What’s New in Mastercam X9

April 2015
Mastercam® X9 What’s New

Date: April 2015
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Software: Mastercam X9

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http://www.mastercam.com/companyinfo/legal/LicenseAgreement.aspx

Be sure you have the latest information!

Information might have been changed or added since this document was published. The latest version of this document is installed with Mastercam or can be obtained from your local Reseller. A ReadMe file (ReadMe.pdf)—installed with each release—includes the latest information about Mastercam features and enhancements.
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Introduction

Welcome to Mastercam X9! Mastercam X9 features new products and new functionality focused on delivering speed and efficiency for your machining jobs. We are sure that you will benefit from what Mastercam X9 has to offer you and your shop.

The Best of Both Worlds

We’re excited to announce that as part of our next product release, customers who purchase Mastercam X9 will be able to use Mastercam or Mastercam® for SOLIDWORKS®, giving them “The Best of Both Worlds.”

With this change, users will now have the ability to have a totally integrated solution, which is often mandated by management or an outside vendor, but they also have the ability to work with Mastercam if that is where their experience lies.

As a Mastercam customer, you are not receiving an additional seat; just the choice of how you use Mastercam to create toolpaths. We know that a majority of part files you receive are generated with SOLIDWORKS, so for those of you who also use SOLIDWORKS, this gives you the opportunity to use whichever product best fits your individual situation.

MCfSW will be available at no additional charge to Mastercam X9 users of Mill 2D, Mill 3D, and Lathe since these products have a MCfSW equivalent. Those customers with the Educational Suite will have access to MCfSW 3D and Lathe.

NOTES:

- There is no corresponding Mastercam for SOLIDWORKS version of Mastercam Router, Mastercam Wire, Mastercam Mill-Turn, or Mastercam Swiss.
- To run MCfSW, you must own a seat of SOLIDWORKS 2013 or newer (purchased separately).

Mastercam Product Changes

With the release of X9, we have made changes to the product line up and naming structure of Mastercam products.
The table below lists the new names for Mastercam’s product line up.

<table>
<thead>
<tr>
<th>Pre-X9</th>
<th>X9 and Beyond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry</td>
<td>Entry</td>
</tr>
<tr>
<td>Mill Level 2</td>
<td>Mill</td>
</tr>
<tr>
<td>Mill Level 3</td>
<td>Mill 3D</td>
</tr>
<tr>
<td>Router Plus</td>
<td>Router</td>
</tr>
<tr>
<td>Router Pro</td>
<td>Router 3D</td>
</tr>
<tr>
<td>MCfSW 2D</td>
<td>MCfSW</td>
</tr>
<tr>
<td>MCfSW 3D</td>
<td>MCfSW 3D</td>
</tr>
<tr>
<td>Lathe</td>
<td>Lathe</td>
</tr>
<tr>
<td>Wire</td>
<td>Wire</td>
</tr>
<tr>
<td>Design</td>
<td>Design</td>
</tr>
</tbody>
</table>

Also with the release of X9, the following add-ons will no longer be sold separately and will instead be included in the specified products.

- **Rast2Vec** - Included in all Mill and Router products. Not available in MCfSW.
- **Nesting** - Included in all Mill, MCfSW (toolpath nesting only), and Router products.
- **Solids** - Included in Design, Lathe, Wire, and all Mill and Router products, including Entry.
- **Mill Level 1** - Customers will get Level 2 functionality when updating.
- **Router** - Customers will get Router Plus functionality when updating.
- **MCfSW** - Customers will get Mill Level 2 functionality when updating.

**Mastercam Documentation**

Mastercam installs the following documents in the `\Documentation` folder of your Mastercam installation:

- *What’s New in Mastercam X9*
- *Mastercam X9 Installation Guide*
Contact Us
For questions about this or other Mastercam documentation, contact the Technical Documentation department by email at techdocs@mastercam.com.

