates a Knowledge Base that has machining operations that cannot locate control geometry in the loaded part file was implemented. This helps in implementing automation without forcing human interactions with the system.

Invoke 'Stock Model Information' dialog

The [Stock Model Information](#) dialog is displayed when a stock geometry is created.



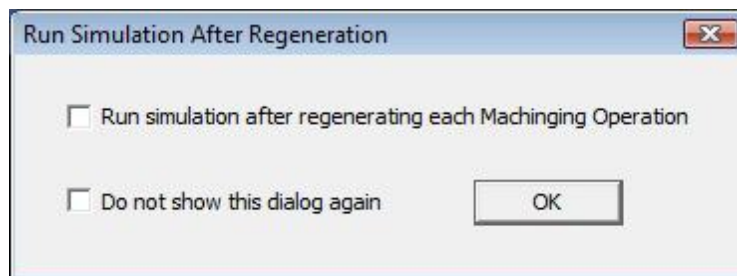
Dialog Box: Stock Model Information

You can turn off this dialog by selecting [Do not show this dialog again](#) located on the bottom of the message window.

To display this dialog during stock creation, select [CAM Preferences > User Interface](#) and select [Invoke 'Stock Model Information' dialog](#).

Invoke 'Run Simulation After Regeneration' dialog


This dialog is displayed when you regenerate a [Setup](#) or the [Machining Job](#).



Dialog Box: Run Simulation After Regeneration

Run simulation after regenerating each Machining Operation

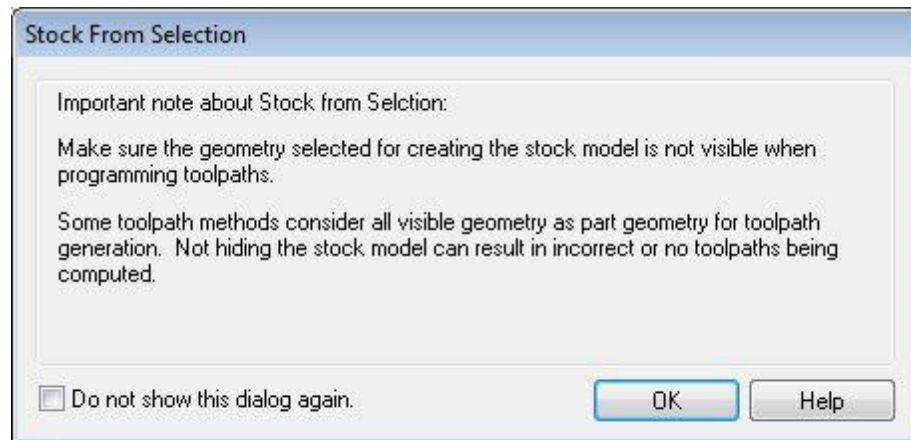
Selecting this option simulates every machining operation in the [Setup](#) after the operation is regenerated. This is generally selected when a re-roughing operation is part of a [Setup](#) as it requires the in-process stock of the previous roughing operation to generate the re-roughing toolpath.

 This process would take longer processing time to regenerate all operations in a Setup depending on the system resources and simulation preferences.

To display this dialog when regenerating a [Setup](#), select [CAM Preferences > User Interface](#) and select [Invoke 'Run Simulation after Regeneration' dialog](#).

Invoke 'Stock from Selection Information' dialog

This dialog is displayed when creating [Stock](#) geometry using [Stock from Selection](#).



Dialog Box: Stock from Selection Information

To display this dialog again when creating [Stock](#) from Selection select [CAM Preferences > User Interface](#) and select [Invoke 'Invoke Stock from Selection Information' dialog](#).

[Reset to defaults](#)

