

CHAPTER 1 NOTES ON DEVICE SAFETY

CONTENTS

	Page
1 NOTES ON DEVICE SAFETY.....	1-3
1.1 General.....	1-3
1.2 Regulations	1-3
1.3 Notes on Setting up the Microscope System.....	1-4
1.4 Notes on Handling the Computer and Data Media	1-5
1.5 Notes on Care, Maintenance and Service	1-6
1.6 Notes on Handling the Laser Components	1-7
1.7 Warning and Information Labels.....	1-8

1 NOTES ON DEVICE SAFETY

1.1 General

The LSM 510 laser scanning microscope, including its original accessories and compatible accessories from other manufacturers, may only be used for the purposes and microscopy techniques described in this manual (intended use).



The manufacturer will not assume liability for any malfunction or damage caused by any thing other than the intended use of the LSM 510 or individual modules or parts of it, nor by any repair or other service operation performed or attempted by persons other than duly authorized service staff. Any such action will invalidate any claim under warranty, including parts not directly affected by such action. This also includes the modification of the system computer with new cards, etc. by the user.

1.2 Regulations


Extensive knowledge of the hardware/the system is indispensable for safe operation of the LSM 510.



Read these operating instructions and all device publications belonging to the system conscientiously **before** operating the LSM 510! You can obtain additional information on the hardware configuration delivered and on optional system extensions from the manufacturer or via the service hotline.


- ⇒ The LSM 510 has been designed, built and tested in conformity with the standards DIN EN 61010-1 (IEC 1010-1) "Safety requirements for electrical instrumentation and control and laboratory apparatus", and DIN EN 60825-1 (IEC publication 825-1) "Safety of laser equipment", and taking relevant CSA and UL specifications into account.
- ⇒ As the system is largely operated via menus on a computer, you should be acquainted with the principles of the operating system and its WINDOWS NT 4.0 and WINDOWS 2000 graphical user interface. The respective manuals are supplied together with the programs.
- ⇒ In accordance with WHO regulations, the LSM 510 is a device that belongs to laser hazard class 3 B. WHO recommendations concerning health and industrial protection when handling laser devices must be observed. The operator of the unit must also observe all and any relevant statutory accident prevention regulations.

1.3 Notes on Setting up the Microscope System

 Setting up, assembly on the system base plate and commissioning of the LSM 510 must be performed by authorized Carl Zeiss service staff, who are also advised to give the customer's operators a basic introduction to operation and maintenance.


The LSM 510 laser scanning microscope is delivered in several crates:


- Crate 1: microscope stand, laser scanning module, control unit
- Crate 2: computer
- Crate 3: monitor
- Crate 4: large system table
- Crate 5: second microscope stand
- Crate 6: small system table
- Crate 7: scan module META
- Crate 8: upgrade kit META


 The LSM 510 must be set up so as to ensure that the minimum clearance between the wall and the rear of the system is no less than 0.5 m. This clearance is needed for adjustment and maintenance operations.

Do not set up the unit in the proximity of heat sources such as radiators or direct sunlight. To avoid heat build-ups, the ventilation louvers on the microscope system must not be covered up.

The unit must be connected to a properly installed socket outlet with earthing contact by means of the mains cables supplied. Continuity of PE connection must not be affected by the use of extension leads.

 Before connecting the mains cables, please check whether your mains voltage corresponds to the voltage specified on the rating plate of the laser module.

 For reasons of laser safety, the TV port on the microscope must either be equipped with a camera or covered by a cap.

 Maintenance, repairs, modifications, removal or exchange of components, or other interference with the equipment beyond the operations described in this manual may only be carried out by the manufacturer Carl Zeiss or by persons expressly authorized by us to do so. This applies especially to the microscope system, the laser scanning module, lasers, the PC system, the power supply units, cable connections and other system components. Please note that the LSM 510 is a high-precision opto-electronic instrument. Inexpert handling may easily impair its function or even damage it.

After installation or after conversion of the LSM system, authorized specialized staff must carefully check that it is in a proper condition and, particularly, that covers protecting against laser radiation are provided.

Tube openings or other unused mounts should always be protected against dust and moisture with the corresponding device components or with termination covers/blind plugs.


