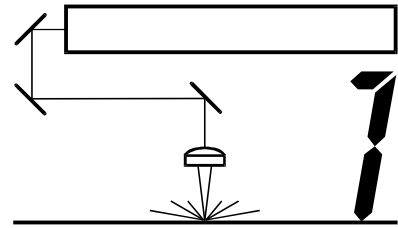

SECTION 1

Safety



This section describes hazards that may occur if the laser is installed or used improperly.



WARNING: Failure to follow these guidelines can result in injury to yourself, others, or may cause severe damage to the equipment and your facility. Use of the equipment in a manner other than what is described in this manual may increase this risk. Operation and care of the laser must be followed in strict accordance to this manual.

Description of Appropriate Use

This device is designed for laser cutting and engraving of the materials listed in this manual, in laboratory, workshop or light duty manufacturing environments. This equipment must be properly installed and connected to an appropriate exhaust system meeting the specifications outlined in this manual. Materials to be processed must fit completely inside the system for proper operation.

General Safety

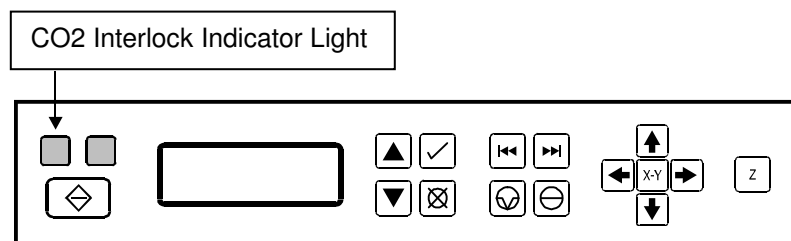
- **Exposure to the laser beam may cause physical burns and can cause severe eye damage.** Proper use and care of this system are essential to safe operation.
- **Never operate the laser system without constant supervision of the cutting and engraving process.** Exposure to the laser beam may cause ignition of combustible materials and start a fire. A properly maintained fire extinguisher should be kept on hand at all times.
- **A properly configured, installed, maintained, and operating fume/smoke exhaust system is mandatory when operating the laser system.** Fumes and smoke from the engraving process must be extracted from the laser system and exhausted outside.
- **Some materials, when engraved or cut with a laser, can produce toxic and caustic fumes.** We suggest that you obtain the Material Safety Data Sheet (MSDS) from the materials manufacturer. The MSDS discloses all of the hazards when handling or processing that material. **DISCONTINUE** processing any material that shows signs of chemical deterioration of the laser system such as rust, metal etching or pitting, peeling paint, etc. Systems damaged from this abuse will **NOT** be covered under warranty.
- **Care should be taken when moving or lifting this device.** Obtain assistance from 1 or 2 additional people when lifting or carrying. Severe bodily injury may occur if improper lifting techniques are applied or the system is dropped.

- **Dangerous voltages are present within the electronics and laser enclosures of this system.** Although access to these areas is not necessary during normal use, if it becomes necessary to open one of these enclosures for service reasons please remember to disconnect the power cord from your electrical supply.
- **This device is specifically designed to comply with CDRH performance requirements under 21 CFR 1040.10 and 1040.11.** CDRH is the Center for the Devices of Radiological Health division of the Food and Drug Administration (FDA) in the USA. It also complies with CE (European Community) safety regulations. No guarantees of suitability or safety are provided for any use other than those specified by Universal Laser Systems, Inc.

Laser Safety

- The device contains a sealed carbon dioxide (CO₂) laser in a Class I enclosure that produces intense invisible and visible laser radiation at a wavelength of 10.6 microns in the infrared spectrum. For your protection, this enclosure has been designed to completely contain the CO₂ laser beam. However, the intense light that appears during the engraving or cutting process is the product of material combustion or vaporization. **DO NOT STARE AT THE BRIGHT LIGHT OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.**
- This device may contain a visible red laser diode (Class IIIa). **DO NOT STARE AT THE RED LIGHT OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.**

- The user door is safety interlocked and will disable the invisible CO₂ laser beam from firing when the user door(s) are opened. The control panel will also display a flashing “RED” light to visually indicate that the safety interlock system has been activated (see diagram). However, since the red diode laser produces visible light, is **NOT** safety interlocked and can be activated with the door(s) either open or closed.



