ArtCAM 2013

What's New

Pro and Jewelsmith

ArtCAM

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The functionality and user interface in this manual is subject to change without notice in future revisions of software.

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Acknowledgements

Patents

The technique of using a wall-mounted scanner to capture a photographic side profile of a human face, which is then used to create a 3D relief in ArtCAM, is subject to a patent.

Patent No: GB 2 387 731 "Deriving a model from a scan of an object"

The functionality of preparing a 3D relief of the side profile of a human face direct from a photograph in ArtCAM is subject to a patent.

Patent No: GB 2 403 883 "Photo to 3D"

The functionality of the 3D layers used to design and machine an article in ArtCAM is subject to a patent application.

Patent No: GB 2 434 287 "3D Layers"

The functionality of creating a low relief from an imported 3D object in ArtCAM without losing low-level detail is subject to a patent.

Patent No: GB 2 455 966 "Method and System for Generating Low Reliefs – a.k.a. Scan to Low Relief"

The functionality of filling an area with geometric or natural textures using pattern elements and a controlling direction line in ArtCAM is subject to a patent application.

Patent Application: GB 2492225 "Texture Flow"

Contents

Getting Started in ArtCAM

ArtCAM is a 3D machining solution for professional CNC engravers and router users. Designs can be created using ArtCAM's comprehensive vector and bitmap drawing tools, its vector and relief clipart libraries, or imported from other graphics packages.

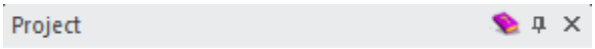
ArtCAM handles complex designs with ease and provides flexible machining strategies that are fast, accurate and, most importantly, very reliable. Realistic 3D toolpath simulations can be used to verify all toolpaths, and picture the end product, before sending them to the CNC machine.

Information about ArtCAM

You can find information about the features in ArtCAM from the following sources:

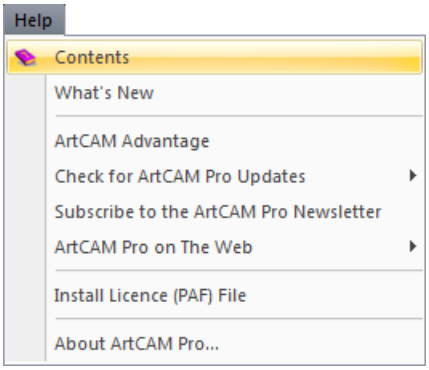
- Inline-help.

  Click  on a panel's header to toggle the display of its in-line help.

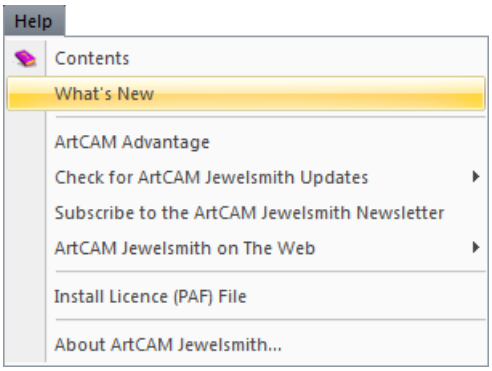
- The ArtCAM Reference Help system.

  In the **Main Menu** bar, select **Help > Contents**.

- The ArtCAM What's New system.

  In the **Main Menu** bar, select **Help > What's New**

- The **Live!** panel.

  Move the cursor over the **Live!** tab in the right docking area:

- The **Tutorials** panel.

  Move the cursor over the **Tutorials** tab in the right docking area:

- The **Start** panel.

  Click  in the **Other Features** area to display details of new features and enhancements.

- The ArtCAM website.

  In the **Main Menu** bar, select **Help > ArtCAM on The Web > ArtCAM Home Page**.

- The ArtCAM User Forum.

  In the **Main Menu** bar, select **Help > ArtCAM on The Web > ArtCAM Forum**. You can also access the forum at http://forum.artcam.com (http://forum.artcam.com).

  *If you have not yet registered as a forum member, click the **Register** option on the forum's home page to do so. Registered users are able to download images, example ArtCAM models and relief clipart files attached to posts.*

- Subscribe to the ArtCAM Newsletter.

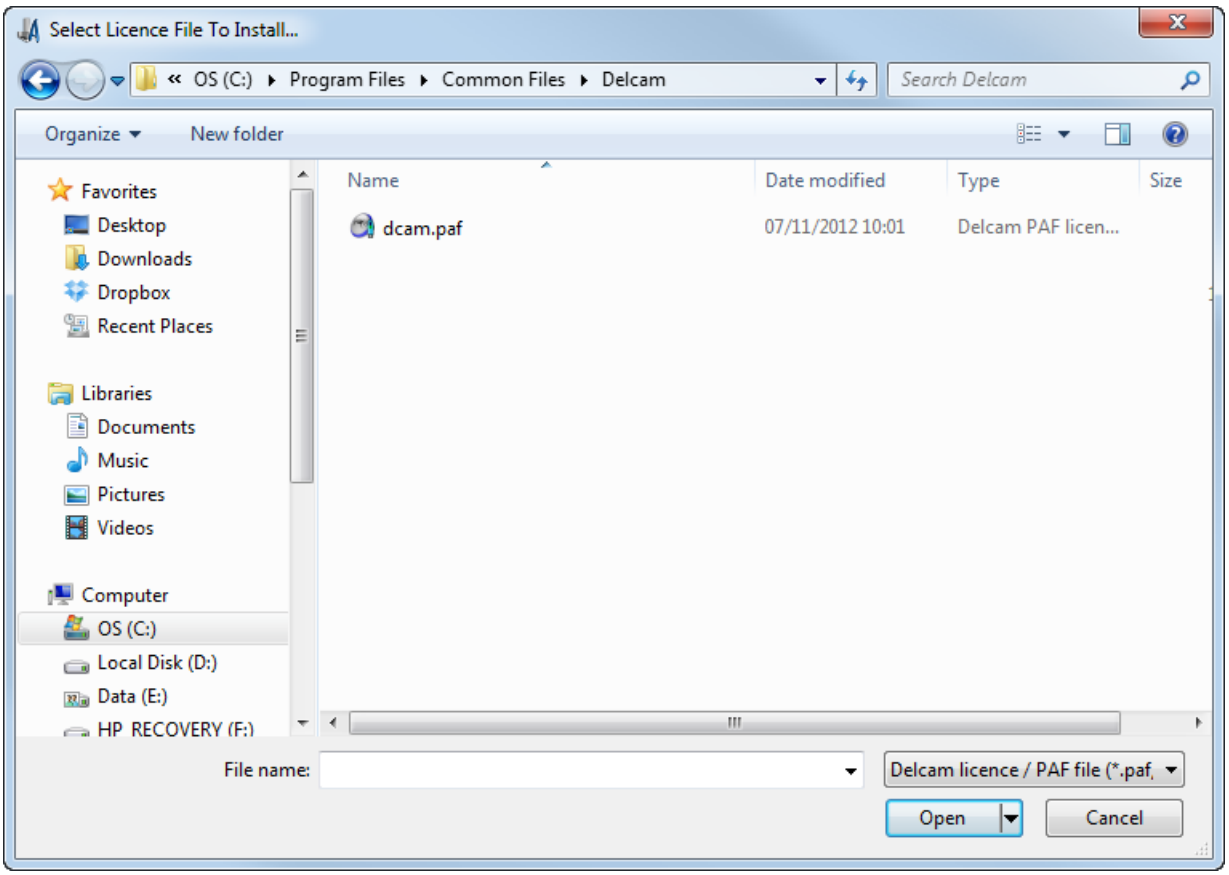
  In the **Main Menu** bar, select **Help > Subscribe to the ArtCAM Newsletter** to send an e-mail requesting subscription to the quarterly newsletter.

Installing your ArtCAM licence

In order to use ArtCAM, you must ensure that a valid licence is installed. This licence can be installed as one of two different file types: a PAF file (*dcam.paf*) or a Delcam Licence file (*dcam.dcamlic*).

To install your ArtCAM licence:

1. In the **Main Menu** bar, select **Help > Install Licence (PAF) File** to display the **Select Licence File To Install** dialog:



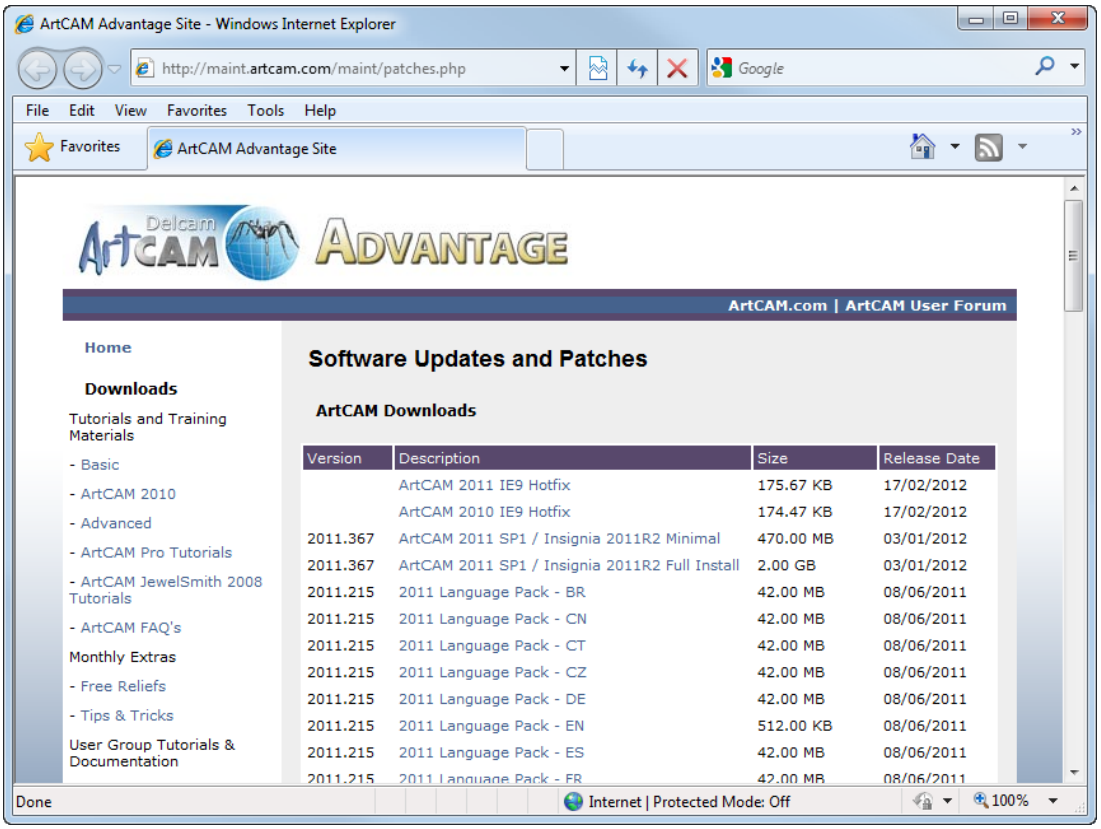
2. Navigate to the folder on your computer in which your licence file is stored. The default location is *C:\Program Files\Common Files\Delcam.*
3. When you have found the licence file, click its file name. This is displayed in the **File name** field.
4. Click **Open** to install the selected licence file and close the dialog.

Updating ArtCAM

To check for software updates and patches from within ArtCAM:

1. Ensure that you are connected to the internet.
2. In the **Main Menu** bar, select **Help > Check For ArtCAM Updates > Software Updates**.

   If there are updates available, ArtCAM displays the **Update** settings on the **Tool Settings** tab, and opens a new browser window with the **Software Updates and Patches** web page of the **ArtCAM Advantage Site** displayed:



All of the available software updates and product updates are listed on this web page. In the **Description** area, click a link to download its associated update or patch to your computer.

If there are no software updates or patches currently available, a message dialog is displayed asking if you would like to visit the online **ArtCAM Advantage Site.**

Click **Yes** to open a new browser window with the **Software Updates and Patches** web page of the **ArtCAM Advantage Site** displayed. Click **No** to close the message dialog.

***ArtCAM Advantage** customers can also browse the **ArtCAM Advantage Site** using the links shown on the left side of the **Software Updates and Patches** web page.*

Files compatible with ArtCAM

You can create a new model by opening a file saved in any of the following formats:

- ArtCAM Model (***.art**)
- ArtCAM Relief (***.rlf**)
- Windows or OS/2 Bitmap (***.bmp**)
- Windows or OS/2 DIB (***.dib**)
- Windows or CompuServe RLE (***.rle**)
- JPEG Image - JFIF Compliant (***.jpg**, ***.jpeg**, ***.jpe** and ***.jfif**)
- CompuServe Graphics Interchange (***.gif**)
- Windows Enhanced Meta File (***.emf**)
- Windows Meta File (***.wmf**)
- Tagged Image File Format (***.tif** and ***.tiff**)
- Portable Network Graphics (***.png**)
- Windows Icon (***.ico**)
- Drawing Interchange Format, including PowerSHAPE and AutoCAD (***.dxf**)
- AutoCAD 2D Drawing (***.dwg**)
- Lotus, PC Paint or DUCT picture (***.pic**)
- Delcam DGK (***.dgk**)
- Portable Document Format (***.pdf**)

You can import vector artwork saved in any of the following formats into an open ArtCAM model:

- Adobe Illustrator Image (***.ai**)
- Encapsulated PostScript (***.eps**)
- Drawing Interchange Format, including PowerSHAPE and AutoCAD (***.dxf**)
- AutoCAD 2D Drawing (***.dwg**)
- Lotus, PC Paint or DUCT picture (***.pic**)
- Delcam DGK (***.dgk**)
- Windows Meta File (***.wmf**)

You can import triangle models saved in the following file formats into an open ArtCAM model:

- 3D Assembly (***.3da**)

- ArtCAM Project (***.3dp**)
- 3D Studio (***.3ds**)
- Drawing Interchange File (***.dxf**)
- Binary or ASCII STL (***.stl**)
- Universal 3D File (***.u3d**)
- Wavefront Object File (***.obj**)
- Delcam Machining Triangles (***.dmt**)

You can import surface models saved in the following file formats into an open ArtCAM model:

- 3D NURBS Modeller - Rhinoceros (***.3dm**)
- Delcam DGK (***.dgk**)

You must have Exchange 7.0.1005 or above installed on your computer to import all triangle and surface models.

Using the mouse

The way in which your mouse can be used in ArtCAM often changes according to which design window is displayed and the particular aspect of the model on which you are working. If you own a mouse with a wheel this increases the range of options available to you.

2D View

You can use the mouse to manipulate the **2D View** in the following ways:

ArtCAM Function	Mouse Action
Magnify view by 50%	
Reduce view by 50%	
Zoom in	
Zoom out	

3D View

You can use the mouse to manipulate the **3D View** in the following ways:

ArtCAM Function	Mouse Action
Rotate view	
Zoom	
Pan view	
Zoom in	
Zoom out	

Vectors

You can use the mouse relative to vector artwork in the following ways:

ArtCAM Function	Mouse Action
Select vector *(also select node in node editing mode)*	
Select multiple vectors	
Copy vector	 *on selected vector.*
Display context menu	 *on selected vector.*
Display Shape Editor	 *on selected vector.*

Bitmaps

You can use the mouse relative to bitmap images shown in the **2D View** in the following ways:

ArtCAM Function	Mouse Action
Select primary colour	 *on colour swatch in colour palette.*
Select secondary colour	 *on colour swatch in colour palette.*
Link colour to primary colour	 *on colour swatch in colour palette.*
Display Shape Editor	 *on colour swatch in colour palette.*

Toolpaths

You can use the mouse relative to toolpaths in the following ways:

ArtCAM Function	Mouse Action
Edit toolpath	 *on 2D toolpath preview or toolpath name.*

Keyboard shortcuts

There are many different shortcuts available to help you complete your tasks in ArtCAM as efficiently as possible.

