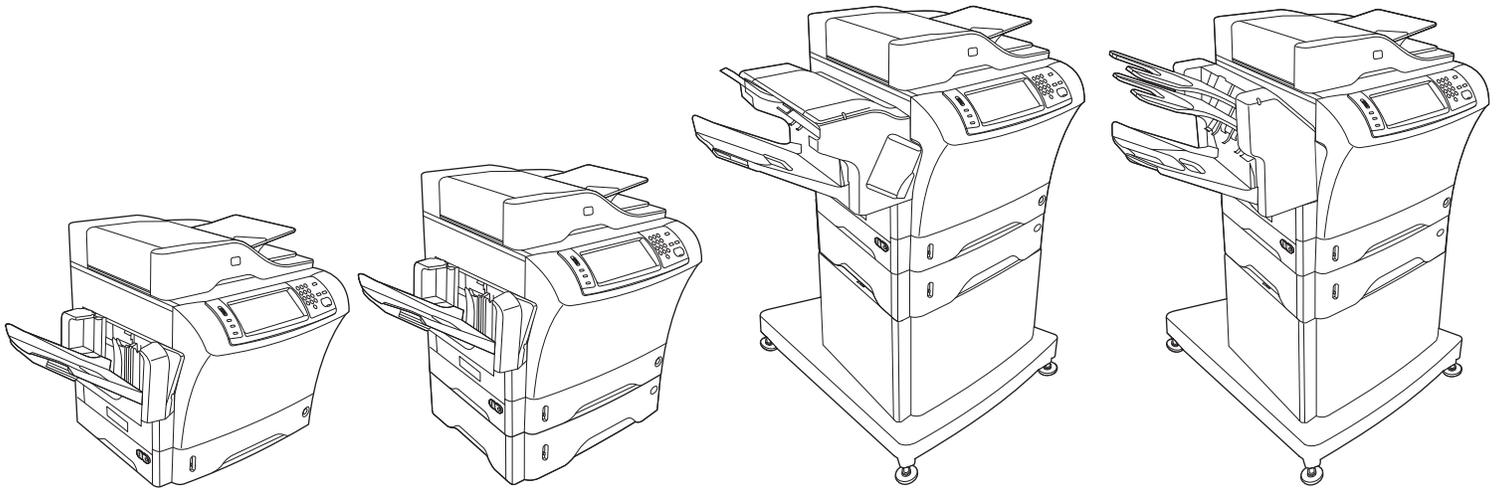


HP LaserJet M4345 MFP Service Manual

For the complete PDF manual
please visit www.LaserPros.com.



HP LaserJet M4345 MFP

Service Manual



Copyright and License

© 2006 Copyright Hewlett-Packard Development Company, L.P.

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

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

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Part number CB425-90908

Edition 1, 10/2006

Trademark Credits

Java™ is a US trademark of Sun Microsystems, Inc.

Windows®, Windows® XP, and Windows NT® are U.S. registered trademarks of Microsoft Corporation.

Linux is a U.S. registered trademark of Linus Torvalds.

UNIX® is a registered trademark of The Open Group.

Adobe® and PostScript® are trademarks of Adobe Systems Incorporated.

PANTONE®* *Pantone, Inc.'s check-standard trademark for color.

ENERGY STAR® and the ENERGY STAR logo® are U.S. registered marks of the United States Environmental Protection Agency.



Table of contents

1 Product information

Device comparison	2
Features comparison	3
Walkaround	6
Accessories and supplies	7
Interface ports	8
Locking and unlocking optional accessories	8
Media specifications	10
Select print media	10
General media specifications	14
Media considerations	14
Envelopes	14
Envelopes with double side seams	15
Envelopes with adhesive strips or flaps	16
Envelope margins	16
Envelope storage	16
Labels	16
Label construction	16
Transparencies	16
Card stock and heavy media	17
Card stock construction	17
Card stock guidelines	17
Letterhead and preprinted forms	17
Select the correct fuser mode	18

2 Installation

Site preparation	22
Operating environment	22
Installation checklist	24
Optional output and input devices	26
Connect to a computer or network	27
USB configuration	27
Network connection	28
Fax connection	28
Analog faxing	28
Connecting the fax accessory to a phone line	28
Configuring and using the fax features	29
Digital faxing	29
Device software	30

