HP
LaserJet
Companion

Printer Accessory
Service Manual

Service Manual

HP LaserJet Companion Printer Accessory (C3989A) Companion (C3079A) Companion SE (C4106A) Companion XI

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Product Information

Product Description

The HP LaserJet Companion Printer Accessory expands the capabilities of an HP LaserJet printer. Users can scan a variety of documents with the scanned quality very close to the original document. A letter- or A4-sized page scans in approximately ten seconds.

The Companion is used to copy, fax, file, and read scanned documents using the Companion software, the PaperPort™ software for Hewlett-Packard, and optical character recognition (OCR) software.

System Requirements

The minimum system requirements are:

- IBM or compatible computer with a 486 central processing unit (CPU) or faster
- 8 megabytes (MB) or more of random-access memory (RAM)
- Bidirectional or ECP-compliant parallel port
- 8 MB of free hard disk space
- Video graphics adapter (VGA) or better monitor
- Microsoft® Windows® 3.1, Windows 3.11, or Windows 95
- HP LaserJet 4-, 5-, or 6-series printer
- Bidirectional parallel cable (IEEE-1284 compliant)

Product Features

Hardware

Speed	Approximately 10 seconds per typical page*
Resolution	300 by 300 dots per inch (dpi) optical 256 levels of gray (8 bit)
Technology	Sheetfeed, grayscale, single pass
Interfaces	Two high-speed bidirectional parallel ports (A-type connector) Companion is a parallel port pass-through device between the computer and the HP LaserJet printer
Control Panel	Icon-based control panel includes two buttons: one button sends the image to the printer (even if the computer is off) and the other button sends the image to the computer
Included Cable	One parallel interface cable connecting the Companion to the computer
Product Certifications	UL and CUL listed; complies with IEC 825-1/EN 60825-1 and IEC 950/EN 60950; FCC Class B certified; CISPR-22 Class B
Warranty	One-year warranty (Express Exchange** or Repair and Return)

Software

OLE/TWAIN Support	Supports OLE 2.0 and TWAIN standards

Included Software

Companion XI	PaperPort software, Companion Copier software, OmniPage Limited Edition OCR software
Companion SE	PaperPort software, Companion Copier software; OmniPage Lite Edition OCR

* Scan time only, data transfer time to CPU not included
** Express Exchange is available in the United States and Canada only

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Note   Information in this manual is subject to change upon product improvement.

Product Specifications

Performance Specifications	
I/O Port Speed	Companion to computer (with 166 mHz processor): 90 to 110 kilobytes per second (Kbps) Companion to HP LaserJet 5P Printer: 100 to 110 Kbps (approximately 9.5 seconds per page)
Approximate Scan Speed (166 mHz)	1 bit / 150 dpi – 11 seconds per page (spp) 1 bit / 300 dpi – 16 spp 4 bit / 300 dpi – 42 spp 8 bit / 300 dpi – 83 spp
Monthly Usage (Duty Cycle)	400 scans per month
Electrical Specifications	
Power Consumption	4 watts (W) (standby); 17 W (operating)
Available AC Adapter Inputs	120 to 127 V (+6% to -10%), 60 Hz (± 2 Hz) 220 V (+6% to -10%), 50 to 60 Hz (± 2 Hz) 230 V (+6% to -10%), 50 to 60 Hz (± 2 Hz) 240 V (+6% to -10%), 50 to 60 Hz (± 2 Hz)
AC Adapter Output	18 Volts direct current (Vdc), 730 milliamperes (mA)
Environmental Specifications	
Operating Environment	Temperature: 10° to 40° C (50° to 104° F) Humidity: 15% to 80% Relative Humidity (RH)
Storage Environment	0° to 60° C (32° to 140° F) 10% to 90% RH
Acoustic Emissions	6.1 bels (B)
Size Specifications	
Dimensions (H by W by D)	149 by 316 by 92 mm (5.875 by 12.5 by 3.625 inch)
Weight	1.36 kg (3.0 lb) includes power supply 1.2 kg (2.6 lb) without power supply

Media Specifications	
Media Handling	Multiple-page Automatic Document Feeder – capacity varies from 10 to 15 pages depending upon paper thickness "Fold-up" arms for paper support Center-justified paper guides for paper alignment
Media Sizes	Maximum: 216 mm x 762 mm (8.5 by 30 inch) Minimum: 51 mm x 89 mm (2 by 3.5 inch)
Media Weights	60 to 105 g/m^2 (16 lb to 28 lb)
Skew	Maximum skew no greater than 3.35 mm (.13 inches) over 279 mm (11 inches)

Cable Specifications (see page 6-9 for part numbers)	
Companion to computer	Bidirectional IEEE-1284 compliant cable (shipped with Companion)
Companion to HP LaserJet Printer	Bidirectional parallel cable: A-B type, no more than 2 meters in length A-C type, no more than 3 meters in length (HP LaserJet 5P or 6P printer only)

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Functional Overview

Operation and Timing

Optical System

A contact sensor unit is used for the optical system. When the optical system is operating, the light-emitting diode (LED) array emits light to the document and the photo transistors detect the light reflected from the document.

Document Scanning Function

- The image sensor scans documents of up to letter size width (8.5 inches or 215.9 millimeters) at the horizontal scanning resolution of 300 dpi.
- The vertical scanning resolution is 300 dpi.
- The image sensor is a dust-free structure that prevents dust from accumulating on the photo transistors' surfaces. The light emitted by the LED array goes through the glass and is reflected by the document. This reflected light is then converted to electrical signals by the photo transistors in the sensor unit. This method requires no lens.

Structure of the Image Sensor

The image sensor consists of the following:

- The LED array emits the scanning light. The LED array consists of 36 LEDs and is controlled by the control system.
- The glass is in contact with the document.
- The photo transistor array receives the reflected light. The photo transistor array consists of 2,574 photo transistors and 11 driver circuits. Each driver circuit amplifies the output of 234 photo transistors. The output from the 11 driver circuits is converted to the serial data and sent to the control unit.
- The guide film prevents the document from becoming jammed.

Document-Feed System

Although this unit does not have a sensor that detects whether or not a document is in the document feed tray, it has a document-feed sensor that detects the leading and trailing edges of the paper.

The document-feed system does not have a document-feed solenoid. Rather, at the moment the main motor rotates, the pickup roller also rotates and a document is fed to the inside of the unit. The document inside the unit is then fed to the delivery slot by the scan roller after being scanned. The scan roller rotation speed is four times the rotation speed of the pickup roller.

Control Buttons

The HP LaserJet Companion Printer Accessory has two control buttons located on the top right-hand side of the unit:

- To PC (light gray, on the left)
- To Printer (dark gray, on the right)

To stop a scan, press either **To PC** or **To Printer** once.

