

# **Mastercam X<sup>5</sup>**

**Welcome to  
Mastercam**



**World Class Machining**



# Welcome to Mastercam

October 2010

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## II • WELCOME TO MASTERCAM

### **Mastercam® X5 Welcome to Mastercam**

Date: October 2010

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First Printing: October 2010

Software: Mastercam X5

Part Number: X5-PDF-TUT-WG

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[www.mastercam.com/legal/licenseagreement/](http://www.mastercam.com/legal/licenseagreement/)

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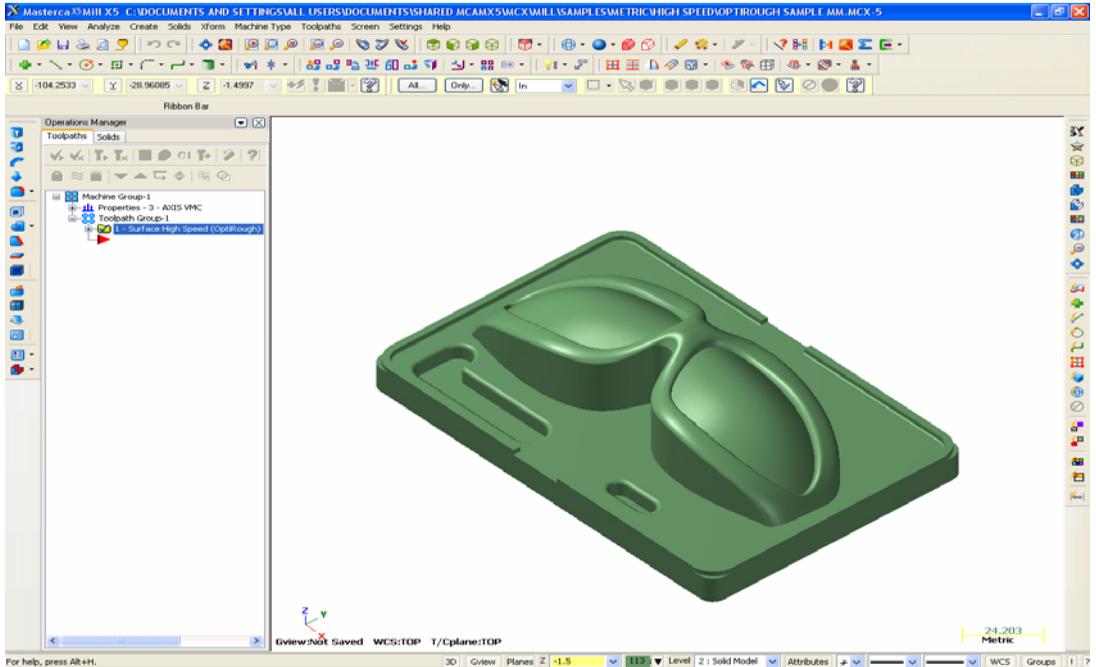


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# INTRODUCTION

Welcome to Mastercam! Mastercam is a powerful application that delivers CAD/CAM software tools for all types of programming, from the most basic to the extremely complex. This tutorial introduces you to the Mastercam workspace and prepares you for work with other tutorials in the *Mastercam Getting Started Tutorial Series*.



## Tutorial Goals

- Become familiar with the Mastercam workspace.
- Personalize your workspace to suit your requirements and preferences.

## Before You Begin

This is a module of the *Mastercam Getting Started Tutorial Series*. The series introduces general Mastercam functions and teaches basic skills for getting started with Mastercam. Other tutorial series include:

- *Focus Series*: Focuses on a specific Mastercam feature—for example, Setup Sheets or FBM Drill, and teaches basic and advanced skills.
- *Exploring Series*: Explores a single Mastercam product—for example, Mill, Solids, or Wire, and teaches in-depth skills for working with the product.

The Mastercam tutorial series is in continual development, and we will add modules as we complete them. For information and availability, please contact your local Mastercam Reseller.



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**IMPORTANT:** Screen colors in the tutorial pictures were modified to enhance image quality; they may not match your Mastercam settings or the tutorial results. These color differences do not affect the lesson or the exercise results.

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## General Tutorial Requirements

All Mastercam tutorials have the following general requirements:

- You must be comfortable using the Windows<sup>®</sup> operating system.
- The tutorials cannot be used with Mastercam Demo/Home Learning Edition (HLE). The Demo/HLE file format (EMCX) is different from Mastercam (MCX), and basic Mastercam functions, such as file conversions and posting, are unavailable.
- Each lesson in the tutorial builds on the mastery of preceding lesson's skills. We recommend that you complete them in order.
- *Focus Series* and *Exploring Series* tutorials require, at minimum, a mastery of the basic Mastercam skills taught in the *Getting Started Series* modules. A general knowledge of machining principals and practices is also required.
- You must have a seat of Mastercam X5 Design or higher to complete most of the tutorials in the *Getting Started Series*.
- The *Basic 2D Machining* module in the *Getting Started Series* requires, at minimum, a seat of Mill Entry or Router Entry.
- The *Basic 3D Machining* module in the *Getting Started Series* requires Mill Level 3 or Router Pro.
- Additional files may accompany a tutorial. Unless the tutorial provides specific instructions on where to place these files, store them in a folder that can be accessed from the Mastercam workstation, either with the tutorial or in any location that you prefer.
- The *Getting Started Series* tutorials are available in an Adobe<sup>®</sup> Flash<sup>®</sup> compatible video format. Additional tutorial videos may also be available. Contact your local Mastercam Reseller for more information.
- You must install Adobe Flash Player to display tutorial videos. You can download Adobe Flash Player from [www.adobe.com](http://www.adobe.com).
- You must configure Mastercam to work in metric units. Complete the instructions in the following section **Preparing for a Tutorial** to set Mastercam to metric.

## Preparing for a Tutorial

Before you start a tutorial, be sure you have completed the following tasks:

- 1 Start Mastercam using your preferred method:
  - ♦ Double-click Mastercam's desktop icon.
  - Or
  - ♦ Launch Mastercam from the Windows Start menu.

- 2 Select the metric configuration file:
  - a Select **Settings, Configuration** from Mastercam's menu.
  - b Choose ...\**mcamxm.config <Metric>** from the **Current** drop-down list.
  - c Click **OK**.



