
What's New in

ArtCAM JewelSmith 8.1

By Delcam plc



Issue: 8.1 Date: 25/08/05



THE QUEEN'S AWARDS
FOR ENTERPRISE
2003

Disclaimer

Delcam plc has no control over the use made of the software described in this manual and cannot accept responsibility for any loss or damage howsoever caused as a result of using the software. Users are advised that all the results from the software should be checked by a competent person, in accordance with good quality control procedures.

Information contained in this manual is subject to change without notice and does not represent a commitment by Delcam plc. The software described in this manual is furnished under licence agreement and may be used or copied in accordance with the terms of such licence. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose without the express permission of Delcam plc.

Copyright © 2005 Delcam plc. All rights reserved.

Delcam plc
Talbot Way
Small Heath Business Park
Birmingham B10 OHJ
England

Tel: (UK) 0121-766-5544
(Int) +44 (0) 121-766-5544

Contents

Introduction	1
Overview	1
New Features	5
New Component Library	5
Creating and Selecting the Library Folder	6
Using the Advanced Options	8
New Assembly Mirroring Tool.....	10
New Assembly Copying Tools	14
Rotate Copy	14
Block Copy	18
Enhanced Visibility Settings.....	23
New Fade Relief Tool.....	24
New Mirror Merge Relief Tool.....	28
Improved Constant Height Lettering	29
Multiple Relief and Bitmap Undo/Redo	30
New Maximum Diameter for Sculpting Tools	31
New 2D Bitmap Contrast Tool	32
Enhanced Zooming	33
New Toolpath Ordering	33
New Colour 2D Toolpath Simulation.....	34
Improved Arc Creation	37
Enhanced Nesting with Sheets.....	38
Enhanced Multiplate Tool with Sheets.....	43
Enhanced Toolpath Lead Moves	45
New Toggle Visibility for All Layers.....	46
Index	47

Introduction

Overview

ArtCAM JewelSmith 8.1 offers all the original features of ArtCAM JewelSmith 7.1 and the following new features:

- **New Component Library.** You can now import a variety of components previously saved as replica meshes into your current Master Model. These components can be replica meshes saved as 3D Master Models (*.3DP), 3D Assemblies (*.3DA), 3D Models (*.3DS) and STL Models (*.STL).
- **New Assembly Mirroring Tool.** You can now mirror an assembly, much in the same way that you would a relief or vector in ArtCAM JewelSmith. This allows you to create repetitive symmetrical designs very quickly, and means that you now only need to create a partial assembly in order to output a complete component design.
- **New Assembly Copying Tools.** You can now copy an assembly, much in the same way that you would a vector in ArtCAM JewelSmith. You can create multiple copies of any assembly in a circular pattern or grid format.
- **Enhanced Visibility Settings.** You can now control the visibility of individual components independently of the Master Model. The icons shown in the Master Model Tree now also reflect the current state of visibility for each of the components.
- **New Fade Relief Tool.** You can now quickly fade and feather an existing relief, providing a tapered effect.

- **New Mirror Merge Relief Tool.** You can now mirror an existing relief in several different directions.
- **Improved Constant Height Lettering.** ArtCAM JewelSmith now adjusts the angle and height of the letter when a sharp corner is found in the vector text from which it is being calculated. ArtCAM JewelSmith also preserves the integrity of the constant height associated with the vector text's spine.
- **Multiple Relief and Bitmap Undo/Redo.** You can now cancel a sequence of relief or bitmap editing actions, or repeat them. This allows you to experiment with modifying your relief with the safety of being able to revert to a previous state at any time.
- **New Maximum Diameter for Sculpting Tools.** The maximum diameter of ArtCAM JewelSmith's range of sculpting tools has been increased, allowing you to sculpt large relief areas quickly.
- **New 2D Bitmap Contrast Tool.** You can now adjust the contrast of a bitmap image shown in the **2D View** window using a slider on the **2D View** toolbar.
- **Enhanced Zooming.** The magnification of the **Zoom In Tool** on the **2D View** toolbar has been improved, allowing you to apply a zoom factor of up to 40 on an area of your vector and bitmap artwork.
- **New Toolpath Ordering.** You can now control the order in which your toolpaths are machined.
- **New Colour 2D Toolpath Visualisation.** You can now draw a toolpath in the **2D View** window as a solid colour, which allows you to clearly see the areas of the vector artwork that a selected tool will machine. This is useful for viewing toolpaths which include multiple tools and also for identifying problem areas in a toolpath.
- **Improved Arc Creation.** You can now create an arc by defining its start point, exact radius and end point from the **2D View** window. You can also control the direction of the arc.
- **Enhanced Nesting with Sheets.** ArtCAM JewelSmith replaces the concept of nesting vectors across separate layers with that of nesting across sheets of material. The use

of sheets is specifically designed to mimic the use of sheets of material.

- **Enhanced Multiplate Tool with Sheets.** ArtCAM JewelSmith replaces the concept of creating plates across separate layers with that of creating plates across sheets of material.
- **Enhanced Toolpath Lead Moves.** You can now control the angle of linear lead moves that you add to a profile pass within a toolpath strategy.
- **New Toggle Visibility for All Layers.** You can now toggle the visibility of all layers in a model on and off at once.

Only new features available in ArtCAM JewelSmith are documented here. For information on bug fixes, known bugs, corrections and compatibility please look at the release notes (readme.txt).

For complete information about all other features see the in-line help, displayed in the **Assistant** window using the **Show Help** option, and the ArtCAM JewelSmith User Guide.




You can also find advice on using ArtCAM JewelSmith on the ArtCAM User Forum. From the Main menu bar, click on the **Help** menu, followed by the **ArtCAM JewelSmith On The Web > ArtCAM JewelSmith Forum** option. If you have not yet registered as a Forum member, please click on the **Join** option on the Forum's Home Page. You can also access the forum at <http://forum.artcam.com>.

New Features

New Component Library

You can now import a variety of components previously saved as replica meshes into your current Master Model. These components can be replica meshes saved as 3D Master Models (*.3DP), 3D Assemblies (*.3DA), 3D Models (*.3DS) and STL Models (*.STL).

To import a replica mesh from a Component Library:



1. Click on the **Project** tab to display the **Project** page.
2. Click to select the Master Model  in the Master Model Tree. Its name is now shown in bold text and its associated options are displayed on the page.
3. Click on the **Add New Component**  button in the **Project Tools** area to display the **Project Components** page.
4. Click on the **Component Library**  button to display the first **Component Library** settings page.
5. Click on the **Libraries** list box, followed by the library folder whose contents you want to list on the **Component Library** settings page.

If the **Libraries** list box is currently empty, you must select the location of the folder on your computer that you want to treat as the library. For details, see "Creating and Selecting the Library Folder" on page 6.



Note: If you want to edit the list of recognised folders you can use the **Remove** button to delete whichever folder is currently selected from the **Libraries** list box. Doing so does **not** delete the actual folder on your computer.

If your chosen library folder contains any sub-directories, each of them are assigned to a separate area specifically created on the **Component Library** settings page. Each area adopts the name of the sub-directory to which it is related.

You can use the  icon to hide the buttons for each of the replica meshes listed within a specific area, or the  icon to reveal them.

6. Click on the button for the replica mesh that you want to import into your Master Model. The next page of options is displayed on the **Component Library** settings page.



Note: To select an alternative replica mesh, click on the **Back**  button to return to the **Project Components** page and then repeat the previous step.

7. Type a name for the selected replica mesh relevant to the current Master Model in the **Component Name** box.
8. Define the dimensions of the selected replica mesh in each of the value-entry boxes shown on the page.

The number of dimensions associated with the selected replica mesh will vary according to how many have been created using the **Advanced Options** settings. However, there can be no more than three dimensions associated with any single replica mesh.

If you want to add or remove dimensions for the selected replica mesh, see "Using the Advanced Options" on page 8.

9. Click on the **Import** button to add the replica mesh to the Master Model according to the settings defined on the page.

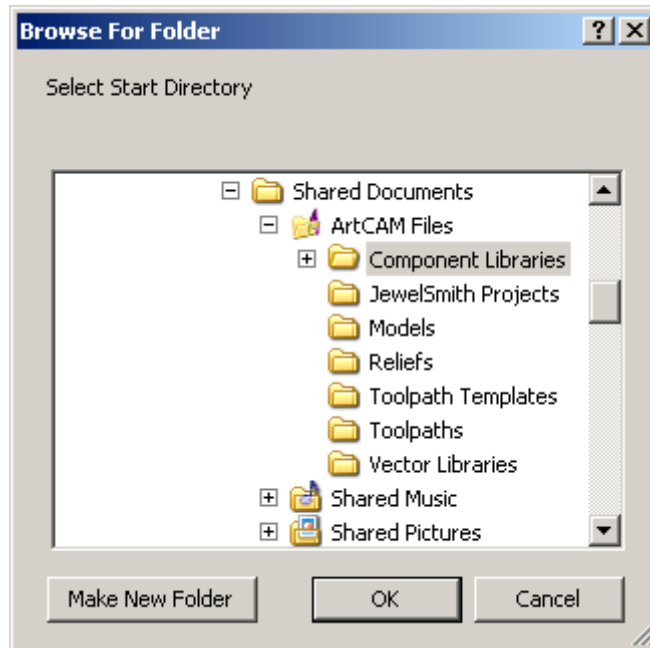
Creating and Selecting the Library Folder

It is important to create a central location on your computer in which all replica meshes can be stored for use in future projects. This central location takes the form of a directory and is referred to as the Component Library.

The location of the default Component Library is *C:\Documents and Settings\All Users\Documents\ArtCAM Files\Component Libraries*. The *Component Libraries* folder contains two sub-directories, one named *Settings* and the other *Bosses*. Each of these sub-directories contain a variety of useful components.

To create and select a folder as your Component Library:

1. Click on the **New...** button to display the **Browse For Folder** dialog box:



2. If you have already created a folder to be used as your Component Library:
 - Using the tree in the dialog box window, navigate to the folder you have created for your replica mesh files, and then click to select the folder.

If you want to create a new folder specifically for use as your Component Library:

- Using the tree in the dialog box window, navigate to the location on your computer in which you want to store your replica mesh files. For example, the *D:* drive.
- Now click on the **Make New Folder** button to create a new folder in the location currently selected.
- Finally, type an appropriate name for the new folder. For example, *Component Library*

3. Click on the **OK** button to close the dialog box and define the location of the folder.
4. Copy all of your saved 3D Master Models (*.3DP), 3D Assemblies (*.3DA), 3D Models (*.3DS) and STL Models (*.STL) to the folder you have created. If necessary, create sub-directories to group the replica meshes according to how they can be used in future projects. For example, *Shanks, Settings, Animals, Symbols* and so on.



Tip: Take a screen-capture of your assembly and save it as a GIF or JPEG image with a resolution of 40 pixels. Store this image in the Component Library folder alongside the replica mesh of the same assembly. In doing so, ArtCAM JewelSmith creates an icon for each of your replica meshes and allows you to identify them far more easily.

5. Return to the **Component Library** settings page in ArtCAM JewelSmith.
6. Click on the **Rescan** button to ensure that the contents of the Component Library folder are recognised by ArtCAM JewelSmith.
7. If you want to edit the list of folders recognised as Component Libraries in ArtCAM JewelSmith, you can use the **Remove** button to delete whichever folder or replica mesh is currently selected in the **Libraries** list box.

Using the Advanced Options

Using the **Advanced Options** settings, you can associate up to three dimensions with a single replica mesh. Each dimension can be applied to any of the axes in the replica mesh (X, Y and/or Z).

Each of the dimensions you create are given their own individual value-entry box above the **Import** button on the page. You can then define the exact value of the dimension so as to scale any replica mesh within your Component Library before it is imported into the Master Model.

