Carvey Quick Start
&
Resource Guide

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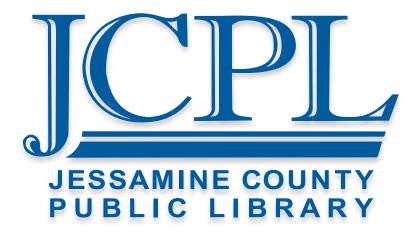
Carvey Manual and Guide

https://inventables.desk.com/customer/en/portal/topics/820856-carvey-faq/articles?b_id=9565

Carvey Manual:

http://carvey-instructions.inventables.com

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Carvey Basics and Community

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Easel Live Classes:

https://www.inventables.com/collections/29

Inventables' Forum:

https://discuss.inventables.com/

CNC Subreddit:

https://www.reddit.com/r/CNC/

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Software

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Inkscape – Vector Graphics Software

https://inkscape.org/en/

Easel – Print Driver / Vector / CAM Software

https://www.inventables.com/technologies/easel

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Materials

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Laser Cutter Material Vendor:

https://www.johnsonplastics.com

https://www.tapplastics.com

https://www.inventables.com/categories/materials/
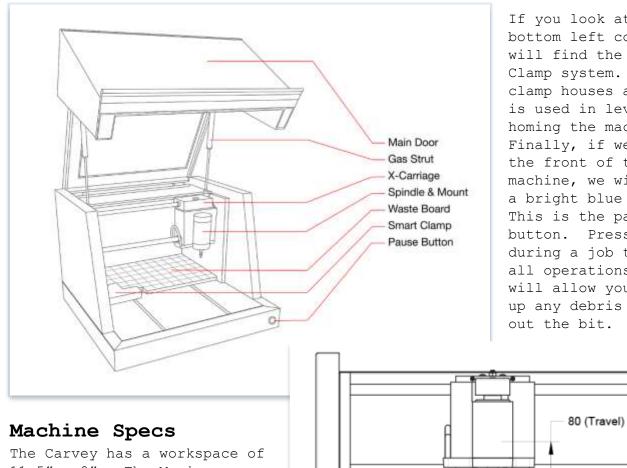
https://www.interstateplastics.com

- NO METAL, PVC, VINYL, OR STYROFOAM ALLOWED FOR USE WITH THE CARVEY. -

Carvey Quick Start Guide

Machine Basics

When you open the Carvey for the first time, you will notice several important features. The first is the Spindle, which houses the router. The second is the

Waste Board, which protects the bed, electronics, and mechanics while carving, engraving, routing, or cutting.

Main Door
Gas Strut
X-Carriage
Spindle & Mount
Waste Board
Smart Clamp
Pause Button

If you look at the bottom left corner, you will find the Smart Clamp system. This clamp houses a PCB and is used in leveling and homing the machine. Finally, if we look at the front of the machine, we will notice a bright blue LED. This is the pause button. Press this during a job to pause all operations. This will allow you to clean up any debris or change out the bit.

Machine Specs

The Carvey has a workspace of 11.5" x 8". The Maximum thickness of material that can be used is 3"; however, our clamps will only allow material up to 2" thick. Some bits may not be able to reach the full 2", so keep that in mind when choosing material.
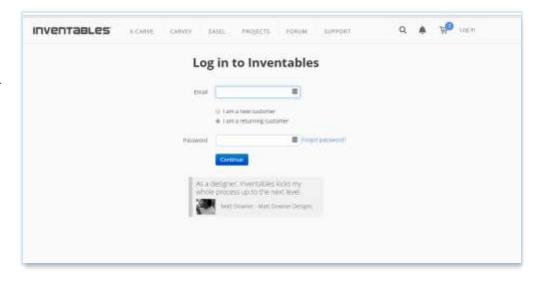
Working with Easel

1. Go to

https://easel.inventables.com/

Firstly, you will need to create an Inventables account, if you have already completed the sign up process, then proceed to login to your account.

