

Section 1

Safety



Description of Appropriate Use

This device is designed for laser cutting and engraving, in a laboratory, workshop, or light duty manufacturing environment. Materials to be processed must fit completely inside the system for proper operation.



Notice: This device is not designed, tested, intended or authorized for use in any medical applications, surgical applications, medical device manufacturing, or any similar procedure or process requiring approval, testing, or certification by the United States Food and Drug Administration or other similar governmental entities. Please see the Notice herein for further information regarding such uses.

General Safety

Use of the equipment in a manner other than what is described in this manual can result in injury to yourself, others, or may cause severe damage to the equipment and your facility. Failure to follow the operational requirements and safety guidelines, listed in this manual, may increase this risk.

- **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 ETCHING 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.
- **NEVER LEAVE MATERIALS IN THE LASER SYSTEM AFTER LASER PROCESSING HAS FINISHED.** Materials may ignite after laser processing has finished. Thoroughly inspect the interior of the laser system and remove any particulate materials before leaving the workstation. A properly maintained fire extinguisher should be kept on hand at all times.
- **A PROPERLY CONFIGURED, INSTALLED, MAINTAINED, AND OPERATING PARTICULATE/FUME 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. Damage to the laser system from caustic materials is **NOT** covered under warranty.

- **CARE SHOULD BE TAKEN WHEN MOVING OR LIFTING THIS DEVICE.** Obtain assistance from 3 or 4 additional people when lifting or carrying (secure motion system and doors). 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 is designed to completely contain the CO₂ laser beam. Improper use of controls and adjustments, or performance of procedures other than those specified, may invalidate the safety of this system.

- 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 Dot Pointer (Class IIIa). **DO NOT STARE AT THE RED LIGHT OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.**
- 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 Dot Pointer is **NOT** safety interlocked and can be automatically activated with the door(s) either open or closed.
- **DO NOT OPERATE THE LASER SYSTEM IF ITS SAFETY FEATURES HAVE BEEN MODIFIED, DISABLED OR REMOVED.** This may lead to accidental exposure to invisible and visible CO₂ laser radiation which may cause permanent blindness and/or severe burns to your skin.

Safety Labels


CDRH and CE regulations require that all laser manufacturers 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: XXX XXXX
Manufactured: XXX XXXX
Serial No: XXXXX

 **CE**
Made in USA

221-0004-0

SERIAL #: XXXXX
DATE: XXXXX

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

221-0013-0 REV A

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

221-0015-0

CAUTION
CLASS 4 INVISIBLE LASER RADIATION
WHEN OPEN AND INTERLOCK FAILED OR
DEFEATED AVOID EYE OR SKIN EXPOSURE
TO DIRECT OR SCATTERED RADIATION

221-0016-0 REV A


CAUTION
CLASS 4 INVISIBLE LASER
RADIATION WHEN OPEN
AVOID EYE OR SKIN EXPOSURE TO
DIRECT OR SCATTERED RADIATION

221-0017-0 REV A

AVOID EXPOSURE
INVISIBLE LASER RADIATION IS
EMITTED FROM THIS APERTURE


221-0018-0

SAFETY



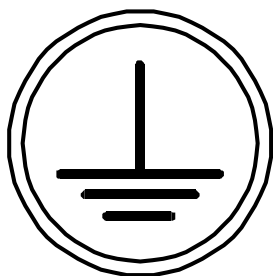
WARNING
TURN THE LASER SYSTEM OFF BEFORE
CONNECTING OR DISCONNECTING
THE ROTARY FIXTURE

221-0019-0



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

221-0020-0



221-0021-0 REV A

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

221-0022-0 REV A

INPUT POWER:
230 VAC; 50/60 Hz; 15 A

221-0024-0 REV B

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 4 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 ONE
OR MORE OF U.S. PATENTS 5,661,746; 5,754,575; 5,867,517;
5,881,087; 5,894,493; 5,901,167; 5,982,803; 6,181,719; 6,983,001
OTHER U.S. AND INTERNATIONAL PATENTS PENDING.


