Creating Cut Files

The Ins and Outs of Wam

Wam is the software that turns your Design into a Cut File for WAZER; it manages important aspects of the Cut, like the Cut Rate, Cut Start Point, End Point, etc.

The following WAM instrution is split into 8 sections:

- Design Software

- Terms of Service and Privacy Policy

- Wam Overview

- Wam Setup

- How to Use Wam

- Wam Settings

- Cut File Steps

- Using the Material Library

Design Software

The first step to using Wam is to design your parts with one of the many vector design programs available today. Wam takes in your Design as a .dxf or .svg file. These are universal 2D file formats that many programs support.
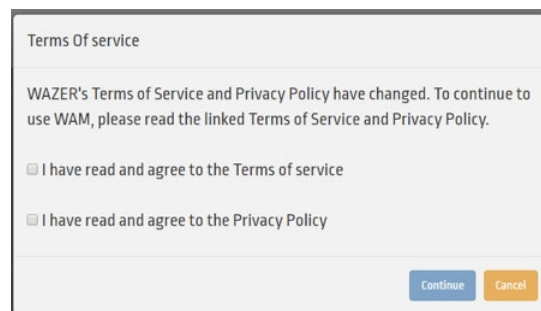
Wam is not a design platform; there are a variety of different design software options that can translate your ideas and paper sketches into digital Designs. These programs vary in complexity and cater to a variety of different industries and applications; they also vary in cost and have different learning curves.

Choosing design software is a personal decision based on your needs, industry, and technical abilities. If you are just starting out with two-dimensional design, we suggest starting with a simple 2D option such as LibreCAD or QCAD. If you have some digital design experience you may want to use something like Inkscape. It may be a good idea to reach out to others in your industry to see what they are using and if it would be appropriate for your level of experience. If you are still uncertain as to what programs to use, please reach out to us at support@wazer.com and we'll be happy to help.

At WAZER we use a variety of software platforms across the team. Our engineering and technical team use AutoCAD, Onshape, Solidworks, and Pro-Engineer. Our business and design team use Inkscape and Adobe Illustrator. If you visit our website resources you will find export guides and information for some of the most popular design software programs such as Illustrator, Solidworks, Fusion360, and Inkscape.

Terms of Service and Privacy Policy

Please read the "Term of Service" and "Privacy Policy" on WAZER.com for more information

Terms Of service

WAZER's Terms of Service and Privacy Policy have changed. To continue to use WAM, please read the linked Terms of Service and Privacy Policy.

☐ I have read and agree to the Terms of service

☐ I have read and agree to the Privacy Policy

Continue   Cancel

WAZER

Login to Your Account

Username or Email

Password

LOGIN

Don't have an account? **Register**
Forgot Your Password?

Wam Overview

Wam is browser based. You can access it at wam.wazer.com*.*
After logging in, you will import your Design. After setting your Cut Parameters, Wam will generate a unique Cut File which you will transfer to WAZER via a SD card. This Cut File will contain all the information WAZER needs to cut the Design in your chosen Material.

Despite Wam being browser based program, all of the design file processing is done locally on your computer. Often there is a misconception that web based software means data is being sent and processed on servers somewhere on the internet. This is extremely far from the truth and by using Wam your design files are never sent to WAZER servers or across the internet. As some additional insight on the matter, WAZER uses a browser based system for the following three reasons:

- Provide you free of charge updates to the software seemlessly upon login.

- Free you of software installation and PC/Mac compatibility issues.

- Collect information "metadata" on the parameters that were chosen for a cut file so we can continue to provide targeted updates on features. For more information for those "Meata Data", please refer to this page
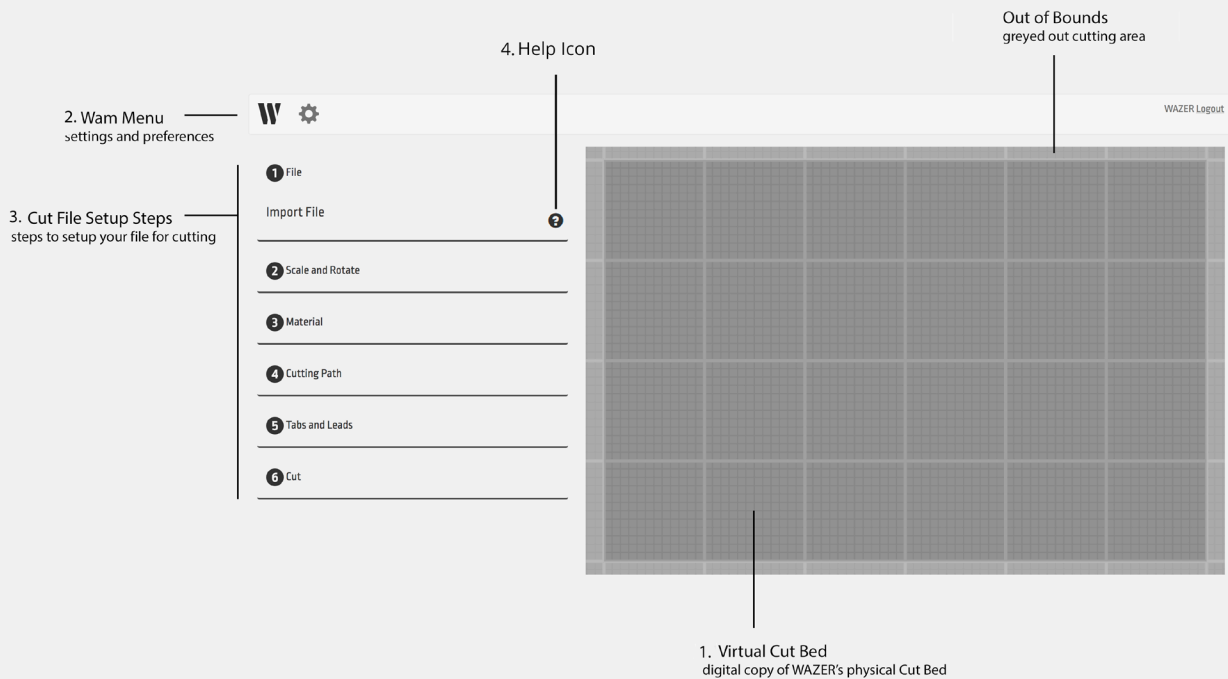
Wam Setup