Use **To Printer** to print single copies

1 Raise the paper tray and paper supports.
2 Place a document in the paper tray, face up and top down, and adjust the paper edge guides.
3 Press **To Printer**. The document is fed through the Companion and the printer prints a copy.

Use **To PC** to send images to the Companion Copier software

1 Raise the paper tray and paper supports.
2 Place a document in the paper tray, face up and top down, and adjust the paper edge guides.
3 Press **To PC** once. The image is sent to the computer where the PaperPort software starts automatically.

Software

Installation Software

The Companion installation software installs the scanner drivers and the PaperPort software on the computer's hard disk. The software can be installed from either a disk or a compact disc.

The PaperPort Software

The PaperPort software offers the following features:

- Annotate, organize, and find scanned items.
- Electronically link scanned documents to other applications such as fax, e-mail, and word processing applications.
- Unless specified otherwise, the PaperPort software is the default inbox for receiving scanned documents at the computer.

3

Testing

Performing Main Tests

Final tests use the PaperPort software shipped with the HP LaserJet Companion Printer Accessory.

Tests may be performed only when the scan roller and the image sensor are clean. To clean the scan roller and image sensor, follow the directions under "Cleaning the HP LaserJet Companion Printer Accessory" later in this chapter.

System Requirements

Connect the Companion to a computer and an HP LaserJet printer that meet the system requirements described in Chapter 1.

Initializing Nonvolatile Random-Access Memory (NVRAM)

NVRAM should be initialized before performing other tests. NVRAM initialization ensures that the internal memory is in the default mode.

1 Disconnect the power supply from the Companion.
2 Press and hold down **To Printer** while reconnecting the power supply. The motor will rotate briefly.
3 Release **To Printer** when the motor stops. The motor will again rotate briefly.

Initialization is complete when the motor stops again.

Calibrating the Companion

Calibrate the Companion so that the image sensor and control board become a matched set that produces quality scanned images.

1 Click Settings on the PaperPort software desktop.
2 Click More.
3 Click Calibrate.
4 Insert a blank sheet of white paper that is 8.6 inches (218 millimeters) wide by at least 6 inches (15.2 millimeters) long into the Companion.
5 Click OK.

Calibration is complete.

Copying to the Printer

Multi-feed Test

The document-feed system should accept 10 to 20 pages, feeding them through the Companion one at a time.

1 Raise the paper tray and paper supports and place approximately ten pages in the paper tray.
2 Press **To Printer** .

Skew Test

The document-feed system should feed pages through the Companion smoothly and evenly.

1 Place a document containing printed grid lines in the paper tray.
2 Press **To Printer** .
3 Measure the grid lines on the resulting copy for skew.
4 Repeat steps 1 through 3 several times to determine whether or not skew is consistent.

Note   Also see skew troubleshooting on page 4-5.

Scanning to the Computer

Use Settings in the software to select a scanning mode that simulates the user's problem.

● Use Photograph Mode or Custom Mode for graphics and photographs.
● Use OCR Mode or Fax Test Mode for OCR problems.

Performing Additional Tests

Additional tests may be developed for use at repair sites. New tests will
be available at this Internet address: http://ljtm.boi.com/.

3 Testing

Cleaning the HP LaserJet Companion Printer Accessory
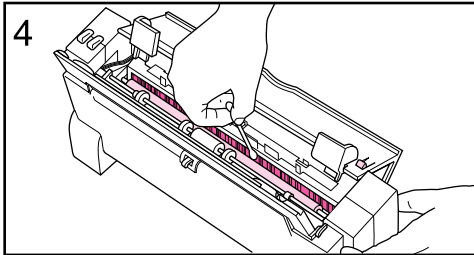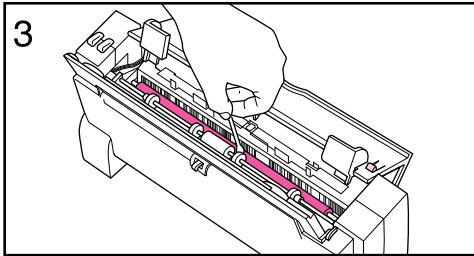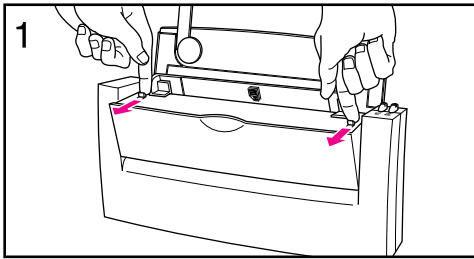
To clean the scan roller and image sensor

1 Pull forward on the release levers and open the cover.

2 Dip a cotton swab in isopropyl alcohol.

3 Press either **To Printer** or **To PC** on the Companion to rotate the white scan roller, then wipe the roller with the saturated cotton swab.

4 Spray glass cleaner on a new cotton swab and clean the glass on the image sensor with the saturated cotton swab.

Caution

Do not spray cleaner or any other liquid directly on or into the Companion. Doing so may cause damage to the Companion.

Note

- Use isopropyl alcohol to clean the pickup roller, separation pad, and scan roller.
- Use glass cleaner to clean the image sensor.

4

Troubleshooting

Basic Troubleshooting

Troubleshoot the HP LaserJet Companion Printer Accessory in four general areas:

- Power On Self-Test
- Paper Movement
- Image Transfer
- Image Quality

When troubleshooting the Companion, follow the order shown. Begin with the Power On tasks and work through the list.

The following pages explain the different troubleshooting tasks and how to complete them.

Power On Self-Test

Power to the Companion is in good working order when all of the following occurs upon plugging the power supply into the Companion:

- The power module outputs 22 Vdc +/- 25%.
- The main motor and gear train rotate for approximately one half of a second and produce an audible hum.
- The pickup roller rotates approximately 22.5 degrees and the scan roller rotates approximately 90 degrees.
- All 36 green LEDs in the image sensor light up briefly.

Power Supply

If the power supply does not output 22 Vdc +/- 25%, replace the power supply.

The power supply should output at least 15 Vdc when connected to the Companion. Figure 4-1 shows the test points.

Figure 4-1
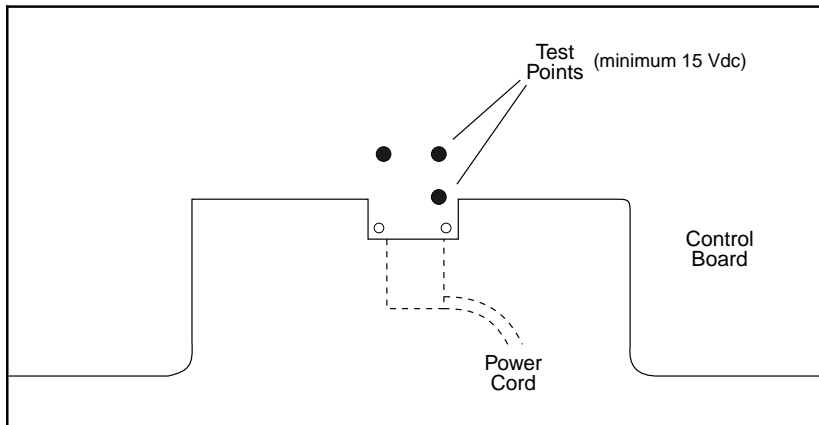
Voltage Test Points

If the voltage falls below the minimum 15 Vdc, the Companion is overloading the power supply.