View Control

The following keyboard shortcuts can be used to adjust the ArtCAM layout, the content of the **2D View** window:

Function	Keyboard Shortcut
Display the Reference Help.	**F1**
Display **2D View** window.	**F2**
Display **3D View** window.	**F3**
Toggle **Project** panel visibility.	**F4**
Toggle **Tool Settings** panel visibility.	**F6**
Preview currently active relief layer in **2D View.**	**F10**
Display cursor information.	**Alt+C**
Toggle visibility of currently active bitmap layer.	**Alt+B**
Create greyscale from composite relief.	**Alt+G**
Toggle **Notes** visibility.	**Alt+N**

Models

The following keyboard shortcuts can be used when working with ArtCAM models:

Function	Keyboard Shortcut
Create new model.	**Ctrl+N**
Open model.	**Ctrl+O**
Save model.	**Ctrl+S**
Create new sheet in model.	**Ctrl+Alt+Shift+S**

Editing

The following keyboard shortcuts can be used when editing:

Function	Keyboard Shortcut
Select all objects (vectors and preview reliefs).	**Ctrl+A**
Copy to ArtCAM clipboard.	**Ctrl+C**
Paste from ArtCAM clipboard.	**Ctrl+V**
Cut to ArtCAM clipboard.	**Ctrl+X**
Undo last action.	**Ctrl+Z**
Redo last action.	**Ctrl+Y**
Delete.	**Delete**
Use the **Transform** tool.	**T**
Use the **Envelope Distortion** tool.	**Ctrl+E**
Use the **Relief Cookie Cutter** tool.	**Ctrl+T**
Create a copy using the **Relief Cookie Cutter** tool.	**Ctrl+Shift+T**

Vector Drawing

The following keyboard shortcuts can be used when drawing vector artwork:

Function	Keyboard Shortcut
Create vector and continue drawing.	**Return** or **Space Bar**
Select tool.	**Esc**
Constrain angle of linear span between nodes to 15 degree increments *(Create Polyline only).*	**Ctrl**
Keep aspect ratio *(Create Rectangle only).*	**Shift**
Close polyline to create polygon and continue drawing.	**Tab**

Vector Editing

The following keyboard shortcuts can be used when editing vector artwork:

Function	Keyboard Shortcut
Select tool.	**Esc**
Edit selected vector.	**E**
Node Editing tool.	**N**
Convert span *(linear or bezier)* to arc.	**A**
Convert span *(linear or arc)* to bezier.	**B**
Convert span *(bezier or arc)* to line.	**L**
Cut span.	**C**
Remove span.	**R**
Insert node.	**I**
Insert start node *or* change node to start node.	**P**
Toggle smoothing on node.	**S**
Delete node.	**D**
Align selected nodes in X-axis.	**X**
Align selected nodes in Y-axis.	**Y**
Nudge selected vector up.	
Nudge selected vector down.	
Nudge selected vector right.	
Nudge selected vector left.	
Measure tool.	**M**
Display the **Vector Clipping** panel.	**Ctrl+Alt+Shift+C**
Display the **Vector Slice** panel.	**Ctrl+Alt+Shift+V**
Envelope Distortion tool.	**Ctrl+E**

Object Alignment

The following keyboard shortcuts can be used when aligning vectors or preview relief:

Function	Keyboard Shortcut
Centre in model.	**F9**

Align left.	**Ctrl+←**
Align horizontal centre.	**Shift+←**
Align right.	**Ctrl+→**
Align top.	**Ctrl+↑**
Align vertical centre.	**Shift+↓**
Align bottom.	**Ctrl+↓**

Vector Grouping

The following keyboard shortcuts can be used when grouping vectors:

Function	Keyboard Shortcut
Group selected vectors.	**Ctrl+G**
Ungroup vectors.	**Ctrl+U**

Bitmap Colours

The following keyboard shortcuts can be used when working with bitmap artwork:

Function	Keyboard Shortcut
Toggle linking between primary and secondary colours.	**Ctrl+L**
Link all colours.	**Ctrl+K**
Unlink all colours.	**Ctrl+R**

Reliefs

The following keyboard shortcuts can be used when working with reliefs:

Function	Keyboard Shortcut
Display the **Shape Editor.**	**F12**
Reset the currently active relief layer	**Shift+Delete**
Copy relief.	**Ctrl+Shift+C**
Display the **Offset Relief** dialog.	**Ctrl+Alt+Shift+O**
Use the **Envelope Distortion** tool.	**Ctrl+E**
Use the **Cookie Cutter** tool.	**Ctrl+T**
Create a copy using the **Relief Cookie Cutter** tool	**Ctrl+Shift+T**

What's New in ArtCAM Pro and Jewelsmith

ArtCAM 2013 includes new features and enhancements in the following areas:

2D design process

In ArtCAM 2013, there are improvements to several areas used in the 2D design process:

- The **Offset Vectors** (see page 18) tool is improved. You can now use the cursor to dynamically offset vectors in the **2D View** and **3D View** windows.
- There is a new option on the **Mirror** (see page 21) panel which enables you to join open vectors when you mirror them.
- The **Vector Doctor** (see page 23) tool is expanded. You can now quickly select all vectors which satisfy specified criteria.
- The vector snapping (see page 24) system is updated so there are now more snapping options available for all vector tools.
- You can now display, create, and edit guidelines (see page 25) in both the **2D View** and **3D View** window.

3D design process

In ArtCAM 2013, there are improvements to several areas used in the 3D design process:

- The **Envelope Distortion** (see page 29) tools are now combined in one tool which is available from the **Design Tools** toolbar.
- There is a new relief **Height Analysis** (see page 27) tool available from the **3D View** toolbar, which provides colour information regarding the height differences across a surface.
- The **Add Draft** (see page 34) tool is available on the **Relief Editing** toolbar, and its functionality is enhanced.
- You can store any .stl, .obj, .3ds, or .3dm file as your custom gem (see page 34) in ArtCAM Jewelsmith's new Gem library. *(ArtCAM Jewelsmith only).*

Machining

In ArtCAM 2013, there are improvements to two areas used in the machining process:

- There is a new **Fluting** toolpath (see page 36) available from the **Toolpaths** panel. This toolpath enables you to create and control ramping cuts along vectors.
- The **Bridges** (see page 46) function is improved. It is now easier to access and use.
- There is a new option on the **Drill Banks** (see page 55) panel.
- Simulation (see page 55) times are much faster.

User interface changes

In ArtCAM 2013, there are improvements to the appearance and organisation of different areas of the interface. This is part of an ongoing drive to improve the look and usability of ArtCAM and while maintaining consistency throughout the software.

There are updates to the following toolbars:

- Main Menu bar
- Model toolbar (see page 60)
- Vector Creation toolbar (see page 62)
- Fill Tools toolbar (see page 63)
- Relief Creation toolbar (see page 64)
- Relief Editing toolbar (see page 66)
- Vector Editing toolbar (see page 67)
- Design Tools toolbar (see page 69)

General enhancements

In ArtCAM 2013, there are improvements to two general areas:

- Your choice of model origin is no longer overridden when opening a .dxf file (see page 70).
- ArtCAM uses **KeyShot** to render 3D models. (*ArtCAM Jewelsmith only*).

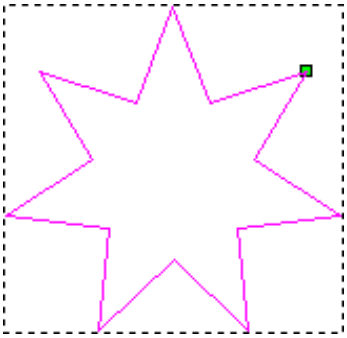
2D design process

Real time vector offset

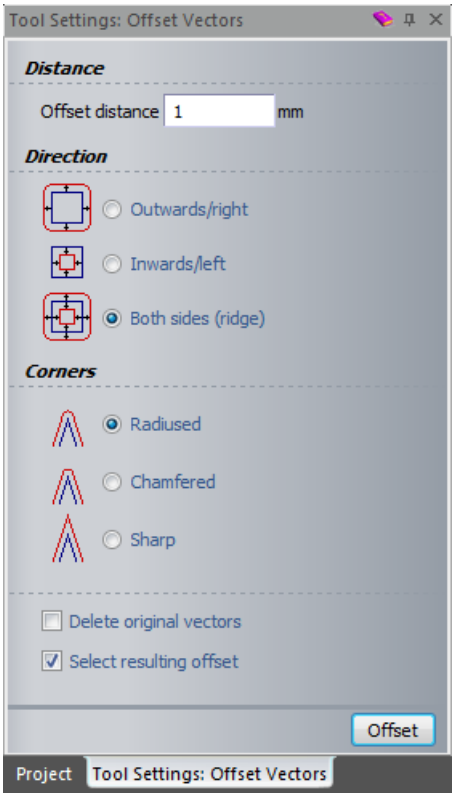
In ArtCAM 2013, the vector offsetting functionality is improved. You can now use the cursor to dynamically offset vectors in the **3D View** window. This enables you to move and position an offset vector in real time, and to continually adjust the position until it is correct.

To create an offset vector using the cursor:

1 Select the vector or vectors from which you want to create an offset vector.



2 Click the **Offset Vectors**  button. This displays the **Tool Settings: Offset Vectors** panel.



a To offset the vector on both sides, select **Both sides (ridge)**, otherwise the direction of the offset is controlled by the movement of the cursor.

b Select whether you want the corners of the new vector to be **Radiused**, **Chamfered** or **Sharp**.

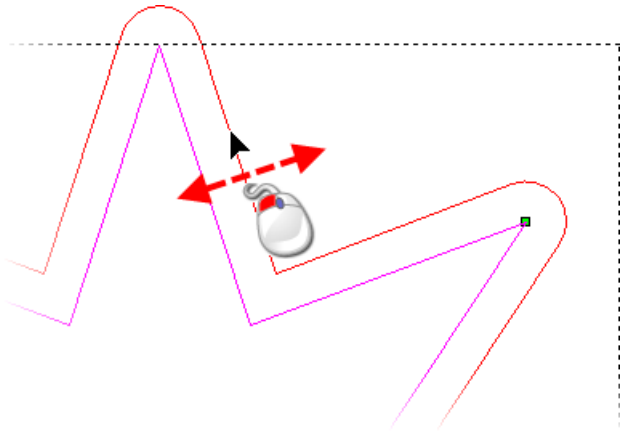
*If you select **Sharp**, this displays the **Maximum sharp offset distance** field. For more information, see **Offsetting Vectors** in the Reference Help.*

c Select **Delete original vectors** to automatically delete the original vectors after creating the offset vector.

d Select **Select resulting offset** to select the resulting offset vectors.

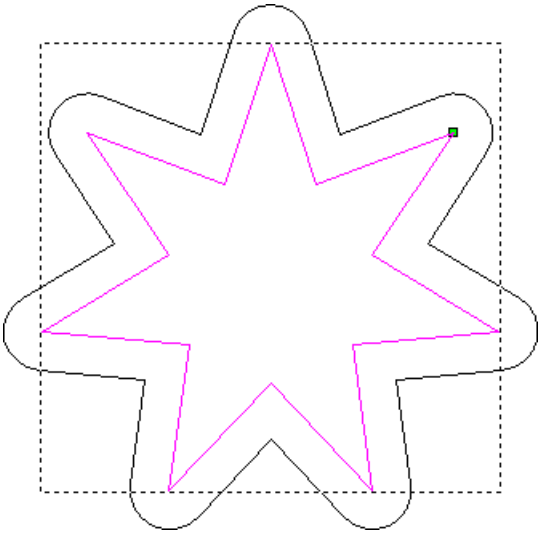
This is useful if you are creating an offset from a complex vector or multiple vectors, which would result in the creation of more than one offset vector.

3 Move the cursor over the selected vector. When the cursor changes to , drag the vector to the desired position.



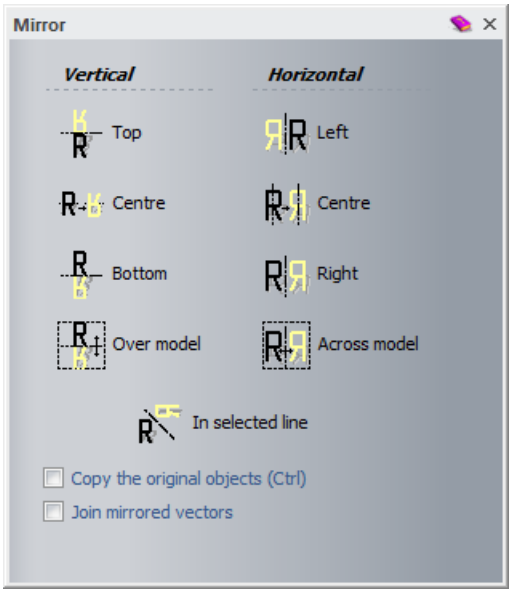
*By default, ArtCAM calculates the offset as the shortest distance between the cursor and the vector from where the drag was started. If you hold down the **Ctrl** key when you drag the vector, the offset is calculated as the shortest distance between the cursor and any of the selected vectors.*

4 Release the mouse button to position the new vector.



Updated mirror tool

In ArtCAM 2013, the **Mirror Vectors** button on the **Vector Editing** toolbar is now called **Mirror Objects**, and there is a new option, **Join mirrored vectors**, on the panel.

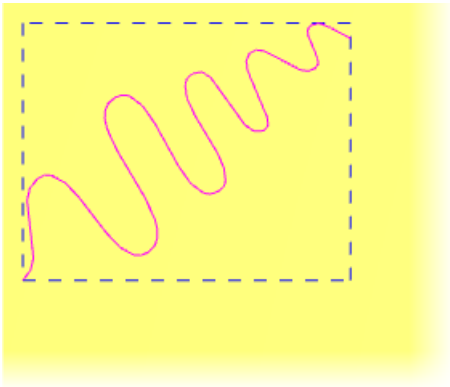


Use **Join mirrored vectors** to create vertical patterns, horizontal patterns or symmetrical shapes from open vectors. You can create simple zig-zag patterns or more complicated patterns, as long as the vector you want to mirror is open and has its start or end point on the mirror line.

Vectors which would overlap when mirrored cannot be joined even if they are open.