Registration

You'll need to register before using Wam for the first time.

- **Go to:** https://wam.wazer.com and select "register".

- Use WAZER's software serial number to register your account and gain full access to the Wam feature set. The software serial number is located on the first page of your user manual that shipped with your Wazer.

- Read and Acknowledge "Terms of Services" and "Privacy Policy" by clicking the adjacent box.

NOTE: Some users have reported trouble with registering their serial number later because of a block symbol on the Submit Serial Number button. Once you have typed in your number, either click outside the text box or press Enter to validate the number, then the button will activate and allow you to finish registering.

Logging In

- Go to: https://wam.wazer.com.

- Log in using your registered user name and password (case sensitive).

- You will remain logged in for 24 hours.

4. Help Icon

Out of Bounds
greyed out cutting area

2. Wam Menu
settings and preferences

3. Cut File Setup Steps
steps to setup your file for cutting

W ✿

WAZER Logout

1 File

Import File ❷

2 Scale and Rotate

3 Material

4 Cutting Path

5 Tabs and Leads

6 Cut

1. Virtual Cut Bed
digital copy of WAZER's physical Cut Bed

How to Use Wam

User Interface
*At the highest level, you can view Wam as having four areas*

1. **Virtual Cut Bed**: This area represents the WAZER Cut Bed. This allows you to arrange various Designs to be cut, exactly as they will be cut on WAZER's Cut Bed.

2. **Wam Menu**:
   - Start a new Wam setup by clicking on the **W** Icon or refresh the page.
   - Select the options menu by clicking on the ✿ Icon to change user account settings, preferences, and your personal WAZER settings.

3. **Cut File Section**: Use these six expandable Sections to configure the Cut on WAZER. We will go through them one by one later.

4. **Help Icons:** Next to each of the tabs you will notice a question mark ic ❷ icon. Clicking these icons at any point will explain how to use that tab to effectively setup your design for cutting on the WAZER.

The Virtual Cut Bed

- **Arrange Cut Groups for cutting**. Left-click on the desired Cut Group and drag into place.
- **Select multiple Cut Groups at once:**
  - Hold the CNTRL or SHIFT key, and select multiple Cut Groups.
  - The Bounding Box indicates selected Cut Groups.
  - Move the Cut Groups as a group into the desired position.
  - Then, you can apply the same settings to multiple Cut Groups.

Wam Settings

By clicking on the ⚙ Icon you will be brought into a two-Tab pop-up menu:
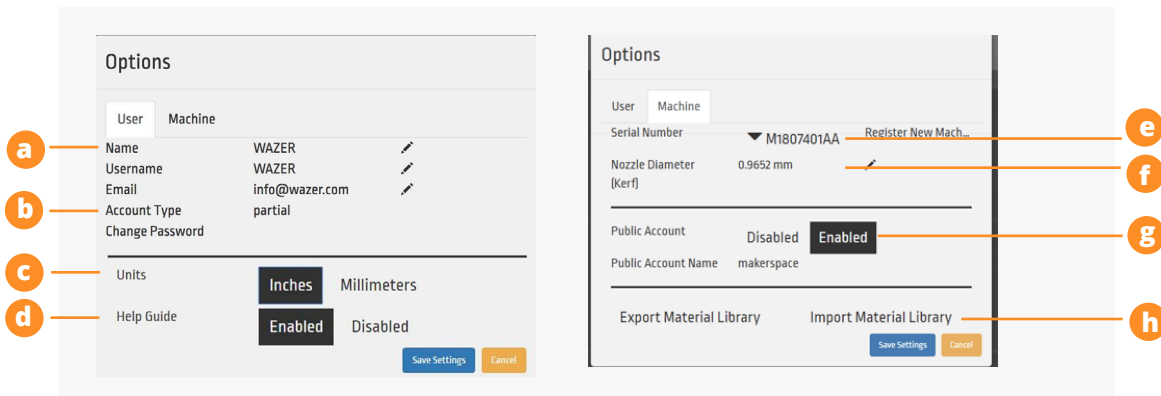
1. User Tab

   a. **Account Preferences:**
      – *Name*
      – *User name*
      – *Email*

   b. **Account Type**
      – *Partial/Demo Account* - When account is not registered to a valid WAZER software Serial Number. Some Wam functionality will not be available to the user.
      – *Full/Registered Account* - When account is registered to a valid WAZER. All Wam functionality is available to the user. For every machine purchase you have a software license serial number. Registering a software account with this serial number enables that account to be a full registered account. Each one of these serial numbers can be used to register <u>three accounts</u>, so be mindful of who you give this serial number to. If your situation requires more accounts, please contact <u>WAZER customer service</u>.
      – *Public Account* – When a full account is registered to a valid WAZER, the account holder can choose to register public account for his/her students. All Wam functionality is available to the user but public account holder cannot edit user/machine options and adding materials.

