



HP Mini 1104

Maintenance and Service Guide

© Copyright 2012 Hewlett-Packard
Development Company, L.P.

Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license. Intel and Atom are trademarks or registered trademarks of Intel Corporation in the United States and other countries. Microsoft and Windows are U.S. registered trademarks of Microsoft Corporation. SD Logo is a trademark of its proprietor.

The information contained herein 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.

First Edition: January 2012

Document Part Number: 684907-001

Safety warning notice

⚠ WARNING! To reduce the possibility of heat-related injuries or of overheating the device, do not place the device directly on your lap or obstruct the device air vents. Use the device only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The device and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

Table of contents

1 Product description	1
2 External component identification	5
Keys	5
Display	6
Buttons	7
Lights	8
TouchPad	9
Front	10
Left side	10
Right side	11
Bottom	12
3 Illustrated parts catalog	13
Service tag	13
Computer major components	15
Display assembly subcomponents	18
Miscellaneous parts	19
Mass storage devices	20
Sequential part number listing	21
4 Removal and replacement procedures	23
Preliminary replacement requirements	23
Tools required	23
Service considerations	23
Plastic parts	23
Cables and connectors	23
Drive handling	24
Grounding guidelines	24
Electrostatic discharge damage	24
Packaging and transporting guidelines	26

Component replacement procedures	28
Service tag	28
Computer feet	29
Battery	30
SIM (select models only)	31
WLAN module	32
WWAN module	35
Memory module	37
RTC battery	38
Hard drive	39
Keyboard	41
Top cover	44
Speakers	50
System board	51
Fan	54
Heat sink	55
Display assembly	57

5 Setup Utility (BIOS) and System Diagnostics 63

Using Setup Utility	63
Starting Setup Utility	63
Changing the language of Setup Utility	63
Navigating and selecting in Setup Utility	64
Displaying system information	64
Restoring factory settings in Setup Utility	65
Exiting Setup Utility	65
Updating the BIOS	65
Determining the BIOS version	66
Downloading a BIOS update	66
Using System Diagnostics	67

6 Specifications 68

Computer specifications	68
10.1-inch, LED, WSVGA, AntiGlare display specifications	69
Hard drive specifications	70

7 Backup and recovery 71

Backing up your information	72
Performing a system recovery	73
Using the Windows recovery tools	73

Using f11 recovery tools	74
Using a Windows 7 operating system DVD (purchased separately)	74
8 Power cord set requirements	76
Requirements for all countries	76
Requirements for specific countries and regions	77
9 Recycling	79
Index	80

1 Product description

Category	Description
Product Name	HP Mini 1104
Processor	Intel Atom N2600 1.60-GHz processor, dual core, 1.0-MB L2 cache, 800-MHz FSB, 3.5 W (processor is soldered to the system board)
Chipset	Intel NM10 Express Chipset
Graphics	Intel Graphics Media Accelerator 3600 (shared memory with up to 256-MB supported via Intel DVMT), supports MPEG2, AVC H.264, VC1 WMV9, and Microsoft DX9
Panel	<p>10.1-in, light-emitting diode (LED), WSVGA, AntiGlare (1024×600) display; typical brightness: 200 nits</p> <p>All display assemblies include 2 wireless local area network (WLAN) antenna cables</p> <p>Supports 16:9 wide aspect ratio</p> <p>Lighted logo on top bezel</p>
Memory	<p>One customer-accessible/upgradable memory module slot</p> <p>DDR3-800-MHz single channel support</p> <p>Supports up to 2-GB of system RAM (2048×1 or 1024×2)</p>
Hard drives	<p>Supports 6.35-cm (2.5-in) hard drives in 9.5-mm (.37-in) and 7.0-mm (.28-in) thicknesses</p> <p>Customer-accessible</p> <p>Serial ATA</p> <p>Supports Accelerometer hard drive protection</p> <p>Supports the following configurations:</p> <ul style="list-style-type: none">• 320 GB, 5400 rpm, 9.5 and 7.0 mm• 250 GB, 5400 rpm, 9.5 and 7.0 mm

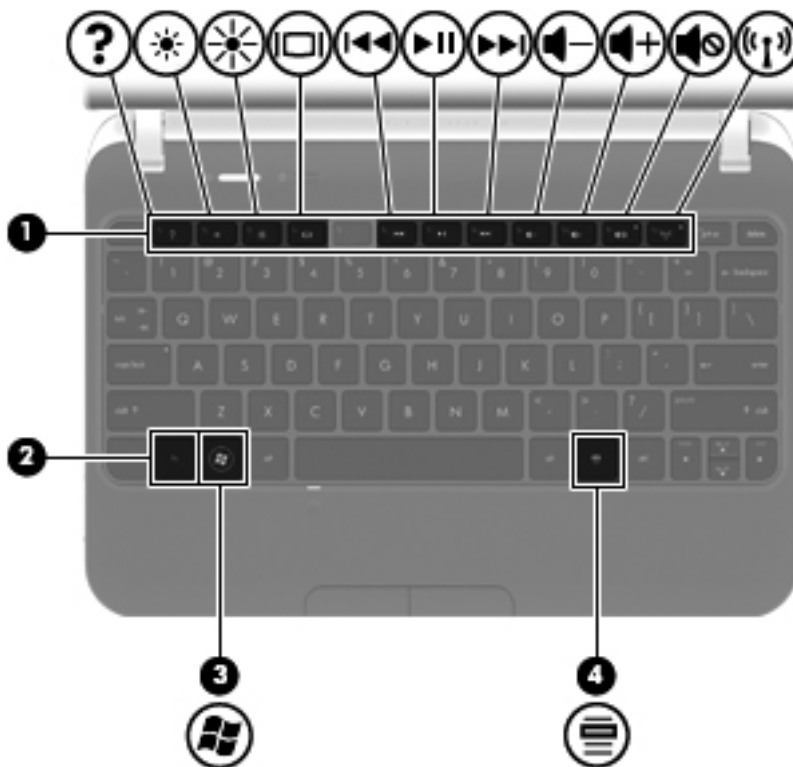
Category	Description
Audio and video	<p>Single digital microphone</p> <p>HD audio</p> <p>2 integrated, boxed stereo speakers, 1.5 W max</p> <p>HP VGA webcam (fixed, no tilt with activity LED, F/2.8, 640×480 by 30 frames per second)</p>
Ethernet	<p>Integrated 10/100 network interface card (NIC)</p>
Wireless	<p>Integrated wireless local area network (WLAN) options by way of wireless module</p> <p>Two WLAN antennas built into display assembly</p> <p>Support for the following WLAN formats:</p> <ul style="list-style-type: none"> • Broadcom 4313 802.11b/g/n 1×1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready) for use only in Brazil • Broadcom 4313GN 802.11b/g/n 1×1 WiFi and 20702 Bluetooth 4.0 Combo Adapter • Ralink 3592BC8 802.11a/b/g/n 2×2 WiFi and Bluetooth 3.0+HS Combo Adapter <p>Integrated wireless wide area network (WWAN) options by way of wireless module</p> <p>Two WWAN antennas built into display assembly (select models only)</p> <p>Support for the following WLAN formats:</p> <ul style="list-style-type: none"> • HP hs2340 HSPA+ Mobile Broadband Module • HP lc2000 HSPA Mobile Broadband Module
External media cards	<p>Digital Media Slot with push-push technology, supporting:</p> <ul style="list-style-type: none"> • MultiMediaCard • Secure Digital (SD) Memory Card • Secure Digital High Capacity (SDHC) Memory Card • Secure Digital Extended Capacity (SDxC) <p>Supports mini versions by use of an adapter (adapter is not included).</p>

Category	Description
Ports	<ul style="list-style-type: none"> • 3-pin AC power • Audio-in (mono microphone) • Audio-out (stereo headphone) • RJ-45 (Ethernet, includes link and activity lights) • USB 2.0 (3 ports) • VGA (Dsub 15 pin) supporting 1920 × 1200 external resolution @ 60Hz, hot plug and unplug and auto-detection for correct output to wide-aspect vs. standard aspect video
Keyboard/pointing devices	<p>Textured, pocket-style keyboard</p> <p>TouchPad with capacitive multi-touch gestures, 2-finger scrolling, and pinch-zoom enabled</p> <p>Taps enabled by default</p>
Power requirements	<p>40W AC adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector)</p> <p>Support for the following batteries:</p> <ul style="list-style-type: none"> • 6-cell, 55-Whr, 2.55-Ah Li-ion battery • 3-cell, 28-Whr, 2.55-Ah Li-ion battery
Security	<p>Supports security lock</p> <p>Trusted platform module (TPM) 1.2 (Infineon, soldered on system board) and TPM Enhanced Drive Lock</p>