Creating a Dimension

To associate a dimension with the selected replica mesh:

1. Click on the  icon to display the **Advanced Options** settings on the page.

2. Click on the **Dimension** list box, followed by the number of the particular dimension that you want to add to the replica mesh.

For example, with a round replica mesh you would typically only need to add a single dimension in order to be able to control its diameter. In this instance, we would select *1* from the **Dimension** list box.

3. Make sure that the **Active** option is selected. When selected, the settings associated with the active dimension are displayed on the page.
4. Type the name of the dimension that you want to associate with the replica mesh in the **Description** box. A previously unused dimension is named *none* by default.

In our example, we will name the dimension *Diameter*.

5. Define the default value that you want to associate with the dimension in the **Reference Size** box. A previously unused dimension is sized as *0* by default.

In our example, we will define a default diameter of *20* mm.


6. In the **Link** area, click to select which of the three axes in the replica mesh you want to scale in relation to the dimension. All three axes associated with a previously unused dimension are deselected by default.

In our example, we would select all three options so that the round setting can be scaled proportionately in all three axes.




Tip: For each replica mesh of a shank assembly in your mesh library, it is recommended that you add two dimensions. The first should be named 'ShankDiameter', and the second 'ShankWidth'. The first dimension should be linked to all three axes, while the second should be linked to the X-axis only. By adding these two dimensions to the replica mesh, all of the settings displayed when a shank is created in the usual way are shown on the next occasion the assembly is opened in the Component Library.

7. If you need to add any further dimensions, repeat the previous steps. You can define up to three dimensions for each replica mesh.
8. Click on the **Apply** button to apply the settings for the dimension shown on the page to the replica mesh.

9. Click on the **Back**  button to return to the first **Component Library** settings page; or click on the **Import** button to add the replica mesh to the Master Model according to the settings defined on the page.

Resetting a Dimension



To reset the settings of a particular dimension associated with the selected replica mesh:

1. Click on the  icon to display the **Advanced Options** settings on the page.
2. Click on the **Dimension** list box, followed by the number of the dimension that you want to reset.
3. Make sure that the **Active** option is deselected. When deselected, the settings associated with the active dimension are hidden on the page.
4. Click on the **Apply** button to restore the default settings to the current dimension. The dimension is now named *none*, is sized as *0*, and all three of its axes are deselected. This means that the dimension is no longer associated with the replica mesh.

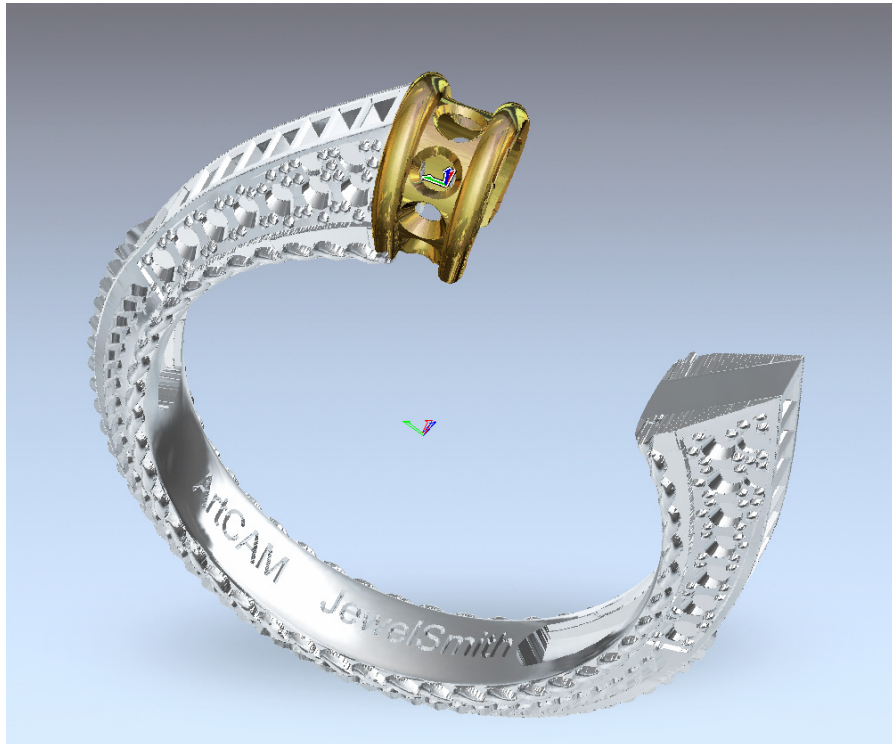
New Assembly Mirroring Tool


You can now mirror an assembly, much in the same way that you would a relief or vector in ArtCAM JewelSmith. For example, you can create a setting on one shoulder of a ring and mirror it onto the opposite side of the shank.

To mirror a selected assembly:


1. Click on the **Project** tab to display the **Project** page.
2. Click to select the master model  or assembly  in the Master Model Tree that you want to mirror. Its name is now shown in bold text and its associated options are displayed on the page.

For example, we shall select the assembly associated with the shoulder in a fancy ring. The shoulder assembly that we want to mirror is rendered as 24ct Polished Gold in the following image:

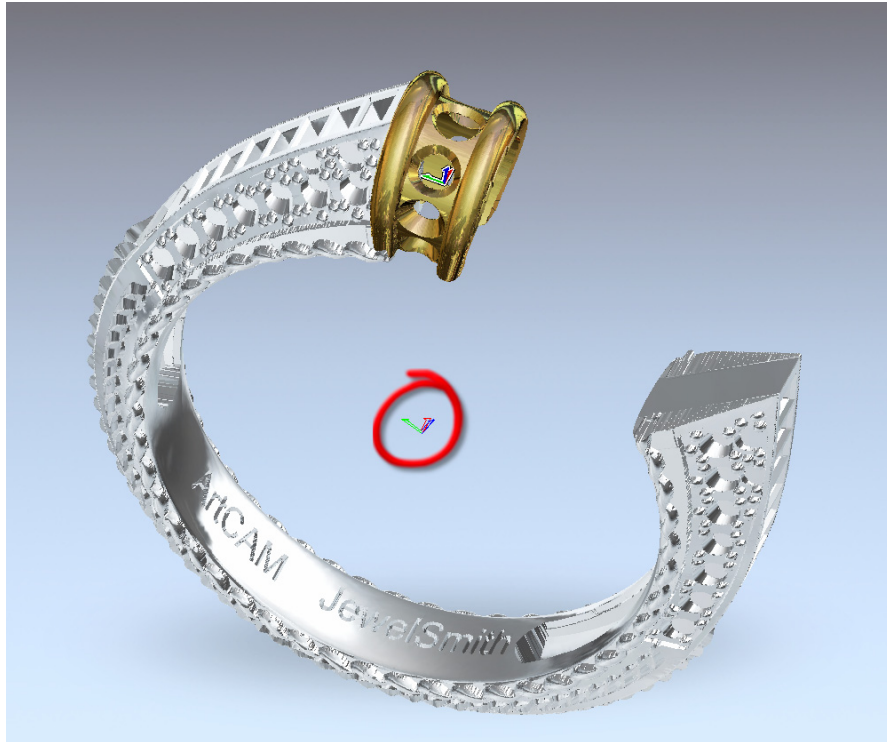


3. Click on the **Mirror**  button in the **Assembly Manager** area to display the **Mirror** settings.
4. In the **Transform Relative To** area, select the origin that you want to use when mirroring the chosen assembly:
 - If you want to mirror the assembly relative to the origin of the Master Model, select the **World Centre** option by clicking on its radio button. This method is selected by default.
 - If you want to mirror the assembly relative to its own origin, select the **Component Centre** option by clicking on its radio button.




Tip: Click to select the **Origin**  button in the **3D View** toolbar to display the axes gnomes for both the Master Model and the assembly in the 3D View window.

In our example, we shall mirror the shoulder assembly relative to the 'World Centre' of the Master Model.



5. In the **Plane to mirror in** area, select the direction in which you want to mirror the chosen assembly:
 - If you want to mirror the assembly from the X plane to the Y plane, select the **X-Y Plane** option by clicking on its radio button.
 - If you want to mirror the assembly from the Y plane to the Z plane, select the **Y-Z Plane** option by clicking on its radio button.
 - If you want to mirror the assembly from the Z plane to the X plane, select the **Z-X Plane** option by clicking on its radio button.



Tip: Click to select the **Origin**  button in the **3D View** toolbar to display the axes gnomon in the 3D View window. The axes gnomon is colour co-ordinated with the options shown in the **Plane to mirror in** area. This assists you in deciding the direction in which you need to mirror the chosen assembly.



In our example, we shall mirror the shoulder assembly from the Z plane to the X plane. This will effectively reproduce the shoulder assembly on the opposite side of the ring's shank.


6. If you want to group your resulting mirrored copy beneath a single new assembly in the Master Model Tree, click to select the **Nest inside new assembly** option.




Note: *The **Nest inside new assembly** option is disabled whenever the Master Model is selected in the Master Model Tree.*

The resulting mirrored copy adopts the name of the original assembly. It is recommended that you re-name this so that you are able to distinguish it from the original assembly.

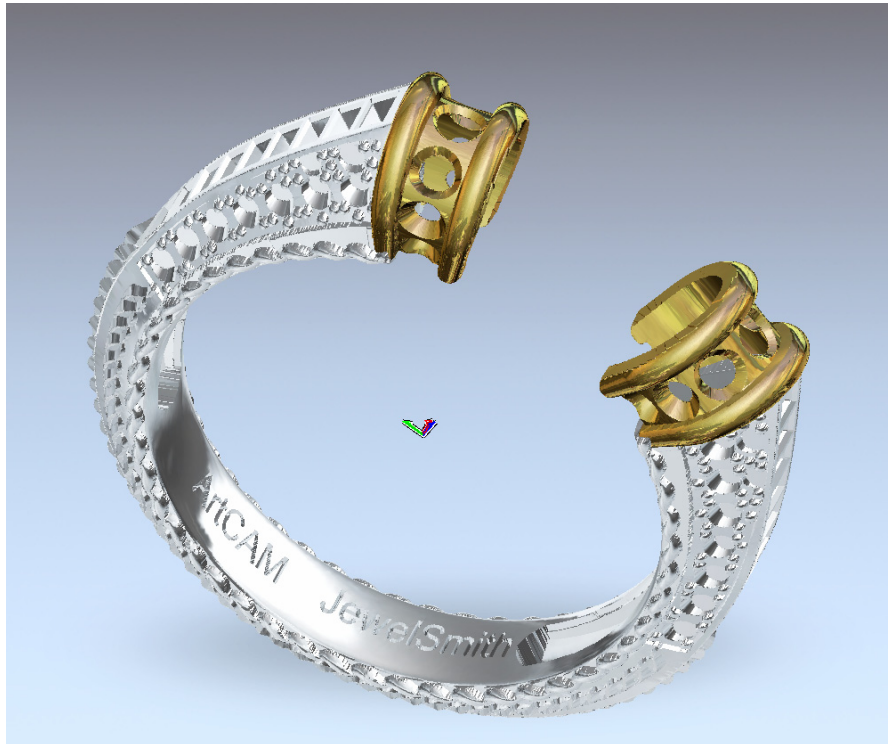
If you are mirroring an assembly , the original assembly is hidden from view  in the Master Model Tree when its resulting copy is created only when the **Nest inside new assembly** option is selected.

If you are mirroring a Master Model , the original master model remains visible in the Master Model Tree, but its associated assemblies are hidden. The resulting copy of the Master Model and the copies of its associated assemblies are all visible.

In our example, we do not want to group the mirrored copy of the shoulder assembly with the original. We must therefore leave this option deselected.

7. Click on the **Accept**  button to mirror the chosen assembly according to the settings shown on the page.

In our example, we can see that a copy of the shoulder assembly has been created on the opposite side of the ring's shank.