Mastercam Resources
Enhance your Mastercam experience by using the following resources:

- **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, function panels, and ribbon bars feature a Help button that opens Mastercam Help directly to related information.
- **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) is open Monday through Friday from 8:00 a.m. to 5:30 p.m. USA Eastern Standard Time.
- **Mastercam Tutorials**—CNC offer a series of tutorials to help registered users become familiar with basic Mastercam features and functions. The Mastercam tutorial series is in continual development, with new modules added as we complete them. Visit our website, or select Tutorials from the Help menu to see the latest publications.
- **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, or email training@mastercam.com.
- **Online communities**—You can find a wealth of information, including many videos, at www.mastercam.com.

For tech tips and the latest Mastercam news, follow us on Facebook (www.facebook.com/mastercam), Twitter (www.twitter.com/mastercam), or
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Google+ (plus.google.com/+mastercam). Visit our YouTube channel to see Mastercam in action (www.youtube.com/user/MastercamCadCam)!

Registered users can search for information or ask questions on the Mastercam Web forum, forum.mastercam.com, or use the knowledge base at kb.mastercam.com. To register, select Help, Link on Mastercam.com from the Mastercam menu and follow the instructions.
System Enhancements

Plane Manager Improvements
For X9, the Plane Manager is now a modeless dialog box. This means that you can leave the Plane Manager on the screen as you work in Mastercam’s main window. You can even move Plane Manager to another monitor in a multi-monitor system.

In addition, the XYZ indicators have been restored to the dynamic gnomon.

Display Relative to WCS
The Display relative to WCS checkbox has been removed from the Planes (WCS) toolpath parameter pages. The plane information is now controlled by the Display plane info relative to WCS checkbox in the Plane Manager.
Copy Work Offset

The new Copy work offset option when creating relative planes applies the parent work offset to all child planes.

Viewsheet Improvements

- Viewsheets are now enabled by default at startup and can be accessed from the View menu (instead of the Settings menu).
- A bookmark indicator is added to the tab when a bookmark has been saved in a viewsheet.
- You can now delete bookmarks from viewsheets through the right-click menu.
Naming and renaming occurs on the tab. Creating a new viewsheet automatically enables the naming function.

**Undo During Active Functions**

In the original release of Mastercam X, we allowed you to Undo anytime, which was a useful feature. However, this behavior was problematic and needed to be changed. For entity creation functions, Undo/Redo is inactive while a live entity is displayed on the screen. As soon as the entity is saved in the database, Undo/Redo wakes up and the last entity created can be undone without exiting the function first. In Trim functions, Undo/Redo is active when you complete an action.

**Print Dialog Box Enhancements**

In X9, the Print dialog box has been improved with the following enhancements:

- Pan support in the Preview window using the left mouse button.
- Zoom support in the Preview window using the mouse wheel.
- Fit/Center support in the Preview window
  - Fits to margins with **Keep scale** off.
  - Centers with **Keep scale** on.
- Interactive margin control in the Preview window.
- Improved scale factor.
Solid Chaining Improvements

New **Linked edges** solid chaining mode allows for contiguous chaining of edges across multiple solid faces. The new **End chain** button allows for multiple chains to be created in a single session.

Linked edges are then displayed as a group within the Chain Manager.
**Analyze Toolpath**

This new function, found in the Analyze menu, displays toolpath information when you hover over any part of the tool motion.
Level Manager Improvements

The new **Purge selected empty levels** function in the right-click menu of the Level Manager allows empty levels to be removed from a selected range.

The **Select All Entities** and **Unselect All Entities** functions in the Level Manager allow for easy selection and unselection of entities within the selected level(s).
System Configuration

The new Plane WCS gnomon color allows for a specific default color to be used for the WCS gnomon, (displayed by pressing [Alt+F9]) rather than the default wireframe geometry color.

Mastercam Simulator Enhancements

Adaptive Quality

With X9, we are trying to address issues that we have seen with very small parts and very large parts that contain small features to verify. We added a new tool called Adaptive Quality that is turned on by default. You may notice that when you run a verify session and the progress bar is complete, the quality of the result is the same as what you had before. But after some time (not much in many cases), the quality is greatly improved, especially in rounded areas. This re-processing affects the entire part and not just the current section where you are zoomed in. It will help with areas like fillets, small holes, and corners.

