PHASER™ 4400
LASER PRINTER

Service Manual

Warning
The following servicing instructions are for use by qualified service personnel only. To avoid personal injury, do not perform any servicing other than that contained in the operating instructions, unless you are qualified to do so.

First Printing: June 2002
071-0861-00

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Service Terms

Manual Terms

Various terms are used throughout this manual to either provide additional information on a specific topic or to warn of possible danger that might be present during a procedure or action. Be aware of all symbols and terms when they are used, and always read **NOTE**, **CAUTION** and **WARNING** messages.

Note: ***A NOTE may indicate an operating or maintenance procedure, practice or condition that is necessary to efficiently accomplish a task.***
A NOTE may also provide additional information related to a specific subject or add a comment on the results achieved through a previous action.

Caution: **A CAUTION indicates an operating or maintenance procedure, practice or condition that, if not strictly observed, could result in damage to, or destruction of, equipment.**

Warning: **A WARNING indicates an operating, or maintenance procedure, practice or condition that, if not strictly observed, could result in injury or loss of life.**

PL: Corresponds to the FRU Parts List.

RRP: Corresponds to the FRU Disassembly Removal and Replacement Procedures.

Product Terms

Caution:	A personal injury hazard exists that may not be apparent. For example, a panel may cover the hazardous area.
Danger:	A personal injury hazard exists in the area where you see the sign.

Symbols Marked on the Product

DANGER high voltage.

Protective ground (earth) symbol.

Hot surface on or in the printer. Use caution to avoid personal injury.

The surface is hot while the printer is running. After turning off the power, wait 30 minutes.

Avoid pinching fingers in the printer. Use caution to avoid personal injury.

Use caution (or draws attention to a particular component). Refer to the manual(s) for information.

Power Safety Precautions

Power source

For 110 VAC printers, do not apply more than 140 volts RMS between the supply conductors or between either supply conductor and ground. Use only the specified power cord and connector. For 220 VAC printers, do not apply more than 264 volts RMS between the supply conductors or between either supply conductor and ground. Use only the specified power cord. This manual assumes that the reader is a qualified service technician.

Warning: Plug the three-wire power cord (with grounding prong) into a grounded AC outlet only. If necessary, contact a licensed electrician to install a properly grounded outlet. If the product loses its ground connection, contact with conductive parts may cause an electrical shock.

Disconnecting Power

Warning: Turning the power OFF using the On/Off switch does not completely de-energize the printer. You must also disconnect the printer power cord from the AC outlet. Position the power cord so that it is easily accessible during servicing so that you may power down the printer during an emergency.

Disconnect the power plug by pulling the plug, not the cord. Disconnect the power cord in the following cases:

- If the power cord or plug is frayed or otherwise damaged
- If any liquid or foreign material is spilled into the case
- If the printer is exposed to any excess moisture
- If the printer is dropped or damaged
- If you suspect that the product needs servicing or repair
- Whenever you clean the product

Electrostatic Discharge (ESD) Precautions

Some semiconductor components, and the respective sub-assemblies that contain them, are vulnerable to damage by Electrostatic discharge (ESD). These components include Integrated Circuits (ICs), Large-Scale Integrated circuits (LSIs), field-effect transistors and other semiconductor chip components. The following techniques will reduce the occurrence of component damage caused by static electricity.

Caution: Be sure the power is off to the chassis or circuit board, and observe all other safety precautions.

- Immediately before handling any semiconductor components assemblies, drain the electrostatic charge from your body. This can be accomplished by touching an earth ground source or by wearing a wrist strap device connected to an earth ground source. Wearing a wrist strap will also prevent accumulation of additional bodily static charges. (Be sure to remove the wrist strap before applying power to the unit under test to avoid potential shock.)
- After removing a static sensitive assembly from its anti-static bag, place it on a grounded conductive surface. If the anti-static bag is conductive, you may ground the bag and use it as a conductive surface.
- Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage some devices.
- Do not remove a replacement component or electrical sub-assembly from its protective package until you are ready to install it.
- Immediately before removing the protective material from the leads of a replacement device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
- Minimize body motions when handling unpackaged replacement devices. Motion such as your clothes brushing together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an electro-statically sensitive device
- Handle ICs and EPROM's carefully to avoid bending pins.
- Pay attention to the direction of parts when mounting or inserting them on Printed Circuit Boards (PCB's).

Service Safety Summary

General Guidelines

For qualified service personnel only: Refer also to the preceding Power Safety Precautions.

Avoid servicing alone: Do not perform internal service or adjustment of this product unless another person capable of rendering first aid or resuscitation is present.

Use care when servicing with power: Dangerous voltages may exist at several points in this product. To avoid personal injury, do not touch exposed connections and components while power is on. Disconnect power before removing the power supply shield or replacing components.

Do not wear jewelry: Remove jewelry prior to servicing. Rings, necklaces and other metallic objects could come into contact with dangerous voltages and currents.

Power source: This product is intended to operate from a power source that will not apply more then 264 volts rms for a 220 volt AC outlet or 140 volts rms for a 110 volt AC outlet between the supply conductors or between either supply conductor and ground. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Warning Labels

Read and obey all posted warning labels. Throughout the printer, warning labels are displayed on potentially dangerous components. As you service the printer, check to make certain that all warning labels remain in place.

Safety Interlocks

Make sure covers and panel are in place and that all interlock switches are functioning correctly after you have completed a printer service call. If you bypass an interlock switch during a service call, use extreme caution when working on or around the printer.

CLASS 1 LASER PRODUCT

The Phaser 4400 laser printer is certified to comply with Laser Product Performance Standards set by the U.S. Department of Health and Human Services as a Class 1 Laser Product. This means that this is a class of laser product that does not emit hazardous laser radiation; this is possible only because the laser beam is totally enclosed during all modes of customer operation. When servicing the printer or laser unit, follow the procedures specified in this manual and there will be no hazards from the laser.

Servicing Electrical Components

Before starting any service procedure, switch off the printer power and **unplug the power cord** from the wall outlet. If you must service the printer with power applied, be aware of the potential for electrical shock.

Warning: **Turning the power OFF using the On/Off switch does not completely de-energize the printer. You must also disconnect the printer power cord from the AC outlet. Position the power cord so that it is easily accessible during servicing so that you may power down the printer during an emergency.**

Warning: ***Do not touch any electrical component unless you are instructed to do so by a service procedure.***

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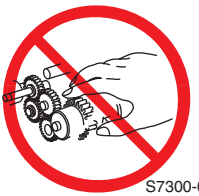
Servicing Mechanical Components

Manually rotate drive assemblies to inspect drive gears.

Warning: ***Do not try to manually rotate or manually stop the drive assemblies while any printer motor is running.***



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Servicing Fuser Components

This printer uses heat to fuse the toner image to a sheet of paper. The Fuser Assembly is very hot. Turn the printer power OFF and wait at least 5 minutes for the Fuser to cool before you attempt to service the Fuser Assembly or adjacent components.

Regulatory Specifications

Federal Communications Commission Compliance

The equipment described in this manual generates and uses radio frequency energy. If it is not installed properly in strict accordance with Xerox instructions, it may cause interference with radio and television reception or may not function properly due to interference from another device. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiver (device being interfered with).
- Increase the separation between the printer and the receiver.
- Connect the printer into an outlet on a circuit different from that which the receiver is connected.
- Route the interface cables on the printer away from the receiver
- Consult the dealer, Xerox service, or an experienced radio/television technician for help.

Changes or modifications not expressly approved by Xerox can affect the emission and immunity compliance and could void the user's authority to operate this product. To ensure compliance, use shielded interface cables. A shielded parallel cable can be purchased directly from Xerox at www.xerox.com/officeprinting/6200supplies.