By establishing a corresponding workplace environment, please ensure that the formation of electrostatic charges by electronic components is avoided.


To avoid vibrations during operation, the LSM 510 should only be operated in conjunction with the system table (vibration damping).

1.4 Notes on Handling the Computer and Data Media

The computer used as standard in your LSM system is an IBM-compatible high-end pentium computer with WINDOWS NT 4.0 or WINDOWS 2000 operating system.

As standard, your computer has one hard disk drive, one drive for 1.44 MB diskettes and one CD-ROM drive. An CD reader/writer is installed.

 Do make sure, though, that you receive your LSM system with the operating system installed, with initialization and start files set up and with the LSM program also installed.

 When working with the hard disk, it is important to know that the more data it contains, the slower its operation will become. Therefore, data that you do not need permanently should be stored on a diskette or CD-ROM.



When handling diskettes, avoid data losses by protecting them against extreme temperatures, moisture and magnetic fields. The data on a diskette is stored in the form of magnetic signals. To some extent, monitors, telephones or even lamps generate magnetic fields that might destroy this data. Also, never open the metal cover on diskette cases. A diskette's surface can also be destroyed by touching it.



Never turn your computer off before you have exited the LSM program and run down the WINDOWS NT operating system. Otherwise, the program and/or data files may get lost.



When handling discs of the CD reader/writer, do not touch the data side of the disc (the side of the disc with no label or printing).

Do not apply paper labels or write on any part of the disc, data side or label side. If dust or fingerprints get on the disc, wipe it with a soft cloth from the center to the edge, but do not use benzine, paint thinner, record cleaner, or static repellent. This can damage the disc.

Do not place the disc in any place where it is exposed to direct sunlight or high temperatures.

1.5 Notes on Care, Maintenance and Service

The manufacturer of the unit cannot be held liable for damage resulting from operating errors, negligence or unauthorized tampering with the device system, particularly as the result of removal or replacement of parts of the unit or as the result of the use of unsuitable accessories from other manufacturers.

Any such action will also render all warranty claims null and void.

You are well advised to arrange a service agreement with your nearest Zeiss representative to guarantee perfect functioning of the microscope system in the long term.

Modifications and conversion work on the components of the system must only be carried out by the manufacturer, by the service agency or by persons authorized and trained for this purpose by the manufacturer.

Damaged units or parts may only be repaired or maintained by the responsible service agency.

Care operations that may be carried out by operating staff are limited to cleaning painted and glass surfaces.

- **Cleaning painted surfaces**
To do this, use a clean cloth that has been moistened in a mixture of water and some detergent; do not use any solvent, however. Dry with a lint-free cloth.
- **Cleaning glass surfaces**
Glass surfaces that have become soiled or which are marked with fingerprints may be rubbed with a clean optical cleaning cloth.
If soiling is persistent, dip the optical cleaning cloth into a mixture of distilled water and a small quantity of detergent.
To complete cleaning, lightly breathe on the glass surface and rub it dry with a clean cloth. Lint or dust is best removed with a clean hairbrush.

The air filter mat at the bottom of the LSM 510 Control Unit must be cleaned every six months. Filter mats can be ordered from our Service Department.

1.6 Notes on Handling the Laser Components



The LSM 510 is a laser hazard class 3 B instrument and is marked as such. This moderate-risk class embraces medium-power lasers. You must take care not to expose yourself to the radiation of such lasers. In particular, never look into the laser beam!

The following laser types are currently recommended for use in the LSM 510.

- 1 Ar 351/364 (UV)
- 2 Ar/ML 458/477/488/514
- 3 HeNe 543
- 4 ArKr 488/568
- 5 HeNe 633



Please contact Carl Zeiss if you intend to use a laser type with a wavelength other than the ones above.