221-0031-0 REV E



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

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

221-0033-0 REV B



DANGER



LASER RADIATION - AVOID
DIRECT EYE EXPOSURE

LASER DIODE
WAVELENGTH: 630-680 nm
MAX. OUTPUT: 5 mW
CLASS 3R LASER PRODUCT

221-0034-0 REV B

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

221-0036-0 REV A



WARNING

THIS SYSTEM IS DESIGNED FOR USE WITH INERT AND NON-OXIDIZING GASES ONLY (i.e. DRY CLEAN AIR, CARBON DIOXIDE, HELIUM, NITROGEN). CONNECTING FLAMMABLE OR OXIDIZING GASES TO THIS SYSTEM CREATES A SERIOUS SAFETY AND/OR FIRE HAZARD. DO NOT CONNECT ANY GAS SOURCES EXCEEDING 75 PSI (5 ATM) PRESSURE. UNIVERSAL LASER SYSTEMS ASSUMES NO RESPONSIBILITY ARISING FROM THE IMPROPER USE OF THIS SYSTEM.

221-0037-0

THIS PRODUCT IS MANUFACTURED UNDER ONE OR MORE OF U.S. PATENTS 5,051,558; 5,661,746; 5,754,575; 5,867,517; 5,881,087; 5,894,493; 5,901,167; 5,982,803; 6,181,719; 6,313,433; 6,342,687; 6,423,925; 6,424,670; 6,983,001; D517,474; 7,060,934
OTHER U.S. AND INTERNATIONAL PATENTS PENDING.