Category	Description
Operating system	<p data-bbox="839 226 1070 254">Preinstalled: FreeDOS</p> <p data-bbox="839 281 1342 308">Preinstalled with Microsoft Office Starter 10:</p> <ul data-bbox="839 333 1410 632" style="list-style-type: none"> <li data-bbox="839 333 1177 361">• Windows 7 Home Basic 32-bit <li data-bbox="839 386 1206 413">• Windows 7 Home Premium 32-bit <li data-bbox="839 438 1177 466">• Windows 7 Professional 32-bit <li data-bbox="839 491 1410 579">• Windows 7 Starter 32-bit (Small Notebook COA; available only on computer models equipped with 1-GB memory and 250-GB hard drive) <li data-bbox="839 604 1386 632">• Windows 7 Starter 32-bit (Standard Notebook COA) <p data-bbox="839 657 1007 684">Restore media:</p> <p data-bbox="839 709 938 737">OS-DVD:</p> <ul data-bbox="839 762 1206 947" style="list-style-type: none"> <li data-bbox="839 762 1177 789">• Windows 7 Home Basic 32-bit <li data-bbox="839 814 1206 842">• Windows 7 Home Premium 32-bit <li data-bbox="839 867 1177 894">• Windows 7 Professional 32-bit <li data-bbox="839 919 1126 947">• Windows 7 Starter 32-bit <p data-bbox="839 972 1050 999">DR-DVD: Windows 7</p>
Serviceability	<p data-bbox="839 1024 1145 1052">End-user replaceable parts:</p> <ul data-bbox="839 1077 1038 1367" style="list-style-type: none"> <li data-bbox="839 1077 999 1104">• AC adapter <li data-bbox="839 1129 951 1157">• Battery <li data-bbox="839 1182 983 1209">• Hard drive <li data-bbox="839 1234 1038 1262">• Memory module <li data-bbox="839 1287 1023 1314">• WLAN module <li data-bbox="839 1339 1038 1367">• WWAN module

2 External component identification

Keys



Item	Component	Description
(1)	Action keys	Execute frequently used system functions.
(2)	<code>fn</code> key	Executes frequently used system functions when pressed in combination with a function key, the <code>num lk</code> key, or the <code>esc</code> key.
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Windows applications key	Displays a shortcut menu for items beneath the pointer.

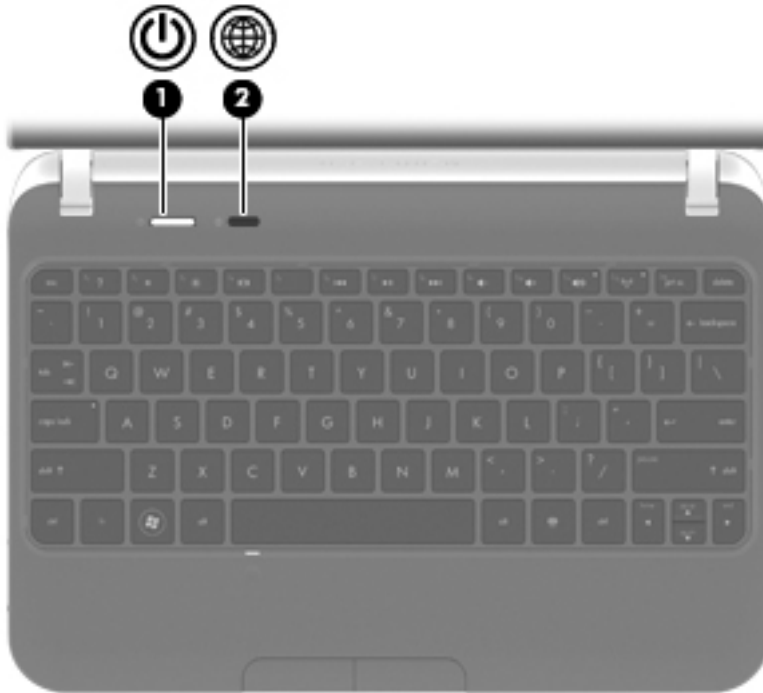
Display



Item	Component	Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs.
(2)	WWAN antennas (2)*	Send and receive wireless signals to communicate with WWANs.
(3)	Internal microphone	Records sound.
(4)	Webcam	Records video and captures still photographs. To use the webcam, double-click the ArcSoft Camera Suite icon on the desktop, or select Start > All Programs > ArcSoft Camera Suite > Launch WebCam Companion .
(5)	Webcam light	On: The webcam is in use.

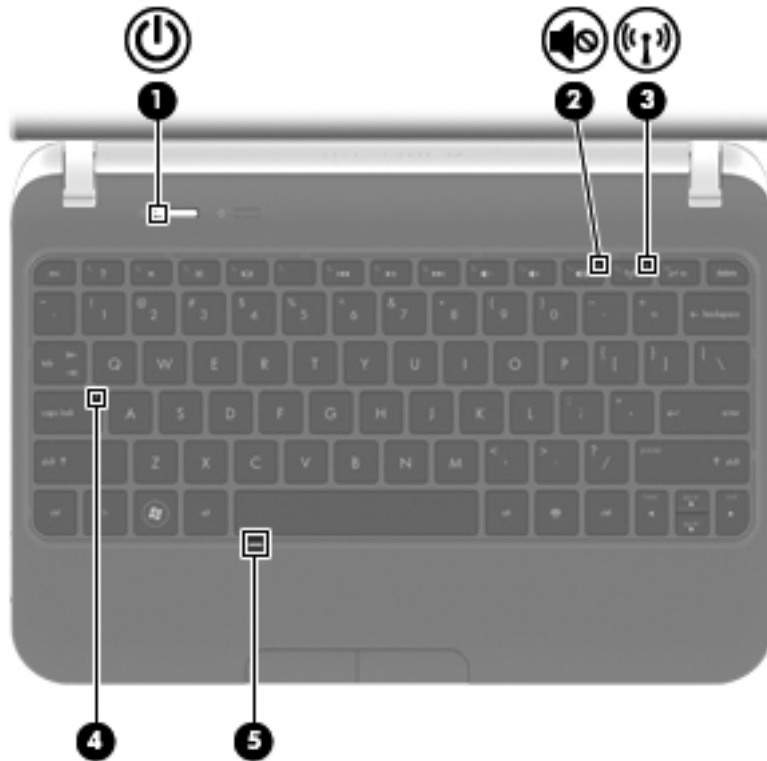
*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. To see wireless regulatory notices, refer to the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region. These notices are located in Help and Support.

Buttons



Item	Component	Description
(1)	Power button	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press the button briefly to exit Sleep.• When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, select Start > Control Panel > System and Security > Power Options, or refer to the <i>HP Notebook Reference Guide</i>.</p>
(2)	Web browser button	<p>When the computer is in Microsoft Windows, press the button to open the default Web browser.</p>

Lights



Item	Component	Description
(1)	Power light	<ul style="list-style-type: none">• White: The computer is on.• Blinking white: The computer is in the Sleep state.• Off: The computer is off or in Hibernation.
(2)	Mute light	<ul style="list-style-type: none">• Amber: Computer sound is off.• Off: Computer sound is on.
(3)	Wireless light	<ul style="list-style-type: none">• White: An integrated wireless device, such as a WLAN device and/or a Bluetooth device, is on.• Amber: All wireless devices are off.
(4)	Caps lock light	On: Caps lock is on.
(5)	TouchPad light	<ul style="list-style-type: none">• Off: The TouchPad is on.• Amber: The TouchPad is off.

TouchPad



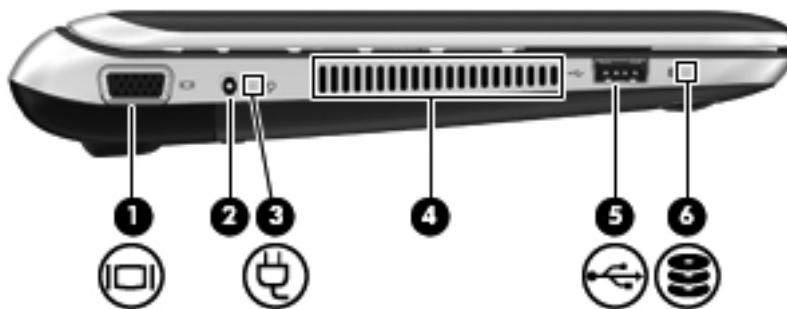
Item	Component	Description
(1)	TouchPad light	<ul style="list-style-type: none">• Off: The TouchPad is on.• Amber: The TouchPad is off.
(2)	TouchPad on/off button	Quickly double-tap the TouchPad on/off button to turn the TouchPad off and on.
(3)	TouchPad zone	Moves the pointer and selects or activates items on the screen.
(4)	Left TouchPad button	Functions like the left button on an external mouse.
(5)	Right TouchPad button	Functions like the right button on an external mouse.