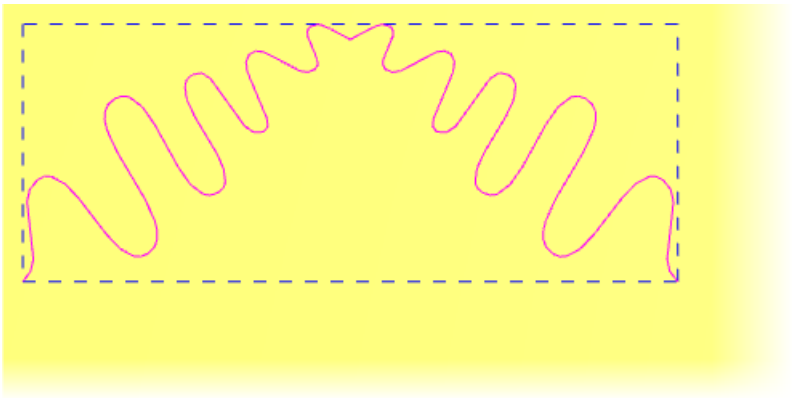
To create a simple horizontal pattern:

1. In the **2D View** or **3D View** window, draw an open vector.

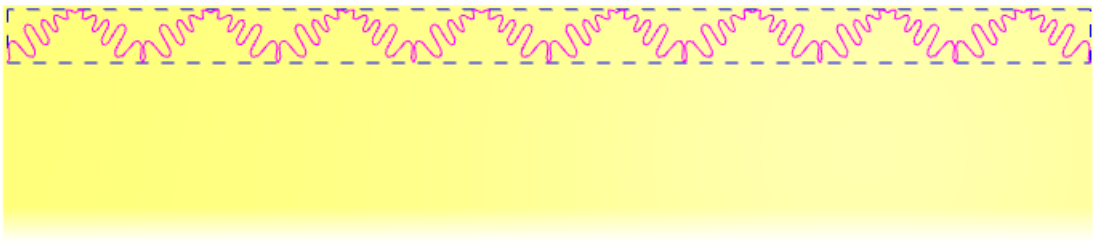


2. In the **Vector Editing** toolbar, click **Mirror Objects**  to display the **Mirror** panel.
3. Select **Copy the original objects** and **Join mirrored vectors**.

4 Ensure the vector is selected, then click **Right**  . The vector is mirrored horizontally over the right edge of its bounding box and is joined to the original vector.

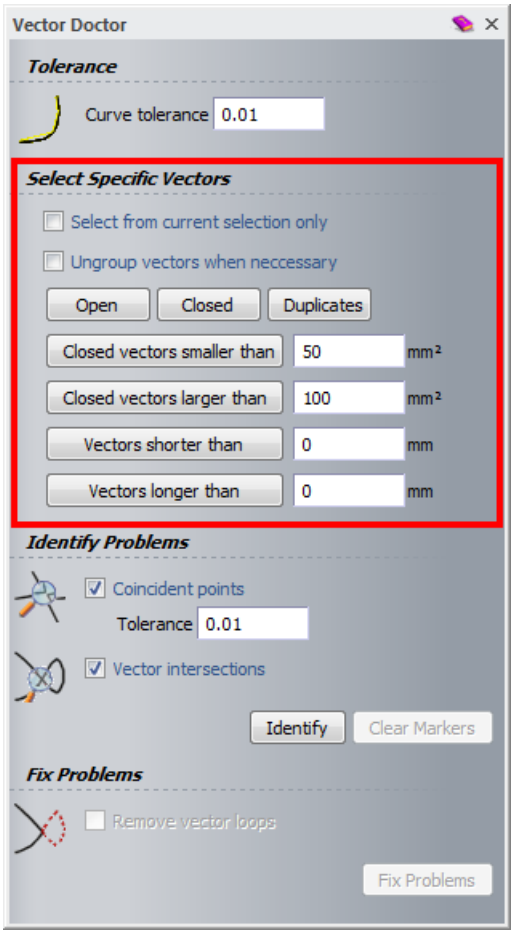


5 Click **Right**  a few more times to build up the pattern.



Enhanced vector doctor

In ArtCAM 2013, there are new options added to the **Vector Doctor** panel which enable you to quickly select all vectors that satisfy the specified criteria. These options are grouped in the **Select Specific Vectors** area, and are also available from the **Edit > Select All** submenu and the context menu.



- **Select from current selection** — When selected, vectors that meet the specified criteria are selected from within the current vector selection. When deselected, vectors that meet the specified criteria are selected from all visible vectors.
- **Ungroup vectors when necessary** — When selected, vector groups containing vectors that meet the specified criteria are ungrouped in order to enable selection. When deselected, grouped vectors are ignored.
- **Open** — Click to select all open vectors.
- **Closed** — Click to select all closed vectors.
- **Duplicates** — Click to select all duplicate vectors. One instance of each duplicated vector is left unselected.

- **Closed vectors smaller than** — Click to select all closed vectors with an area smaller than the specified value.
- **Closed vectors larger than** — Click to select all closed vectors with an area larger than the specified value.
- **Vectors shorter than** — Click to select all vectors with a length shorter than the specified value.
- **Vectors longer than** — Click to select all vectors with a length longer than the specified value.

When using the vector selection options from the **Edit > Select All** menu or the context menu:

- The **Open**, **Closed**, and **Duplicate** options select vectors from within your current selection. If you have no vectors selected then vector selection is made from all visible vectors.
- Vector groups are always ignored.
- The smaller, larger, shorter, longer options compare all vectors against the currently selected vector, rather than against a specified value. These options are unavailable unless you have a vector selected.
- Click **Specify** to display the **Vector Doctor** panel.

Improved snapping system

In ArtCAM 2013, there are now more snapping options available for all vector tools. This makes the alignment and construction of vectors faster, thus providing a much better, smoother workflow.

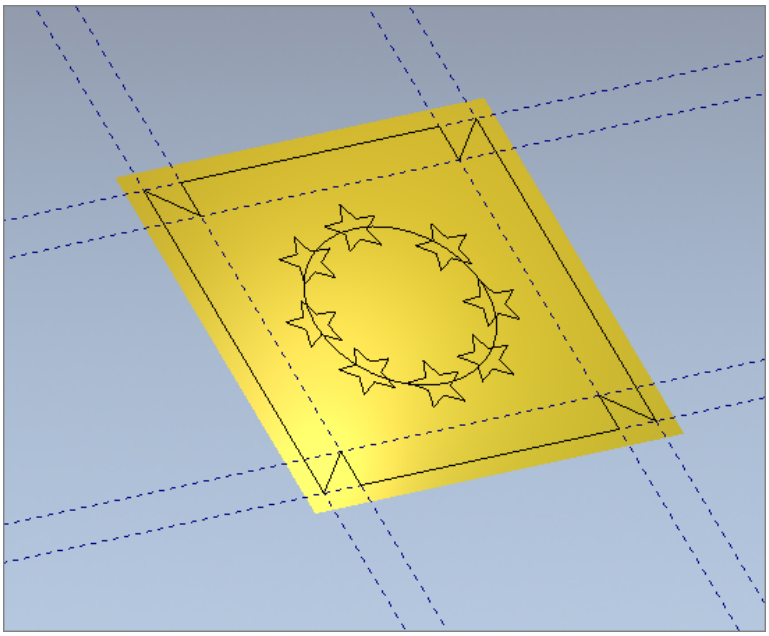
You can now:

- Snap anywhere on a vector.
- Snap to vector intersections.
- Snap to the intersections of guidelines and vectors.
- Snap to the origin.
- Snap to a model centre, corners and midpoints.
- Snap a guideline to the same places as vectors.

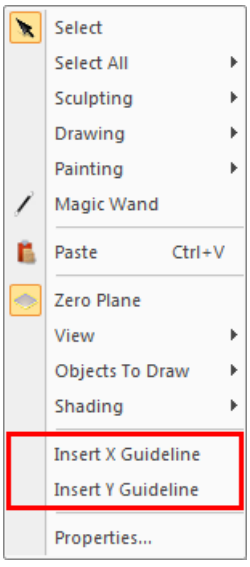
*Snapping options are available from the **View > Snapping** menu.*

Enhanced guideline creation and editing

You can now display, create, and edit guidelines in both the **2D View** and **3D View** window.



To create guidelines in the **3D View**, right-click in the **3D View** window and select **Insert X Guideline** or **Insert Y Guideline** from the context menu. Guidelines in the **3D View** can be edited in the same way as guidelines in the **2D View**.

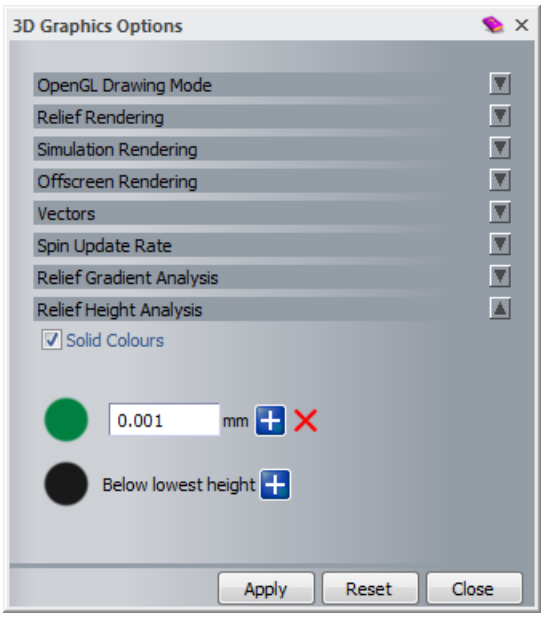


3D design process

Relief height analysis

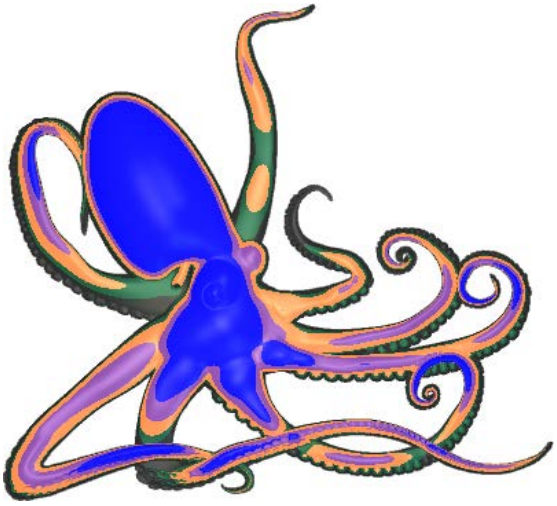
There is a new **Height Analysis** option available from the **3D View** toolbar. Use this to provide colour information about the height variation across a surface. This enables you to ensure the sculpted relief is within the constraints of the production line.

To display the height analysis colour information on your relief, click the **Height Analysis**  button on the **3D View** toolbar. By default, any part of the relief over 0.001mm high is green, anything below this height is black. You can modify these parameters, and add further heights, using the **3D Graphics Options** panel, accessed from **Edit > 3D Graphics Options**.

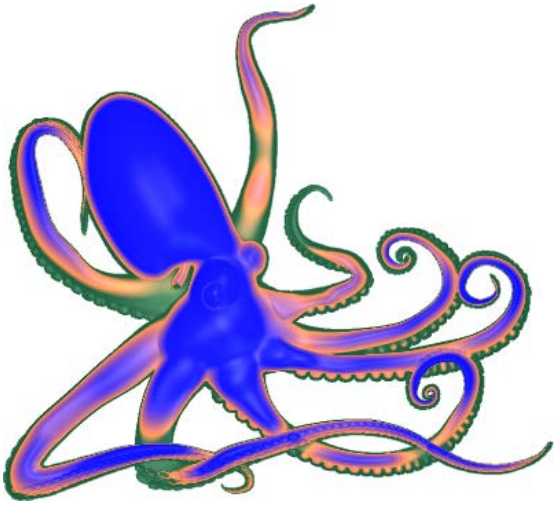


Solid Colours — When selected, the height analysis is displayed as solid colours. When deselected, the colours are blended together.

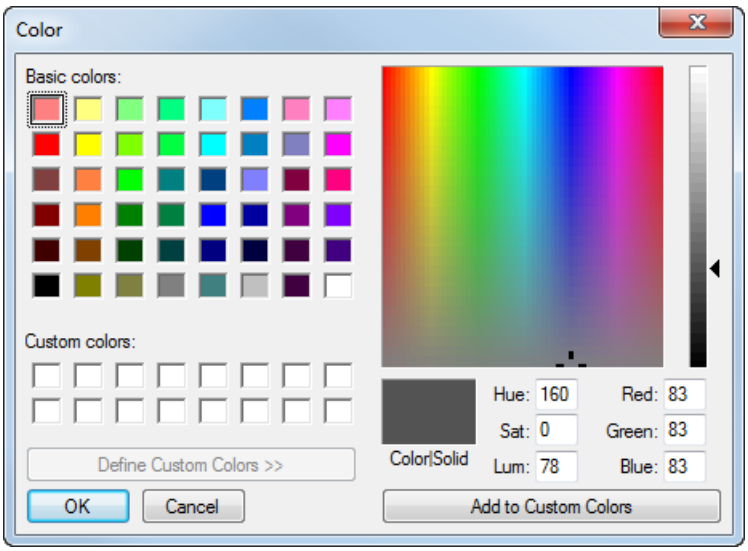
Solid Colours selected

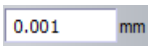


Solid Colours deselected



 — Click a colour swatch to display the **Color** dialog. This enables you to choose the colour for each height.



 — Enter a value to display any part of the relief which exceeds this in the assigned colour.

 — Add another height. You can add up to 20 heights.

 — Delete a height from the list.

 **Below lowest height** — Click to specify the colour of any area of the relief below the lowest height. Click the colour swatch to change the colour.

 *This parameter is active only when **Solid Colours** is selected.*

Click **Apply** to visualise the colour information on the relief. The panel remains open so you can continue to adjust the parameters if necessary.

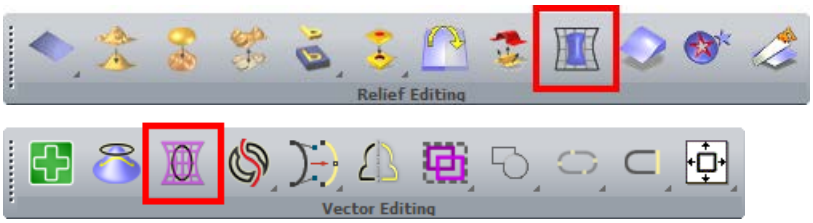
Click **Reset** to return the **Relief Height Analysis** parameters to the default settings.

Click **Close** to close the panel. Any changes that have not been applied are discarded.

Improved envelope distortion

In ArtCAM 2012, there were two separate envelope distortion tools: **Relief Envelope Distortion** for distorting reliefs, and **Envelope Distortion** for distorting vectors. In ArtCAM 2013 these tools are combined into one tool, **Envelope Distortion,** which is accessed from the **Design Tools** toolbar.

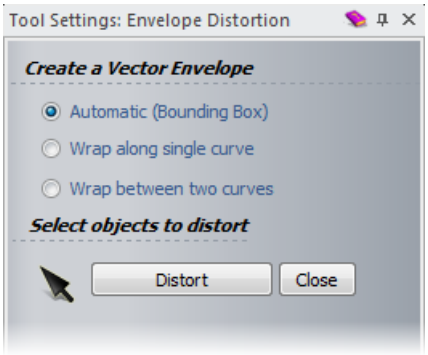
2012



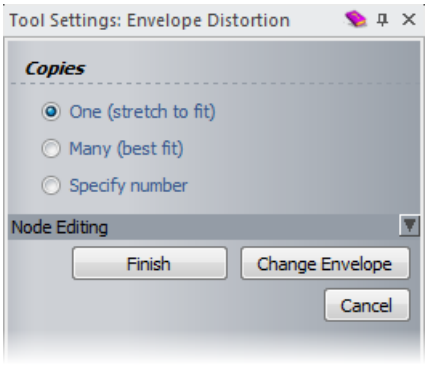
2013

Click **Envelope Distortion**  to display the **Tool Settings: Envelope Distortion** panel. The options available on this panel change depending on the objects you select.

