ArtCAM Express 2011

# Getting Started


*Issue: 2011 (build 180) Released: 06/04/2011*

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.

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

The software described in this manual is furnished under licence agreement and may be used or copied solely in accordance with the terms of such licence.

Delcam plc grants permission for licensed users to print copies of this manual or portions of this manual for personal use only. Schools, colleges and universities that are licensed to use the software may make copies of this manual or portions of this manual for students currently registered for classes where the software is used.

### Acknowledgements



### Patents

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 are subject to a patent application.

Patent application: GB 0600873.4 "3D Layers"

# Contents

# Overview

ArtCAM Express is an entry-level 3D machining solution for professional CNC engravers and router users. Designs can be created using the comprehensive vector and bitmap drawing tools, its vector and relief clipart libraries, or imported from other graphics packages.

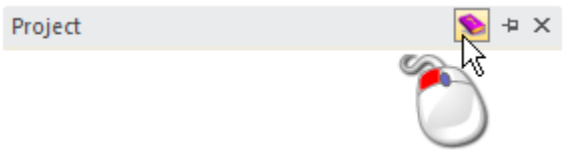
ArtCAM Express handles complex designs with ease and provides flexible machining strategies that are fast, accurate and most importantly, very reliable. Realistic 3D toolpath simulations can be used to verify all toolpaths, and picture the end product, before sending them to the CNC machine.

## Information about ArtCAM Express

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

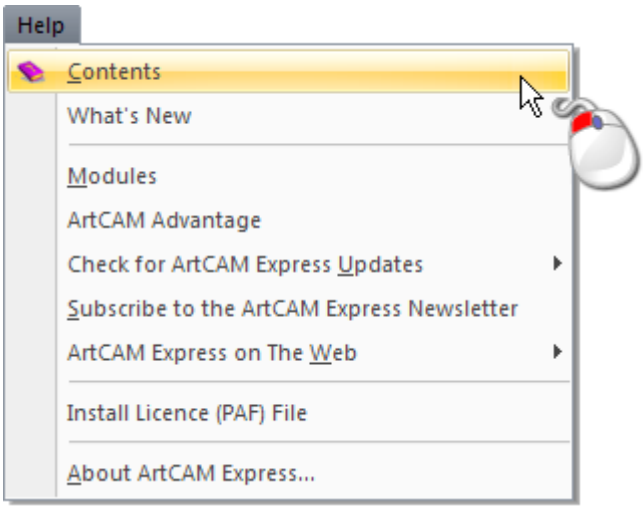
- Tool panels (in-line help).

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



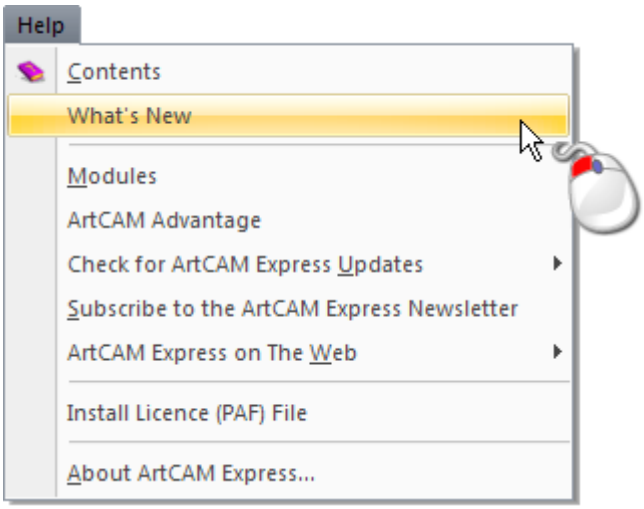

- The ArtCAM Express Reference Help system.

  From the **Menu Bar**, click **Help > Contents**.



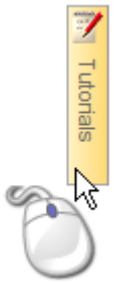

- The ArtCAM Express What's New system.

  From the **Menu Bar**, click **Help > What's New**.



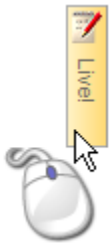

- The **Tutorials** panel.

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




- The **Live!** panel.

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




- The **Modules** panel.

  Move the mouse cursor over the **Modules** tab in the right docking area:


- The **Start** panel.

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

- The printed ArtCAM Express Getting Started manual.
- The ArtCAM Express website.

  From the **Menu Bar**, click **Help > ArtCAM Express on The Web > ArtCAM Express Home Page**.

- The ArtCAM User Forum.

  From the **Menu Bar**, click **Help > ArtCAM Express on The Web > ArtCAM Express Forum**. You can also access the forum at http://forum.artcam.com

  *To register as a forum member, click **Join** on the forum's home page. Registered users can download images, example ArtCAM models, and relief clipart files attached to posts.*

- Subscribe to the ArtCAM Express Newsletter.

  From the **Menu Bar**, click **Help > Subscribe to the ArtCAM Express Newsletter** to send an e-mail requesting a subscription to the quarterly newsletter.

# Files compatible with ArtCAM Express

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**)

  *ArtCAM Express supports only Illustrator 3 and 8 files. It is recommended that you save all Illustrator files you want to use in ArtCAM Express in the Illustrator 8 format using the* ***Version*** *list box in Adobe Illustrator.*

- Encapsulated PostScript (***.eps**)

  *It is recommended that you save all Illustrator files you want to use in ArtCAM Express in the* Illustrator 8 EPS *format.*

- 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**)

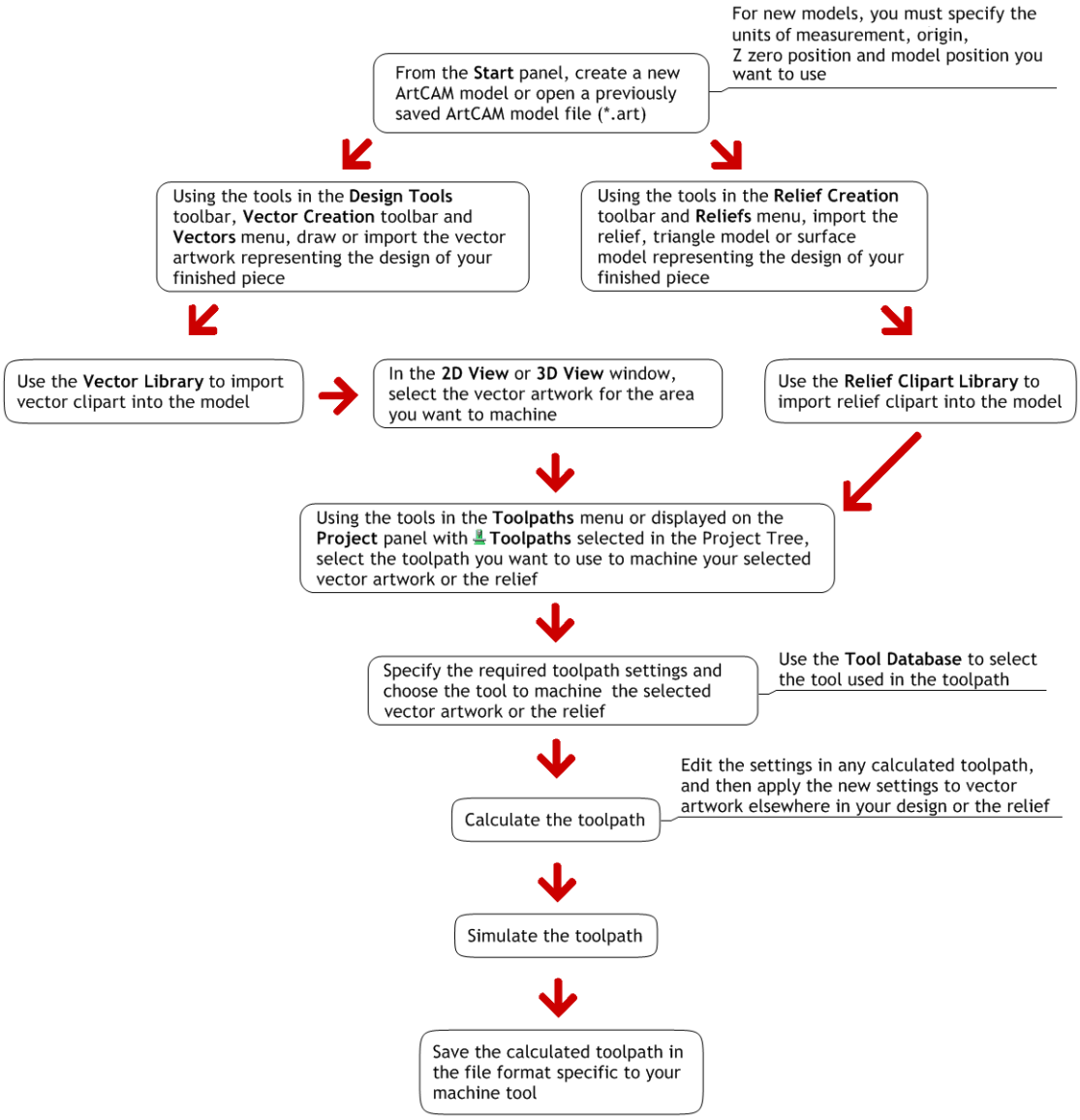
You can import surface models saved in the following file formats into an open ArtCAM model:

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

*You must have Exchange 6.3.10.06 or above installed on your computer to import triangle and surface models.*

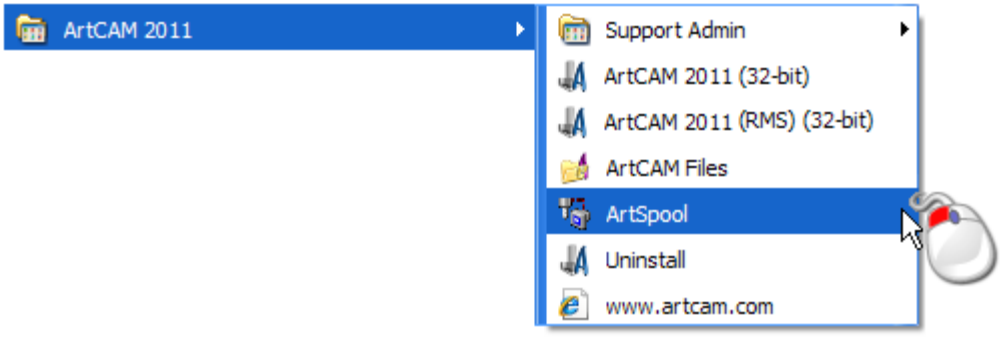
# The ArtCAM Express process

The following diagram shows the basic steps involved in turning your ideas into machined pieces using ArtCAM Express:



# Using ArtSpool

ArtSpool is an application tool you can use to send toolpath data to your CNC machine tool through a serial cable. It is installed alongside ArtCAM Express:




ArtSpool runs as a background task in Windows. This enables you to continue using your computer while ArtSpool sends data to your CNC machine tool.

For details on setting up ArtSpool and using toolpath files, see the ArtSpool chapter of the ArtCAM Express Reference Help.

# Tutorial - Saw Mill sign

This tutorial demonstrates how to create a *Saw Mill* sign from vector artwork. You will use ArtCAM Express's **Vector Creation** and **Vector Editing** tools to adapt the imported vector artwork, and then its **Toolpath Operation** tools to calculate the toolpaths needed to machine the sign.

The stages covered by this tutorial are:

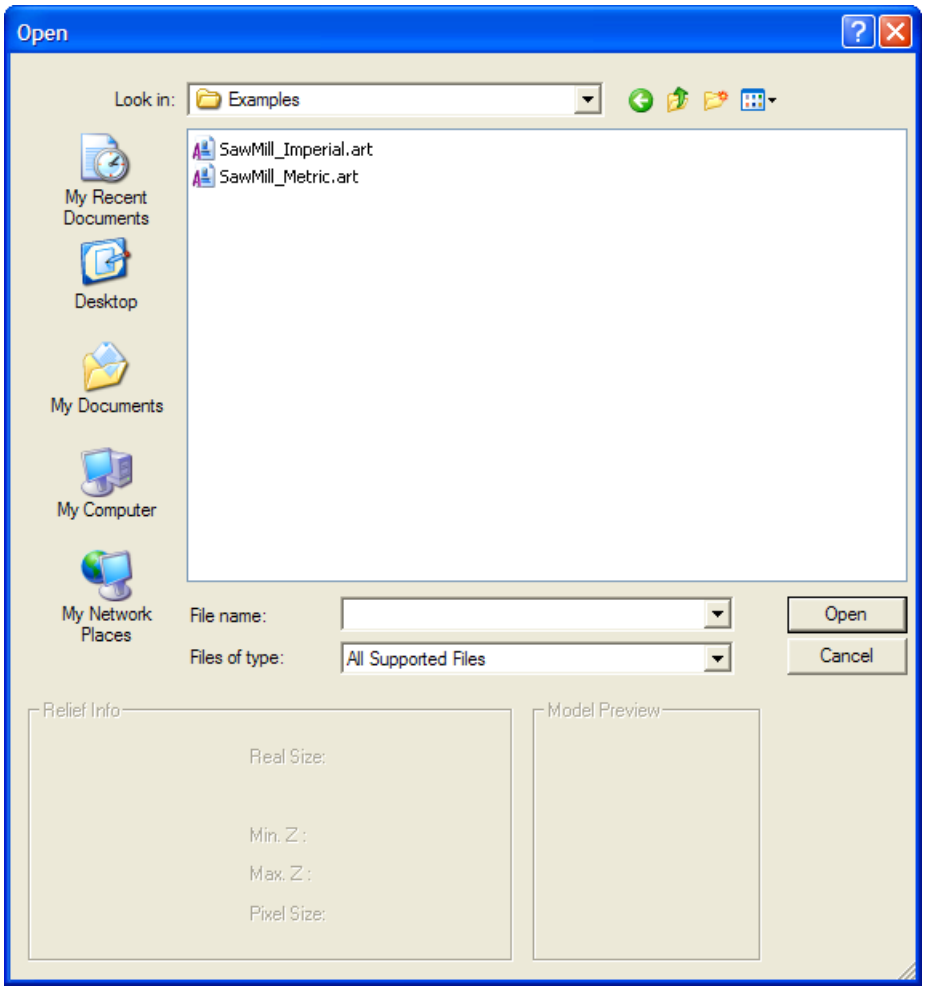
- Preparing the model (see page 9).
- Creating the offset vectors (see page 10).
- Grouping the offset vectors (see page 13).
- Creating additional vector text (see page 16).
- Repositioning the vector text (see page 16).
- Clearing the area around the text (see page 18).
- Carving the text (see page 22).
- Cutting out the sign (see page 24).
- Saving the toolpaths (see page 26).

At the end of this tutorial, you will have created all of the toolpath files needed to machine the *Saw Mill* sign using ArtCAM Express.

# Preparing the model

This section describes how to open the ArtCAM model containing the vector artwork needed to produce the *Saw Mill* sign.

1 From the **Start** panel, click **Open Model**  in the **Models** area. The **Open** dialog box is displayed:




2 Click the **Look in** list box, and then browse to the C:\Documents and Settings\All Users\Documents\ArtCAM Files\Examples folder on your computer.

*If you are using Windows Vista or 7, browse to the C:\Users\Public\Documents\ArtCAM Files\Examples folder.*

*If you did not install the Examples folder along with ArtCAM Express, you can find the folder on the ArtCAM Express installation DVD.*

3 To complete this tutorial using:

- metric measurements, select the *SawMill_Metric.art* file.
- imperial measurements, select the *SawMill_Imperial.art* file.

*The* *.art *suffix indicates that the selected file is an ArtCAM model.*

In the **File name** box, the name of the selected file is displayed.

4 Click **Open** to close the dialog box and open the selected ArtCAM model file.

ArtCAM Express displays the **2D View** window by default. The white rectangle shown in the window is the model area. In this area you can see the vector artwork you will use as the foundation in the process of creating the *Saw Mill* sign.

# Preparing the vector artwork

This section describes how to add to the vector artwork already included in the model so that you are ready to create the toolpaths needed to machine the *Saw Mill sig*n. These vectors comprise offsets and text.

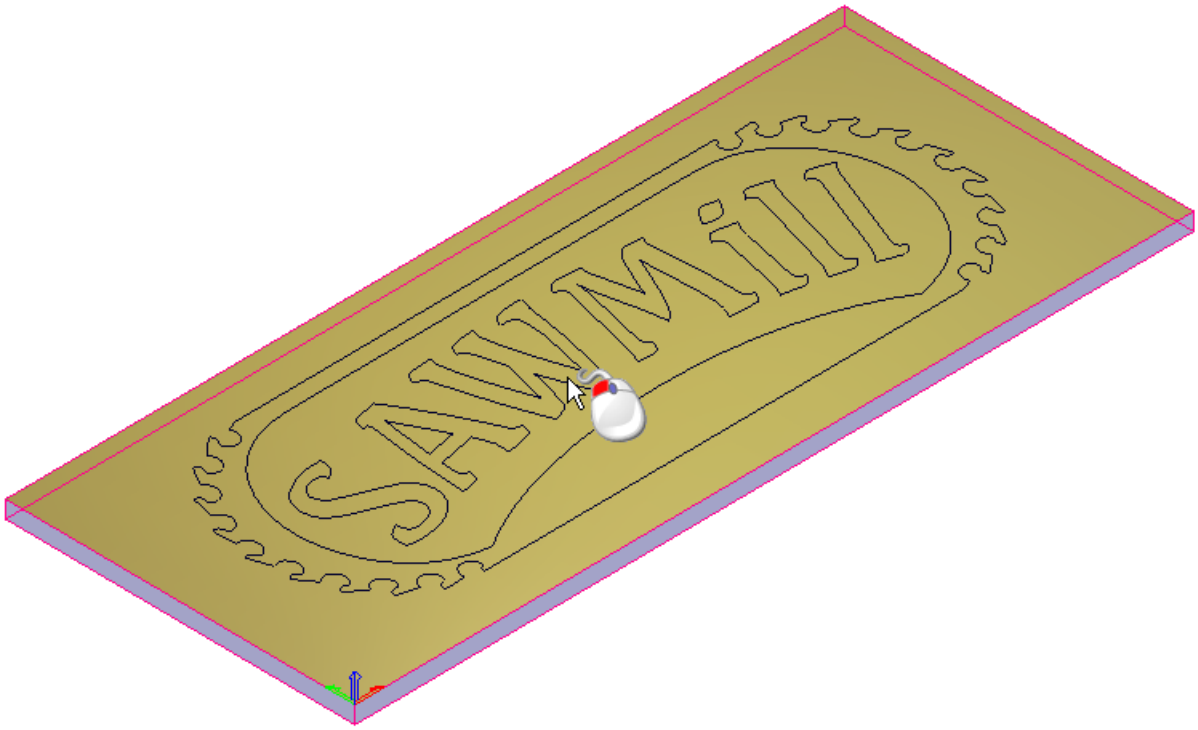
## Creating the offset vectors

You are now ready to create some additional vectors using the artwork already in the model. This is needed when creating the toolpaths used to machine the *Saw Mill* sign.

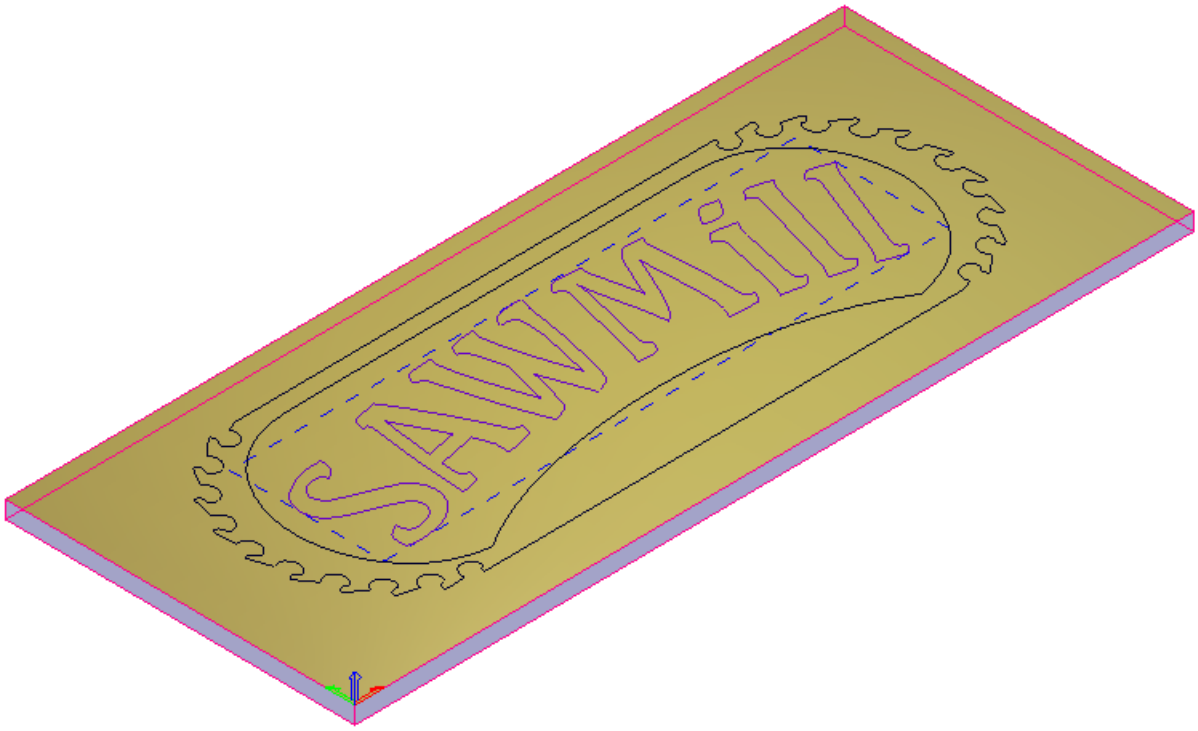
1 Press the **F3** key to display the **3D View** window.

2 In the **3D View** toolbar, click the **Toggle Vector Visibility**  button. The vector artwork is displayed in the **3D View** window.

3 Click to select the grouped vectors that make up the *Saw Mill* vector text:




The characters that make up the *Saw Mill* vector text are purple and surrounded by a bounding box; indicating that they are both grouped and selected:




As the characters that make up the *Saw Mill* vector text are already grouped, you can create an offset vector around them all at once.

4 In the **Vector Creation** toolbar, click the **Offset Vector(s)** button. The **Offset Vector(s)** panel is displayed.

5 In the **Offset Distance** box, type 6 mm (0.2 inches).

6 In the **Offset Direction** area, select the **Outwards/Right** radio button. This instructs ArtCAM Express to draw the offset vectors around the outside of the selected vector text's boundaries.