If used properly, the LSM 510 will not pose any laser radiation risks for operating staff. The dangerous laser radiation area is limited to the beam path and to a distance of up to around 10 cm from the specimen. Nevertheless, you should observe the following warnings:



- If necessary - insofar as specified by law - inform the laser protection officer before commissioning the laser.
- Always store laser key switches and, if applicable, keys for further laser power supply units, where they are inaccessible to persons not authorized to operate the laser.
- Do not place any reflecting objects into the beam path.
- Never open any covers or panelings.
- Never look into the laser beam, not even to simply view the specimen, whether with the aid of optical instruments or without. **Otherwise you risk going blind!**
- Do not leave any screw positions of the nosepiece uncovered.



Suitable protective measures must be taken if gases, dust or vapors hazardous to health, secondary radiation or explosive objects should arise on the specimen as a result of laser radiation.

1.7 Warning and Information Labels



The warning and information labels attached on the LSM 510 must be observed. Check whether all of the labels shown below are provided on your instrument, and contact Carl Zeiss Germany or one of the service agencies if you should discover that any of the labels should be missing. You will receive a free replacement.

The label means: "Do not remove securing screw as otherwise laser beam will escape. For use by service only!"

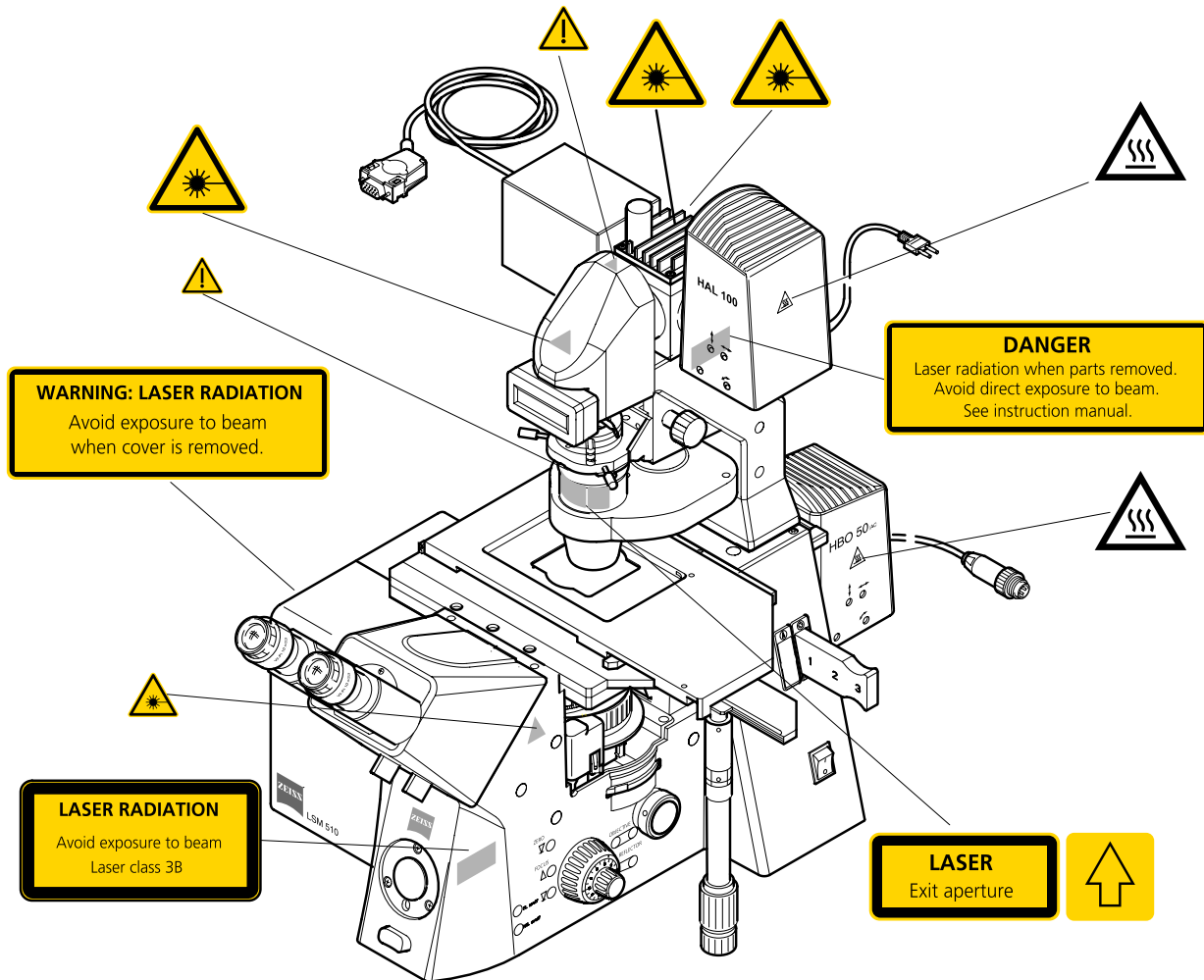


Fig. 1-1 Warning and information labels on the Axiovert 200 M microscope with the LSM 510 scanning module

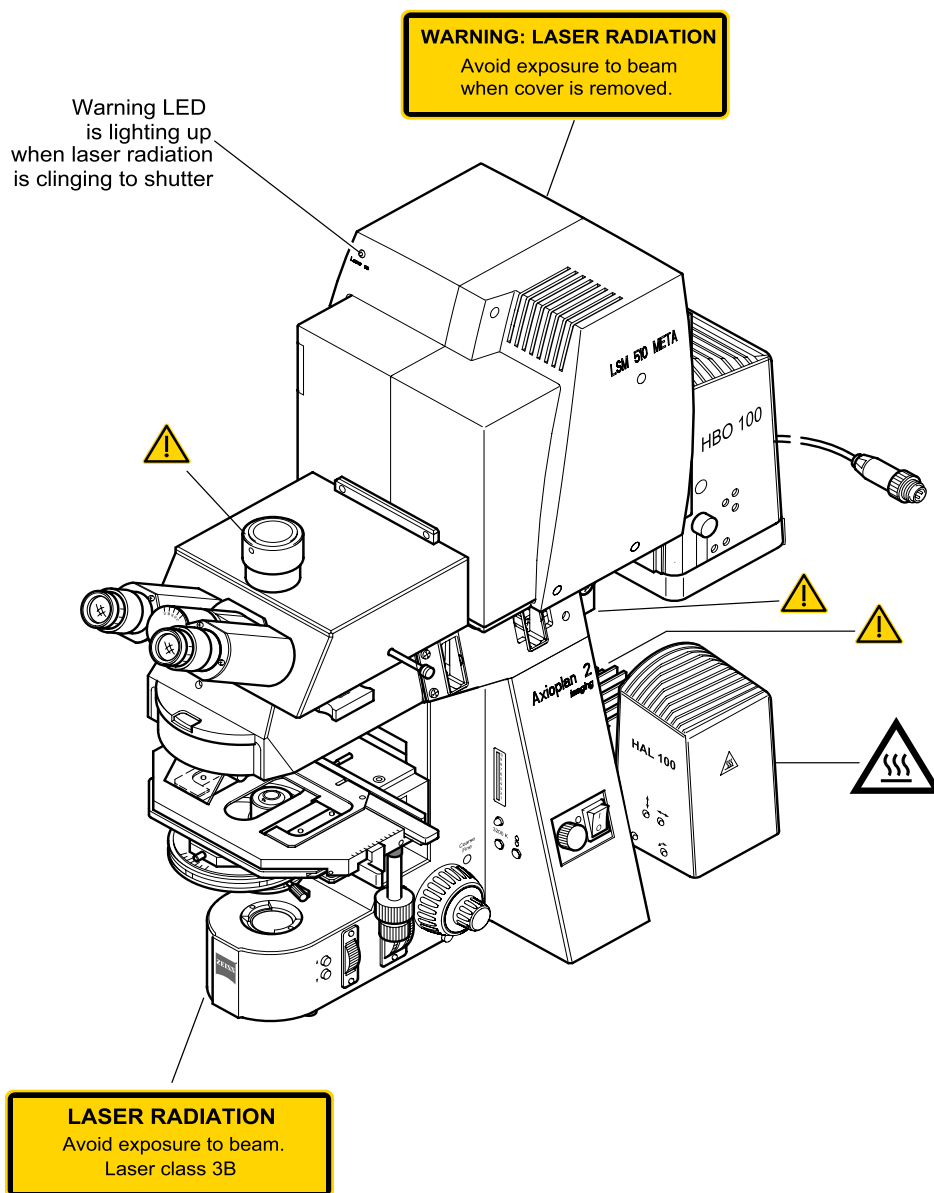


Fig. 1-2 Warning and information labels on the Axioplan 2 imaging MOT microscope with LSM 510 META scanning module

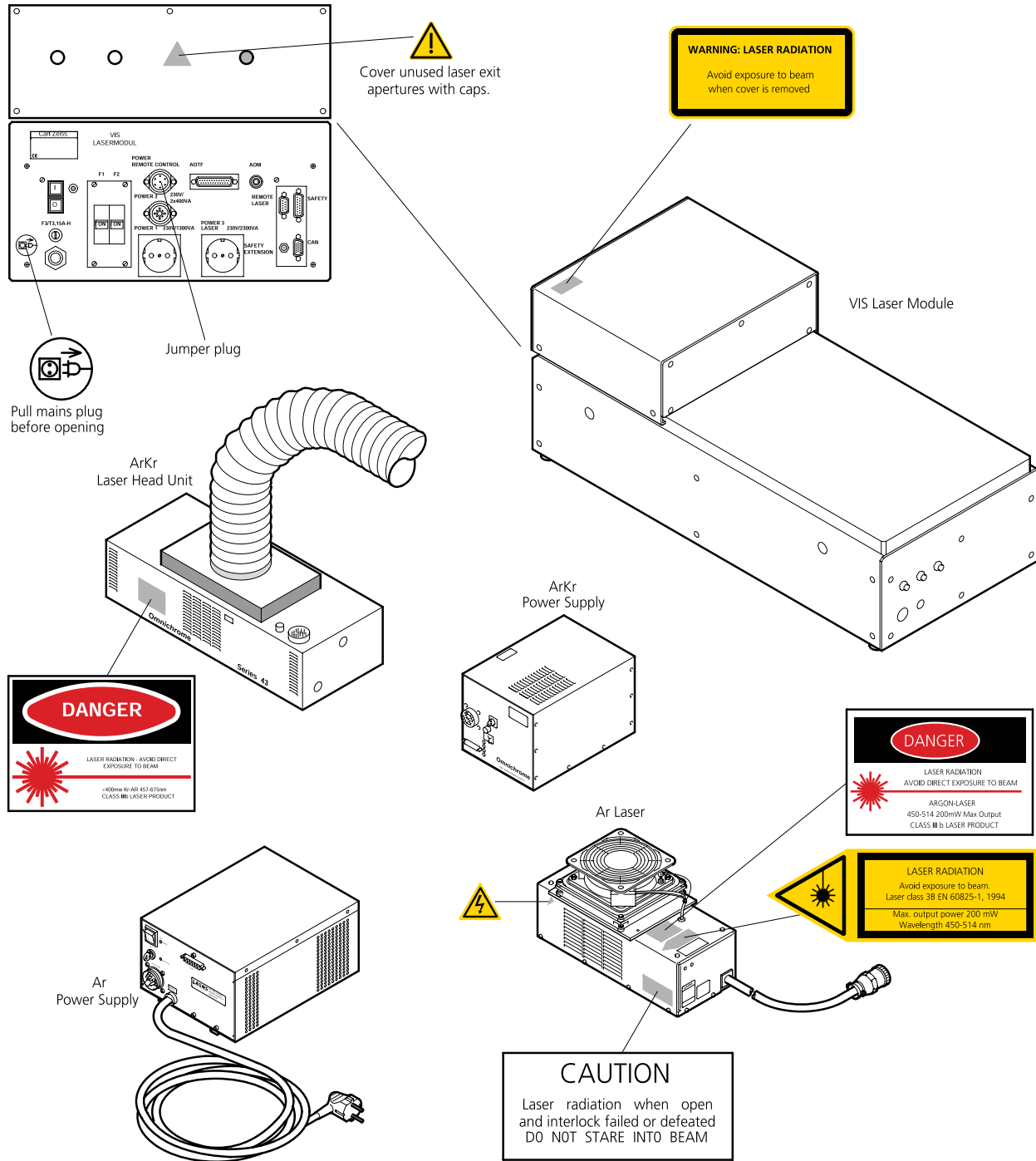


Fig. 1-3 Warning and information labels on laser components (page 1)