221-0065-0 REV C

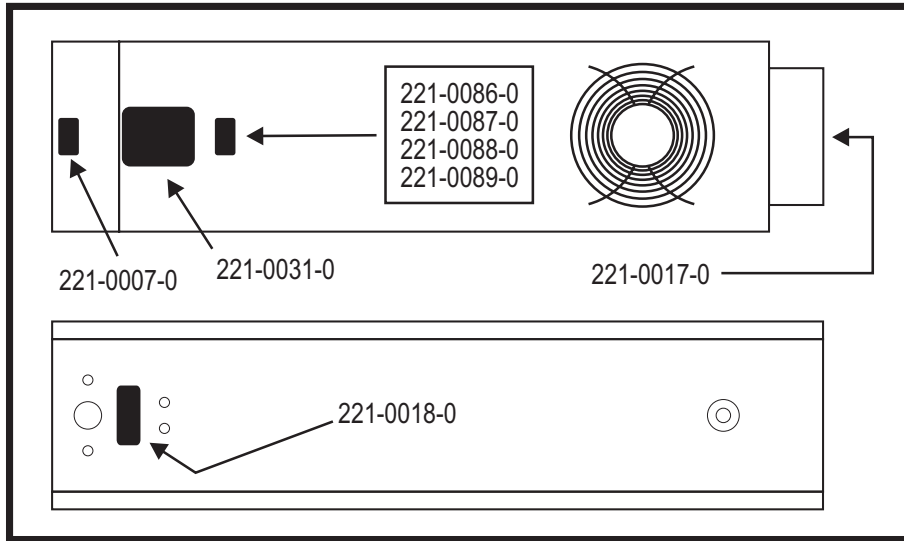


WARNING

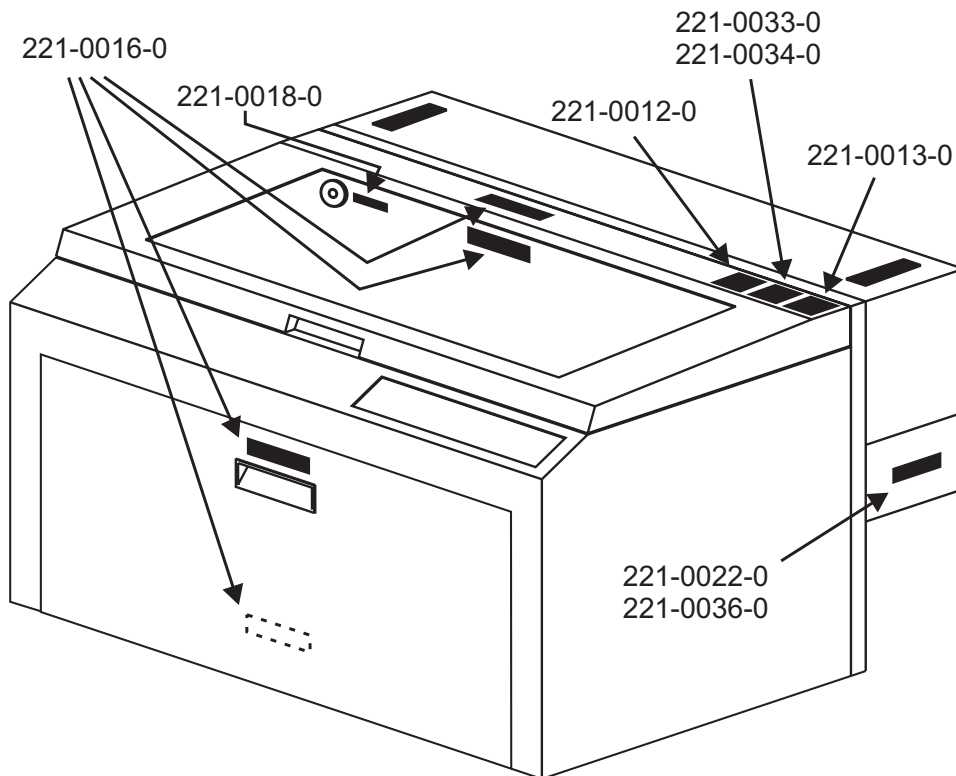
Do **NOT** use in medical or surgical applications or to manufacture medical devices. See the Safety, Installation, Operation, and Basic Maintenance Manual, or the OEM Laser Integration Manual for further information.