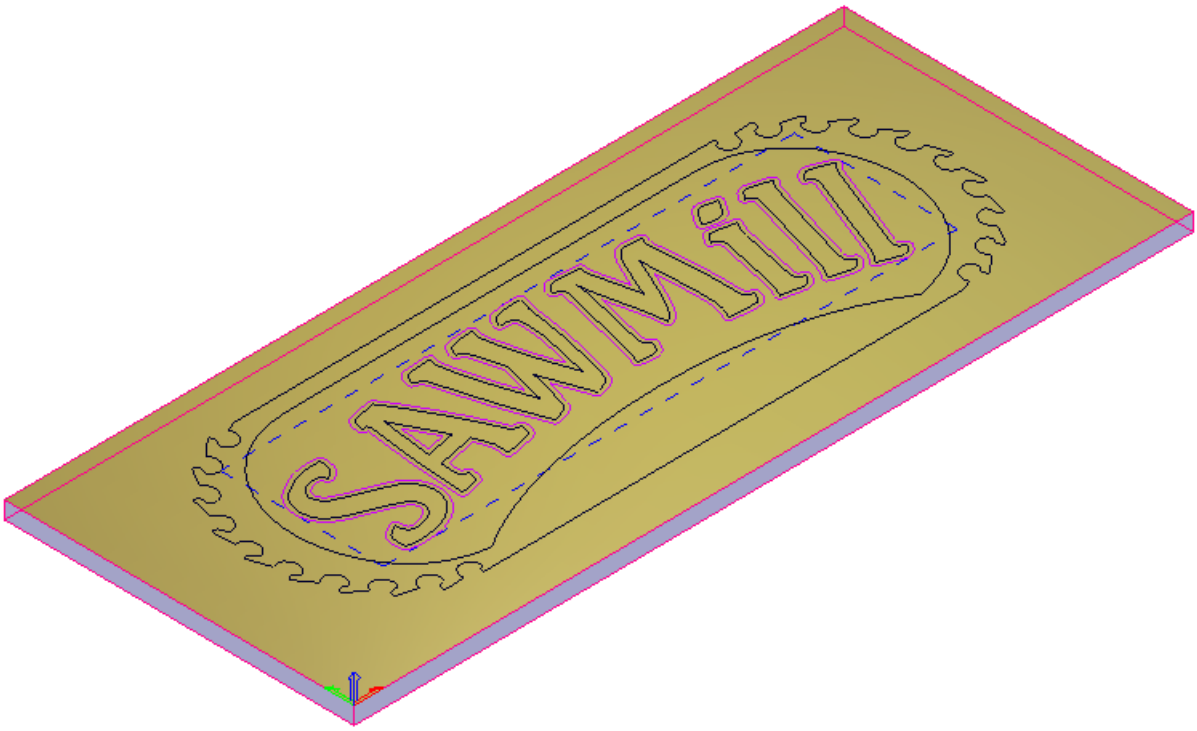
7 In the **Offset Corners** area, select the **Radiused** radio button.

8 Deselect the **Delete original vectors** check box.

9 Click **Offset** to create the offset vectors.

In the **Status Bar**, a progress bar is displayed during the calculation process:

The offset vectors are magenta and surrounded by a bounding box, indicating they are ungrouped and selected:

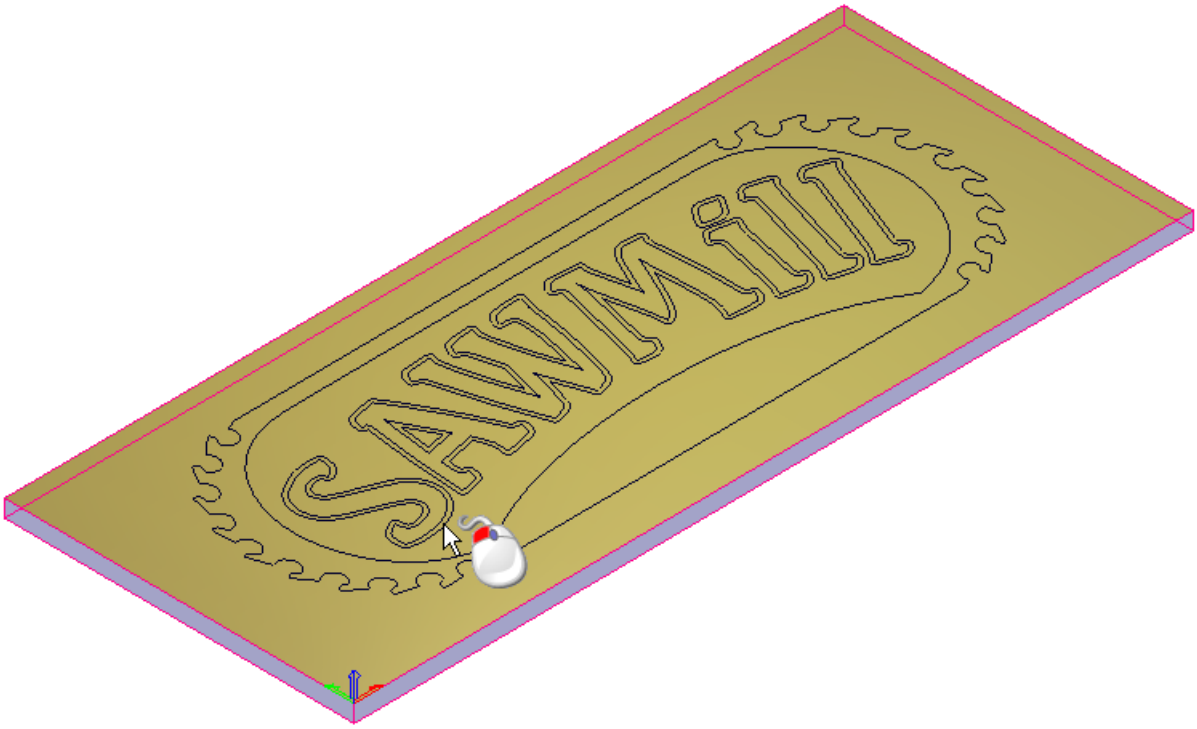



10 Click on the **Offset Vector(s)** panel's header to close it.

## Grouping the offset vectors

As the same toolpath settings will be applied to the offset vectors, it is easier to group them together and select them simultaneously, rather than selecting each of the offset vectors in turn when creating your toolpaths.

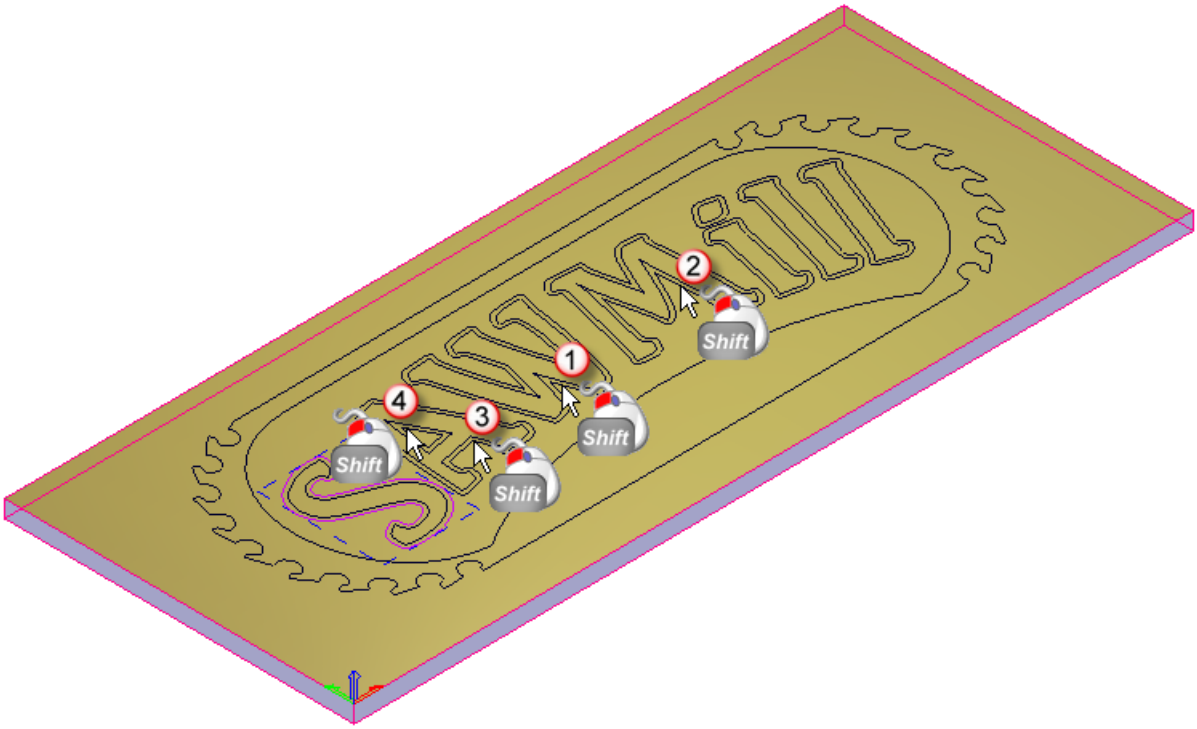
1. In the **3D View** window, click an empty area to deselect the offset vectors. The offset vectors are shown in black; indicating that they are no longer selected.
2. Click to select the offset vector that surrounds the *S* character in the *Saw Mill* vector text.




The offset vector is shown in magenta and surrounded by a bounding box; indicating that it is ungrouped and selected.

3. Hold down the **Shift** key to select multiple vectors, and then select the offset vector:
   - that surrounds the *W* character.
   - that surrounds the *M* character.
   - that surrounds the *A* character.

- within the *A* character's internal cavity.

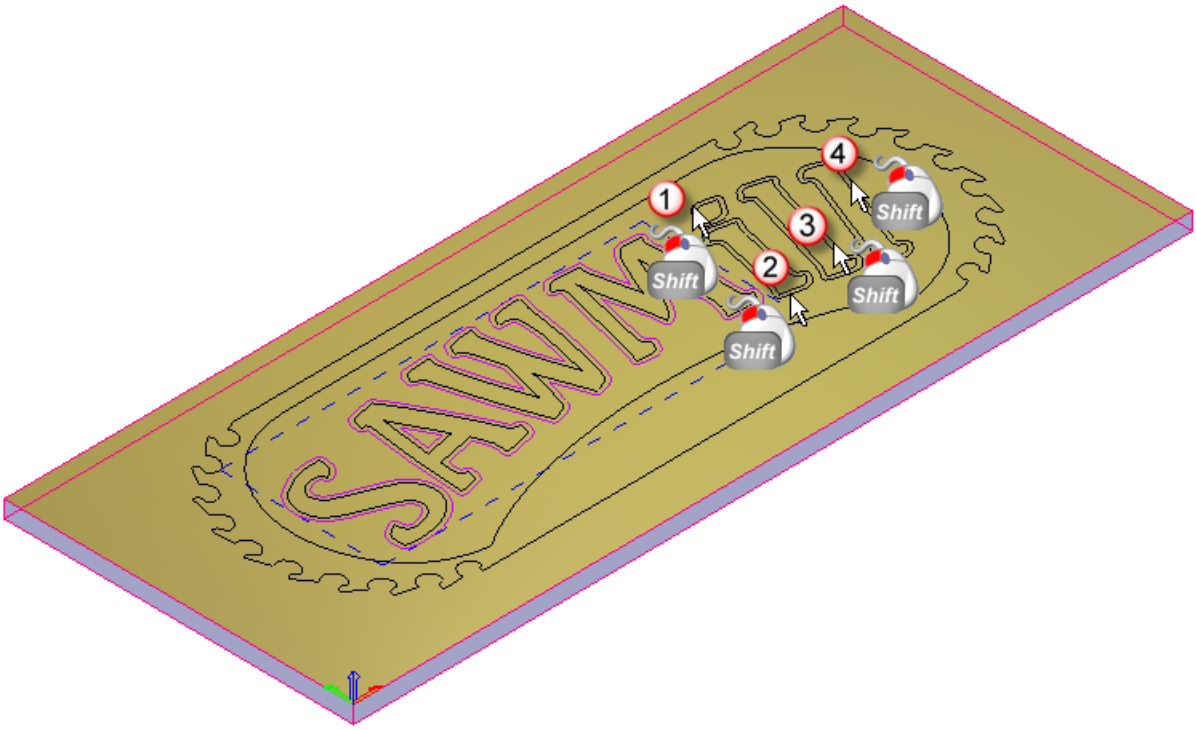



The offset vectors are shown in magenta and surrounded by a bounding box; indicating that they are ungrouped and selected.

4 Hold the **Shift** key down, and then, in the *Saw Mill* vector text, select the offset vector that surrounds the:

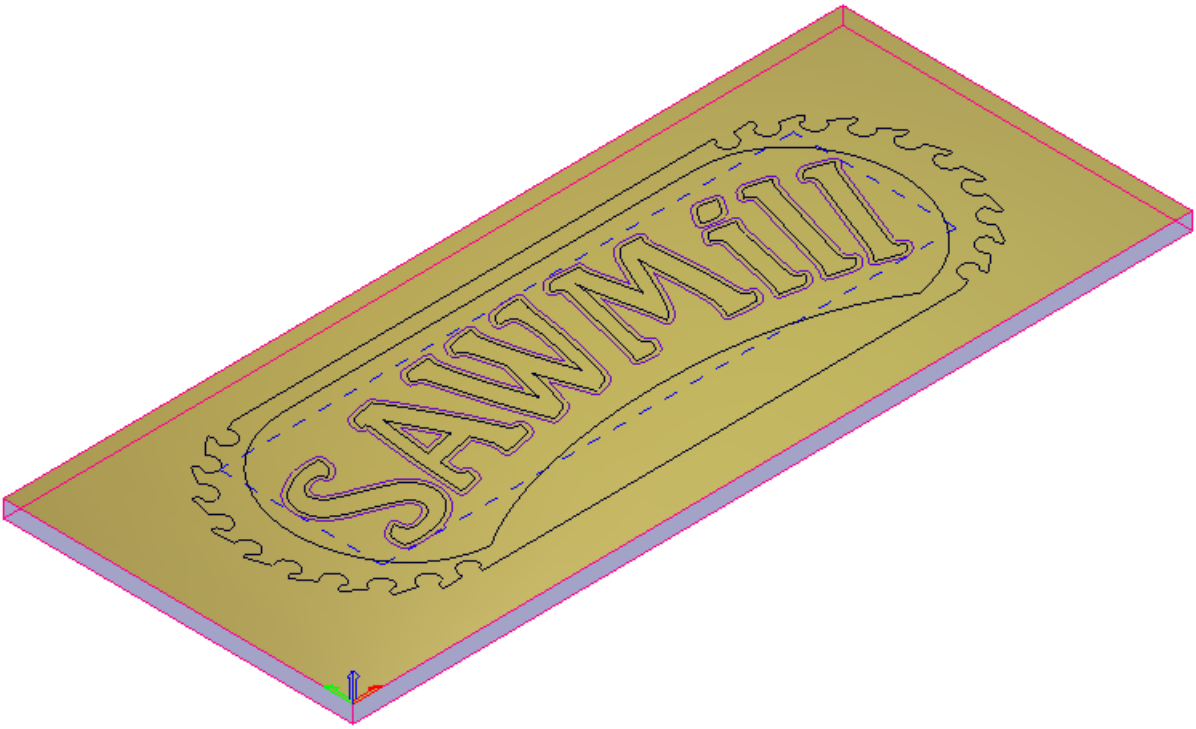
- dot in the *i* character.
- lower part of the *i* character.

- two / characters.




The offset vectors are shown in magenta and surrounded by a bounding box; indicating that they are ungrouped and selected.

5 Press the **Ctrl+G** keys to group the selected offset vectors. All of the offset vectors are purple and surrounded by a bounding box; indicating that they are grouped and selected:



## Creating additional vector text

You are now ready to create the vector text required to produce some additional text in the finished *Saw Mill* sign.

1. Press the **F2** key to display the **2D View** window.
2. Click anywhere in the model area (the white rectangle) to deselect the grouped offset vectors. The offset vectors are shown in black; indicating that they are no longer selected.
3. In the **Design Tools** toolbar, click the **Create Vector Text**  button. The **Tool Settings** panel is displayed, and shows the **Text Tool** settings.

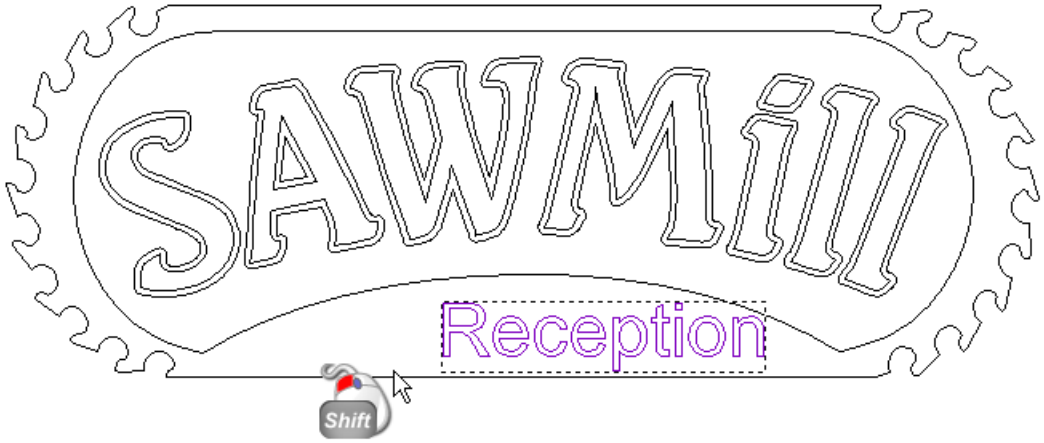
   *If you cannot see the **Tool Settings** panel, press the **F6** key.*
4. Select the **Align Left**  button. This instructs ArtCAM Express to align the vector text to the left with a ragged right edge.
5. Click the **Font** list box, followed by **Arial**.
6. If you are using metric measurements:
   a. Click  in the **Size** area, and then select **mm** from the list.
   b. In the **Size** box, type 51 to set the size of the vector text.

   If you are using imperial measurements:
   a. Click  in the **Size** area, and then select **inches** from the list.
   b. In the **Size** box, type 2 to set the size of the vector text.
7. Click anywhere in the empty model area (the white rectangle) between the outermost vector and the vector that surrounds the offset vectors.
8. Type *Reception*.
9. From the **Tool Settings: Text Tool** panel, click **Done**. The vector text is created, the **Tools Settings** panel is hidden, and the **Select** tool is re-selected.

## Repositioning the vector text

You are now ready to reposition the *Reception* vector text so that it sits between the outermost vector and the vector that surrounds the grouped offset vectors.

1 In the **2D View** window, click the *Reception* vector text to select it. Hold down the **Shift** key, and then click to select the outermost vector:




The outermost vector is shown in magenta; indicating that it is ungrouped. A bounding box surrounds this and the *Reception* vector text; indicating that they are both selected:


2 In the **Vector Editing** toolbar, click and hold the mouse on the **Centre In Model**  button. Its flyout toolset is displayed.

3 While holding down the mouse button, move the mouse cursor over the **Centre Horizontally**  button in the toolset.

4 Release the mouse button to align the centre of the outermost vector with the centre of the *Reception* vector text.

5 In the **2D View** window, click anywhere in the model area (the white rectangle) to deselect all vector artwork.

6 Click to select the *Reception* vector text. It is shown in purple and surrounded by a bounding box; indicating that it is grouped and selected.

7 Use the ↑ and ↓ keys to adjust the vector text until it is positioned between the grouped offset vectors and the outermost vector:


8 In the **2D View** window, click anywhere in the empty model area (the white rectangle) to deselect the vector text. The vector text is shown in black; indicating that it is not selected.

# Machining the Saw Mill sign

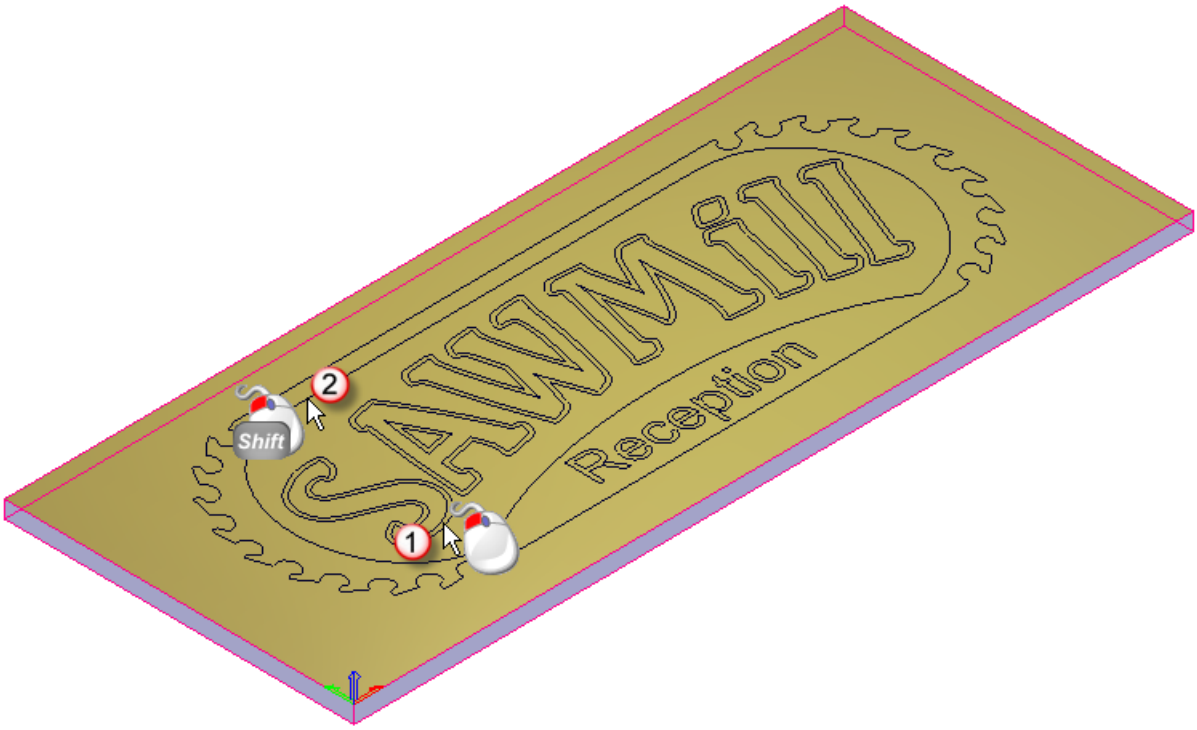
This section describes how to create the toolpaths needed to machine the *Saw Mill* sign. The settings within each toolpath are applied to different areas of the vector artwork.

## Clearing the area around the text

You will now calculate the toolpath needed to clear the area around the *Saw Mill* vector text during the machining process. The toolpath settings are applied to the area between the grouped offset vectors surrounding the *Saw Mill* vector text and the vector surrounding the grouped offset vectors. You are machining the *Saw Mill* sign out of a sheet of material that is 25 mm (1 inch) thick.

1 Press the **F3** key to display the **3D View** window.

2 In the **2D View** window, click to select the grouped offset vectors surrounding the *Saw Mill* vector text, hold down the **Shift** key, and then click to select the vector that surrounds the grouped offset vectors.