2. Login or Sign up With Inventables

Follow the on screen directions to create or login to your account. This account is separate from any JCPL account or service. JCPL does not store or have access to any credentials with third party services.
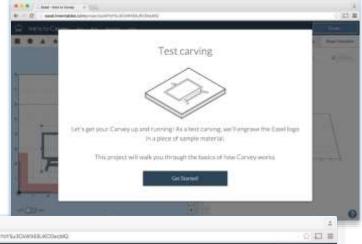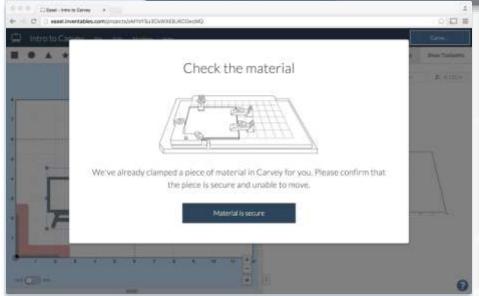
3. Using Easel

When you first login to Easel, you will be presented with a simple project. The first project is of the Inventables' Logo. This is done as both a test print for the Carvey, and as a way of showing you around Easel.

4. Securing the Material

Following the on screen prompt will show us the steps in settings up our carving project. We need to secure the material to the bed using clamps, bolts, and step blocks. If you are missing any of these, please let staff know immediately and we will do our best to resolve the issues.
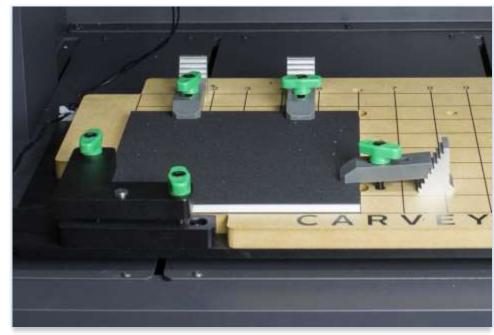
In the image to the right, you can see how these various pieces are used to secure your material to the Waste Board. The material will slide in under the Smart Clamp, you will line up the clamps on top of the step blocks and finally, using a bolt you will secure them to the bed of the Carvey.

Be aware that clamps can interfere with certain designs. When designing or importing work into Easel, be sure to account for the clamps.

5. Choosing an Endmill (Routing Bit)

After securing our material to the Waste Board, we need to insert a routing bit (endmill). Provided by JCPL are both 1/8" and 1/16" bits. We have both Square (Flat) and Rounded (Ball) style bits. Every material cuts a bit differently and will require a different feed rate and depth per pass. Easel has some presets for commonly used materials that are an excellent place to start. Note that these presets are primarily designed for 1/8" and 1/16" bits. If you are using larger or smaller bits, you may need to adjust feed rates a bit to ensure proper carving performance

Ball (Rounded) Bits

Ball mills are the bread and butter of 3D machining. They are great for cutting complex, organic surfaces. Ball end mills will leave smaller scallops on sloped surfaces, but they will also leave scallops on flat areas.

1/8" Ball (Rounded) Bit

- Cutting Diameter: .125"
- Cutting Length: .5"
- Shank Diameter: .125"

1/16" Ball (Rounded) Bit

- Cutting Diameter: .0625"
- Cutting Length: .25"
- Shank Diameter: .125"

Flat (Square) Bits

Flat end mills will cut flat areas with no scallops. However, they leave a terrace-like scallop on non-flat surfaces.

1/8″ Flat (Square) Bit

- Cutting Diameter: .125"
- Cutting Length: .5"
- Shank Diameter: .125"

1/16″ Flat (Square) Bit

- Cutting Diameter: .0625"
- Cutting Length: .25"
- Shank Diameter: .125"

6. The Spindle

After choosing an endmill for your project, you will need to insert it into the Spindle. This requires removing the collet from the spindle, inserting the bit, and finally, tightening the collet back to the spindle.
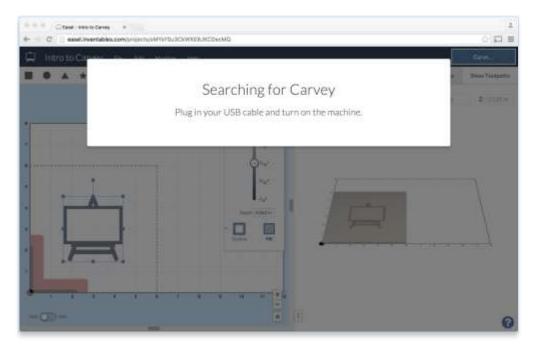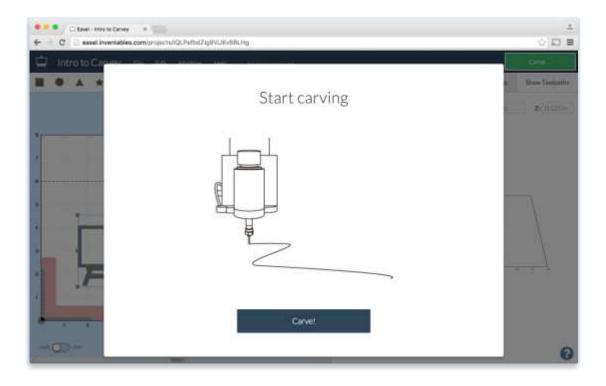