Supported operating systems	30
Supported operating systems	31
Select the correct printer driver	32
Universal printer drivers	32
Driver Autoconfiguration	32
Update Now	33
HP Driver Preconfiguration	33
Priority for print settings	33
Open the printer drivers	34
Software for Macintosh computers	35
Remove software from Macintosh operating systems	35
Utilities	36
HP Web Jetadmin	36
Embedded Web server	36
HP Easy Printer Care software	37
Supported operating systems	37
Supported browsers	37
Other components and utilities	37
Network configuration	38
Configure TCP/IPv4 parameters	38
Change the IP address	38
Set the subnet mask	39
Set the default gateway	39
Configure TCP/IPv6 parameters	40
Disable network protocols (optional)	40
Disable IPX/SPX	40
Disable AppleTalk	41
Disable DLC/LLC	41
HP Jetdirect EIO print servers	41
Security features	42
Securing the embedded Web server	42
Foreign Interface Harness (FIH)	42
Requirements	42
Using the FIH	42
Secure Disk Erase	43
Data affected	44
Gaining access to Secure Disk Erase	44
Additional Information	44
Job-storage features	44
HP DSS authentication	44
Locking the control-panel menus	44
Locking the formatter cage	45

3 Manage and maintain the device

Control-panel menus	48
Use the control panel	48
Control-panel layout	48
Home screen	49
Buttons on the touchscreen	50
Control-panel help system	50

Navigate the Administration menu	50
Information menu	51
Default Job Options menu	52
Default Options for Originals	53
Default Copy Options	54
Default Fax Options	55
Default E-mail Options	56
Default Send to Folder Options	57
Default Print Options	58
Time/Scheduling menu	58
Management menu	59
Initial Setup menu	60
Networking and I/O	60
Fax Setup	68
E-mail Setup	71
Send Setup menu	71
Device Behavior menu	71
Print Quality menu	75
Troubleshooting menu	77
Resets menu	79
Service menu	80
Use information pages	82
Configure e-mail alerts	84
HP Easy Printer Care software	85
Open the HP Toolbox FX	85
HP Toolbox FX sections	85
Use the embedded Web server	87
Open the embedded Web server by using a network connection	87
Embedded Web server sections	87
Use HP Web Jetadmin software	90
Use the HP Printer Utility for Macintosh	91
Open the HP Printer Utility	91
HP Printer Utility features	91
Manage supplies	93
Supplies life expectancy	93
Change the print cartridge	93
Manage the print cartridge	93
Print-cartridge storage	93
Use genuine HP print cartridges	93
HP policy on non-HP print cartridges	94
Print-cartridge authentication	94
HP fraud hotline and Web site	94
Clean the device	95
Clean the exterior	95
Clean the scanner glass	95
Clean the scanner lid backing	96
Clean the paper path	96
Clean the document feeder	96
Clean the document feeder delivery system	97
Clean the document feeder-rollers	98

Set the real-time clock	100
Set the date and time	100
Set the date format	100
Set the date	100
Set the time format	100
Set the time	100
Set the wake time	101
Set the sleep delay	101
Upgrading the firmware	102
Determining the current level of firmware	102
Downloading the new firmware from the HP Web site	102
Transferring the new firmware to the MFP	102
Using FTP to upgrade the firmware on a network connection	102
Using HP Web Jetadmin to upgrade the firmware	104
Using MS-DOS commands to upgrade the firmware	104
Upgrading the HP Jetdirect firmware	105
Calibrate the scanner	106
Calibrate the control panel	107
Disable Embedded Jetdirect I/O	108
Select the MFP language	109

4 Theory of operation

Basic operation	112
Sequence of operation (printer)	112
Sequence of operation (scanner)	113
Formatter system	114
Sleep mode	114
Resolution Enhancement technology (REt)	114
EconoMode	115
Input/output	115
CPU	115
Memory	115
Hard disk	115
Random-access memory	115
DIMM slot	115
Firmware	115
Nonvolatile memory	116
HP Memory Enhancement technology	116
PJM overview	116
PML	116
Control panel	116
Scanner interface	116
Engine-control system	117
DC controller PCA	117
Motors and fans	119
Motor and fan functions	119
Ambient-temperature detection	120
Engine power supply circuit	120
Fuser control	121
Fuser over-temperature protection	122