**NOTE:** This is only available when the Simulation engine is set to 5-axis in the Mastercam Simulator Options dialog box.

If you zoom in, the message box begins to re-process again. This is a re-design of the Accurate Zoom tool. Now when you zoom and stop, the zoomed area is processed with a higher quality. The higher quality in that area remains even after zooming out or panning away.

YouTube Video: https://www.youtube.com/watch?v=Vv42UHQRoR0&feature=youtu.be
Fixture Support

Mastercam Simulator now includes the option to display fixtures or not. Previously, this function only supports Lathe chuck and jaws, and only if defined in the Lathe machine definition.

Fixtures can be displayed and collision checked against any geometry on a selected level. To set the designated level for the fixtures, select an option from the *Fixture level* drop-down located on the Backplot/Verify Options dialog box.

Inside Mastercam Simulator, the fixture display can be toggled in the Home ribbon bar under the Visibility section.

The collision detection options for fixtures are defined in the Options dialog box in Mastercam Simulator.
Motion Controller Support

Mastercam Simulator now supports various 3DConnexion devices, such as SpacePilot®, SpaceMouse® and SpaceNavigator®. A new option is available that allows users to define the center of rotation position on the View ribbon bar, shown below.

By selecting this option and then selecting a position on the graphics window inside Mastercam Simulator, that position will define the center of rotation for the device, allowing the user the same control as if used in the main Mastercam graphics window. A temporary point is shown on the screen to help indicate the selected position.

Polygon Mesh Workpiece Support

Mastercam Simulator now supports bringing in polygon mesh data (STL data) as a valid workpiece.

5-axis Engine as Default

Mastercam Simulator now includes the option to automatically use the 5-axis engine as the default. This is most useful on very small parts or very large parts with small features (below 5mm). Choose File, Options and select the Always use 5-axis engine checkbox to activate this option.
Updated Stop Conditions

X9 provides more stop condition options in Mastercam Simulator so you can pause your backplot or verification at specified points.

- Click the **Stop Conditions** button on the Home ribbon bar to turn stop conditions on or off. If the button is highlighted, stop conditions will be used. If you click the button to turn the stop conditions off, all your stop condition settings are preserved.
- Click the **Stop Conditions** drop-down list on the Home ribbon bar and select one of the options, such as stopping at a change in the X value or stopping at each tool inspection point.
- Choose **Specify Values** to open the Specify Values dialog box and enter operation numbers, tool numbers, or other criteria for stops. You can enter multiple operation numbers separated by commas or semicolons, or enter a value range (operations 4-7). You can also select multiple conditions.
**Mastercam Code Expert**

**Improved NC Configuration Settings For Block Numbering**

Options now include the ability to define lines to skip by specifying characters. This allows for start and end of file (%) and program number (O) lines to be skipped.

![NC Configuration Settings](image)

**Application Options**

A Default Text branch has been added to the Applications Options dialog box under Editor, Interface. This allows for settings for tabs, fonts, and colors for plain text (i.e. text files, log files, .xml files, etc.) that are not already covered by the other available
branches (NC, MPNET, MP, and VBScript).
Design Enhancements

**Dynamic Xform**

The Dynamic Xform function allows users to switch between gnomon manipulation and geometry manipulation mode at any time without having to reselect geometry. Simply click the button that appears in the lower left of the gnomon to change modes. This will greatly enhance the usefulness and workflow of this important function.

![Dynamic Xform Diagram](image)

**Solid Disassemble**

Solid Disassemble is a new Model Prep function that takes an assembly and lays each body out on a single plane. It works on models with and without history, imported from other systems, or created from within Mastercam.

![Solid Disassemble Diagram](image)
You can use the Bounding Box function to define stock and planes for each piece to be machined.

Click the video link below to see how the controls work.