1 Replace the control board.
2 Replace the motor.
3 Replace the power supply.

Motor

If the power supply is in good working order, but the motor and gear train do not rotate, check the cable connection to the motor.

Check the gear train. There may be something interfering with the gears' movement.

If the motor and gear train still do not rotate,

1 Replace the main control board.
2 Replace the motor.

Pickup Roller and Scan Roller

If the Power Supply is in good working order and the motor and gear train rotate successfully, but the pickup roller and scan roller do not rotate, there may be damaged or broken gears or gear shafts.

1 Replace damaged or broken gears.
2 Replace the Companion if a gear shaft is broken.

Image Sensor LEDs

If some or all of the image sensor's 36 LEDs fail to light, check the cable connection to the image sensor.

If the LEDs continue to fail,

1 Replace the image sensor.
2 Replace the control board.

4 Troubleshooting

Paper Movement

Paper movement troubleshooting can be completed after verifying that the I/O configuration on the computer is correct and that the software performs adequately. Also confirm that the documents being scanned meet the media specifications detailed in Chapter 1.

Button Press

The front cover holds the control board in place, allowing the **To PC** and **To Printer** buttons to operate. With the front cover in place, Press **To PC** or **To Printer**. The pickup roller should rotate.

Note   The **To PC** button will not operate properly unless the software is installed.

If the pickup roller does not rotate, first verify that the front cover holds the control board in place properly.

Also verify that the buttons activate the switches on the control board. With the front cover off, hold the control board in place manually.

If the pickup roller still does not rotate,

1 Replace the front cover if it is damaged or defective.
2 Replace damaged or defective buttons.

Paper Sensor

The paper sensor detects the leading and trailing edges of pages. When the paper sensor is not working properly,

- The margin at the top of an output image may be different from the margin of the original scanned document.
- The output document may be two or three pages even when the original scanned document is only one page.

When these problems occur:

1 Check the paper sensor lever spring and replace it if it is damaged or broken.

Note   The spring can become disconnected during shipping. Reattach the spring, and bend the end of the spring so that it will not come loose. The end of the spring may be glued in place, if necessary.

2 Check the paper sensor lever and replace it if it is damaged or broken.
3 Replace the paper sensor.

Multifeed

If the Companion feeds more than one document at a time, clean the separation pads, entrance guide, and pickup roller.

If, after cleaning, the Companion continues to feed multiple pages,

1 Replace the separation pad.
2 Replace the entrance guide.
3 Replace the separation spring.
4 Replace the pickup roller.

Skew

Note   Do not attempt to correct skew unless it exceeds the normal skew specifications below.

Some skew is normal. The maximum amount of skew that is considered "normal" is .13 inches (3.35 millimeters) over 11 inches (279 millimeters). Skew exceeding the normal amount may be caused by media that is damaged, media that does not meet the specifications detailed in Chapter 1, or media that is loaded incorrectly.

If media meets specifications, is not damaged, and is loaded correctly, but skew remains excessive, clean the separation pad, entrance guide, pickup roller, and scan roller.

Verify that the paper edge guides slide freely. If not, clean (or replace, if necessary) the paper edge guides gear and loosen the gear's screw.

If skew remains excessive,

1 Replace the upper cover.
2 Replace the scan roller.
3 Replace the pickup roller.

Paper Jam

If media frequently becomes jammed in the Companion, check for and clear obstructions in the paper path.

When obstructions have been cleared, clean the image sensor and the scan roller.

If media meets specifications, is not damaged, and is loaded correctly, and jams continue, clean the separation pad, entrance guide, and pickup roller.

If media continues to become jammed in the Companion,

1 Replace damaged or missing paper guides.
2 Replace the scan roller.
3 Replace the pickup roller.
4 Replace the separation pad.

4 Troubleshooting

Image Transfer Failures

Troubleshoot image transfer failures only after verifying that the I/O configuration on the computer is correct and that the software performs adequately. Also confirm that the parallel cables being used are IEEE-1284 compliant parallel cables.

If the Companion scans documents correctly, but the scanned image will not transfer to the printer or to the computer, initialize NVRAM (see Chapter 3) and try again to scan.

If scanned images still will not transfer, replace the control board.

Image Quality Problems

Image quality problems come in several varieties: the image is too dark or too light, the image contains dark or light spots, or the image contains vertical or horizontal lines.

Set the software to the appropriate resolution.

Note   It takes more time to scan at higher resolutions.

Clean the image sensor and scan roller.

Calibrate the Companion (see Chapter 3).

If image quality problems are not solved,

1 Replace the image sensor.
2 Replace the control board.
3 Replace the scan roller.

5

Removal and Replacement

Disassembly and Reassembly

This section details the disassembly and reassembly procedures of the HP LaserJet Companion Printer Accessory.

WARNING! Unplug the power cord from the power outlet before attempting to service this unit or severe injury may result.

Note Note the lengths, diameters, and locations of screws as you remove them. When reassembling the Companion, be sure to reinsert the screws in their original locations.

Caution Do not operate the unit with any parts removed.

Required Tools

The following tools are required for disassembly and reassembly of the Companion:

- Torx T-10 driver
- Small flat-blade screwdriver
- Phillips-head screwdriver
- Needlenose pliers

Disassembly

When cleaning, checking, or repairing the Companion, use the following procedures:

Lower-Front Cover Removal

(Figure 6-2, Reference 1)

1 Unplug the power cord and remove the parallel cable from the back of the unit.
2 Locate the three latches at the bottom of the unit.
3 Use a flat-blade screwdriver to release the latches one at a time.
4 Remove the cover and stand the unit upright.

Control Board Removal

(Figure 6-3, Reference 26)

5 Use a Torx T-10 driver to remove the four screws.
6 Disconnect the three connectors to the control board (use needlenose pliers, if necessary).

Upper-Front Cover Removal

(Figure 6-1, Reference 4)

The upper-front cover houses the image sensor.

7 Lift open the paper tray.
8 Locate the two release levers at the top of the unit.
9 Pull the release levers toward you to disengage the cover.
10 Unhook the spring located on the left-hand side of the cover.
11 Pull the cover toward you for partial removal.