High-voltage power supply	124
Low-voltage power supply	125
Overcurrent/overvoltage protection	127
Toner detection	127
Cartridge detection	127
Laser/scanner system	128
Laser/scanner control	129
Image-formation system	131
Print cartridge	132
Cartridge memory	132
Image-formation process	133
Pickup, feed, and delivery system	135
Pickup-and-feed block	138
Printing from tray 1	139
Printing from tray 2	140
Media-size detection	141
Cassette media-size detection	141
Media-length detection	141
Media-width detection	141
Cassette pickup operation	141
Lifter-driver operation	143
Multifeed prevention	143
Distance-between-pages adjustment	144
Media-skew prevention	145
Feed-speed control	147
Fusing and reversing/delivery block	148
Fusing	148
Face-down delivery	148
Face-up delivery	149
Jam detection	151
Pickup delay jam from tray 1	151
Pickup delay jam from tray 2	151
Pickup stationary jam	151
Fuser-delivery delay jam	152
Fuser wrapping jam	152
Fuser-delivery stationary jam when feeding regular-size media	152
Fuser-delivery stationary jam when feeding custom-size media	152
Reversing delay jam (face-down delivery only)	152
Reversing stationary jam (face-down delivery only)	152
Delivery delay jam during face-down delivery	153
Delivery delay jam during face-up delivery	153
Delivery stationary jam during face-down delivery	153
Delivery stationary jam during face-up delivery	153
Door-open jam	153
Residual-media jam	153
Printing from the 500-sheet feeder	154
500-sheet feeder pickup and feeding	155
Duplex-printing unit	157
Reversing/duplexing pickup	157
Duplex-printing jam detection	158

	Duplex-unit-pickup delay jam	158
	Duplex-unit stationary jam	159
	Duplex-unit delay jam	159
3-bin mailbox system		160
Stacker mode		162
Mailbox mode		162
Function-separator mode		162
Jam detection		162
Feed-delay jam		163
Feed-stationary jam		163
Residual-media jam		163
Power-on sequence		163
MBM driver		164
MBM switches and sensors		167
MBM PCBs		168
MBM list of signals		169
Stapler/stacker system		171
Power-on sequence		171
Staple mode		172
Jogger operation		178
Jogger home-position detection		182
Stacker mode		184
Jam detection		184
Stapler unit		185
Staple home position detection		186
Self-priming detection		186
Staple level detection		186
Stapler/stacker switches and sensors		187
Stapler/stacker motors, solenoid, and fan		189
Stapler/stacker PCBs		190
Stapler/stacker driver PCB		193
Stapler/stacker driver list of signals		195
Scanner system		198
Electrical system		198
Motors and fans		200
Optical assembly		200
ADF feed system		202
Jam detection		202
Residual-media jam		202
ADF pickup jam		203
ADF jam		203
Registration sensor jam		203
Read sensor jam		203
Exit sensor jam		203
ADF cover open jam		203
ADF open jam		203
Locations of major components		204
Sensors and switches		204
Cassette sensors		204
Sensors in the print-cartridge area		205

Sensors on the reversing unit (top side)	205
Sensors in the interior of the MFP	206
Output-bin detection switch, SW103	207
Tray 1 paper-present sensor, PS105	207
Top-cover switch, SW101	208
Tray 2 jam-access-cover switch, SW105	208
Motors, fans, solenoids, and clutch	208
Front-side fans	209
Rear-side fans	210
Rear-side motors (1 of 2)	210
Rear-side motors (2 of 2)	211
Rear-side solenoid	212
Reversing-unit motors and solenoids	213
Right, rear corner components (1 of 2)	214
Right, rear corner components (2 of 2)	215
Scanner and ADF components	215
ADF output-bin-full sensor	215
ADF pickup assembly sensors	216
ADF motors, solenoid, and sensors	216