   c. **Units** - Specify the desired units

   d. **Help Guide** - Either shows or hides the help icons at every setup step

   e. **Machine Serial Number** - This is a list of registered WAZER machines your account is linked to. Entering additional valid Software serial numbers will register additional machines to your account

   f. **Default Jet Diameter** - This is the diameter of the cut gap, otherwise known as the Kerf. See more information about Kerf <u>on this page.</u>

   g. **Public Account** – As a registered Wam account holder you can enable/disable a public access account for each of your machines. This may be a very useful tool for shared workspaces in particular, as you can share this public account login credentials with trained users of the machine, but at the same time controlling clutter in your material database or introducing unwanted changes of machine setting.

   h. **Export Material Library** - As a registered Wam account holder you can save custom Materials to your account. You can easily export and import these Materials if you would like to share these settings with others.

Cut File Steps

Step 1: Import File

Import File Compatibilities:

- **.dxf** - 2D file type that most engineering and design software will export.
  - The .dxf library supports arcs, circles, ellipses, lines, polylines, and splines.
  - All text must be converted to vector paths before importing into WAM
  - .dxf files do not include units – Wam tries to infer the correct units, but if it fails, the part will <u>default to inches</u>.
  - For more information about DXF files, see this page

- **.svg** - 2D Vector file that most design software will export.
  - Ensure that the output format for files is set to Plain SVG.
  - All shapes and objects should be simplified as paths, all layers compressed into one
  - Make sure the document units are set to physical units (inches or mm) and not pixels.
  - Pictures and bitmaps will be ignored.
  - For more information about SVG files, see this page

Import File Checklist:

- Convert all desired cut edges from objects to path.
- Convert all text, shapes, objects to vector paths.
- Check for gaps.
  - If path fragments are 0.0010 inches apart or less, Wam will merge the fragments into a single path.
  - If a path start and path end are less than 0.0020 inches apart, Wam will merge the points and treat the path as closed.
  - Unconnected line segments less than 0.0001 inch long are deleted.
- Join and trim paths in your design software if necessary.
- Check for overlapping segments.
  - Overlapping Cut Groups may not be visible but may cause issues.
- Check for dangling or default Cut Groups.