A bounding box surrounds the grouped offset vectors and the vector around them indicating that they are both selected. The offset vectors are shown in purple; indicating that they are grouped. The vector that surrounds them is shown in magenta; indicating it is ungrouped.

3 From the **Project** panel, click **Toolpaths** in the Project Tree to display its associated tools below the splitter bar.

4 In the **2D Toolpaths** area, click the **Create Area Clearance Toolpath** button. The **2D Area Clearance** panel is displayed.

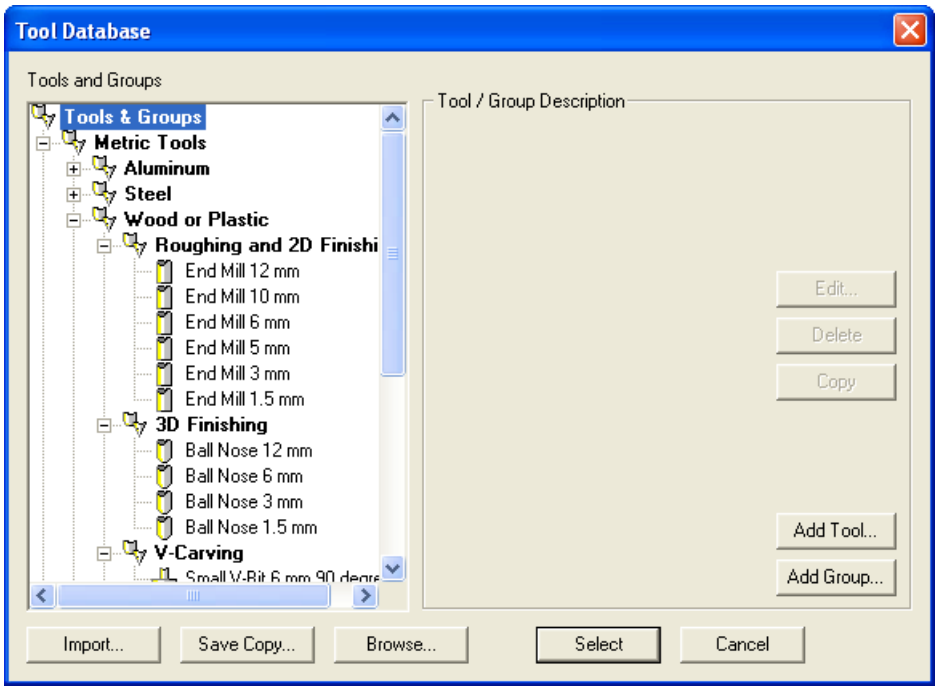
5 In the **Finish Depth** box, type 8 mm (0.25 inches).

6 Set the **Start Depth** and **Allowance** is to *0*.

7 Set the **Tolerance** to *0.025* mm (*0.001* inches).

8 Click the **Machine Safe Z** control bar to display its settings, and then type 25 mm (1 inch) in the **Safe Z** box and the **Home Position**'s **Z** box. This controls the height at which the roughing tool makes rapid moves between toolpath segments.

9 In the **Tools List** area, click **Add.** The **Tool Database** is displayed:




10 From the **Wood or Plastic\Roughing and 2D Finishing** tool group, double-click the *End Mill 10 mm (End Mill 3/8 Inch)* tool. The **Tool Database** is closed and the tool's description is displayed below the **Tools List** area.

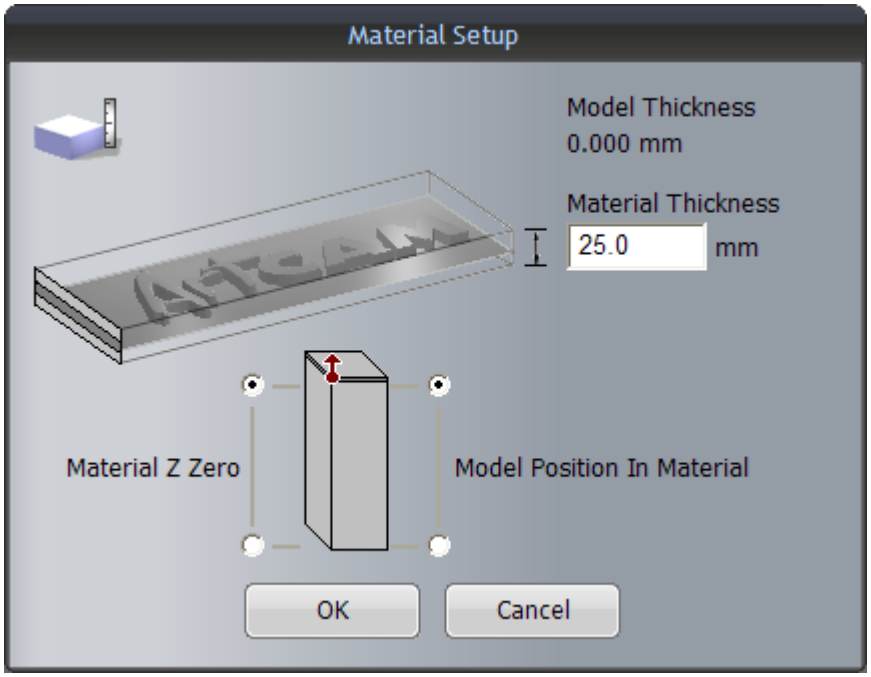
*After selecting the* End Mill 10 mm (End Mill 3/8 Inch) *tool, the* ***Add*** *button is greyed-out. This is because the* Area Clearance *toolpath is restricted to the use of one tool only in ArtCAM Express.*

*For illustration, the tool's* ***Stepover*** *has been increased to* 8 *mm (*0.25 *inches).*

In the **Tool Clearance Strategy** area, the **Raster** option is selected. This default strategy will be used along with a **Raster Angle** of *0* in the toolpath.

11 Deselect the **Add Ramping Moves** check box.

12 In the **Material** area, click the **Setup** button. The **Material Setup** dialog box is displayed:




13 Set the:

- **Material Thickness** to *25* mm (*1* inch).
- **Material Z Zero** position to the top of the block.
- **Model Position In Material** relative to the top of the block.

14 Click **OK**. The **Material Setup** dialog box is closed.

15 On the **2D Area Clearance** panel, click **Calculate Now**. The toolpath is named *Area Clear* by default and is shown in the **3D View** window:


16 On the **2D Area Clearance** panel's header, click to close the panel.

17 Press the **F3** key to display the calculated *Area Clear* toolpath in the **3D View** window.

## Carving the text

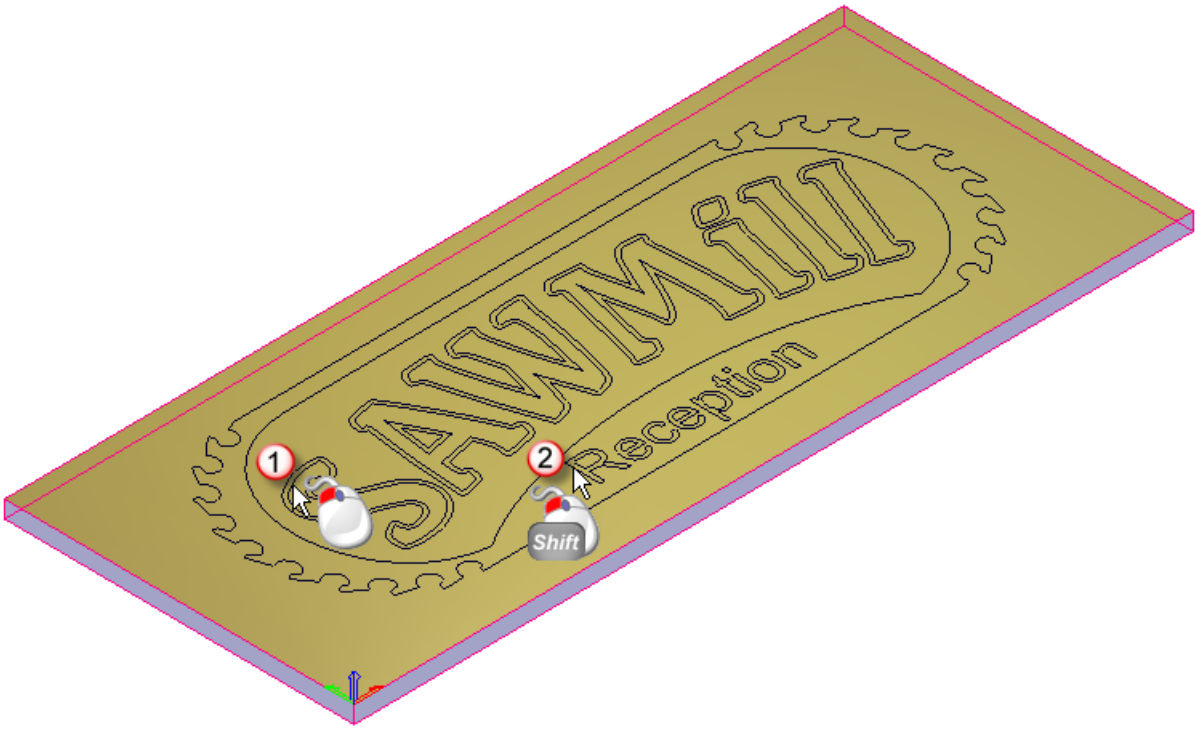
You are now ready to calculate the toolpath needed to carve the *Saw Mill* and *Reception* text during the machining process. The toolpath's settings are applied to the *Saw Mill* and *Reception* vector text.

You can carve the *Saw Mill* and *Reception* vector text as it has been created using fonts compatible with V-Bit Carving.

1 On the **Project** panel, click beside **Toolpaths** in the Project Tree, and then click and to the right of the *Area Clear* toolpath. In the **3D View** window, the toolpath is hidden; making it easier to select the vector text you want to carve.

2 In the **3D View** window, click an empty area to deselect all vector artwork.

3 Click the *Saw Mill* vector text, hold down the **Shift** key, and then click the *Reception* vector text:




A bounding box surrounds the *Saw Mill* and *Reception* vector text; indicating that both are selected. The *Saw Mill* and *Reception* vector text is shown in purple; indicating that both are grouped.

4 From the **Project** panel, click the **Create V-Bit Carving Toolpath**  button in the **2D Toolpaths** area. The **V-Bit Carving** panel is displayed.

5 Set the **Start Depth** to *0*, deselect the **Limit tool maximum depth** check box, and set the **Tolerance** to *0.025* mm (*0.001* inches).

6 In the **Carving Tool** area, click the control bar. The **Tool Database** is displayed.

7 From the **Wood or Plastic/V-Carving** tool group, double-click the *V-Bit 32 mm 110 degree (V-Bit 1.25 Inch 110 degree)* tool. The **Tool Database** closes and the tool's description is displayed in the **Carving Tool** area.

8 In the **Carving Tool** area, click the tool's description to display its machining parameters, and then type 2 in the **Tool Number** box.

*If you have a tool changer, this number should correspond with the position of the tool in the CNC machine.*

You can use the other default settings displayed on the **V-Bit Carving** panel.

9 Click **Calculate Now** to calculate the toolpath. The calculated toolpath is named *V-Bit Carving* toolpath by default, and is shown in the **3D View** window:

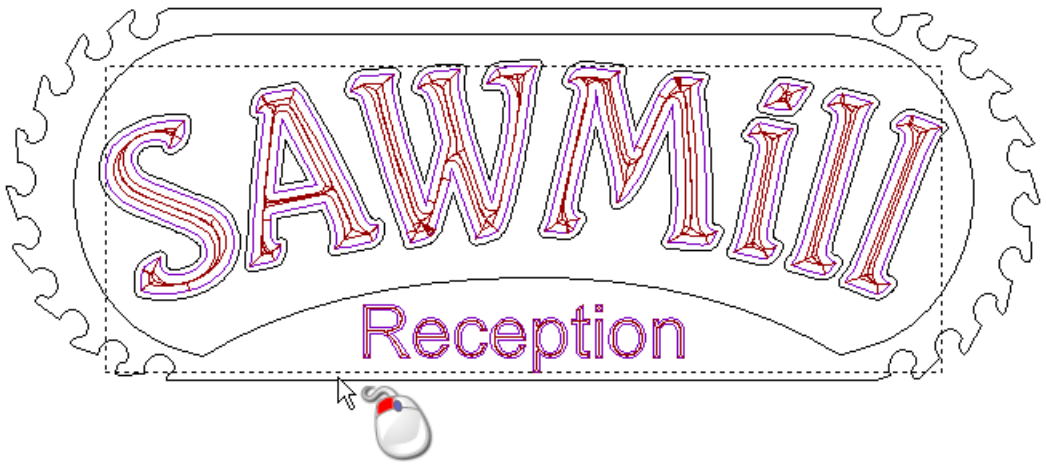

10 On the **V-Bit Carving** panel's header, click ⊠ to close the panel.

## Cutting out the sign

You will now calculate the toolpath needed to cut out the *Saw Mill* sign from the sheet of material during the machining process. The settings within the toolpath are applied to the outermost vector amongst the artwork shown in the **2D View** window.

1 Press the **F2** key to display the **2D View** window.

2 In the **2D View** window, click to select the outermost vector:



It is shown in magenta and surrounded by a bounding box; indicating that it is ungrouped and selected.

3 On the **Project** panel, click the **Create Profile Toolpath**  button in the **2D Toolpaths** area. The **Profiling** panel is displayed.

4 Make sure that:

- **Outside** is selected in the **Profile** list box.
- the **Allowance** is set to *0*.
- the **Start Depth** is set to *0*.
- the **Finish Depth** is set to *25* mm (*1* inch).
- the **Tolerance** is set to *0.025* mm (*0.001* inches).

5 In the **Profiling Tool** area, click the control bar. The **Tool Database** is displayed.

6 From the **Wood or Plastic\Roughing and 2D Finishing** tool group, double-click the *End Mill 10 mm (End Mill 3/8 Inch)* tool. The **Tool Database** is closed, and the tool's description is displayed in the **Profiling Tool** area.

7 In the **Profiling Tool** area, click the tool's description to display its machining parameters, and then set the **Tool Number** box to **1**.

If you have a tool changer, this number corresponds with the position of the tool in the CNC machine. The *Profile* toolpath uses the same tool as that used in the *Area Clear* toolpath; therefore you can set the tool number here so that it is identical in both of these toolpaths.

8 Set the **Cutting Direction** to **Climb**.

9 Select the **Add Lead In Moves** check box. Its settings are displayed.

10 Click the **Circular Arc** option. This instructs the Profiling Tool to lead into the vector's boundary in an arc. The arc lead move is positioned at the start node in the toolpath. The start point in the toolpath is equal to the start node in the selected vector.

11 In the **Distance (D)** box, type **15**. This sets the distance from the toolpath at which you want the Profiling Tool to cut into and retract from the vector's boundary.

12 In the **Radius (R)** box, type **15**. This specifies the arc lead-in move's radius.

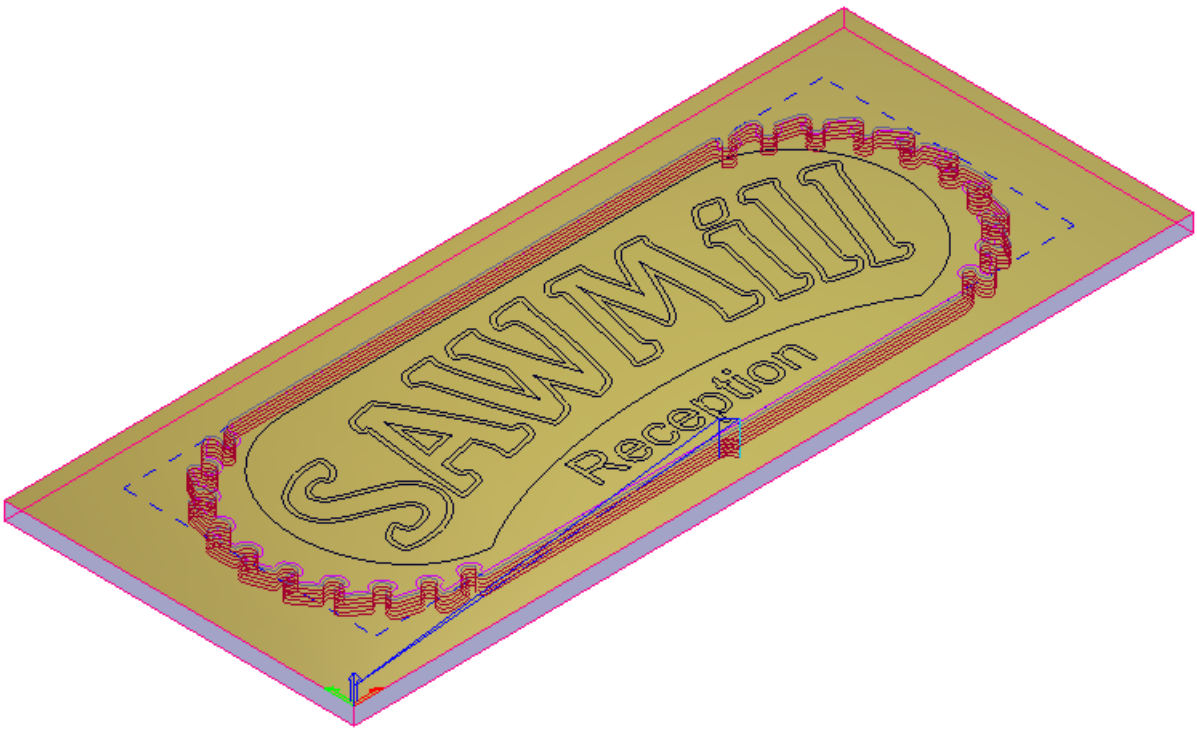
13 Deselect the **Add Bridge to Start Point(s)** and **Add Ramping Moves** check boxes.

14 Click **Calculate Now** to calculate the toolpath. The calculated toolpath is named *Profile* by default, and is shown in the **2D View** window:


15 On the **Profiling** panel's header, click to close the panel.

16 On the **Project** panel, click and to the right of the *V-Bit Carving* toolpath in the Project Tree. This hides the toolpath in the **2D View** and **3D View** window.

17 Press the **F3** key to display the **3D View** window. The calculated *Profile* toolpath is shown as follows:



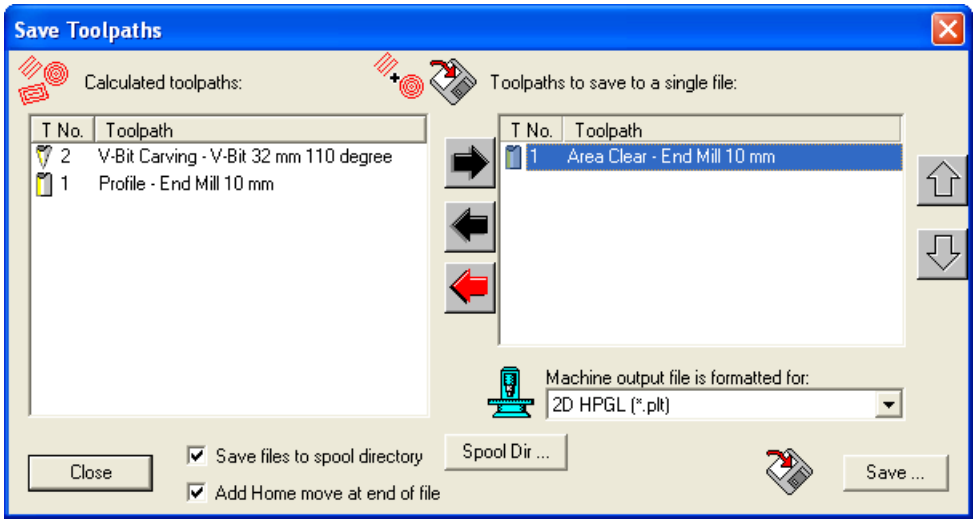
# Saving the toolpaths

You are now ready to save the calculated toolpaths so you can machine the *Saw Mill* sign.

You will save the toolpaths in separate files, grouping together those that use the same tool. Both the *Area Clear* and *Profile* toolpaths share the same tool number because they both use the *End Mill 10 mm (End Mill 3/8 Inch)* tool.

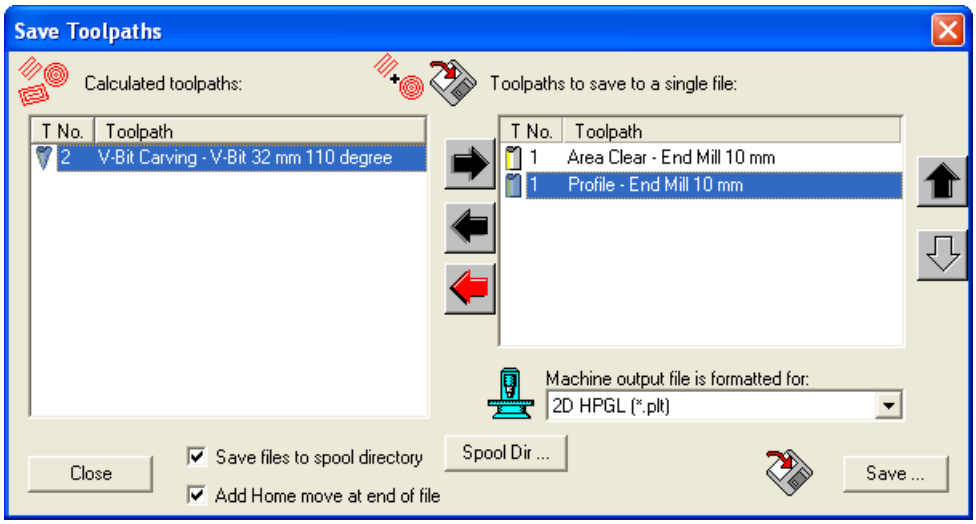
1. On the **Project** panel, click + beside *Area Clear* in the Project Tree, and then click *End Mill 10 mm (End Mill 3/8 Inch)*. Its name is highlighted, and its associated tools are displayed below the splitter bar.

2. Click the **Save Toolpaths** button in the **Toolpath Operations** area. The **Save Toolpaths** dialog box is displayed:




3. In the **Calculated toolpaths** window, click the *Profile - End Mill 10 mm (End Mill 3/8 Inch)* toolpath. Its name is highlighted.

4 Click  to send the toolpath to the **Toolpaths to save to a single file** window:




5 Click the **Machine output file is formatted for** list box, followed by the machine format in which you want to save your toolpath file.