**Solid Position**

Solid Position lets you pick a face of a solid body and mate it to a face of another solid body. The function allows you to redefine the base position of the body being moved, then also redefine the final position on the body it is moved to. Holding down the [Ctrl] key when selecting the mating solid makes a copy of the source solid. The example below displays the positioning of clamps around a part through the use of Solid Position.
Model Prep Toolpath Associativity

With X9, the associativity between solids and toolpaths has been greatly improved. Now when bodies are edited, only the toolpaths directly affected by the change in the solid body are marked dirty. Click the video link below to learn more.

YouTube video: [http://youtu.be/gNrzbxXUJdQ](http://youtu.be/gNrzbxXUJdQ)

Temporary Midpoints and Center Points

These new capabilities help with creating and editing geometry.

Temporary Midpoints

This new capability eliminates the need to draw a line between two AutoCursor positions to use the midpoint for construction purposes. Hover over an AutoCursor position for one second to have a temporary point displayed. Hover over a second AutoCursor position to have a second temporary point displayed, as well as the midpoint between them. You may also hover and press **N** to avoid the one second delay. Enable or disable this functionality in the AutoCursor Settings dialog box.

Temporary Center Points

Temporary center points become available through General Selection for functions that require an AutoCursor position, such as Rotate or Dynamic Xform. The temporary center point is created at the center of a bounding box surrounding the selected geometry.

Click the video link to learn more about these two functions.

YouTube video: [https://www.youtube.com/watch?v=fsA3DS_9TkA](https://www.youtube.com/watch?v=fsA3DS_9TkA)

Bounding Box

The Bounding Box function has undergone significant change for X9.

- You are now prompted to select entities to include in the bounding box, rather than automatically including all entities.
- Push-Pull technology that was introduced for X8 Model Prep is now available in the Bounding Box function. Individual faces can be manipulated as needed.
- The Apply and OK/New buttons allow you to complete one bounding box and start another without having to restart the function.
- The bounding box’s dimensions are available for editing. Enter a value or use the spin controls to change the size for X, Y, and Z.
Stock volume measurements are now a display property on the Advanced tab. Use the Advanced tab to create planes as needed, based on the newly created bounding box. YouTube video:  http://youtu.be/9Efflq-HVmk

**Entity Attribute Editing**
For X9, we are making two small changes when you right-click on Colors, Point style, Line style, and Thickness on the Status bar.

- All edits are now live, so if you change any of those attributes, you will see them change before you click **OK** to accept them, saving you the guesswork of how the change will look.
- The small dialog boxes for these changes now pop up right above their location on the status bar, reducing the distance you have to move the mouse to make a change.

**Delete Duplicates**
In X9, we now show/highlight the remaining entities found during this function. When you run the function, you see the remaining entities in the Result color until you click **OK** to dismiss the reporting dialog.

**Selection From Back**
Selection from the back of a solid is now available any time General Selection is active.

**Selection Cue Support for Radius and Diameters with Solids**
Selection Cues (or SelCue) are the options you get when you right-click or type a “?” in a yellow entry field. In X9, the **D** or **R** options (Diameter and Radius) support the selection of a cylindrical solid face/fillet to get the value and add it directly to the edit field.

**Xform Offset and Offset Contour Options**
Both of these functions now have a Join and a Slot option. The Join option creates a square off the ends of the selected entity(s), while the Slot option rounds off the ends
of the selected entity(s). Now all you need to produce a slot is a wireframe center line.

**Preview for Xform of Solids**

In X9, when performing Xform operations on a solid, the preview now shows all of the outline edges of the solids instead of just a bounding box. This method is more efficient, faster, and supports all entity types, including polygon meshes.

**Break Many Pieces**

X9 includes arc filtering in this function when arcs are output along with the tolerance method. This will greatly reduce the number of created entities.

**File Converters**

Parasolids - X9 uses the Parasolids 27 kernel, which keeps Mastercam in step with other Solid modelers.
Mill Enhancements

General Enhancements

Dynamic Motion Conventional Feed Rate
2D HST Dynamic Mill, Peel Mill, and 3D Dynamic OptiRough now support a Conventional feed rate when you are set to a Zigzag cutting method.

