VECTRIC TUTORIALS :
IMPORT A COMPONENT OR 3D MODEL

1: Import Component Icon 

This command opens the File Open dialog window, allowing existing Aspire files (CRV3D extension) and importable 3rd party 3D files to be selected and opened. If you select a 3rd party 3D model format, the Orientate Model form will open (see below) to allow you to manipulate the 3D model before it is converted into a Component.

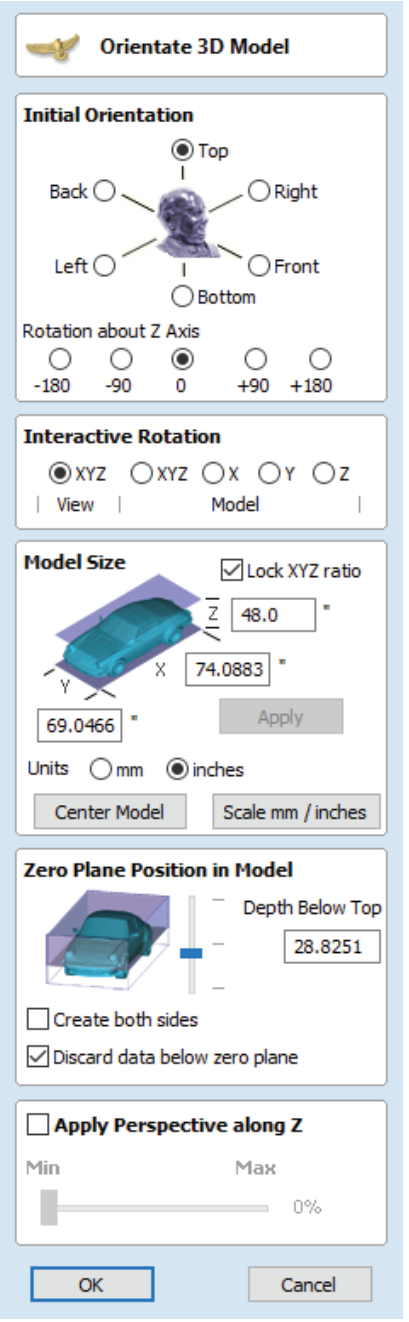
V3M	V3M is a proprietary file format developed by Vectric for Vector Art 3D and Design and Make. Files in this format can be purchased from www.vectorart3d.com and www.designandmake.com and when imported into Aspire will create a new Component with the same name as the file. This will be imported at the size and position the part was saved in the original file.
STL	This is a standard format for complex 3D models, based on a triangular mesh. STL files can be exported from many 3D design software programs such as Rhino. These models can be completely 3 dimensional (i.e. have a front, back, etc.), this means that when this type of file is opened that it must first be sized and oriented before a Component can be created (Aspire only represents base-relief so cannot work with a completely 3D object). Once the file becomes a Component it will have the same name as the original STL file. This file type will need to be imported using the Orientate 3D Model to size and position it before it is brought into Aspire.

DXF	3D DXF files from AutoCAD and many other CAD orientated modeling packages, these must be 3D meshes and not just wireframe data of the models vertices. This file type will need to be imported using the Orientate 3D Model to size and position it before it is brought into Aspire.
3DS	A native format from 3D Studio Max and many other animation orientated modeling packages. This file type will need to be imported using the Orientate 3D Model to size and position it before it is brought into Aspire.
OBJ	A native format from Wavefront and many other animation orientated modeling packages. This file type will need to be imported using the Orientate 3D Model to size and position it before it is brought into Aspire.
SKP	A native format from the SketchUp modeling package. This file type will need to be imported using the Orientate 3D Model to size and position it before it is brought into Aspire.

Note: If you wish to read data from a 3D digitizer or scanning device then STL is typically the best format that should be used to import the data into Aspire. Many software packages that work with a scanner offer an STL export option, if not then a third party software program may be required to convert the data to an STL model.

IMPORTING 3D MODEL (STL, DXF, 3DS, OBJ etc)

When one of these formats are chosen for 3D file Import, the imported model needs to be oriented and scaled before it can become a Component. A special import window is opened and a set of orientation/scaling tools enabled which are controlled using the form shown below. There is also a video tutorial that shows this process.