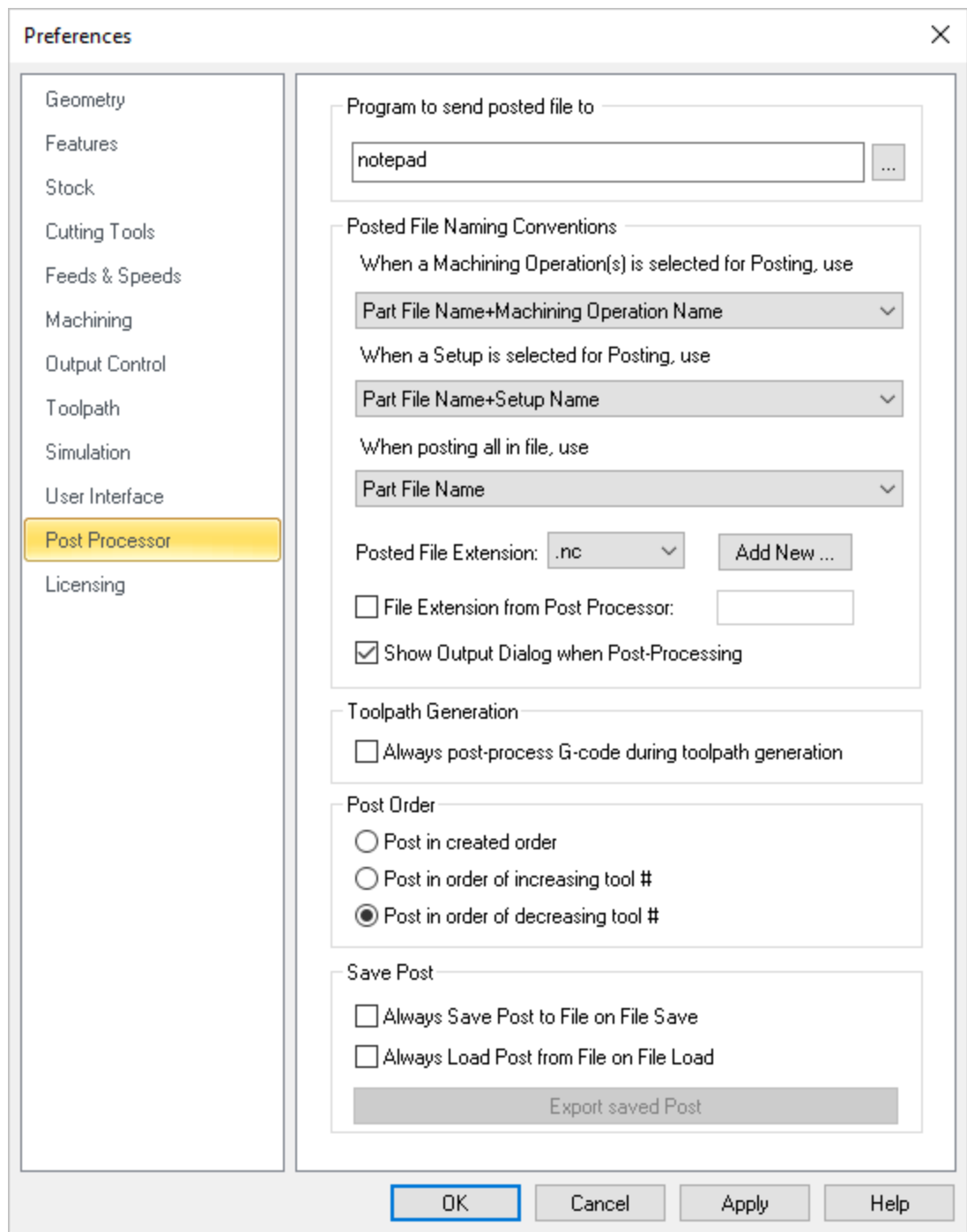
You can use this button if you want to revert to the default factory install settings.

9.11 Post Preferences

These preferences relate to posting toolpath operations to gcode files.



[CAM Preferences > Toolpath](#)



Program to send the Posted file to

This feature allows you to specify a program to display the posted file. This could be a NC editor or a text editor like [Notepad](#).



You could also have this point to your control software's executable file and **RhinoCAM** will automatically launch this application when the machining operations are post processed.



Posted File Naming Conventions

This allows you to set rules for posted file name when post processing machining operations.

When a machining operation is selected for posting you can set the output file name from one of the following options.

- Part File Name + Machining Operation Name
- Part File Name + Setup Name + Machining Operation Name
- Setup Name + Machining Operation Name
- Machining Operation Name

When a setup is selected for posting you can set the output file name from one of the following options.