Front



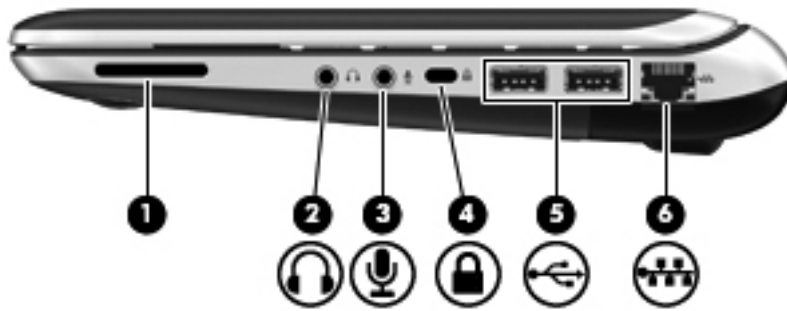
Component	Description
Speakers (2)	Connects an external VGA monitor or projector.

Left side



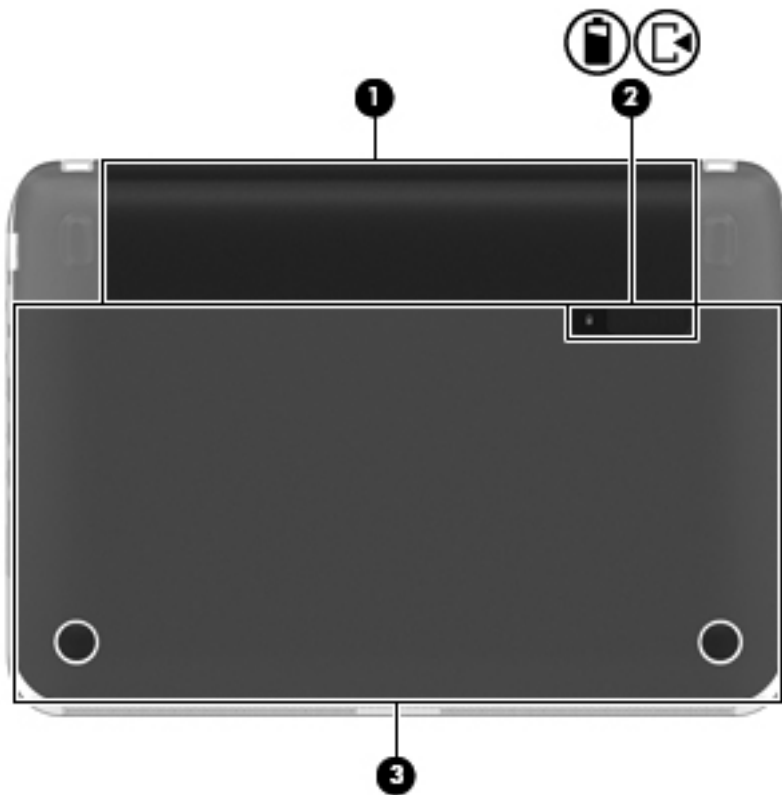
Item	Component	Description
(1)	External monitor port	Connects an external VGA monitor or projector.
(2)	Power connector	Connects an AC adapter.
(3)	AC adapter/battery light	<ul style="list-style-type: none"> Amber: The computer is connected to external power, and the battery is charging. White: The computer is connected to external power, and the battery is fully charged. Blinking white: The computer is in the Sleep state, or the battery charge level is 10% or less (recharge the battery as soon as possible). Off: The computer is not connected to external power.
(4)	Vents	Enables airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(5)	USB 2.0 port	Connect an optional USB 2.0 device.
(6)	Hard drive light	On : The hard drive is being accessed.

Right side



Item	Component	Description
(1)	Digital Media Slot	<p>Supports the following digital card formats:</p> <ul style="list-style-type: none"> • MultiMediaCard • Secure Digital (SD) Card • Secure Digital High Capacity (SDHC) • Secure Digital Extended Capacity (SDxC) <p>Supports mini versions by use of an adapter (adapter is not included).</p>
(2)	Audio-out (headphone) jack	<p>Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
(3)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(4)	Security cable slot	<p>Attaches an optional security cable to the computer.</p> <p>NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p>
(5)	USB 2.0 ports (2)	Connects optional USB 2.0 devices.
(6)	RJ-45 (network) jack	Connects a network cable.

Bottom



Item	Component	Description
(1)	Battery bay	Holds the battery and the subscriber identity module (SIM) slot.
(2)	Battery/service cover release latch	Releases the battery from the battery bay and the service cover from the computer.
(3)	Service cover	Provides access to the hard drive bay, the memory module slot, the WLAN module, and the WWAN module (select models only).

3 Illustrated parts catalog

Service tag

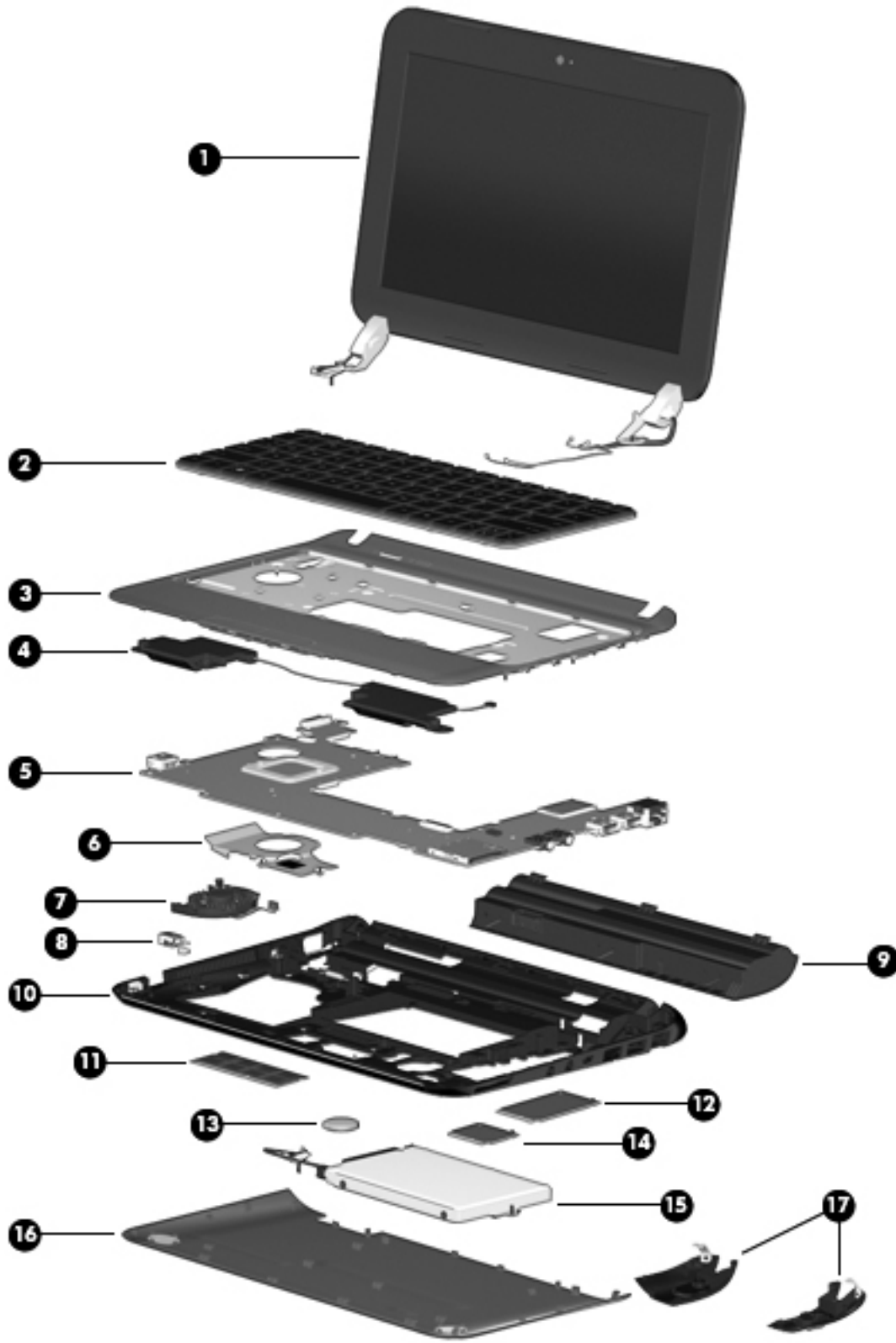
When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag.



Item	Description	Function
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.