The mirrored copy has been added to the bottom of the Master Model Tree as a new assembly, sharing the same name as the original assembly from which it was created.

New Assembly Copying Tools

You can now copy an assembly, much in the same way that you would a vector in ArtCAM JewelSmith.



You can now create multiple copies of any assembly in either of two regular patterns:

- Rotate Copy. For details, see "Rotate Copy" on page 14.
- Block Copy. For details, see "Block Copy" on page 18.

Rotate Copy

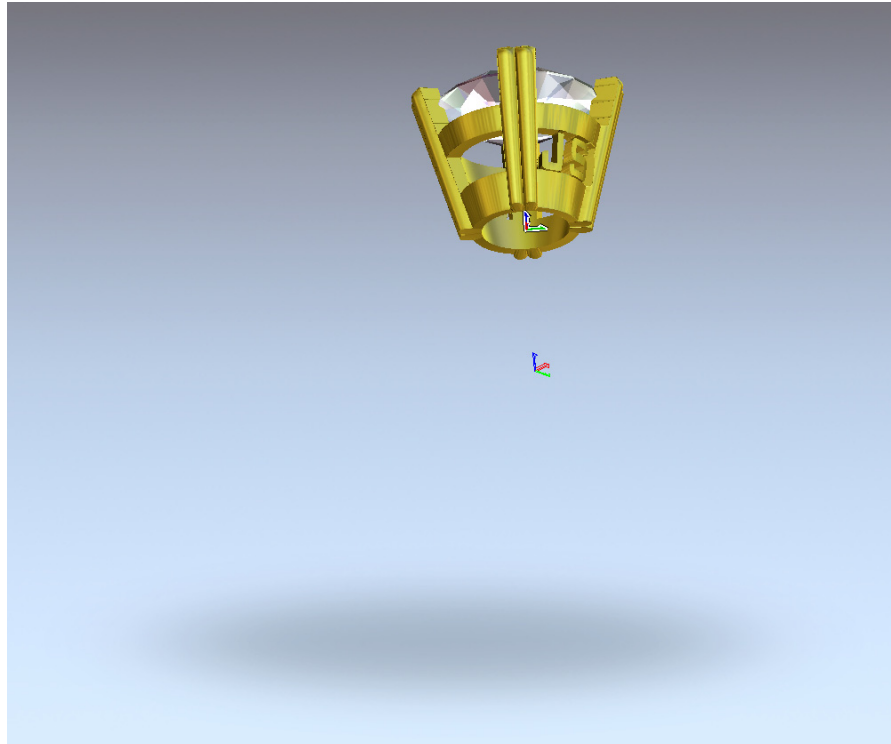
You can produce several copies of a selected assembly in a circular pattern around a defined origin.


To create multiple copies of an assembly in a circular pattern:

1. Click on the **Project** tab to display the **Project** page.
2. Click to select the master model  or assembly  in the Master Model Tree that you want to copy. Its name is now

shown in bold text and its associated options are displayed on the page.

For example, we shall select the assembly associated with the round flush setting in a fancy ring. The setting assembly that we want to mirror is rendered as 24ct Satin Finish in the following image:



3. Click on the **Copy Rotate**  button in the **Assembly Manager** area to display the **Copy Rotate** settings.
4. In the **Transform Relative To** area, select the origin you want to use when copying the assembly:
 - If you want to copy the assembly relative to the origin of the Master Model, select the **World Centre** option by clicking on its radio button. This method is selected by default.
 - If you want to copy the assembly relative to its own origin, select the **Component Centre** option by clicking on its radio button.

In our example, we shall copy the round flush setting assembly relative to the 'World Centre' of the Master Model.

5. Select the axis along which you want to paste copies of your chosen assembly:

- If you want to paste copies along the X-axis, click to select the **X** radio button.
- If you want to paste copies along the Y-axis, click to select the **Y** radio button.
- If you want to paste copies along the Z-axis, click to select the **Z** radio button.

In our example, we shall copy the round flush setting assembly along the Y-axis.

6. Define how each copy of the assembly is rotated by clicking on either of the radio buttons in the **Angle** area:
 - If you want to rotate each subsequent copy of the selected assembly by a specific angle, click to select the **Incremental** option.
 - If you want to rotate each copy of the selected assembly evenly within a specific angle, click to select the **Total** option.

In our example, we shall rotate each subsequent copy evenly within a specific angle.

7. Define the angle of rotation in the **degrees** box.
 - Type a positive value to rotate the assembly clockwise.
 - Type a negative value to rotate the assembly anti-clockwise.

In our example, we shall rotate the assembly by 120 degrees.

8. Define the total number of copies that you want to create in the **Number of Copies** box.

In our example, we shall create four copies of the round flush setting assembly.

9. If you want to group your resulting copies beneath a single assembly in the Master Model Tree, click to select the **Nest inside new assembly** option.



Note: *The **Nest inside new assembly** option is disabled whenever the Master Model is selected in the Master Model Tree.*



The hierarchy of the grouped rotate copy appears as *Original Assembly* > *Copied Assemblies* in the Master Model Tree.




If you want to create each of your copies as a separate new assembly, make sure that the **Nest inside new assembly** option is deselected.




Each of the resulting copies adopts the name of the original assembly. It is recommended that you re-name each of the copies as something more meaningful so that you are able to distinguish one component from another more easily.

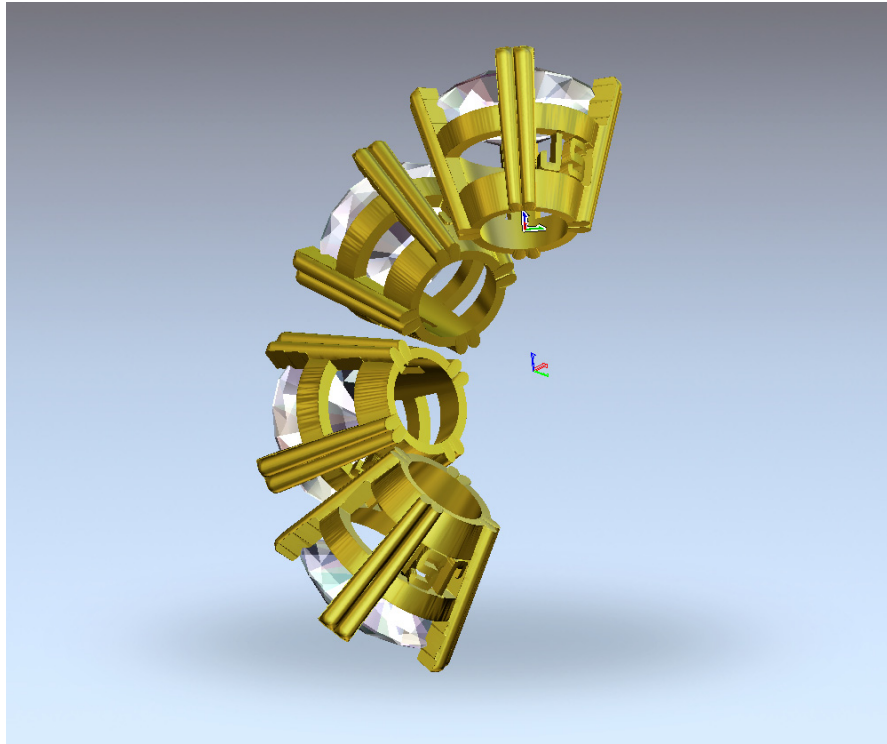
If you are copying an assembly , the original assembly is hidden from view  in the Master Model Tree when its resulting copies are created only when the **Nest inside new assembly** option is selected.

If you are mirroring a Master Model , the original master model remains visible in the Master Model Tree, but its associated assemblies are hidden. The resulting copy of the Master Model and the copies of its associated assemblies are all visible.

In our example, we do not want to group the copies of the round flush setting assembly with the original. We must therefore leave this option deselected.

10. Click on the **Accept** button  to copy the chosen assembly according to the settings on the page.



In our example, we can see that four copies of the original round flush setting assembly have been created within a 120 degree range:



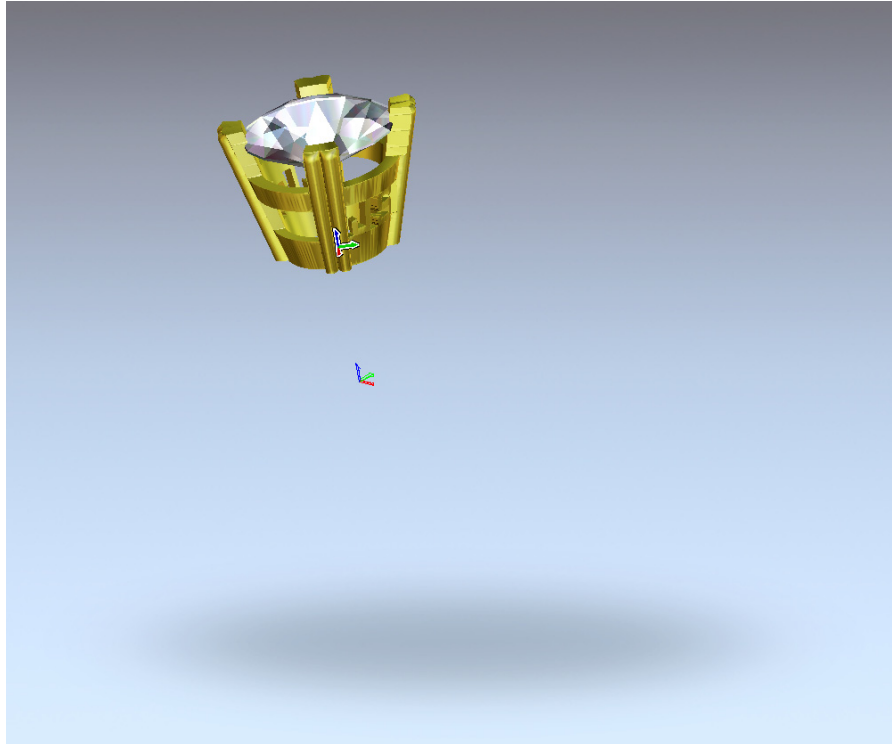
Block Copy


You can produce several copies of a selected assembly in a grid format.

To create multiple copies of an assembly in a grid format:

1. Click on the **Project** tab to display the **Project** page.
2. Click to select the master model  or assembly  in the Master Model Tree that you want to copy. Its name is now shown in bold text and its associated options are displayed on the page.

For example, we shall select the assembly associated with the round flush setting in a fancy ring. The setting assembly that we want to mirror is rendered as 24ct Satin Finish in the following image:



3. Click on the **Block Copy**  button in the **Assembly Manager** area to display the **Block Copy** settings.
4. In the **Transform Relative To** area, select the origin you want to use when copying the assembly:
 - If you want to copy the assembly relative to the origin of the Master Model, select the **World Centre** option by clicking on its radio button. This method is selected by default.
 - If you want to copy the assembly relative to its own origin, select the **Component Centre** option by clicking on its radio button.

In our example, we shall copy the round flush setting assembly relative to the 'World Centre' of the Master Model.

5. Select the planes between which you want to paste copies of your chosen assembly in the **Tangent Plane** area:
 - If you want to copy the assembly from the X plane to the Y plane, select the **X-Y Plane** option by clicking on its radio button.
 - If you want to copy the assembly from the Y plane to the Z plane, select the **Y-Z Plane** option by clicking on its radio button.

- If you want to copy the assembly from the Z plane to the X plane, select the **Z-X Plane** option by clicking on its radio button.

In our example, we shall copy the round flush setting assembly from the X plane to the Y plane.

6. If you want to build the rows of copies in a negative direction between your chosen planes, click to select the **Reverse row direction** option.
7. If you want to build the columns of copies in a negative direction between your chosen planes, click to select the **Reverse column direction** option.