This allows access to the image sensor.

Paper Supports Removal

(Figure 6-2, Reference 3A)

12 Lower both paper supports.
13 Lift the right paper support away from the paper tray approximately one half inch (12 to 13 millimeters) and rotate it counterclockwise to release it from the paper tray.
14 Lift the left paper support away from the paper tray approximately one half inch and rotate it clockwise to release it from the paper tray.

Rear Cover Removal

(Figure 6-2, Reference 2C)

The rear cover is attached to the chassis by two interlocks at the bottom right and left of the cover, just below the two lower control board screw holes.

15 Release the interlocks one at a time by pulling the cover down while lifting the chassis up, or use the small flat-blade screwdriver to pry them apart.
16 Lift up on the separation pad assembly latch at the rear of the back cover to remove the chassis.

Drive Gear Removal

(Figure 6-3, References 12, 13, 14, 15, 16, and 17)

17 Remove the screws on the gear plate by using the Phillips-head screwdriver. (There are three screws on the side of the gear plate and one on the back.)
18 Snap off the gear plate.
19 Remove gear #16 (teeth #23T/37T).
20 Remove gear #15 (teeth #59T).
21 Remove gear #12 (teeth #71T/22T).
22 Remove gear #14 (teeth #19T/61T).
23 Remove gear #13 (teeth #29T).
24 Remove gear #17 (teeth #47T).

Pickup Roller Removal

(Figure 6-3, Reference 7E)

Follow steps 1 to 11 and steps 15 to 18 under "Disassembly," then complete the following steps:

25 Remove gear #16.
26 Remove gear #17.
27 Slide the pickup roller toward the left (gear-side) of the unit to disengage it from the right side while, at the same time, holding down the separation pad behind the pick-up roller. This will prevent the spring in the separation pad from popping out.
28 Lift up on the right side of the roller for removal.

Separation Pad Assembly Removal

(Figure 6-3, Reference 20)

Follow steps 1-11, steps 15 and 16, and steps 25 to 28 under "Disassembly," then complete the following steps:

29 Carefully lift the separation pad to remove the spring.

Note the position of the spring under the separation pad for proper reassembly.

30 Turn the unit so it is facing away from you.
31 Pull one side of the separation pad toward you until it snaps out of its hinges, then repeat for the other side.

Scan Roller Removal

(Figure 6-3, Reference 6)

Follow steps 1 to 11 and steps 15 to 24 under "Disassembly," then complete the following steps:

32 Slide the scan roller toward the left (gear-side) of the unit to disengage it from the right side.
33 Lift up on the right side of the roller to remove.

Paper Sensor Removal

(Figure 6-3, Reference 18)

The paper sensor is mounted on the right side of the chassis. It is held in place by four clips. Follow steps 1 to 11 and steps 15 and 16 under "Disassembly," then complete step 34:

34 Release the clips to remove the paper sensor.

Paper Sensor Lever Removal

(Figure 6-3, Reference 1)

Follow steps 1 to 11 and steps 15 and 16 under "Disassembly," then complete the following steps:

35 Grasp one of the four paper guides with the needlenose pliers and pull. Repeat until all paper guides are removed.
36 Remove the spring.

The paper sensor lever is held in place by one snap-in hinge on the left side of the back of the chassis.

37 Using the small flat-blade screwdriver, pry the paper sensor lever from the hinge.
38 Slide the paper sensor lever to the left to remove.

Motor Removal

(Figure 6-3, Reference 9)

Follow steps 1 to 11 and steps 15 to 24 under "Disassembly," then complete the following steps:

39 Cup the motor with one hand (to prevent it from falling once the screws are removed).
40 Remove the two screws on the motor with the Phillips-head screwdriver.
41 Remove the spring.

The motor is now detached from the chassis.

Image Sensor Removal

(Figure 6-1, Reference 8)

Follow steps 1-11 under "Disassembly," then complete the following steps:

42 Grasp the image sensor on one side and pull it toward the opposite side while at the same time using your thumb to press outward on the front cover tab.
43 Disconnect the connector wire to the image sensor.

5 Maintenance

Reassembly

Use the following procedures to reassemble the Companion.

Motor Replacement

(Figure 6-3, Reference 9)

1 Reattach the spring.
2 Line up the holes on the gear plate.
3 Reinsert the screws from the outside of the gear plate.

Paper Sensor Lever Replacement

(Figure 6-3, Reference 1)

4 Turn the chassis around to view it from the back.
5 Slide the paper sensor lever into the hole on the right (gear side).
6 Snap the hinge on the other side into place.
7 Replace the spring (see Figure 6-3, Reference 11).
8 Replace the paper guides (snap into place with a small flat screwdriver if necessary).

Paper Sensor Replacement

(Figure 6-3, Reference 18)

9 Replace the paper sensor on the left and turn the chassis around to view it from the front.
10 Replace the three clips on the right side of the chassis.

Scan Roller Replacement

(Figure 6-3, Reference 6)

11 Tip the chassis upside-down so that the paper guides tip away from the slot where the scan roller will be replaced.

12 Grasp one of the four paper guides with the needlenose pliers and pull. Repeat until all paper guides are removed.

13 Guide the scan roller into the hole on the left.

Be sure to insert the long, notched end into the left side (gear side) of the unit.

14 Insert the scan roller into the hole on the right side of the chassis.

15 Replace the gears by following the Gear Replacement instructions.

Separation Pad Assembly Replacement

(Figure 6-3, Reference 20)

16 Holding the separation pad assembly and the spring, slide it into the chassis.

17 Snap both hinges, one on each side, into place.

Pickup Roller Replacement

(Figure 6-3, Reference 7E)

18 Insert the long end into the left side (gear side) of the chassis first, then insert the short end into the right side.

5 Maintenance

Gear Replacement

(Figure 6-3, References 12, 13, 14, 15, 16, and 17)

See Figure 5-1 for correct replacement.

19 Replace gear #17 (teeth #47T).
20 Replace gear #13 (teeth #29T).
21 Replace gear #14 (teeth #19T/61T).
22 Replace gear #12 (teeth #71T/22T).
23 Replace gear #15 (teeth #59T).
24 Replace gear #16 (teeth #23T/37T).
25 Rotate the gears slightly to mesh, if necessary.
26 Snap on the gear plate and replace the screws.