1. **Multiple Designs**
   Wam takes eIt is possible to import multiple Designs, or the same Design multiple times in one Cut File Manage these Designs by using the +, -, and X Icons.
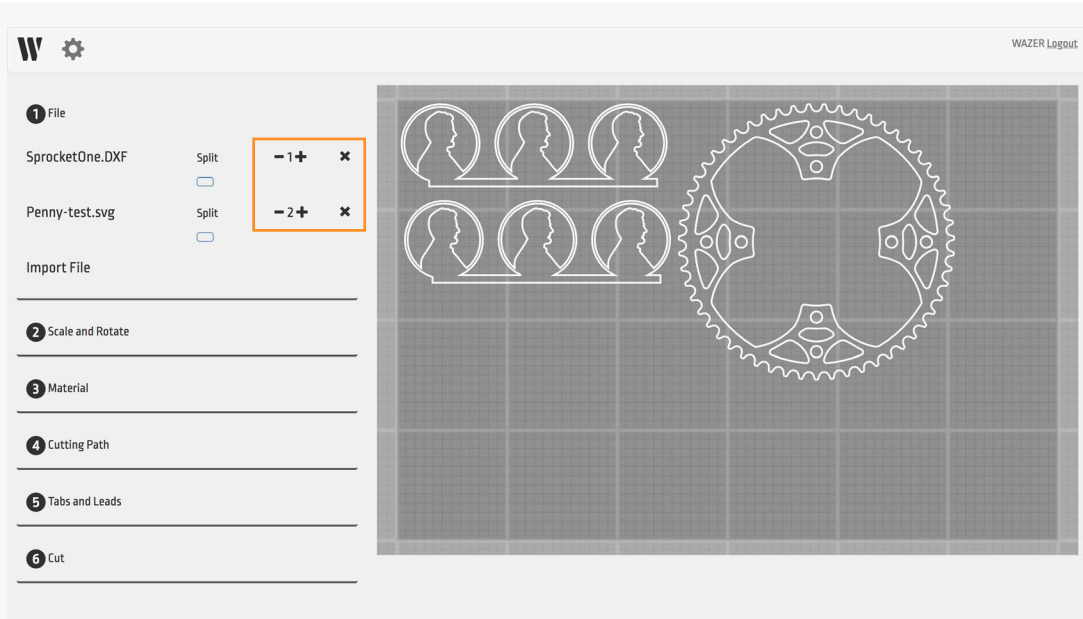
2. **Cut Groups**
   Wam takes every Design and divides it into Cut Groups. A Cut Group includes all elements contained within a closed curve. In the example on the next page, all the elliptical and circular shapes inside the sprocket will be imported as one Cut Group, where the coin cut outs are other cut groups.
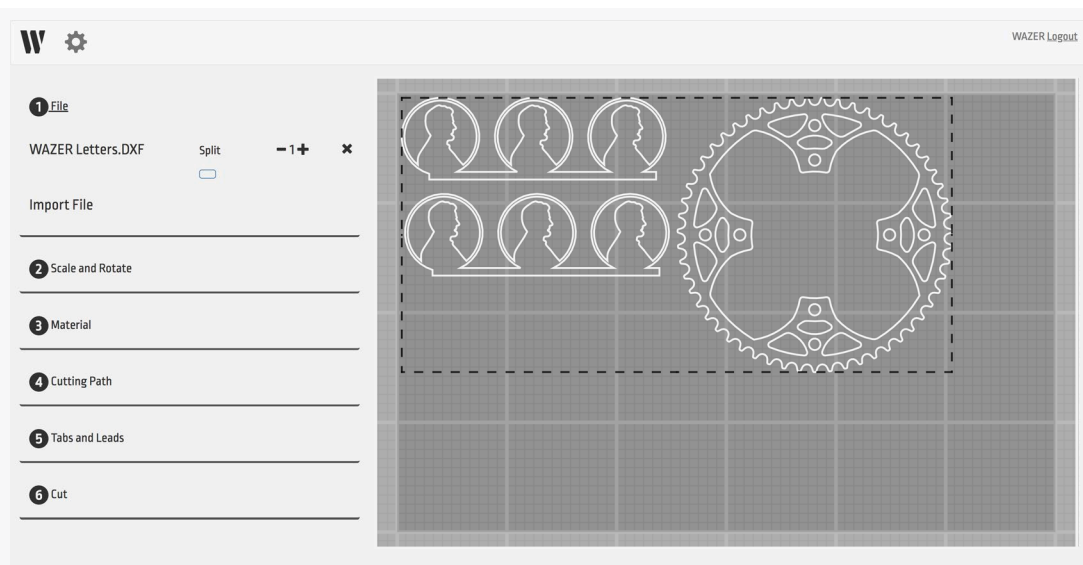
3. **Split**
   It is also possible to upload multiple independent curves outside of a closed curve from a single .dxf or .svg file. When these curves import they will maintain their positions and groupings, and they can be moved about the Virtual Cut Bed as a group. If you would like to manipulate each curve independently, select the Split option in the File menu. This will break any curves not contained within a closed curve into independent Cut Groups that can be manipulated independently.
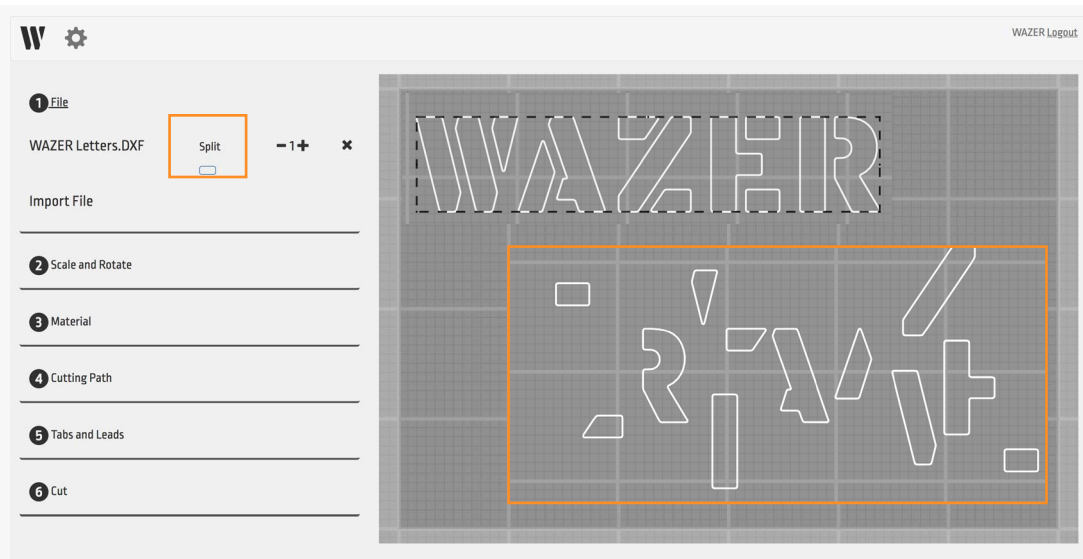
Inserting Multiple Parts and Instances of a Part

A Part with Multiple Contours is Treated as a Single Group

*Results of Enabling "Split" for an Imported Part*

80

Step 2: Scale and Rotate

Wam allows you to manipulate individual Cut Groups within the Virtual Cut Bed:

a. **Rotation** – Rotating a cut group if you want to nest as many cut groups as possible into a single cut file.

b. **Location of Vector Group**

- This feature update allows you to accurately position the cut group on the virtual cut bed.

- Use this feature to position the top-left point of the cut in relation to the bed origin (Top left of the bed) by entering the distance from that point in selected dimensions denoted by X position and Y position (See image below). This Feature works on one path at a time and is disabled during multi-selection.

c. **Adjust Scale** – You will require the Cuts to be sized precisely. Some programs will Scale your Design in unexpected ways when exporting, so you will need to rescale your Design back to the intended size.

