

Getting Started With VCarvePro



Tutorial - Intermediate Level
Importing 3D Toolpaths

Vectric

VCarve Pro

Disclaimer

All CNC machines (routing, engraving, and milling) are potentially dangerous and because Vectric Ltd has no control over how the software described in this manual might be used. Vectric Ltd or any associated Resellers cannot accept responsibility for any loss or damage to the work piece, machine or any individual, howsoever caused by misusing the software. Extreme care should always be taken and the output from the software thoroughly checked before sending it to a CNC machine.

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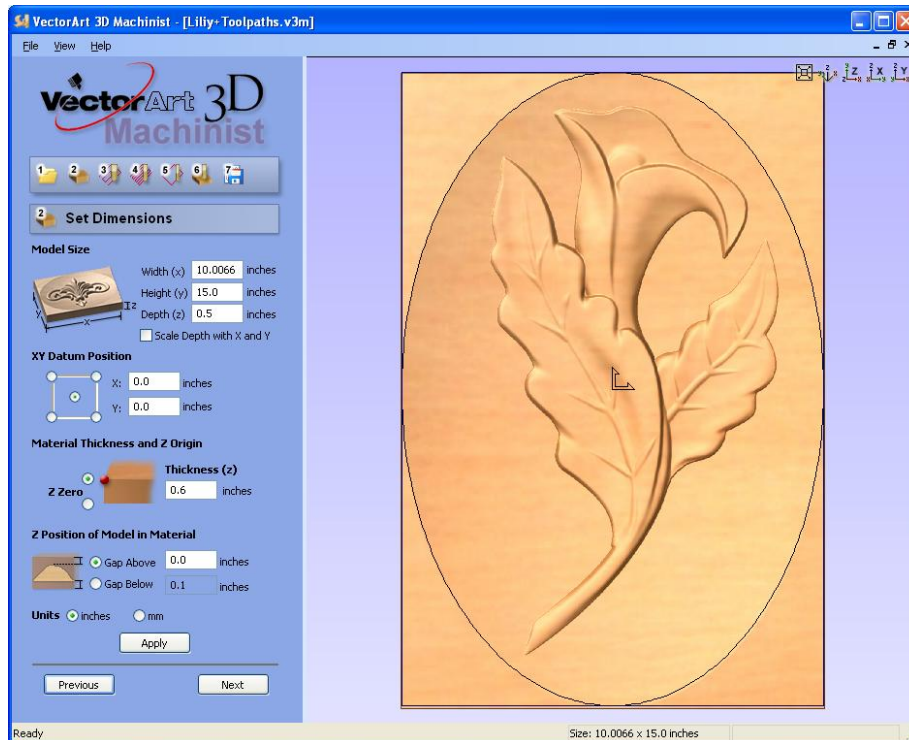
Table of Contents

Getting Help	2
Watch the supporting tutorial videos.....	3
View Controls	3
2D Design Window	3
3D Window.....	3
 Tutorial 5 Decorative 3D Carving	4
Introduction	4
 1. Opening the Cabinet Door Design.....	5
2. Import the 3D Clipart Toolpaths.....	6
4. Previewing the Job	8
5. Estimate Cutting Times and Save Toolpaths.....	8

Introduction

This **Intermediate Level Tutorial** explains how 3D designs from the **Cut3D** and **Vector Art 3D Machinist** software can be imported and added to VCarve Pro projects. The notes assume that you understand how to select, draw text and calculate toolpaths, and only covers the key points required to import toolpaths.

We hope you enjoy using the software.



3D Clipart model in the **Free** Vector Art 3D Machinist Software

Getting Help

If you need assistance when using the software there are 5 primary places to look.

1. **Program Help File** - From the Main menu select Help
2. **Video Tutorials** - Can be downloaded from the Vectric website.
3. **User Forum** - The Vectric user forum at www.vectric.com/forum is a very useful resource for information on VCarve Pro along with materials, cutters etc. and also to share knowledge and experiences.
4. **E-mail Support:** - The Vectric Support Team at support@vectric.com
5. **Frequently Asked Questions (FAQ)** - The support area on the Vectric web site at www.vectric.com maintains a list of the most frequently asked questions along with the answers.

Watch the supporting tutorial videos



There is a video file for this tutorial.