Figure 5-1
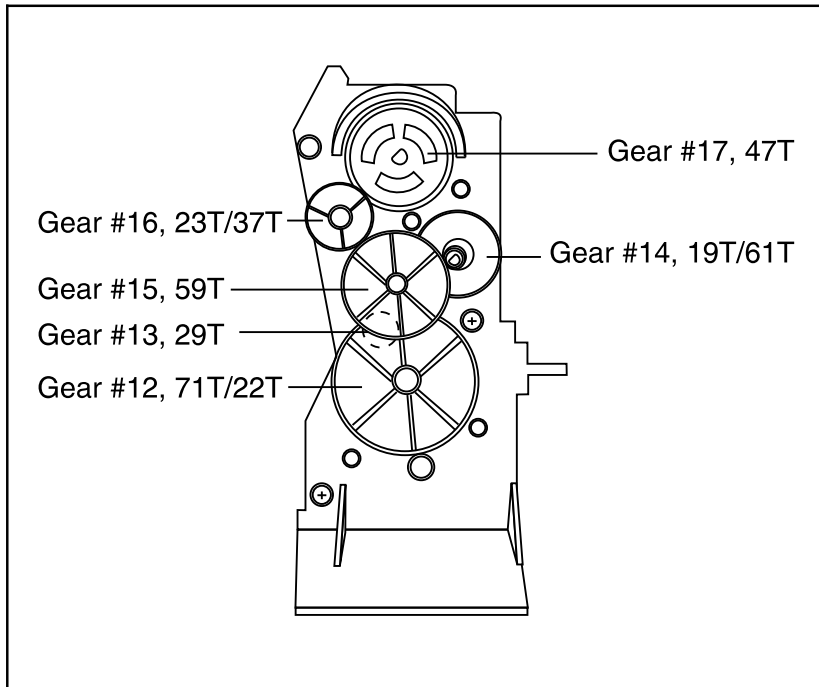
Gear Locations

Rear Cover Replacement

(Figure 6-2, Reference 2C)

27 Slide the chassis into the rear cover.
28 Push (on both sides at the same time) on the base of the chassis until it snaps into place.

Image Sensor Replacement

(Figure 6-1, Reference 8)

29 Reconnect the connector wire to the image sensor assembly.
30 Insert the image sensor into the front cover tabs.

N o t e Avoid touching the glass surface of the image sensor. If you touch the glass, clean it according to the instructions in Chapter 3.

31 Route the connector wire through the right side of the upper cover, then over the clip on the chassis (see figure 5-2).

Figure 5-2
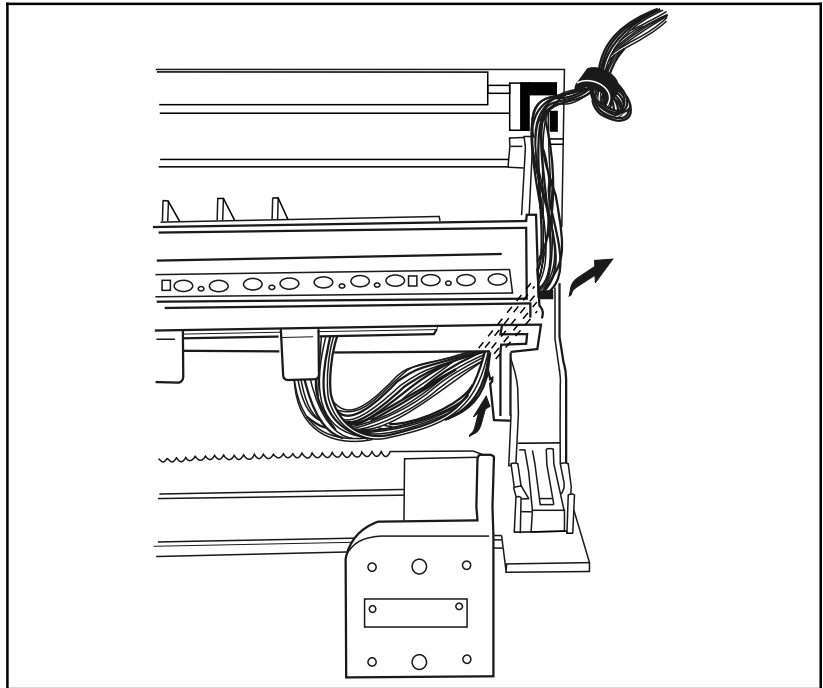
Image Sensor Connector Wire Routing

N o t e Improper routing of the image sensor connector wire can cause wear on the scan roller and on the wire itself.

Paper Supports Replacement

(Figure 6-2, Reference 3A)

32 Place the round end of the right paper support over the round indentation at the right of the paper tray.

33 Lower the other end into the paper pickup area while pressing the round end into the indentation until the round end snaps into place, then raise the paper support.

34 Repeat steps 32 and 33 on the left side to replace the left paper support.

Upper-Front Cover Replacement

(Figure 6-1, Reference 4)

35 Insert the tabs at the lower left and right sides of the cover into the slots in the chassis.

36 Replace the spring at the lower-left hand corner of the cover (see figure 6-1, reference 5).

37 Close the cover until it snaps into place.

Control Board Replacement

(Figure 6-3, Reference 26)

38 Connect the three connectors to the control board.

39 Use a Torx T-10 driver to replace the four screws in their original locations.

Lower-Front Cover Replacement

(Reference 6-2, Reference 1)

40 Hook the top of the cover in place.

41 Line up the latches at the bottom of the lower-front cover and rear cover.

42 Press until the cover snaps into place.

6

Parts

Ordering Parts

All standard part numbers listed are stocked and may be ordered from HP Direct Ordering. Call 1-800-538-8787 (U.S.) or 1-800-387-3164 (Canada).