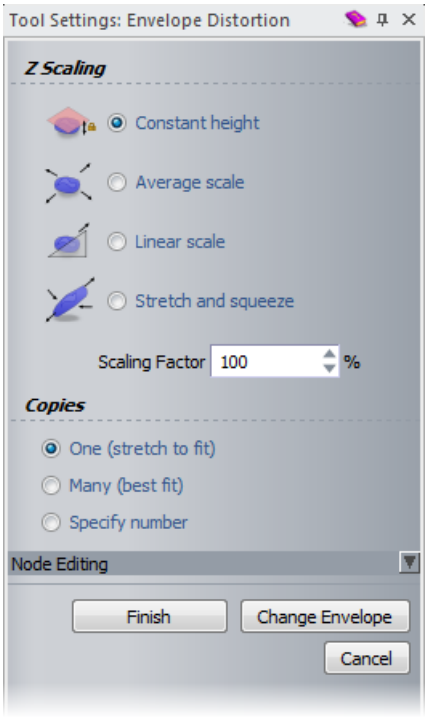
- With no objects selected, the panel contains the **Create a Vector Envelope** area and the **Select objects to distort** area. Click **Distort** to display either the **Copies** area or the **Z Scaling** and **Copies** areas.



- With only vectors selected, the panel contains the **Copies** area and the **Node Editing** tools. Click **Change Envelope** to display the **Create a Vector Envelope** area.



- With preview relief or preview relief and vectors selected, the panel contains the **Z Scaling** area, the **Copies** area, and the **Node Editing** tools. Click **Change Envelope** to display the **Create a Vector Envelope** area.



There are several enhancements to the **Envelope Distortion** functionality.

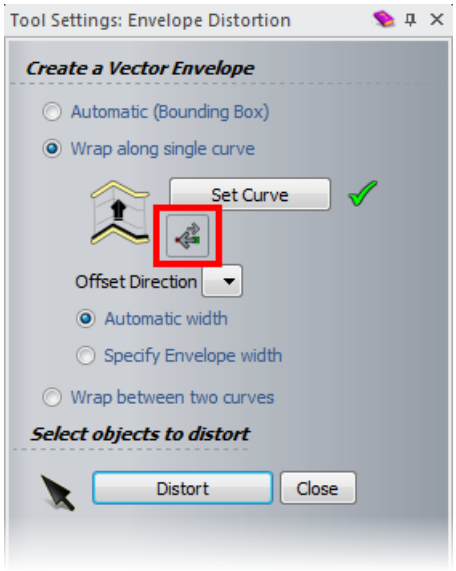
- You can now distort vectors and preview relief simultaneously.
- In ArtCAM 2013 you no longer need to paste preview relief onto a model before distorting it.

  Copies of preview relief which are created using the distort tool remain floating and are not pasted into the model after you finish distorting.

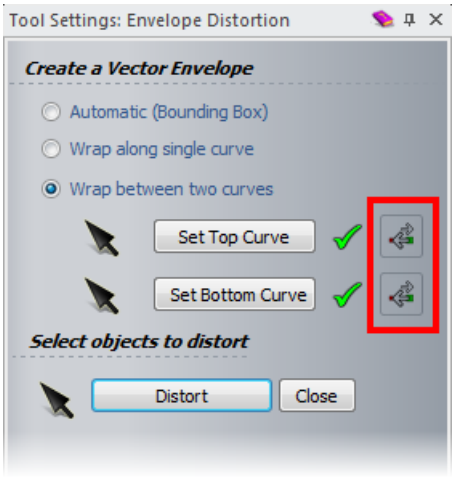
*If you want to distort reliefs which are already pasted onto a model, you can use the **Cookie Cutter** tool to lift them from the model.*

- You can now use the **Envelope Distortion** tool in the **3D View** window as well as in the **2D View** window.
- The **Envelope Distortion** tool now works in real time so you can instantly see the effects of your distortion.
- There is a new **Reverse Curve** button which is available if you select **Wrap along a single curve** or **Wrap between two curves** from the **Create a Vector Envelope** area. This button enables you to control the direction of the wrap. Arrows positioned along the length of the curve indicate the current direction of the wrap.

Wrap along a single curve

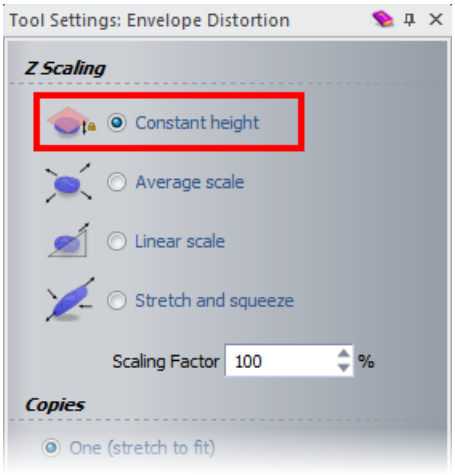


Wrap between two curves



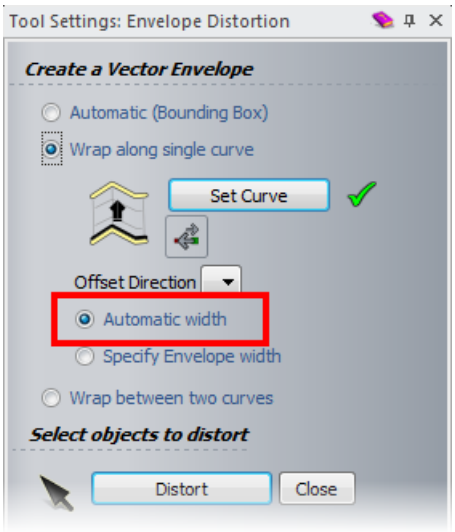
For best results, use the reverse curve buttons to align the arrows pointing along the curves so they point in the same direction. This enables you to avoid twists in the distorted objects.

- In the **Z Scaling** area, **Keep Current Z** is renamed to **Constant Height**.



- There is a new **Automatic width** option available when **Wrap along single curve** is selected. If **Automatic width** is selected, the vector envelope used for the wrap is only as wide as the objects being distorted.

*This option existed in ArtCAM 2012, but its selection was implied when **Specify envelope width** was deselected, rather than being a selectable option.*

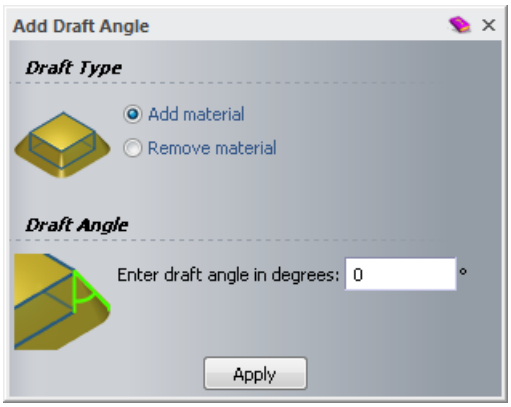


- The **Envelope Distortion** tool and the **Transform** tool use the same envelope, so you can use the buttons on the **Design Tools** toolbar to switch between the two tools with no loss of information.

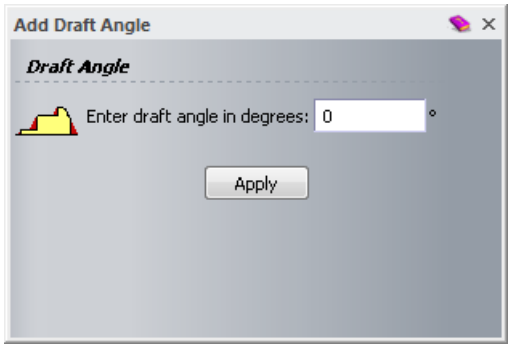
Add draft

In ArtCAM 2013, an **Add Draft**  button has been added to the **Relief Editing** toolbar to improve the accessibility of the tool. In ArtCAM 2012, the **Add Draft Angle** panel could only be accessed from the **Reliefs** menu on the **Main Menu** bar.

ArtCAM 2013



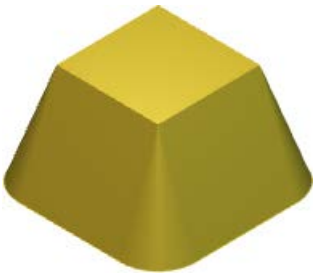
ArtCAM 2012



There is a new **Draft Type** area added to the panel so that you can now choose whether you want to **Add material** or **Remove material** to create the draft angle.

Original

Draft angle of 20° added



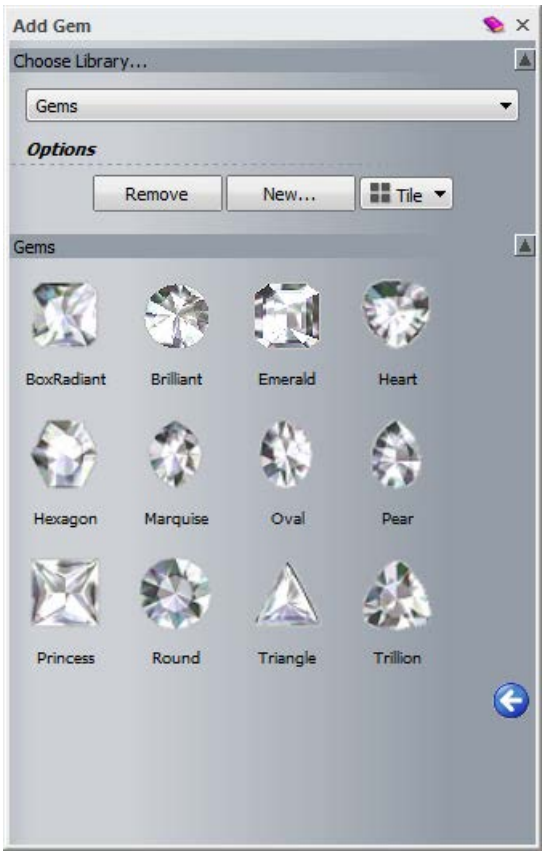
Draft angle of 20° removed

Custom gems

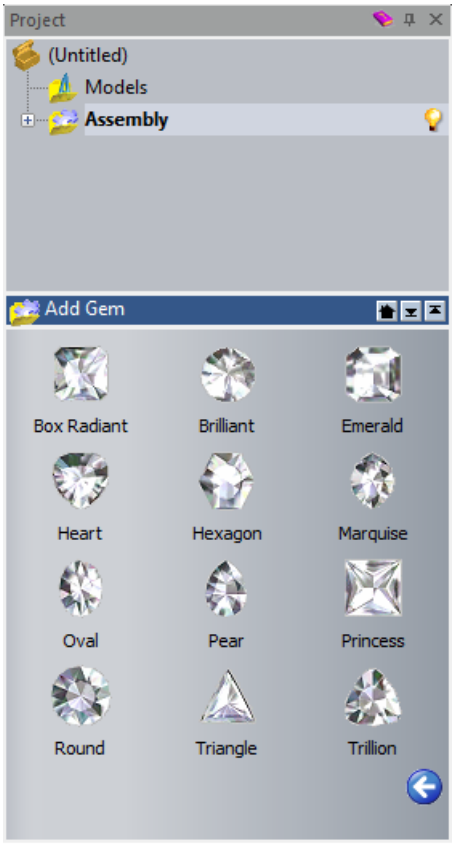
This option is only available in ArtCAM Jewelsmith.

In ArtCAM Jewelsmith 2013, click **Add Gem**  in the **Assembly** panel, to display the **Add Gem** panel. This panel is now floating and contains the **Choose Library** area which enables you to create new gem libraries, and import gems from them.

ArtCAM 2013



ArtCAM 2012



With ArtCAM's new gem library, you can store any .stl, .obj, .3ds, or .3dm file as your custom gem to create stunning jewellery designs.

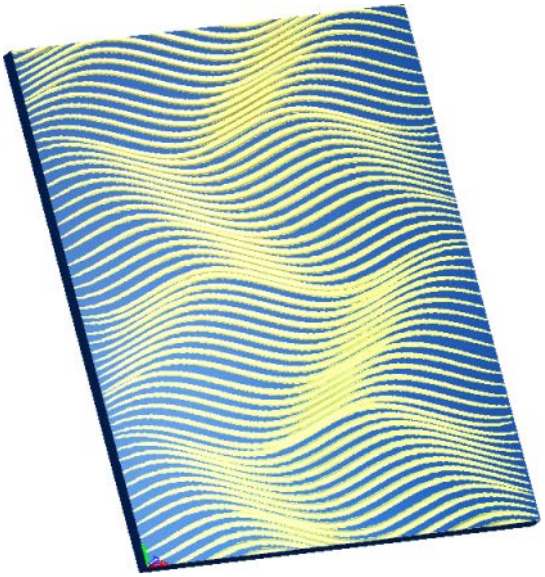
To add a gem to the default library, copy your .stl or .obj file and corresponding thumbnail image to C:\Users\Public\Documents\ArtCAM Files\Gem Library\Gems. The thumbnail image file should be 50 x 50 pixels, saved in .gif, .jpeg, or .png format, and must share the same name as its corresponding .stl or .obj file.

Machining

Fluting toolpath

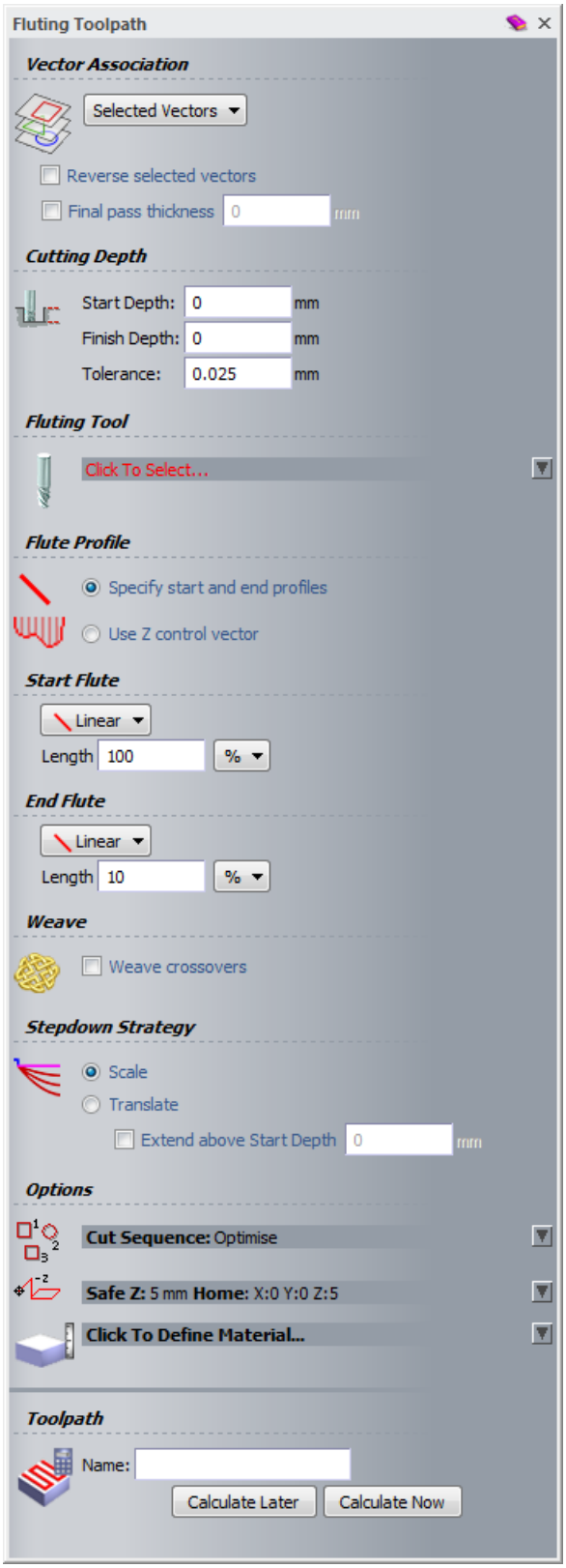
There is a new **Fluting** toolpath available from the **2D Toolpaths** area of the **Toolpaths** panel. This toolpath enables you to create and control ramping cuts along vectors. It is useful for cabinetry, textured panels, architectural pieces and security markings, for example. With the weave (see page 44) function, you can easily create woven toolpath patterns based on your vector artwork.