Item	Description	Function
(3)	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
(4)	Warranty period	This number describes the duration of the warranty period for the computer.
(5)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

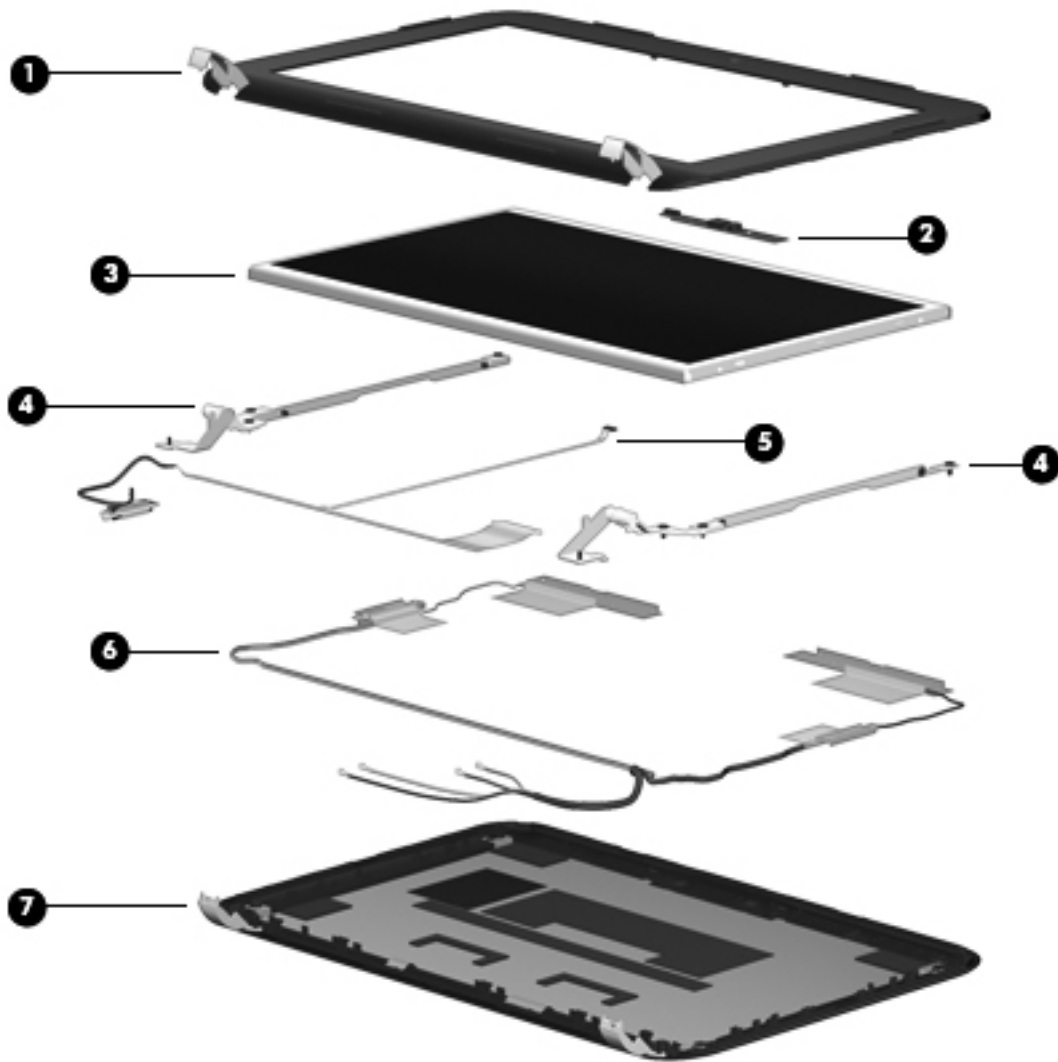
Computer major components



Item	Component	Spare part number
(1)	Display assembly , 10.1-in, LED, WSVGA, AntiGlare (includes display panel cable, 2 WLAN antenna transceivers and cables, and webcam/microphone module and cable):	
	For use only on computer models equipped with WWAN capability (includes WWAN antenna cables and transceivers)	665226-001
	For use only on computer models not equipped with WWAN capability	665225-001
	NOTE: For more display assembly spare part information, see Display assembly subcomponents on page 18 .	
(2)	Keyboard (includes keyboard cable):	
	For use in Brazil	658517-201
	For use in Canada	658517-121
	For use in Latin America	658517-161
	For use in the United States	658517-001
(3)	Top cover (includes TouchPad board and bracket)	663677-001
(4)	Speakers (include cables)	650736-001
(5)	System board (includes processor and replacement thermal material):	
	For use only on computer models equipped with an Intel Atom N2600 1.60-GHz processor and WWAN capability (1.0-MB L2 cache, dual core, 3.5 W; includes processor)	665231-001
	For use only on computer models equipped with an Intel Atom N2600 1.60-GHz processor, but not WWAN capability (1.0-MB L2 cache, dual core, 3.5 W; includes processor)	665230-001
(6)	Heat sink (includes replacement thermal material)	651898-001
(7)	Fan	651897-001
(8)	Power connector cable	656095-001
(9)	Battery:	
	6-cell, 55-Wh, 2.55-Ah, Li-ion battery	646757-001
	3-cell, 28-Wh, 2.55-Ah, Li-ion battery	646755-001
(10)	Base enclosure	663675-001
(11)	2-GB memory module (PC3, 10600, 1333-MHz):	621565-001
(12)	WWAN module:	
	HP hs2340 HSPA+ Mobile Broadband Module	632155-001
	HP lc2000 HSPA Mobile Broadband Module	612599-001
(13)	RTC battery	599516-001
(14)	WLAN module:	
	Broadcom 4313 802.11b/g/n 1×1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready) for use only in Brazil	600370-201

Item	Component	Spare part number
	Broadcom 4313GN 802.11b/g/n 1x1 WiFi and 20702 Bluetooth 4.0 Combo Adapter	657325-001
	Ralink 3592BC8 802.11a/b/g/n 2x2 WiFi and Bluetooth 3.0+HS Combo Adapter	630813-001
(15)	Hard drive (2.5-in, 7.0-mm, SATA; does not include hard drive bracket, hard drive connector cable, hard drive rubber isolators, screws):	
	320-GB, 5400-rpm	645193-001
	250-GB, 5400-rpm	645191-001
	Hard Drive Hardware Kit (not illustrated, includes hard drive bracket, hard drive connector cable, hard drive rubber isolators, and screws)	664913-001
(16)	Service cover	663676-001
(17)	Corner covers	652308-001
	Rubber Kit (includes 2 rubber feet)	650734-001

Display assembly subcomponents



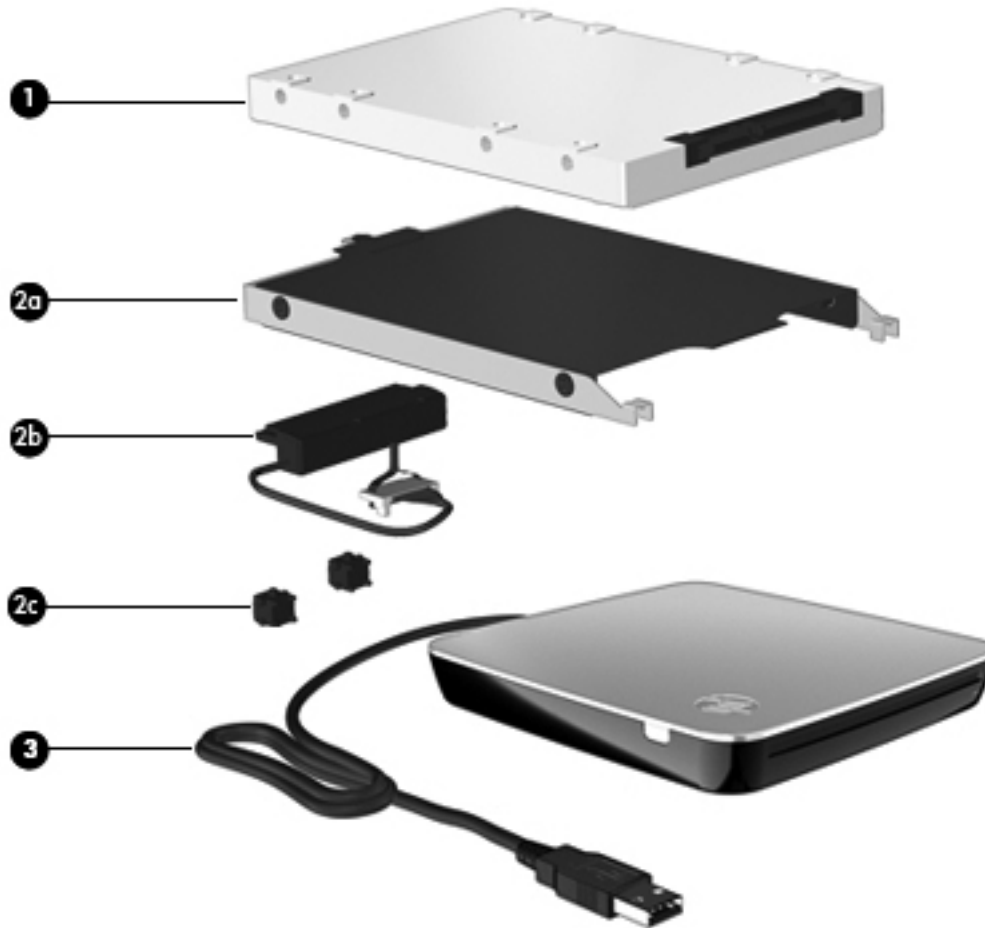
Item	Component	Spare part number
(1)	Display bezel	666424-001
(2)	Webcam/microphone module	658516-001
(3)	10.1-in, LED, WSVGA, AntiGlare display panel	658511-001
(4)	Display Hinge Kit (includes left and right display hinges and brackets)	650711-001
(5)	Display Cable Kit (includes display panel cable and webcamera/microphone module cable)	658505-001
(6)	Antenna Kit (includes left and right wireless antenna cables and transceivers)	658498-001
(7)	Display enclosure:	