## If You Need More Help

There are many ways to get help with Mastercam, including the following:

- *Mastercam Help*—Access Mastercam Help by selecting **Help, Contents** from Mastercam's menu bar or by pressing [**Alt+H**] on your keyboard. Also, most dialog boxes and ribbon bars feature a Help button  that opens Mastercam Help directly to related information.
- *Online help*—You can search for information or ask questions on the Mastercam Web forum, located at [www.emastercam.com](http://www.emastercam.com). You can also find a wealth of information, including many videos, at [www.mastercam.com](http://www.mastercam.com) and [www.mastercamedu.com](http://www.mastercamedu.com).
- *Mastercam Reseller*—Your local Mastercam Reseller can help with most questions about Mastercam.
- *Technical Support*—CNC Software's Technical Support department (860-875-5006 or [support@mastercam.com](mailto:support@mastercam.com)) is open Monday through Friday from 8:00 a.m. to 5:30 p.m. USA Eastern Standard Time.
- *Documentation feedback*—For questions about this or other Mastercam documentation, contact the Technical Documentation department by email at [techdocs@mastercam.com](mailto:techdocs@mastercam.com).
- *Mastercam University*—CNC Software sponsors Mastercam University, an affordable online learning platform that gives you 24/7 access to Mastercam training materials. Take advantage of more than 180 videos to master your skills at your own pace and help prepare yourself for Mastercam Certification. For more information on Mastercam University, please contact your Authorized Mastercam Reseller, visit [www.mastercamu.com](http://www.mastercamu.com), or email [training@mastercam.com](mailto:training@mastercam.com).

## Additional Documentation

You can find more information on using Mastercam in the following materials, located in the \Documentation folder of your Mastercam installation:

- *Mastercam X5 Installation Guide*
- *Mastercam X5 Administrator Guide*
- *Mastercam X5 Quick Start*
- *Mastercam X5 Reference Guide*
- *Mastercam X5 Transition Guide*
- *Mastercam X5 Quick Reference Card*

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- *Mastercam X5 Wire Getting Started Guide*
- *Version 9 to X Function Map*
- *Mastercam X5 NCI & Parameter Reference*
- *Mastercam X5 Post Debugger User's Guide*

# LESSON 1

## The Mastercam Workspace

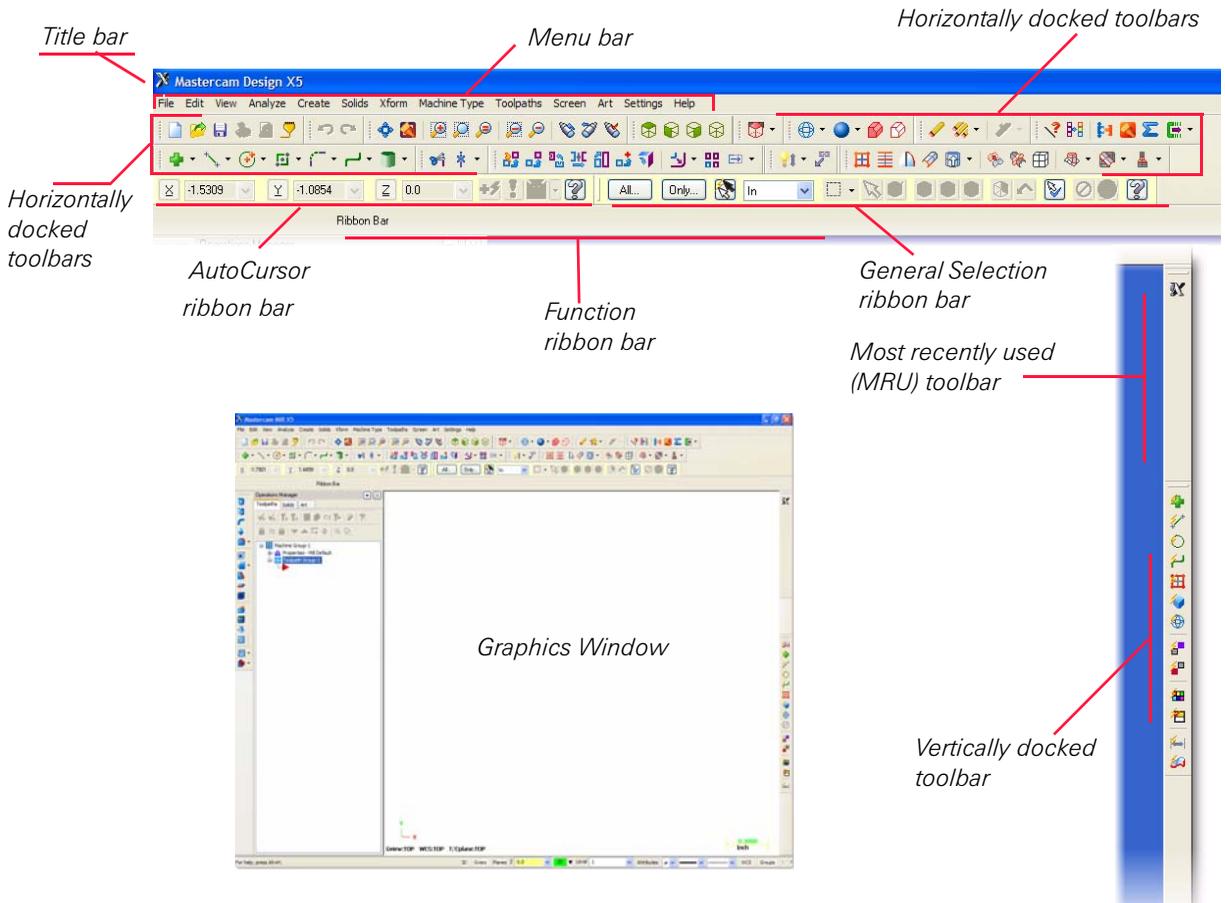
Mastercam's workspace consists of a set of standard elements, including toolbars, a status bar, and a work area. It also features special elements, such as *ribbon bars* and the *Operations Manager*.

### Lesson Goals

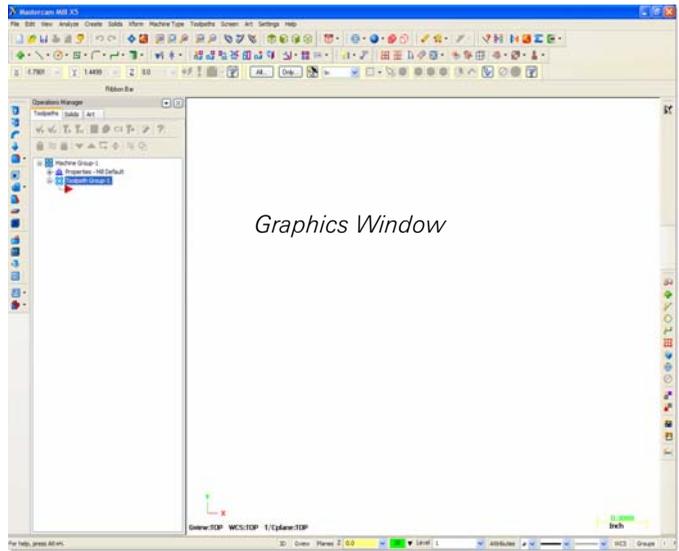
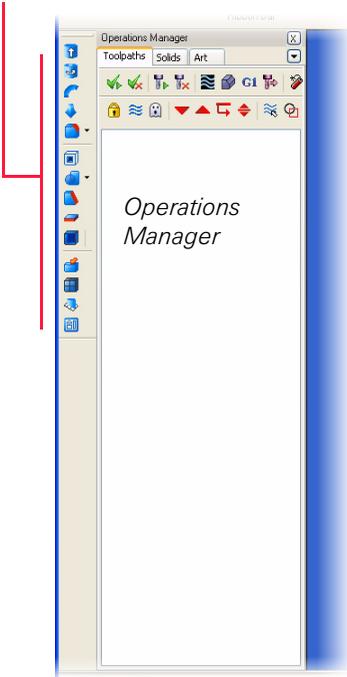
- Learn about the Mastercam environment.
- Modify toolbars and the Operations Manager.