Generic Radial Chip Thinning Calculation
For X9, you can now enable radial chip thinning calculation with the following toolpaths without using an ISCAR CHATTERFREE tool:

- Pocket
- Surface Rough
- Area Roughing
- Dynamic Mill
- Area Mill
- Blend Mill
- Slot Mill
- Face
- Dynamic OptiRough
- Horizontal Area
- Dynamic Contour
- Peel Mill
- Circmill
3D Milling Enhancements

3D HST Roughing Consolidation

3D HST roughing has been consolidated from six toolpaths down to two toolpaths - Dynamic OptiRough and Area Roughing. This effort brings 2D and 3D HST in line with each other.

- X8 OptiCore = X9 Dynamic OptiRough set to **From outside**.
- X8 OptiArea = X9 Dynamic OptiRough set to **Stay inside**.
- X8 OptiRest = X9 Dynamic OptiRough with Rest Material page enabled.
- X8 Core Roughing = X9 Area Roughing set to **From outside**.
- X8 Area Clearance = X9 Area Roughing set to **Stay inside**.
- X8 Rest Rough = X9 Area Roughing with Rest Material page enabled.
3D HST Rest Roughing Linking
We have improved the efficiency of rest roughing linking heights for 3D HST toolpaths. The following graphics show X8 on the left and X9 on the right.

3D HST Tool Contact Point Confinement
The following 3D HST toolpaths support a new tool contact point confinement on the Tool containment page:

- Waterline
- Raster
- Scallop
- Spiral
- Radial
Mastercam can now contain motion relative to the tool tip or the actual contact point the tool is making with the drive data at the boundary location.

**3D HST Waterline Cut Order**

3D HST Waterline toolpaths now include an option to machine your part from bottom to top.
Hybrid Flat Area Processing

Hybrid flat area processing is available in Mastercam X9. You can choose to include the flat areas of your part in the toolpath, ignore the flat areas, or only machine the flats. These options are located on the Cut Parameters page of the Hybrid 3D high speed toolpath.

- **Flat detection:**
  - Flat size:
    - Include flats
    - Include edges
    - Ignore flats
  - Flat stepover:
    - Flat only

Improved Taper Tool Support

Tapered tools are now more accurately compensated.
Additional Check Surfaces
Additional check surfaces have been added to 3D HST when the Collision checking is set to **Tilt to avoid gouge**. This option is located on the Holder page.

2D Milling Enhancements

2D HST Blend
2D HST Blend includes a new cut order. You can now machine from the outside to the center or from the center to the outside. Also, the new **First pass feed reduction** option allows you to slow down the first full width cut of blend toolpaths by a percentage of the cut feed when machining channel-like features.
2D Contour Corner Break
2D Contour now supports corner break motion, which allows you to round off convex corners in your chains. This option violates the selected chain shape.

Peel Mill Updates
Per your requests, Mastercam X9 includes standard Peel Mill motion available in previous releases. Standard Peel Mill can work with closed chains, while Dynamic Peel Mill cannot.
Preview Toolpaths
You can now preview 2D toolpaths in the graphics window before closing and generating or regenerating the toolpath. Click the button in the top left corner to enable or disable the preview.

**NOTE:** You must have a tool assigned to the toolpath or else the preview will not display.

**Multiaxis Enhancements**

Port Expert Minimize Tilting Option
Now available on the Tool Axis Control page, **Minimize tilting** creates the most efficient toolpath possible through a port. This results in significantly less tilting, but will add some calculation time.
Toolpath Display
In X9, Multiaxis toolpaths are displayed as normal tool motion instead of vectors in the graphics window.

Multi-Threading
All Advanced Multiaxis toolpaths, such as Port Expert and Blade Expert, are now processed through the Multi-Threading Manager, leaving you free to work while processing.

WCS Awareness
Previously, all calculations inside of the Multiaxis toolpaths were calculated against the WCS TOP. If you chose to rotate around the X axis, it referenced the TOP X axis, not necessarily the WCS you were working in. Now, all axis labels, values, and references refer to the working WCS.