There are two methods to re-scale your imported Cut Groups:

- *Scale* - specify a scaling factor into the field to Scale the selected Cut Group(s) to size

- *Width/Height* - specify the intended major extent of the imported Cut Group (width or height) to Scale the entire Cut Group proportionally.
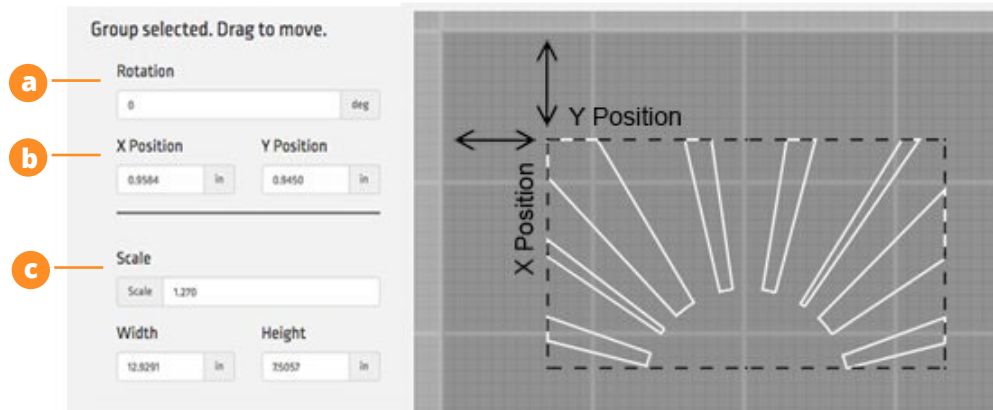
Step 3: Material Selection

WAZER needs to know the Cut Rate, or how fast it can cut, for your Material. Rather than relying on the user to calculate and enter this directly for every Cut, we have created a Material Library that containing all this information. You can simply specify your Material and thickness from the available selections, and Wam will set the correct Cut Rate.

When you log into Wam, the software will automatically load the most recent Material Library for you to select from. We will constantly be expanding this Material Library.

There may be some instances where a Material is not in the Material Library yet. If this is the case, you will have to manually Add Material, which is done easily through the Add Material menu (more on this later).

The organization of Materials is done by Material Type (i.e. metal, plastic, etc.), and then by specific Material (i.e. aluminum, stainless steel, etc.), and finally Material Thickness (i.e. 1.0mm, 1/16", etc.).

Default Material entries are indicated by a **W** Icon, while your personal Material entries are indicated by a 👤 Icon.

WAZER currently only supports the selection of one Material per Cut file.
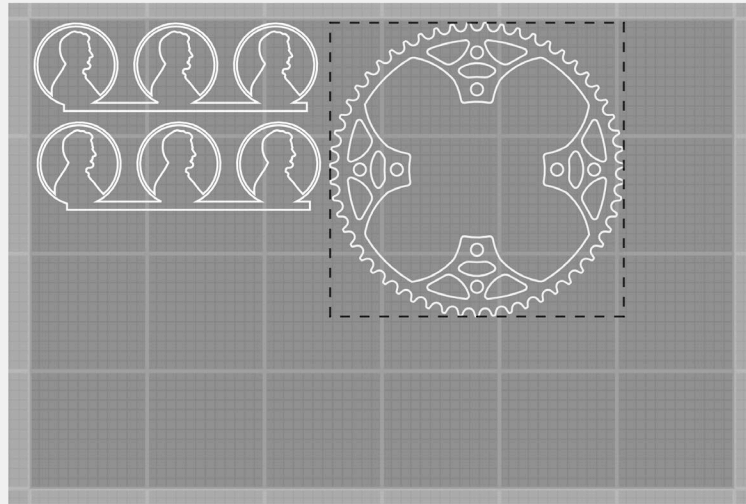
Panel 1

WAZER Logout

1 File

2 Scale and Rotate

Group selected. Drag to move.

Rotation
0   deg

X Position
0.00   mm

Y Position
0.00   mm

Scale
Scale   1.000

Width
445.37   mm

Height
209.90   mm

3 Material

4 Cutting Path

5 Tabs and Leads

6 Cut

Panel 2

WAZER Logout

1 File
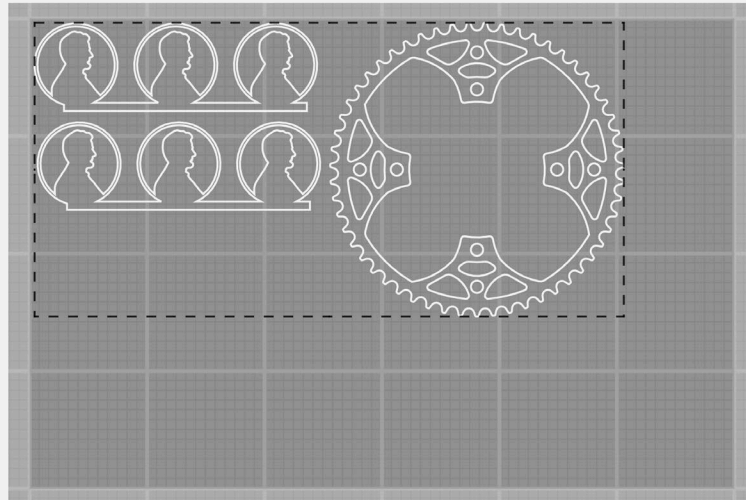
2 Scale and Rotate

3 Material

Aluminum 0.250 in

- Metals
  + Nickel Silver
  + Copper
  − Aluminum
    Aluminum 0.063 in
    Aluminum 0.125 in
    Aluminum 0.250 in
    Aluminum 0.079 in
    Aluminum 0.098 in
  + Mild Steel
  + Stainless Steel
  + Titanium
  + NEW MATERIAL
  + Stainless Steel (SB)

Add/Edit Material

4 Cutting Path

5 Tabs and Leads

6 Cut

Step 4: Cutting Path

When a Design or cut group is imported into Wam, it is simply a set of curves. These curves are shown in white.

