

Revised March, 2005



## *Service Manual*

For the complete PDF manual  
please visit [www.LaserPros.com](http://www.LaserPros.com).

**Lexmark C510**

**5021-0XX**

- ***Table of Contents***
- ***Start Diagnostics***
- ***Safety and Notices***
- ***Trademarks***
- ***Index***

**LEXMARK™**

*Lexmark and Lexmark with diamond design are trademarks of Lexmark International, Inc., registered in the United States and/or other countries.*

**Edition: March 2005**

**The following paragraph does not apply to any country where such provisions are inconsistent with local law:** LEXMARK INTERNATIONAL, INC. PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions; therefore, this statement may not apply to you.

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in later editions. Improvements or changes in the products or the programs described may be made at any time.

Comments may be addressed to Lexmark International, Inc., Department D22A/032-2, 740 West New Circle Road, Lexington, Kentucky 40550, U.S.A or electronically mailed (e-mail) to [ServiceInfoAndTraining@Lexmark.com](mailto:ServiceInfoAndTraining@Lexmark.com). Lexmark may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you. You can purchase additional copies of publications related to this product by calling 1-800-553-9727. In other countries, contact your point of purchase.

Lexmark and Lexmark with diamond design are trademarks of Lexmark International, Inc., registered in the United States and/or other countries.

ImageQuick, Optra Forms, and PrintCryption are trademarks of Lexmark International, Inc.

PCL® is a registered trademark of the Hewlett-Packard Company.

PostScript® is a registered trademark of Adobe Systems Incorporated.

Other trademarks are the property of their respective owners.

© 2004 Lexmark International, Inc.

**All rights reserved.**

**UNITED STATES GOVERNMENT RIGHTS**

This software and any accompanying documentation provided under this agreement are commercial computer software and documentation developed exclusively at private expense.

# Table of contents

<b>Laser notices</b> .....	<b>xi</b>
<b>Safety information</b> .....	<b>xxi</b>
<b>Preface</b> .....	<b>xxvi</b>
Definitions .....	<b>xxvi</b>
<b>General information</b> .....	<b>1-1</b>
Maintenance approach .....	<b>1-1</b>
Tools required for service .....	<b>1-1</b>
Serial number .....	<b>1-2</b>
Acronyms .....	<b>1-3</b>
Specifications .....	<b>1-4</b>
Resolution .....	<b>1-4</b>
Model differences .....	<b>1-4</b>
Technical specifications .....	<b>1-4</b>
Physical specifications and weight .....	<b>1-5</b>
Operating clearances .....	<b>1-6</b>
Packaging and shipping dimensions .....	<b>1-6</b>
Print speed and performance .....	<b>1-7</b>
Time to first print .....	<b>1-7</b>
Duty cycle .....	<b>1-8</b>
Printer memory .....	<b>1-8</b>
Paper and media specifications .....	<b>1-8</b>
Media sizes .....	<b>1-11</b>
Output capacity by media and source .....	<b>1-12</b>
Media guidelines .....	<b>1-12</b>
Connectivity .....	<b>1-14</b>
Power and electrical specifications .....	<b>1-15</b>
Environment .....	<b>1-16</b>
Printer identification .....	<b>1-17</b>
Options identification .....	<b>1-18</b>
Printer theory of operation .....	<b>1-19</b>
Printer paper path .....	<b>1-20</b>
Printer systems description .....	<b>1-21</b>
Basic principles of color printing .....	<b>1-21</b>
Mechanical and electrical structures .....	<b>1-21</b>
Printer component systems .....	<b>1-23</b>
Basic process of color printing .....	<b>1-24</b>
Print system and transfer system .....	<b>1-25</b>
Structure of OPC belt (photo developer cartridge) .....	<b>1-26</b>

Basic structure of the print system .....	1-27
Details of the print system .....	1-29
Charging process .....	1-29
Exposing process .....	1-31
Developing process .....	1-32
First transfer (drum) process .....	1-34
Belt discharge (erase lamp) process .....	1-35
Belt cleaning process .....	1-36
Details of the transfer system .....	1-38
Second transfer (paper) process .....	1-38
Transfer belt cleaning process .....	1-39
Details of the optical system .....	1-40
Details of the paper transportation system .....	1-42
Fusing unit .....	1-44
Fusing process .....	1-46
Control system structure .....	1-47
Electrical system and function .....	1-47
Control of print process .....	1-48
Print sequence diagram .....	1-49
Laser drive control circuit .....	1-50
Interface control .....	1-51
<b>Diagnostic information .....</b>	<b>2-1</b>
Start .....	2-1
Service error codes .....	2-2
Operator messages .....	2-9
Paper jam messages .....	2-22
Symptom tables .....	2-25
Printer symptom table .....	2-25
Print quality symptom table .....	2-27
Printer service checks .....	2-29
901—Yellow developer clutch service check .....	2-29
902—Magenta developer clutch service check .....	2-31
903—Cyan developer clutch service check .....	2-33
904—Black developer clutch service check .....	2-35
905—Yellow toner retract solenoid service check .....	2-37
906—Magenta toner retract solenoid service check .....	2-39
907—Cyan toner retract solenoid service check .....	2-41
908—Black toner retract solenoid service check .....	2-43
910—Developer motor service check .....	2-45
911—Main motor service check .....	2-48
912—Power supply fan service check .....	2-51
913—Fuser fan service check .....	2-52