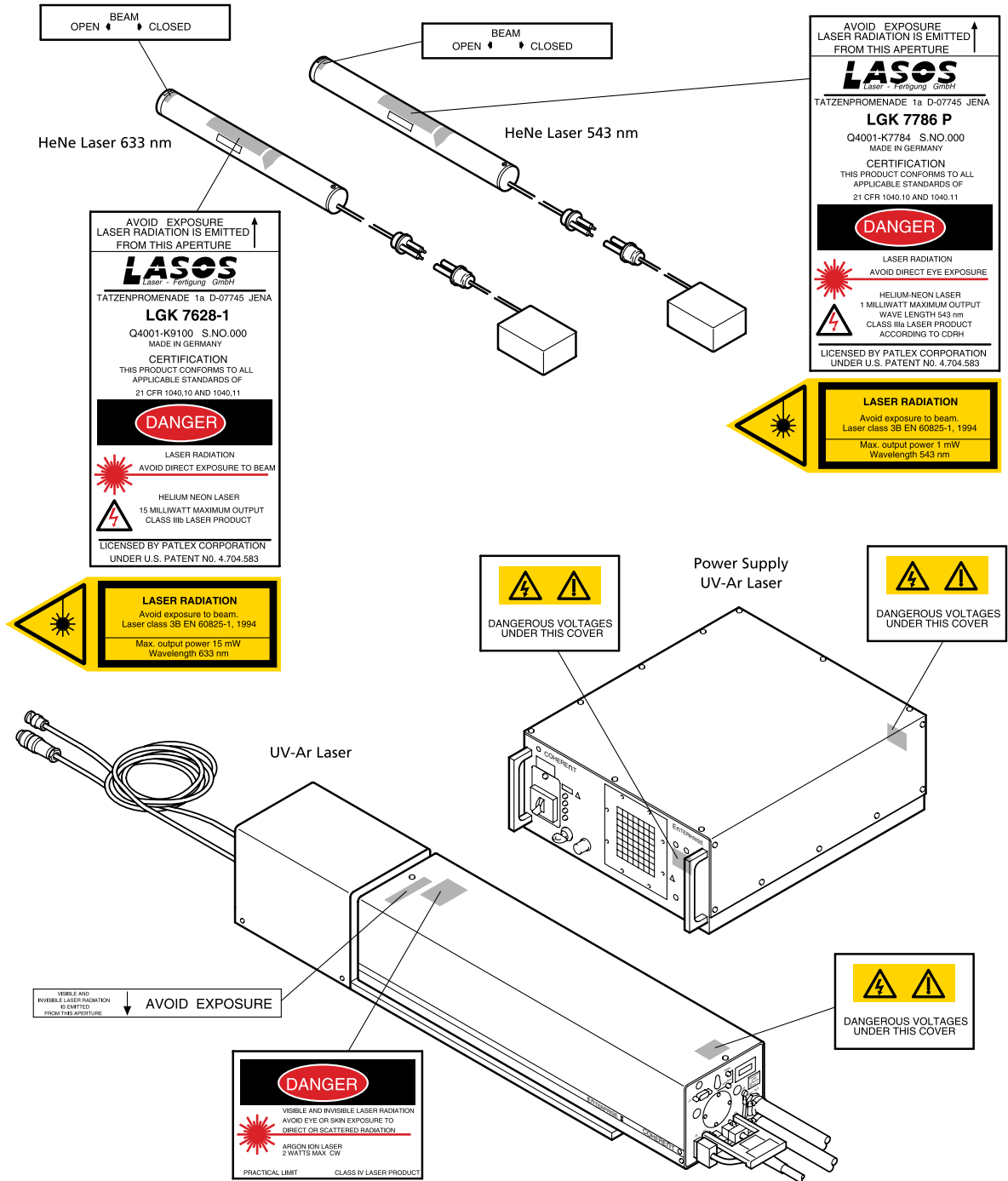


Fig. 1-3 Warning and information labels on laser components (page 2)