6 Click **Save...** to display the **Save As** dialog box.

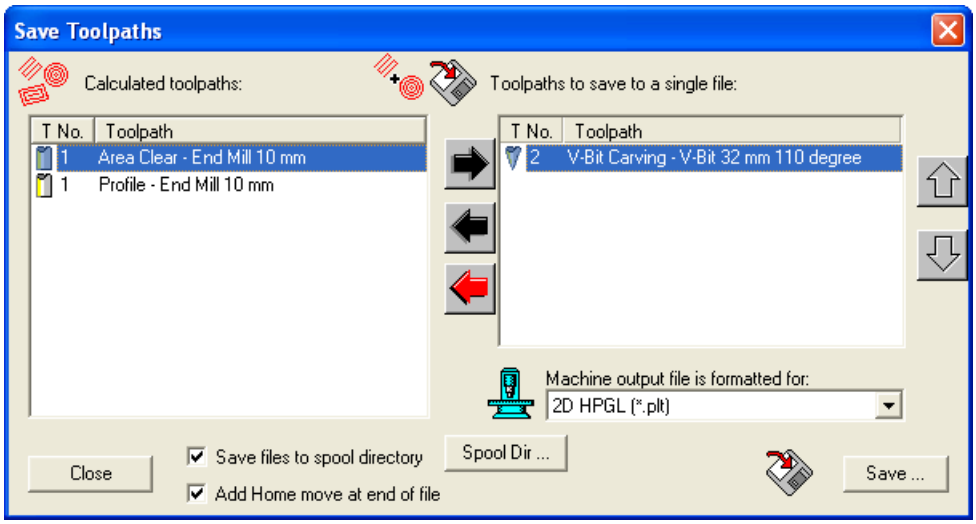
7 Click the **Save in** list box, followed by the folder on your computer in which you want to save the toolpath file.

8 In the **File name** box, type **Area_Clear_Profile**, and then click **Save** to save the toolpath file.

9 Click  to return the toolpaths in the **Toolpaths to save to a single file** window to the **Calculated toolpaths** window.

10 In the **Calculated toolpaths** window, make sure the *V-Bit Carving - V-Bit 32 mm 100 degree (V-Bit 1.25 Inch 110 degree)* toolpath is selected by clicking its name. Its name is highlighted.

11 Click  to send the toolpath to the **Toolpaths to save to a single file** window:




12 Click **Save...** to display the **Save As** dialog box.

13 Click the **Save in** list box, followed by the folder on your computer in which you want to save the toolpath file.

14 In the **File name** box, type **Carving**, and then click **Save** to save the toolpath file.

15 Click **Close** to close the **Save Toolpaths** dialog box.

You are now ready to send the toolpath files to your CNC machine to manufacture the *Saw Mill* sign.

# Tutorial - Lizard

This tutorial demonstrates how to machine a piece of relief clipart. You will import a lizard relief from ArtCAM Express's **Relief Clipart Library**, and then create the 3D toolpaths needed to machine the lizard relief.

The stages that you will cover during the course of this tutorial are:

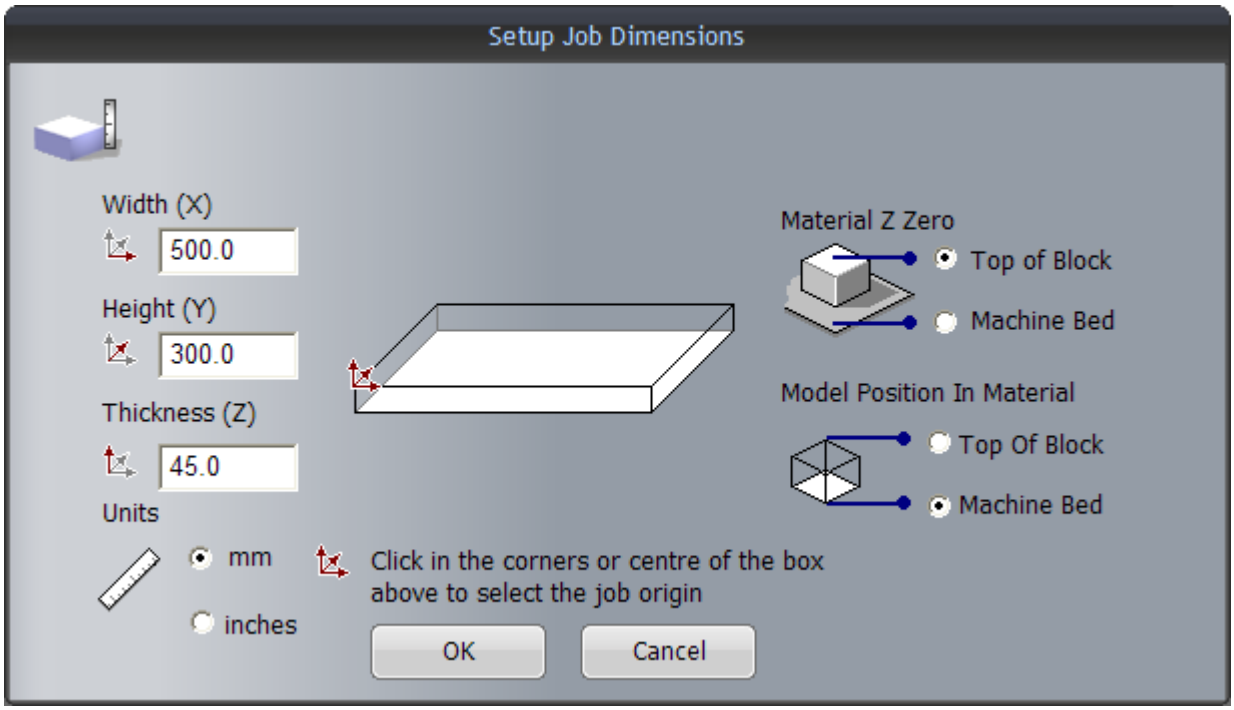
- Preparing the model (see page 31).
- Importing the relief clipart (see page 32).
- Calculating the toolpaths (see page 35).
- Simulating the toolpaths (see page 40).
- Saving the toolpaths (see page 42).

At the end of this tutorial, you will have created all of the toolpath files needed to machine a lizard relief using ArtCAM Express.

# Preparing the model

You will begin by creating a new ArtCAM model.

1 From the **Start** panel, click the **New Model** button. The **Setup Job Dimensions** dialog box is displayed:




2 In the **Units** area, select the **mm** radio button.

3 In the **Width (X)** box, type **500**.

4 In the **Height (Y)** box, type **300**.

5 In the **Thickness (Z)** box, type **45**.

6 In the **Material Z Zero** area, select the **Top of Block** radio button.

7 In the **Model Position In Material** area, select the **Machine Bed** radio button.

8 Set the origin as the bottom left corner of the model diagram.

9 Click **OK** to close the dialog box and create a model according to these dimensions.

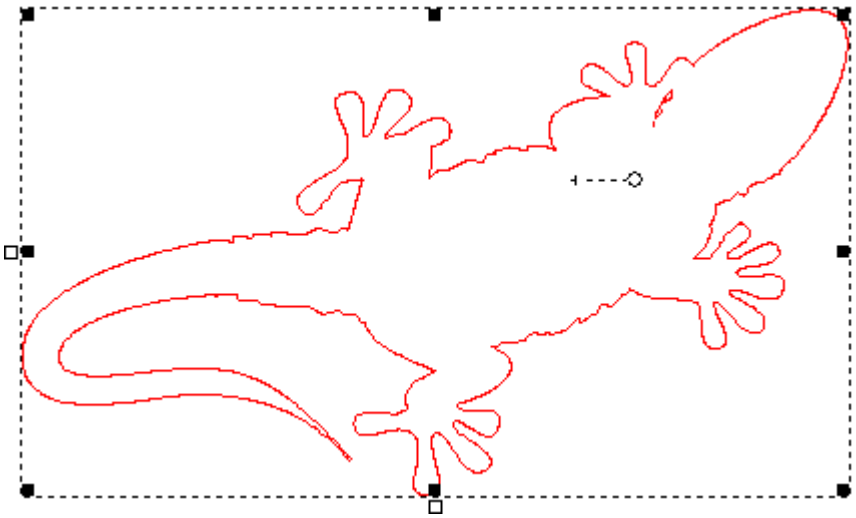
A **2D View** window is displayed in the viewing area. This window represents the block of material when viewed down the Z-axis.

# Importing the relief clipart

You are now ready to import a piece of relief clipart into the model.

1. In the **Relief Creation** toolbar, click the **Relief Clipart Library** button. The **Relief Clipart Library** panel is displayed.
2. Click the **Libraries** list box, followed by the **Animals** option to display thumbnails of its associated selection of relief clipart.
3. Click the **Lizard** thumbnail to import the lizard relief clipart. The **Paste Relief** settings are displayed on the **Tool Settings** panel.

   In the **2D View** window, a vector boundary of the lizard relief clipart is shown:

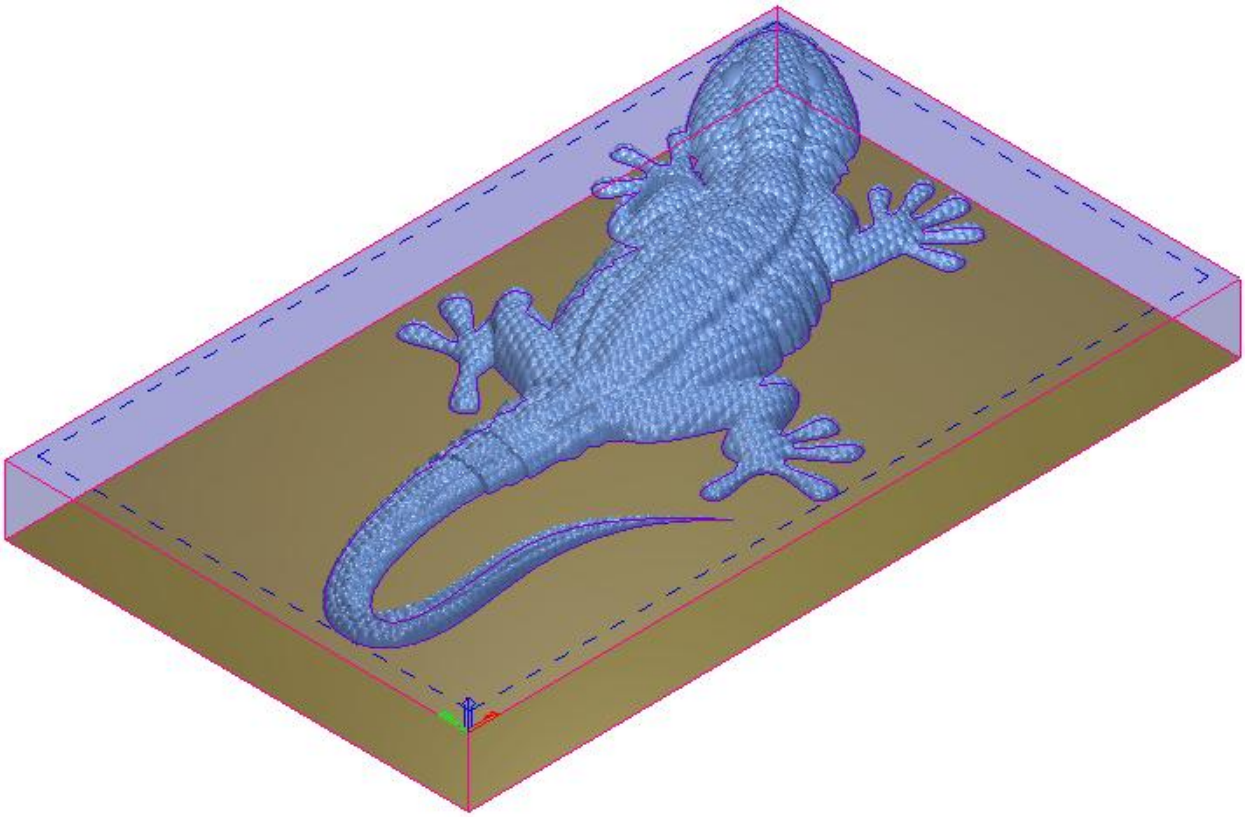


   The vector boundary is red and surrounded by a bounding box; indicating that it is selected. You can also see:

   - a rotation handle within the vector boundary, which can you can use to rotate the relief clipart;
   - three resizing points on each side of the bounding box; and
   - a shearing point on the left and bottom side of the bounding box.

4. Press **F3** to display the **3D View** window.
5. On the **3D View** toolbar, click the **Toggle Vector Visibility** button.

In the **3D View** window, the lizard relief clipart and a vector boundary of its outline are shown:



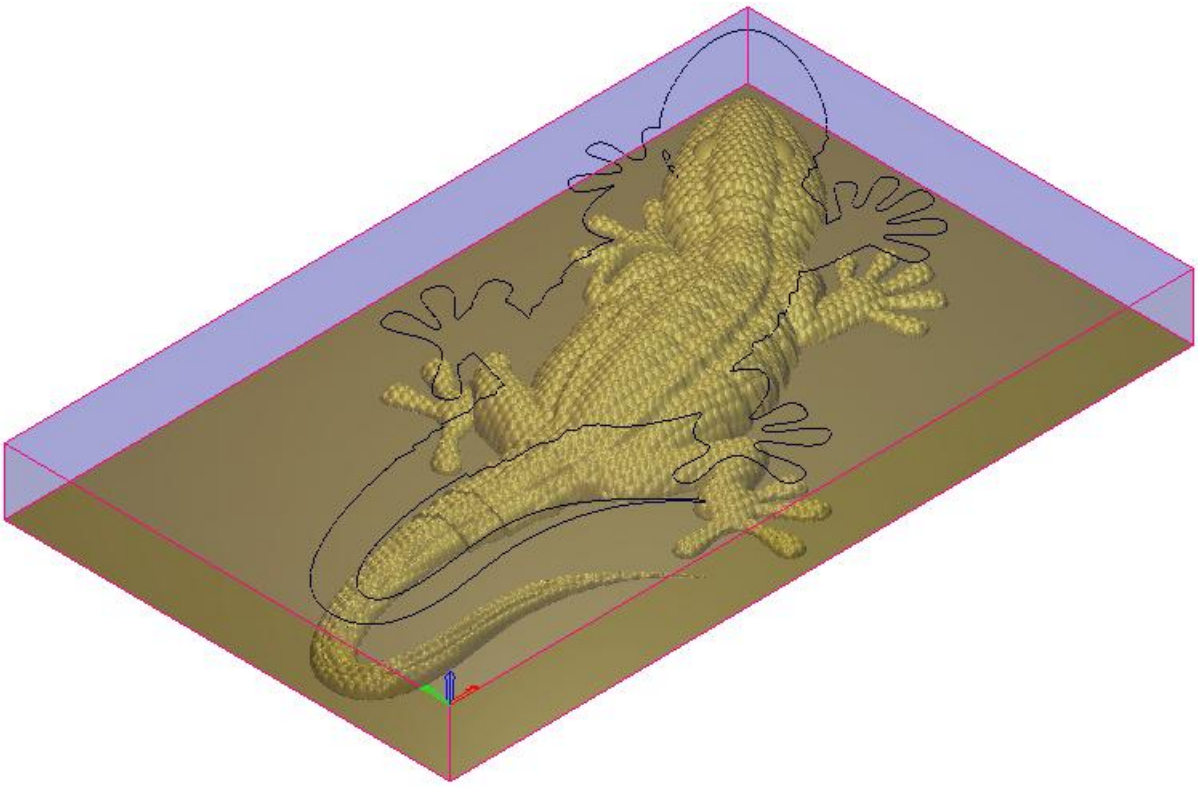
6 Click on the **Relief Clipart Library** panel's header to close it.

7 On the **Tool Settings: Paste Relief** panel, make sure that the **Add** option is selected by clicking its radio button.

8 Click **Paste** to combine the lizard relief clipart with the relief. The vector boundary is also pasted into the model area. It is black and deselected.

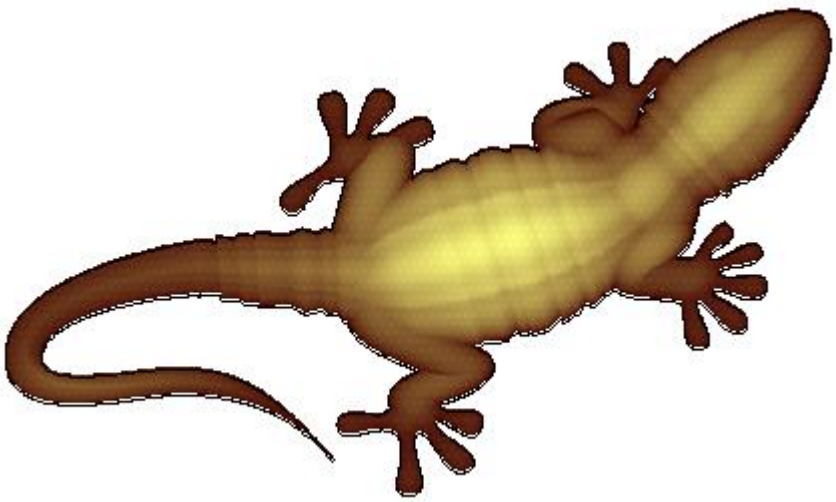
9 Click on the **Tool Settings: Paste Relief** panel's header to close it.

In the **3D View** window, the relief and a vector boundary of the lizard relief clipart's outline are shown:



10 Press **F2** to display the **2D View** window.

11 In the **2D View** toolbar, click the **Preview Relief** button to display a greyscale image of the lizard relief in the **2D View** window:

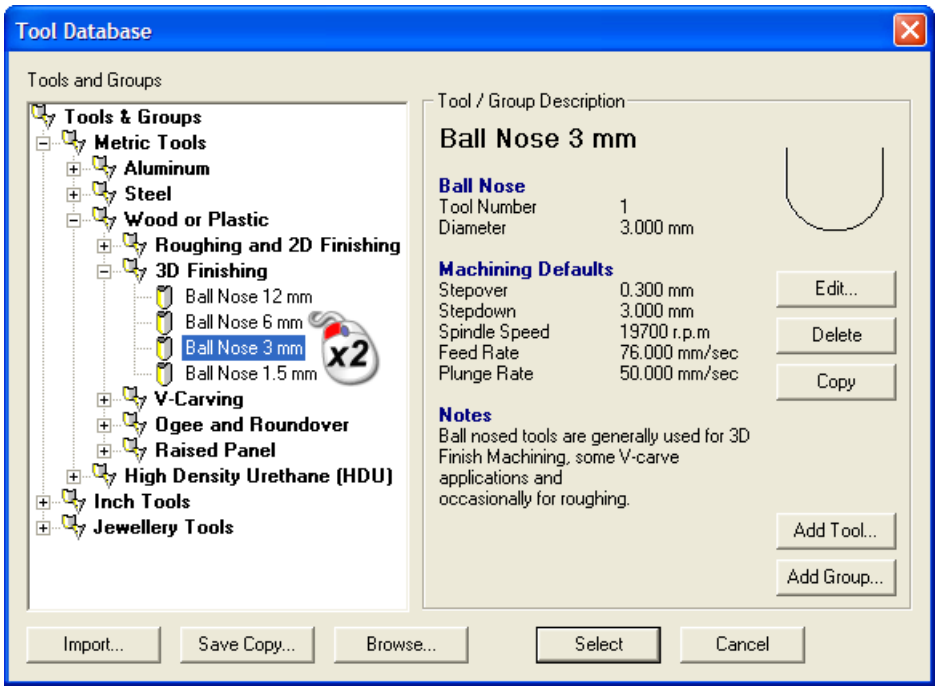


12 Click the **Preview Relief** button to hide the greyscale image of the lizard relief.

# Calculating the toolpaths

You are now ready to create and calculate two toolpaths. The first is used to machine the whole of the relief, and the second to machine only the area of the relief within the lizard relief clipart's vector boundary.

1. Press **F3** to display the **3D View** window.
2. From the **Project** panel, select **Toolpaths** in the Project Tree, and then click the **Create Machine Relief Toolpath** button displayed in the **3D Toolpaths** area below the splitter bar. The **Machine Relief** panel is displayed.
3. Make sure that **Whole Relief** is selected in the **Area to Machine** list box.
4. In the **Finishing Options** area, click the control bar to display the **Tool Database**.
5. From the **Wood or Plastic\3D Finishing** tool group, double-click the **Ball Nose 3 mm** tool:




   The **Tool Database** closes and the tool's description is displayed on the control bar.
6. Click the **Tool clearance strategy** list box, followed by the **Raster (Classic)** option.
7. Make sure that the **Angle** is set to *0*.
8. In the **Tolerance** box, type **0.01**.

9 In the **Allowance** box, type **0.1**.

10 Click the **Multiple Z Passes** control bar to display its settings.

11 Select the **Do Multiple Z Passes** check box.

12 In the **Start Z** box, type **-3**.

*This value is equal to the **Max Z** height of the material block less the **Stepdown** associated with your selected tool.*

The number of passes made between the Z height of the first and last pass is decided by the **Stepdown** associated with your selected tool.

*If you cannot see the **Stepdown** associated with your selected tool, click the control bar displaying the tool's description in the **Finishing Tool** area to show its parameters.*

13 In the **Finish Z** box, type **-45**.

14 In the **Options** area, click the second control bar down to display the **Safe Z** box and the **Home Position**'s **X**, **Y** and **Z** boxes.

15 In the **Safe Z** and **Home Position**'s **Z** box, type **10**.

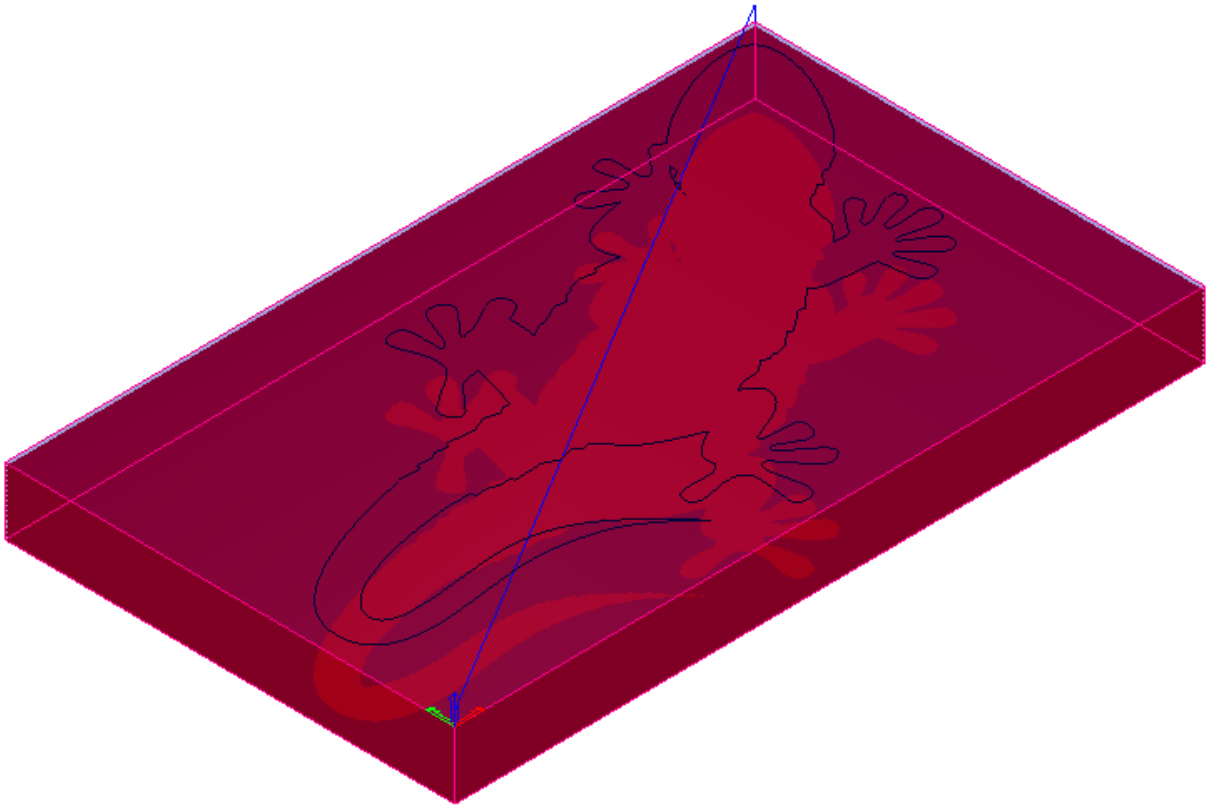
16 Click the control bar to hide the **Safe Z** box and the **Home Position**'s **X**, **Y** and **Z** boxes.

