

Standard Operating Procedure for Laser Cutter Hand and Machine Lab, University of New Mexico

Standard Operating Procedure (SOP) for using the laser cutters in the Hand and Machine Lab. 2022.	
Process	Laser cutters cut and engrave a variety of materials size using a laser.
Equipment	Trotec Speedy 400 Flex Laser Cutter (large laser cutter) Glowforge Plus Laser Cutter (small laser cutter)
Environmental / Ventilation controls.	The air filter attached to the laser cutter must be turned on whenever the machine is in operation.
Required training or approval	<ul style="list-style-type: none"> You must complete the lab's laser cutter safety training before use. We must have a signed copy of this SOP on file before you can use either machine.
Inspection requirements before use	<ul style="list-style-type: none"> Know exactly what your material is made of before cutting or engraving it. If you're not sure, don't use it! Some materials can release toxic fumes when burned. Examples of materials that are OK to cut: wood, cardboard, natural fabrics like cotton wool and silk, acrylic, nylon, silicone. Materials that are NOT OK to cut: PVC, vinyl, epoxy, any plastic or rubber with unknown chemical make-up, reflective materials. SOME MATERIALS, INCLUDING ALL PVC AND VINYL-BASED MATERIALS, RELEASE POISONOUS GAS WHEN BURNED! Beware of flammable materials and fires while using the laser cutter. Familiarize yourself with the location of the fire extinguisher. The air filter attached to the laser cutter must be turned on the entire time you are cutting. Ensure that the cutting area is clean and free of all debris prior to turning the laser on. Ensure that the lens is clean before using the laser cutter. If it requires cleaning, notify Leah Buechley.
Safe operating procedures or precautions	<ul style="list-style-type: none"> The laser cutter will generally not cut anything greater than 0.25" (6mm), anything thicker will require several passes. Make sure the laser is appropriately focused before starting each job. An unfocused laser beam can cause fires! If using the focusing tool on the large laser cutter, make sure the tool is returned to the bowl on the top of the laser cutter after each use. Make sure the lid is tightly closed before starting a job. Use the appropriate settings for your material. Refer to the online material database. NEVER LEAVE THE LASER CUTTER UNATTENDED when it is on! Wait for all smoke to clear from the cutting chamber before opening the lid. If you experience significant problems, if you break anything, or if you think the cutter is not working properly, stop using the machine immediately and notify Leah Buechley. Never open the lid or reach into the cutting area prior to the laser coming to a complete stop. When you are finished using the laser cutter, and before leaving the laser for any reason, the power must be shut off and the machine must come to a complete stop. The air filter should be turned off when you are done using the machine. The area around the laser cutter should be cleaned when you are done using the machine. Put away all materials. Dispose of any waste. Clean surfaces.
Waste disposal	<ul style="list-style-type: none"> Avoid waste material build up and clean as you go. Check the dust collection system and make sure it is properly maintained. If you suspect the laser lens may be dirty, stop using the machine immediately and notify Leah Buechley.
Signature:	Date: