

# FILE SUBMISSION GUIDE

## Accepted File Types

### 2D Cuts (Profiles & Pockets)

DXF, DWG, Ai(Adobe Illustrator)

### 3D Machining

STL

## Size of Tooling Offered

We have both flat mills and ball nose mills in these sizes:

.5" / .375" / .25" / .125"

These sizes will create limitations for drill operations, but are suitable for all of our supported operations.

## Stock Measurement Vs. Nominal Measurement

**Nominal Measurement** is what hardware/lumber yards use as the average across the stock. This makes up for tolerances through the manufacturing process.

**Stock Measurement** is the true measurement of the material you will be using. With laminate material this can change from brand to brand. This is very important when you want to machine 3D files.

Ex. a 2"x4" piece of lumber is a nominal measurement. Its stock measurement is generally closer to 1.5" x 3.5"

## Material Size Limitations

All dimensions are in inches

Shopbot Alpha 4'x8'	Wood (Plywood/MDF/Hardwood)	Foam	Plastic
Max Length	96"	96"	96"
Max Width	48"	48"	48"
Max Thickness	2.5"	4"	2.5"
Min Length	2"	2"	2"
Min Width	2"	2"	2"
Min Thickness	0.25"	0.25"	0.25"

## Material Size Limitations

All dimensions are in inches

<i>Shopbot Desktop</i> 24" x 18"	Wood (Plywood/MDF/Hardwood)	Foam	Plastic
Max Length	24"	24"	24"
Max Width	18"	18"	18"
Max Thickness	1.5"	2"	1.5"
Min Length	2"	2"	2"
Min Width	2"	2"	2"
Min Thickness	0.25"	0.25"	0.25"

<i>Roland Square Stock*</i>	Wood (Plywood/MDF/Hardwood)	Foam	Plastic
Max Model Length	8"	8"	8"
Max Model Width	5"	5"	5"
Max Model Thickness	2.5"	2.5"	2.5"
Min Model Length	4"	4"	4"
Min Model Width	2"	2"	2"
Min Model Thickness	0.25"	0.25"	0.25"

<i>Roland Cylinder Stock*</i>	Wood (Plywood/MDF/Hardwood)	Foam	Plastic
Max Model Length	8"	8"	8"
Max Model Diameter	4"	4"	4"
Min Model Length	4"	4"	4"
Min Model Diameter	.75"	.75"	.75"

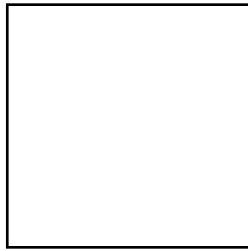
**\*\*NOTE\*\*** Roland files must have an additional 4" of material to be properly be attached to the machine.

Ex. The model length is 8" the material length should measure 12".

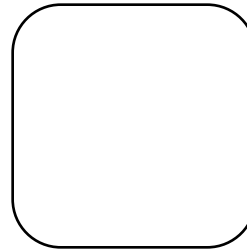
### Internal Radii

This is what an **INSIDE** corner will look like when a tool goes into the area to cut.  
Ex. 1/2" cutting tool will leave a 1/4" radius on a corner.

Original Design



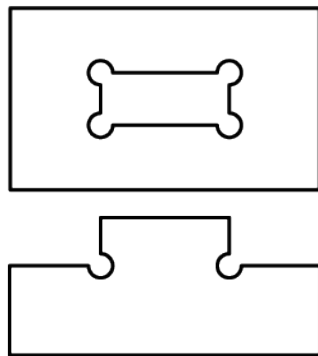
Internal Radii



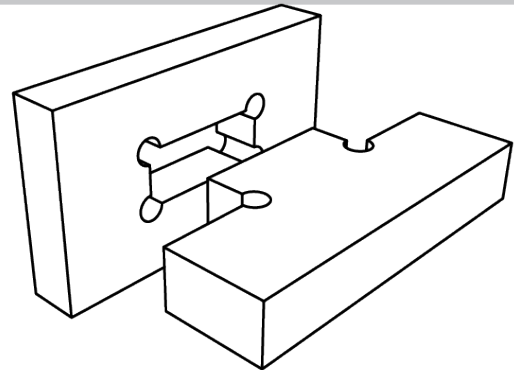
### Dog Bones

Dog bones is a technique to create relief for internal corners for slot fitting parts. They are created by drawing 2D vectors. They can be created by using the Aspire software (refer to vector packet) or drawn in your preferred software.