Multiaxis Link
The new Multiaxis Link toolpath allows users to link multiple toolpaths together to create a safe linking move between them. It can be used to link any combination of 3-5 axis toolpaths.
Lathe Enhancements

Custom WCS In Lathe
Turning, Milling (including Lathe C-axis operations) and Part Handling (Lathe Misc and Mill-Turn Part handling) operations now support custom WCS correctly.

Mill Tool Orientation Validation
The **Warn on mill tool orientation conflict** option has been added to ensure that tools loaded in a turret are not mistakenly used in multiple operations where they are used in different orientations. The option appears in the Tool Settings tab in Machine Group Properties for Lathe and Mill-Turn machine groups. The new option is off by default for Lathe, but enabled for Mill-Turn. It can be enabled in the end user’s .defaults file.
Lathe Rough

The **Shorten pass** option has been added to the Lathe Rough parameters page, which adjusts the start of each pass based on the shape of the remaining stock from the previous pass and shape of the tool.

Off

On
Wire Enhancements

*Improved Lead-out Functionality*

Lead-out motion now ensures the lower and upper guides move in the same direction when leading off the part geometry. The default behavior will move the guides toward the thread/cut point.
Tooling Enhancements

*Mill Tooling Enhancements*

**Editing Holder Segments**
In X9 we added the ability to insert, delete, or otherwise rearrange holder segments using the right-mouse context menu. To access the context menu, right-click on the row selector as shown in the following picture.
Surface Speed and Feed Per Tooth Parameters
These fields are now available in all milling toolpaths in X9. The implementation is the same as what you are used to seeing in the tree-style dialogs.

Updated .TOOLDB
The .TOOLDB file has been updated for X9. Previous version files can be used within Mastercam. The stand-alone Tool Manager requires a current .TOOLDB file. Use the Migration Wizard to update any .TOOLDB files you intend to use in the stand-alone Tool Manager that were created prior to X9 Beta 1.
NOTE: As a safety measure, if you try to save changes to an older library, you will receive a prompt asking you if you want to update to the latest format. The prompt will also warn you that after updating the library, it will no longer be accessible in older versions of Mastercam and gives you the opportunity to cancel your changes and leave the library in its current state.

**New Barrel Tool Type**

Barrel tool support has been added for X9. The parametric definition is slightly complicated due to the lack of standardization. This tool also supports importing a custom profile from a file or level.

**New Thread Mill Tool Type**

Thread Mill tool support has been added for X9. The Thread Mill tool supports the following thread forms as part of the parametric definition:

- Unified National
- Metric
- Acme
- Acme, truncated (Stub)
- American Buttress Pull
- American Buttress Push
- American National Pipe Thread

Additional thread forms may be added in the future.

**Upper Corner Types Added To Slot Mill**

In X9, you now have the ability to specify upper corner geometry independent of the lower corner geometry. Sharp corner, bull, and chamfer corner treatments can be specified independently for upper and lower corners. Use the **Lock upper and lower**
corners checkbox to use the same settings for each corner.

**Added Reduced Neck Endmill Support**

In X9, you can now define a reduced neck endmill parametrically, removing the need to use a custom profile. Reduced neck is supported for the following tool types:

- Flat endmill
- Bull endmill
- Ball-Nosed endmill
- Thread Mill
- Barrel Mill

[Image of a software interface showing the addition of a reduced neck endmill support feature.]
Holder Profile Arc Support

In X9, we have added support for arc segments in the holder profile. Prior to X9, the profile of a holder was limited to cylindrical and conical segments. With the introduction of arc data, the segment editing capability in the Holder page has been removed and all holder editing is now done through the Holder Wizard. Segment editing is still available in the wizard for linear holder profiles, however the data grid in the wizard will be read-only when working with a custom profile containing arc data.

To edit the profile of a holder with arcs, you can export it to a level and make use of Mastercam’s existing CAD functionality. It is important to recognize that linking to external files or levels is not supported. The profile is stored with the holder and will not update automatically when the geometry on the level you exported to changes. The same is true when importing from a CAD file. If you make changes to the source geometry, you will need to reselect it in the holder definition in order to update the stored path.
NOTE: Importing from a .MCX file or Mastercam level and exporting to a level is only available when running the Holder Wizard from Mastercam.

