

Sample Standard Operating Procedure Carbon Dioxide Laser



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. Rofin Sinar SC x30 carbon dioxide laser cutting system with robot beam delivery inside a walk-in enclosure. This is a class 1 laser system with an embedded class 4 laser.
- Wavelength: 10.6 μm
 - Maximum Power: 300 W
 - Beam Diameter: 8.5 mm
 - Beam Divergence: 2 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. Allow only authorized personnel to be present inside the enclosure during potential beam access. Approved safety eyewear is required for all personnel inside the enclosure. (Polycarbonate eyewear has an OD of $>5 @ 10,600 \text{ nm.}$) Make sure beam is aimed away from personnel before activation. Use only short bursts of laser light at low power during testing and alignment. Enclosure door interlocks may be defeated by authorized personnel.
- B. Keep all combustibles, tool, and reflective surfaces away from the beam path. Make sure you know where the beam is and stay clear.
- C. 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.
- D. When functioning normally, the exhaust system will remove all LGACs. Notify the LSO if you think there might be a problem.

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

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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
