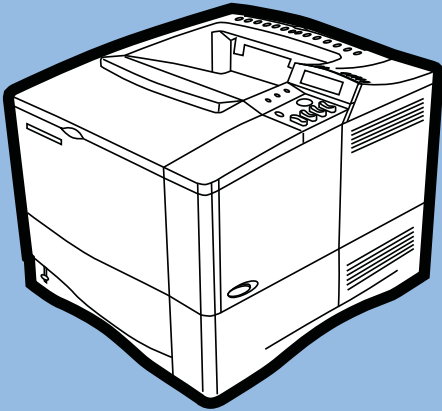


For the complete PDF manual  
please visit [www.LaserPros.com](http://www.LaserPros.com).

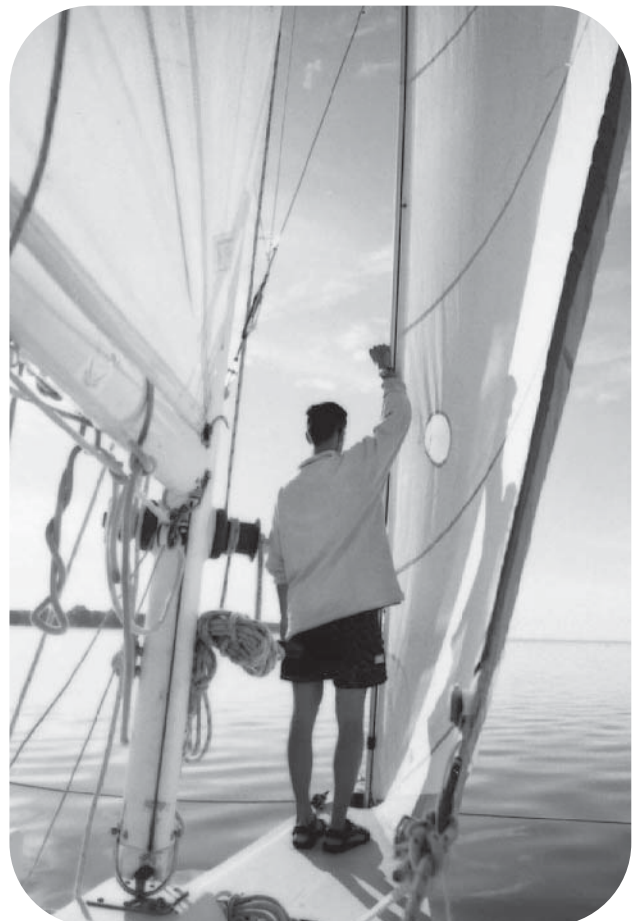


**hp** LaserJet 4100



i n v e n t

**service manual**





# HP LaserJet 4100 Series Printer

**Service Manual** \_\_\_\_\_

**Copyright Information**

© 2001 Hewlett-Packard  
Company

All Rights Reserved.  
Reproduction, adaptation, or  
translation without prior written  
permission is prohibited, except  
as allowed under the copyright  
laws.

Publication number  
C8049-90920

First edition, April 2001

**Warranty**

The information contained in this  
document is subject to change  
without notice.

Hewlett-Packard makes no  
warranty of any kind with respect  
to this information.

HEWLETT-PACKARD  
SPECIFICALLY DISCLAIMS  
THE IMPLIED WARRANTY OF  
MERCHANTABILITY AND  
FITNESS FOR A PARTICULAR  
PURPOSE.

Hewlett-Packard shall not be  
liable for any direct, indirect,  
incidental, consequential, or  
other damage alleged in  
connection with the furnishing or  
use of this information.

**Trademark Credits**

ENERGY STAR® is a U.S.  
registered mark of the United  
States Environmental Protection  
Agency.

Microsoft® is a U.S. registered  
trademark of Microsoft Corp.

MS-DOS® is a U.S. registered  
trademark of Microsoft Corp.

Netscape™ is a U.S. trademark of  
Netscape Communications  
Corporation.

PostScript™ is a trademark of  
Adobe Systems Incorporated  
that may be registered in certain  
jurisdictions.

TrueType™ is a U.S. trademark of  
Apple Computer, Inc.

# Contents

## 1 Printer description

Printer features	14
Product compatibility matrix	18
Identification	20
Model and serial numbers	20
Site requirements	21
Installation requirements	22
Environmental requirements	24
Print media specifications	25
Supported types of print media	28
Types of print media to avoid	29
Weight equivalence table	30
Adhesive labels	31
Overhead transparencies	32
Envelopes	33
Card stock and heavy paper	35
Safety information	36
Toner safety	36
Laser safety	37
Regulatory information	37

## 2 Service approach

Service approach	40
Parts and supplies	40
Ordering information	40
Printer documentation	41
HP direct ordering for genuine HP parts	42
Exchange program	42
Consumables	42
World Wide Web	42
HP service parts information compact disc	42
HP support assistant compact disc	43
Toner cartridge information	44
Warranty statement	45
Printer warranty	45
Limited warranty for toner cartridge life	45