View Controls

The View Control options available when working in the 2D Design and 3D Preview windows are,

2D Design Window



Zoom Interactive

Mouse with Middle Wheel – Push / Pull



Zoom Box

Click top left corner
Click bottom right corner



Pan

Click and hold the Left mouse button – Esc to cancel
Shortcut: Click and drag the **Middle** mouse button



Zoom Extents

Zooms to show all vector geometry in the 2D window



Zoom Selected

Click to select an object or objects
Zooms to the bounding box of the selections



Mouse with Middle Wheel can be used to interactively zoom in / out.

3D Window



3D Twiddle

Click and drag **Left** mouse button in the 3D window



Zoom

Right mouse button – Push / Pull
Mouse with Middle Wheel – Push / Pull



Pan

Click and drag **Right** mouse button + **Ctrl**
Click and drag **Right** and **Left** mouse button



Plan View

Looks directly down the Z axis onto the design in 3D window



Isometric View

Shows the model in a 3D isometric view in the 3D window



Pressing **F2 & F3** will toggle between displaying the **2D & 3D windows**



We recommend that you watch the **5 minute Video** for this Tutorial before proceeding.

The estimated time needed to complete this tutorial is around **10 minutes**.

Introduction

This tutorial will explain how 3D toolpaths from the Vector Art 3D Machinist software can be imported into VCarve Pro and added to an existing design. The finished door panel shown below in Figure 1 is approximately 20" (510mm) wide by 26" (660mm) high. This design is based on the Cabinet Door project that is available from the VCarve Pro install folder and the Free 3D model from the **Vector Art 3D** web site.

For more details on **3D Clipart and Vector Art 3D** see - www.vectorart3d.com

Important The 3D Lily clipart design has been opened, rotated and sized to around **10" wide " and 15" high** using the **Free Vector Art 3D Machinist software**. The appropriate toolpaths calculated and the complete file saved ready for importing into VCarve Pro.

Notes The 3D toolpaths cannot be scaled once imported into VCarve Pro. You must set the correct for the 3D designs before importing them. In this example the following cutters will be used.

A 0.250" (6mm) diameter End Mill to Rough machine the Lily leaving 0.060" on the job

A 0.125" (3mm) diameter Ball Nose cutter for the Finish 3D toolpaths cutting to size.

An Ogee cutter or 1/4" (6mm) diameter End Mill cutter to cut around the frame



Figure 1. The finished Door Panel


The 5 key stages in preparing toolpaths for the picture frame shown above are,

1. Opening the Cabinet Door panel from the Samples folder.
2. Import the 3D toolpaths and position as required
3. Profile a decorative border or a simple cut out toolpath
4. Preview the completed job
5. Save the Toolpaths

Note: This tutorial uses files that can be used to machine sample files on your own CNC machine.

1. Opening the Cabinet Door Design

The vector artwork can be directly opened and the material size specified.

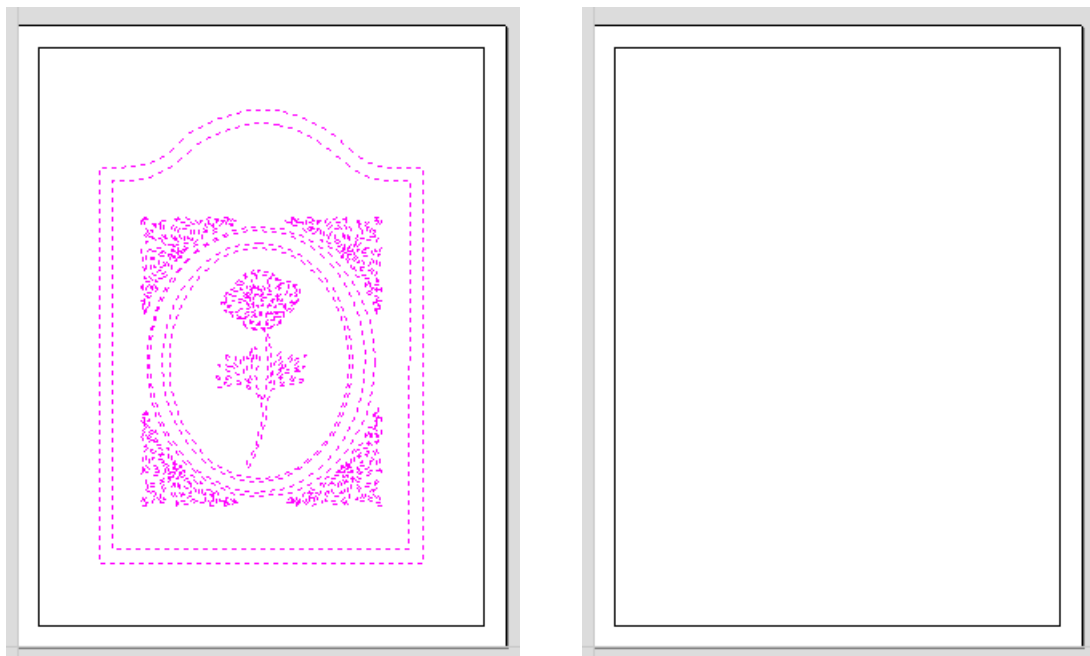
1. From the **Startup Tasks** tab toolbar click on the **Open file**  icon and select the file as shown below,