UNSCREW
THE COLLET
FROM
THE SPINDLE

CONNECT
MILLING BIT
WITH
COLLET

TIGHTEN
THE COLLET TO
THE SPINDLE
WITH WRENCHES

7. Carving Your Project

After inserting the bit, verify there are no red outlines coming through on your design. These areas will not cut due to the limitations of the bit. If the design is free of errors, click on the large **Carve** button on the top right of the screen. It will now connect to the Carvey and begin uploading the design to the Carvey.
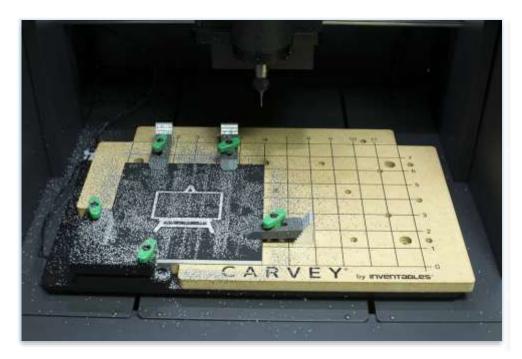

If doing a preset project, like this, the Carve options will be displayed through a wizard menu shown below.

8. Cleaning Up

After carving, you will see a huge amount of dust and debris. Please use the ShopVac located in the creative space cabinet below the Carvey to clean up the work area.

Your project may need some finishing touches, such a sanding, routing, cutting, or millwork. Projects can be carved more than once, so don't be afraid to layer your design. When you are finished carving on your material, remove the bolts, clamps, step blocks, and Smart Clamp to release your project. Please remember place everything back in its container, including the endmill.

9. CorelDRAW / CAM Software to Easel

- To import from CorelDRAW, save or export your design as an SVG file.
- Then after logging in to Inventables, close the "Get Started" popup box.
- Proceed to the Import Menu and select SVG. This will launch File Explorer and you can select your SVG file.
- Alternatively, if you have a traditional raster graphic (png, bmp, gif, or jpg file) you can use the Image Trace feature found in the Import Menu. This again, will launch File Explorer and allow you to select you file.
- Finally, if importing from CAD / CAM software, such as Fusion360, AutoCAD, Rhino, or MeshCAM, you will need to export or save your project as a g-code file. You can then import it into Easel by going to the File Menu and selecting Import g-code.

JCPL Approved Material

Material Dimensions

Materials officially approved for use in Carvey should not exceed dimensions of Width (X-axis): 11.5 inches (30 cm), Depth (Y-axis): 8 inches (20 cm), Height (Z-axis): 1.5 inches (3.81 cm) and are as follows:

JCPL Approved Materials for use with the Carvey:

- ABS (Acrylonitrile Butadiene Styrene)
- Acrylic / Plexiglas / Lucite / Perspex (Polymethyl methacrylate)
- HDPE (high-density polyethylene)
- Soft-Medium Natural Woods (Alder, Pine, Basswood, etc.)
- MDF
- Corian (Dupont Counter Top Surface)
- Delrin / POM (Polyoxymethylene)
- Wax (Machinable)

JCPL Banned Materials for use with the Cavery

Banned Materials:

- PVC (including vinyl)
- Metal (including Aluminum and Circuit Boards)
- Styrofoam / Hobby Foam
- Treated or Glued Wood
- Ceramics

ABSOLUTELY NO PVC (INCLUDING VINYLS), METAL, FOAM, TREATED OR GLUED WOOD, CERAMICS, OR PCB / CIRCUIT BOARDS ARE TO BE USED IN THE CARVEY.