In our example, we shall not reverse the direction of either the rows or columns of copies made from the original round flush setting assembly.

8. Select the shape along which you want to paste copies of your chosen assembly in the **Shape of surface to paste along** area:
 - If you want to copy the assembly along a planar surface, select the **Plane** option by clicking on its radio button.
 - If you want to copy the assembly around a cylindrical surface, select the **Cylinder** option by clicking on its radio button.
 - If you want to copy the assembly around a spherical surface, select the **Sphere** option by clicking on its radio button.

In our example, we shall copy the round flush setting assembly around a cylindrical surface.

9. Define the distance that you want to set between each subsequent copy of the selected assembly in the **Offset** box.
In our example, we shall offset each copy of the round flush setting assembly by 10 mm.
10. Define the total number of copies that you want to create of the selected assembly by typing the number of rows and columns that you want to create in the **Number of Rows** and **Number of Columns** boxes.

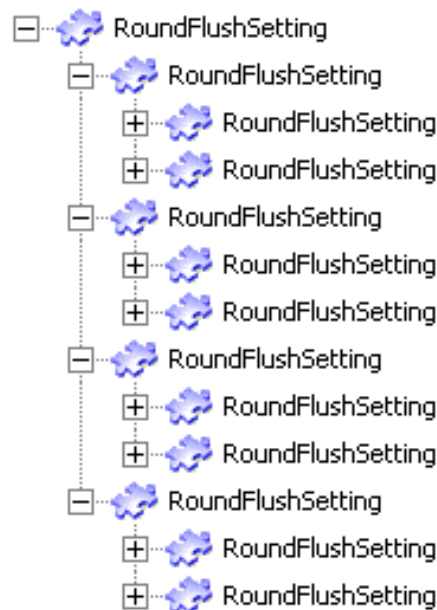
In our example, we shall create two rows and two columns of the round flush setting assembly.

11. If you want to group your resulting columns and rows of copies beneath a single new assembly in the Master Model Tree, click to select the **Nest inside new assembly** option.

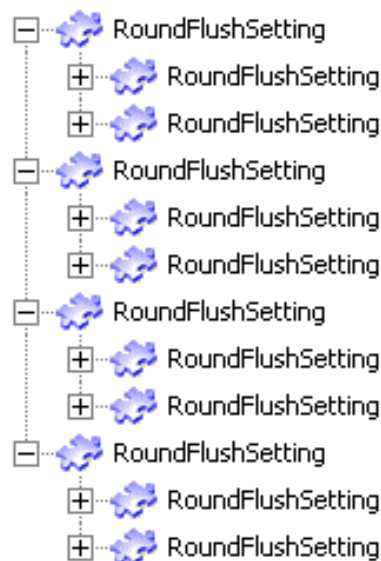


Note: *The **Nest inside new assembly** option is disabled whenever the Master Model is selected in the Master Model Tree.*

The hierarchy of the grouped block copy appears as *Assembly > Column Assembly > Row Assemblies* in the Master Model Tree.






If you want to create each of your copies as a separate assembly, make sure that the **Nest inside new assembly** option is deselected.



The hierarchy of the block copy appears as *Column Assembly > Row Assemblies* in the Master Model Tree.

Each of the resulting copies adopts the name of the original assembly. It is recommended that you rename each of the copies as something more meaningful so that you are able to distinguish them from one another more easily.

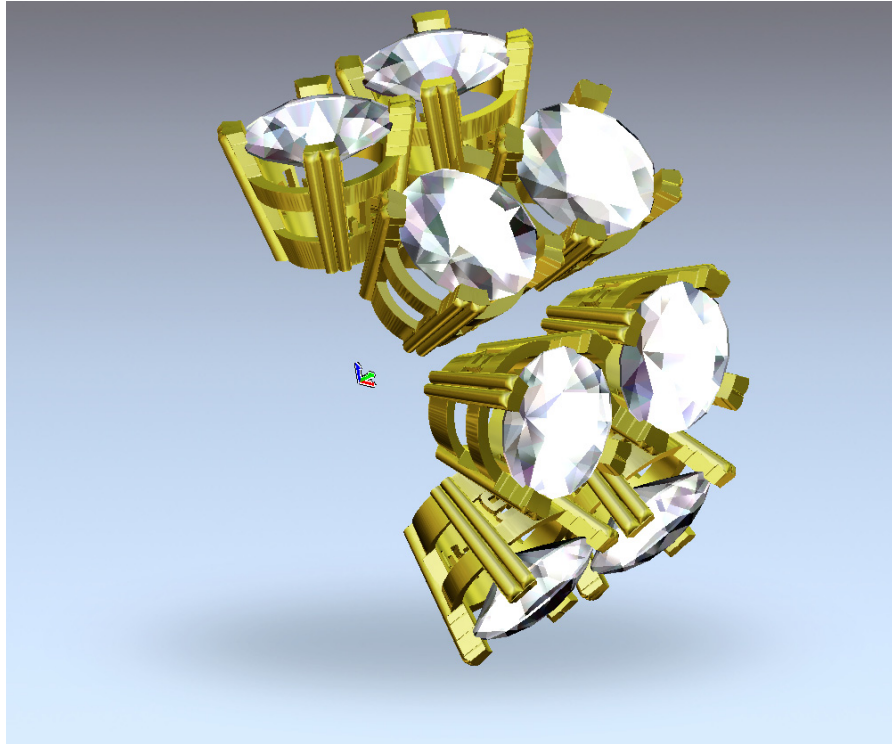
If you are copying an assembly , the original assembly is hidden from view  in the Master Model Tree when its resulting copies are created regardless of whether the **Nest inside new assembly** option is selected or not.

If you are mirroring a master model , the original master model remains visible in the Master Model Tree, but its associated assemblies are hidden. The resulting copy of the master model and the copies of its associated assemblies are all visible.

In our example, we do not want to group the copies of the round flush setting assembly with the original. We must therefore leave this option deselected.

12. Click on the **Accept**  button to copy the chosen assembly according to the settings on the page.

In our example, we can see that two rows and four columns of the original round flush setting assembly have been created with an offset of 10 mm between each copy:




Enhanced Visibility Settings


In the previous version of ArtCAM JewelSmith you could only control whether or not the Master Model itself was shown or hidden in the **3D View** window. When the Master Model was hidden from view, all of its associated components were hidden along with it.

You can now control the visibility of individual components independently of the Master Model. The icons shown in the Master Model Tree now also reflect the current state of visibility for each of the components.

To control which of the components are displayed or not:

1. Click on the **Project** tab to display the **Project** page.
2. Right-click on the name of the component in the Master Model Tree to display its context menu, and then click on the **Hide** option to conceal it in the **3D View** window.


The  icon indicates that the Master Model is shown.


The  icon indicates that the Master Model is hidden.


The  icon indicates that a replica triangle mesh is shown.

The  icon indicates that a replica triangle mesh is hidden.

The  icon indicates that a gem setting is shown.

The  icon indicates that a gem setting is hidden.

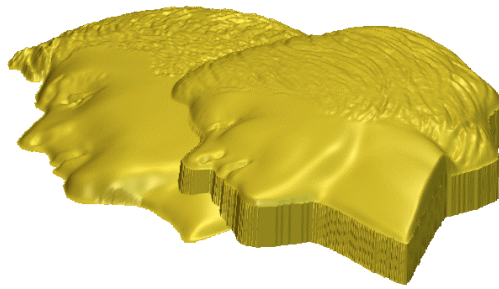
The  icon indicates that an assembly is shown.

The  icon indicates that an assembly is hidden.

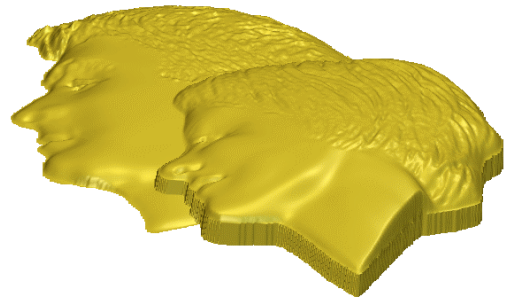
New Fade Relief Tool

ArtCAM JewelSmith 8.1 allows you to fade and feather all or part of a relief. You can control the strength and direction of the fade that is applied to the relief.

Before...



After...




Coupled with the **Envelope Distortion** tool, the **Fade Relief** tool is particularly useful for adding perspective to your designs. It also allows you to graduate textures applied to the relief surface. Perhaps most importantly, the ability to fade a relief assists in assuring that you remain within the constraints of a block of material when combining reliefs.

The **Fade Relief** tool is located in the **Relief Editing** area of the **Assistant's Home** page:



To fade an area of the relief currently shown in the **3D View** window:

1. Click on the **Fade Relief** button  in the **Relief Editing** area of the **Assistant's Home** Page to display the **Fade Relief** page.

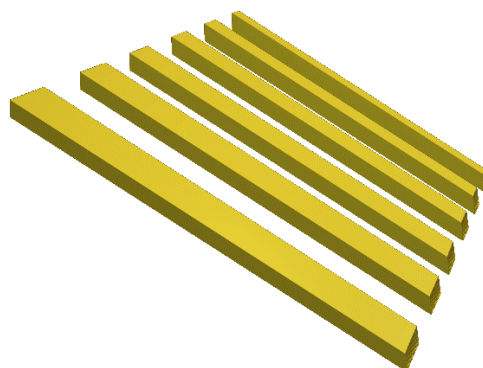
2. If you only want to fade a specific area of the relief, make sure that you draw and then select the vector that identifies the boundary of the fade. If you do not, the fade will be applied to the entire relief.
3. In the **Fade Strength** area, set the strength of the fade effect that you want to apply to the relief using either of the following methods:
 - Click and drag the slider to the right to increase the strength of the fade, or click and drag to the left to reduce the strength of the fade or feather.
 - Type the percentage in the box.

Using a strength of 100% will fade the relief to zero, whilst a strength of 0% will not fade the relief at all.

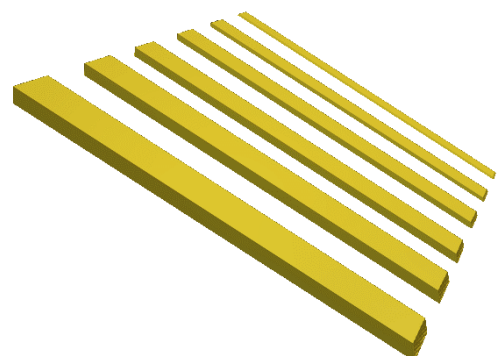
4. If you want to fade the relief in the opposite direction, click to select the **Reverse** option . This option is deselected by default.
5. In the **Fade Type** area, click to select the method you want to use when fading the relief:
 - **Linear** – this allows you to create a straight-edged sloped shape between two defined points. The first point identifies the original height of the relief, whilst the height at the second point depends on your **Fade Strength** setting.

For example, take a row of six rectangular shapes each with a height of 25 mm. If you create a linear fade horizontally across the relief surface applying a strength of 50%, the resulting height at the first point is 25 mm whilst the height at the second point is 12.5 mm.

Before...



After Linear Fade...

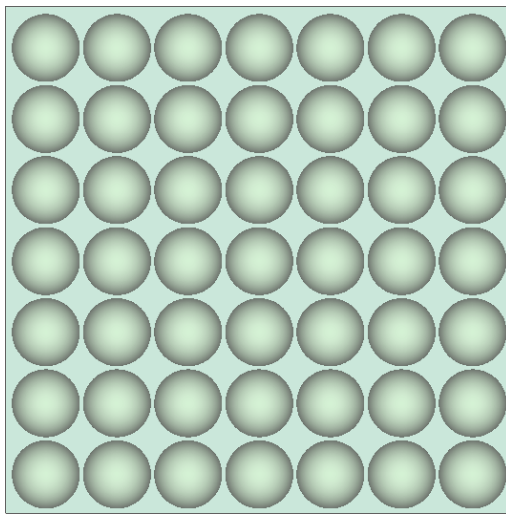


- **Radial** – this allows you to create a convex or concave shape, depending on whether you have selected the **Reverse** option or not, using a defined centre-point.