This design is Material dimensions are 20" wide x 26" high x 1" thick

The **Z Zero origin** for setting the datum for the tool is on the **Material surface**.

The **XY Origin** will be the bottom **Left corner** of the job.

Delete the unwanted vectors in the design by dragging to select and pressing the **Delete** key.

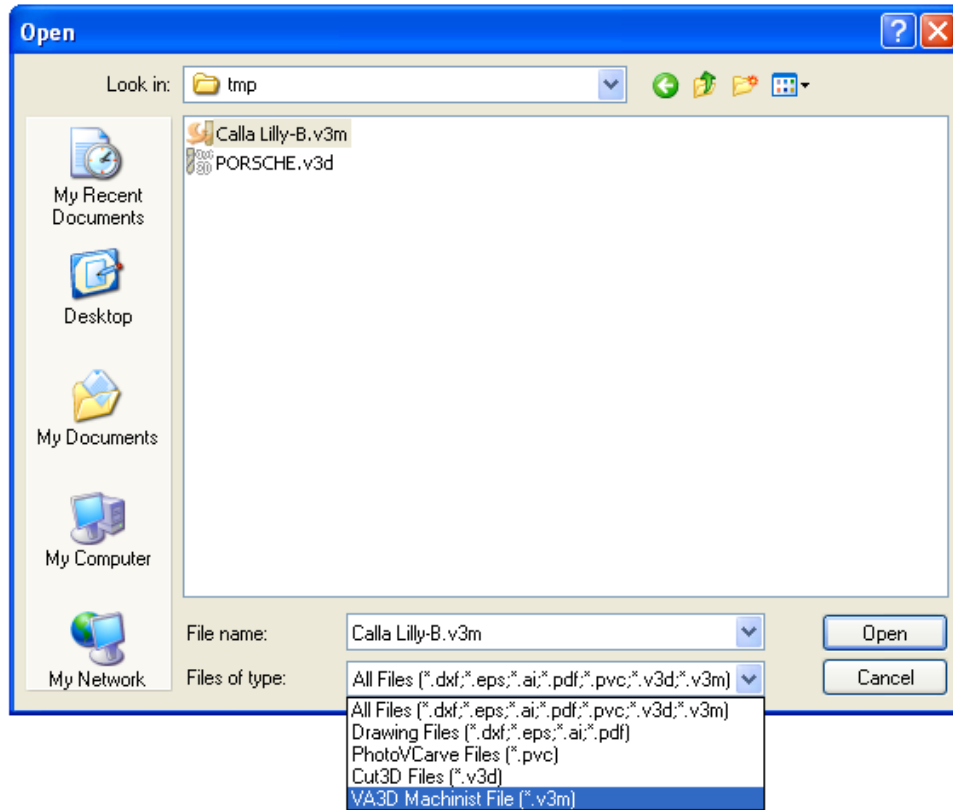


Leaving the single rectangle shown above

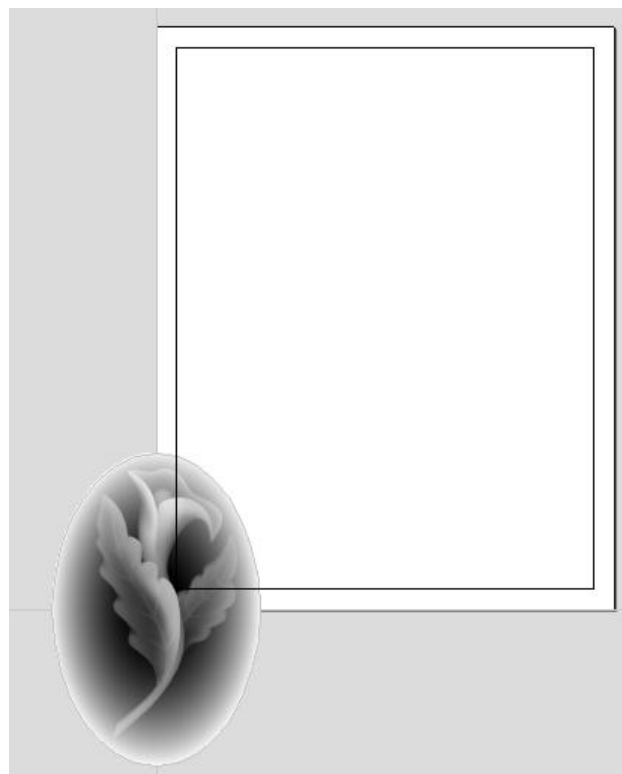
2. Import the 3D Clipart Toolpaths

2. From the .File Operations tools select the Import from a File  icon.

Select the Vector Art 3D Machinist file (.V3M) or Cut3D (.V3D) file you wish to place on the door panel.



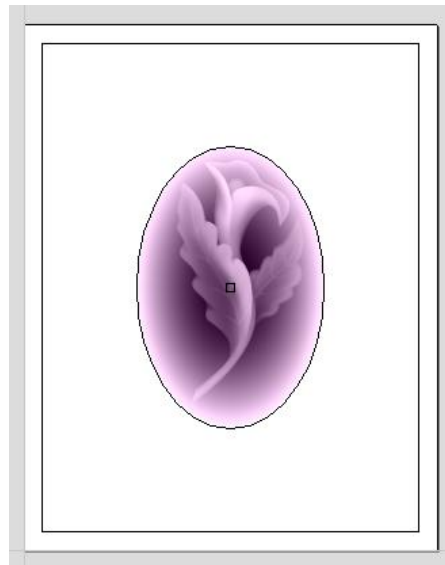
3. A Grayscale image of the design appears in the 2D Window.



- Click to **Left mouse Twice** on the grayscale image to select and the image turns a **Light Blue**.



Use the alignment tool **Center in Material** to move the grayscale image and the corresponding 3D toolpaths will be moved to the same position in the 3D window.

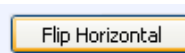


Remember that Multiple 3D Toolpath designs can be imported into a single VCarve Pro design.

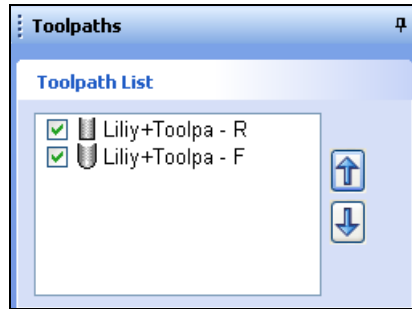
The designs can be moved, rotated and mirrored as required. For example, this the Lily on the 2 panels below has simply been mirrored to make a matching pair of doors.



- Click the Mirror icon and Flip Horizontal option