A simulated fluting toolpath



A simulated fluting toolpath created using the Weave function

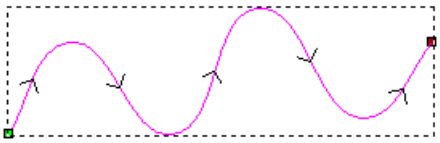
To display the **Fluting Toolpath** panel, click the **Create Fluting Toolpath**  button in the **2D Toolpaths** area of the **Toolpaths** panel. In order to create a **Fluting** toolpath, you must have vector artwork in your model.



Vector Association — Select an option from the list to determine how to apply the toolpath to your vector artwork.

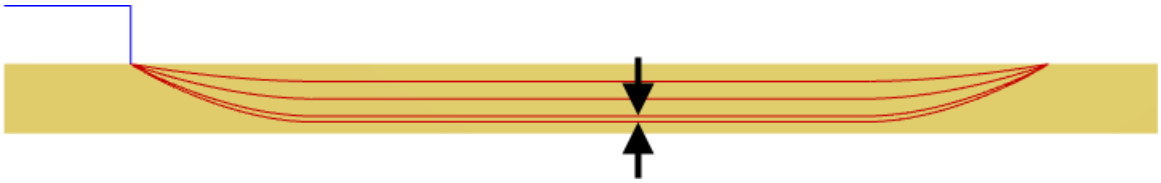
- Select **Selected Vectors** to apply the toolpath to the selected vectors only.
- Select **Default Layer** to apply the toolpath to all vectors on the currently active vector layer.

Reverse selected vectors — Select to reverse the direction of the selected vectors. The direction is indicated by arrows positioned along the length of the selected vector.



Final pass thickness — Select to specify a thickness for the final pass of the toolpath.

When selected, enter the final pass value. For example, you may want a general stepover of 3mm with a final pass of 1mm. This in effect gives you a couple of roughing passes followed by a finishing pass.



Cutting Depth — Specify the **Start Depth** and **Finish Depth** for the toolpath. You must enter a **Finish Depth** in order to calculate the **Fluting** toolpath.

- **Start Depth** — This value controls the depth of the tool at the start and end of the toolpath. It must be less than the **Finish Depth**. If you enter a **Start Depth** of **0**, the **Fluting** toolpath starts and ends at the top of the material.
- **Finish Depth** — Specify the maximum depth of the tool.
- **Tolerance** — Determine how closely the toolpath follows the shape of any Bezier curves. Entering small values increases the toolpath file sizes and slows down calculation and machining times, but increases accuracy.

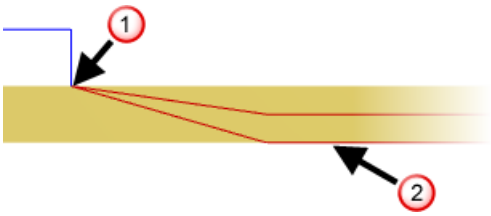
Fluting Tool — Click the control bar to display the **Tool Database** dialog then select a tool for the toolpath. For more information, see Using the Tool Database in the Reference Help.

Flute Profile — Select the flute creation method.

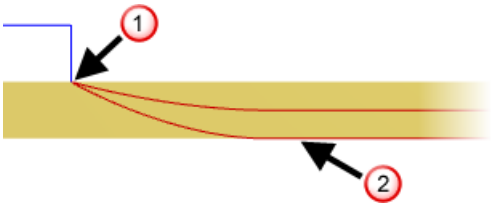
-  **Specify start and end profiles** — Specify the shape of the start and end profiles using the **Start Flute** and **End Flute** options. When selected, this displays the **Start Flute** and **End Flute** areas on the panel.
-  **Use Z control vector** — Specify the profile of the Z cut using a vector. When selected, this displays the **Z control vector** area on the panel.

Start Flute — Select an option from the list to specify the profile of the start flute then enter a value for the length of the flute.

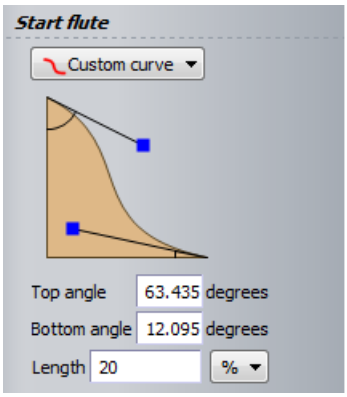
- **None** — The tool plunges straight into the material.
- **Linear** — The profile is a straight line from the start depth ① to the finish depth ②.



- **Curve** — The profile curves from the start depth ① to the finish depth ②.



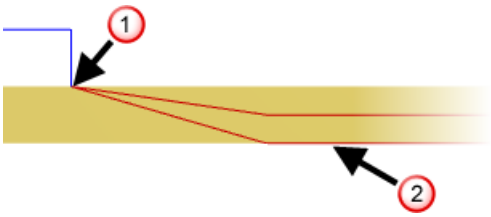
- **Custom curve** — Either drag the blue handles to determine the shape of the curve, or enter specific values for the top and bottom angles in the appropriate fields.



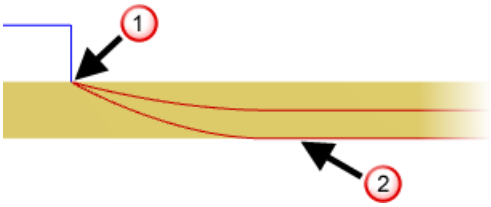
Length — Enter a value to determine the length of the flute. You can enter the value as a percentage or as millimetres. If you enter a percentage of **20**, for example, the length of the flute is 20% of the length of the vector.

End Flute — Select an option from the list to specify the profile of the end flute then enter a value for the length of the flute.

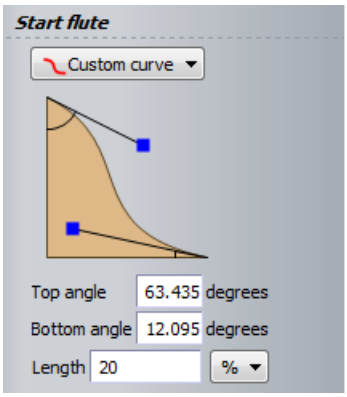
- **None** — The tool retracts straight out of the material.
- **Linear** — The profile is a straight line from the start depth ① to the finish depth ②.



- **Curve** — The profile curves from the start depth ① to the finish depth ②.



- **Custom curve** — Either drag the blue handles to determine the shape of the curve, or enter specific values for the top and bottom angles in the appropriate fields.

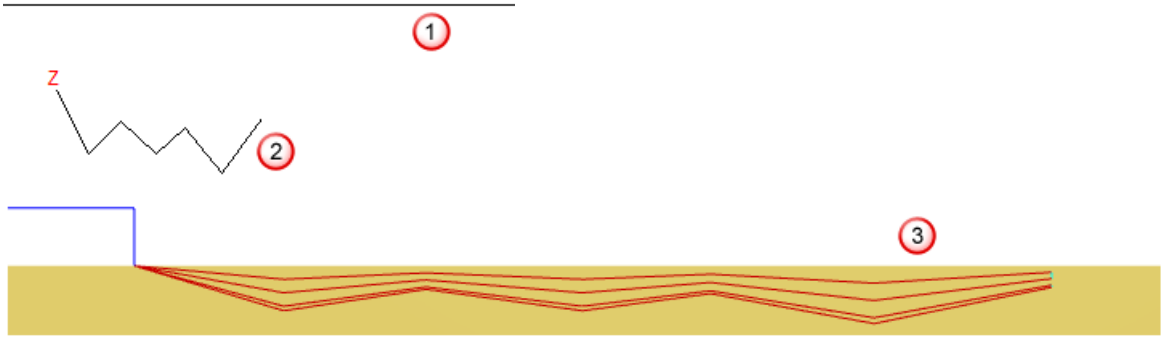


Length — Enter a value to determine the length of the flute. You can enter the value as a percentage or as millimetres. If you enter a percentage of **20**, for example, the length of the flute is 20% of the length of the vector.

Z control vector — Select a vector to control the Z height of the flute.

Use the cursor to select the vector you want to use to control the Z height then click **Select**.

When selected, the Z control vector is marked with a **Z** so it is clear which vector is selected. You must reselect the vector along which you want to create the fluting toolpath after selecting the Z control vector.



1 — Vector

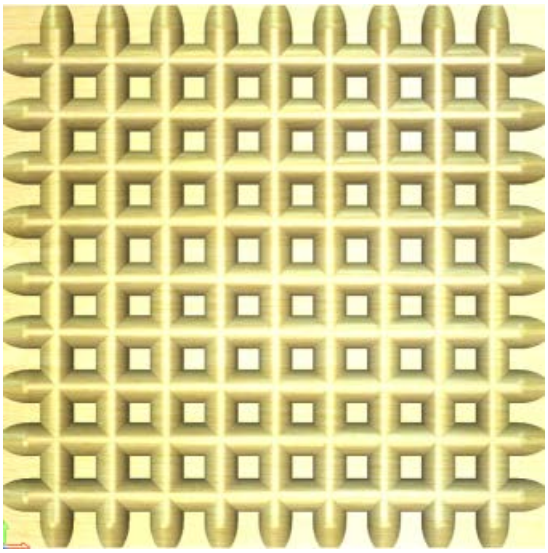
2 — Z control vector

3 — Toolpath created along 1 using 2 to control the Z height.

Weave — Use this option to create woven patterns from intersecting vectors.

Weave selected

Weave deselected



For more information, see Creating a fluted weave (see page 44).

Stepdown Strategy — Choose whether to scale the toolpath to fit the curve or translate the toolpath to the surface.

 **Scale** — This strategy scales the cutting move so that the whole length of the vector is machined on each pass.

 **Translate** — This strategy creates a series of offsets from the curve. As this produces a constant stepover it creates more efficient toolpaths with faster material removal.

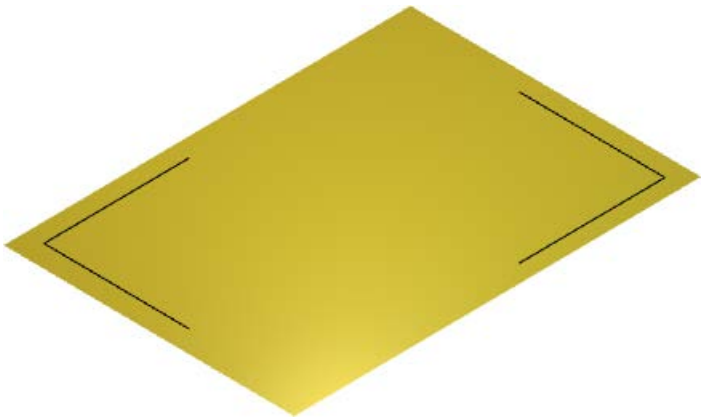
Extend above Start Depth — This option extends the toolpath beyond the block where it reaches the start depth (1). This ensures the tool completely leaves the block if your material has a non-planar surface.

Options — Choose the **Cut Sequence**, and define the **Safe Z** and **Material Thickness**. These options are common to all toolpath panels. For more information, see the Reference Help.

Creating a simple fluting toolpath

To create a simple fluting toolpath:

1 Draw two vectors in the **3D View** window, at opposite corners of the model.



2 In the **Toolpaths** panel, click the **Create Fluting Toolpath**  button. This displays the **Fluting Toolpath** panel and draws arrows on the vectors showing their direction.

3 In the **Vector Association** area, select **Selected Vectors**.

4 In the **Cutting Depth** area, enter a **Finish Depth** of 2.

5 Click the **Fluting Tool** control bar and select a *Small V-Bit 6 mm 90 degree* tool from the **Tool Database**.

6 Select **Specify start and end profiles**.

7 In the **Start Flute** area:

   a Select **Curve**.

   b Enter a **Length** of 20 %.

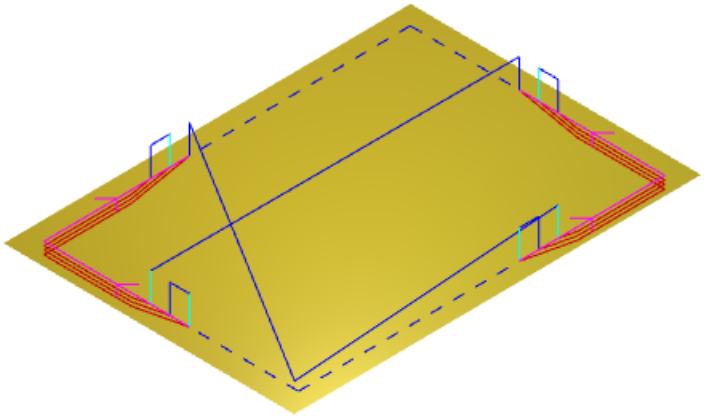
8 In the **End Flute** area:

   a Select **Linear**.

   b Enter a **Length** of 20 %.

9 In the **Stepdown Strategy** area, select **Translate**.

10 Select the vectors and click **Calculate Now**.



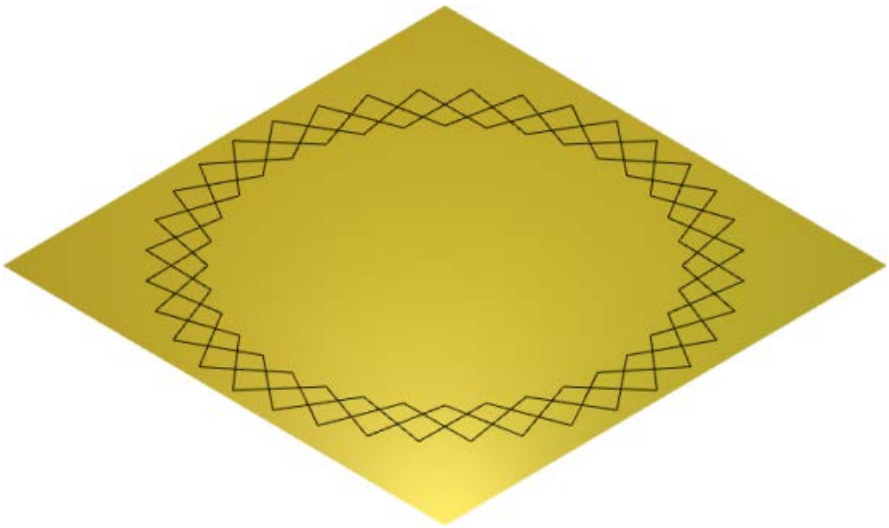
11 Simulate the toolpath.