**Improved Composite Holder Support**

When working with modular tooling or holders with extensions, Mastercam now offers the ability to edit each holder component individually from within Mastercam. Building up Composite holders is still only supported in the stand-alone Tool Manager at this time.

**Added CS/SFM And FPT To Tool Definition**

Cutting speed (metric), surface feet per minute (inch), and feed per tooth parameters can now be directly entered into the Tool Wizard. The feed rate and spindle speed
values are still displayed and will be updated as changes are made to CS/SFM and FPT.

Save to Library Context Menu Added To Tool Page
When creating tools from the Tool Parameters page, you can now right-click in the toolpath dialog and select **Save tool to library** to save the tool to a library file.
Import Holder Profile From a CAD File

Import, Export, and Drop Profile buttons have been added to the Holder Wizard. This functionality is consistent with the Tool Wizard.

New Option for Auto-Naming of Assemblies, Tools, and Holders

Use this option, found on the General page of the Tool Manager's Application Options dialog box, to enable or disable auto-naming of tooling components.
Mill-Turn Enhancements

Spindle direction arrows now display during turning operations in simulation.

TNRC Control For B-Axis Turning Operations

The Tool Angle dialog box contains some new options.

These options tell Mastercam which quadrant you touched off your tool in. When setting up B-axis head machines, you can touch a tool off in several ways. If you are creating a toolpath, and the tool’s control point is not what you want, you can now choose to swap it. Select the **Manually define the cutting direction** checkbox, and choose the option that matches how the tool was touched off on the machine.
.machine Migration (X8 to X9)

Use the Migration Wizard to update your X8 .machine files to X9. If you need changes to X8 .machine content for enhanced migration results, please contact the Post Group at CNC Software, Inc. for more information (posts@mastercam.com).

Collision Detection Support for Mill-Turn Machines

Collision detection is enabled by default for Mill-Turn simulation in X9. A new branch and file can be found in the Machine Explorer within Code Expert.

![Collision Detection Support for Mill-Turn Machines](image)

This file contains the collision pairs used in Simulation for each machine. The migration process creates a default set of collision pairs whose contents can be customized in the Simulation interface.

When you complete customization, you save the collision pairs to the .collision file, which notifies Code Expert of the change, by displaying an asterisk next to the machine folder under the Collision Check drop-down.

This allows you to save the updated file in the .machine file for use in future jobs.
Translation Support for .machine Files

You can now generate resource files with the Export Localizable Resources right-click option. This allows editing of customer-facing strings such as token names, descriptions, and more.

Resellers can now edit .LMD files contained in .machine files, allowing the translations of strings defined in the machine definitions (stream names, reference position names and comments, and axis combination names).

**NOTE:** This function is not available for Consumer licenses.
Chuck Jaw Movement Distance Control

Chuck components have been enhanced to include a definition for the maximum physical distance the jaws can move and a default clearance distance.

In Job Setup, you can adjust the default Clearance distance up to the maximum defined amount.

This allows simulation to provide a more realistic experience for machines, controlling the opening and closing distance of the chuck jaws. These values are optional; existing X8 machines retain zero values in the fields, resulting in the same behavior seen in X7.
and X8 simulation. Please contact the Post Group at CNC Software, Inc. (posts@mastercam.com) if you would like to have your existing LMD modified.

Stock Pull Improvements

Improved Part Tracking When Multiple Pulls Are Performed
The ability to set the pickoff point behind the source chuck in Job Setup has been added. This allows for multiple stock pulls to advance the work piece before pickoff/cutoff operations.

Support For Fixed Spindle Pulls
The ability to use the fixed (main) spindle to pull the part located in the opposing spindle has been added.

Default Property Added to Inch/Metric For Single Input Options
A new token default property allows for single field input instead of separate fields for inch and metric.

Sync Data Now Available in Tool Table Processing
Operation sync data is now available in tool table processing, allowing for output of the sync data.
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Attention! Updates may be available. Go to Mastercam.com/Support for the latest downloads.