5 Removal and replacement

Service approach	220
Removal and replacement strategy	221
Required tools	221
Before performing service	221
After completing service	222
Screws that are used in the MFP	222
User-replaceable parts	224
Print cartridge	224
Control-panel overlays	224
Control panel	225
Transfer roller	226
ADF input tray	227
ADF pickup and feed rollers	228
ADF separation pad	229
ADF delivery guide (clear mylar sheet)	231
Output-bin assembly	233
Duplex-printing unit	234
Fuser-entrance guide	235
Fuser	235
Tray 2, 3, 4, or 5 pickup and feed rollers	236
Tray 1 pickup roller	237
Scanner filter cover and scanner filter	238
ADF-hinge flap	239
Formatter cover and formatter	240
Hard drive	242
DIMM	243
Fax accessory	244
Covers, doors, and external panels	246
Top-cover flatbed flange	246

Front cover	247
Back cover	251
Internal assemblies	253
Reversing-separation-guide assembly	253
Reversing assembly	254
Main fan (FN101) and reversing-unit fan (FN103)	258
Thermistor (TH3)	263
Tray 2 jam-access-cover switch (SW105)	265
Tray 1 assembly	267
Front-cover support	269
Tray 1 feed-assembly	271
Feed-roller assembly	278
DC controller	280
Main motor (M101)	283
DC controller fan (FN104)	284
Print-cartridge fan (FN102)	285
Print-cartridge motor (M102)	287
Top-cover switch (SW101)	290
Registration assembly	292
Paper-pickup-drive assembly	295
Lifter-drive assembly	298
Power-factor-correction (PFC) power supply	301
Engine power supply	306
Paper-feed assembly	311
Tray 2 detection switch	312
Paper-size-detection switch (SW102)	313
Tray 2 paper-present sensor (PS101)	314
Laser/scanner	315
Output-bin-full sensor	316
ADF and scanner components	319
ADF assembly	319
Scanner assembly	321
Scanner-controller PCA	326
ADF components	327
ADF output-bin extension	327
ADF white mylar-backing	328
ADF front cover	330
ADF rear cover	331
ADF left-side cover	332
ADF jam-access cover and latch	334
ADF leading-edge and paper-present sensors	335
ADF hinges	337
500-sheet feeder components	339
500-sheet-feeder pickup and feed rollers	339
Stapler/stacker components	340
Delivery tray	340
Front cover	340
Rear cover	340
Left cover	341
Top cover	341

Bottom cover	342
Stapler unit	343
Jogger unit	344
Stapler/stacker driver PCB	348
3-bin mailbox components	350
Rear cover	350
Front cover	350
Delivery tray	350
Left cover	351
Upper cover	351
Right-door unit	352
Bottom cover	354
MBM driver PCB	355

6 Problem solving

Problem-solving checklist	359
Factors that affect performance	359
Problem-solving flowchart	360
Power-on checks	364
Power-on troubleshooting overview	364
Formatter lights	366
HP Jetdirect Inside LEDs	366
Heartbeat LED	366
Fax LED	367
Diagrams for troubleshooting	368
DC controller connections	368
Scanner-controller PCA connections	370
General timing chart	371
General circuit diagrams	373
Solve general device problems	379
Control-panel message types	382
Control-panel messages	383
Common causes of jams	399
Clear jams	400
Clear jams from the top-cover and print-cartridge areas	401
Clear jams from the optional envelope-feeder area	403
Clear jams from the tray 1 area	405
Clear jams from the tray 2, 3, 4, or 5 areas	406
Clear jams from the optional duplexer	408
Clear jams from the output areas	409
Clear jams from the fuser	410
Clear jams from the document feeder	413
Solve repeated jams	414
Paper-path test	415
Clear staple jams	416
Solve print-quality problems	418
Print-quality problems associated with media	418
Print-quality problems associated with the environment	418
Print-quality problems associated with jams	418
Overhead transparency defects	418

Image defect examples	419
Light print (partial page)	419
Light print (entire page)	419
Specs	420
Dropouts	420
Lines	421
Gray background	421
Toner smear	422
Loose toner	423
Repeating defects	423
Repeating image	424
Misformed characters	424
Page skew	425
Curl or wave	425
Wrinkles or creases	426
Vertical white lines	427
Tire tracks	427
White spots on black	428
Scattered lines	428
Blurred print	429
Random image repetition	429
Repetitive defect ruler	431
Solve network printing problems	433
Solve copy problems	434
Prevent copy problems	434
Image problems	434
Media-handling problems	435
Performance problems	437
Solve fax problems	438
Solve sending problems	438
Solve receiving problems	439
Solve e-mail problems	441
Validate the SMTP gateway address	441
Validate the LDAP gateway address	441
Solve network connectivity problems	442
Troubleshooting network printing problems	442
Loopback test	442
Ping test	443
Solve stapler/stacker problems	444
Solve 3-bin mailbox problems	451
Functional checks	454
Early boot diagnostic test	454
Engine test	454
Formatter test	455
Half self-test	455
Drum-rotation test	456
MFP resets	457
Cold reset	457
NVRAM initialization	457
Hard-disk initialization	458