To cut your parts properly and meet your need, WAZER needs to know which side of the curve to Cut. It is because water jet as a certain width, and will cut a gap of certain widths into your material. This is known as the "kerf". As a result, the Cut Path needs to be specified as either Outside, Centerline or Inside.

Once you have made a selection, a green Cut Path appears around or within the white part geometry. **This green line indicates the actual path of the WAZER. You can use it to check if your Design will be Cut correctly.**

If you want to cut directly on the Cut Path. You can specify this using the Centerline option. In this case, you will notice that the green Cut Path completely covers the white geometry. There is also a "no cut" option. You may use a curve as a guide to other curves, and set the guide as "no cut".

To aid in quick setup and accurate Outside and Inside Cut Paths, the software automatically defaults the offset value based on the kerf (you can change the default in the Wam options).

There may be instances where you desire an additional offset to make your Part slightly smaller or slightly larger. To do this quickly, change the preloaded offset by the amount you would like to oversize or undersize your Cut.

For more information on cut path selection, please refer to this page.

Step 5: Tabs and Leads

A Tab is small connection point between your cut out and the left-over material. Its job is to keep your Part in place for the duration of the Cut. Tabs help to increase overall Accuracy and prevent Pop-Ups, which can cause the WAZER to jam and ruin your Cut.

Wam automatically defaults to incorporating Tabs of certain width in default locations of each Cut Path. The location and size are designated on the Cut Group with a yellow indicator.

The default settings dicatate that every Cut Path receives a single Tab of a size based on the Material. This will likely be sufficient for most Cuts and will seldom need to be changed. However, you should always review the default locations, in case they will cause problems with your Design.

If you need to make changes, select "Manual Tab Placement" and move the unwanted Tabs by left clicking and dragging them. You can also add and remove Tabs by left clicking. Additionally, there may be use cases where you cannot afford to place any Tabs, as a result you may want to select No Tabs. However, this is highly discouraged because it greatly increases the risk of poor or failed Cuts.

A Lead refers to the distance that WAZER will be cutting away from the Cut Path. Its purpose is to make sure the oversized Pierce at the start of a Cut doesn't leave a scar on your Part. The Lead's location and size are designated on the Virtual Cut Bed with a blue indicator. Leads are always placed on the tabs.

NOTICE When considering using No Tabs on a Cut, make sure you can afford a failure. There is a high likelihood that these parts will come loose, resulting in them either falling into the Tank or jamming the Nozzle.

Step 6: Finalize Cut

The last required selection in Wam is the Cut Quality. Cut Rate and Cut Quality have an inverse relationship; a faster Cut leads to lower quality, and better quality requires a slower Cut.

Once you have selected Cut Quality, you can specify a file name and select the Generate Job File Button to export the final Cut File. You can now move this Cut File to an SD Card and then insert the SD Card into WAZER to begin the Cut.

- **Show stock size in the last tab -** This feature displays Raw material size required for the cut in the cut section of WAM and helps you know the exact size of the raw material required based on the current layout on the virtual bed. Multiple cuts on the virtual bed are also considered while calculating the final raw material size.

W ⚙

1 File

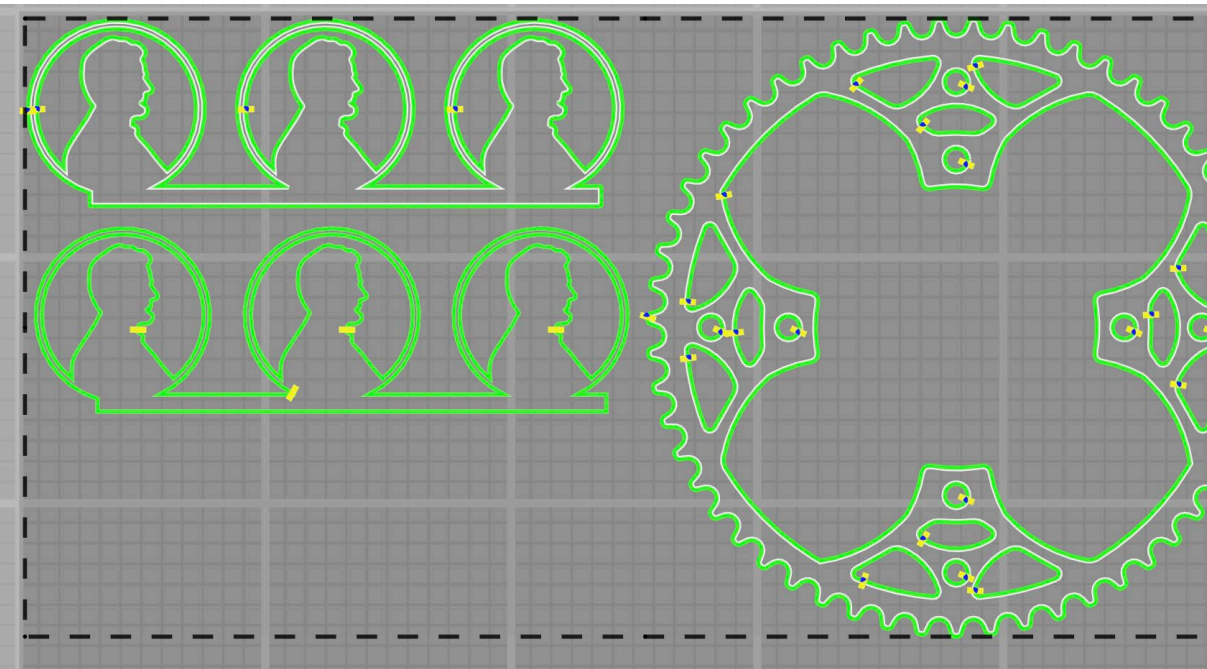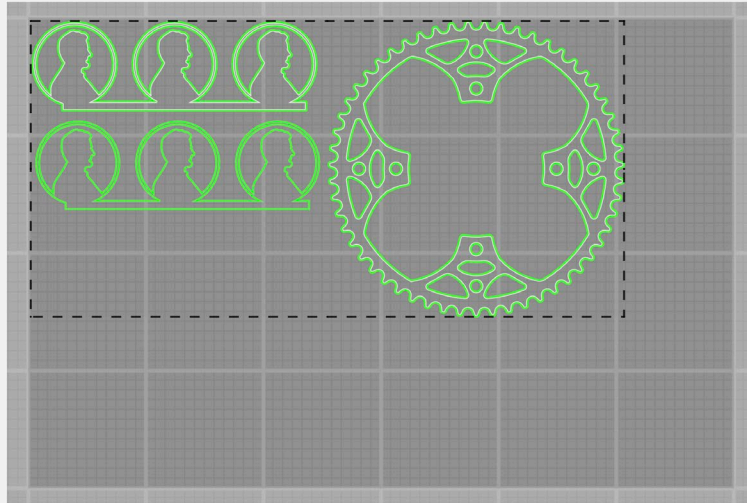2 Scale and Rotate