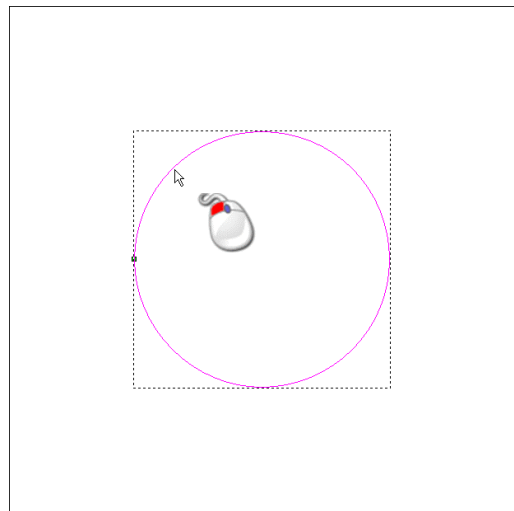
If you select this method, you must click to select a vector drawn in the **2D View** to define the area of the relief in which you want to apply the fade.

For example, applying a radial fade with a strength of 100% to a textured relief within a selected circular vector produces the following results:

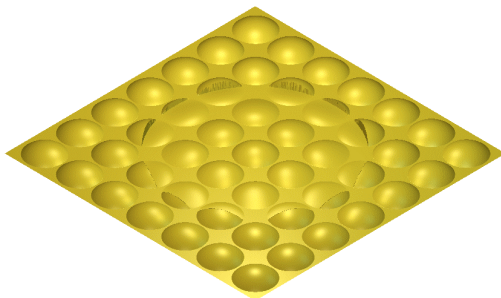
Greyscale of Textured Relief...



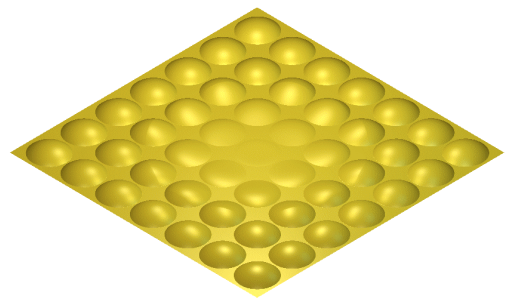
Selected Radial Vector...



Radial Fade...



Radial Fade Reversed...

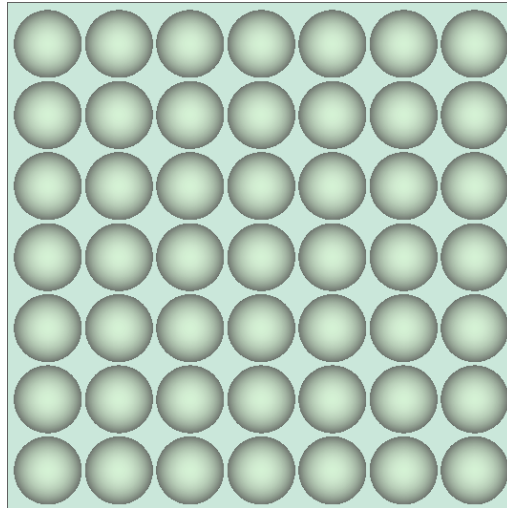


- **Between Boundaries** – this allows you to create a convex or concave shape between two closed vectors, depending on whether you have selected the **Reverse** option or not.

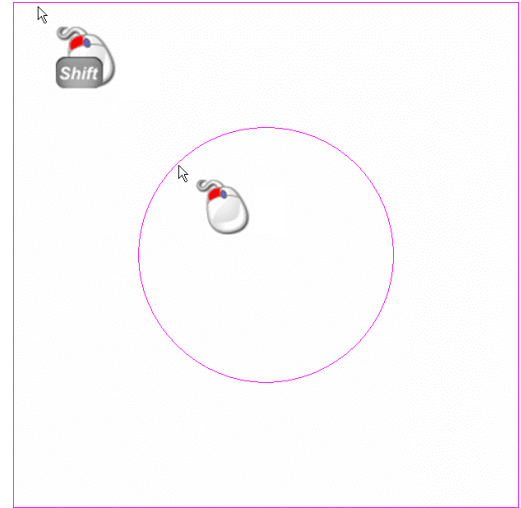
If you select this method, you must click to select two vectors drawn in the **2D View** to define the area of the relief between which you want to apply the fade.

For example, applying a fade with a strength of 100% to a textured relief between a selected circular vector and a rectangular vector produces the following results:

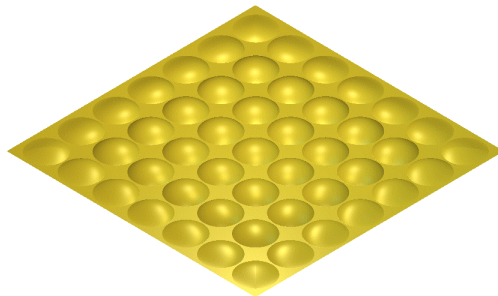
Greyscale of Textured Relief...



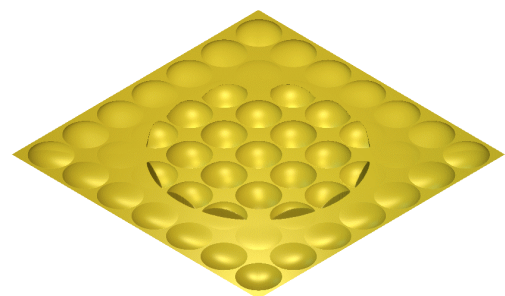
Selected Vector Boundaries...



Fade Between Boundaries...



Fade Between Boundaries Reversed...



6. In the **Options** area, define the point(s) in the model area that you want to use to control the position and direction of the fade.

Use the following method when creating a linear fade:

- First, click on the **Start** button.
- Next, move the cursor over the location in the model area that you want to define as the start point, and then click. The co-ordinates of the point are displayed in the **Fade From** area.
- Finally, move the cursor over the location in the model area that you want to define as the end point, and then click. The co-ordinates of the point are displayed in the **Fade To** area.

Use the following method when creating a radial fade:

- First, click on the **Select Centre** button.
 - Next, move the cursor over the location in the model area that you want to define as the centre point, and then click. Typically, this will be inside of the selected vector used to define the radial fade area. The co-ordinates of the point are displayed in the **X** and **Y** area.
7. Click on the **Create** button to fade the relief according to the settings on the page.
 8. Click on the **Close** button to return to the **Assistant's** Home page.

New Mirror Merge Relief Tool

ArtCAM JewelSmith 8.1 allows you to copy and mirror different halves of a relief. This allows you to create repetitive symmetrical designs very quickly, and means that you now only need to create a partial relief in order to output a complete relief design.

For example, you can create a full weave pattern relief using a partial weave pattern relief occupying only a quarter of the model area in two steps:

(1). *Original Weave Relief...*



(2). *Mirror Relief from Left to Right...*








(3). *Mirror Relief from Top to Bottom...*



The **Mirror Merge Relief** tool is located in the **Relief Operations** area of the **Assistant's** Home page:



To mirror the relief currently shown in one half of the model area over to its opposite half:

1. Click on the **Mirror Merge Relief** button  in the **Relief Operations** area of the **Assistant's** Home Page to display the **Mirror Merge Relief** page.
2. Click on the button associated with how you want to mirror the relief:
 - Click on the  button to mirror the relief from the left side of the model area to the right.
 - Click on the  button to mirror the relief from the right side of the model area to the left.
 - Click on the  button to mirror the top half of the model area to the bottom half.
 - Click on the  button to mirror the bottom half of the model area to the top.
3. Click on the **Close** button to return to the **Assistant's** Home page.

Improved Constant Height Lettering

ArtCAM JewelSmith 8.1 offers a vast improvement in constant-height lettering over that produced in the previous version of ArtCAM JewelSmith.

The **ISO-FORM Letters** button is located in the **Relief Creation** area of the **Assistant's** Home page:

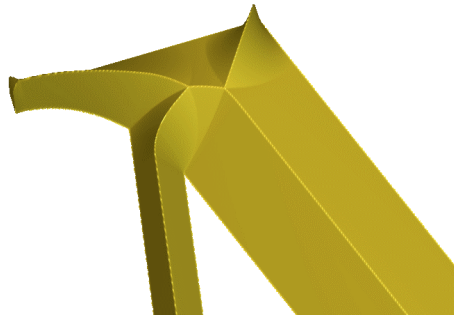


ArtCAM JewelSmith now adjusts the angle and height of the letter when a sharp corner is found in the vector text from which it is being calculated. ArtCAM JewelSmith also preserves the integrity of the constant height associated with the vector text's spine. In creating constant height lettering this way, the drastic tabs or 'wings' that could

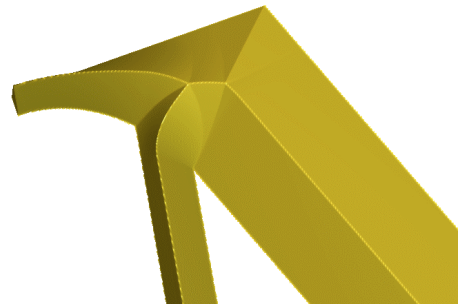
previously result on the serifs within the three-dimensional letter are no longer evident.

For example, you can see below just how different the top-right area of a letter 'M' now appears:

*Constant Height Letter in
ArtCAM JewelSmith 7.1...*



*Constant Height Letter in
ArtCAM JewelSmith 8.1...*



Multiple Relief and Bitmap Undo/Redo

ArtCAM JewelSmith 8.1 allows you to perform a sequence of relief or bitmap editing techniques without having to apply each of your changes in turn.

To cancel each of your consecutive editing actions, working backwards:


- Click on the **Undo** button  in the **File** area of the **Assistant's** Home Page.

To repeat each of the editing actions you have previously cancelled in succession, working forwards:


- Click on the **Redo** button  in the **File** area of the **Assistant's** Home Page.

The number of times that you can undo or redo your actions depends on the size of the 'scratch' file associated with ArtCAM JewelSmith, as well as the magnitude of your editing. For example, a sequence of small changes to the relief or bitmap will store more undo actions than larger modifications.

To set the size of the 'scratch' file associated with the **Undo** and **Redo** buttons:

1. Click on the **Options** button  in the **File** area of the **Assistant's** Home Page to display the **ArtCAM Options** page.
2. In the **Scratch File Settings** area, type the amount of space that you want to allocate on your computer to the temporary scratch file. The default size is 100mb.

The scratch file is stored in the Temp directory associated with the User currently logged-in to Windows. For example, *C:\Documents and Settings\<user>\Local Settings\Temp*.

3. Click on the **Apply** button, followed by the  icon at the bottom of the page to apply your settings and return to the **Assistant's** Home Page.

New Maximum Diameter for Sculpting Tools

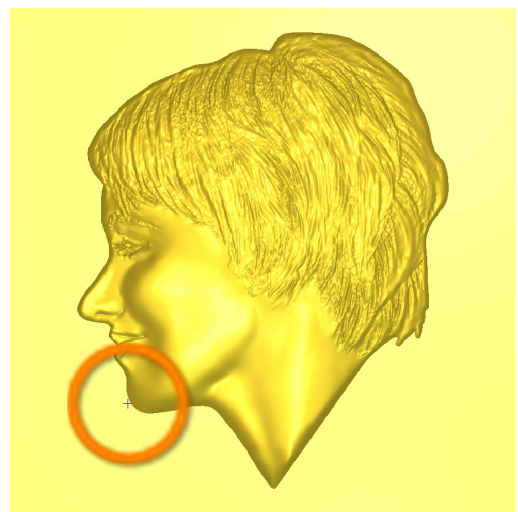
ArtCAM JewelSmith 8.1 allows you to sculpt a much larger surface area in a relief using the familiar collection of **Interactive Sculpting** tools.