Item	Component	Spare part number
	For use only on computer models equipped with WLAN and WWAN capability (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)	684439-001
	For use only on computer models equipped only with WLAN capability (includes WLAN antenna cables and transceivers)	658499-001

Miscellaneous parts

Component	Spare part number
40-W HP Smart AC adapter (RC/V 2-wire)	624502-001
HP mobile optical wireless 2.4-GHz mouse	434594-001
HP lock:	
HP keyed cable lock	626729-001
HP notebook combination lock	591699-001
Power cord (3-pin, black, 1.83-m):	
For use in Argentina	490371-D01
For use in Brazil	490371-201
For use in North America	490371-001
Screw Kit	650735-001

Mass storage devices



Item	Component	Spare part number
(1)	Hard drive (2.5-in, 7.0-mm, SATA; does not include hard drive connector cable, hard drive bracket, or screws):	
	320-GB, 5400-rpm	645193-001
	250-GB, 5400-rpm	645191-001
	Hard Drive Hardware Kit , includes:	664913-001
(2a)	Hard drive bracket	
(2b)	Hard drive connector cable	
(2c)	Hard drive rubber isolators (2)	
	Screws (not illustrated)	

Sequential part number listing

Spare part number	Description
434594-001	HP mobile optical wireless 2.4-GHz mouse
490371-001	Power cord for use in North America (3-pin, black, 1.83-m)
490371-202	Power cord for use in Brazil (3-pin, black, 1.83-m)
490371-D01	Power cord for use in Argentina (3-pin, black, 1.83-m)
591699-001	HP notebook combination lock
599516-001	RTC battery
600370-201	Broadcom 4313 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready) for use only in Brazil
612599-001	HP Ic2000 HSPA Mobile Broadband Module
621565-001	2-GB memory module (PC3, 10600, 1333-MHz)
624502-001	40-W HP Smart AC adapter (RC/V 2-wire)
626729-001	HP keyed cable lock
630813-001	Ralink 3592BC8 802.11a/b/g/n 2x2 WiFi and Bluetooth 3.0+HS Combo Adapter
632155-001	HP hs2340 HSPA+ Mobile Broadband Module
645191-001	250-GB, 5400-rpm, 7.0-mm hard drive (does not include hard drive bracket, hard drive connector cable, hard drive rubber isolators, or screws)
	NOTE: The hard drive bracket, hard drive connector cable, hard drive rubber isolators, and screws are included in the Hard Drive Hardware Kit, spare part number 664913-001.
645193-001	320-GB, 5400-rpm, 7.0-mm hard drive (does not include hard drive bracket, hard drive connector cable, hard drive rubber isolators, or screws)
	NOTE: The hard drive bracket, hard drive connector cable, hard drive rubber isolators, and screws are included in the Hard Drive Hardware Kit, spare part number 664913-001.
646755-001	3-cell, 28-Wh, 2.55-Ah, Li-ion battery
646757-001	6-cell, 55-Wh, 2.55-Ah, Li-ion battery
650711-001	Display hinges (includes left and right display hinges)
650734-001	Rubber Kit (includes 2 base enclosure rubber feet)
650735-001	Screw Kit
650736-001	Speakers (includes left and right speakers and cables)
651897-001	Fan
651898-001	Heat sink (includes replacement thermal material)
652308-001	Corner covers (includes left and right corner covers)
656095-001	Power connector cable
657325-001	Broadcom 4313GN 802.11b/g/n 1x1 WiFi and 20702 Bluetooth 4.0 Combo Adapter

Spare part number	Description
658498-001	Antenna Kit (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)
658499-001	Display enclosure for use only on computer models equipped only with WLAN capability (includes WLAN antenna cables and transceivers)
658505-001	Display panel cable (includes display panel cable and webcam/microphone module cable)
658511-001	10.1-in, LED, WSVGA, AntiGlare display panel
658516-001	Webcam/microphone module (includes double-sided tape)
658517-001	Keyboard for use only in the United States (includes keyboard cable)
658517-121	Keyboard for use only in Canada (includes keyboard cable)
658517-161	Keyboard for use only in Latin America (includes keyboard cable)
658517-201	Keyboard for use only in Brazil (includes keyboard cable)
663675-001	Base enclosure
663676-001	Service cover
663677-001	Top cover (includes TouchPad board and bracket)
664913-001	Hard Drive Hardware Kit (includes hard drive bracket, hard drive connector cable, hard drive rubber isolators, and screws)
665225-001	10.1-in, LED, WSVGA, AntiGlare display assembly for use only on computer models not equipped with WWAN capability (includes display panel cable, webcam/microphone module, and WLAN antenna cables and transceivers)
665226-001	10.1-in, LED, WSVGA, AntiGlare display assembly for use only on computer models equipped with WWAN capability (includes display panel cable, webcam/microphone module, WLAN antenna cables and transceivers, and WWAN antenna cables and transceivers)
665230-001	System board for use only on computer models equipped with an Intel Atom N2600 1.60-GHz processor, but not WWAN capability (1.0-MB L2 cache, dual core, 3.5 W; includes processor and replacement thermal material)
665230-001	System board for use only on computer models equipped with an Intel Atom N2600 1.60-GHz processor and WWAN capability (1.0-MB L2 cache, dual core, 3.5 W; includes processor and replacement thermal material)
666424-001	Display bezel
684439-001	Display enclosure for use only on computer models equipped with WLAN and WWAN capability (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)

4 Removal and replacement procedures

Preliminary replacement requirements


Tools required

You will need the following tools to complete the removal and replacement procedures:


- Flat-bladed screwdriver
- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers

Service considerations


The following sections include some of the considerations that you must keep in mind during disassembly and assembly procedures.

 **NOTE:** As you remove each subassembly from the computer, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

Plastic parts

 **CAUTION:** Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

Cables and connectors

 **CAUTION:** When servicing the computer, be sure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the computer.

Cables must be handled with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Be sure that cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; these cables tear easily.

Drive handling

⚠ CAUTION: Drives are fragile components that must be handled with care. To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions:

Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.

Before removing a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.

Handle drives on surfaces covered with at least one inch of shock-proof foam.

Avoid dropping drives from any height onto any surface.

After removing a hard drive, an optical drive, or a diskette drive, place it in a static-proof bag.

Avoid exposing an internal hard drive to products that have magnetic fields, such as monitors or speakers.

Avoid exposing a drive to temperature extremes or liquids.

If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package "FRAGILE."

Grounding guidelines

Electrostatic discharge damage

Electronic components are sensitive to electrostatic discharge (ESD). Circuitry design and structure determine the degree of sensitivity. Networks built into many integrated circuits provide some protection, but in many cases, ESD contains enough power to alter device parameters or melt silicon junctions.

A discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Even if the spark is neither felt nor heard, damage may have occurred.

An electronic device exposed to ESD may not be affected at all and can work perfectly throughout a normal cycle. Or the device may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

⚠ CAUTION: To prevent damage to the computer when you are removing or installing internal components, observe these precautions:

Keep components in their electrostatic-safe containers until you are ready to install them.

Before touching an electronic component, discharge static electricity by using the guidelines described in this section.

Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.

If you remove a component, place it in an electrostatic-safe container.

The following table shows how humidity affects the electrostatic voltage levels generated by different activities.

⚠ CAUTION: A product can be degraded by as little as 700 V.

Typical electrostatic voltage levels			
Event	Relative humidity		
	10%	40%	55%
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tube	2,000 V	700 V	400 V
Removing DIPS from vinyl tray	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCB	26,500 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe tubes, bags, or boxes.
- Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations.
- Place items on a grounded surface before removing items from their containers.
- Always be properly grounded when touching a component or assembly.
- Store reusable ESD-sensitive parts from assemblies in protective packaging or nonconductive foam.
- Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, screwdrivers, and vacuums.
- When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam.
- Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

Equipment guidelines

Grounding equipment must include either a wrist strap or a foot strap at a grounded workstation.