Xerox has tested this product to internationally accepted electromagnetic emission and immunity standards. These standards are designed to mitigate interference caused or received by this product in a normal office environment. This product is also suitable for use in a residential environment based on the levels tested.

In the United States this product complies with the requirements of an unintentional radiator in part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference; (2) this device must accept any interference received, including interference that may cause undesired operation.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications, ICES-003.

Le présent appareil numérique n'émet pas de bruits radioélectrique dépassant les limits applicables aux appareils numériques de la classe B prescrites dans le Réglement sur le brouillage radioélectrique édicté par le ministere des Communications du Canada, NMB-003.

Declaration of Conformity

Xerox Corporation, declares, under our sole responsibility that the printer to which this declaration relates, is in conformity with the following standards and other normative documents:

In the European Union

following the provisions of the Low Voltage Directive 73/23/EEC and its amendments:

EN 60950 (IEC 950)	“Safety of Information Technology Equipment including Electrical Business Equipment”

following the provisions of the Electromagnetic Compatibility Directive 89/336/EEC and its amendments:

EN55022:1998 (CISPR 22)	“Limits and Methods of measurement of radio interference characteristics of Information Technology Equipment.” Class B.
EN61000-3-2:1995 +A1:1998+A2:1998. (IEC61000-3-2)	“Part 3: Limits - Section 2: Limits for harmonic current emissions (equipment input current less than or equal to 16A per phase).”
EN61000-3-3:1995 (IEC61000-3-3)	“Part 3: Limits - Section 3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current less than or equal to 16A.”
EN55024:1998 (CISPR 24)	“Information technology equipment - Immunity characteristics - Limits and methods of measurement. “

CISPR 24 Immunity Phenomena	**Basic Standard**	**Test Specification**
Electrostatic Discharge	IEC61000-4-2:1995	6kV Contact, 10kV Air
Radio-Frequency Electromagnetic Field (radiated)	IEC61000-4-3:1995	80-1000 MHz, 3V/m, 80% AM @ 1KHz
Fast Burst Transients	IEC61000-4-4:1995	5/50 Tr/Th ns, 5kHz Rep. Freq 0.5kV on Signal Lines 1kV on AC Mains
Line Surge	IEC61000-4-5:1995	Combination wave 2.0kV Common mode 2.0kV Differential mode
Radio-Frequency Electromagnetic Field (Conducted)	IEC61000-4-6:1996	0.15 - 80 MHz, 3V, 80% AM @ 1kHz
Line voltage dips	IEC61000-4-11:1994	>95% dip for ½ cycle @ 50 Hz 30% dip for 25 cycles @ 50 Hz
Line voltage drop-out	IEC61000-4-11:1994	>95% dropout for 250 cycles @ 50 Hz

This product, if used properly in accordance with the user's instructions is neither dangerous for the consumer nor for the environment. A signed copy of the Declaration of Conformity for this product can be obtained from Xerox.

Safety Standards

Phaser 4400 satisfies the following safety standards:

Category	Standard Satisfied
Laser Safety	100 V/120 V type is submitted to FDA 21 CFR (Chapter 1, Subchapter J, Section 1010/1040). 220 V/240 V type is submitted to IEC 825 Class 1 Laser Product.
Ozone Density	Does not exceed 0.02 ppm of ozone density TWA (Time Weight Average), measured according to ECMA 129 standard
Other standards	100 V/120 V type satisfies: UL 1950 3rd Edition, CSA C22.2 no. 950-M95 or equivalent, NOM 200 V/220 V satisfies: IEC 950 including amendments 1,2,3 and 4, CE Directive 1, Nordic and other Agency Approval 2, CCIB Notes: 1. When the controller is installed, the OEM customer shall be responsible for the submittal of CE and CCIB. 2. The OEM customer shall be responsible for the Nordic agency approvals including NEMKO, SEMKO, SETI and DEMKO.