17 In the **Name** box, type **Machine Relief**.

18 Click **Calculate Now** to calculate the toolpath.

In the **Status Bar**, a progress bar is displayed during the calculation process:

In the **3D View** window, the calculated *Machine Relief* toolpath is shown as follows:

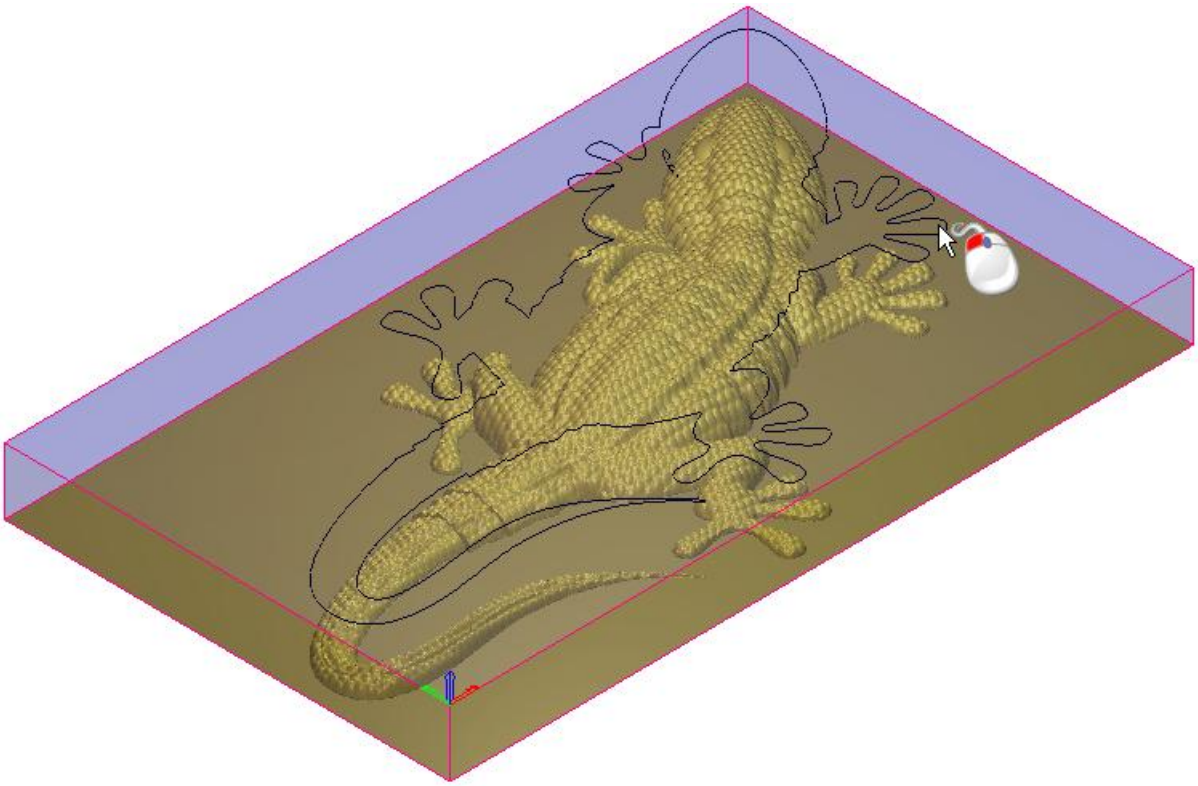


*You can use the **Zoom** button in the **3D View** toolbar to view the machining passes in more detail. After clicking the button, position the magnifying cursor over the area of the toolpath on which you want to focus, click and drag to create a bounding box surrounding the area of the toolpath, and then release the mouse button to zoom on the area within the bounding box.*

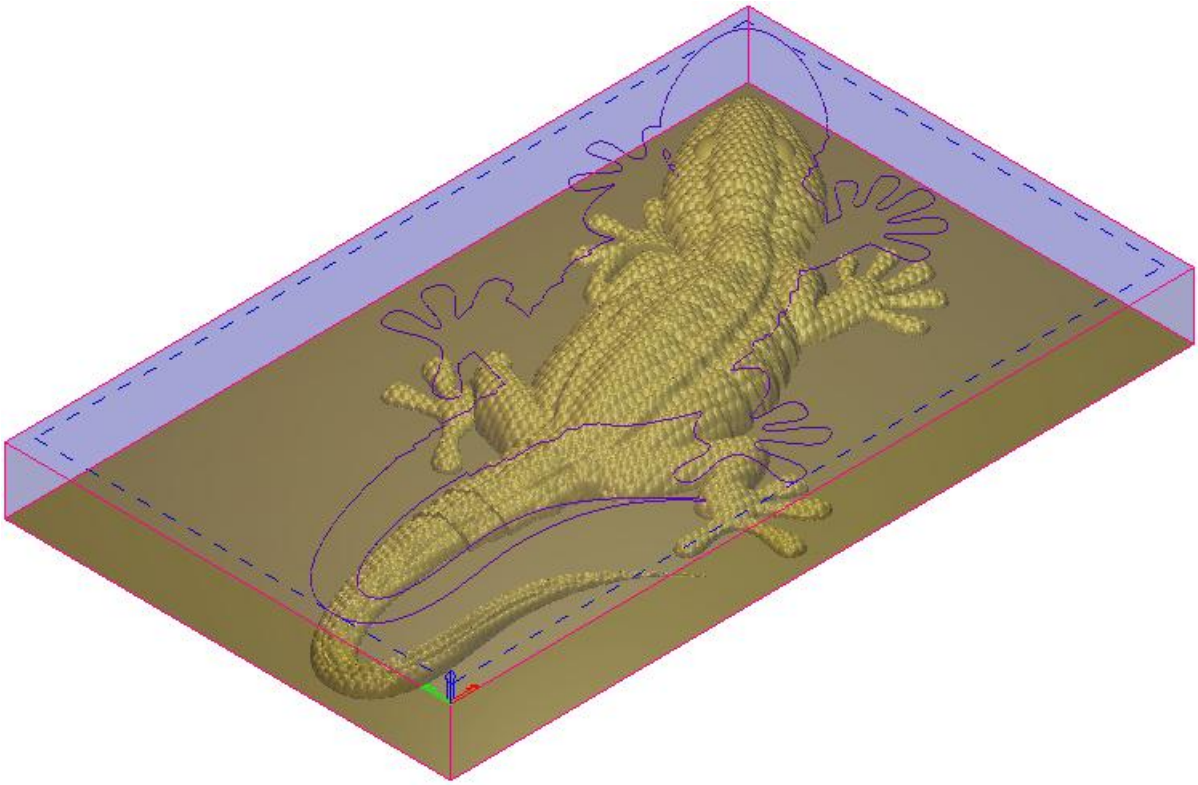
19 From the **Project** panel, click beside **Toolpaths** in the Project Tree. The calculated *Machine Relief* toolpath is now shown.

20 From the **Project** panel, click to the right of the *Machine Relief* toolpath in the Project Tree. The *Machine Relief* toolpath is hidden in the **3D View** window.

21 In the **3D View** window, select the lizard relief clipart's vector outline.



The vector is shown in purple and surrounded by a bounding box; indicating that it is both grouped and selected.



**22** On the **Machine Relief** panel, click the **Area to Machine** list box, followed by **Selected Vector**.

23 Make sure that the **Inside Vector** option is selected.

24 In the **Finishing Options** area, click the control bar to display the parameters associated with the currently selected tool.

25 From the **Wood or Plastic\3D Finishing** tool group, double-click the **Ball Nose 1.5 mm** tool. The **Tool Database** closes and the tool's description is displayed on the control bar.

26 Make sure that the:

- **Raster (Classic)** option is selected in the **Tool clearance strategy** list box.
- **Angle** is set to *0*.
- **Tolerance** is set as *0.01*.
- **Allowance** is set as *0.1*.
- **Do Multiple Z Passes** check box is selected.

27 In the **Start Z** box, type **-1.5**.

*This value is equal to the **Max Z** height of the material block less the **Stepdown** associated with your selected tool.*

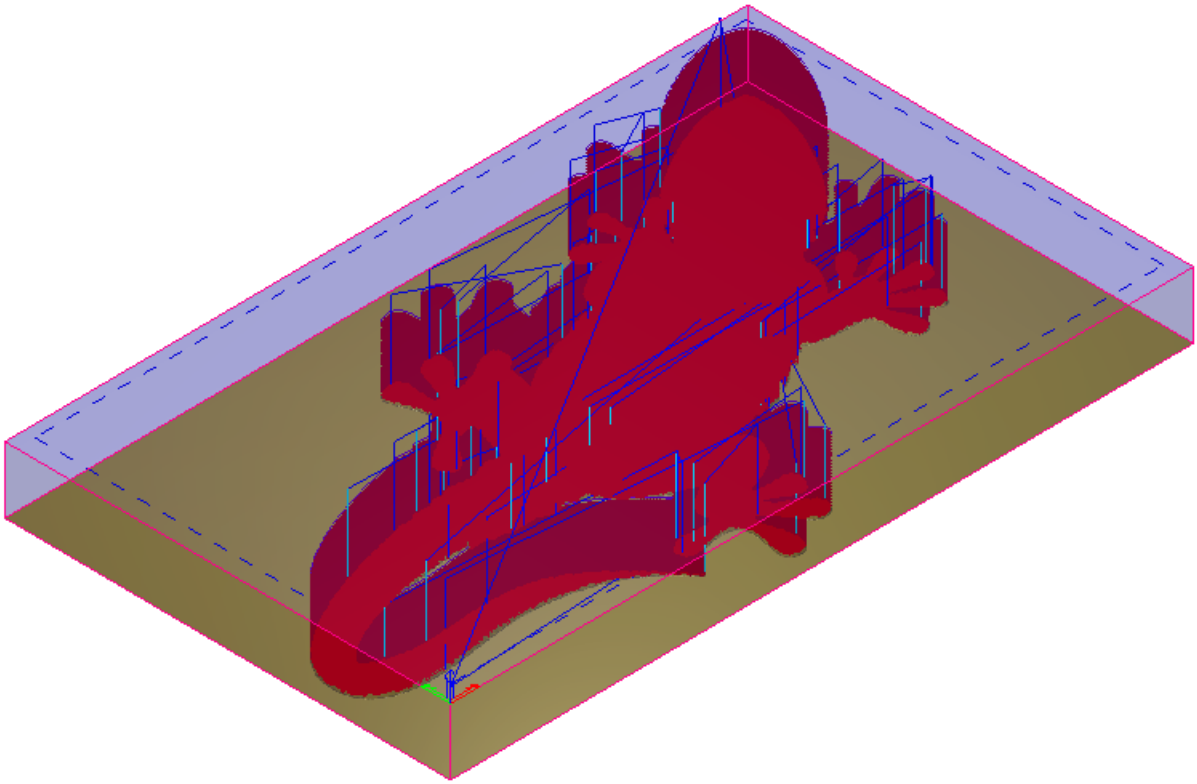
28 Make sure that:

- the **Finish Z** is set as *-45*.
- both the **Safe Z** and **Home Position**'s **Z** is set at *10*.

29 In the **Name** box, type **Machine Relief 1**.

30 Click **Calculate Now** to calculate the toolpath.

In the **3D View** window, the calculated *Machine Relief 1* toolpath is shown as follows:



*Rapid moves within the toolpath are shown in blue, while plunge moves are shown in cyan. You can toggle the display of these moves in the **3D View** window using the **Toolpaths > Toolpath Drawing > Draw Rapid and Plunge Moves** option from the **Menu Bar**.*

On the **Project** panel, the calculated *Machine Relief 1* toolpath is listed below the *Machine Relief* toolpath in the Project Tree.

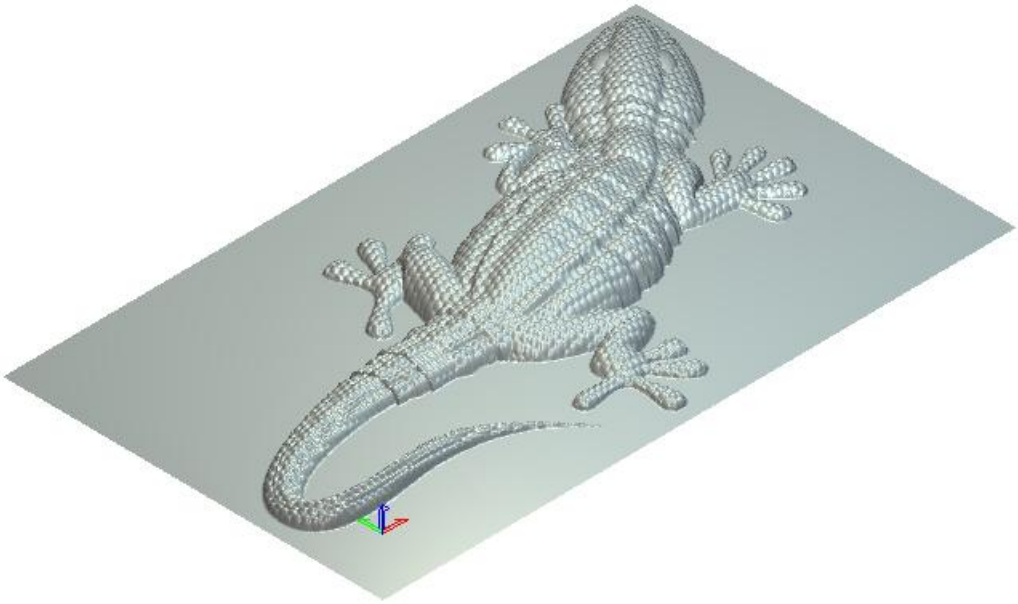
31 Click on the **Machine Relief** panel's header to close it.

# Simulating the toolpaths

You are now ready to simulate both of the calculated toolpaths, and then render the resulting toolpath simulation using a shading set.

1 From the **Project** panel, click **Toolpaths** in the Project Tree, and then click the **Simulate All Toolpaths** button displayed in the **Simulation** area below the splitter bar.

In the **3D View** window, the simulated *Machine Relief* and *Machine Relief 1* toolpaths are shown as follows:

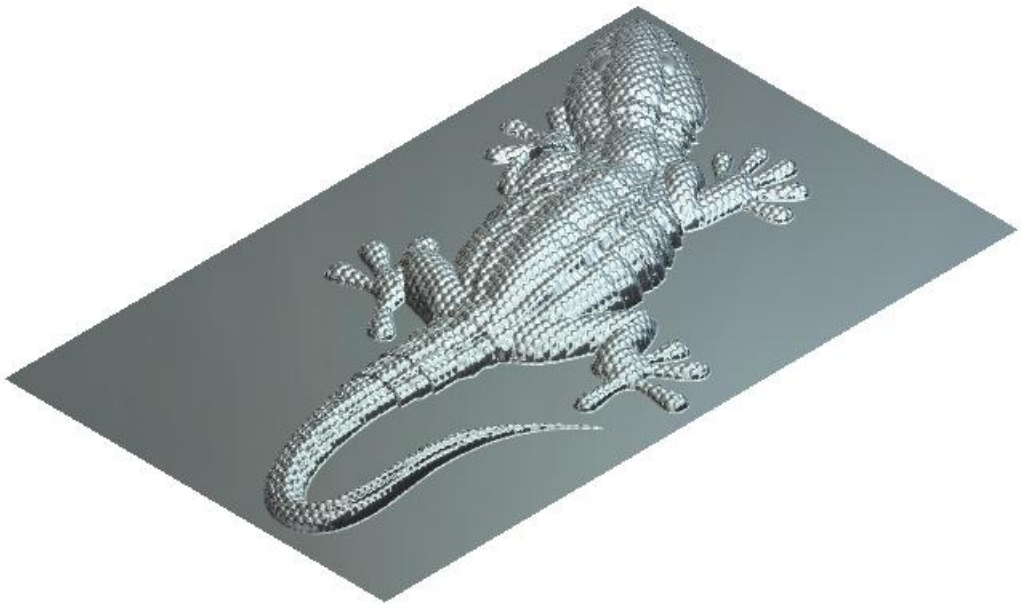


2 In the **3D View** toolbar, click the **Origin** button to hide the origin gnomon in the **3D View** window.

3 From the **Project** panel, click **Simulation** in the Project Tree.

4 In the **Rendering** area displayed below the **Project** panel's splitter bar, click the **Material** list box, followed by **Platinum**.

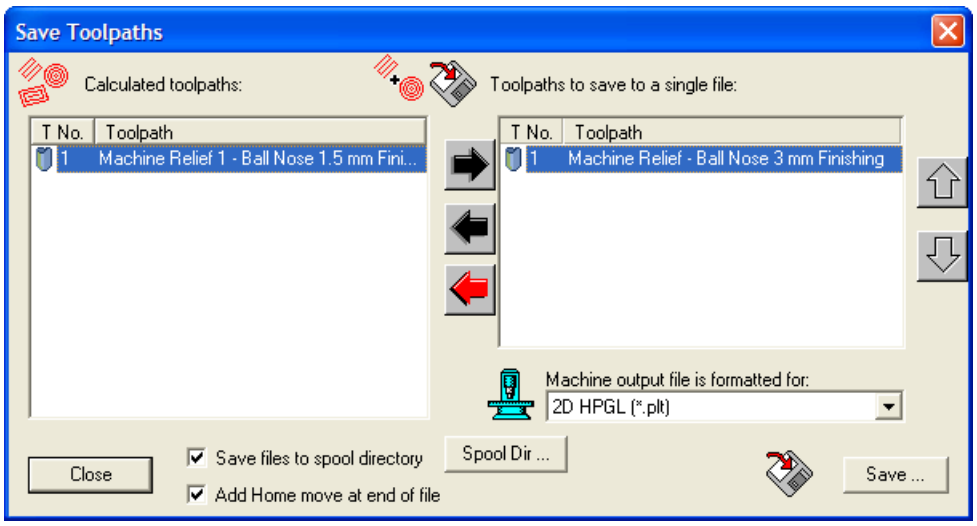
5 Click **Apply**. The toolpath simulation in the **3D View** window is rendered as if the lizard was cast in platinum:



# Saving the toolpaths

You are now ready to save your calculated toolpaths so that you can machine the lizard relief. Each of the toolpaths will be saved as separate files.

1 From the **Project** panel, select **Toolpaths** in the Project Tree, and then click the **Save Toolpaths** button in the **Toolpath Operations** area below the splitter bar. The **Save Toolpaths** dialog box is displayed:




2 Make sure that the *Machine Relief - Ball Nose 3 mm Finishing* toolpath is shown in the **Toolpaths to save to a single file** window. Its name is highlighted in blue.

3 Click the **Machine output file is formatted for** list box, followed by the machine format in which you want to save your toolpath file.

4 Click the **Save...** button to display the **Save As** dialog box.

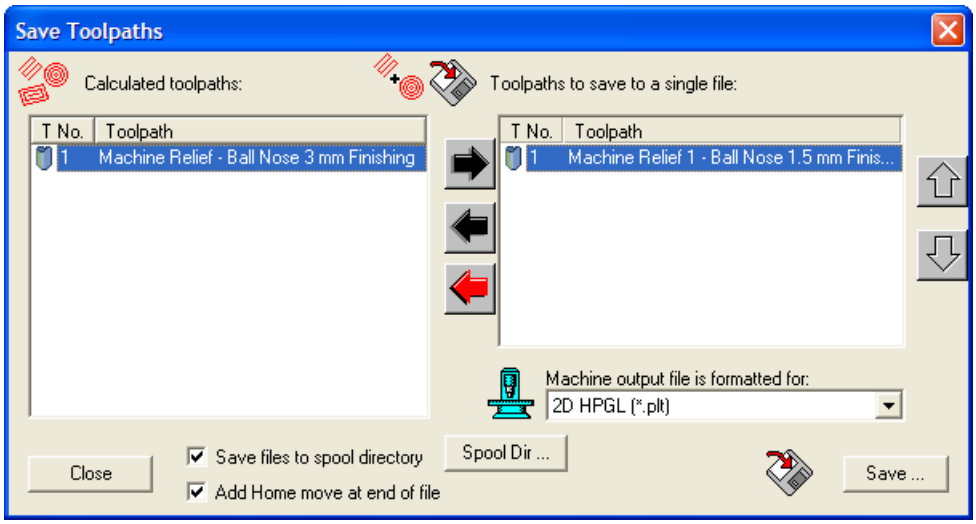
5 Click the **Save in** list box, followed by the folder on your computer in which you want to save the toolpath file.

6 In the **File name** box, type **Machine_Whole_Relief**, and then click **Save**.

7 Click to send the *Machine Relief - Ball Nose 3 mm Finishing* toolpath to the **Calculated toolpaths** window.

8 Select the *Machine Relief - Ball Nose 1.5 mm Finishing* toolpath in the **Calculated toolpaths** window. Its name is highlighted in blue.