In the previous version of ArtCAM JewelSmith , the maximum diameter of a sculpting tool was 100 pixels. The maximum tool diameter has now been increased to 200 pixels, allowing you to sculpt a large area of a relief far more efficiently.

*Tool Diameter at 100% in
ArtCAM JewelSmith 7.1...*



*Tool Diameter at 100% in
ArtCAM JewelSmith 8.1...*



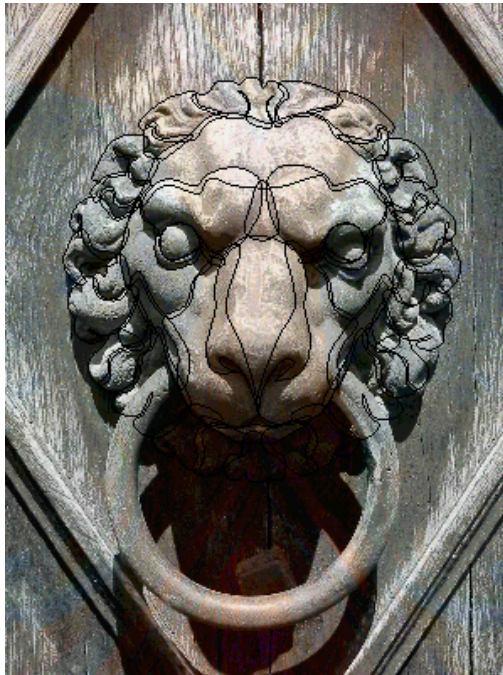
This increase in tool diameter allows you to sculpt a surface area with a single stroke up to 400% larger than in previous versions of ArtCAM JewelSmith.

New 2D Bitmap Contrast Tool

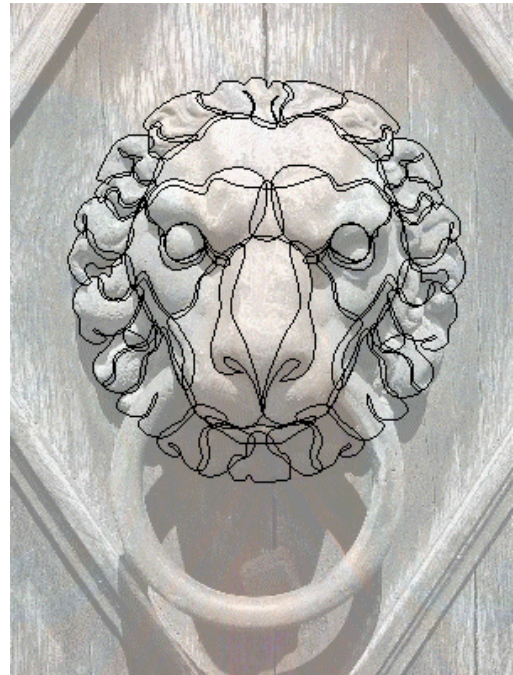
ArtCAM JewelSmith 8.1 allows you to adjust the contrast of a bitmap image shown in the **2D View** window, making it far easier to draw vector outlines representing specific areas within the bitmap image.

The contrast command changes the amount of shading applied to a bitmap image shown in the **2D View** window. You can use it to blur the image, to make colours appear more saturated.

2D Bitmap Contrast slider set at 100%...

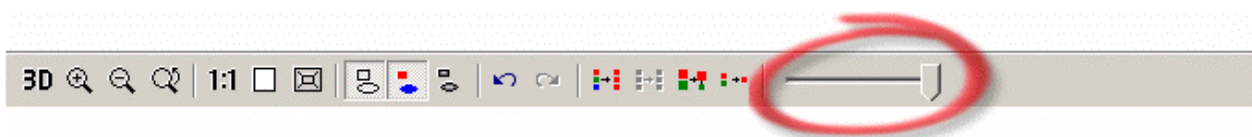


2D Bitmap Contrast slider set at 50%...



The ability to adjust the contrast of a bitmap image from within ArtCAM JewelSmith greatly reduces the need to edit the image elsewhere before it is imported. It is a particularly useful tool when working with scanned or faxed data.

The **2D Bitmap Contrast** slider is located on the far-right side of the **2D View** toolbar, as shown below:



To set the contrast applied to the bitmap image, click and drag on the **2D Bitmap Contrast** slider. Click and drag the slider to the right to restore the image to its original sharpness, or click and drag the slider to the left to blur the image.

Enhanced Zooming

ArtCAM JewelSmith 8.1 allows you to focus on areas of vector and bitmap artwork in far greater detail. The maximum zoom factor associated with the **Zoom In Tool** is now forty times greater than that previously available in ArtCAM JewelSmith.

For example, within an overall model area of 8 feet (2400 mm) by 4 feet (1220 mm), a zoomed area of 1 inch (25 mm) actually appears at 0.001 inches (0.025 mm).

The **Zoom In Tool** button is located on the far-left side of the **2D View** toolbar, as shown below:



New Toolpath Ordering



Each time a new toolpath is created or calculated it is listed on the **Toolpaths** Home page. The previous toolpath is then moved down a position in this list of toolpaths. This can often mean that the final list of toolpaths does not reflect the order in which you want to machine a job.

ArtCAM JewelSmith 8.1 allows you to reset the order in which created and calculated toolpaths are listed on the **Toolpaths** Home page to reflect exactly how you want to machine the job. This concept is very similar to that which is already employed when merging toolpaths.

The toolpath-ordering buttons are located beneath the list of calculated toolpaths shown on the **Toolpaths** Home page.



To set the order in which created and calculated toolpaths are listed:

1. Click to select the name of the toolpath that you want to prioritise. Its name is highlighted in blue.
2. Use the buttons on the page to set the position of the toolpath in the list:
 - Click on the  button to move the toolpath upwards.
 - Click on the  button to move the toolpath downwards.

New Colour 2D Toolpath Simulation

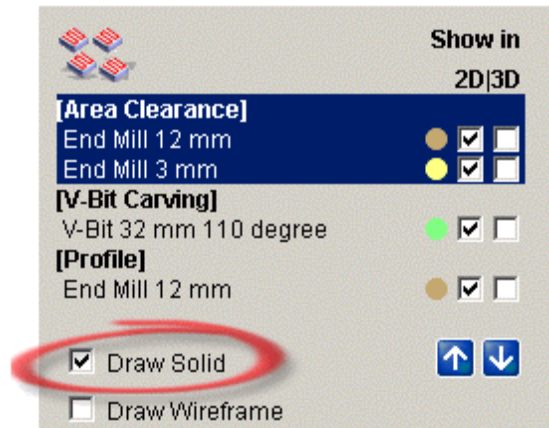
ArtCAM JewelSmith 8.1 allows you to simulate calculated toolpaths in the **2D View** window as a solid colour. This toolpath simulation method is a more informative display of the toolpath than that offered by the traditional red wireframe drawing that made up a toolpath preview in the previous version of ArtCAM JewelSmith.



You can simulate any toolpath as a solid colour in the **2D View** window providing that it has been calculated and a **2D Preview** has also been created. The name of a calculated toolpath is shown on the

Toolpaths Home page in black. If it is shown in red, the toolpath has not yet been calculated and therefore cannot be simulated.

The **Draw Solid** option is located beneath the list of calculated toolpaths shown on the **Toolpaths** Home page.



To simulate a toolpath in the **2D View** window as a solid colour:

1. Click to select the calculated toolpath listed on the **Toolpaths** Home page that you want to simulate.
2. Click to select the **Draw Solid** option beneath the list of calculated toolpaths. If you only want to view a solid colour simulation, make sure that the **Draw Wireframe** option is deselected also.

Using the **Draw Solid** option allows you to clearly see the areas of the vector artwork that the selected tool will machine, and how effectively the toolpath reproduces the integrity of the original design.

In the example below, the solid colour simulation on the left confirms that we would need to use a tighter tolerance in our toolpath in order to preserve the profile of the letter. The image on the right shows the solid colour simulation of the same toolpath after its tolerance has been adjusted.

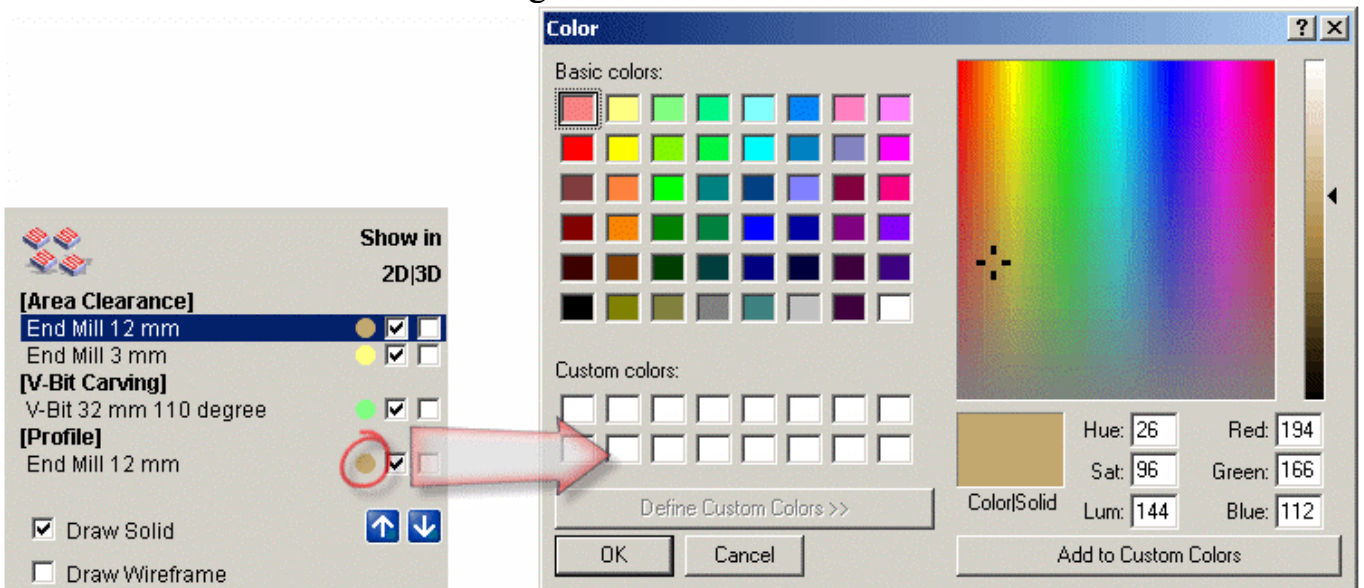
Letter 'a' using a loose tolerance...



Letter 'a' using a tighter tolerance...



3. If you want to change the colour of the solid toolpath simulation, click on the colour spot beside the name of the tool used in the toolpath listed on the page to display the **Color** dialog box:



For details on using this dialog box, see "Assigning a Colour To A Layer" in the Working with Models chapter of the ArtCAM Pro Reference Manual.