### Interface Overview

- Start Mastercam using your preferred method. Refer to the following pictures as you look at the Mastercam interface on your screen.



Vertically docked toolbar



Prompt area

Status bar

## Exercise 1: Exploring the Interface

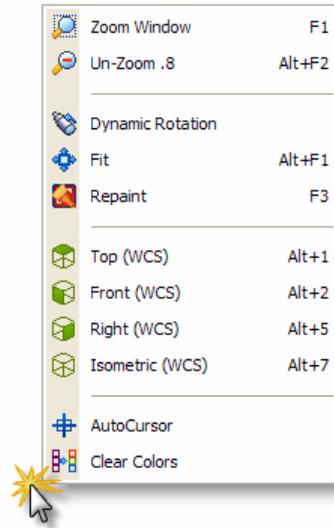
In this exercise, you explore Mastercam's interface.

**1** Right-click in the graphics window.

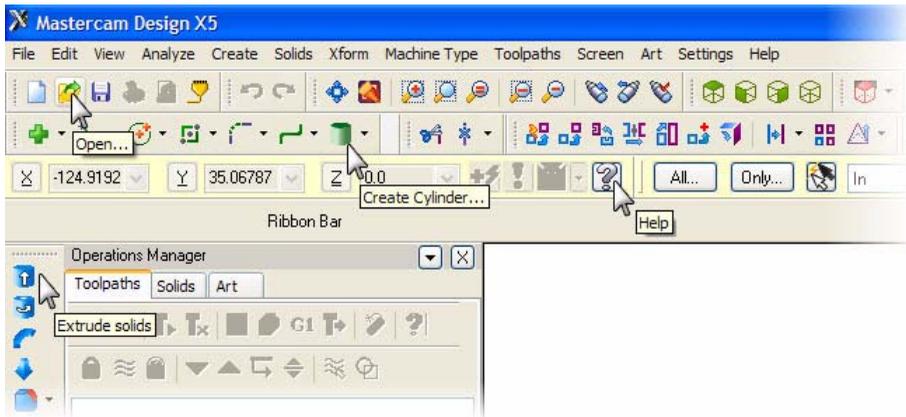
The right-click menu provides quick access to many common functions.



**TIP:** To learn more about customizing the right-click menu, see **Customizing the Right Mouse Button Menu** on page 24.



**2** Move your mouse over some of the icons in the toolbars. Note the tooltips.



**3** Move your mouse over the different functions in the Status bar at the bottom of the screen.



This icon displays when you hover over some of the Status bar options and indicates that right-clicking on the function gives you additional options.



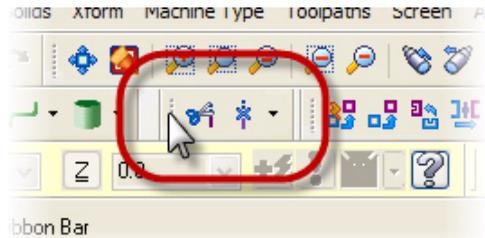
Click the **Help** button on the Status bar, or press **[Alt+H]** to learn more.



## Exercise 2: Undocking, Moving, and Redocking a Toolbar

With Mastercam, you can arrange your toolbars according to your particular needs. In this exercise, you practice this with the Trim/Break toolbar.

- 1 Select the **Trim/Break** toolbar by left-clicking and holding the separator bar. Do not release the mouse button.

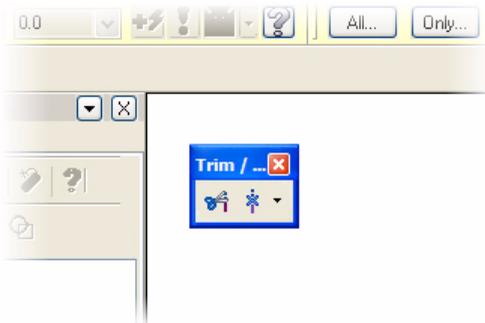


- 2 Drag and drop the toolbar onto the graphics window.  
The toolbar is now “floating” in the graphics window. You can move floating toolbars anywhere in the graphics window.

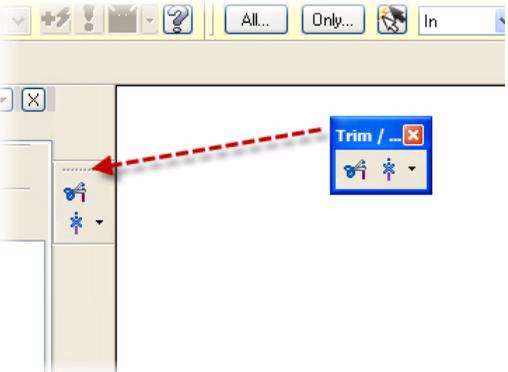
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**TIP:** You can also create a floating toolbar by double-clicking its separator bar.

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- 3 Drag and drop the **Trim/Break** toolbar onto the left side of the graphics window.  
The toolbar snaps vertically into place.



- 4 Return the **Trim/Break** toolbar to another location on the main toolbar using the drag and drop method.



## Exercise 3: Hiding and Displaying a Toolbar

Mastercam's toolbars make accessing functions as easy as a mouse click. However, you may find that you do not use some toolbars or that a toolbar that you need is not displayed. In this exercise, you use the right-click menu to hide and display the Trim/Break toolbar.

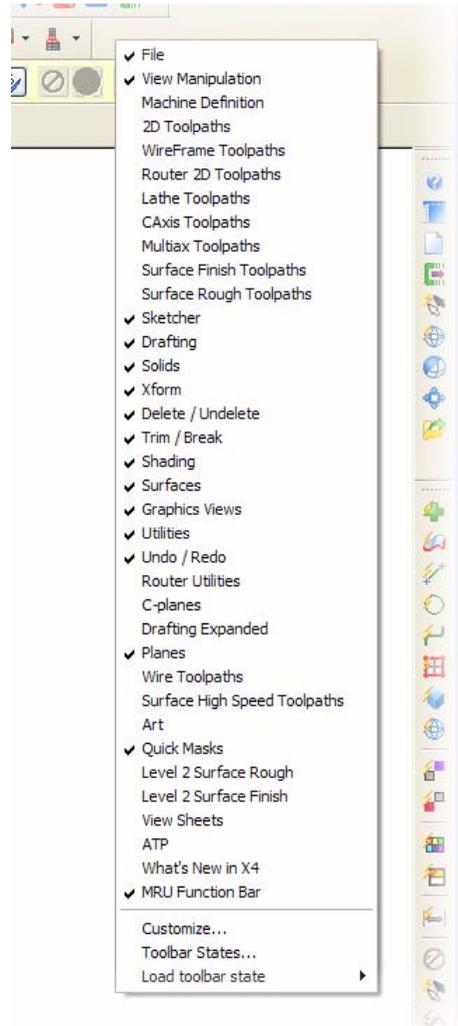
- 1 Right-click in an empty toolbar area to display a menu that shows a list of available toolbars.