Documentation Part Numbers

Manual	Language	HP Part Number
HP LaserJet Companion Printer Accessory User's Manual	U.S. English	C3989-90913
	Dutch	C3989-90901
	Generic English	C3989-90902
	French	C3989-90903
	German	C3989-90904
	Portuguese	C3989-90907
	Russian	C3989-90908
	Spanish	C3989-90910
HP LaserJet Companion Printer Accessory Service Manual	English	C3989-90945
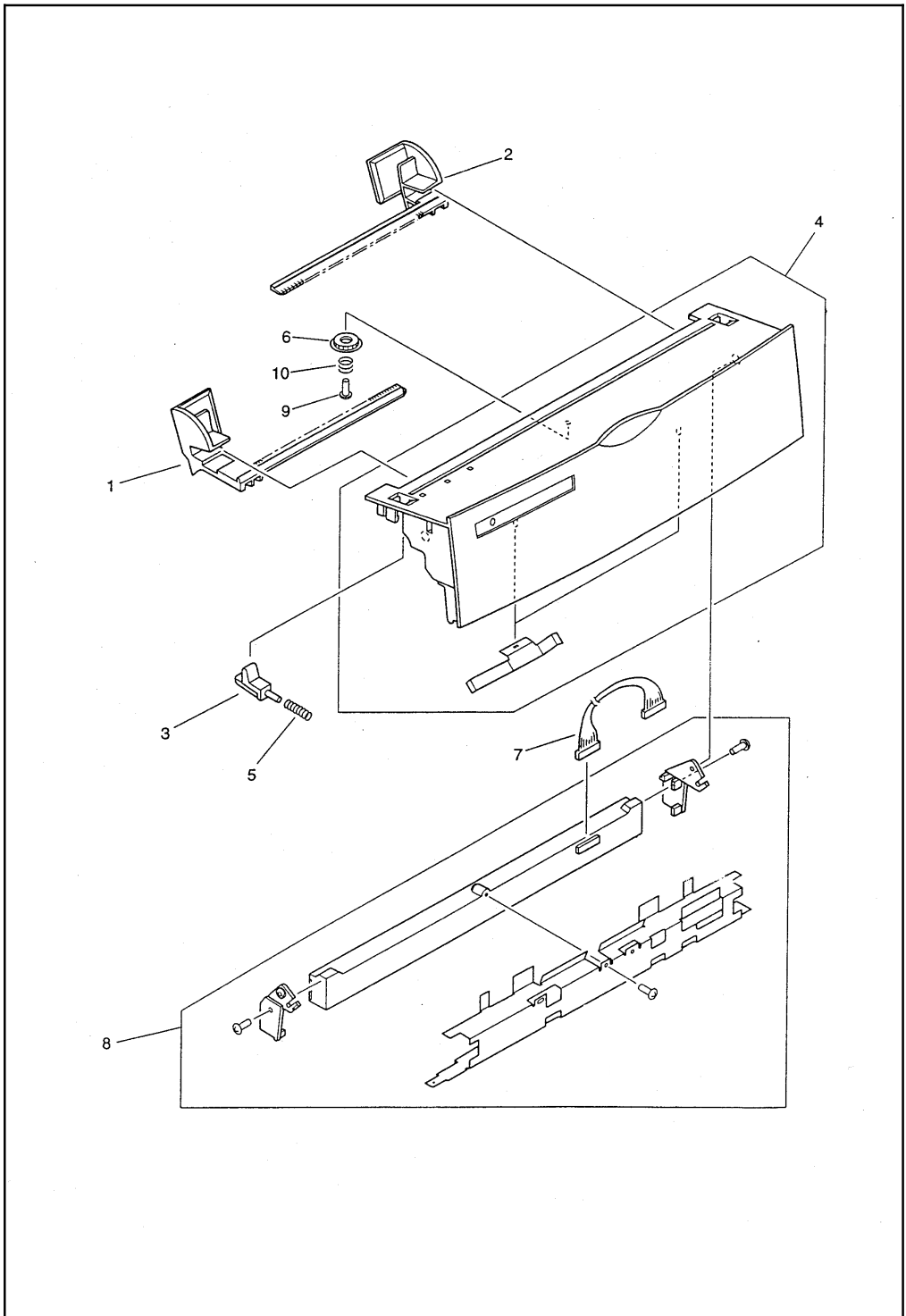
Figure 6-1   Upper Cover Assembly

Upper Cover Assembly

Reference	HP Part Number	Quantity	Description
1	RB1-9323-000CN	1	Paper Edge Guide, Left
2	RB1-9324-000CN	1	Paper Edge Guide, Right
3	RB1-9334-000CN	2	Lever, latch
4	RF5-1937-000CN	1	Cover, upper
5	RS5-2665-000CN	2	Spring, compression
6	RS6-0010-000CN	1	Gear, 18T, Paper Edge Guides
7	RG5-2956-000CN	1	Contact Image Sensor Cable
8	RG5-2959-000CN	1	Contact Image Sensor Assembly
9	XA9-0527-000CN	1	Self-tapping Phillips M3x12, Paper Edge Guides
10	RS5-2667-000CN	1	Spring, Compression
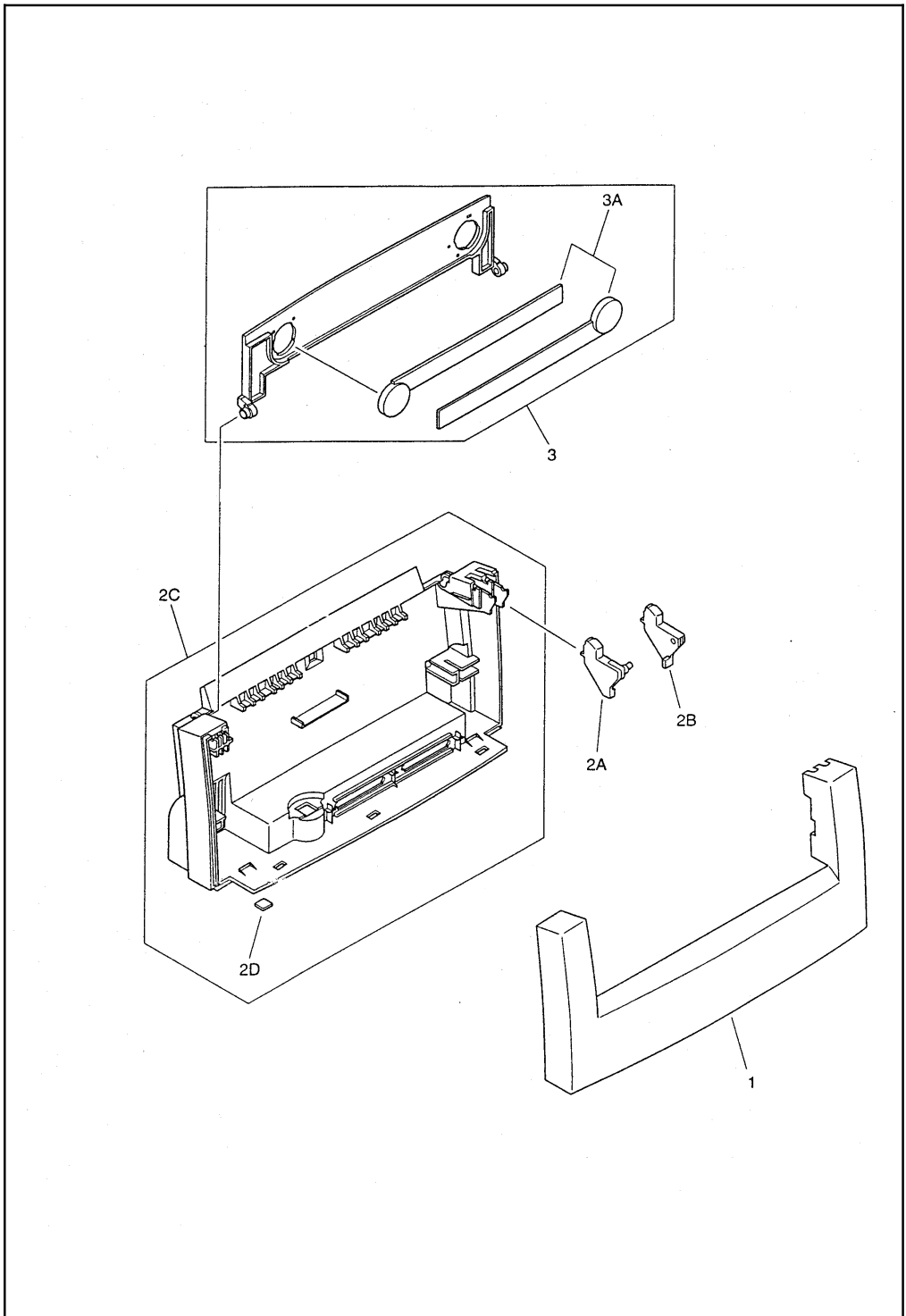
Figure 6-2 External Covers and Panels