914—Laser fan service check . . . . .	2-53
915—Erase lamp service check . . . . .	2-54
916—Toner empty sensor (sender-TPD) service check . . . . .	2-56
917—Toner empty sensor (receiver-TTR) service check . . . . .	2-57
918—HVPS connection service check . . . . .	2-58
919—Lower feed unit (secondary paper assembly) service check <b>2-59</b>	
920—Fuser thermistor service check . . . . .	2-60
921,922,923,924,925—Fuser assembly service check . . . . .	2-61
930,931,932—Laser unit assembly service check . . . . .	2-62
985—Duplex connection error 1 service check . . . . .	2-63
986—Duplex connection error 2 service check . . . . .	2-64
990—Transfer belt unit service check . . . . .	2-65
991—Transfer roller clutch service check . . . . .	2-67
992—Transfer belt cleaning roller clutch service check . . . . .	2-68
993—Fuser clutch service check . . . . .	2-69
994—OPC belt marker sensor service check . . . . .	2-70
995—High voltage power supply (HVPS) service check . . . . .	2-72
996—Low voltage power supply (LVPS) service check . . . . .	2-74
Cover open service check . . . . .	2-75
Incorrect media service check . . . . .	2-78
Missing photodeveloper cartridge service check . . . . .	2-80
Missing toner cartridge service check . . . . .	2-81
OPC belt (photodeveloper) cartridge drive service check . . . . .	2-83
Operator panel service check . . . . .	2-84
Output tray full service check . . . . .	2-85
Paper size sensing service check . . . . .	2-87
Printer no power service check . . . . .	2-89
Toner feed service check . . . . .	2-91
Toner low/empty service check . . . . .	2-92
Transfer roller missing service check . . . . .	2-93
Tray empty service check . . . . .	2-95
Waste toner bottle service check . . . . .	2-97
Waste toner feed service check . . . . .	2-98
Paper feed service checks . . . . .	2-99
Printer paper feed service check . . . . .	2-99
Print quality service checks . . . . .	2-101
Background service check . . . . .	2-101
Back stain service check . . . . .	2-102
Banding service check . . . . .	2-103
Black line service check . . . . .	2-104
Color misregistration service check . . . . .	2-105
Insufficient fusing service check . . . . .	2-107

- Insufficient gloss service check .....2-108
- Jitter service check .....2-109
- Missing image at edge service check .....2-110
- Mixed color image service check .....2-111
- Mottle service check .....2-112
- Residual image service check .....2-113
- Ribbing service check .....2-114
- Toner drop service check .....2-116
- Vertical line service check .....2-118
- Vertical staggering image service check .....2-119
- Vertical white band service check .....2-120
- White band service check .....2-121
- White line I service check .....2-122
- White line II service check .....2-123
- White spot / black spot service check .....2-124
- White print service check .....2-125
- Wrinkle / image migration service check .....2-126
- Uneven density (right and left) .....2-127
- Spacing table .....2-129
  - Roller specifications .....2-129
- Diagnostic aids .....3-1**
  - Disabling download emulations .....3-1
  - Paper jam sequence .....3-2
  - Diagnostic mode .....3-4
    - Diagnostics menu structure .....3-5
    - Print quality test pages .....3-5
  - Print registration .....3-6
    - Setting tray 2 left margin .....3-6
    - Setting top margin .....3-7
  - Print tests .....3-7
  - Hardware tests .....3-8
    - LCD test .....3-9
    - Button test .....3-9
    - Parallel wrap test .....3-9
    - ROM memory test .....3-10
    - DRAM memory test .....3-11
    - Serial wrap test .....3-11
  - Duplex tests .....3-13
    - Duplex left margin .....3-13
  - Device tests .....3-14
    - Quick disk test .....3-14
    - Disk test/clean .....3-14