Toolbars that are listed with check marks are visible.

- 2 Choose **Trim/Break** to deselect the check mark.

Deselecting the check mark hides the toolbar.

- 3 Repeat Steps 1 – 2 to re-display the Trim/Break toolbar.



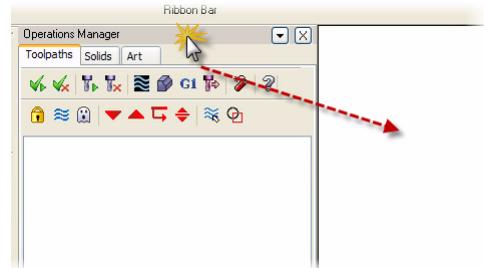
## Exercise 4: Working with the Operations Manager

Like toolbars, you can toggle the display of the Operations Manager, as well as move it to a new location. Operations Manager settings are *modal*, which means that Mastercam remembers the settings even after you close the application.

In this exercise, you use different methods to move, hide, and display the Operations Manager.

- 1 Drag and drop the Operations Manager into the graphics window by left-clicking and dragging it by its title bar.

Like an undocked toolbar, the Operations Manager can freely move (float) anywhere within the graphics window. You can also place it on top of the toolbars or dock it on a second monitor.

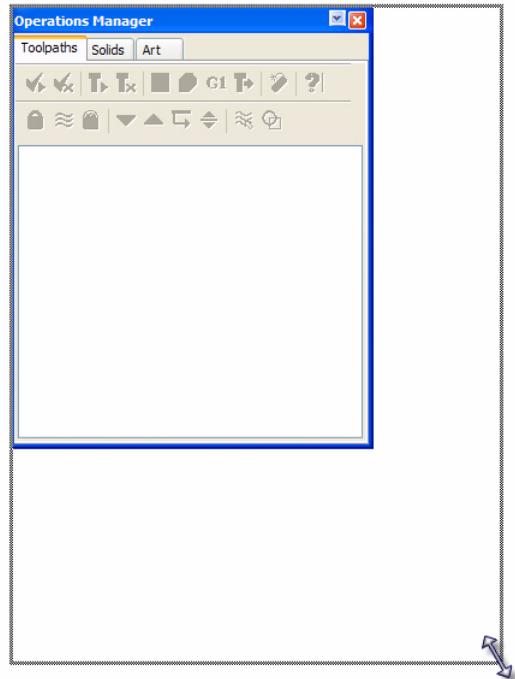



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**TIP:** You can also double-click the Operations Manager's title bar to undock or redock it.

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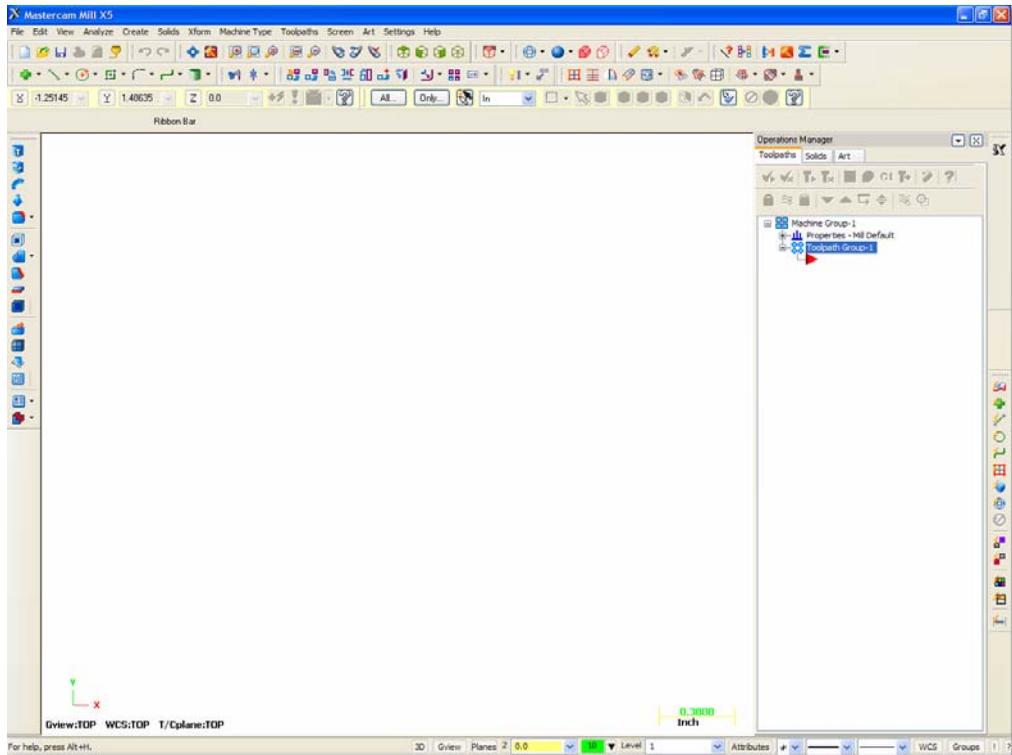
- 2 Resize the Operations Manager by clicking and dragging any of its edges.



- 3 Drag and drop the Operations Manager onto the right side of the screen.

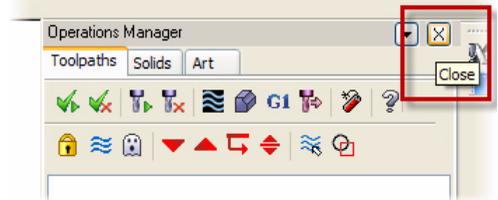


The Operations Manager snaps into place as it docks.

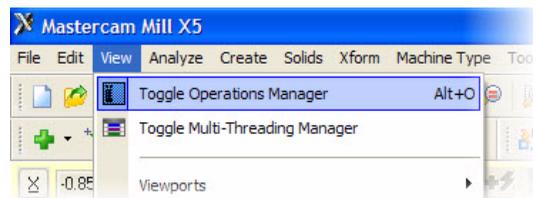


**TIP:** If you work with two monitors, drag and drop the Operations Manager onto the monitor that is not running Mastercam to free the entire graphics window for drawing.

- 4 Hide the Operations Manager by clicking the **Close** button in its upper right corner.



- 5 Re-display the Operations Manager by choosing **View, Toggle Operations Manager**.