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm $\pm 10\%$ resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:

- Antistatic tape
- Antistatic smocks, aprons, and sleeve protectors
- Conductive bins and other assembly or soldering aids
- Nonconductive foam
- Conductive tabletop workstations with ground cords of one megohm resistance
- Static-dissipative tables or floor mats with hard ties to the ground
- Field service kits
- Static awareness labels
- Material-handling packages
- Nonconductive plastic bags, tubes, or boxes
- Metal tote boxes
- Electrostatic voltage levels and protective materials

The following table lists the shielding protection provided by antistatic bags and floor mats.

Material	Use	Voltage protection level
Antistatic plastics	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

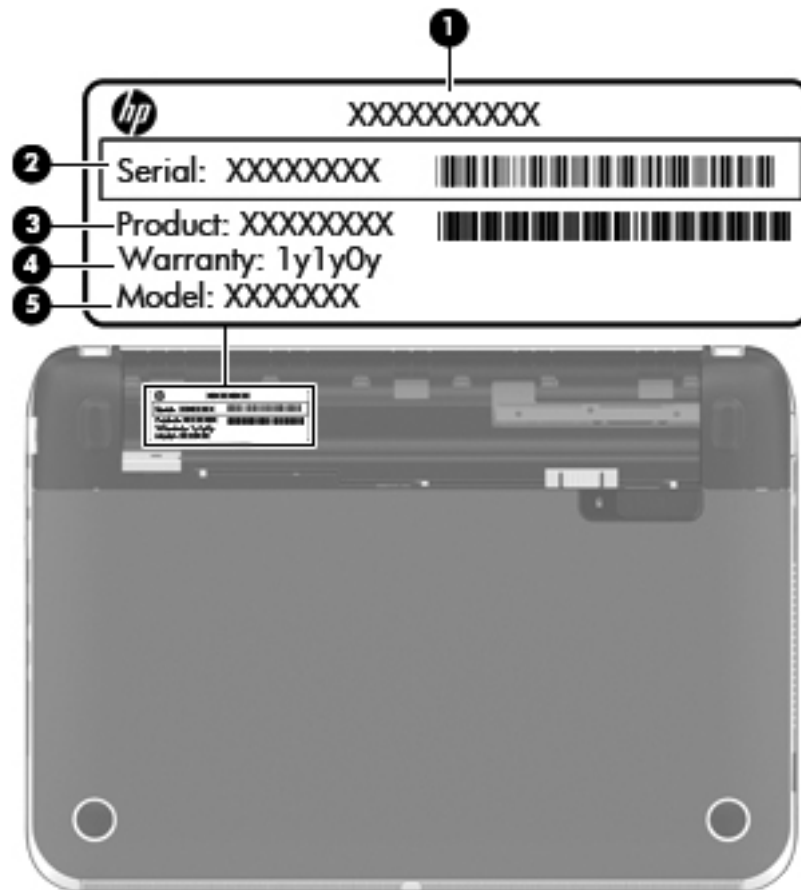
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 41 screws that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Service tag

When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag. It is necessary to remove the battery to obtain these numbers. See [Battery on page 30](#) for battery removal instructions.

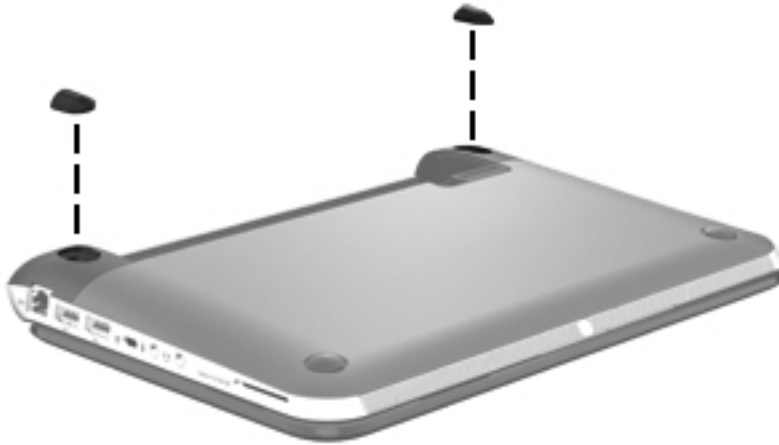


Item	Component	Description
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
(3)	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician determine what components and parts are needed.

Item	Component	Description
(4)	Warranty period	This number describes the duration of the warranty period for the computer.
(5)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

Computer feet

The computer feet are adhesive-backed rubber pads. There are 2 rubber feet that attach to the corner covers in the locations illustrated below. These rubber feet are available in the Rubber Kit, spare part number 650734-001.



Battery

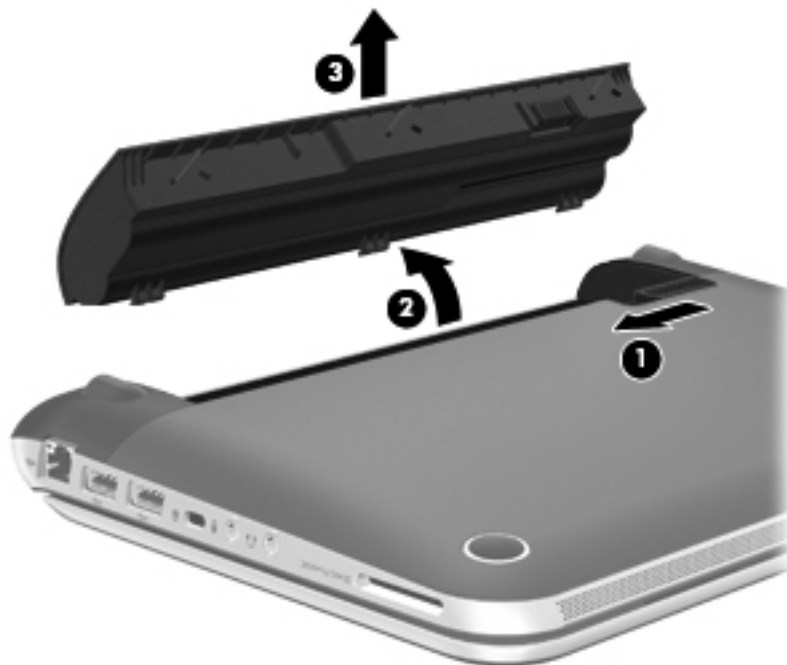
Description	Spare part number
6-cell, 55-Wh, 2.55-Ah, Li-ion battery	646757-001
3-cell, 28-Wh, 2.55-Ah, Li-ion battery	646755-001

Before disassembling the computer, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

Remove the battery:


1. Slide the battery/service cover release latch **(1)** to release the battery.
2. Pivot the front edge of the battery **(2)** up and back.
3. Remove the battery **(3)** from the computer.



To insert the battery:

1. Align the tabs on the rear edge of the battery with the notches on the rear edge of the battery bay.
2. Pivot the front edge of the battery down into the battery bay until it is seated. (The battery release latch will automatically lock into place.)

SIM (select models only)

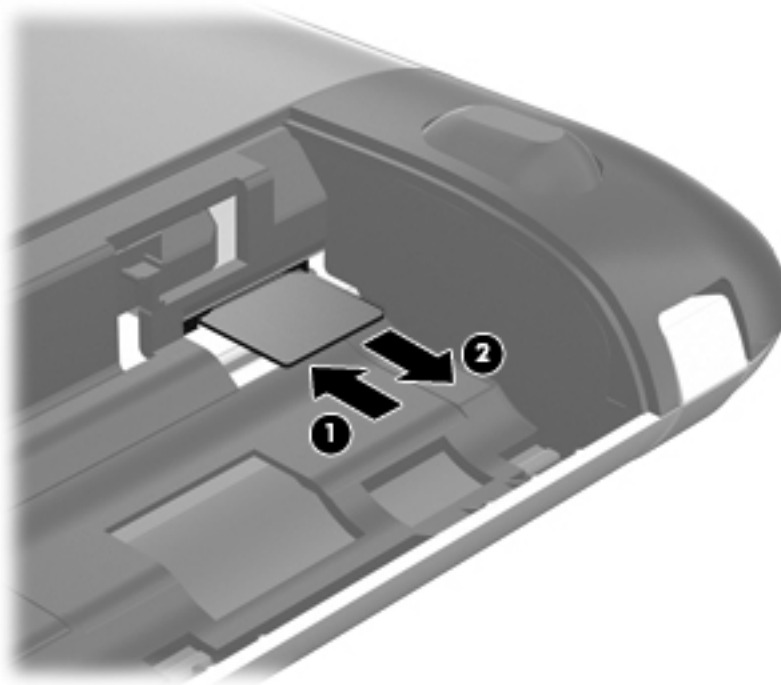
 **NOTE:** The SIM is provided by the end-user as a security measure for the WWAN module. The SIM should be removed, placed into a static-dissipative container, and then replaced when the computer is reassembled.

Before removing the SIM, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)).