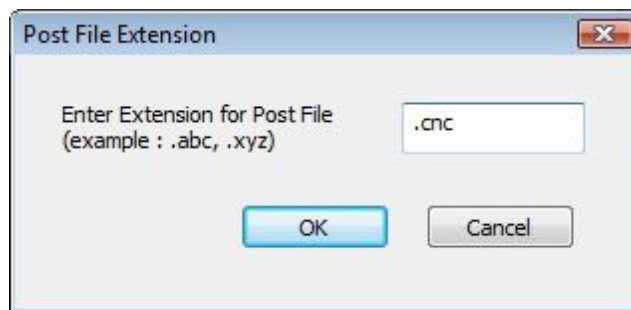
- Part File Name + Setup Name
- Setup Name

When **Machining Job** is selected to **Post All**, you can set the output file name from one of the following options.

- Part File Name
- Part File Name + First Setup Name
- First Setup Name

Posted File extension

You can select a posted file extension from the list or add an extension to the list by selecting **Add new** button. This displays the **Post File Extension** dialog shown below where you can specify a new file extension and click **OK**.



Dialog Box: Post File Extension

The new file extension is now set as your posted file extension automatically.

By default [RhinoCAM](#) performs interactive post-processing. That is, when you select a toolpath for post-processing, [RhinoCAM](#) launches the post-processor and waits for it to complete. You can also turn off the display of the output dialog (post and save dialog).

During interactive post-processing, [RhinoCAM](#) launches the NC editor to view the output file. You can specify a different NC editor to use. See [Program to send the Posted file to](#) above for doing this.

File Extension from Post Processor

Check this box to "pull" the posted g-code file extension from the [Legacy Post-Processor](#) (*.spm) file. This ensures that whichever post that you use, your posted g-code file will match the file extension defined in the active post. **Note:** You must edit your legacy post and set the [Output File Extension](#) value from the [General](#) tab in the [Post-Processor Generator](#).

Show Output Dialog When Post Processing

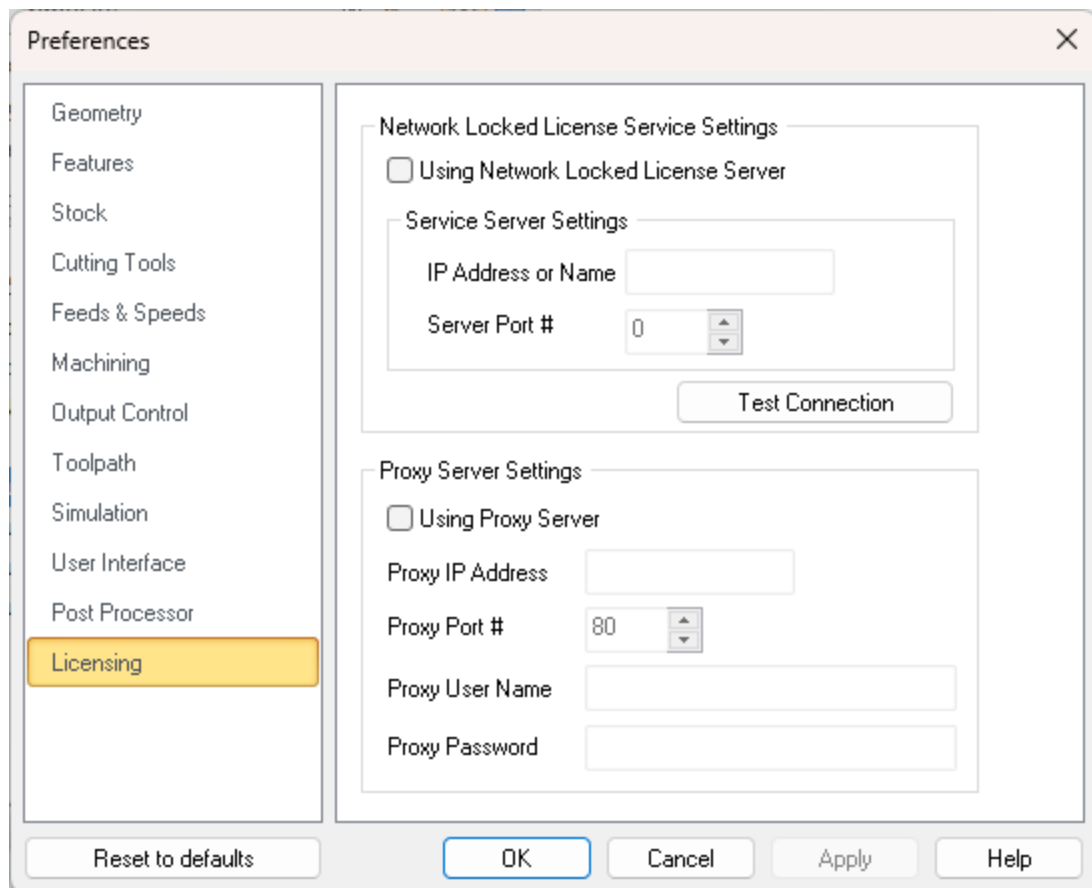
Check this box to always display the [Post & Save As](#) file dialog when you select [Post](#) from an operation ([Mop](#)), [Setup](#) or [Machining Job](#).