Creating a fluted weave

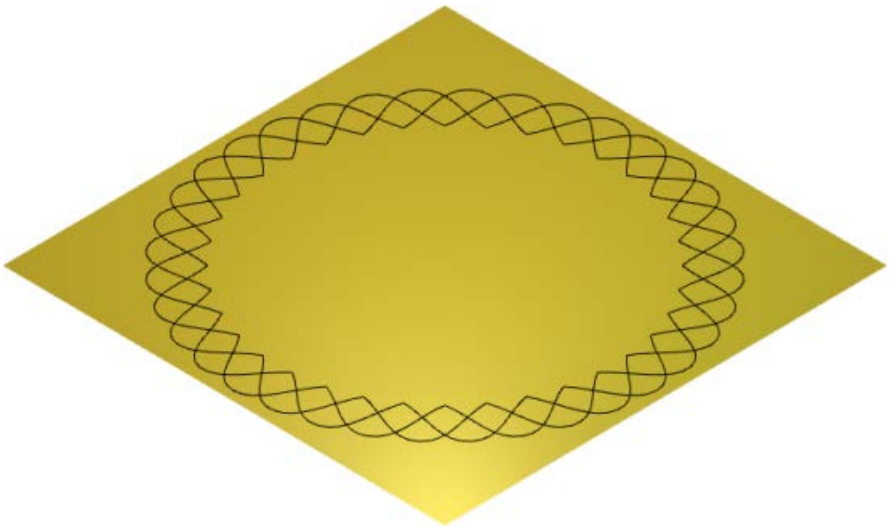
To create a woven fluted toolpath from a simple vector pattern:

1. Create a twelve pointed star and click  to centre it on the model.

2. Click **Block Copy / Rotate**  to display the **Block and Rotate Copy** panel.
   a. Select **Rotate copy**.
   b. Enter a **Rotation Centre** of **50** in the **X** field.
   c. Enter a **Rotation Centre** of **50** in the **Y** field.
   d. In the **Angle** area, select **Total** and enter a value of **20**.
   e. Enter a **Number of objects** of **3**.
   f. Click **Apply**.



3 Click  to enter **Node Editing** mode and smooth the outer nodes of all three star vectors. For more information on editing nodes, see the Reference Help.



4 Click  to open the **Fluting** panel.

a Select **Selected Vectors**.

b Enter a **Finish Depth** of 3.

c Select a *Ball Nose 3 mm* tool.

d Select **Specify start and end profiles**.

e Select a *Curve* **Start Flute** of 5 %.

f Select a *Curve* **End Flute** of 5 %.

g Select **Weave crossovers**.

h Select **Translate**.

i Enter a **Material Thickness** of 5.

j Select all the vectors.

k Click **Calculate Now**.

5 Simulate the toolpath.

Bridges

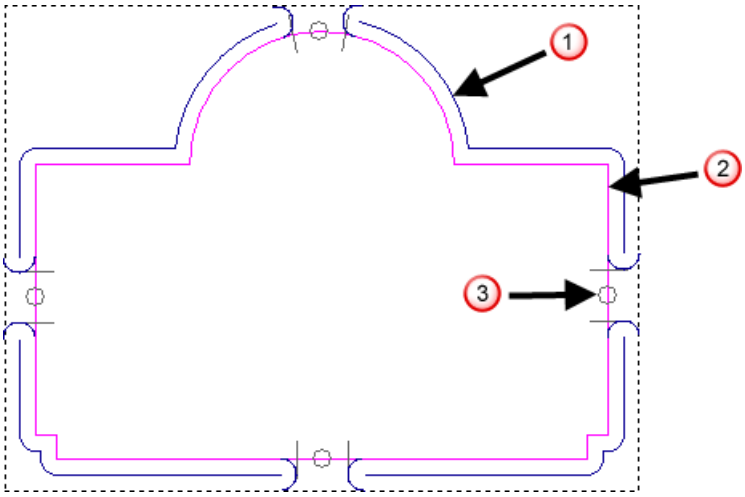
There are several improvements to bridge functionality in ArtCAM 2013 so it is now much faster and easier to add bridges to your model before machining.

In ArtCAM 2012, before you could add bridge locations you first had to create a toolpath with a profile pass, then click **Profile Options**  on the profile tool's panel to display the **Profile Options** panel, which contained the bridging options. In ArtCAM 2013 bridges are added to the vector rather than the toolpath so you do not need to create a profile pass first. There are two methods you can use to add bridge locations to a vector:

- Using the new **Add Bridges** option on the **Profiling**, **Bevel Carving**, **Female Inlay**, or **Male Insert** toolpath panels; or
- Using the new **Create Bridges** tool on the **Toolpaths** panel.

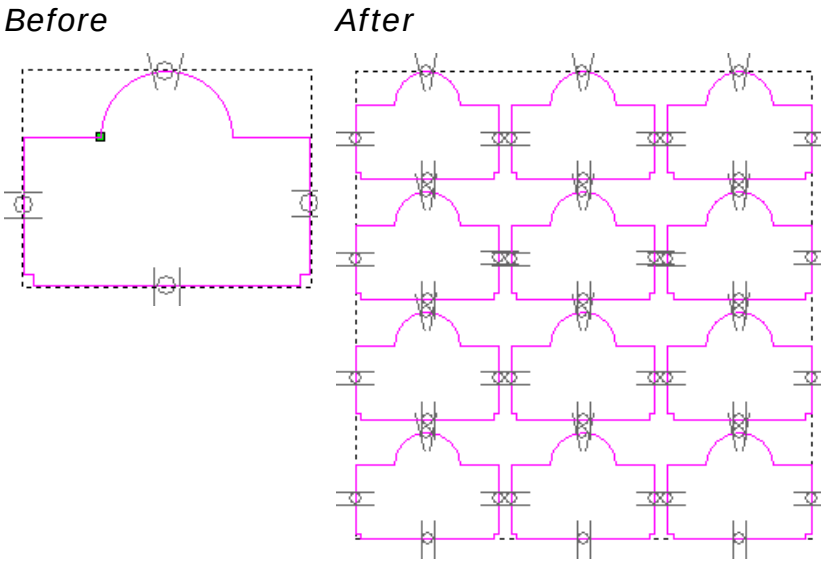
In addition to improving the accessibility of the bridge options, there are several enhancements.

- Bridges now exist on the vector rather than on the toolpath.

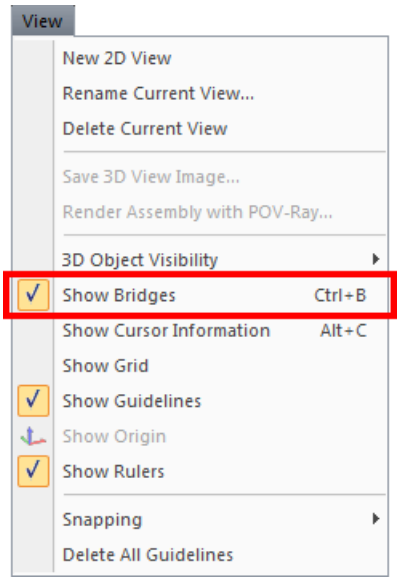


1. Toolpath
2. Vector
3. Bridge location

- Bridges remain associated with the vector even after the vector has been transformed. In the following example, four bridges are added to a simple vector. The vector is then resized and copied. You can see that the bridges on the original vector are replicated on each copy.



- Automatic bridge placement is improved. ArtCAM analyses the vector and selects the best bridge locations based on section length, curvature and spacing.
- You can now add and edit bridges when working in the **3D View** window.
- There is a new **Adaptive spacing** option in the **Auto Bridges** area. **Adaptive spacing** is designed to be a more intelligent version of **Constant spacing** because it is aware of the vector geometry and is more relaxed with spacing. When selected, bridges are positioned in better locations, such as on long straight spans.
- There is a new **Show Bridges** option available from the **View** menu which enables you to toggle the visibility of bridges in the **2D View** and **3D View** windows. It is selected by default. Deselect **Show Bridges** to hide bridges.

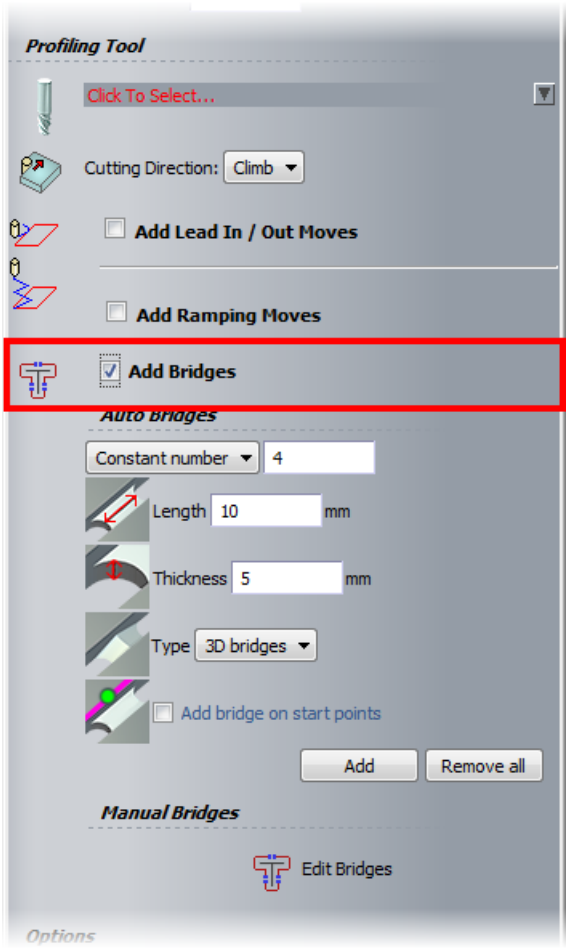


Adding bridges when creating a profile pass

You can add bridge locations to vectors using the **Profiling**, **Bevel Carving**, **Female Inlay**, and **Male Inlay** toolpath panels.

To add bridge locations to a vector using the **Profiling** panel:

1. Select the vector to which you want to add the bridges.
2. In the Project Tree, click the **Toolpaths** item to display the **Toolpaths** panel below the splitter bar.
3. In the **2D Toolpaths** area, click **Create Profile Toolpath**  to display the **Profiling** panel.
4. In the **Profiling Tool** area, select **Add Bridges**. This displays the bridge options on the **Profiling** panel.



5. In the **Auto Bridges** area, select an option from the list to specify how you want to position the bridges:
   - **Constant number** — Select this option then enter the number of bridges you want to add to the vector in the field.

- **Adaptive spacing** — Select this option then enter the distance you want to maintain between bridge locations. ArtCAM uses this distance as a guide and moves the bridges to better locations if maintaining the spacing means the bridge would, for example, be on a corner.
- **Constant spacing** — Select this option then enter the distance you want to maintain between the bridge locations. ArtCAM positions the bridges at the specified distance, regardless of whether the bridge location falls on a corner or not.

6 In the **Length** field, enter the length for each bridge.

7 In the **Thickness** field, enter the thickness for each bridge.

8 From the **Type** list, select:

- **3D bridges** if you want the bridges to have a triangular cross-section without any associated plunge or retract moves; or
- **2D bridges** if you want the bridges to have a flat cross-section.

9 Select **Add bridge on start points** if you want to add a bridge location at the start point of the vector.

10 Click **Add**. Bridges are added to the vector.

When you have added the bridges, you can edit them individually, or simultaneously. For information on editing bridges and adding bridges manually, see Editing bridges (see page 52).

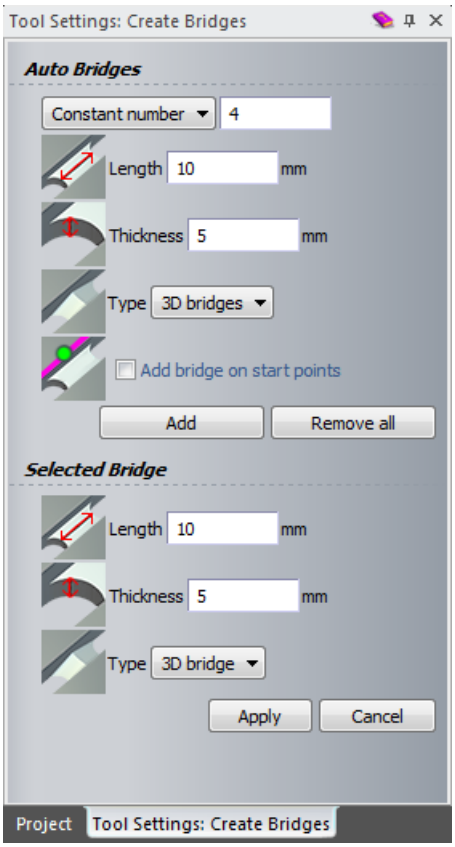
*If you edit bridges after calculating the **Profile** toolpath, you must remember to recalculate the toolpath to account for the new bridge positions.*

*When you calculate a **Profile** toolpath using vectors on which you have added bridges, you must remember to select **Add bridges** on the **Profiling** panel in order for ArtCAM to account for the bridges.*

Adding bridges using the Tool Settings: Create Bridges panel

To add bridge locations to a vector with the **Create Bridges** tool:

1. Select the vector to which you want to add bridges.
2. In the **Toolpaths Operations** area of the **Toolpaths** panel, click **Create Bridges**  . This displays the **Tool Settings: Create Bridges** panel.



3. In the **Auto Bridges** area, select an option from the list to specify how you want to position the bridges:
   - **Constant number** — Select this option then enter the number of bridges you want to add to the vector in the field.
   - **Adaptive spacing** — Select this option then enter the distance you want to maintain between bridge locations. ArtCAM uses this distance as a guide and moves the bridges to better locations if maintaining the spacing means the bridge would, for example, be on a corner.
   - **Constant spacing** — Select this option then enter the distance you want to maintain between the bridge locations. ArtCAM positions the bridges at the specified distance, regardless of whether the bridge location falls on a corner or not.

4 In the **Length** field, enter the length for each bridge.

5 In the **Thickness** field, enter the thickness for each bridge.

6 From the **Type** list, select:

- **3D bridges** if you want the bridges to have a triangular cross-section without any associated plunge or retract moves; or
- **2D bridges** if you want the bridges to have a flat cross-section.

7 Select **Add bridge on start points** if you want to add a bridge location at the start point of the vector.

8 Click **Add**. Bridges are added to the vector.

When you have added the bridges, you can edit them individually, or simultaneously. For information on editing bridges and adding bridges manually, see Editing bridges (see page 52).

*Use the **Selected Bridge** area for editing existing bridges.*

*When you calculate a **Profile** toolpath with vectors on which you have added bridges, you must remember to select **Add Bridges** on the **Profiling** panel in order for ArtCAM to account for the bridges.*

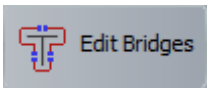
Editing bridges

You can edit bridges individually by entering specific values in the **Selected Bridges** area of the **Tool Settings: Create Bridges** panel, or by using the cursor to drag the bridges into new positions, and alter the length.