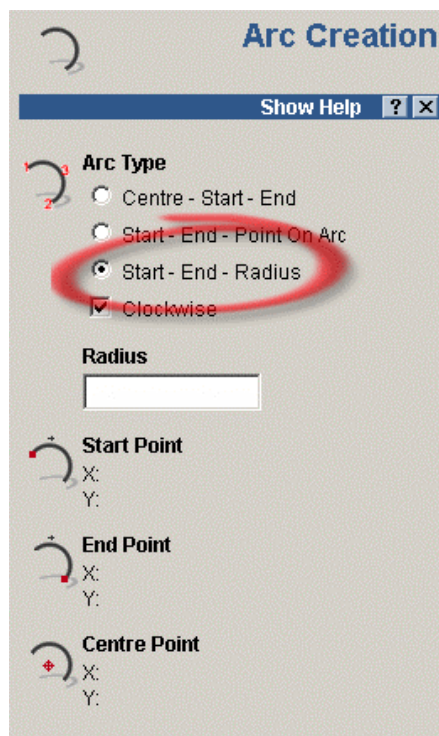
The default colour assigned to each and every tool used within a toolpath is brown. However, if you assign a new colour to a tool at any stage, this colour will be maintained in all subsequent toolpaths listed on the **Toolpaths** Home page in which the same tool is used. For example, if blue is assigned to a *3 mm End Mill* tool, then the solid simulation for all subsequent toolpaths using a *3 mm End Mill* tool will also be blue. This does not apply retrospectively, so

previous toolpaths using the same tool will not adopt the newly assigned colour.

4. If you want to hide the solid toolpath simulation at any time, you can either:
 - Click to deselect the **Show In 2D** option beside the name of the calculated toolpath .
 - Click to deselect the **Draw Solid** option .

Improved Arc Creation


ArtCAM JewelSmith 8.1 allows you to create an arc vector by defining its start point, end point and radius. You can also control the direction in which the arc is drawn.



The **Create Arcs** button is located in the **Vector Editing** area of the **Assistant's** Home page:



To create an arc by defining its start point, end point and radius:

1. Click on the **Create Arcs** button  in the **Vector Editing** area of the **Assistant's** Home Page to display the **Arc Creation** page.
2. In the **Arc Type** area, click to select the **Start – End – Radius** option. The **Clockwise** option and the **Radius** box are activated, while the editing boxes at the bottom of the page are greyed-out.
3. Define the direction of the arc. The arc is drawn in an anti-clockwise direction by default, meaning that the **Clockwise** option is deselected . If you want to draw the arc in a clockwise direction from its start point, make sure that the **Clockwise** option is selected .
4. Type the radius of the arc you want to create in the **Radius** box.
5. Move the \oplus cursor over the model area and click on the position that you want to set as the arcs start point. The X and Y co-ordinates of the point are displayed in the **Start Point** area of the page.
6. Move the \oplus cursor over the model area and click on the position that you want to set as the arc's end point. The X and Y co-ordinates of the point are displayed in the **End Point** area of the page.
7. If you want to see a preview image of the arc before it is drawn, click on the **Preview** button.
8. If you want to draw the arc and remain in arc creation mode, click on the **Create** button. If you want to draw the arc and return to the **Assistant's** Home page, right-click on your mouse.

Enhanced Nesting with Sheets



In the previous version of ArtCAM JewelSmith, vectors were nested across separate layers. ArtCAM JewelSmith 8.1 replaces the concept of nesting vectors across separate layers with that of nesting across sheets of material.

In light of this change, you will notice that the **Multi Sheets into Layers** option previously found on the **Nesting** page has been removed altogether.

Sheets of nested vectors are listed on the **Layers** page, and only one sheet can be active at a time. ArtCAM JewelSmith merges all sheets containing an identical number and layout of nested vectors into a single sheet, and names it so that you can easily identify what of the original nested sheet output makes up the merged sheet.

Using sheets is a far more efficient concept for handling parts. For example, a cabinet project might comprise of thirty panels nested across five sheets of wood. If we were to display all five sheets simultaneously, the **2D View** would be incredibly congested and it would be impossible for us to determine the purpose of any single sheet. By displaying only one sheet at a time, the purpose of each sheet is made explicit.

To nest a selection of vectors onto multiple sheets:

1. Make sure that you are in **Select Vectors** mode . For details, see "Selecting Vectors" in the Working with Vectors chapter of the ArtCAM Pro Reference Manual.
2. Click on the **Nest Selected Vectors** button  in the **Position Size Align Vectors** area of the **Assistant's** Home Page to display the **Nesting** page.



Note: You can also display the **Nesting** page from the Main menu bar, by clicking on the **Vectors** menu followed by the **Nest Vectors** option.

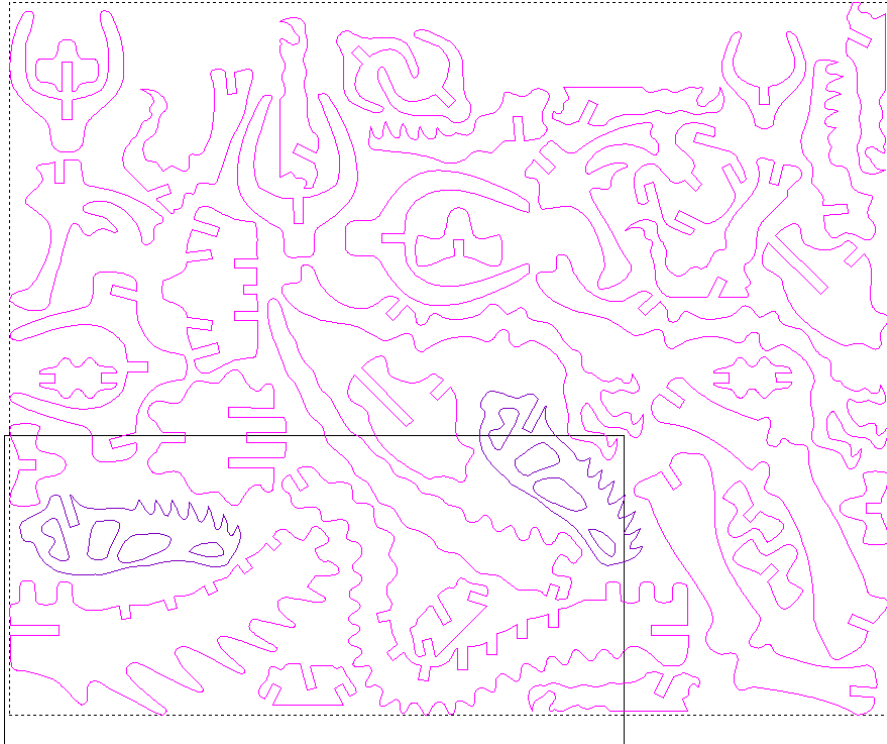
3. If the current model area does not represent the piece of material in which you want to nest objects:
 - First, draw and select the vector representing the piece of material you have available to machine.
 - Next, hold down the **Shift** key down on your keyboard and select all of the vectors that you want to nest within the selected vector.

By default, selected vectors are always nested within the vector you select first in the **2D View** window.

If the model area (the white area) shown in the **2D View** is representative of your exact material dimensions:

- Click to select the **Model is Sheet** option .
- Select all of the vectors that you want to nest within the model area.

In the following example, the model area represents our material. We can see that all of the vectors we want to nest within the model area are selected.



4. Define the diameter of the cutting tool that you are using to machine the nested vectors in the **Diameter (D)** box.
5. Define the amount of additional material that you want to surround each of the nested vectors in the **Tool Clearance (C)** box.

If you want to allow the selected vectors to be rotated during the nesting process, click to select the **Allow Part Rotation** option and then define the increment by which you want ArtCAM JewelSmith to rotate the vectors in the **Step Angle (A)** box.

For example, if the **Step Angle (A)** is defined as 90° , ArtCAM JewelSmith attempts to nest the vectors, rotating them by 0° , 90° , 180° and 270° in sequence.

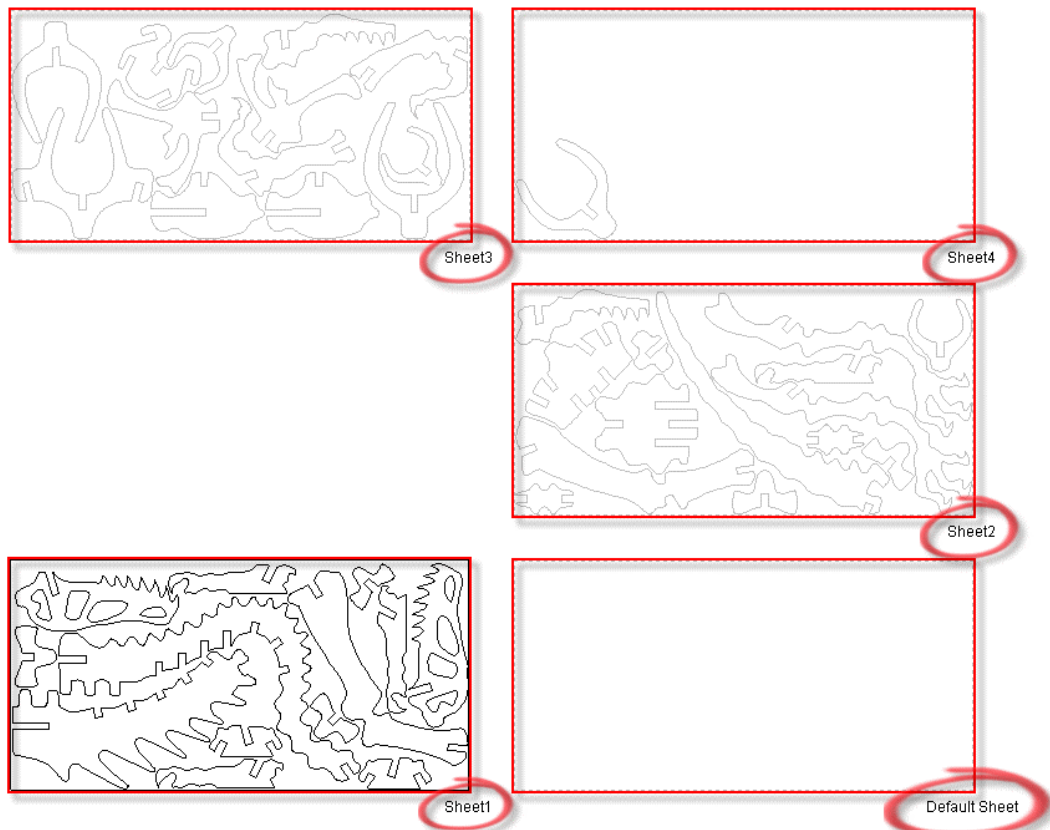
This and the remaining options on the page provide ArtCAM JewelSmith with flexibility when fitting vectors into the available space.

6. If you want to allow the selected vectors to be mirrored during the nesting process, click to select the **Allow Mirrored Parts** option .
7. If you want to allow the selected vectors to be nested inside of those vectors within the selection that have a central cavity, click to select the **Allow Parts in Parts** option .
8. Click to select one of the following options from the **Nest From** list box:
 - **Bottom Left** – To nest the selected vectors from the bottom left corner of the material area.
 - **Bottom Right** – To nest the selected vectors from the bottom right corner of the material area.
 - **Top Left** – To nest the selected vectors from the top left corner of the material area.
 - **Top Right** – To nest the selected vectors from the top right corner of the material area.
9. Click on the **Nest Direction** list box, and then on the axis along which you want to nest the selected vectors.
10. Define how closely you want the cutting tool to maintain the shape of the nested vectors in the **Curve Tolerance** box.
11. If you want to nest a block of vector text or a group of vectors exactly as it is shown in the **2D View** window, click to select the **Don't nest inner vectors (preserve groups)** option .
12. If you want to create a vector in the shape of the disposable material that remains after the selected vectors have been nested, click to select the **Create Leftover Material Vector** option .
13. If you want to nest multiple copies of each of the selected vectors, click to select the **Nest Multiple Copies** option and then define the number of copies that you want to create in the box below.
14. If you want to group the vectors contained on each sheet, click to select the **Group Nested Vectors** option .