221-0081-0

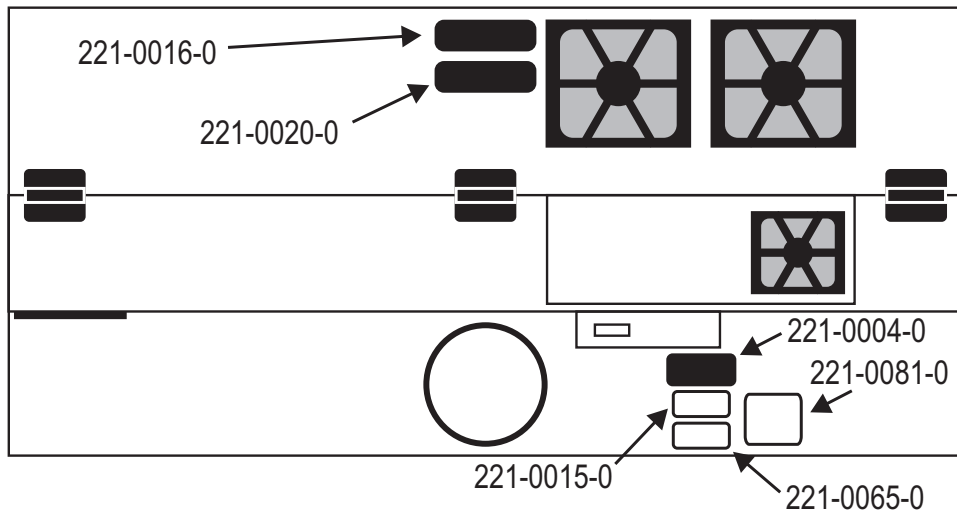
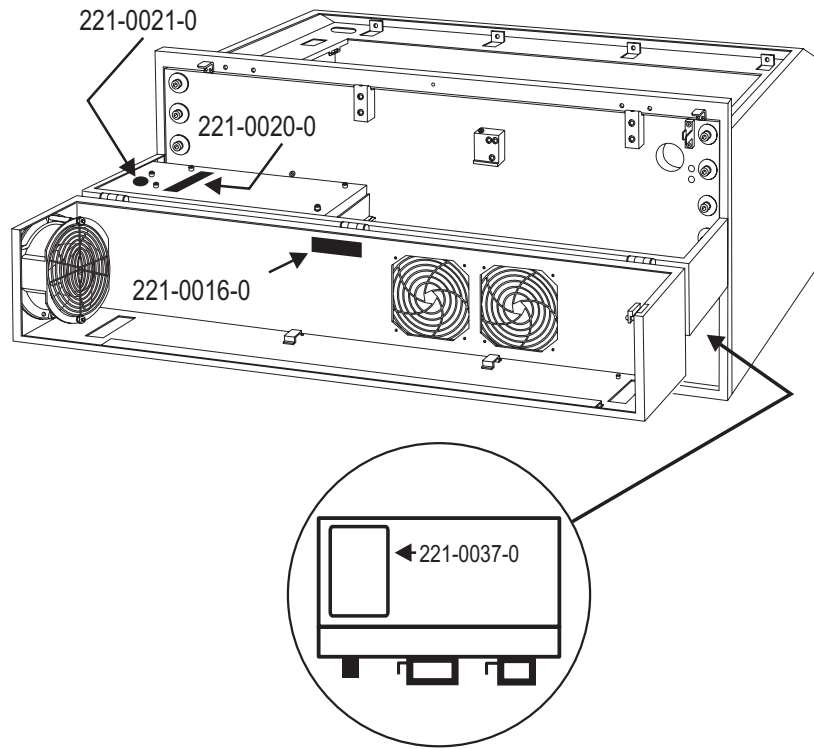
PLS3.60, PLS4.60, PLS6.60 Label Placement