Individual component diagnostics	459
Paper-path-sensor test	459
Manual sensor test	459
Scanner tests	460
Component test	461
Service ID	462
Restoring the Service ID	462
Converting the service ID to an actual date	462
Troubleshooting the embedded HP Jetdirect print server	463
Firmware-stack trace	464
Solve common Windows problems	465
Solve common Macintosh problems	466
Solve Linux problems	469
Solve PostScript problems	470
General problems	470

7 Parts and diagrams

Order parts, accessories, and supplies	472
Order directly from HP	472
Order through service or support providers	472
Order directly through the embedded Web server	472
How to use the parts lists and diagrams	472
Screws that are used in the MFP	473
Customer-replaceable parts and accessories	474
Accessories	474
Customer-replaceable components (print engine)	476
Customer-replaceable components (ADF and scanner)	478
Cables and interfaces	480
Control panel and control-panel overlays	483
Memory	485
Print cartridge and maintenance kits	487
Documentation, software, and training material	490
Assembly locations	492
External components	496
Print-engine internal components	498
Upper-plate assembly	498
Internal components (1 of 5)	500
Internal components (2 of 5)	502
Internal components (3 of 5)	504
Internal components (4 of 5)	506
Internal components (5 of 5)	508
Electrical/forward assembly	510
Main drive assembly	512
Paper-pickup-drive assembly	514
Lifter-drive assembly	516
Cassette	518
Paper-feed roller assembly	520
Registration assembly	522
Multipurpose assembly	524
Reverse assembly	526

Reverse-separation-guide assembly	528
Delivery assembly	530
Fuser	532
ADF components	534
ADF assembly	534
ADF internal components (1 of 3)	536
ADF internal components (2 of 3)	538
ADF internal components (3 of 3)	540
ADF input tray	542
ADF separation pad	544
ADF separation-pad case	546
ADF pickup-roller assembly	548
ADF pickup-roller cover	550
ADF mylar-holder assembly	552
ADF mylar replacement kit	554
Scanner components	556
Scanner-base components	556
Scanner flatbed-unit assembly	558
Scanner covers	560
Cassette	562
Optional devices	564
Duplex-printing accessory	564
Stapler/stacker	566
3-bin mailbox	568
Alphabetical parts list	570
Numerical parts list	586

Appendix A Specifications

Physical specifications	604
Electrical specifications	604
Acoustic specifications	605
Operating environment	606

Appendix B Product warranty statements

Hewlett-Packard limited warranty statement	607
Customer Self Repair Warranty Service	608
HP Customer Care	609
Online Services	609
Telephone support	609
Software utilities, drivers, and electronic information	609
Fax accessory support	609
HP direct ordering for accessories or supplies	609
HP service information	609
HP service agreements	609
HP Toolbox FX	610
HP support and information for Macintosh computers	610
HP maintenance agreements	611
On-site service agreements	611
Next-day on-site service	611
Weekly (volume) on-site service	611

Repacking the device	611
Extended warranty	612

Appendix C Regulatory information

FCC regulations	614
Environmental product stewardship program	615
Protecting the environment	615
Ozone production	615
Power consumption	615
Toner consumption	615
Paper use	615
Plastics	615
HP LaserJet print supplies	616
HP print supplies returns and recycling program information	616
Paper	616
Material restrictions	617
Disposal of waste equipment by users in private households in the European Union	617
Material Safety Data Sheet (MSDS)	618
For more information	618
Telecom statement	619
Declaration of conformity	620
Safety statements	621
Laser safety	621
Canadian DOC regulations	621
VCCI statement (Japan)	621
Power cord statement (Japan)	621
EMI statement (Korea)	621
Laser statement for Finland	621

Index	623
--------------------	------------

For the complete PDF manual
please visit www.LaserPros.com.