2D Vectors

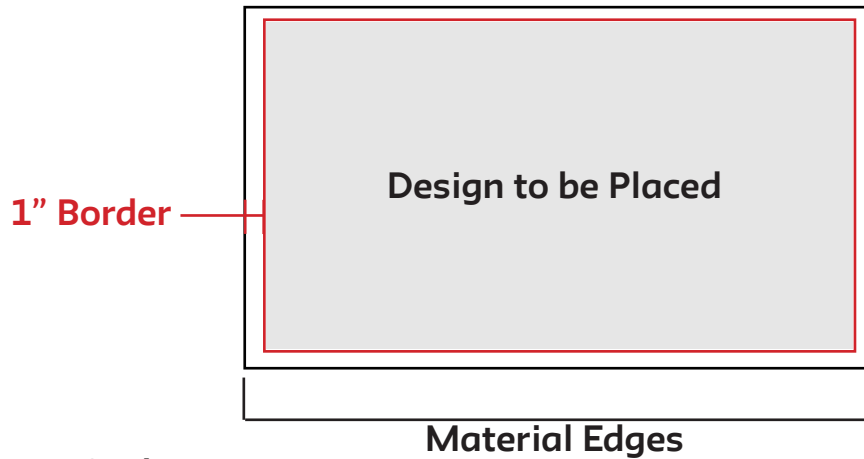


Final Cutout



## Placement of Design

In order to secure material to the machine there **MUST** be the use of fasteners. Those might include screws, nails, tape, jigs or several of these methods combined. With that said, there has to be a border along the edge of any material that does **NOT** include any design components. This border shall be no less than **1"** set in from material edge.



**\*Not Drawn to Scale\***

## Operations Supported

We do not support every type of CNC machining operation. We supported the most general and highly used operations.

### 2D Operations

**Profile:** these 2D operations are generally used to cut out shapes or models.

They can also be used to create lettering or embellishments on designs and models.

This is most similar to vector cutting in the Laser Lab.

**Pocket:** these 2D operations are generally used to cut out recesses into models or material.

This is most similar to raster etching in the Laser Lab.

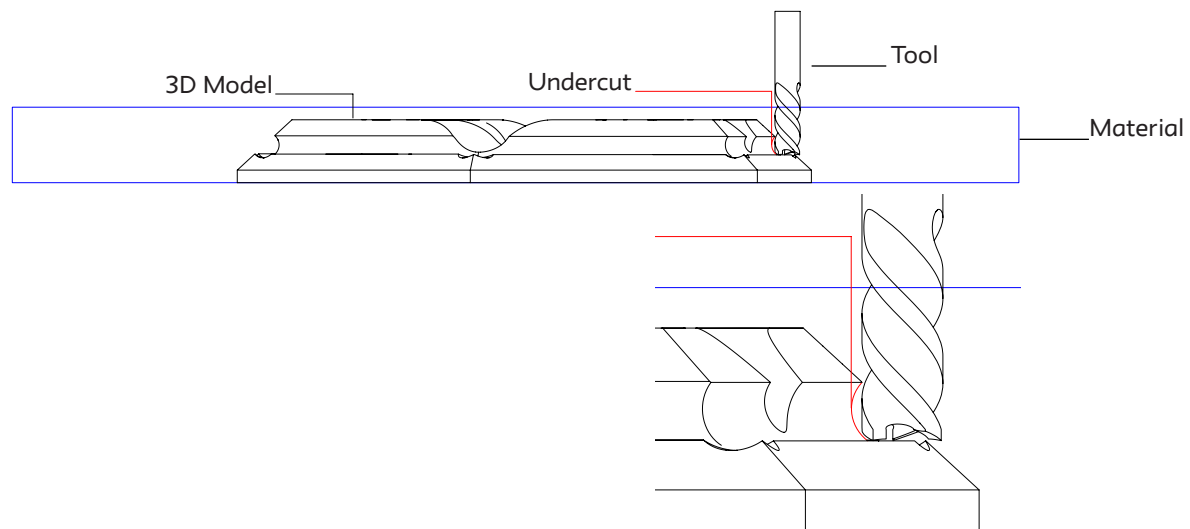
## 3D Operations Machining

The **3D model** must be the **exact size or smaller** than your stock material. If you are creating a digital model that is one inch thick, the stock material should than be at least one inch or slightly thicker. We recommend adding 0.125” of extra material.

Remember the stock material's thickness gets measured to the thousandths

Your 3D STL should contain **2D vectors** from a **TOP** view. We will use this to constrain the cutting operations to speed up cut times.

**Undercuts** are any angle that goes underneath the top surface of your model. Our machines **cannot** cut undercuts and will leave a 90 degree cut instead. Keep this in mind when designing.



## 2 Sided Machining - “Flip Files”

Flip files are done whenever a model has geometry on both sides requiring the stock to be flipped, re-registered, and machined on the 2nd side. Often models can be sliced in half, machined, and then glued back together.

If you feel your model needs to be flipped, you will need to fill out a form for Technician approval. You will need to send it at least 1 week prior to you needing your file cut.

The Technician will get back to you to set up a time for a further consultation if approved.

The form can be found here: <http://bit.ly/flipfile>