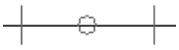
To edit bridges:

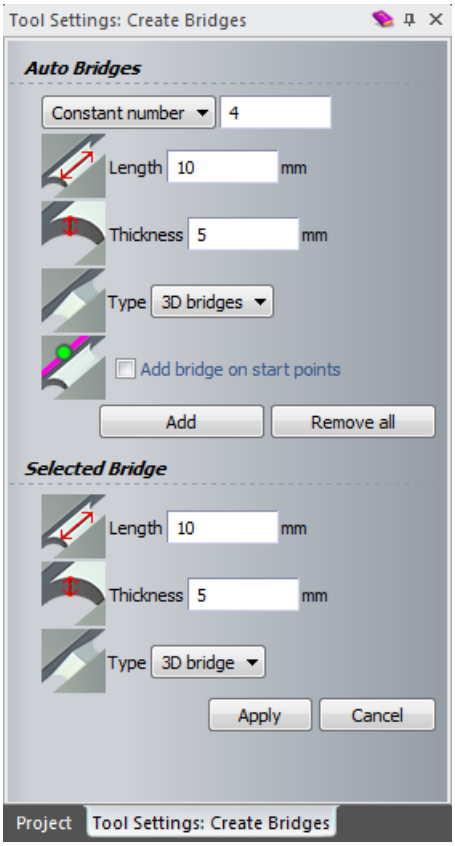
1 Select the vector which contains the bridges you want to edit.

2 Open the **Tool Settings: Create Bridges** panel by either:

- Clicking **Edit Bridges** 

in the **Manual Bridges** area of the **Profiling**, **Bevel Carving**, **Female Inlay**, or **Male Insert** panel; or
- Clicking **Create Bridges**  in the **Toolpaths Operations** area of the **Toolpaths** panel.

The bridge location icons on the vector change from  to  and the **Tool Settings: Create Bridges** panel is displayed.



When the **Tool Settings: Create Bridges** panel is displayed, you can start editing bridges.

To edit all bridges simultaneously:

1. Update the values you want to change in the **Auto Bridges** area.
2. Click the **Add** button to update the bridges on the vector.

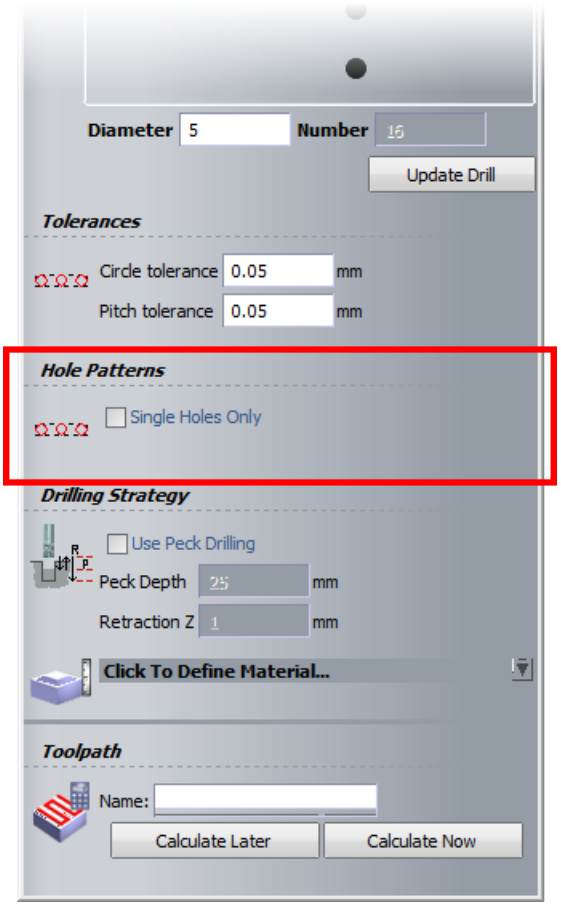
Editing individual bridges:

1. Click the dark blue circle on the bridge you want to edit. The circle changes from  to  to indicate it is selected.
2. To edit the bridge length, either:
   - Enter a new value in the **Length** field in the **Selected Bridge** area of the **Tool Settings: Create Bridges** panel and click **Apply**.
   - Drag one of the white handles either side of the cyan circle. Release the mouse button to position the handle.

3. To edit the bridge's thickness, enter a value in the **Thickness** field in the **Selected Bridge** area of the **Tool Settings: Create Bridges** panel and click **Apply**.
4. To change the location of a bridge, drag the turquoise circle. Release the mouse button when the bridge is in the correct location.
5. To insert a new bridge, move the cursor to the position on the vector at which you want to add the bridge and either:
   - Left-click the vector. The centre of the new bridge is positioned under the cursor.
   - Press the **I** key on your keyboard. The centre of the new bridge is positioned under the cursor.
6. To delete a bridge, either:
   - Right-click a bridge and select **Delete Bridge** from the context-menu.
   - Move the cursor over a bridge and press the **D** key on your keyboard.

New drill bank option

In ArtCAM 2013 the layout of the **Drill Banks** panel is now in the new style and an extra option has been added.



In the **Hole Patterns** area of the **Drill Banks** panel, select **Single Holes Only** if you want to use your drill bank to drill one hole at a time.

Faster simulation

Simulation is much faster, in particular for small, shallow, high-detail reliefs. This is of benefit for industries such as engravers and mints.

*You must deselect **Use fast conical tool simulation** in the **Edit > Options** panel.*

User interface changes

Main Menu bar

There are several changes to the menus available from the **Main Menu** bar:

Edit menu

The **Envelope Distortion** (see page 29) option is now on the **Edit** menu and no longer on the **Vectors** and **Reliefs** menus.

There are more vector selection options available.

- There is a new **Select All** submenu which contains the vector selection options that are now available from the **Vector Doctor** (see page 23) panel.
- **Vectors on Layer** replaces **Select All On Layer**, and is on the new **Select All** submenu. The functionality remains unchanged.

The changes to the options panels include:

- The addition of the **Relief Height Analysis** (see page 27) options to the **3D Graphics Options** panel.
- The addition of the **Control Handle Style** option to the **2D View** area of the **Options** panel, enabling you to switch between the new control handle style and the classic wireframe style.

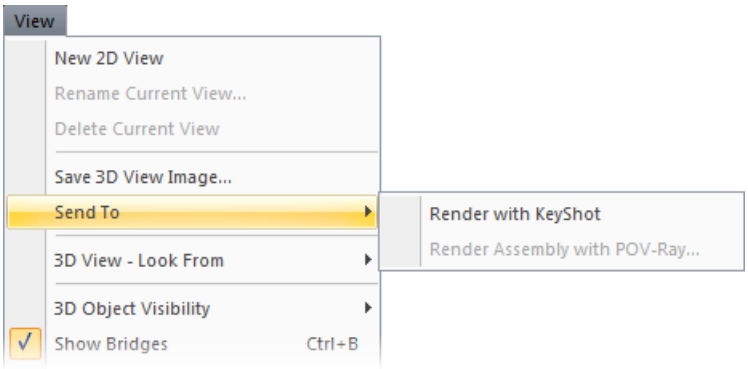
View menu

There are two new options:

- **View > Show Bridges**
- **View > Show Origin**

There are new submenus available:

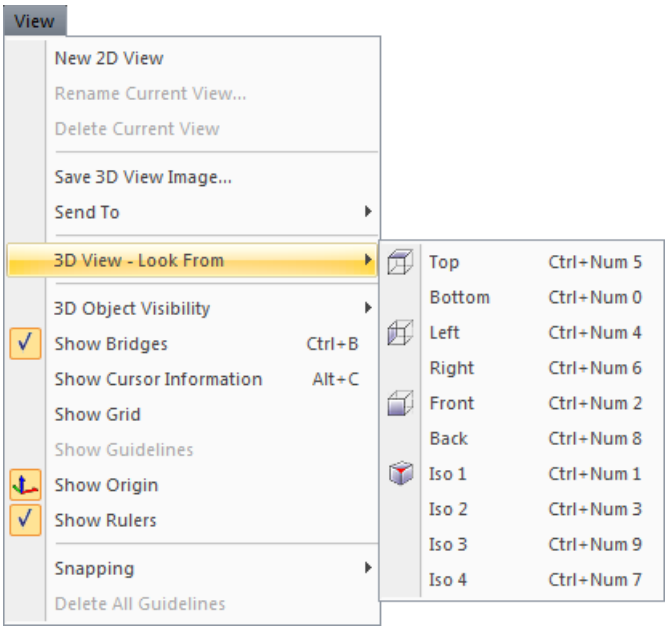
- **View > Send To** *(This submenu is only available with ArtCAM Jewelsmith)*



The **View > Send To** submenu contains the new **Render with KeyShot** option, and the **Render Assembly with POV-Ray** option which was previously on the **Window** menu.

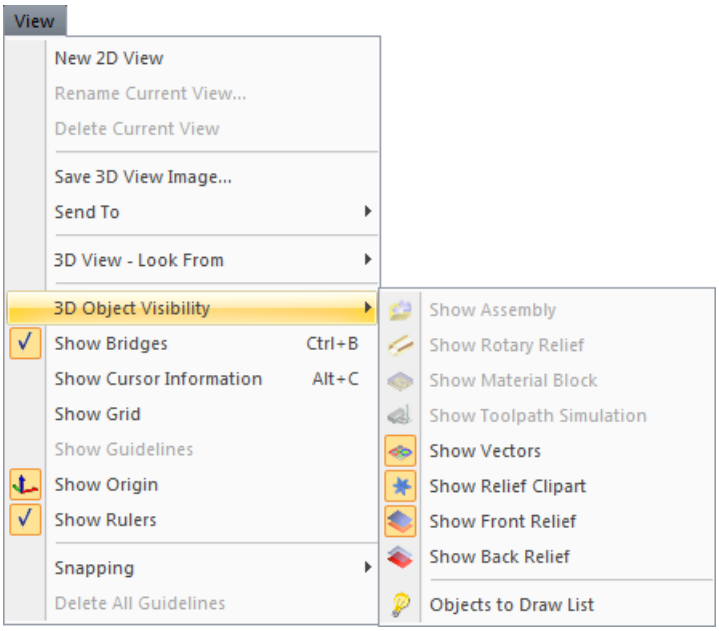
KeyShot is only available with ArtCAM Jewelsmith.

- **View > 3D View - Look From**

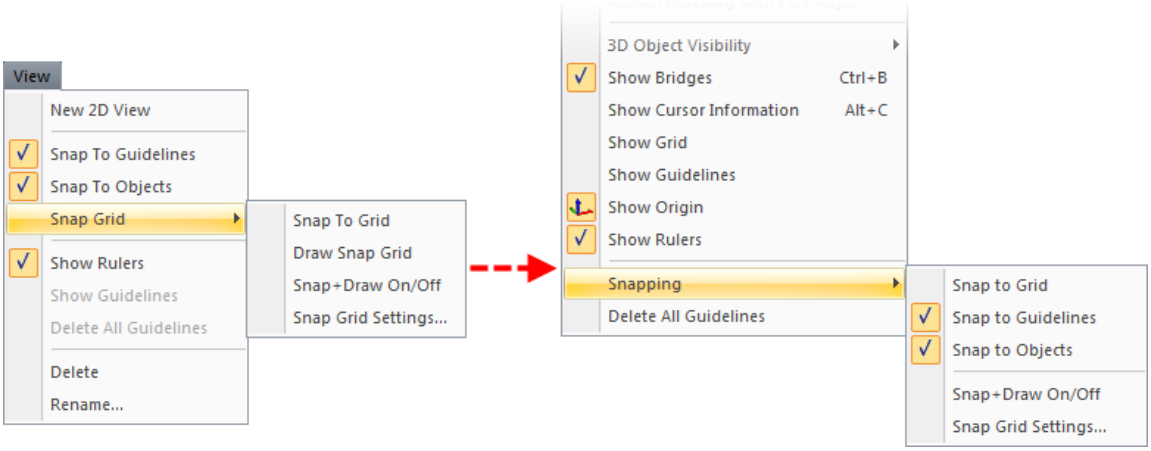


The **View > 3D View - Look From** submenu contains the view options which were previously only available from the **3D View** toolbar. Each view option now has a shortcut which consists of a combination of the **Ctrl** key and a number from the number pad.

- **View > 3D Object Visibility**

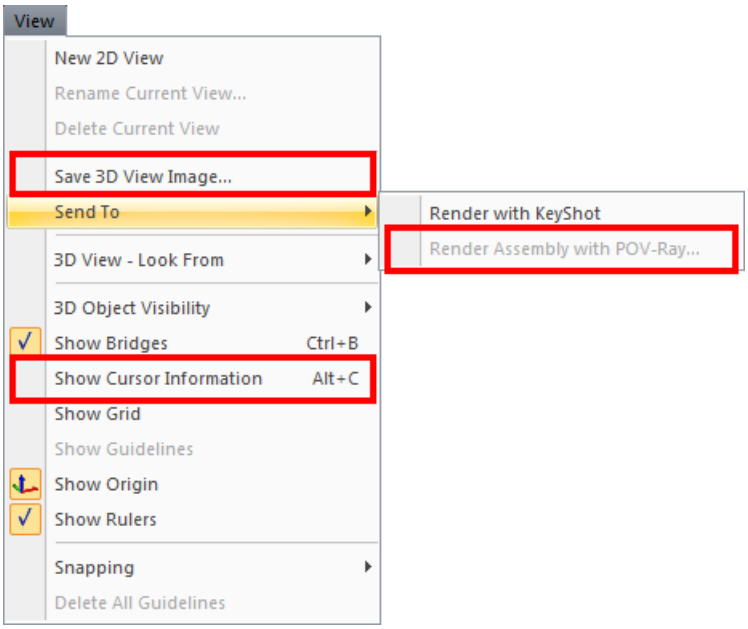


  - **View > 3D Object Visibility > Show Assembly**
  - **View > 3D Object Visibility > Show Rotary Relief**
  - **View > 3D Object Visibility > Show Material Block**
  - **View > 3D Object Visibility > Show Toolpath Simulation**
  - **View > 3D Object Visibility > Show Vectors**
  - **View > 3D Object Visibility > Show Relief Clipart**
  - **View > 3D Object Visibility > Show Front Relief**
  - **View > 3D Object Visibility > Show Back Relief**
  - **View > 3D Object Visibility > Objects to Draw List**
- **View > Snapping**



The snapping options are all now available from the new **Snapping** submenu.

Three options from the **Window** menu are now on the **View** menu.



- **View > Save 3D View Image**
- **View > Render Assembly with POV-Ray**
- **View > Show Cursor Information**

Three options in the **View** menu are renamed:

Name in ArtCAM 2013	*Name in ArtCAM 2012*
View > Rename Current View	**View > Rename**
View > Delete Current View	**View > Delete**
View > Show Grid	**View > Draw Snap Grid**

Toolpaths menu

The new **Fluting** toolpath option is added to the **Toolpaths** menu:

- **Toolpaths > New 2D Toolpath > Fluting** (see page 36)

Window menu

Three options are now on the **View** menu:

- **Window > Save 3D View Image**
- **Window > Show Cursor Information**
- **Window > Render Assembly with POV-Ray**

One option is renamed:

- **Window > Status Bar** renamed to **Window > Show Status Bar**.