- The user door(s) are safety interlocked and will disable the CO₂ laser beam from firing when the user door(s) are opened. The red diode laser beam is **NOT** safety interlocked and can be activated with the door(s) either open or closed.
- Do not operate any system that has had its safety features modified, disabled, or removed as this can expose your eyes and skin to invisible and visible CO₂ laser radiation which can cause permanent blindness and/or severe burns to your skin.
- Improper use of controls and adjustments, or performance of procedures other than those specified in this manual, may invalidate the safety of this system.

Safety Labels

CDRH and CE regulations require all laser manufacturers to affix warning labels in specific locations throughout the equipment. The following warning labels are placed on the laser system for your safety. **DO NOT** remove them for any reason. If the labels become damaged or have been removed for any reason, **DO NOT OPERATE** the laser system and immediately contact Universal Laser Systems, Inc. for a free replacement. Labels are NOT to scale

Laser Processing System Manufactured By:
UNIVERSAL LASER SYSTEMS INC.
 Scottsdale, Arizona

Model No: XXXX
 Manufactured: XXXX
 Serial No: XXXX

CE
 Made in USA

221-0004-0

SERIAL #: 02500A
 DATE : MAY 2000

221-0007-0



WARNING
 NEVER OPERATE THE LASER SYSTEM
 WITHOUT CONSTANT SUPERVISION
 EXPOSURE TO THE LASER BEAM MAY
 CAUSE IGNITION OF COMBUSTIBLE
 MATERIALS WHICH CAN CAUSE SEVERE
 DAMAGE TO THE EQUIPMENT

221-0012-0



WARNING
 THIS SYSTEM CONTAINS A
 CO2 LASER IN A CLASS I ENCLOSURE.
 THE LASER SYSTEM HAS BEEN
 CLASSIFIED AS CLASS 3A DUE
 TO THE PRESENCE OF A
 VISIBLE LASER DIODE.

221-0013-0

THIS EQUIPMENT CONFORMS
 TO PROVISIONS OF
 US 21 CFR 1040.10
 AND 1040.11

221-0015-0

DANGER
 INVISIBLE AND VISIBLE LASER RADIATION
 WHEN OPENED AND INTERLOCK FAILED OR
 DEFEATED. AVOID EYE OR SKIN EXPOSURE
 TO DIRECT OR SCATTERED RADIATION.


221-0016-0

DANGER
 INVISIBLE AND VISIBLE LASER
 RADIATION WHEN OPEN
 AVOID EYE OR SKIN EXPOSURE TO
 DIRECT OR SCATTERED RADIATION

221-0017-0


AVOID EXPOSURE
 INVISIBLE LASER RADIATION IS
 EMITTED FROM THIS APERTURE

221-0018-0



WARNING
 TURN THE LASER SYSTEM OFF BEFORE
 CONNECTING OR DISCONNECTING
 THE ROTARY FIXTURE

221-0019-0



WARNING
 TO AVOID THE RISK OF ELECTRICAL SHOCK
 ALWAYS DISCONNECT POWER CORD
 BEFORE REMOVING THIS COVER

221-0020-0



221-0021-0

1-4 Safety

INPUT POWER:
110 VAC; 50/60 Hz; 10 A

221-0022-0

INPUT POWER:
220 VAC; 50/60 Hz; 5 A

221-0036-0

THIS LASER MANUFACTURED BY
UNIVERSAL LASER SYSTEMS
16008 N. 81ST ST
SCOTTSDALE, AZ 85260 USA

IS DESIGNED FOR USE ONLY AS A COMPONENT IN A
ULS LASER SYSTEM. THIS LASER IS A CLASS IV DEVICE AND
DOES NOT COMPLY WITH U.S. CODE 21 CFR SUBCHAPTER J
OR EUROPEAN STANDARD EN 60825-1:1994.

THIS LASER PRODUCT IS MANUFACTURED UNDER
U.S. PATENTS 5,661,746; 5,754,575; 5,867,517;
5,901,167; 5,894,493; 5,881,087
OTHER U.S. AND INTERNATIONAL PATENTS PENDING.

