**Standard Operating Procedure for Kern Laser Cutter in Prototyping Lab**

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| **TOPIC** | **PROCEDURES** |
| **1. Process** | Cuts and engraves materials using a laser. |
| **2. Equipment** | Kern laser cutter |
| **3. Personal Protective Equipment (PPE)** | Hearing protection, gloves if working with metal sheets |
| **4. Environmental /**  **Ventilation controls** | Ensure equipment is secure so it doesn’t move when in use.  A fume extraction system should be attached near the cutting area. |
| **5. Required training or approval** | * Work through the Glowforge tutorial for basic laser safety. * Work through the Kern tutorial for how to use the Kern. * Consult Prototyping Lab staff to be checked out on the Kern. * Review and observe [general safety practices](https://www.ehs.washington.edu/system/files/resources/staying-safe-shops-poster.pdf). * Refer to the manufacturer’s operating manual for all operating procedures. * Refer to the operating manual for appropriate engraving, cutting, power and speed settings for varied materials. |
| **6. Inspection requirements before use** | * Safety shields and guards are in place prior to turning the machine on. * Only use with materials approved by Prototyping Lab staff. * Take note of the location of nearby fire extinguishers. The nearest one is inside the Kern room, and the next nearest are by the service elevator and just outside the PCB Lab. |
| **7. Safe operating procedures or precautions** | * **Never leave the laser cutter unattended** when it is on. * Small flares of fire are normal, but sustained fire that persists when the beam has moved away require action. * In the event of fire, first press the pause button on the controls, then open the lid (disengages laser so no additional heat is added) and blow out the fire. If you were following the first rule, this will be enough.   + If this is unsuccessful, grab a fire extinguisher and put out the fire, remembering the acronym PASS.     - **P**ull the pin     - **A**im the hose at the base of the fire     - **S**queeze the trigger     - **S**weep slowly until the fire is out * Disconnect the laser from power source and follow Lockout/Tagout (LOTO) procedures or manufacturer’s instructions if making repairs, adjustments, or servicing. More information on LOTO can be found at [www.ehs.washington.edu/workplace/hazardous-energy-control-lockouttagout](http://www.ehs.washington.edu/workplace/hazardous-energy-control-lockouttagout). * When an operator has finished working on the laser cutter, and before leaving the laser for any reason, the laser must come to a complete stop. |
| **8. Waste cleanup** | Avoid waste material build up; clean as you go to prevent a potential dust explosion. Check the fume extraction system and make sure it is properly maintained and material is removed frequently. |
| **9. Emergency response and accident reporting** | In case of fire or emergency, dial 9-1-1.  Report any accidents, injuries, or near miss events using [UW’s Online Accident Reporting System (OARS) at](https://oars.ehs.washington.edu/)oars.ehs.washington.edu. |

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