**TIP:** You can also use the keyboard shortcut [Alt+O] to toggle the display of the Operations Manager.



## LESSON 2

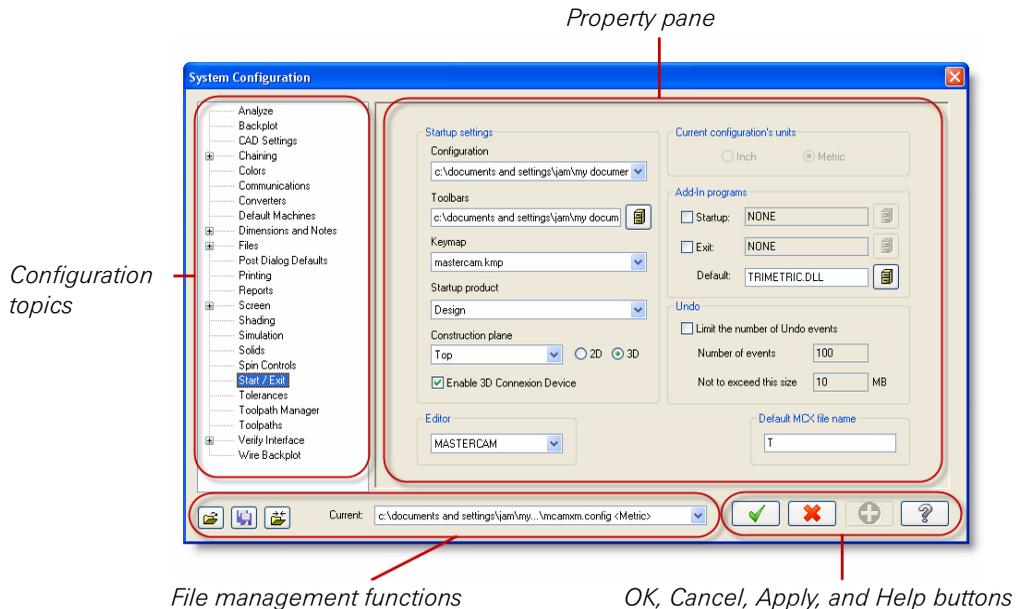
# System Configuration

With Mastercam, you can change your workspace environment or create a new one at anytime. Because each workspace configuration is saved to a separate file, it's easy to switch from one environment to another. Use the System Configuration dialog box to define and manage the configuration files that store these settings.

## Lesson Goals

- Create a configuration file.
- Make some sample changes to your configuration settings.
- Open an inch part while working in a metric environment.
- Convert an MCX part from inch to metric.

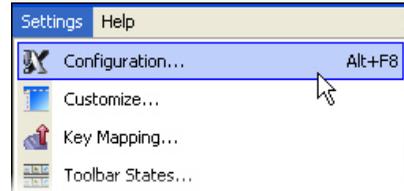
## The System Configuration Dialog Box



## Exercise 1: Changing Settings

In this exercise, you make changes to some of your Mastercam settings using the System Configuration dialog box.

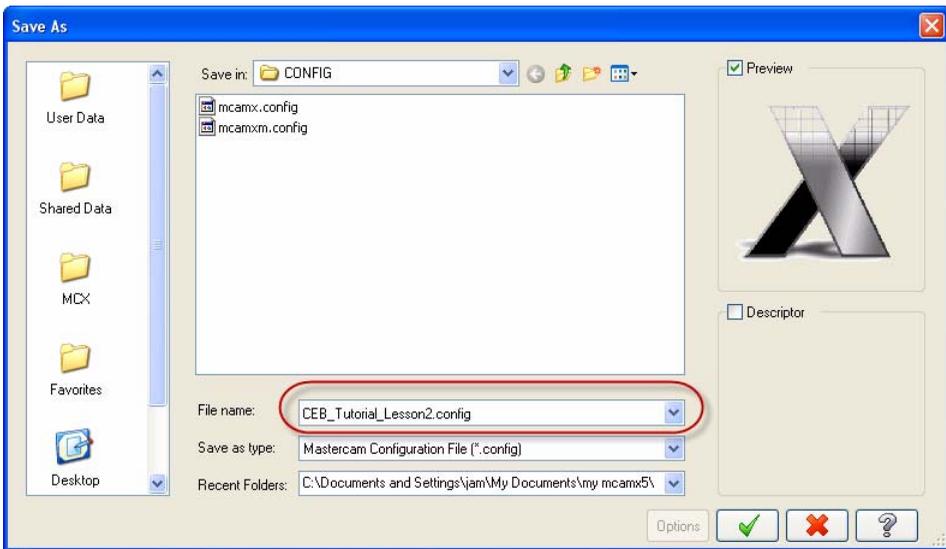
- Choose **Settings, Configuration** from the menu bar to open the System Configuration dialog box.



**TIP:** You can also press [Alt+F8] to open this dialog box.

### Create a new configuration file

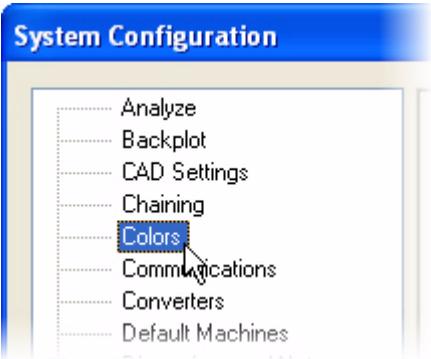
- 1 Click the **Save As** button. 
- 2 Change the configuration name to “YourInitials”\_Tutorial\_Lesson2, and click **OK**.



Mastercam saves a new file to the `\config` folder in your Mastercam installation, and the new file becomes the current configuration file. Any changes you make during this session are applied to this configuration file.

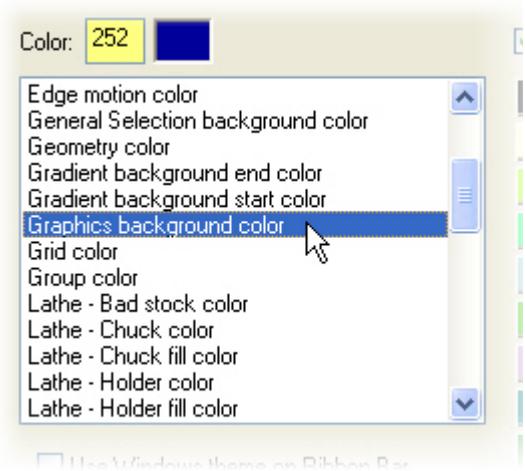
## Change the graphics background color

- 1 From the list of configuration topics on the dialog's left side, select **Colors**.

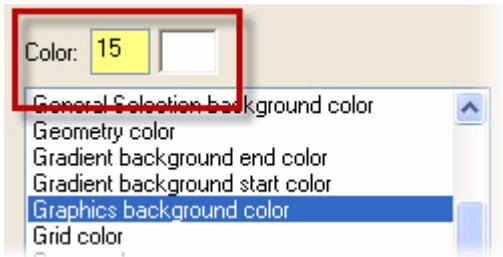


- 2 Select **Graphics background color** from the list of interface items in the property pane.

The Graphics background color is the color that displays in the graphics window.  
The default color is 252.

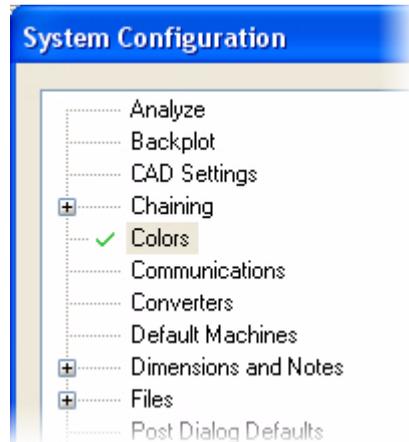


- 3 Type **15** into the **Color** field and press [Tab] or [Enter].



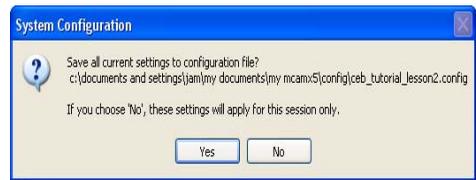
**TIP:** Change colors either by typing a number from 0 to 255 in the text box, or by clicking a color in the color palette.

When you change a setting in the property pane, a check mark displays in front of the configuration topic's name so that you can track the changes you make during an editing session.



- 4 Click the **Apply** button  to apply your changes to the configuration file.
- 5 Click **Yes** to save the changes to your configuration file.

The background color changes in the graphics window.

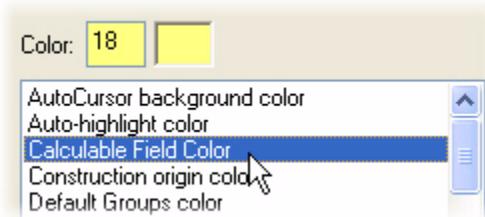


## Change the calculable field color

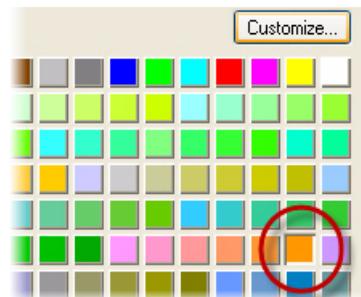
- 1 Select **Calculable Field Color** from the list of interface items.

This setting defines the color of the data entry fields that support calculator functions.

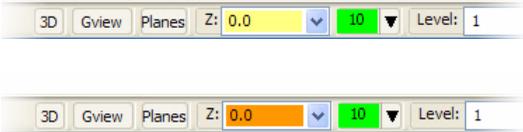
The current color is 18.



- 2 Click on color **94** (orange) in the color palette.
- 3 Click **Apply**. 
- 4 Click **Yes** to save the changes to your configuration file.



Calculable fields, such as the Z depth function field in the Status bar, change color.

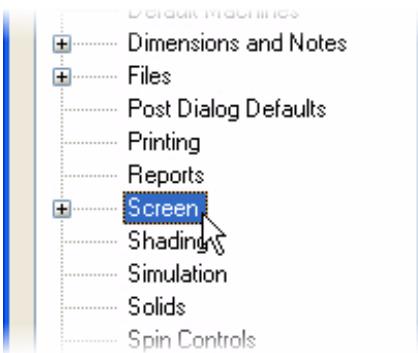


### Hide viewport XYZ axes and display large icons

By default, Mastercam displays information about the geometry (axes, views, planes, and units) at the bottom of the graphics window. You can hide this information by changing the settings in the System Configuration dialog box. From here, you can also increase the size of the icons in the toolbars.



- 1 From the list of configuration topics on the dialog's left side, select **Screen**.



From the property pane:

**2** Deselect **Display viewport XYZ axes**.

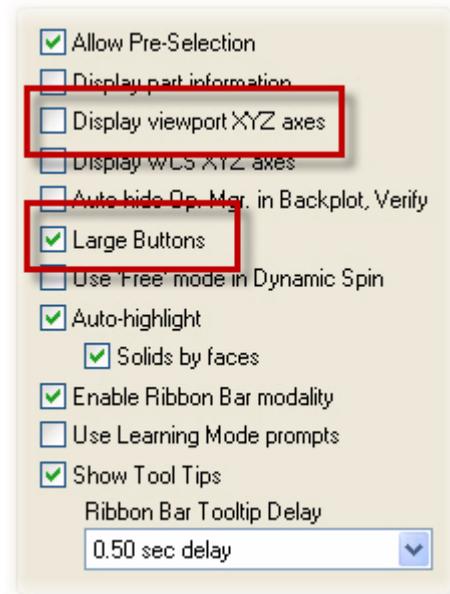
**3** Select **Large Buttons**.

**4** Click **Apply**.



**5** Click **Yes** to save the changes to your configuration file.

The viewport information that was displayed at the bottom of the graphics window is now hidden, and the icons in the toolbars are larger.



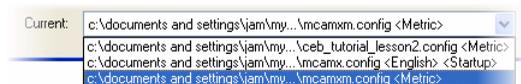
## Revert to the default configuration file

To go back to the default configuration file, exit and restart Mastercam.

Or

**1** Select `mcamxm.config <Metric>` from the **Current** drop-down menu.

**2** Click **OK**.



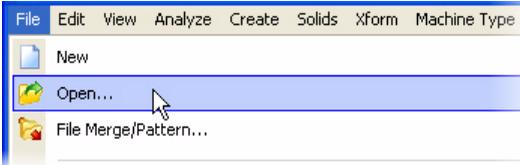
## Exercise 2: Converting Units

When you open a part file that uses different units (English or metric) than the current configuration, Mastercam can switch units by loading an alternate default configuration file. Similarly, when you switch to a configuration file that uses different units than the current part, Mastercam can convert and scale the part to the configuration's unit of measurement. In this exercise, you open a part with different units from the current configuration file, and then convert the part back to the original configuration's units.

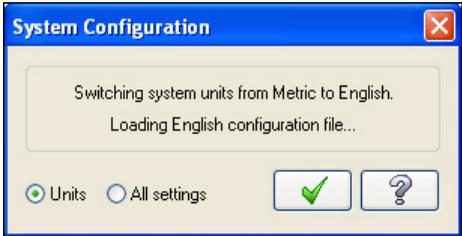
Before you begin this exercise, restart Mastercam or make sure that `mcamxm.config <Metric>` is your current configuration file.

# Opening a part with English units

- 1 Choose **File, Open** from the menu bar.

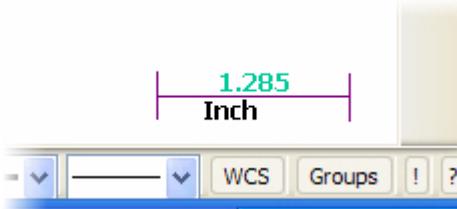


- 2 Navigate to `BOAT.MCX-5`, which was provided with this tutorial, and click **OK**.
- 3 Click **OK** to switch system units from metric to English.



Mastercam switches the configuration file to `mcamx.config <English>`, and the part opens with English units.

The scale in the graphics window changes from metric to inches.

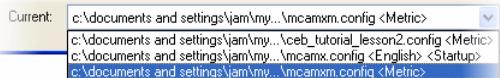
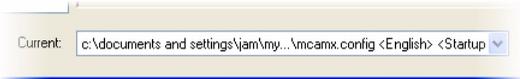


# Converting a part back to metric units

- 1 Press **[Alt+F8]** to open the System Configuration dialog box.