9 Click  to send the toolpath to the **Toolpaths to save to a single file** window:




10 Click the **Save...** button to display the **Save As** dialog box.

11 Click the **Save in** list box, followed by the folder on your computer in which you want to save the toolpath file.

12 In the **File name** box, type **Machine_Lizard_Only**, and then click **Save**.

13 Click **Close** to close the **Save Toolpaths** dialog box.

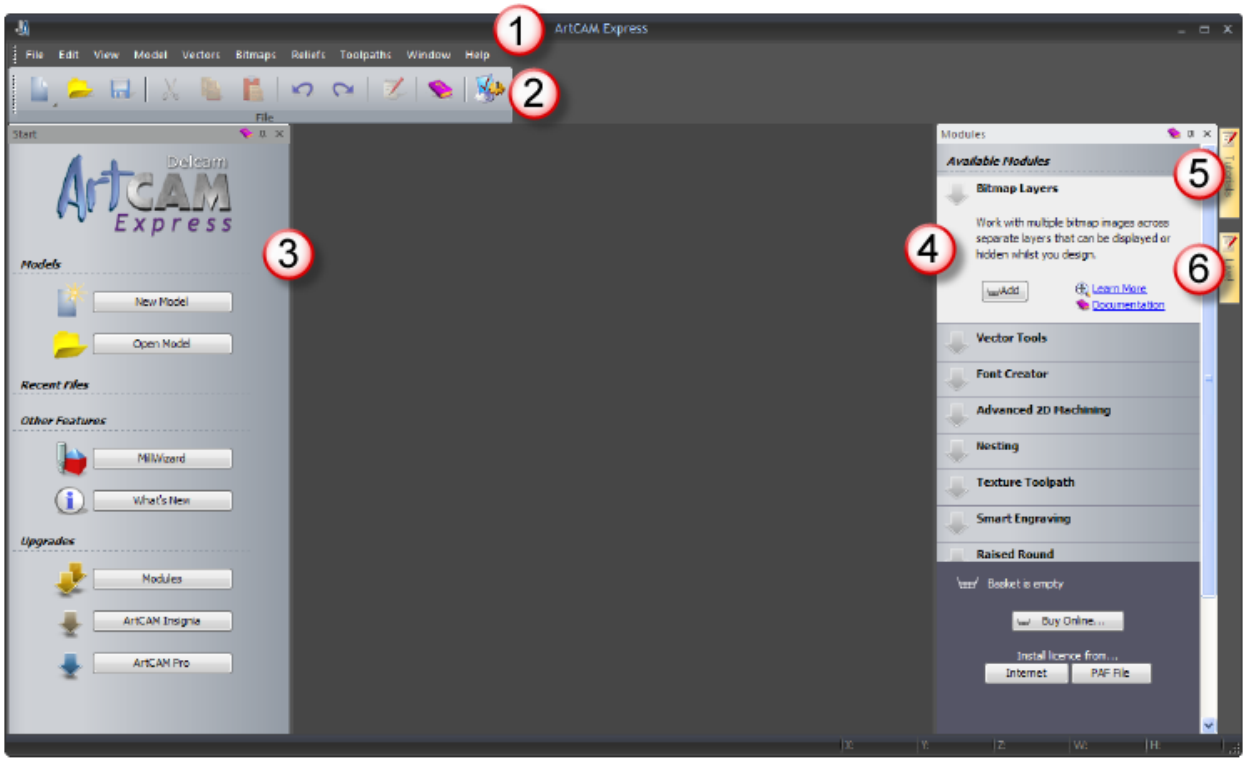
You are now ready to send the toolpath files to your CNC machine to manufacture the lizard.

# The ArtCAM Express layout

The ArtCAM Express screen layout is designed to help you work effectively and efficiently; the layout depends on whether or not you have a model open.

## *The starting layout*

When you start ArtCAM Express, the layout includes six key areas:




1. **Menu Bar** - Select a menu item associated with part of ArtCAM Express's design process to display a drop-down menu of commands. Most of these options are inactive until you open a model.

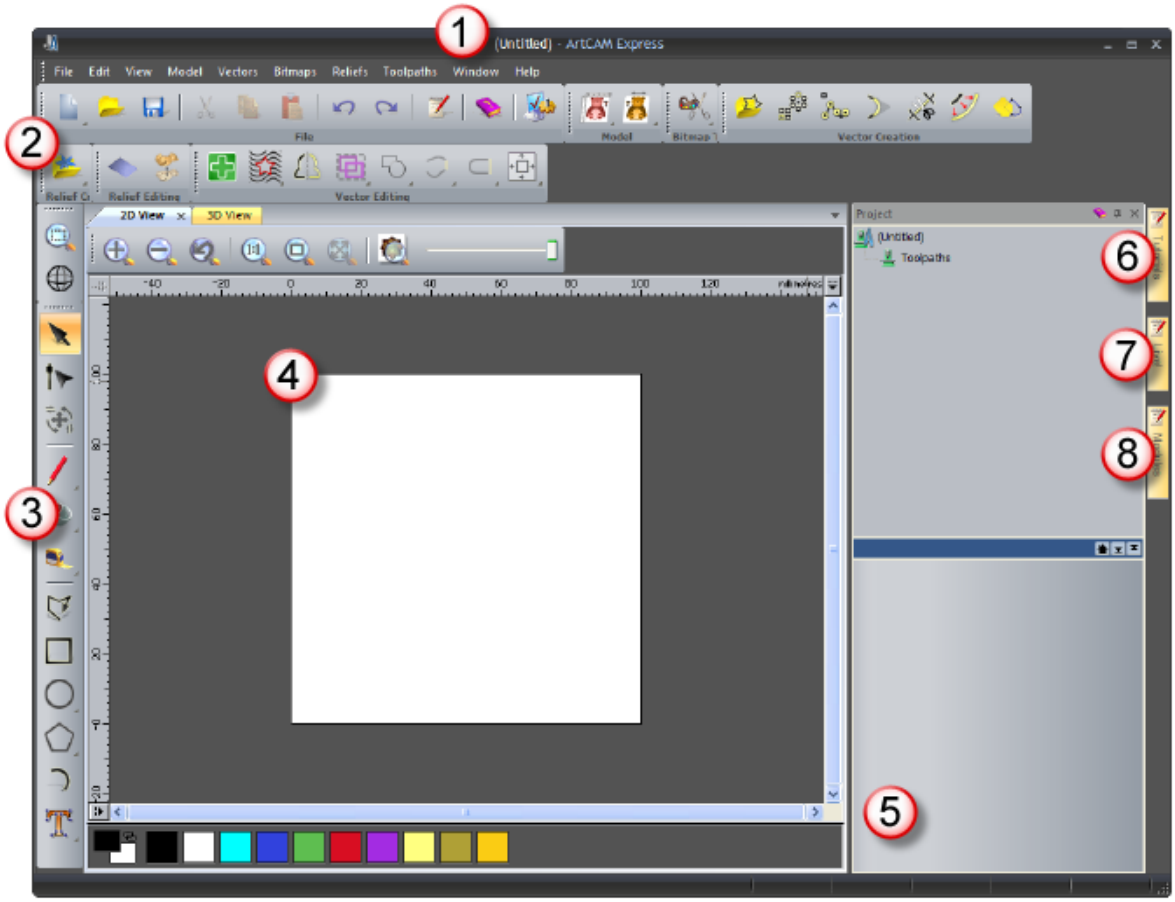
2. **Top docking area** - The **File** toolbar is docked here. This enables you to create and open models. You can also set many working preferences and display the Reference Help.
3. **Start** - This panel enables you to create and open models. Recent files are listed and can be reopened. You can also start the **MillWizard** standalone tool, display information about the new features and enhancements in ArtCAM Express, display the **Modules** panel, and upgrade to ArtCAM Insignia or Pro.

   *When a model is created or opened, the **Start** panel is hidden.*
4. **Modules** - This panel provides brief information about the modules compatible with ArtCAM Express, and enables you to purchase them.
5. **Tutorials** - This tab displays a panel that provides information on where to download tutorial packs. Tutorial packs included in your installation are listed.
6. **Live!** - This tab displays a panel that provides online training and demonstration videos.

## The open model layout

When you create a model, the layout includes eight key areas:




1. **Menu Bar** - As described previously, although more sub-menus and commands are active.

2. **Top docking area** – Contains the **File**, **Model**, **Bitmap Tools**, **Vector Creation**, **Relief Creation**, **Relief Editing** and **Vector Editing** toolbars.

   One additional toolbar is hidden by default: **Simulation**. When displayed, this is also docked.

   *Most all the toolbar tools are also available from the **Assistant** panel, which is hidden by default so to maximize the viewing area. When displayed, this panel is docked on the left.*

3. **Left docking area** - The **View Manipulation** and **Design Tools** toolbars are here. The former enables you to twiddle and zoom, while the latter contains three tool groups: Modes, Painting and Drawing. These include many of the most frequently used tools in ArtCAM Express.

4. **Viewing area** - The viewing area contains two types of tabbed windows: the **2D View** and **3D View**. These display the two-dimensional vector and bitmap artwork in your model. The **3D View** window also displays the relief, calculated toolpaths, and toolpath simulations. Each window has a toolbar and colour palette.
5. **Project** - This panel displays the Project Tree and tools associated with its items. The Project Tree maps the different elements of your model. Its items provide context menus that enable you to create models, as well as to calculate, edit, and simulate toolpaths.

   *The most frequently used tools from the **Toolpaths** panel, which is hidden by default, are available from the **Project** panel. When displayed, the **Toolpaths** panel is docked on the left.*

   Two panels are hidden by default: **Toolpaths** and **Assistant**. When displayed, each panel is docked and pinned.
6. **Tutorials** - As described previously.
7. **Live!** - As described previously.
8. **Modules** - As described previously.

# Understanding the framework

The ArtCAM Express framework comprises a:

- **Title Bar**;
- docking area on all four sides;
- viewing area; and
- **Status Bar**.

The framework:

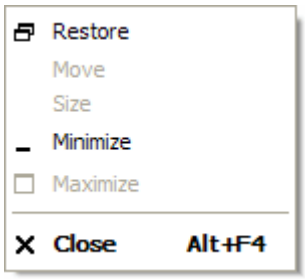
- displays information about what you are working on and where;
- controls how and where docked toolbars are positioned;
- contains a tab for each auto-hidden panel; and
- affects the size of the viewing area.

## *The Title Bar*

The **Title Bar** enables you to close or resize ArtCAM Express, and displays information about what you are working on and where.

The following is displayed along the **Title Bar**:

- a control icon , which displays the control menu;




- the name of the open model;
- the product's name;
- the active view's name, when a cascaded or tiled **2D View** or **3D View** window is maximized;
- a **Minimize** or **Maximize** button, depending on whether or not fullscreen mode is used;
- a **Restore** button; and
- a **Close** button.

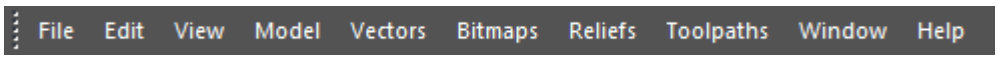
## *The docking areas*

There are four docking areas, located:

- between the **Title Bar** and viewing area;
- to the left of the viewing area;
- to the right of the viewing area; and
- between the **Status Bar** and the viewing area.

When you start ArtCAM Express, the top docking area contains the:

- **Menu Bar**, which is docked below the **Title Bar**; and




- **File** toolbar, which is docked horizontally below the **Menu Bar**.

When you create a model, the top docking area contains the:

- **Menu Bar**, which is docked below the **Title Bar**.
- **File**, **Model**, **Bitmap Tools**, **Vector Creation**, **Relief Creation**, **Relief Editing** and **Vector Editing** toolbars, which are docked below the **Menu Bar**.

**File** toolbar

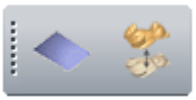
**Model** toolbar

**Bitmap Tools** toolbar

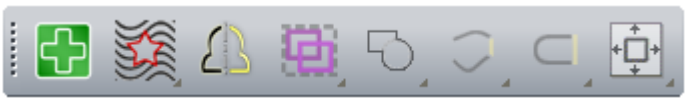
**Vector Creation** toolbar

**Relief Creation** toolbar

**Relief Editing** toolbar



**Vector Editing** toolbar



Many toolbars include toolsets, which are identified by ◢ in a button's bottom right corner. For example, the **Model** toolbar includes the toolset shown below:

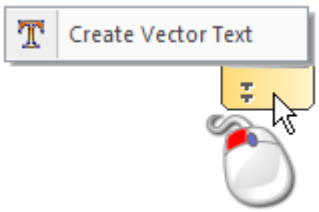
A toolset's most recently selected button is displayed in the toolbar. The other buttons are hidden.

If a complete toolbar cannot fit within a docking area:

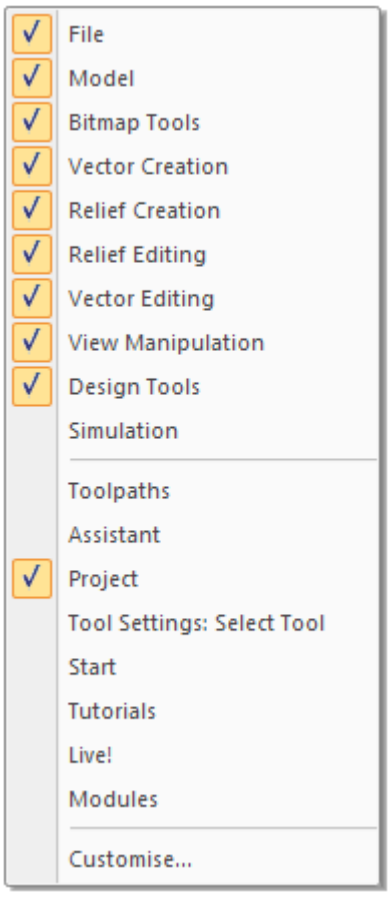
-  is displayed at the end, when the toolbar is horizontal; and
-  is displayed at the bottom, when the toolbar is vertical.

Click this to display the toolbar's other buttons as a list of options.

For example, when the **Create Vector Text** tool is not displayed in the vertical **Design Tools** toolbar, it is included in the options list:




Docking areas, toolbars and auto-hidden panels share a common context menu that you can use to control which toolbars and panels are displayed:




Pinned toolbars and panels are selected  . The top half of the context menu comprises toolbar names, and the bottom half comprises panel names.

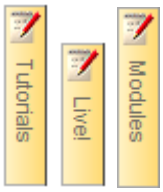
When you start ArtCAM Express, the right docking area contains the **Tutorials** and **Live!** panel tabs:


When you create or open a model, the left docking area contains:

- the **View Manipulation** toolbar:

- the **Design Tools** toolbar:

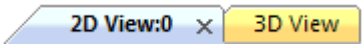
When you create or open a model, the right docking area contains the **Tutorials**, **Live!** and **Modules** panel tabs:




## The viewing area

When you start ArtCAM Express, the viewing area is empty.

When you create or open a model, the viewing area contains the **2D View** and **3D View** windows; tabbed, with the **2D View** window active:

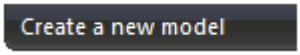



## The Status Bar

The following are displayed along the **Status Bar**:

- a tool description, when the mouse cursor is over a toolbar button or menu;

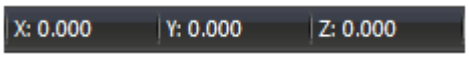
  For example, when the mouse cursor is over the **File** toolbar's **New Model**  button, *Create a new model* is displayed in the bottom left:

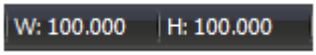
- a progress bar, typically when toolpaths are being calculated;

- the mouse cursor's XYZ coordinates, when the mouse cursor is over the **2D View** or **3D View** window;

- the bounding box's height and width, when vector artwork or toolpath previews are selected; and

- a resizing grip.

# Understanding the Project panel

The **Project** panel is the hub of ArtCAM Express, and this is why it is the only docked and pinned panel displayed when you are working with an open model.

The **Project** panel:

- is divided into two areas by a splitter bar;
- contains the Project Tree; which maps the structure of your ArtCAM model; and
- provides access to a collection of context tools.

The layout of the **Project** panel is controlled by its splitter bar, which separates the Project Tree and its context tools:

The area above the splitter bar contains the Project Tree, while the area below displays all context tools and information associated with the selected item in the Project Tree. The name of the selected item in the Project Tree is displayed on the splitter bar.

Click:

- to display the context tools and information associated with the currently selected item in the Project Tree;
- to maximize the area below the splitter bar, and hide the Project Tree;
- to maximize the area above the splitter bar, and hide the context tools and information associated with the currently selected item in the Project Tree; or
- to move the splitter bar to its previous position.

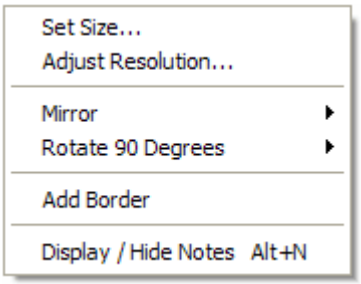
When working with a new model, the Project Tree looks as follows:


The Project Tree includes:

- , at its root. When your model is saved or imported, its name is shown here.

When selected, the model's dimensions and resolution are displayed below the splitter bar, along with the relief dimensions.

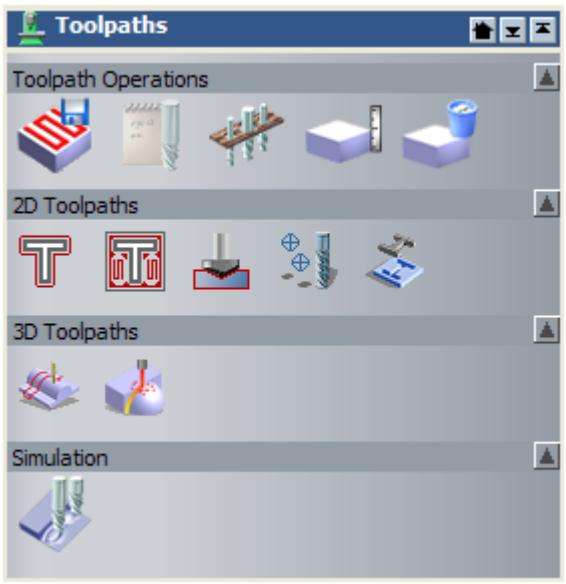
Right-click to display its context menu:



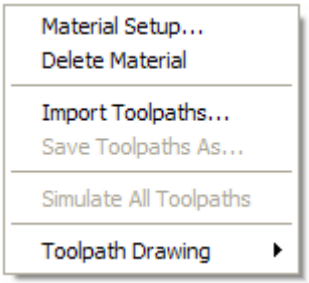

Use this to set the model's size and resolution; to mirror, rotate or add a border to the model; or to display your notes.

- **Toolpaths**, which enables you to control your calculated toolpaths, and the tools that they use.

  When this is selected, displayed below the splitter bar are tools that enable you to create 2D and 3D toolpaths, display the **Tool Database** or a toolpath summary, specify or delete the material block, and simulate all toolpaths.




Right-click **Toolpaths** to display its context menu:

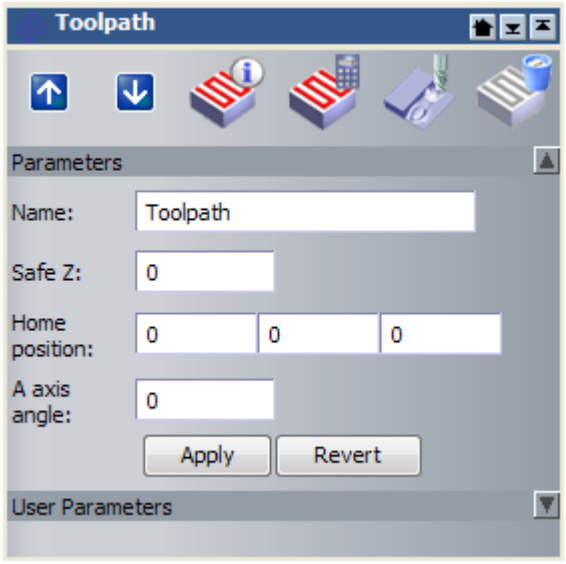


Use this to create or delete the material block, import toolpaths from another ArtCAM model, save or simulate toolpaths, and control how toolpaths are displayed.

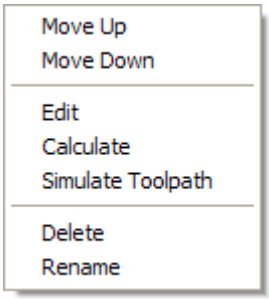
As you work in a model, other items displayed in the Project Tree include:

- for each of the toolpaths that you calculate; beside which is shown the toolpath's name.

  When this is selected, displayed below the splitter bar are tools that enable you to edit, calculate, simulate, delete or set the order of the toolpath. The toolpath's parameters are also shown.




  Right-click to display its context menu:

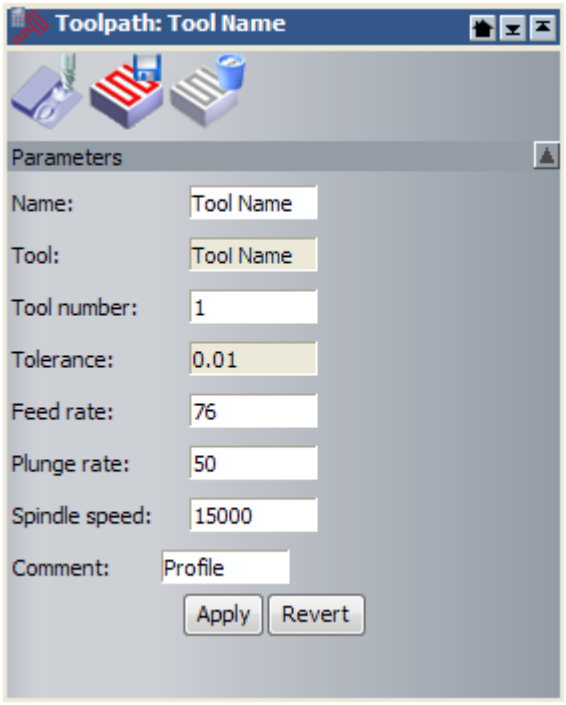



  Use this to edit, calculate, simulate, delete, rename or set the order of the toolpath.

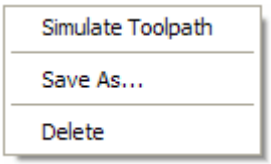
  *Double-click to display the panel of settings used to create the toolpath. You can then edit or re-calculate the toolpath.*

- for each of the tools used in your calculated toolpaths; beside which is shown the tool's name.

When this is selected, displayed below the splitter bar are tools that enable you to edit, simulate or delete the toolpath. The tool's parameters are also shown.



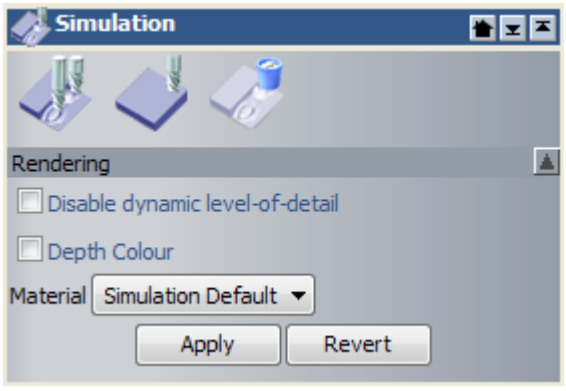

Right-click  to display its context menu:



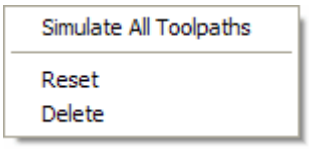

Use this to simulate, save or delete the tool passes.

-  **Simulation**, when you calculate one or more toolpaths.

  When this is selected, displayed below the splitter bar are tools that enable you to simulate all calculated toolpaths, reset or delete a simulation, adjust the level of detail used when zooming on a simulation, render with the primary colour all areas of a simulation below the simulation block's top surface, and choose the shading set used to render the simulation block.



Right-click **Simulation** to display its context menu:




You can use this to simulate all calculated toolpaths, reset or delete a simulation.

- beside **Toolpaths**. Click this to toggle the display of the wireframe toolpath preview associated with all calculated 2D toolpaths in the **2D View** window.
- beside **Toolpaths**. Click this to toggle the display of all calculated toolpaths in the **3D View** window.
- beside each calculated 2D toolpath. Click this to toggle the display of the wireframe toolpath preview in the **2D View** window.
- beside each calculated toolpath. Click this to toggle the display of the toolpath in the **3D View** window.
- beside **Toolpaths** when all wireframe toolpath previews associated with all calculated 2D toolpaths are hidden in the **2D View** window.
- beside **Toolpaths** when the **2D View** window contains both hidden and displayed toolpaths.
- beside **Toolpaths** when all calculated toolpaths are hidden in the **3D View** window.
- beside **Toolpaths** when the **3D View** window contains both hidden and displayed toolpaths.
- beside each calculated 2D toolpath. Click this to toggle the display of the wireframe toolpath preview in the **2D View** window.
- beside a calculated 2D toolpath when its wireframe toolpath preview is hidden in the **2D View** window.

When working in the Project Tree, the name of:

- the currently selected item is highlighted and displayed on the splitter bar.
- each active item is displayed in bold text.
- a calculated toolpath is displayed in black text.
- an uncalculated toolpath is displayed in red text.
- an unlicensed toolpath is displayed in orange text.

# Understanding the Tool Settings panel

The **Tool Settings** panel is one of the most important panels, particularly when creating bitmap and vector artwork. The panel is automatically displayed when you select a tool that includes settings accessed through it.

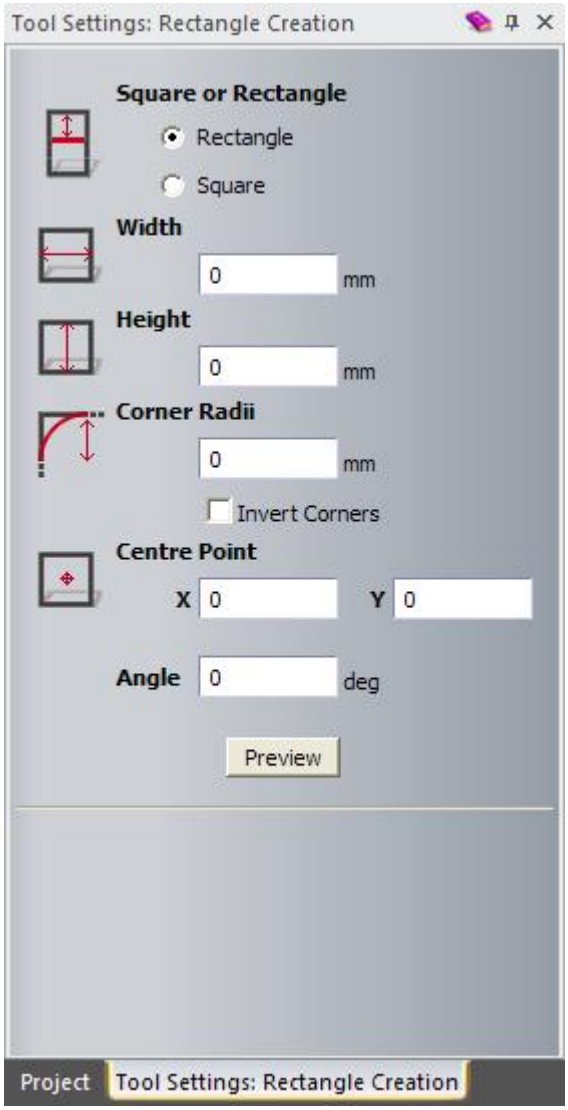
When displayed, the **Tool Settings** panel:

- is docked, pinned and embedded in the same container as the **Project** panel; it is tabbed.
- displays the name of your selected tool on its header and tab.
- contains the settings associated with your selected tool.

Tools that require direct interaction with the **2D View** or **3D View** windows display settings on the **Tool Settings** panel. This includes the following tools:

| Tool Category | Tools |
|---|---|
| Design Tools | Select, Node Editing, Transform, Draw Tool, Paint Tool, Measure Tool, Create Polyline, Create Rectangles, Create Circles, Create Ellipse, Create Polygons, Create Stars, Create Arcs, Create Vector Text, and Wrap text round a curve. |
| Vector Creation | Fillet Vectors and Trim Vectors. |

For example, with the **Create Rectangle** tool selected, the panel looks as follows:




When the **Tool Settings** panel is already displayed and you select:

- a tool that displays a dialog box or its own floating panel of settings, the panel stays displayed. The panel shows the settings associated with the last selected tool to make use of it. This enables you to work with different combinations of tools at the same time. For example, **Create Rectangle** and **Adjust Model Resolution**.
- a tool that does not have any associated settings, the panel is automatically hidden. For example, **Flood Fill**.
- the **Select** tool, the panel is automatically hidden.

To toggle the display of the **Tool Settings** panel, use one of the following methods:

- Press the **F6** key.
- From the **Menu Bar**, click **Window > Display Tool Settings**.

- From the **Menu Bar**, click **Window > Toolbars and Docking Windows > Tool Settings**.

If you dock and auto-hide the **Tool Settings** panel anywhere in the ArtCAM Express framework, the panel is tabbed. When you select a tool that includes settings accessed through the **Tool Settings** panel, its tab flashes dark orange three times. For example, when selecting the **Create Rectangle** tool, the **Tool Settings** panel's tab flashes between the following:


If you move the **Tool Settings** panel into a floating position and then hide it, the panel is automatically displayed in its last position when you select a tool that includes settings accessed through it. It stays displayed until you:

- click  on the panel's header;
- choose the **Select** tool after using any other tool that makes use of the panel;
- choose another tool that does not include settings accessed through the panel;
- press the **Esc** key after using any other tool that makes use of the panel;
- press the **F6** key;
- deselect **Window > Display Tool Settings** from the **Menu Bar**; or
- deselect **Window > Toolbars and Docking Windows > Tool Settings** from the **Menu Bar**.

# Extending ArtCAM Express

The **Modules** panel provides brief information about the modules compatible with ArtCAM Express, and enables you to purchase them. Modules offer a more versatile way of working, and increase your choice of machining methods.

On starting ArtCAM Express, and when no model is open, the **Modules** panel is docked and pinned on the right.

When you create or open a model, the **Modules** panel is auto-hidden. The space previously occupied by the **Modules** panel is then used by the viewing area.

Use one of the following methods to display the **Modules** panel:

- Move the mouse cursor over the **Modules** tab in the docking area to the right of the viewing area:


- Right-click a docking area, and then click to select **Modules** in the context menu.
- From the **Menu Bar**, click **Window > Toolbars and Docking Windows > Modules**.
- From the **Menu Bar**, click **Help > Modules**.
- From the **Start** panel, click **Modules** in the **Upgrades** area.

*By default, the **Start** panel is displayed only when no model is open.*

The **Modules** panel includes:

- a list of modules already installed;
- a list of modules available to purchase;
- a shopping basket to purchase modules (see page 63).
- tools to activate purchased modules (see page 73).

The ten available modules are:

- **Advanced 2D Machining** This enables you to apply several machining enhancements to new or previously calculated toolpaths that include one or more profile passes. These enhancements help deliver a better finish in your machined pieces and reduce wear on your cutting tools.
- **Nesting** This enables you to fit vector text and shapes within a defined area; helping you to make economical use of your material, and to increase the efficiency of the toolpaths used to machine your pieces.

  *The **Nesting** module includes all of the functionality associated with the **Advanced 2D Machining** module. If you have the **Nesting** module installed, the **Advanced 2D Machining** module is moved from your list of available modules to your list of installed modules.*
- **Vector Tools** This enables you to work with several different pieces of vector artwork in a single ArtCAM model. It also provides further flexibility when editing vector artwork, and in converting vector artwork to bitmap artwork.
- **Bitmap Layers** This enables you to work with several different images in a single ArtCAM model. These can be converted into vector artwork, or used to shade all or part of the relief.
- **Smart Engraving** This enables you to create a toolpath that engraves within or around the boundary of vector text or a selection of vectors.
- **Raised Round** This enables you to create a toolpath that produces precise recessed letters and shapes using vector text or a selection of vectors.
- **Feature Machining** This enables you to create a toolpath that machines raised, recessed, or centreline-engraved features created from vector artwork.
- **File Import** This enables you to import a greater variety of 3D surface model files. These can be imported into an ArtCAM model and combined with your relief.

- **Texture Toolpath** This enables you to create a toolpath that machines a texture across the whole surface, or a specific area, of your ArtCAM model using only a tool's geometry and machining parameters.
- **Font Creator** This enables you to create your own fonts, or modify the collection of fonts already installed on your computer.

# Purchasing modules

To purchase one or more modules:

1 Use one of the following methods to display the **Modules** panel:

- Move the mouse cursor over the **Modules** tab in the right docking area:

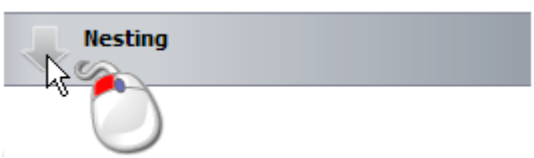

- Right-click a docking area, and then click to select **Modules** in the context menu.
- From the **Menu Bar**, click **Window > Toolbars and Docking Windows > Modules**.
- From the **Menu Bar**, click **Help > Modules**.
- From the **Start** panel, click **Modules** in the **Other Features** area.

*By default, the **Start** panel is displayed only when no model is open.*

If you already have one or more modules installed, these are listed in the **Installed Modules** area. If you have no modules installed, the **Installed Modules** area is not shown.

2 In the **Available Modules** area, click the name of the module that you want to buy.

For example, **Nesting**:




A brief description of the module is displayed, along with:

- an **Add** button. This adds the module to your shopping basket.

- a **Learn More** link. This opens a new browser window containing information about the module.
- a **Documentation** link. This opens a help file containing information about the module, and how it is used.

3 Use one of the following methods to add a module to your shopping basket:

- Click **Add**.
- Double-click the grey area containing the module's name. For example, **Nesting**:


When the first module is added to your shopping basket:

- its module area is shaded green.
- the **Remove** button replaces the **Add** button.
- the shopping basket icon changes from  to  .
- the shopping basket status changes from *Basket is empty* to *Selected Modules: 1*.

For each additional module that you add to the shopping basket:

- its module area is shaded green.
- the *Selected Modules* count increases by one. For example, with the **Nesting** and **Vector Tools** modules in the shopping basket, *Selected Modules: 2* is displayed.

4 Use one of the following methods to remove a module from your shopping basket:

- Click **Remove**.
- Double-click the green area containing the module's name. For example, **Nesting**:


For each module you remove from the shopping basket:

- its module area is shaded grey.
- the *Selected Modules* count decreases by one.

When all modules have been removed from your shopping basket, *Basket is empty* is displayed.

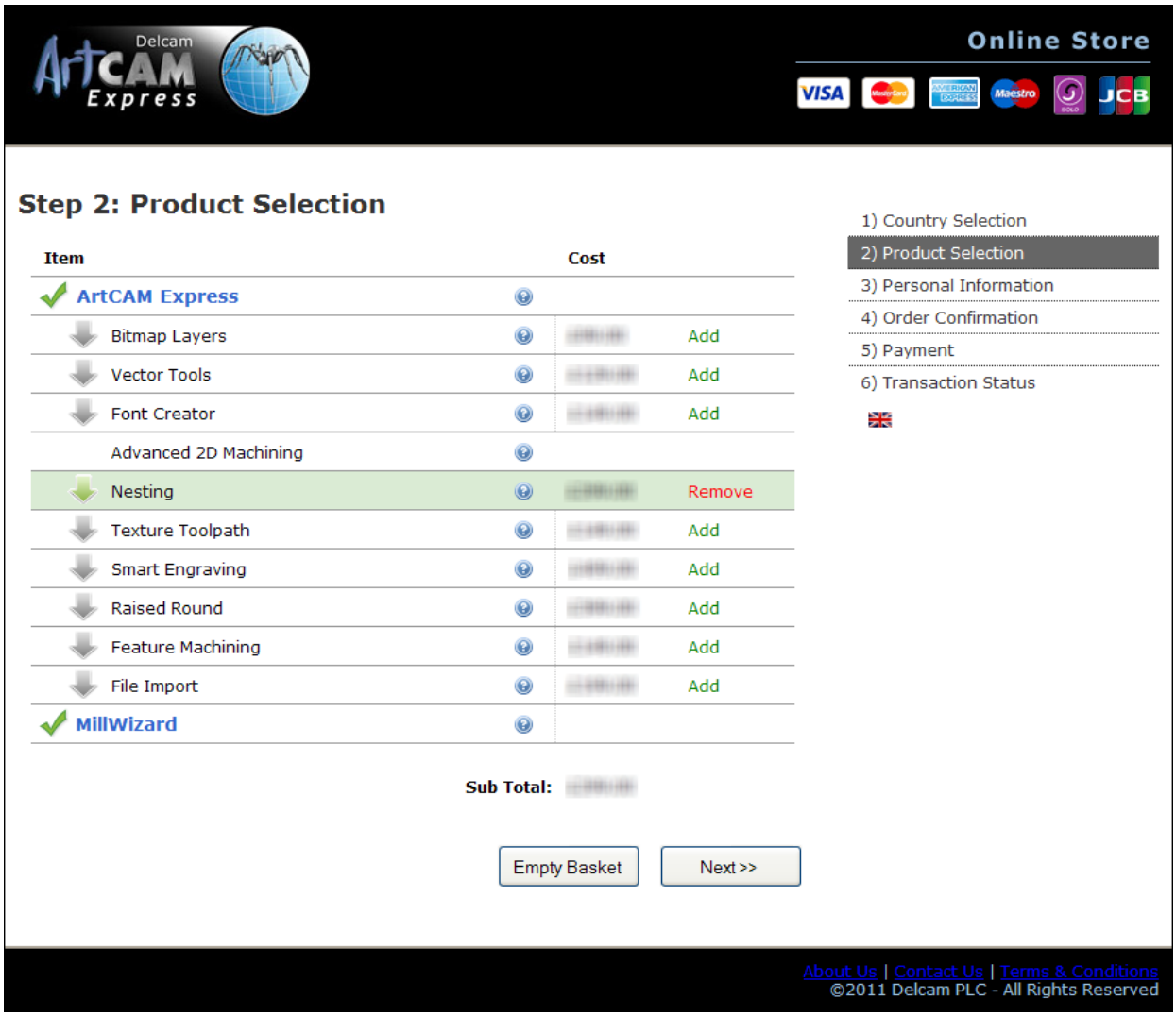
5 Check that only the modules you want to purchase are included in your shopping basket, and then click **Buy Online**. The **ArtCAM Online Store** website is opened in a new browser window.

If you are not registered as a Delcam customer, the **Country Selection** page is displayed:


a Click the **Country** list box, and then select the country that corresponds to your billing address. For example, **United Kingdom**. This ensures your items are priced in the correct currency.

b Click **Next**. The **Product Selection** page is displayed.

If you are a registered Delcam customer, the **Product Selection** page is displayed:




For each of the modules already included in your shopping basket:

- its name is shaded in green. For example, **Nesting**.

- its price is displayed.
- the **Remove** option is displayed.

The cost of your selected modules, before any applicable taxes, is also shown.

6 Click:

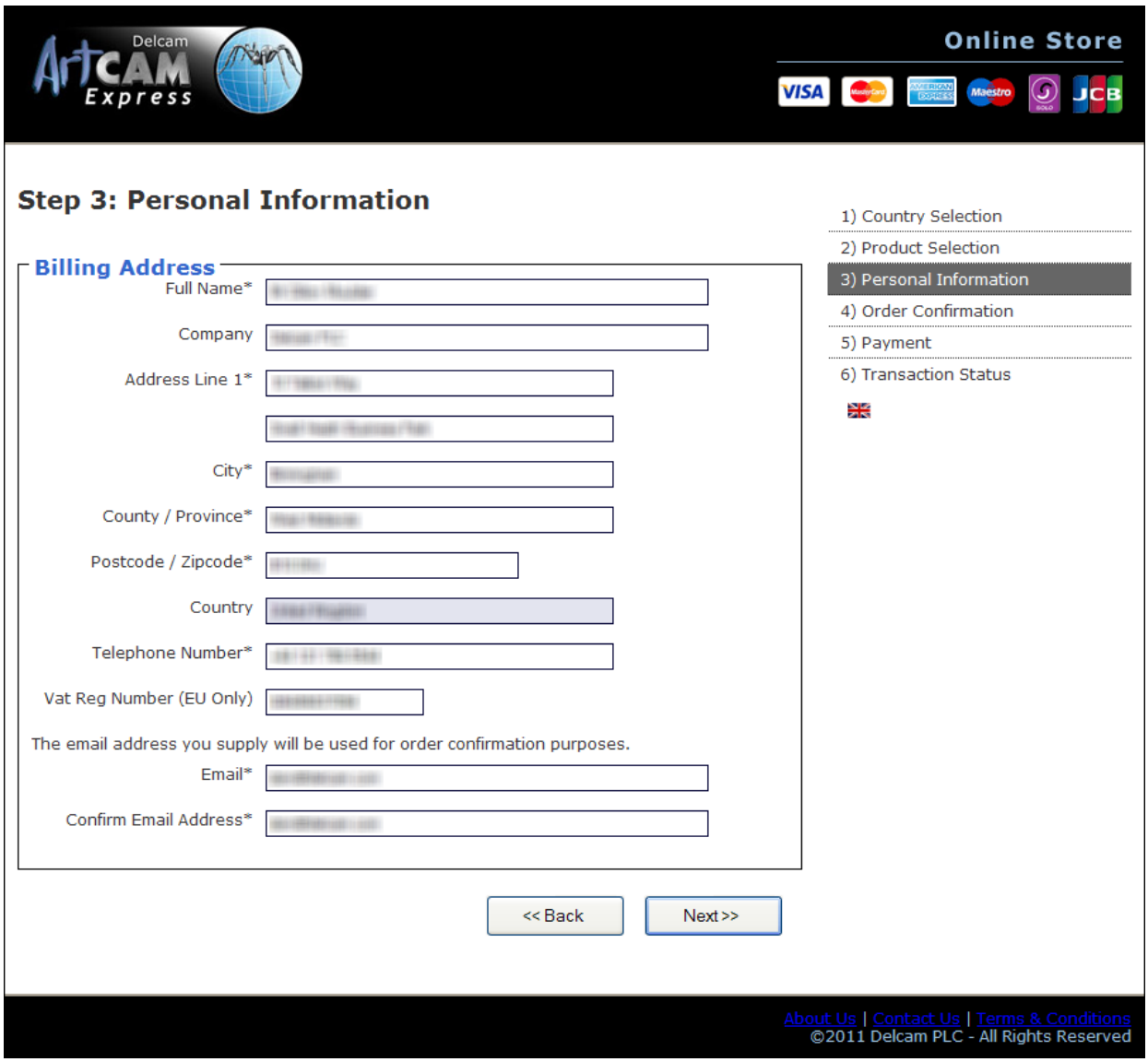
- to open a new window displaying information about the module. Click ✖ to close this window.

- **Add** to add a module to your shopping basket. The **Sub Total** is updated, the module's name is shaded green, and **Remove** replaces **Add**.

  *When you select the **Nesting** module, the **Advanced 2D Machining** module cannot be selected. The **Nesting** module includes all of the features in the **Advanced 2D Machining** module, and more.*

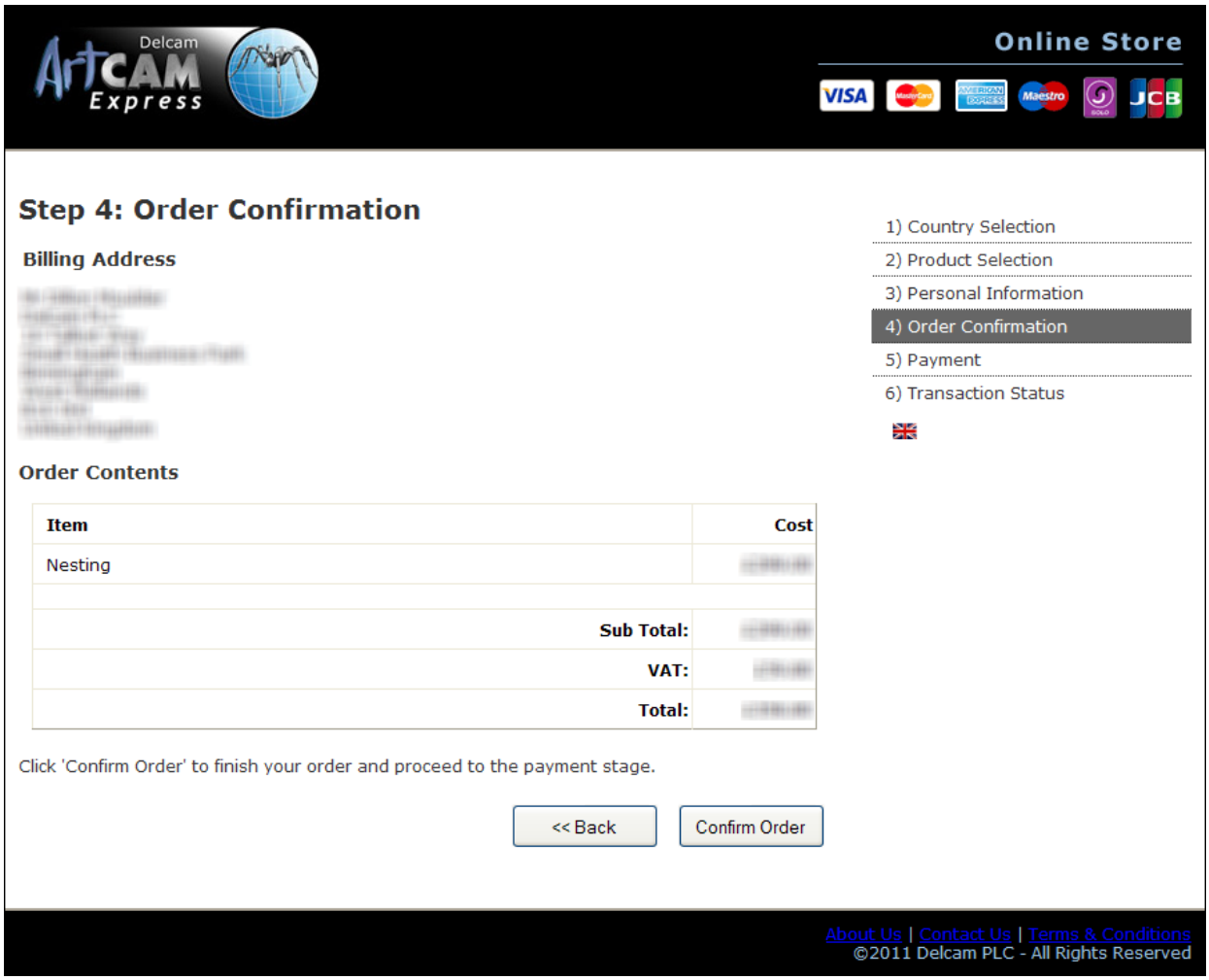
- **Remove** to remove a module from your shopping basket. The **Sub Total** is updated, the module's name is no longer shaded, and **Add** replaces **Remove**.
- **Empty Basket** to empty your shopping basket. The **Sub Total** is reset. The **Next** button is greyed-out until at least one module is in your shopping basket.