External Covers and Panels

Reference	HP Part Number	Quantity	Description
1	RB1-9353-000CN	1	Cover, front
2A	RB1-9345-000CN	1	Lever, key switch, left (light gray)
2B	RB1-9346-000CN	1	Lever, key switch, right (dark gray)
2C	RF5-1938-000CN	1	Cover, rear
2D	RB1-9344-000CN	4	Feet
3	RG5-2995-000CN	1	Paper, Pick-Up Tray Assembly
3A	RB1-9351-000CN	2	Support, paper
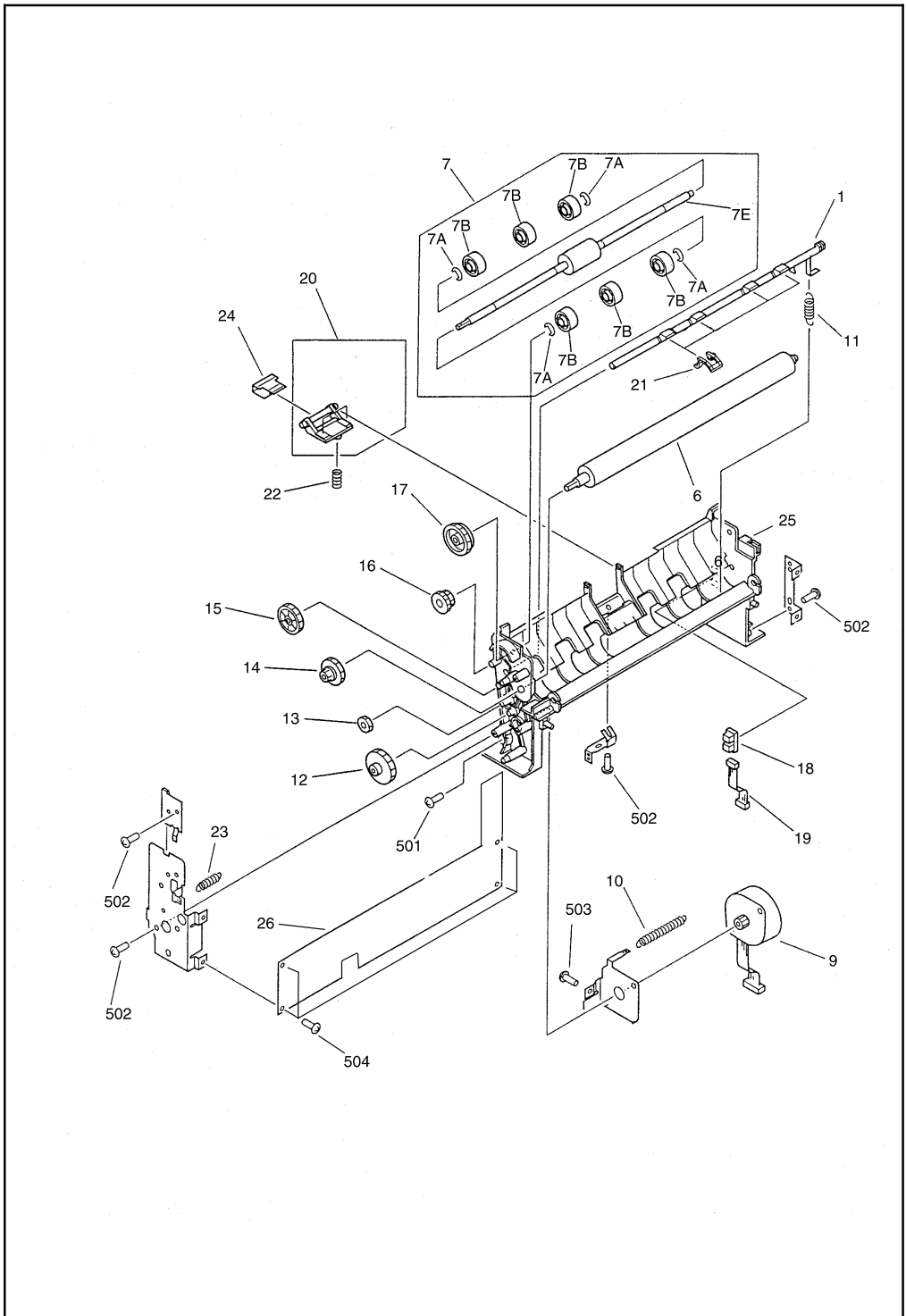
Figure 6-3   Internal Components

Internal Components

Reference	HP Part Number	Quantity	Description
1	RB1-9330-000CN	1	Paper Sensor Lever
6	RB1-9338-000CN	1	Scan Roller (white)
7	RG5-2996-000CN	1	Paper Pickup Roller Assembly
7A	XD2-1100-502CN	4	"E" Clip
7B	RB1-9342-000CN	6	Roller
7E	RB1-9339-000CN	1	Paper Pickup Roller
9	RH7-1316-000CN	1	Motor, ac
10	RS5-2663-000CN	1	Tension Spring
11	RS5-2666-000CN	1	Tension Spring
12	RS6-0011-000CN	1	Gear, 71T/22T
13	RS6-0012-000CN	1	Gear, 29T
14	RS6-0013-000CN	1	Gear, 19T/61T
15	RS6-0014-000CN	1	Gear, 59T
16	RS6-0015-000CN	1	Gear, 23T/37T
17	RS6-0016-000CN	1	Gear 47T
18	WG8-5309-000CN	1	Photo Sensor
19	RG5-2957-000CN	1	Photo Sensor Cable
20	RF5-1939-000CN	1	Separation Pad
21	RB1-9354-000CN	4	Paper Guide
22	RS5-2664-000CN	1	Compression Spring
23	RS5-2662-000CN	1	Tension Spring
24	RB1-9337-000CN	1	Entrance Guide
25	RB9-9329-000CN	1	Chassis

Internal Components (continued)