3 Material

4 Cutting Path

Outside
Centerline
Inside

Offset | 0.019 | in

5 Tabs and Leads

6 Cut

---

1 File

2 Scale and Position

3 Material

Select Material
➕ Metals
➕ Plastics & Rubbers
➕ Ceramics & Stone
➕ Other

Material help

3 Material

Select Material
— Metals
➕ Stainless Steel 316
— Aluminum 7075
Aluminum 7075 - 0.016 in
Aluminum 7075 - 0.031 in
Aluminum 7075 - 0.063 in
Aluminum 7075 - 0.125 in
Aluminum 7075 - 0.188 in
Aluminum 7075 - 0.250 in
Aluminum 7075 - 0.313 in
Aluminum 7075 - 0.375 in
Aluminum 7075 - 0.500 in
Aluminum 7075 - 0.500 mm
Aluminum 7075 - 1.00 mm
Aluminum 7075 - 2.00 mm
Add/Edit Material

Material: WAM has a preloaded library of standard materials and thicknesses. Please select a material* option. If you don't see your material listed, please click Add/Edit Material.

Add/Edit Material: Select this option if your material is not in the WAM library. A pop up window will ask you to enter material name, thickness and material cut properties.

***WAM only allows one material selection per cut.**

Close

Using the Material Library

Back to the Material Section, you will see an Add/Edit Material Button. Selecting it will bring up a menu allowing you to view your Material Library and create entries for new Materials. The left side of this menu shows the entire Material Library, while the right side of the menu shows the specifications of each entry.

WAZER Material Library

The Material Library contains default entries for the most popular Materials and thickness. These Materials will automatically be updated every time you log into Wam and will be indicated by a ⬛ Icon. You will not be able to edit or change these Material Library entries, but you will be able to view the details of the deafult material settings, such as pierce time, cut speed, tab width and lead length.

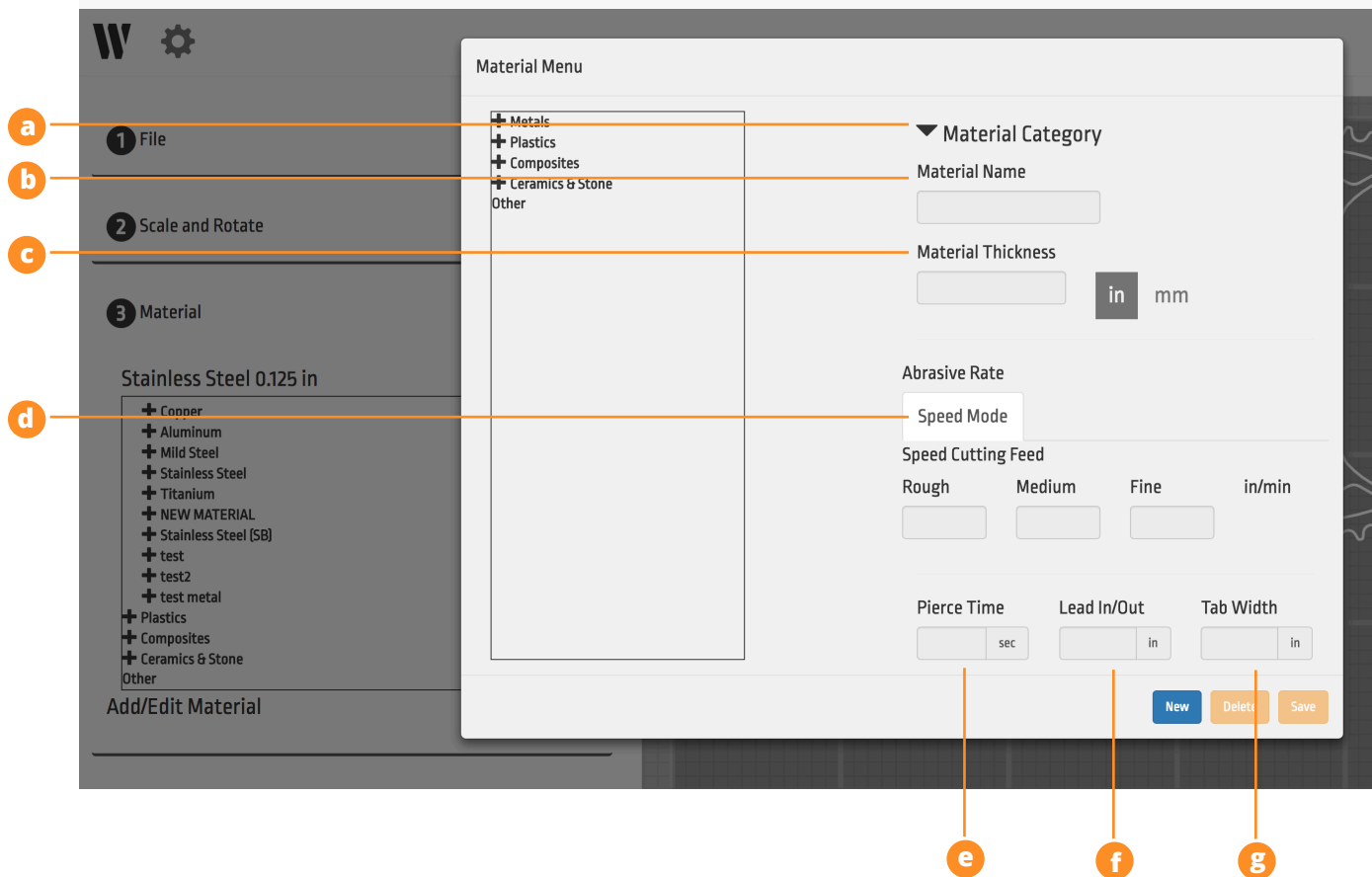## Adding and Editing Material Library Entries