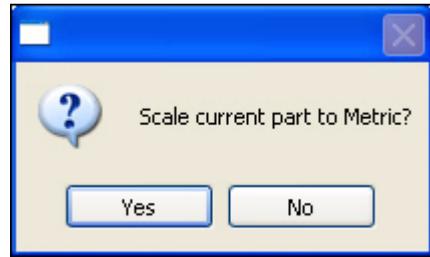
The current configuration file is `mcamx.config <English>`.

- 2 Change the current configuration file back to `mcamxm.config <Metric>`, and click **OK**.

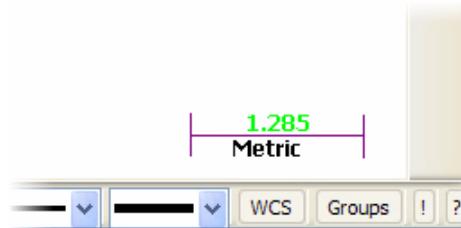


- 3 Click **Yes** to scale the part to metric.

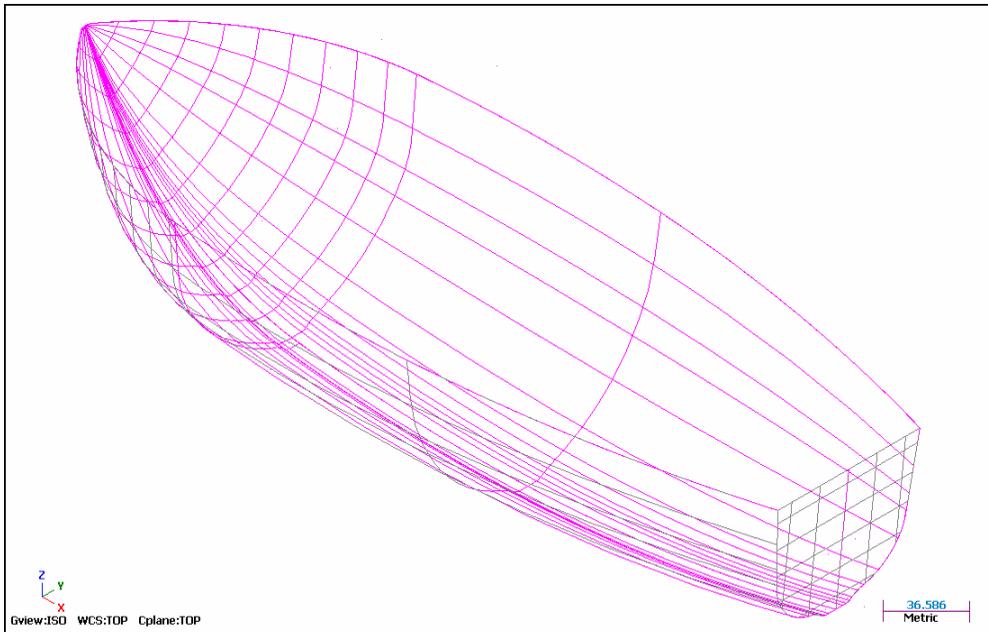
Mastercam converts and scales the part.



The scale in the graphics window changes from inches back to metric.

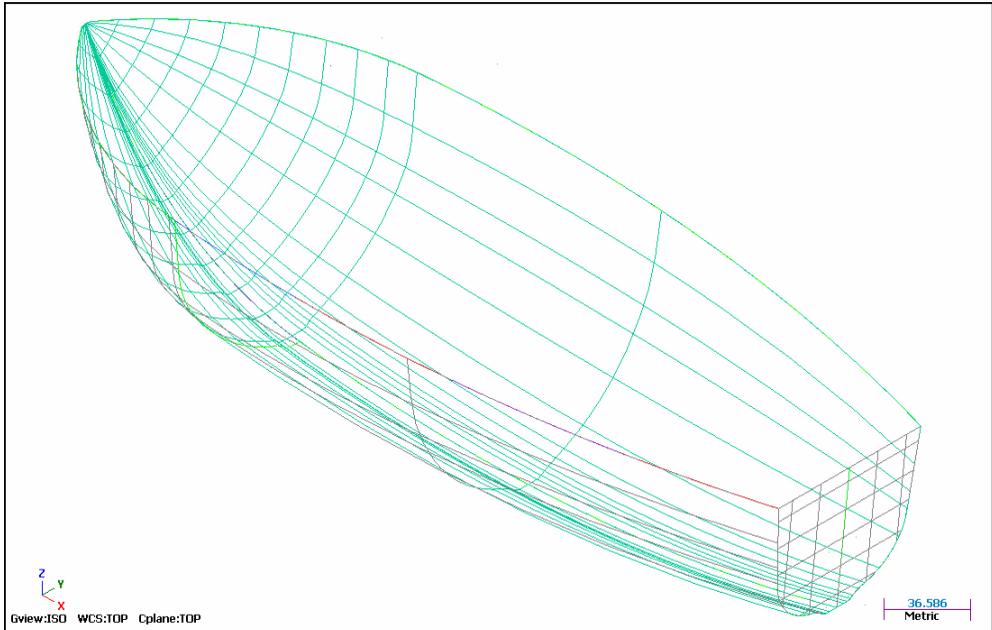


- 4 If necessary, click the **Fit** button  to view the entire part in the graphics window.



After performing the conversion, Mastercam creates a temporary group from the transformed entities. By default, the color of entities in this “result” group is purple. Click the **Help** button for more information about system groups.

- 5 Click the **Clear Colors** button  to remove the result color.