Reference	HP Part Number	Quantity	Description
26	C3988-60001	1	Control Board
501	XB2-8300-809CN	2	Screw with Washer, M3x8
502	XB4-7300-809CN	5	Screw, Self-Tapping Truss Head, M3X8
503	XB6-7300-605CN	1	Screw, TP, M3X6
504	0515-2719	4	Screw, Washer Head Torx T-10 M3x8

Cables

HP Part Number	Part Description
8120-6963	Cable shipped with the Companion
C2950A	Printer parallel cable, 2 meter A-B
C2951A	Printer parallel cable, 3 meter A-C

Power Supply Modules

HP Part Number	Part Description
9100-5534	120 Vac 60 Hz (US/CN/MX)
9100-5535	230 Vac 50 Hz (EUROPE)
9100-5536	240 Vac 50 Hz (U.K.)
9100-5537	220 Vac 50 Hz (ARG)
9100-5539	240 Vac 50 Hz (AUSTRL)
9100-5541	220 Vac 50 Hz (TI/INDO)
9100-5542	220 Vac 50 Hz (HNG KNG)

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Chassis	RB9-9329-000CN	6-3	25
Compression Spring	RS5-2664-000CN	6-3	22
Compression Spring	RS5-2665-000CN	6-1	5
Compression Spring	RS5-2667-000CN	6-1	10
Contact Image Sensor Assembly	RG5-2959-000CN	6-1	8
Contact Image Sensor Cable	RG5-2956-000CN	6-1	7
Control Board	C3988-60001	6-3	26
Cover, front	RB1-9353-000CN	6-2	1
Cover, rear	RF5-1938-000CN	6-2	2C
Cover, upper	RF5-1937-000CN	6-1	4
E-Clip	XD2-1100-502CN	6-3	7A
Entrance Guide	RB1-9337-000CN	6-3	24
Feet	RB1-9344-000CN	6-2	2D
Gear, 18T Paper Edge Guides	RS6-0010-000CN	6-1	6
Gear, 19T/61T	RS6-0013-000CN	6-3	14
Gear, 23T/37T	RS6-0015-000CN	6-3	16
Gear, 29T	RS6-0012-000CN	6-3	13
Gear, 47T	RS6-0016-000CN	6-3	17
Gear, 59T	RS6-0014-000CN	6-3	15
Gear, 71T/22T	RS6-0011-000CN	6-3	12
Lever key switch, left (light gray)	RB1-9345-000CN	6-2	2A
Lever key switch, right (dark gray)	RB1-9346-000CN	6-2	2B
Lever latch	RB1-9334-000CN	6-1	3
Motor, ac	RH7-1316-000CN	6-3	9
Paper Edge Guide, Left	RB1-9323-000CN	6-1	1
Paper Edge Guide, Right	RB1-9324-000CN	6-1	2
Paper Guide	RB1-9354-000CN	6-3	21

Description	HP Part Number	Figure	Ref.
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Paper Pickup Roller	RB1-9339-000CN	6-3	7E
Paper Pickup Roller Assembly	RG5-2996-000CN	6-3	7
Paper Sensor Lever	RB1-9330-000CN	6-3	1
Paper Support	RB1-9351-000CN	6-2	3A
Photo Sensor	WG8-5309-000CN	6-3	18
Photo Sensor Cable	RG5-2957-000CN	6-3	19
Roller	RB1-9342-000CN	6-3	7B
Scan Roller (white)	RB1-9338-000CN	6-3	6
Screw, Self-Tapping Truss Head M3X8	XB4-7300-809CN	6-3	502
Screw, TP M3X6	XB6-7300-605CN	6-3	503
Screw, Washer Head, Torx T-10 M3x8	0515-2719	6-3	504
Screw with Washer M3x8	XB2-8300-809CN	6-3	501
Self-tapping Phillips M3x12, Paper Edge Guides	XA9-0527-000CN	6-1	9
Separation Pad	RF5-1939-000CN	6-3	20
Tension Spring	RS5-2662-000CN	6-3	23
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Tension Spring	RS5-2666-000CN	6-3	11

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Numerical Parts List

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RB1-9324-000CN	Paper Edge Guide, Right	6-1	2
RB1-9330-000CN	Paper Sensor Lever	6-3	1
RB1-9334-000CN	Lever Latch	6-1	3
RB1-9337-000CN	Entrance Guide	6-3	24
RB1-9338-000CN	Scan Roller (white)	6-3	6
RB1-9339-000CN	Paper Pickup Roller	6-3	7E
RB1-9342-000CN	Roller	6-3	7B
RB1-9344-000CN	Feet	6-2	2D
RB1-9345-000CN	Lever key switch, left (light gray)	6-2	2A
RB1-9346-000CN	Lever key switch, right (dark gray)	6-2	2B
RB1-9351-000CN	Paper Support	6-2	3A
RB1-9353-000CN	Cover, front	6-2	1
RB1-9354-000CN	Paper Guide	6-3	21
RB9-9329-000CN	Chassis	6-3	25
RF5-1937-000CN	Cover, upper	6-1	4
RF5-1938-000CN	Cover, rear	6-2	2C
RF5-1939-000CN	Separation Pad	6-3	20
RG5-2956-000CN	Contact Image Sensor Cable	6-1	7
RG5-2957-000CN	Photo Sensor Cable	6-3	19
RG5-2959-000CN	Contact Image Sensor Assembly	6-1	8
RG5-2995-000CN	Paper Pick-Up Tray Assembly	6-2	3
RG5-2996-000CN	Paper Pickup Roller Assembly	6-3	7
RH7-1316-000CN	Motor, ac	6-3	9
RS5-2662-000CN	Tension Spring	6-3	23
RS5-2663-000CN	Tension Spring	6-3	10
RS5-2664-000CN	Compression Spring	6-3	22
RS5-2665-000CN	Compression Spring	6-1	5

Part Number	Description	Figure	Ref.
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RS5-2667-000CN	Compression Spring	6-1	10
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RS6-0011-000CN	Gear, 71T/22T	6-3	12
RS6-0012-000CN	Gear, 29T	6-3	13
RS6-0013-000CN	Gear, 19T/61T	6-3	14
RS6-0014-000CN	Gear, 59T	6-3	15
RS6-0015-000CN	Gear, 23T/37T	6-3	16
RS6-0016-000CN	Gear, 47T	6-3	17
WG8-5309-000CN	Photo Sensor	6-3	18
XA9-0527-000CN	Self-tapping Phillips M3x12, Paper Edge Guides	6-1	9
XB2-8300-809CN	Screw with Washer M3x8	6-3	501
XB4-7300-809CN	Screw, Self-Tapping Truss Head M3X8	6-3	502
XB6-7300-605CN	Screw, TP M3X6	6-3	503
XD2-1100-502CN	E-Clip	6-3	7A

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