

Sample Standard Operating Procedure Carbon Dioxide Laser Cutter



I. Scope

- A. This document provides safety guidance for laser operators and spectators within the laser controlled area where there is potential access to the laser beam.

II. Responsibilities

- A. _____ is responsible for the safety of this laboratory operation in conformance with this Standard Operating Procedure (SOP). In his/her absence, _____ shall assume these responsibilities.
- B. Only trained laboratory personnel and maintenance personnel from manufacturers may energize the laser or laser system

III. Laser Descriptions

- A. Flat bed carbon dioxide laser cutting system. This is a class 4 laser system that is normally operated under class 1 conditions with a limited nominal hazard zone. Laser workers do not normally enter the nominal hazard
- Wavelength: 10.6 μm
 - Maximum Power: 2000 W
 - Beam Diameter: 21 mm
 - Beam Divergence: 2.5 mrad

IV. Hazards

- A. Eye hazard from direct, reflected or scattered beam.
- B. Skin hazard and fire hazard.
- C. Electrical hazard inside power supply.
- D. Laser Generated Air Contaminants.

V. Control Measures

- A. LSO approval is required before any activities that require activation of the laser beam with interlocks defeated or with enclosures or optics removed.
- B. Only authorized personnel may operate the laser equipment. Approved safety eyewear with an OD of 6 @ 10,600 nm is required for laser operators and maintenance personnel during laser operation. Enclosure interlocks may be defeated only by authorized personnel and with the approval of the LSO. Some maintenance operations may require the removal of beam enclosures and optics. In such cases the beam must be directed toward a specific target or beam block. Designated personnel will assure that the beam path is well defined and that other personnel do not enter the nominal hazard zone.
- C. Keep all combustibles, tool, and reflective surfaces away from the beam path. Make sure you know where the beam is and stay clear.
- D. Work involving access to the power supply is normally done with the system locked out. Work involving access to the energized power supply must be done only by qualified personnel using the "buddy" system. Workers are directed to review the electrical safety and power supply sections of the laser manual before any activities involving access to high voltage.
- E. When functioning normally, the exhaust system will remove all LGACs. Notify the LSO if you think there might be a problem.

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VI. Training

- A. Individuals who use this equipment are required to take the UW EHS Laser Safety Class and shall be trained to recognize the intrinsic hazards, are aware of basic safety information that relates to their job duties, and know the safe operating requirement for this activity.
- B. All operating personnel shall read and understand this standard operating procedure (SOP) and all applicable references stated in this SOP. Signatures of all authorized operators are required at the end of this SOP.

VII. Emergency Procedures

- 1. In an event of a laser emergency, turn off all lasers and notify the Laser Safety Officer.
- 2. In an event of fire or other emergency, evacuate and notify the UW Police department by dialing 911.

VIII. Additional Safety Measures