- Click the **Switch to Toolpaths Tab** icon. This closes the Drawing Tab and opens the Toolpaths Tab on the right side of the interface. The Toolpaths for the 2 imported PhotoVCarve designs are already in the Toolpath List.



The **- R** in the filename indicates this is a Roughing Toolpath

The **- F** in the filename indicates this is a Finishing Toolpath



7. Click on the **Setup Material** icon and specify the **Rapid Clearance Gap** (the height above the job that the tool can move at maximum feedrate). .
8. Calculate any additional toolpaths such as a Molded Edge form or a simple cut out using the Profile Toolpaths options.



In this example an Ogee cutter has been profiled around the border of the design followed by a **1/4" End Mill** to cut the framed picture from the material.

4. Previewing the Job

A simulation of the toolpaths cutting into the material can now be shown in the 3D Window



9. Click the **Preview All Toolpaths** icon and each tool will be shown cutting into the material.
10. Experiment with different **Material types** and **Fill colors** to display the Preview image in the

5. Estimate Cutting Times and Save Toolpaths



11. The Toolpaths by clicking the Save icon.
12. Click to select each toolpath in the **Toolpath List** and **Save** each file with a new name.
13. If you have a CNC machine that has an **Automatic Tool Changer (ATC)**, each toolpath must be specified using a different Tool Number before the toolpaths can then be saved into a single file.

Note: The 3D Clipart File and machining software are both Free and can be downloaded from the Vector Art 3D web site - www.vectorart3d.com