Laser Tube

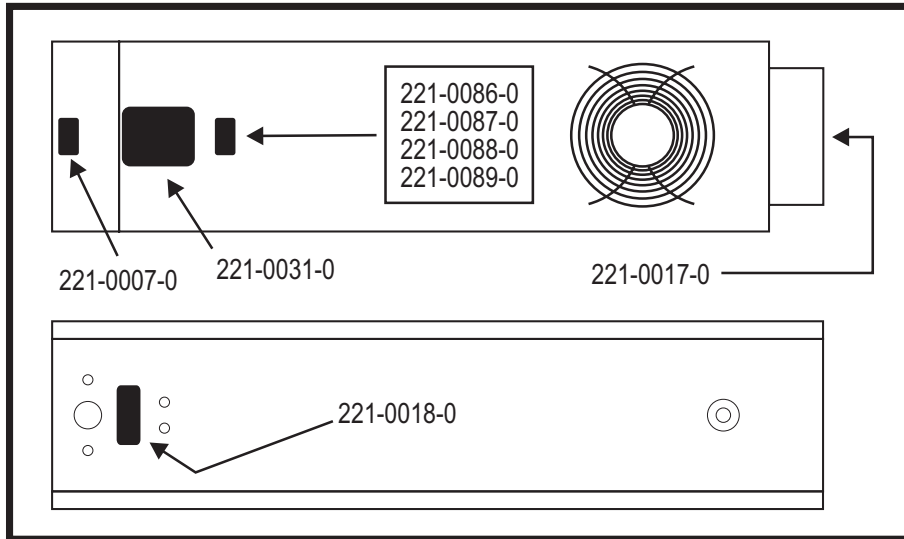


SAFETY

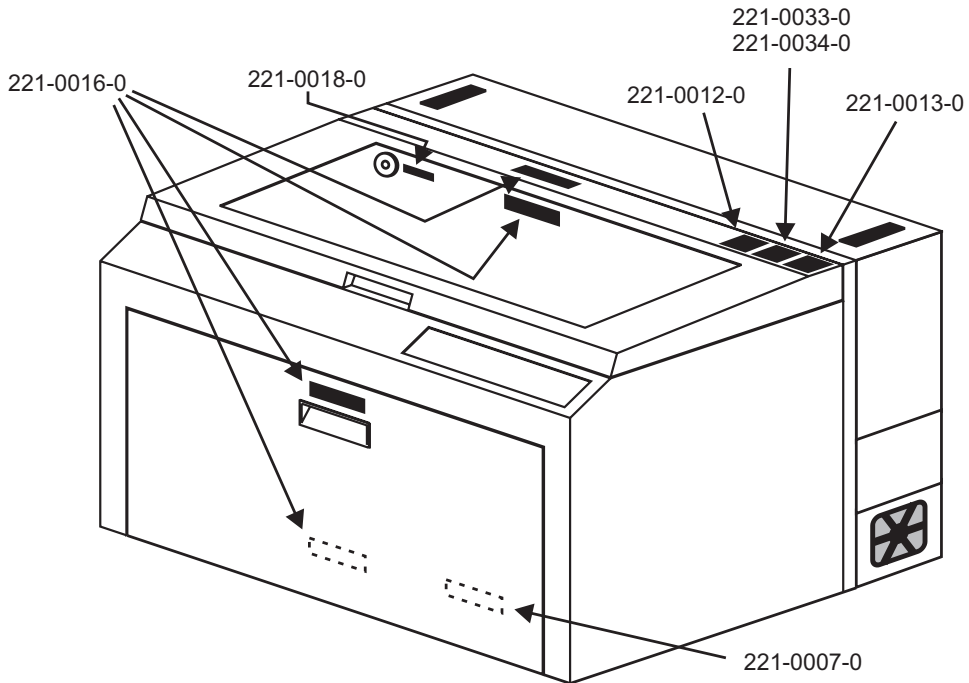


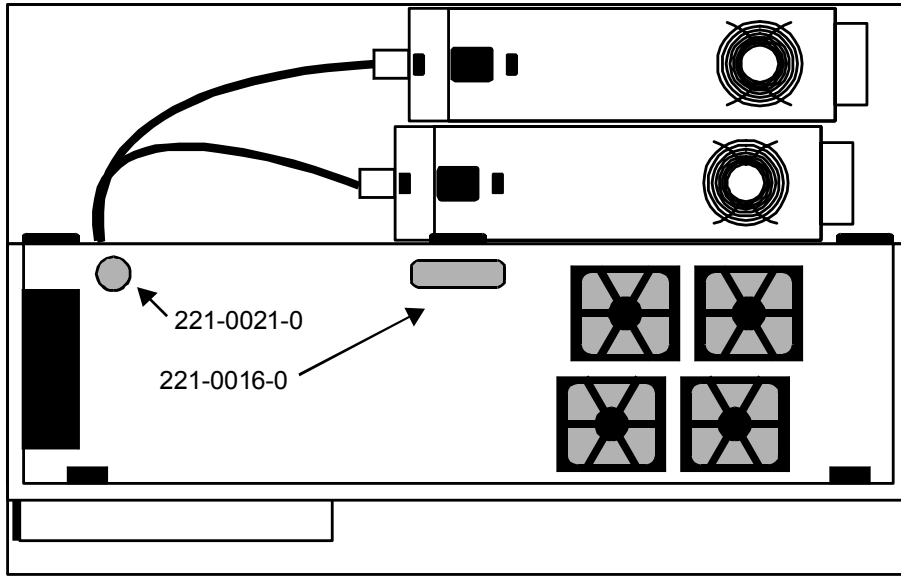
Back View of laser system

PLS6.120D Label Placement

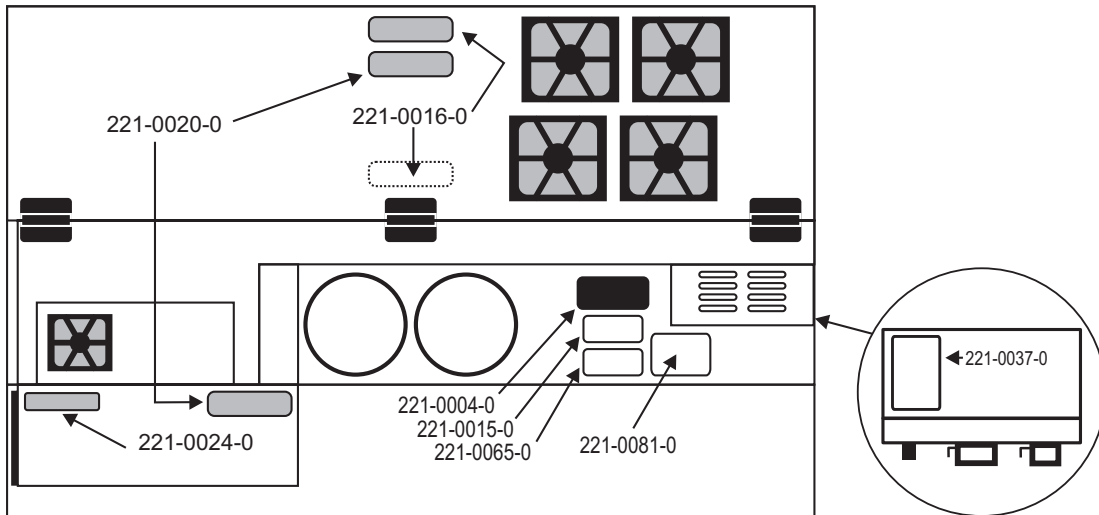


Laser Tube





Back View of laser system - Rear cover open



Back View of laser system - Rear cover closed

EU Declaration of Conformity

UNIVERSAL

L A S E R S Y S T E M S I N C .

Product Identification: PLS3.60, PLS4.60, PLS6.60, and PLS6.120D
Laser Engraving and Cutting Systems

Manufacturer:
Universal Laser Systems, Inc.
16008 N. 81st St.
Scottsdale, AZ 85260
USA

European Office:
Universal Laser Systems GmbH
Lerchenfelder Guertel 43
A-1160 Vienna/Austria

The manufacturer hereby declares that the equipment specified below is in conformity with the following directives:

89/336/EEC	(EMC Directive)
73/23/EEC	(Low Voltage Directive)
98/37/EEC	(Machinery Directive)
2002/95/EEC	(ROHS Directive)
2002/96/ECC	(WEEE Directive)

based on the standards listed.

Standards Used:

Safety:

EN 60950: 2002
EN 60825-1: 2002 (Class 3R)

EMC:

EN 55024 1998 (Class A)
EN 55022: 2003 (Class A)
EN 61000-3-2: 2001 (class A)
EN 61000-3-3: 2002
EN 61000-4-2: 2001 (4kV CD, 8kV AD)
EN 61000-4-3: 2003 (3 or 10 V/m)
EN 61000-4-4: 2002 (1 or 2 kV power line)
EN 61000-4-5: 2001 (class 3)
EN 61000-4-6: (3 or 10Vrms)
EN 61000-4-8
EN 61000-4-11

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.

Recycling



By placing the above symbol on our products and accessories Universal Laser Systems is indicating that we are committed to helping reduce the amount of waste electronics ending up in municipal landfills. Therefore Universal Laser Systems urges consumers to recycle this product and its accessories. Universal Laser Systems is equipped to recycle any of its electronic products and accessories and will assist our customers with their recycling options. To arrange for recycling of your ULS product or accessory, please contact Universal Laser Systems for more information.

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