There may be times where the Material Library doesn't have the Material you are looking to Cut; in these cases, you'll need to add a custom Material. When you add a new Material, it will be saved to your Account and all other registered users to your WAZER will be able to access it. You will see a small 👤 Icon next to custom entries.

- **Adding New Materials:** Select the "New" button on the bottom of the menu and fill in the fields for the Material.

- **Editing/Deleting Materials:** You can always come back and edit/delete a Material you have created by clicking on the custom Material in the Material Library, editing the fields desired, and saving the Material.

- For more information about determining the cut speed, pierce time and other settings for a any materials, refer to [this page](#)

Material Entry:

a. **Material Category** – This field is the highest level organizational structure of your Material Library. The categories within this dropdown are designated by WAZER and cannot be edited or added to.

b. **Material Name** – This field refers to the particular Material that falls under the Material Type. You can create as many new Material Names as you desire (i.e. composition and number designator).

c. **Material Thickness** – This field refers to the thickness of the Material, which can be entered in mm or in.

d. **Cut Rate** – Cut Rate is designated in three different levels.

   - *Coarse –* This refers to a feed that gives you the fastest Cut Rate. The Material will barely be cut all the way through, leaving a rough edge, especially towards the backside of the Material.

   - *Medium –* This refers to a feed that provides a compromise between Cut Rate and quality. With this Cut Rate, a smooth edge can be expected with minor visible striations.

   - *Fine –* This refers to a feed that gives you the highest quality (and takes the longest amount of time). With this Cut Rate, individual striations are not visible, resulting in an almost sandblasted edge finish.

Material Menu

- Metals
- Plastics
- Composites
- Ceramics & Stone
- Other

Material Category

Material Name

Material Thickness

in mm

Abrasive Rate

Speed Mode

Speed Cutting Feed

Rough	Medium	Fine	in/min

Pierce Time	Lead In/Out	Tab Width
sec	in	in

New Delete Save

1 File

2 Scale and Rotate

3 Material

Stainless Steel 0.125 in

- Copper
- Aluminum
- Mild Steel
- Stainless Steel
- Titanium
- NEW MATERIAL
- Stainless Steel [SB]
- test
- test2
- test metal
- Plastics
- Composites
- Ceramics & Stone
- Other

Add/Edit Material

e. **Pierce Time** – This field refers to the duration of time the nozzle will sit in a single position at the start of a Cut. WAZER needs to punch through the Material before it starts to progress along the Cut Path. If the Nozzle starts to move before the Material is Pierced through, you should increase the Pierce Time. However, if the Nozzle doesn't move for a number of seconds after it has already Pierced through the Material, you should decrease the Pierce Time. The point at which WAZER has punched through the Material is both audible and visible – you will notice a change in sound and see air bubbles in the Tank once the Jet has Pierced the Material.

f. **Lead** – This field refers to the distance away from the intended Cut Path where the cutting should start. Even though the Jet coming out of the Nozzle is consistent, the Pierce Hole will be larger than the Kerf. Therefore you want to Pierce away from the Cut Path and then Lead into it. Additionally, this is a good parameter to add in for Materials that chip easily or are not consistent in density. This will vary between Materials and Material Thicknesses.

g. **Tab Size** – This field refers to the distance that will be left uncut on a Cut Path to hold your Part in place. If it is difficult to break the individual pieces apart after cutting them, you should decrease this parameter. If the Tabs are breaking before the Cut completes, you should increase this parameter.

h. For more information on how to determine the best settings for an unknown material, refer to this page.