Flash test.....	3-15
Printer setup .....	3-16
Setting the page count .....	3-16
Viewing the permanent page count.....	3-16
Serial number .....	3-17
Setting configuration ID.....	3-17
Parallel strobe adjustment.....	3-18
Error log .....	3-19
Viewing the error log .....	3-19
Printing the error log .....	3-19
Clearing the error log .....	3-20
Restore EP factory defaults .....	3-20
Exiting diagnostic mode .....	3-21
<b>Repair information .....</b>	<b>4-1</b>
Removal and cleaning precautions .....	4-1
Handling the printed circuit boards with MOS ICs .....	4-2
During transportation/storage:.....	4-2
During replacement: .....	4-2
During inspection: .....	4-2
Photodeveloper cartridge .....	4-3
During transportation/storage .....	4-3
Handling .....	4-3
Parts not to be touched.....	4-3
Printer removal procedures .....	4-4
Precautions to take before maintenance work .....	4-4
CRU/FRU and supplies removals .....	4-5
Cleaning roller cover removal .....	4-6
Transfer belt cleaning roller removal.....	4-6
Transfer belt unit removal .....	4-7
Transfer roller removal .....	4-8
Fuser assembly removal.....	4-9
Waste toner bottle removal.....	4-10
Photodeveloper cartridge removal .....	4-11
Duplex unit assembly removal .....	4-13
Secondary paper feed assembly removal.....	4-16
Cover removals .....	4-17
Top cover assembly removal .....	4-18
Front cover assembly removal .....	4-19
Right cover removal .....	4-22
Rear cover assembly removal.....	4-22
Left cover removal.....	4-24

- Laser unit assembly (printhead) removal . . . . . 4-24
- Laser unit fan assembly removal . . . . . 4-26
- Erase lamp removal . . . . . 4-27
- Right side removals . . . . . 4-29
  - Front door interlock switch removal . . . . . 4-29
  - Front door interlock switch with bracket . . . . . 4-31
  - Developer motor removal . . . . . 4-31
  - Waste toner bottle holder removal . . . . . 4-32
  - Developer drive assembly removal . . . . . 4-32
  - Toner sensor (sender) removal . . . . . 4-35
  - Cleaning roller clutch removal . . . . . 4-36
  - Main motor assembly removal . . . . . 4-38
  - Clutch removal . . . . . 4-40
  - Main drive gear assembly removal . . . . . 4-41
  - Waste toner feeder removal . . . . . 4-42
- Rear removals . . . . . 4-44
  - RIP board removal . . . . . 4-45
  - Bracket assembly removal . . . . . 4-45
  - Paper guide assembly removal . . . . . 4-46
  - Paper guide (C) assembly removal . . . . . 4-47
  - Paper feed roller removal . . . . . 4-48
  - Paper exit assembly removal . . . . . 4-49
  - Registration assembly removal . . . . . 4-52
- Left side removals . . . . . 4-53
  - Operator panel cable removal . . . . . 4-54
  - Engine controller board removal . . . . . 4-55
  - RIP board cage removal . . . . . 4-57
  - High voltage power supply (HVPS) removal . . . . . 4-59
  - Low voltage power supply (LVPS) with cage removal . . . . . 4-60
  - HVPS cage removal . . . . . 4-62
  - Toner present sensor removal . . . . . 4-63
  - Toner sensor (receiver) removal . . . . . 4-64
  - Toner retract solenoid and cam removal . . . . . 4-64
  - Left tray guide assembly removal . . . . . 4-65
- Top removals . . . . . 4-68
  - Marker sensor assembly removal . . . . . 4-69
  - I/O board removal . . . . . 4-70
  - Waste toner auger removal . . . . . 4-72
  - Waste toner agitator removal . . . . . 4-73
  - Power supply fan removal . . . . . 4-74

<b>Locations and connectors</b> .....	<b>5-1</b>
Printer .....	5-1
Options .....	5-3
Electronic components .....	5-4
Sensor locations .....	5-4
Printer circuit board locations .....	5-6
Fan/motor locations .....	5-7
Interlock switch locations .....	5-8
Solenoid/clutch locations .....	5-9
Symbol and part name table .....	5-11
Wiring diagram / cable harness reference .....	5-14
RIP board .....	5-15
Engine controller board .....	5-16
Input/output (I/O) board .....	5-17
Low voltage power supply (LVPS) board .....	5-18
High voltage power supply (HVPS) board .....	5-18
Printer cables .....	5-19
Cable 1 connector assignments .....	5-19
Cable 1 connector pin assignments .....	5-19
Cable 2 connector assignments .....	5-22
Cable 2 connector pin assignments .....	5-22
Cable 3 connector assignments .....	5-24
Cable 3 connector pin assignments .....	5-24
Cable 4 connector assignments .....	5-26
Cable 5 connector assignments .....	5-27
Cable 6 connector assignments .....	5-32
Cable 6 connector pin assignments .....	5-32
Cable 7 connector assignments .....	5-36
Cable 7 connector pin assignments .....	5-36
Cable 9 connector assignments .....	5-42
Cable 9 connector pin assignments .....	5-42
Cable 10 connector assignments .....	5-44
Cable 10 connector pin assignments .....	5-44
Cable 11 connector assignments .....	5-46
Cable 11 connector pin assignments .....	5-46
Cable 12 connector assignments .....	5-47
Cable 12 connector pin assignments .....	5-47
Cable 13 connector assignments .....	5-48
Cable 13 connector pin assignments .....	5-48

**Preventive maintenance** .....6-1

**Parts catalog** .....7-1

    How to use this parts catalog .....7-1

**Index** ..... I-1

**Part number index** ..... I-5

For the complete PDF manual  
please visit [www.LaserPros.com](http://www.LaserPros.com).