Remove the SIM:

1. Press in on the SIM **(1)** to release it from the SIM slot.
2. Remove the SIM **(2)** from the SIM slot.



Insert the SIM into the SIM slot, and gently push the SIM into the slot until it is firmly seated.

WLAN module

Description	Spare part number
Broadcom 4313 802.11b/g/n 1×1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready) for use only in Brazil	600370-201
Broadcom 4313GN 802.11b/g/n 1×1 WiFi and 20702 Bluetooth 4.0 Combo Adapter	657325-001
Ralink 3592BC8 802.11a/b/g/n 2×2 WiFi and Bluetooth 3.0+HS Combo Adapter	630813-001

⚠ CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore device functionality, and then contact technical support.


Before removing the WLAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)).

Remove the WLAN module:


1. Slide the battery/service cover latch **(1)** to release the service cover.

2. Slide the service cover **(2)** toward the front of the computer, and then remove the service cover **(3)**. The service cover is available using spare part number 663676-001.

 **NOTE:** It is normal for the service cover to flex slightly when it is released. You may also hear some popping noises as the service cover tabs disengage from the base enclosure slots.




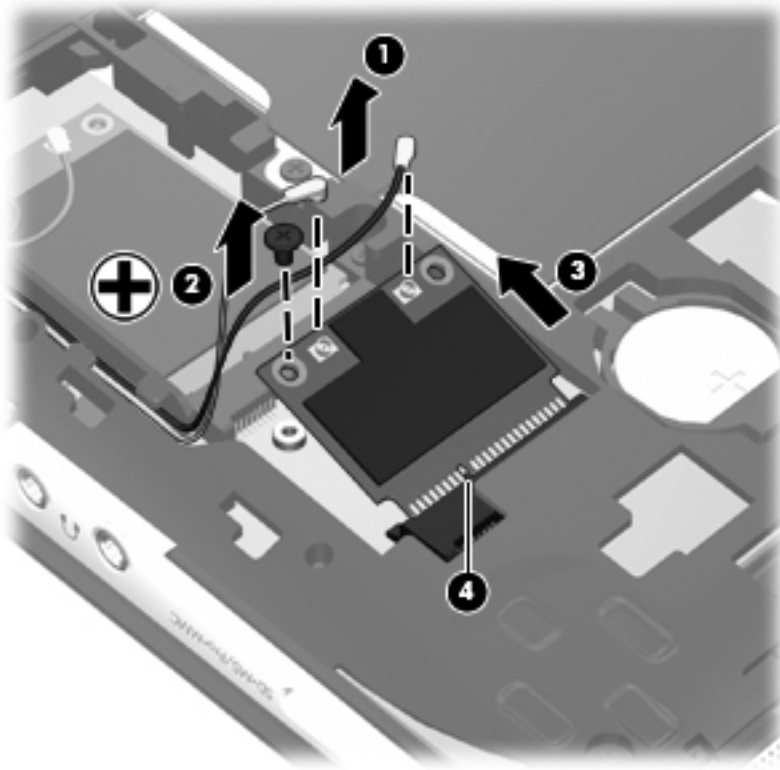
3. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.


 **NOTE:** The #1 WLAN antenna cable is connected to the WLAN module "Main" terminal. The #2 WLAN antenna cable is connected to the WLAN module "Aux" terminal.

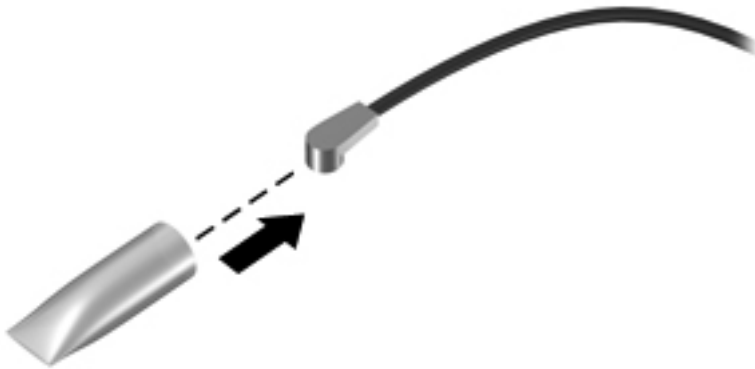
4. Remove the Phillips PM2.0×3.0 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)

5. Remove the WLAN module by pulling the module away from the slot at an angle **(3)**.

 **NOTE:** The WLAN module is designed with a notch **(4)** to prevent incorrect installation into the WLAN module socket.




 **NOTE:** If the WLAN antennas are not connected to the terminals on the WLAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

WWAN module

Description	Spare part number
HP hs2340 HSPA+ Mobile Broadband Module	632155-001
HP lc2000 HSPA Mobile Broadband Module	612599-001

 **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore device functionality, and then contact technical support.

Before removing the WWAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)).
5. Remove the service cover (see [WLAN module on page 32](#)).

Remove the WWAN module:


1. Disconnect the WWAN antenna cables **(1)** from the terminals on the WWAN module.

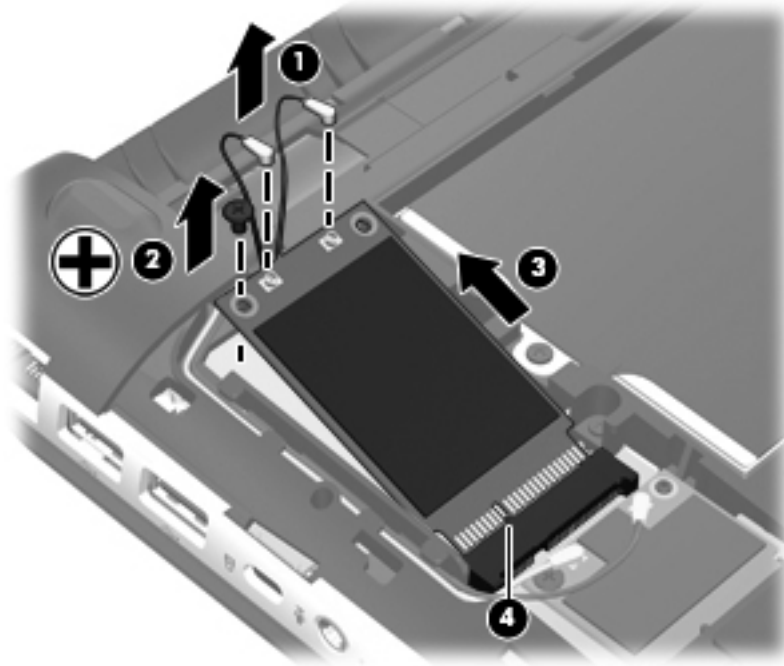



NOTE: The #1 WWAN antenna cable is connected to the WWAN module “Main” terminal. The #2 WWAN antenna cable is connected to the WWAN module “Aux” terminal.

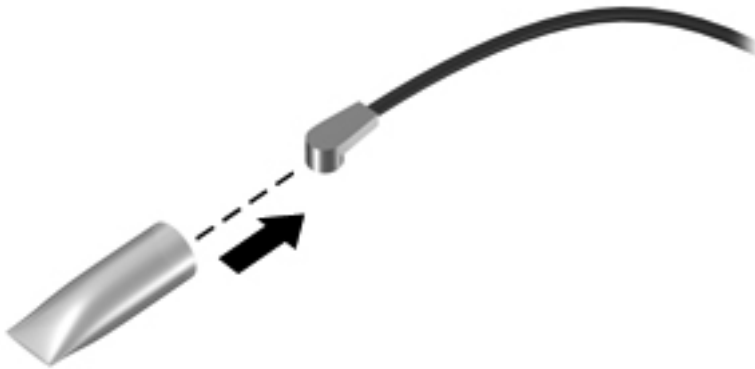
2. Remove the Phillips PM2.0×3.0 screw **(2)** that secures the WWAN module to the system board. (The WWAN module tilts up.)

3. Remove the WWAN module by pulling the module away from the slot at an angle **(3)**.

 **NOTE:** The WWAN module is designed with a notch **(4)** to prevent incorrect installation into the WWAN module socket.



 **NOTE:** If the WWAN antennas are not connected to the terminals on the WWAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.



Reverse this procedure to install the WWAN module.