## LESSON 3

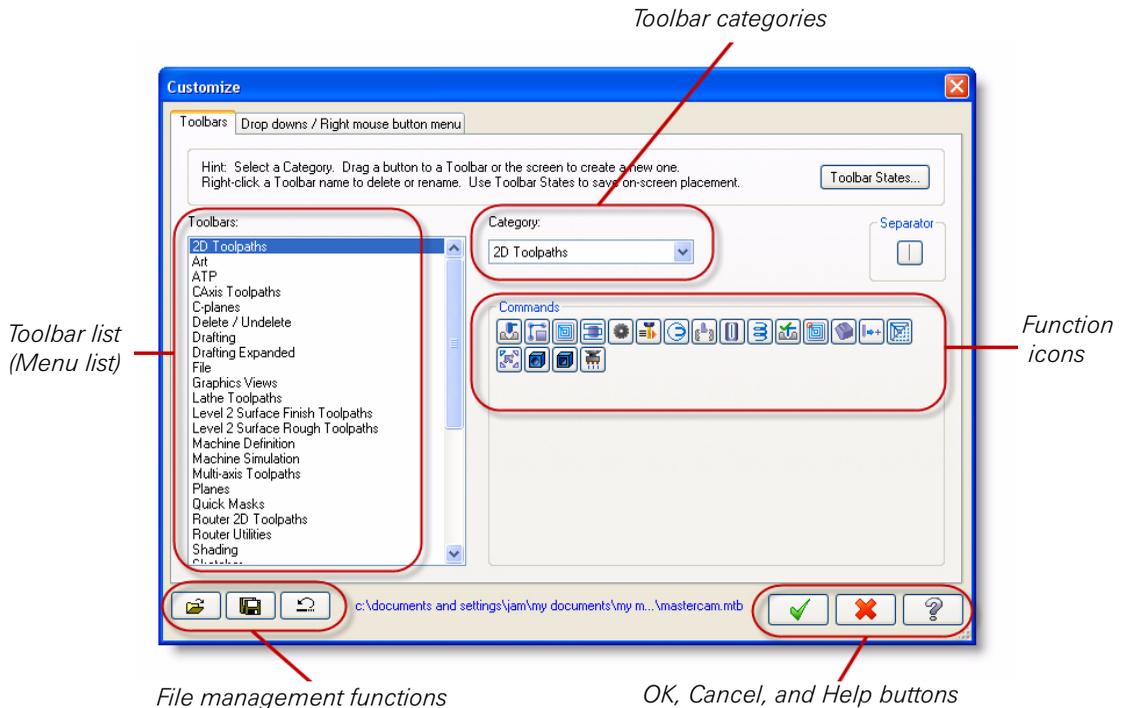
# Customizing the Interface

Use the Customize dialog box to customize toolbar layouts, drop-down menus, and the graphics window right-click menu.

## Lesson Goals

- Become familiar with the Customize dialog box.
- Add a shortcut to the right mouse button menu.
- Format the right mouse button menu for easy viewing.

## The Customize Dialog Box

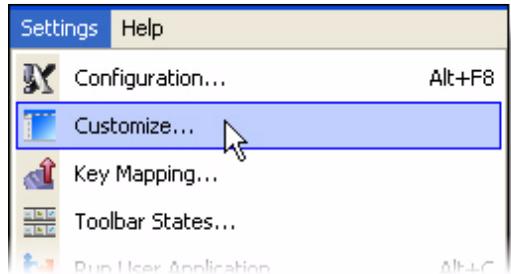


## Exercise 1: Customizing the Right Mouse Button Menu

In this exercise, you add a shortcut to Mastercam Help in the graphics window's right-click menu. Because this shortcut accesses a different function from the others that are currently on the menu, you add a separator bar to visually distinguish it.

### Add a function to the right mouse button menu

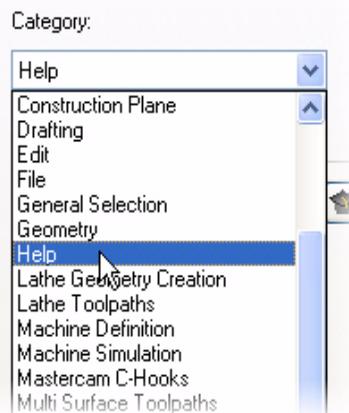
- 1 Choose **Settings, Customize** from the menu bar to open the Customize dialog box.



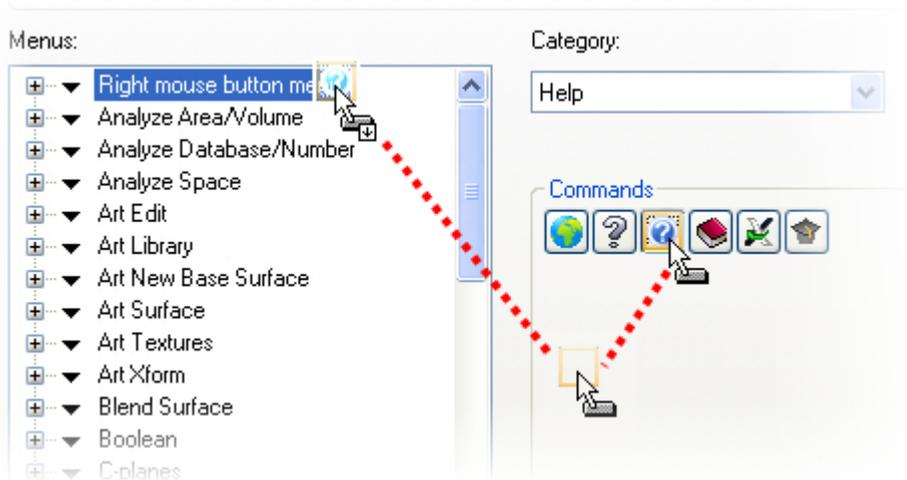
- 2 Click the **Drop downs/Right mouse button menu** tab.



- 3 Select **Help** from the **Category** drop-down menu.



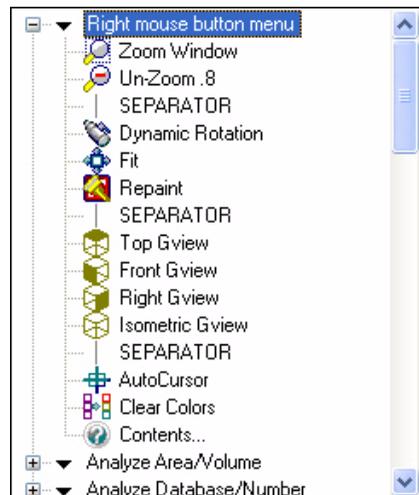
- 4 Drag and drop the **Contents** button  from the **Commands** window onto the **Right mouse button menu** item in the **Menu** list.



**TIP:** If the drop-down menu is not expanded, the new function is added as the last function. Otherwise, it is inserted below the selected function on which it is dropped.

## Format the right mouse button menu

- 1 If necessary, expand the **Right mouse button menu** item to view the shortcuts that are currently on the menu.



2 Drag and drop the **Separator** button  onto the **Clear Colors** function.

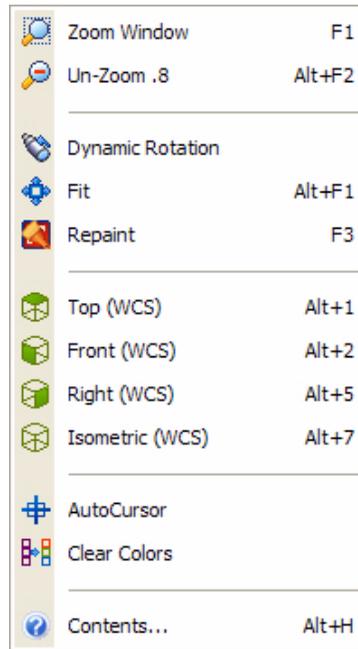
3 A separator is created between the Clear Colors and Contents functions.



4 Click **OK** to close the dialog and apply your changes.

5 Right-click in the graphics window to check your work.

The new function displays in the right-click menu.



## Conclusion

Congratulations! You have completed the *Welcome to Mastercam* tutorial. Now that you have mastered the skills in this tutorial, we encourage you to explore Mastercam's other features and functions. Additional tutorials may be available in this or other series. Please contact your authorized Mastercam Reseller for further training.



**Attention! Updates may be available.  
Go to [Mastercam.com/Support](http://Mastercam.com/Support) for the latest downloads.**



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