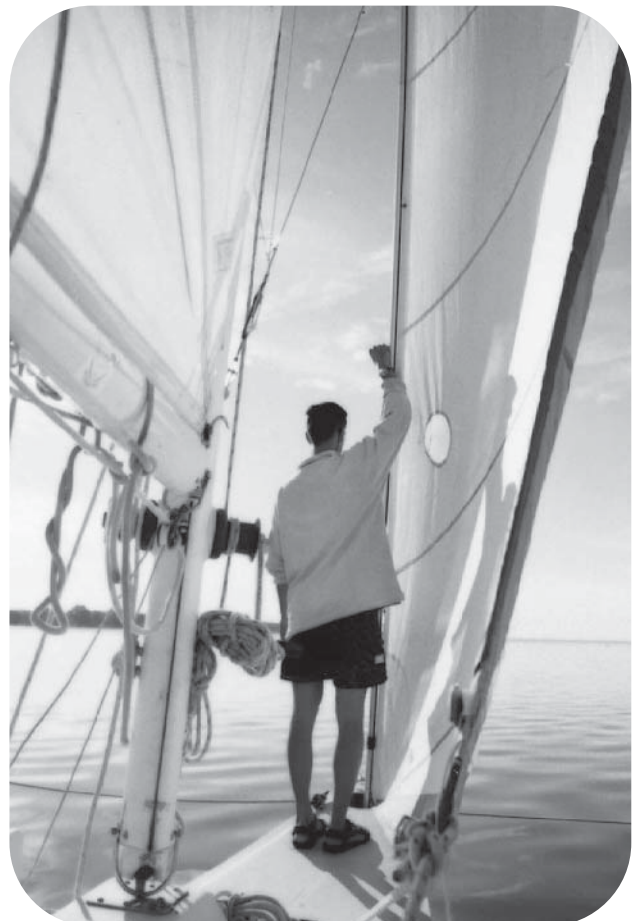


hp LaserJet 4100



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