9.12 Licensing

This dialog allows you to set [Licensing Preferences](#) for using a [Proxy Server](#) and/or a [LAN Daemon](#) (for [Network Licenses](#)). This information would be provided by your network administrator. You can use the [Reset to defaults](#) button if you want to revert to the default factory install settings.



Dialog Box: License Preferences



Dialog Box: License Preferences



Network Locked License Service Settings

Network Locked License Service is a security process required when a computer on a network tries to connect to the server in order to use its resources. If the user's identity has been stored by the server, entering a valid username and password completes the connection. In this method, the license is "locked" to this network only.

Using Network Locked License Server

Check this box to enable the [Network Locked License Service](#). Then complete the [Service Server Settings](#) provided below.

Server IP Address

For [Network Authentication](#), enter the Service Server's [IP Address](#) here.

Server Port

For [Network Authentication](#), enter the Service Server's [Port #](#) here.

Test Connection

Test the connection to the license service server (IP Address or Name) that you have specified in this dialog. A Diagnostics dialog will display with the test results. In the example, the test failed because the IP address of the host could not be reached.

Diagnostics		×
Licensing System Initialized	OK	
Internet Connection	OK	
Cloud Service Reachable	OK	
Host IP/Name Entered	Failure	
Host Resolved	Not ...	
Service Connected	Not ...	
License Received	Not ...	



Proxy Server Settings

Proxy Server Settings need to be set if your computer or network is behind a proxy. A proxy server is a computer that acts as an intermediary between the user's computer and the Internet. It allows client computers to make indirect network connections to other network services.

Using Proxy Server

Check this box to enable **Proxy Server Settings** and complete ALL of the following fields accurately. This information would be provided by your network administrator.

Proxy IP Address

This is the **IP Address** for your **Proxy Server**. This information would be provided by your network administrator.

Proxy Port

Enter the **Port Number** for your **Proxy Server**. This information would be provided by your network administrator.

Proxy User Name

Enter the **Proxy Server** user name. This information would be provided by your network administrator.

Proxy Password

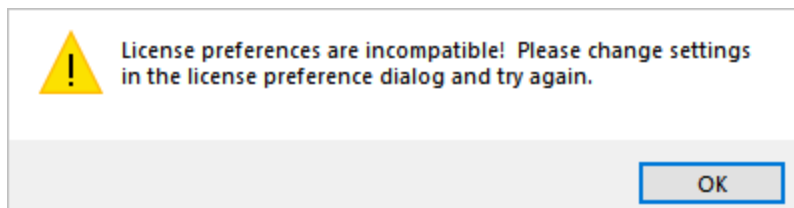
Enter your **Proxy Server** password. This information would be provided by your network administrator.



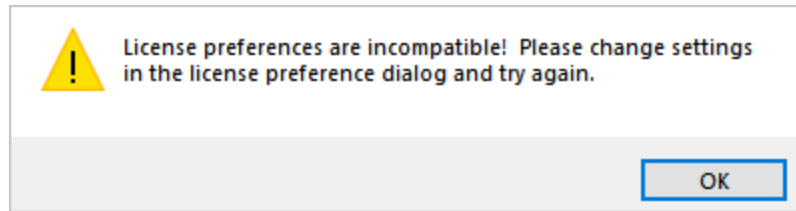
Troubleshooting and Messages

Here are some troubleshooting messages that you may encounter.

If you have node locked license activated and you select **Using Lan Daemon**, this will display the following message and release your node locked license.



If [Using Lan Daemon](#) is checked and you are entering a valid node locked activation code in the license dialog, the following message is displayed. Make sure [Using Lan Daemon](#) is unchecked before activating a node-locked license.



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