## 3 Printer operation

Using the control panel	49
Control panel layout	49
Control panel lights	49
Control panel keys	50
Settings and defaults	51
Control panel menus	52
Quick copy jobs menu	53
Private/stored jobs menu	54
Information menu	55
Paper-handling menu	57
Printing menu	60
Print quality menu	63

Configuration menu . . . . .	66
I/O menu . . . . .	69
EIO menu (networked printers) . . . . .	70
Resets menu . . . . .	73
Service mode . . . . .	74
Service menu . . . . .	75
Page count . . . . .	77
Maintenance count . . . . .	77
Maintenance interval . . . . .	77
Serial number . . . . .	77
Cold reset paper . . . . .	77
Diagnostics . . . . .	77
Clear event log . . . . .	78
Top margin . . . . .	78
Tray 1 left margin . . . . .	78
Trays 2 and 3 left margin . . . . .	78
Testing the printer . . . . .	78
Engine test . . . . .	78
Resetting the printer . . . . .	79
Cold reset . . . . .	79
Clearing NVRAM . . . . .	79
Initialization of NVRAM . . . . .	79
Initialization of the hard disk . . . . .	80
System configuration . . . . .	80
MS-DOS system configuration . . . . .	80
Parallel DOS commands . . . . .	80

## 4 Printer maintenance

Cleaning the printer and accessories . . . . .	82
Using the printer cleaning page . . . . .	84
Using the auto-cleaning page . . . . .	84
Cleaning spilled toner . . . . .	85
Performing printer maintenance . . . . .	86
Reset maintenance count . . . . .	86
Expected life of components . . . . .	87

## 5 Theory of operation

Power supply system . . . . .	91
AC/DC power distribution . . . . .	91
Overcurrent/overvoltage protection . . . . .	92
Fuser over-temperature protection . . . . .	92
High-voltage power distribution . . . . .	93
Toner-cartridge detection . . . . .	94
Cartridge memory . . . . .	94
Engine controller system . . . . .	95
Engine controller board inputs and outputs . . . . .	96
Laser/scanner drive . . . . .	101
Paper-motion monitoring and control . . . . .	101
Solenoids, sensors, clutches, and switches . . . . .	101
Engine test print . . . . .	101
Motors . . . . .	101
Formatter system . . . . .	104
PowerSave . . . . .	104
Resolution Enhancement technology . . . . .	104
EconoMode . . . . .	105
Input/output . . . . .	105
CPU . . . . .	105
Printer memory . . . . .	106

DIMM slots	106
PJL overview	107
PML	107
Control panel	107
Image formation system	108
Toner cartridge	109
Photosensitive drum	110
Writing the image	112
Developing the image	113
Transferring the image	114
Image fusing/variable fusing temperature	115
Paper feed system	117
Clutches and sensors	120
Printing from tray 1	120
Printing from tray 2	122
Printing from the optional 500-sheet tray	124
Envelope feeder	127
Duplexer	127
Jams	128
Other controls	129
Environmental detection	129
Basic sequence of operation	130

## 6 Removing and replacing parts

Removal and replacement strategy	135
Required tools	136
Tools	136
Other helpful tools	136
Removing covers	138
Rear right side cover	138
Control panel	139
Top cover	141
Left side cover	143
Front right side cover	144
Rear cover/rear output bin	145
Tray 1	146
Removing internal assemblies	149
Fuser	149
Firmware DIMM	150
Formatter assembly	151
Output delivery assembly	152
Laser/scanner	154
Cartridge memory	155
Fan	156
Main motor	158
Transfer roller	159
Tray 1 pickup roller	160
Tray 1 pickup assembly	161
Right side toner cartridge guide	164
Registration assembly	165
Paper feed assembly	167
Printer drive assembly (gear train)	169
Delivery drive assembly	170
Separating the engine module from the paper-feed module	171
Engine controller board	173
Paper-feed guide assembly	176
Removing tray assemblies	177
Paper-feed rollers for trays 2, 3, and 4	177

Separation rollers for trays 2, 3, and 4 .....	178
Tray 2 paper-feed module disassembly .....	179
Tray 3 and 4 paper-feed module disassembly .....	180

## 7 Troubleshooting

Troubleshooting process .....	184
Troubleshooting flowchart .....	185
Troubleshooting flowchart (continued) .....	186
Troubleshooting the printing system .....	187
Preliminary operating checks .....	187
Power on .....	188
Engine test .....	190
Display .....	191
Event log .....	191
Printer messages .....	193
General paper-path troubleshooting .....	220
Information pages .....	222
Image quality .....	227
Image system troubleshooting .....	244
Reference diagrams .....	246
Locations of components .....	246
Paper path .....	252
Engine controller board .....	254
Paper-size detection switches .....	255
Motors and fans .....	257
Connectors .....	258
PCAs .....	261
Sensors, switches, and thermistors .....	263
Solenoids and clutch .....	266
Timing .....	268

## 8 Parts and diagrams

How to use the parts lists and diagrams .....	270
Accessories and supplies .....	271
Common screws and replacement cables .....	272
Illustrations and parts lists .....	274
Alphabetical parts list .....	306
Numerical parts list .....	313

## Index

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