Initial Orientation

Choose one of the 6 options to determine the most suitable direction on the model that defines the top surface (upper Z) that you want to use when it's converted into a Component.

You can also use the five options for **Rotation about Z Axis** to modify the position of the part being imported at this stage.

Interactive Rotation

The default choice **XYZ-View** allows you to left-click in the 3D View with the mouse to rotate your view so you can examine the part from different angles. Using this will not change the orientation of the part for import. If you select one of the other four options above the word **Model** then this will adjust the actual positional orientation of the imported part. Choosing the **XYZ** option will allow rotation around all three axes simultaneously, **X, Y** or **Z** will only allow rotation around the specified axis. This is also done using the left-click in the 3D View with the mouse.

MODEL SIZE

Lock XYZ Ratio

Un-checking this option allows the model to be distorted from its original shape. This means independent X, Y and Z sizes can be entered. Leaving it checked ✓ fixes the ratio so it cannot be distorted. Instead it will automatically scale the other axes as you enter new values for X, Y or Z.

Apply

Applies the values you have entered for the X, Y or Z dimensions and scales the others if you have the Lock XYZ ratio option selected.

Many mesh files do not inherently have the units that they were made in embossed in the files, so the software is not able to tell if the files are supposed to be inches or metric, they will just have a particular value. Therefore it is quite common to need to scale the part from inch to metric or vice versa. If you import your model and you wish to work in inches and the file seems very large or if you work in Metric and the file seems very small then you will probably need to use the **Scale mm/inches** option. The next two items on the form cover this need.

Units

Choose the unit of measurement (mm or inches) that you are working in, within the part the file is being imported into.

Scale mm/inches

Scales the X, Y and Z values up or down depending which Unit option is selected. If mm is selected then the software assumes you want to scale the values up so multiplies the current values by 25.4, if inches is selected it assumes you want to scale the values down and divided them by 25.4.

ZERO PLANE POSITION IN MODEL

This slider bar determines where the 3D model will be cut-off when converting to a Component. You can move this up and down with the mouse or use the Middle or Bottom buttons to locate the plane in the correct position.

Note: Anything in the original model which is an undercut (goes underneath another part of the 3D model) will be discarded and a vertical wall will be created down to the plane from the silhouette (looking down Z axis) edge of the model.

Discard data below zero plane

Checking ✓ this will remove any data below the original Zero level within the imported 3D model. If the model is effectively a negative model such as a dished or recessed design with a flat plane then you should uncheck this option to make sure you retain the 3D data below the plane.

Create both sides

If you are working in a 2 sided setup you can check ✓ this option and two components will be created - one looking down the Z axis from above to the zero plane and one looking up from below. Each side of the model will go onto a side. This will provide you with the geometry that can be edited to cut the original imported 3D part as a 2-sided job.

If you were importing a model that contains a non-convex surface for instance a bowl you can import the entire model on each side by sliding the slicing plane all the way to the bottom.

Center Model

The Center Model button which will move the center of the model's bounding box to datum position (XYZ zero). This is particularly useful if you intend to unwrap a model for rotary machining. This may change the Zero Plane position in the model.

Apply Perspective along Z

Checking ✓ this will enable you to apply a perspective distortion to the model along the Z axis by using the slider. Points on the model closest to the observer will become further apart as the distortion strength is increased - this makes the model appear as if it is coming out of the screen.

OK

Creates a 3D Component based on the settings in the form, the Component will have the same name as the imported file. If you selected 'Create both sides' you will have two components with the name of the imported file followed by the suffixes -Top and Bottom.

Cancel

Cancels the Import function and returns to the standard Modeling Tab icons.

Note: See links below for Aspire design tutorials and in-depth visual reference to importing and exporting 3D data.

https://www.vectric.com/support/training-material/aspire.html

https://www.youtube.com/watch?v=Jh2EaoDPXyU

https://docs.vectric.com/docs/V9.0/Aspire/ENU/Help/Modeling/Import.html