221-0031-0

DANGER

LASER RADIATION - AVOID
DIRECT EYE EXPOSURE

LASER DIODE
WAVELENGTH: 630-680 nm
MAX. OUTPUT: 4 mW
CLASS IIIa LASER PRODUCT

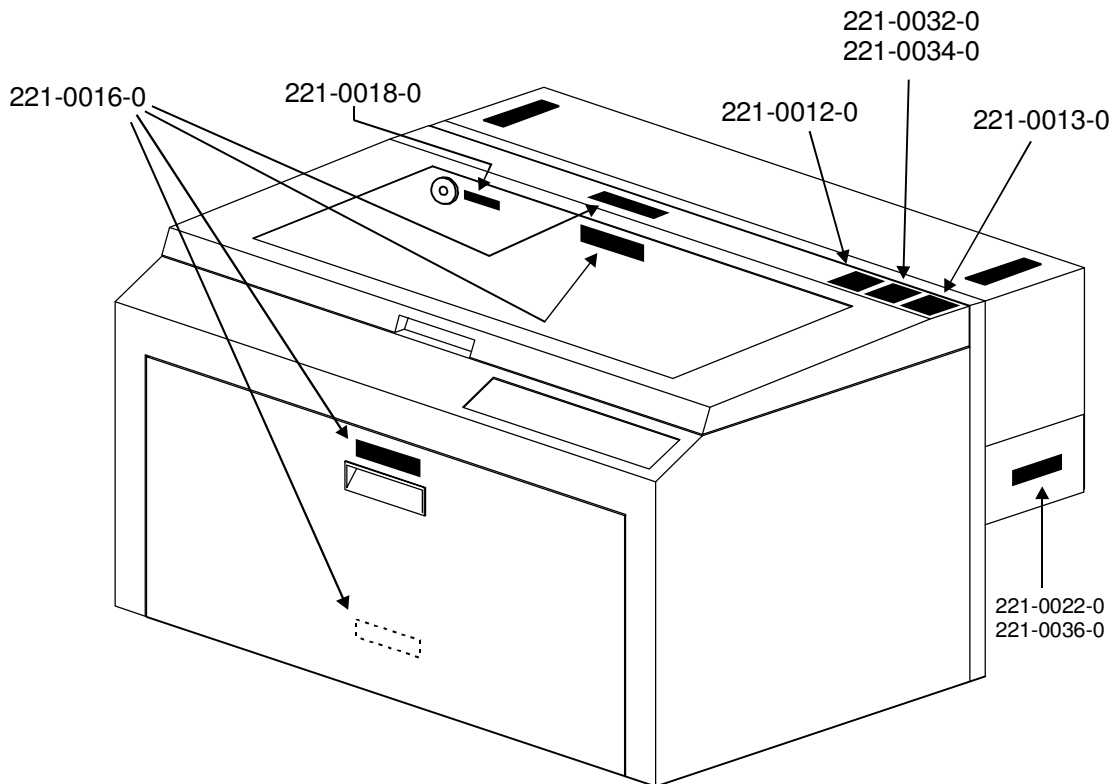
221-0032-0

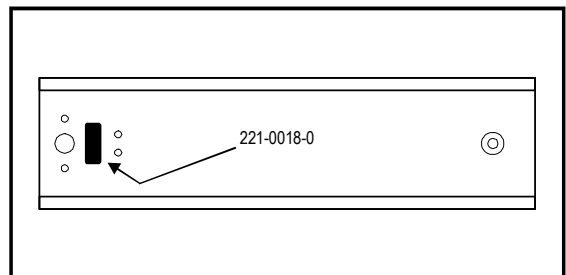
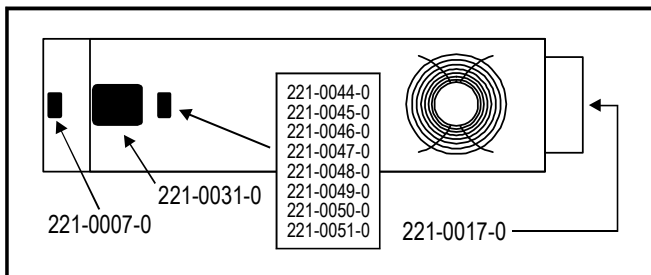
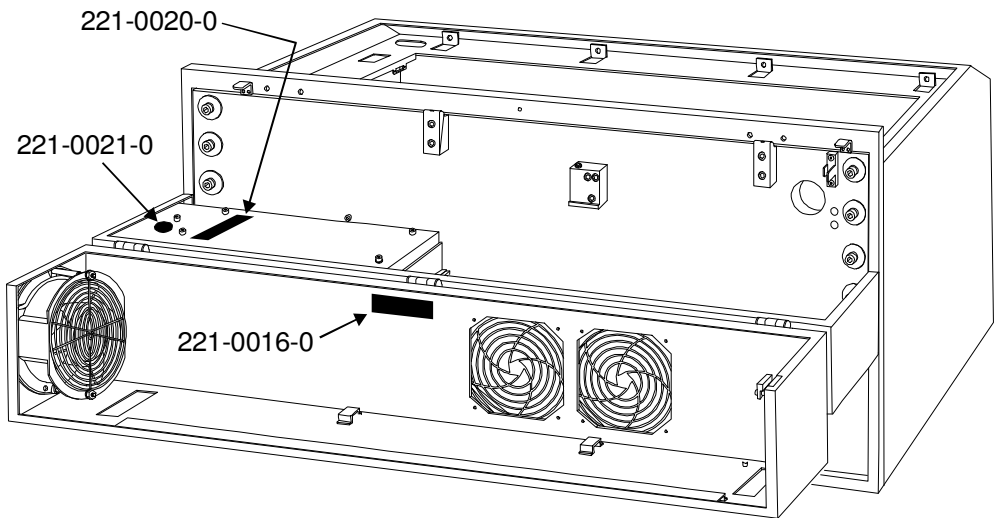
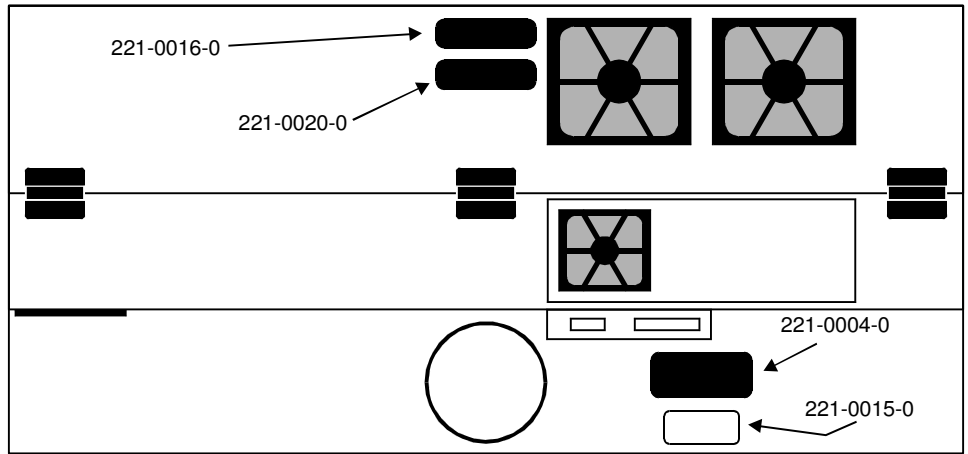
CAUTION LASER RADIATION
DO NOT STARE INTO BEAM OR VIEW
DIRECTLY WITH OPTICAL INSTRUMENTS
CLASS 3A LASER PRODUCT

LASER DIODE
WAVELENGTH: 630-680 nm
MAX. OUTPUT: 5 mW

221-0034-0

Safety Label Locations





EU Compliance (CE)

UNIVERSAL LASER SYSTEMS INC.

Product Identification: V-400 Laser Engraving and Cutting System

Manufacturer: Universal Laser Systems, Inc.
16008 N. 81st St.
Scottsdale, AZ 85260
Phone: (480) 483-1214 Fax: (480) 483-5620
USA

This equipment is manufactured in conformity with the following directives:

89/336/EEC (EMC Directive)
73/23/EEC (Low Voltage Directive)
89/392/EEC (Machinery Directive)

based on the standards listed.

Standards Used:

Safety:

EN 60950: 1995
EN 60825: 1994 (Class IIIa)

EMC:

EN 55022: 1995 (Class A)
EN 50082-1: 1992
EN 60801-2: 1993 (6kV CD, 8kV AD)
EN 61000-3-2: 1996 (class A)
EN 61000-3-3: 1995
EN 61000-4-3: 1997 (3 V/m)
EN 61000-4-4: 1995 (2 kV power line, 0.5 kV signal line)
EN 61000-4-5: 1996 (class 2)

Note: This is not a declaration of conformity. The importer of this equipment supplies the declaration of conformity.

Warning - This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Compliance

This ULS laser system has been tested and found to comply with Federal Communication Commission (FCC) directives regarding Electromagnetic Compatibility (EMC). In accordance with these directives ULS is required to provide the following information to its customers.

FCC Compliance Statement and Warnings

This device complied with FCC Rules Part 15. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device as set forth in Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

Users should be aware that changes or modifications to this equipment not expressly approved by the manufacturer could void the user's authority to operate the equipment.

This equipment has been type tested and found to comply with the limits for a Computing Device per FCC part 15, using shielded cables. Shielded cables must be used in order to insure compliance with FCC regulations.