15. Click on the **Nest** button to nest the selected vectors onto sheets.

The arrangement of the rows and columns of sheets shown in the **2D View** window will vary according to the most economical use of the available space.

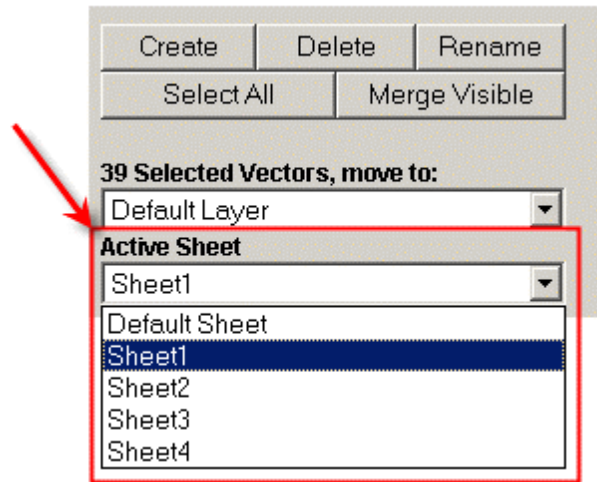
In our example, we have allowed for part rotation using a step angle of 45 degrees only. The default sheet and the four sheets of nested vectors are arranged as shown:



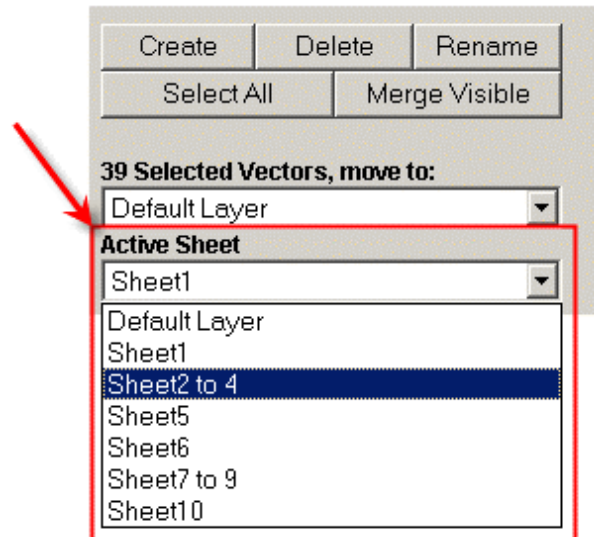
Each sheet of nested vectors is listed on the **Layers** page.

You can control which sheet of nested vectors is shown in the **2D View** window by clicking to select the name of the specific *Sheet* you want to view from the **Active Sheet** list box. Only one sheet can be active at any given time, although it is possible to preview the contents of all sheets. You can only edit the vector artwork on the active sheet.

In our example, the sheets are listed as shown with *Sheet1* selected as the active layer:



All identical sheets of nested vectors are merged into a single sheet. For example, if the second, third and fourth sheet of nested vectors were identical, all of them would be merged into a single sheet named *Sheets 2 to 4*.



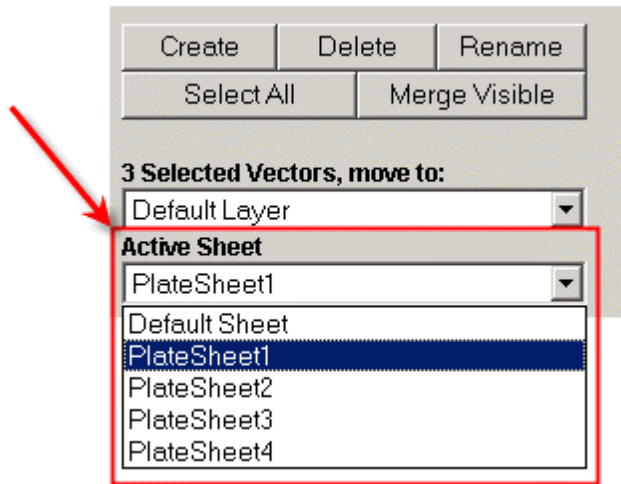
During the manufacturing process, you need only create the necessary toolpath(s) using this single sheet and machine it three times to machine the required number of pieces.

16. Click on the **Close** button to return to the **Assistant's** Home Page.

Enhanced Multiplate Tool with Sheets

In the previous version of ArtCAM JewelSmith, plates were created across separate layers. ArtCAM JewelSmith 8.1 replaces the concept of creating plates across separate layers with that of creating plates across sheets of material. This same principle is now also applied when nesting vectors.

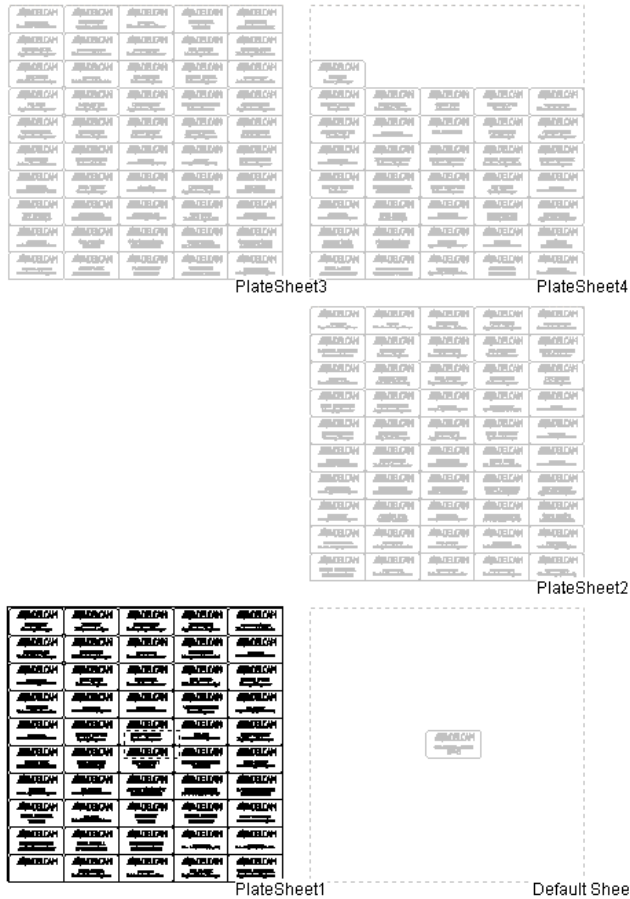
After you have created the plates using your selected vector artwork and text data, each sheet of plates is listed on the **Layers** page.



You can control which sheet of plates is shown in the **2D View** window by clicking to select the name of the specific *PlateSheet* you want to view from the **Active Sheet** list box. You can only view one sheet of plates at a time. You can only edit the vector artwork on the active sheet.

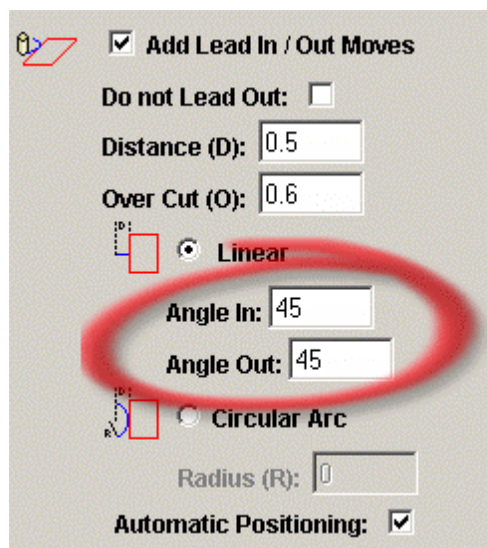
The arrangement of the rows and columns of sheets shown in the **2D View** window will vary according to the most economical use of the available space.

For example, 186 plates divided across 4 sheets appear as follows:



Enhanced Toolpath Lead Moves

ArtCAM JewelSmith 8.1 allows you to control the angle of linear lead moves that you add to a profile pass within a toolpath strategy. To find out which toolpath strategies contain a profile pass, refer to the "Machining Models" chapter of the ArtCAM Pro Reference Manual.



When editing lead moves associated with a profile pass used to machine inside of a defined area, the distance of a linear lead move or the radius of a circular arc move is now considered.

When adjusting the position of a linear lead move, ArtCAM checks to ensure that the distance of the lead move remains within the boundary of the profile pass. If the current distance of the lead move intersects with the profile pass, its distance will be cropped so that it does not.

When adjusting the position of a circular arc lead move, ArtCAM checks to ensure that the radius of the lead move remains within the boundary of the profile pass. If the current radius of the lead move intersects with the profile pass, the lead move is converted to a linear move instead with a distance that does not.

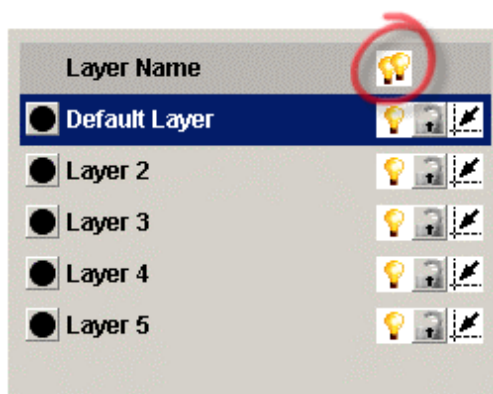
New Toggle Visibility for All Layers

ArtCAM JewelSmith 8.1 allows you to control the visibility of each of the layers that make up an ArtCAM model simultaneously. In previous versions of ArtCAM you could only control their visibility individually.

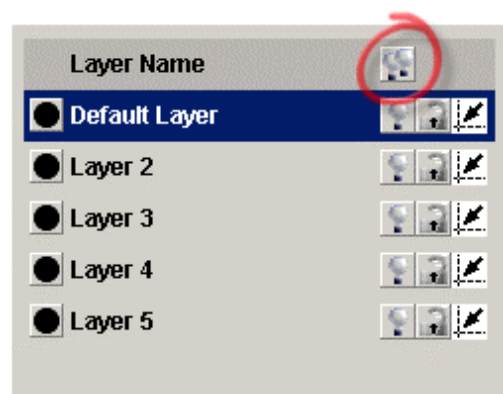
The **Toggle All Visibility** button is located above the list of layers shown on the **Layers** page. The **Layers** page is displayed by clicking on the **Layers** tab.

Click on the **Toggle All Visibility** button to toggle the visibility of all layers that make up a model either on or off.

Toggle All Visibility ON...



Toggle All Visibility OFF...



Index

2

- 2D Bitmap Contrast Tool 32
- 2D View
 - bitmap contrast tool 32
 - zooming 33

A

- Arc Creation 37
- Assembly
 - copying 14
 - mirroring 10

B

- Block Copy 18

C

- Colour 2D Toolpath Simulation 34
- Component Library
 - advanced options 8
 - creating 6
 - dimensions 8, 10
 - importing 5
- Constant Height Lettering 29
- Copy
 - assembly 14, 18
 - block 18
 - rotate 14

F

- Fade Relief Tool 24

I

- Interactive Sculpting 31

L

- Lead Moves 45

M

- Master Model Tree 23
- Mirror
 - assembly 10
 - relief 28
- Mirror Merge Relief Tool 28
- Multiplate Tool 43

N

- Nesting Vectors 38

O

- OrderToolpaths 33

R

- Relief
 - constant height lettering 29
 - fade 24
 - mirror merge 28
 - multiple redo 30
 - multiple undo 30
 - sculpting tools 31
- Rotate Copy 14

S

- Scratch File 30
- Sheets
 - multiplate tool 43

nesting vectors 38

T

Toggle All Visibility 46

Toolpaths

 lead moves 45

 ordering 33

 simulating 34

V

Vectors

 arcs 37

 constant height lettering 29

 multiplate tool 43

 nesting 38

Visibility

 components 23

 layers 46

Z

Zoom In Tool 33