7 Click **Next**. The **Personal Information** page is displayed:



8. To change the contents of your shopping basket, click **Back** and then repeat the last two steps.
9. Enter and review your billing information, including your address EU VAT registration number (if applicable), and email address.
   a. In the **Full Name** box, type your first name (given name) and second name (family name).
   b. In the **Company** box, type your organization's name (if applicable).
   c. In the **Address Line 1** box, type your house number and street name, or your post office (P.O.) box number.
   d. In the **City** box, type the name of the city that corresponds with your billing address.
   e. Click the **County / Province** list box, followed by your county, state or province.
   f. In the **Postcode / Zipcode** box, type your postal or zip code.
   g. In the **Telephone Number** box, type your preferred contact number.
   h. If you are an EU VAT registered customer, type your ISO Country Code followed by your VAT number in the **VAT Reg Number** box. For example, GB 123456789.
   i. In the **Email** box, type your email address. Your purchase invoice and updated PAF licence file are sent separately to this email address.
   j. In the **Confirm Email Address** box, type the same email address displayed in the **Email** box.

10 Click **Next**. The **Order Confirmation** page is displayed:

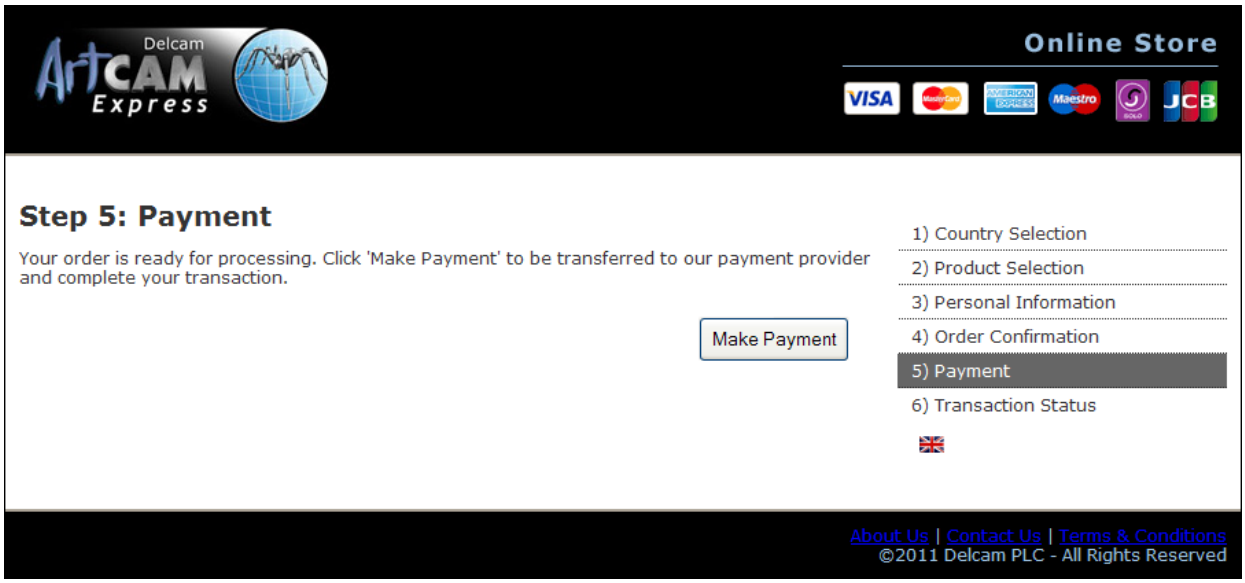



This shows:

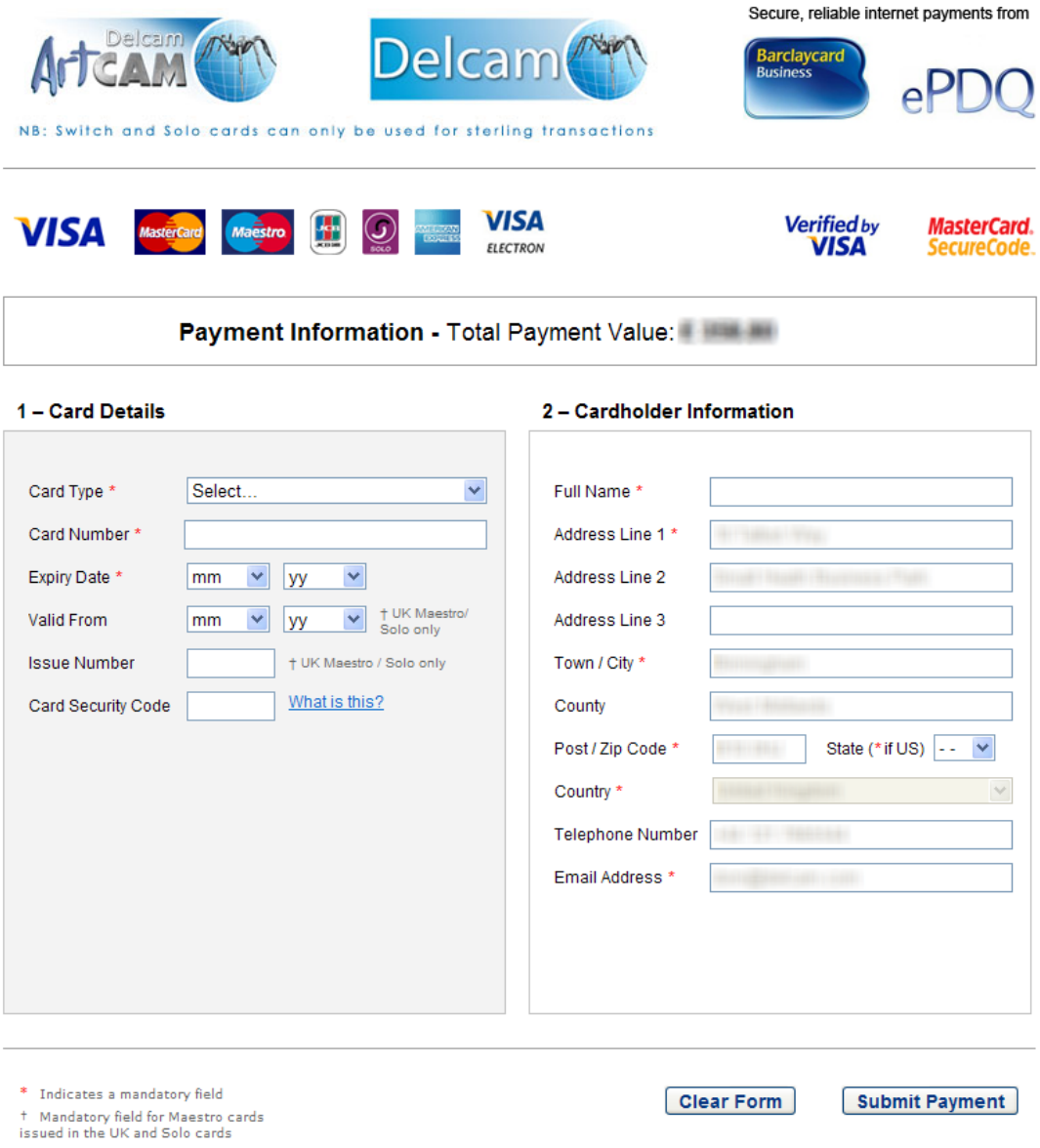
- your billing address.
- the modules included in your shopping basket.
- the price of each module in your shopping basket.
- the combined cost of your chosen modules, before any applicable taxes.
- the cost of all applicable taxes (for example, VAT if you are an EU customer).
- the total cost.

11 If there are any mistakes in your billing address, click **Back** and then repeat the last two steps.

12 Click **Confirm Order**. The **Payment** page is displayed:



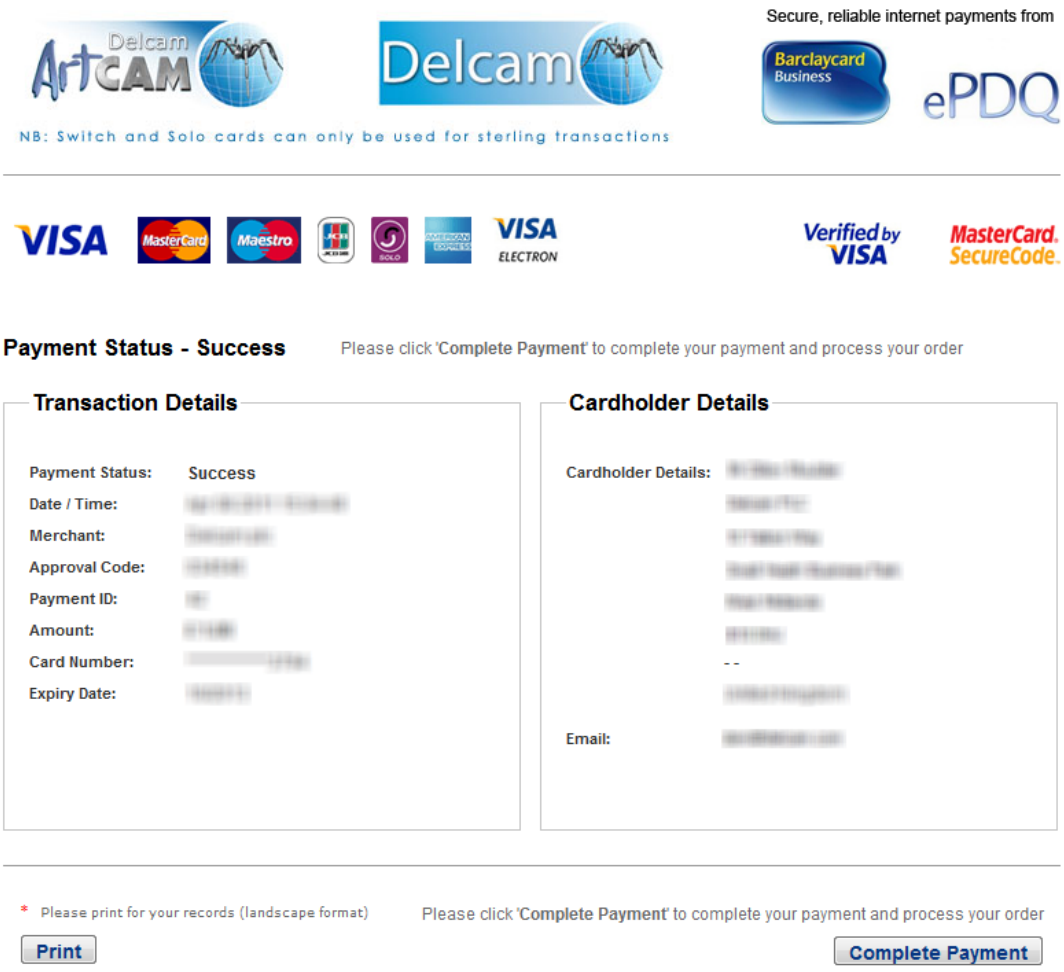

13 Click **Make Payment**. The payment provider page is displayed:




14 In the **Card Details** area, enter and review your payment card details.

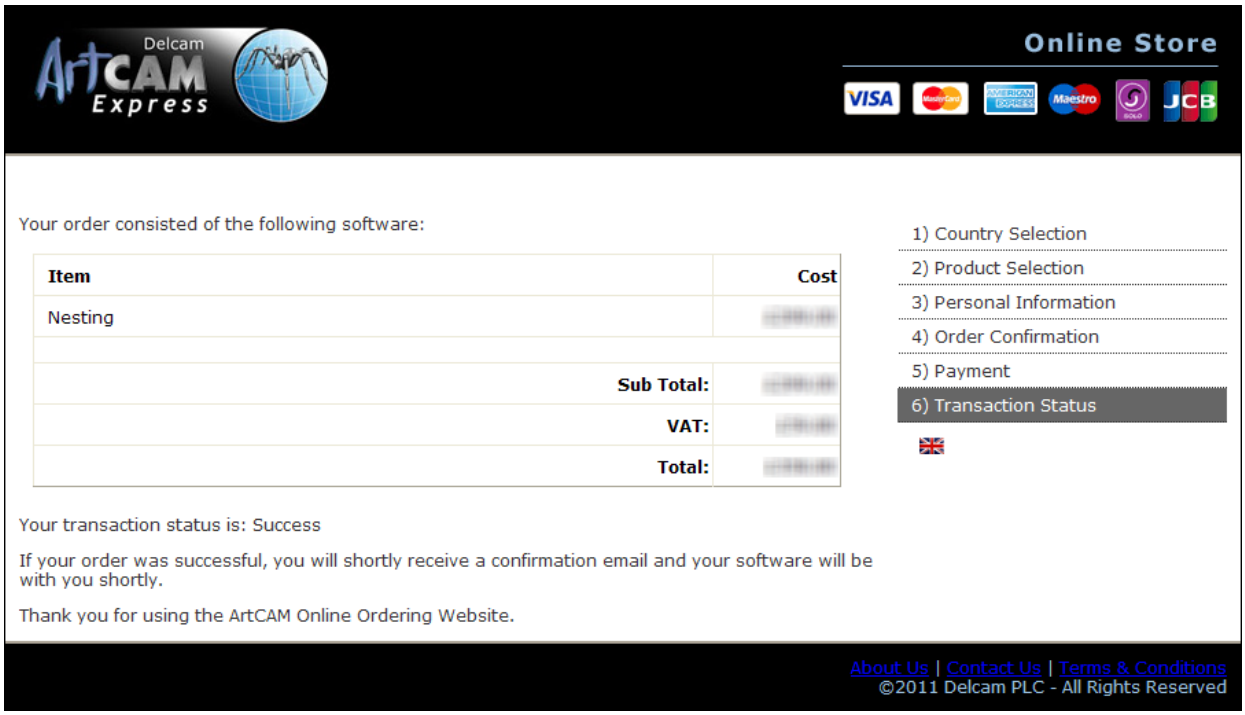
15 In the **Cardholder Information** area's **Full Name** box, type your name as it is displayed on your payment card.

16 Review your cardholder information, and then click **Submit Payment**. The **Payment Status** page is displayed:




17 Click:

- **Print** to print a copy of your payment information.
- **Complete Payment** to complete payment and process your order. The **Transaction Status** page is displayed:




# Activating a module

When you have purchased a new ArtCAM Express module from the online store, you are:

- sent an email confirming your purchase.
- issued a new PAF licence file (***.paf**).

Before you can use the module, you must activate it using your new PAF licence file.

To activate a new module:

1. Use one of the following methods to display the **Modules** panel:
   - Move the mouse cursor over the **Modules** tab in the right docking area:

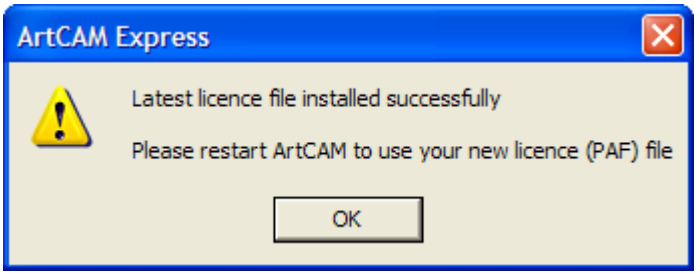

   - Right-click a docking area, and then click to select **Modules** in the context menu; or
   - From the **Menu Bar**, click **Window > Toolbars and Docking Windows > Modules**.

- From the **Menu Bar**, click **Help > Modules**.
- From the **Start** panel, click **Modules** in the **Upgrades** area.

  *By default, the **Start** panel is displayed only when there is no model open.*

2 In the **Install licence from** area, click:

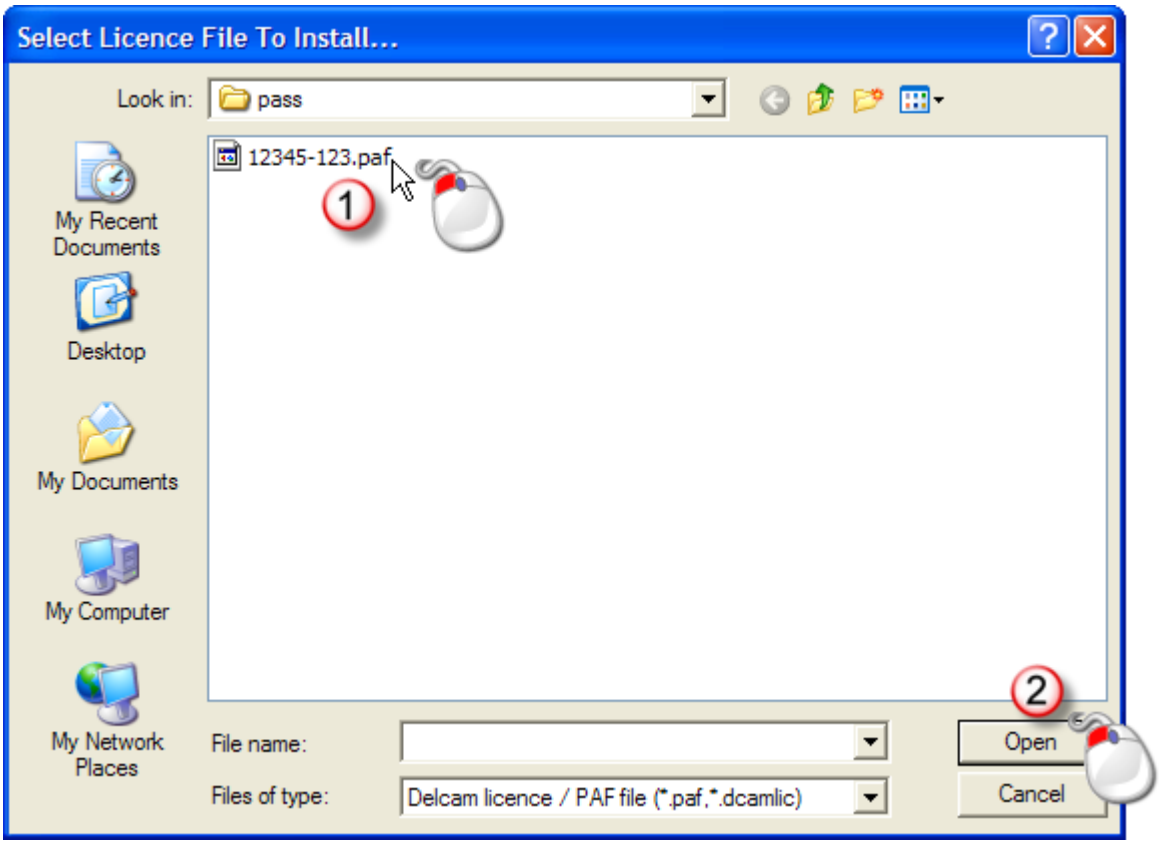
- **Internet** if you have an internet connection. A message box is displayed confirming that your licence file has been installed:




  Click **OK** to close the message box.

- **PAF File** if you cannot connect to the internet, but have the PAF file sent to the email address specified during your module purchase. The **Select Licence File To Install** dialog box is displayed.

  Select the PAF file (***.paf**), and then click **Open**:



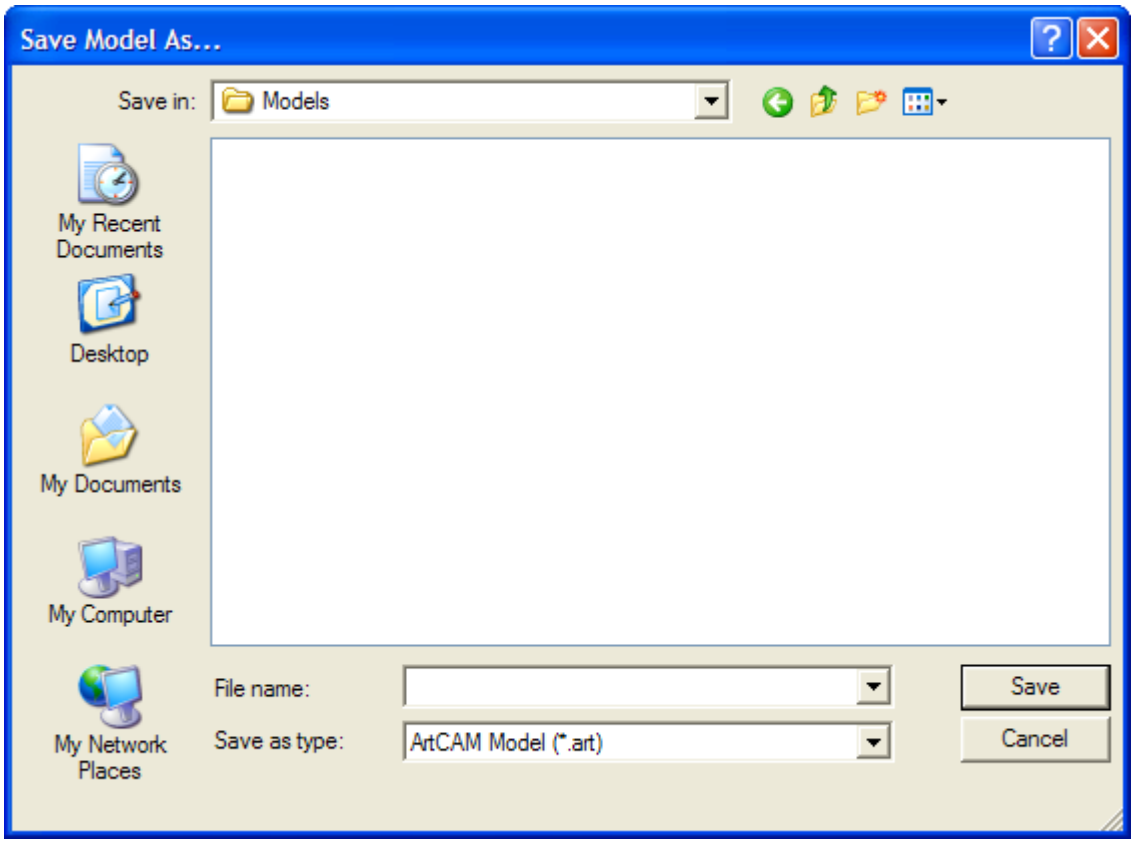
A message box is displayed confirming that your licence file has been installed. Click **OK** to close the message box.

3 Restart ArtCAM Express:

a From the **Menu Bar**, click **File > Exit**. If a model is open, a message box is displayed asking if you would like to save it.

If you click **Yes** and you:

- have previously saved the model, your changes are saved; overwriting the previous model file (***.art**).
- are saving the model for the first time, the **Save Model As** dialog box is displayed:




In the **File name** box, type the name that you want to give to the model.

Click **Save** to save the model, close the dialog box and shut down ArtCAM Express.

b Click **Start > All Programs > ArtCAM 2011 > ArtCAM 2011**.