Model toolbar

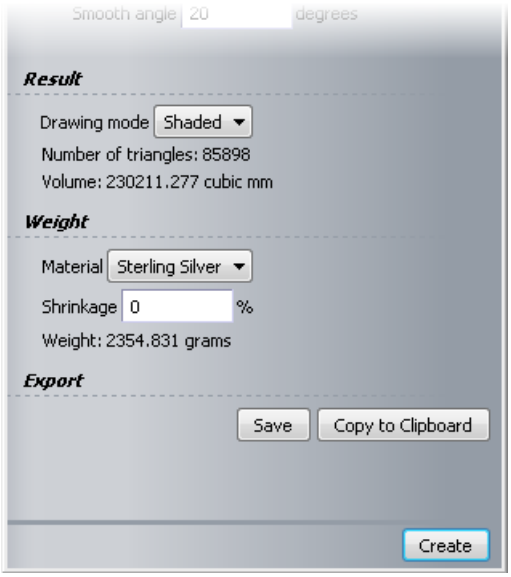
There are updates to the following areas of the **Model** toolbar:

Adjust Model Resolution

- There is a close  button at the top of the dialog.

Create Triangle Mesh

- The panel is renamed to **Create Triangle Mesh** from **Mesh Creator**.
- The **Triangulation Parameters** area is now called the **Options** area.
- The **Create** button replaces the **Create Triangles** button and is positioned at the bottom of the panel.
- The **Smooth Shading** option replaces the **Smooth Triangles** option. The functionality remains unchanged.
- The **Close** button is removed. Click the cross on the panel header to close the panel.
- The **Properties** expanding area is removed. Mesh properties are now displayed below the **Advanced** area, only after a mesh has been created.



- The **Triangle Drawing** list is now called **Drawing Mode** and is in the **Result** area.
- The **Save Triangles** button is now called **Save**, and is in the **Export** area.

Vector Creation toolbar

There are updates to the following areas of the **Vector Creation** toolbar:

 Fillet Vectors

- There is now a **Cancel** button.
- The unit of measurement is included after the **Fillet Radius** field.

 Trim Vectors

- The panel is renamed to **Tool Settings: Trim Vectors** from **Tool Settings: Trim Tool**.
- There is now a **Cancel** button.
- The **Auto Join** area is now called the **Options** area.

 Offset Vectors

- The panel is now docked by default.
- The panel is renamed to **Tool Settings: Offset Vectors** from **Offset Vector(s)**.
- There is a new **Group resulting offset** option.
- The unit of measurement is included after the **Offset Distance** field.
- The **Max Sharp Offset Distance** field is hidden when **Sharp** is not selected.

For more information, see Real time vector offset (see page 18).

 Bitmap to Vector

- The unit of measurement is included after the **Speckle Size** and **Smoothness** fields.
- The panel is organised into three areas: **Colour Reduction**, **Vectors,** and **Settings**.
- Colour selection is included in the **Settings** area.

 Cross Section

- There is now a **Cancel** button.

- The panel is renamed to **Tool Settings: Cross Section** from **Tool Settings: Create Relief Cross Section**.

Nesting

- The panel is organised into five areas: **Toolpath Dimensions**, **Settings**, **Boundaries and Grouping**, **Copies**, and **Sheets**.
- The unit of measurement is included after the **Toolpath clearance** and **Edge clearance** fields.
- The **Step Angle** field is hidden unless **Allow Part Rotation** is selected.
- The **Send to vector library** option is hidden unless **Create leftover material vector** is selected.
- There is no **Apply** button.
- The **Group Now** button is only displayed if **Group inside and outside of shapes on nesting** is deselected.
- The **Copies** area includes the **Selected part** field.

Create Vector Boundary

- The **Height** options are hidden unless **Use height range** is selected.
- There is no **Close** button. Click the cross on the panel header to close the panel.

Fill Tools toolbar

There are updates to the following areas of the **Fill Tools** toolbar:

Block Copy / Rotate

- The panel is organised into four areas: **Copy Type**, **Distances**, **Directions**, and **Copies**.
- The unit of measurement is included after the **X gap** and **Y gap** fields.

Paste Along a Curve

- The **Select Object and Curve** area is now called **Paste Settings**.
- The **Number of copies** field is hidden unless **Specify number** is selected.
- The **Distance between copies** field and **Make spacing even** option is hidden unless **Specify distance** is selected.

Relief Creation toolbar

There are updates to the following areas of the **Relief Creation** toolbar:

 Two Rail Sweep

- The **First** and **Second** options are buttons rather than check boxes.

 Extrude

- The panel is organised into five areas: **Drive Curve**, **Start Profile**, **End Profile**, **Z Modulation**, and **Combine Mode**.
- There is no **Close** button. Click the cross on the panel header to close the panel.

 Spin

- The panel is organised into five areas: **Start Profile**, **End Profile**, **Z Modulation**, **Sweep**, and **Combine Mode**.
- There is no **Close** button. Click the cross on the panel header to close the panel.

 Turn

- The panel is organised into two areas: **Profile**, and **Combine Mode**
- There is no **Close** button. Click the cross on the panel header to close the panel.

 3D Blend

- The **Blend To** area replaces the **Blend from Border to** area. The functionality remains unchanged.
- The **Select point with cursor** fields are hidden unless **Select point with cursor** is selected.
- The **Fill inner vector** option is hidden unless **Inner vector edge** is selected.
- The **Heights** area is below the **Blend To** area.
- The unit of measurement is included after the **Border** and **Inner** fields.

- In the **Combine Mode** area, **Highest** is renamed to **Merge High** and **Lowest** is renamed to **Merge Low**.
- There is no **Close** button. Click the cross on the panel header to close the panel.

Create Angled Plane

- In the **Combine** area, **Highest** is renamed to **Merge High** and **Lowest** is renamed to **Merge Low**.
- There is no **Close** button. Click the cross on the panel header to close the panel.

Relief Editing toolbar

There are updates to the following areas of the **Relief Editing** toolbar:

 Scale Relief

- The **Detail** list is now below the **Scale** fields.

 Relief Mirror Merge

- There is no **Apply** button. When you select an option on the panel, it is applied automatically to your relief.

 Fade Relief

- The **Reverse fade direction** option replaces **Reverse**. The functionality remains the same.
- The **Fade Type** and **Options** areas are combined.

 Add Draft

- There is now an **Add Draft** button on the **Relief Editing** toolbar.
- There is a new **Draft Type** (see page 34) area.

 Slice Relief

- The panel is organised into three areas: **Relief**, **Properties**, and **Slices**.

Vector Editing toolbar

There are updates to the following areas of the **Vector Editing** toolbar:

 Vector Doctor

- The **Select Specific Vectors** area replaces the **Find Duplicate Vectors** area, and contains many new options for selecting vectors.
- Most of the options in the **Fix Problems** area are hidden unless **Remove vector loops** is selected.
- The **% Of vector area to keep loop** field is now called the **Keep loops of area**.

 Slice Vectors

- The panel has been renamed to **Slice Vectors** from **Vector Slice**.
- The **Closing Option** area is now called **Close Vectors**.
- The **Slicing Method** area is now above the **Close Vectors** area.
- The **Line coordinate** field is hidden unless **Use a vertical line** or **Use a horizontal line** are selected.

 Arc Fit Vectors

- The panel is organised into two areas: **Settings**, and **Selected Vectors Information**.
- The unit of measurement is included after the **Tolerance** field.

 Spline Vectors

- The panel is organised into two areas: **Settings**, and **Selected Vectors Information**.
- The **Keep lines longer than** field is hidden unless **Preserve straight spans** is selected.

 Mirror Objects

- The panel is renamed to **Mirror Objects** from **Mirror Vectors**.
- There is a new **Join mirrored vectors** (see page 21) option.

Design Tools toolbar

There are updates to the following areas of the **Design Tools** toolbar:

 Envelope Distortion

The envelope distortion tools, which were previously available from the **Relief Editing** and **Vector Editing** toolbars, are now combined into one tool. This new envelope distortion tool is available from the **Design Tools** toolbar. For more information, see Improved envelope distortion tool (see page 29).

 Paint

- There is now **Cancel** button.

 Measure Tool

- The panel is organised into five areas: **Anchor Position**, **Distance**, **Angle**, **X and Y Distance**, and **Cursor Position**.
- There is now a **Cancel** button.

 Magic Wand

- Only the **Tolerance** field for the active option is visible.
- There is now a **Cancel** button.

 Create Polyline

- There is now a **Cancel** button.
- The **Add to an existing vector** option is now called **Snap to existing line**.

 Create Rectangle

- The panel is organised into five areas: **Square or Rectangle**, **Size**, **Corners**, **Centre Point**, and **Rotation**.

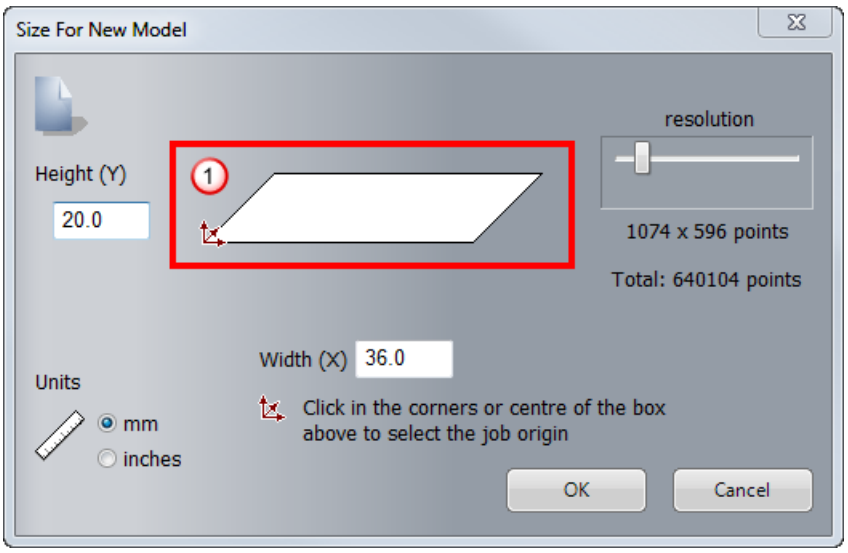
 Create Arcs

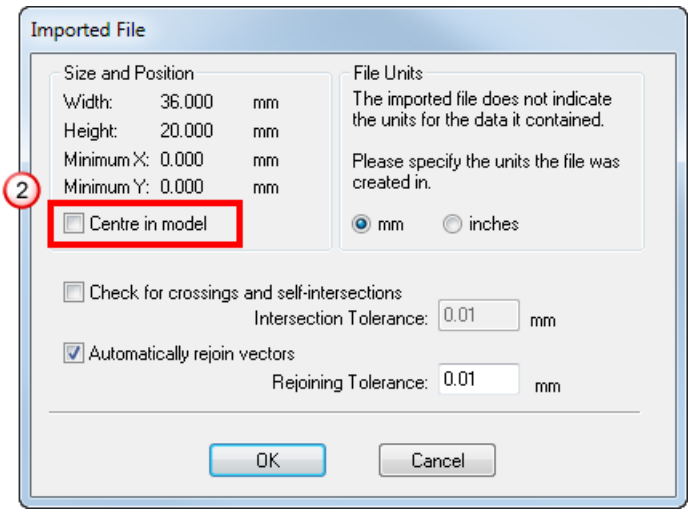
- There is now a **Cancel** button.

General enhancements

Opening a .dxf file

When opening a .dxf file, ArtCAM no longer overrides the choice of model origin (1), which you select in the **Size for New Model** dialog, if you deselect **Centre in model** (2) in the **Imported File** dialog.

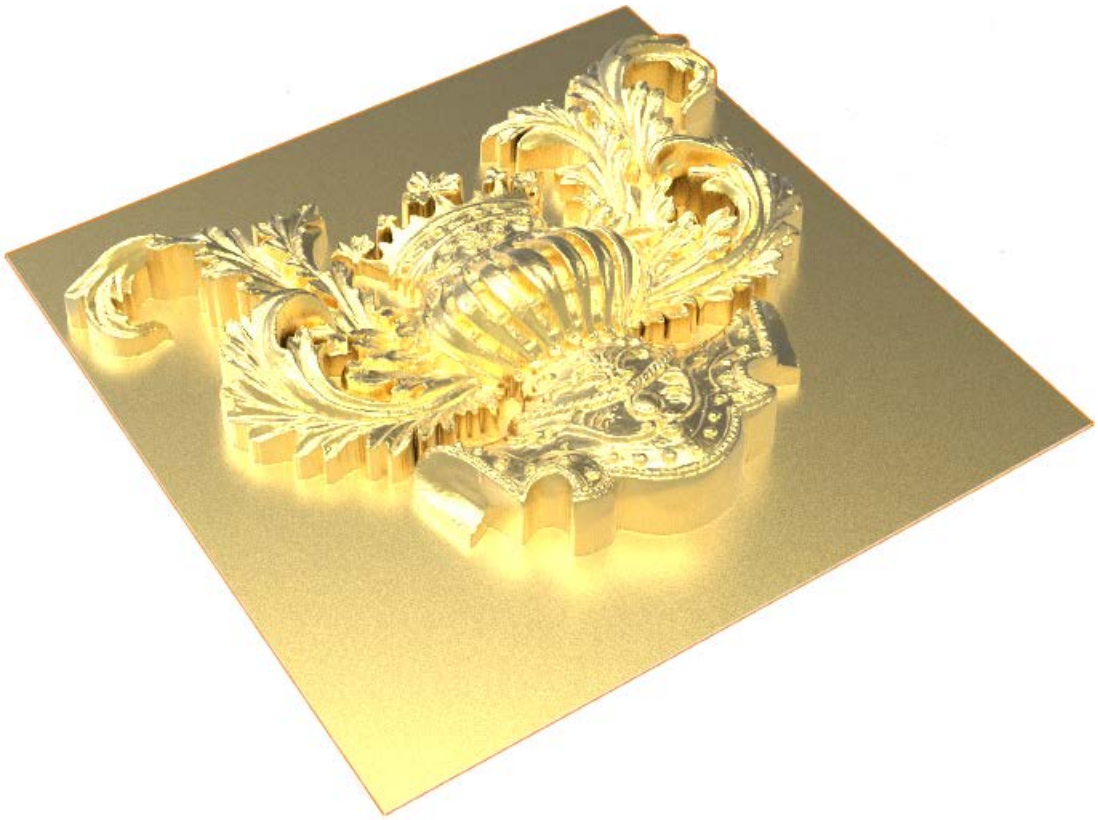




Rendering reliefs

KeyShot is only available with ArtCAM Jewelsmith.

In ArtCAM 2013 you can now use **KeyShot** to render your 3D models. **KeyShot** is a CPU based 3D rendering system for 3D data. It enables you to quickly and simply produce photorealistic images of your work so you can clearly visualise your end product.



To use **KeyShot** to render your model:

1. Ensure the composite relief you want to render is displayed in the **3D View** window.
2. In the **Model** toolbar, click **Lights and Material** to display the **Lights and Material** panel.
3. Select the material in which you want to render the model from the **Shading Setup** list. You also can change the material in **KeyShot**. For more information, refer to the **KeyShot** documentation.
4. In the **Main Menu** bar, select **View > Send To > KeyShot**. ArtCAM converts the relief to triangles, opens **KeyShot** in a new window and renders the model in your chosen material.

*The scrolling direction of the mouse in **KeyShot** is opposite to ArtCAM. To reverse this, in **KeyShot**, select **Edit > Preferences > Interface**, then select **Reverse camera distance scrolling**.*

If you make changes to your model in ArtCAM, you can quickly update the rendered image by selecting **View > Send To > KeyShot**.

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