Memory module

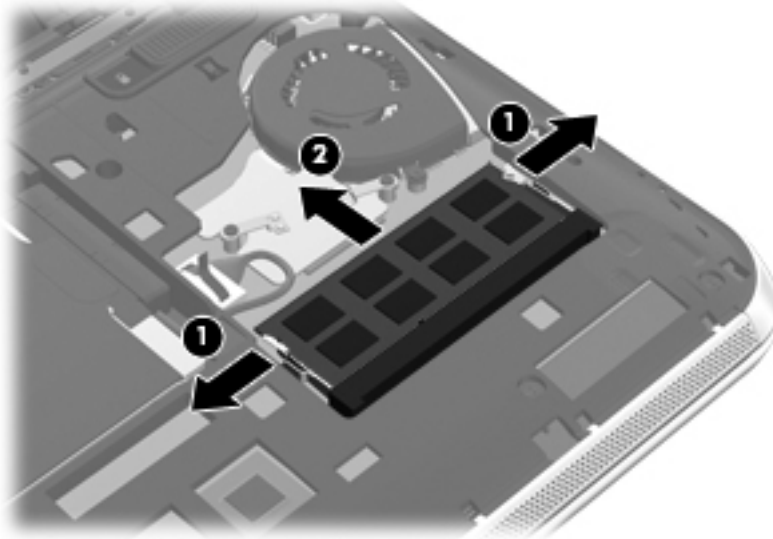
Description	Spare part number
2-GB (PC3, 10600, 1333-MHz)	621565-001

Before removing the memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)).
5. Remove the service cover (see [WLAN module on page 32](#)).

Remove the memory module:

1. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The memory module tilts up.)
2. Remove the memory module **(2)** by pulling it away from the slot at an angle.



Reverse this procedure to install the memory module.

RTC battery

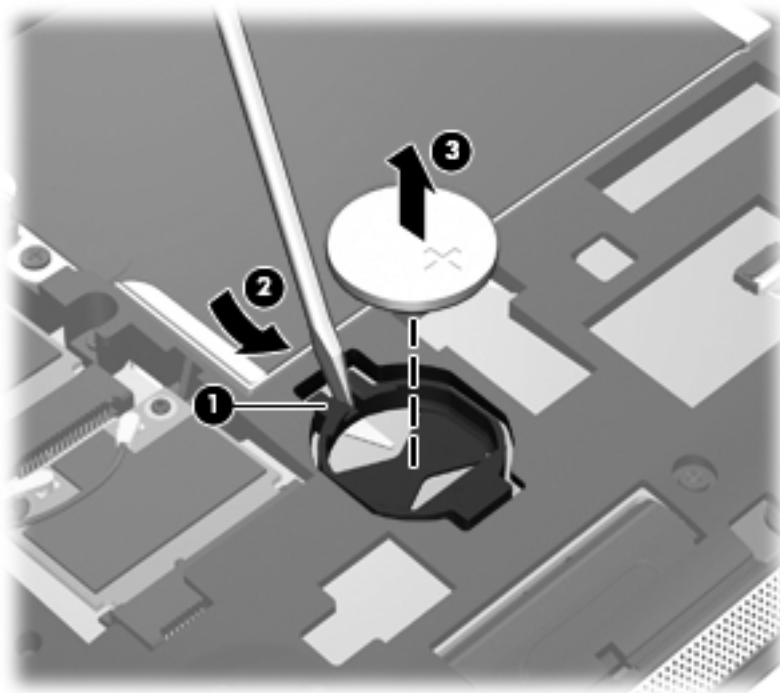
Description	Spare part number
RTC battery	621565-001

Before removing the RTC battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)).
5. Remove the service cover (see [WLAN module on page 32](#)).


Remove the RTC battery:

1. Insert a non-conductive, flat-tip, tool **(1)** into the notch **(2)** on the side of the RTC battery socket.
2. Remove the RTC battery **(3)** from the socket on the system board.



Reverse this procedure to install the RTC battery. When installing the RTC battery, be sure the “+” sign faces up.

Hard drive

 **NOTE:** The hard drive spare part kit does not include the hard drive bracket, connector cable, rubber isolators, or screws. These components are included in the Hard Drive Hardware Kit, spare part number 664913-001.

Description	Spare part number
320-GB, 5400-rpm	645193-001
250-GB, 5400-rpm	645191-001

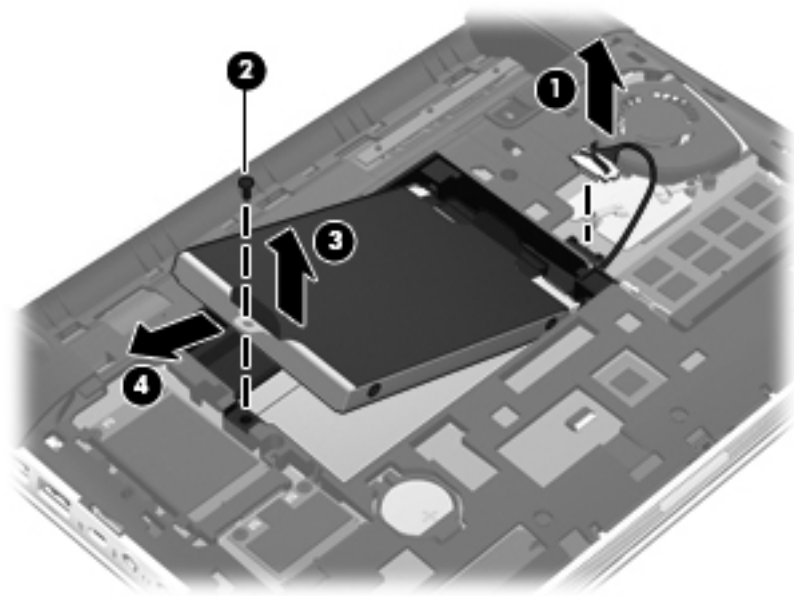
Before removing the hard drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)).
5. Remove the service cover (see [WLAN module on page 32](#)).

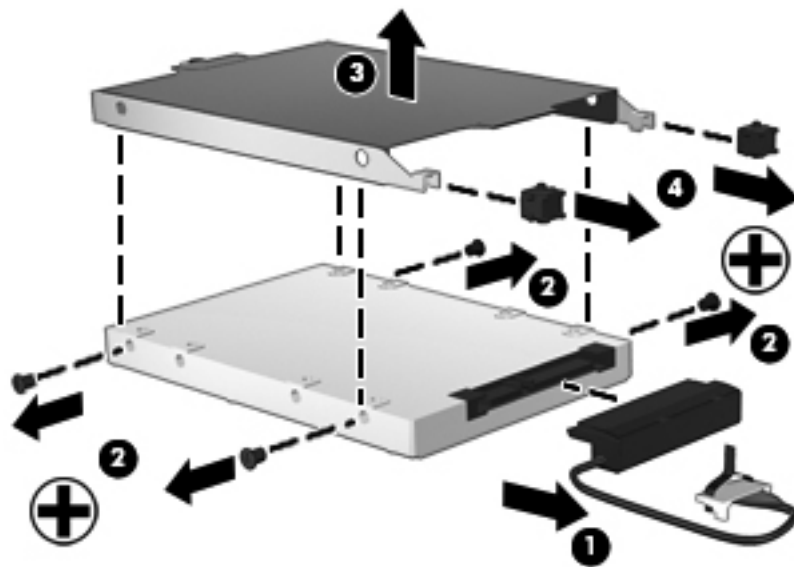
Remove the hard drive:

1. Disconnect the hard drive connector cable **(1)** from the system board.
2. Remove the Phillips PM 2.0×5.0 screw **(2)** that secures the hard drive to the computer.
3. Use the pull tab **(3)** to lift the left side of the hard drive until it rests at an angle.

4. Remove the hard drive **(4)** by sliding it up and to the left at an angle.




5. If it is necessary to replace the hard drive connector cable **(1)**, the hard drive screws **(2)**, the hard drive bracket **(3)**, or the rubber isolators **(4)**, remove and replace the components.



Reverse this procedure to reassemble and install the hard drive.

Keyboard

 **NOTE:** The keyboard spare part kit includes a keyboard cable.

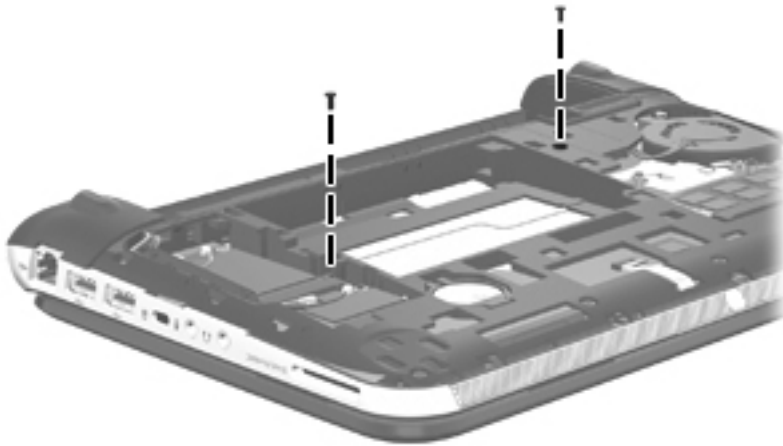
Description	Spare part number	Description	Spare part number
For use in Brazil	658517-201	For use in Latin America	658517-161
For use in Canada	658517-121	For use in the United States	658517-001

Before removing the keyboard, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)).
5. Remove the service cover (see [WLAN module on page 32](#)).

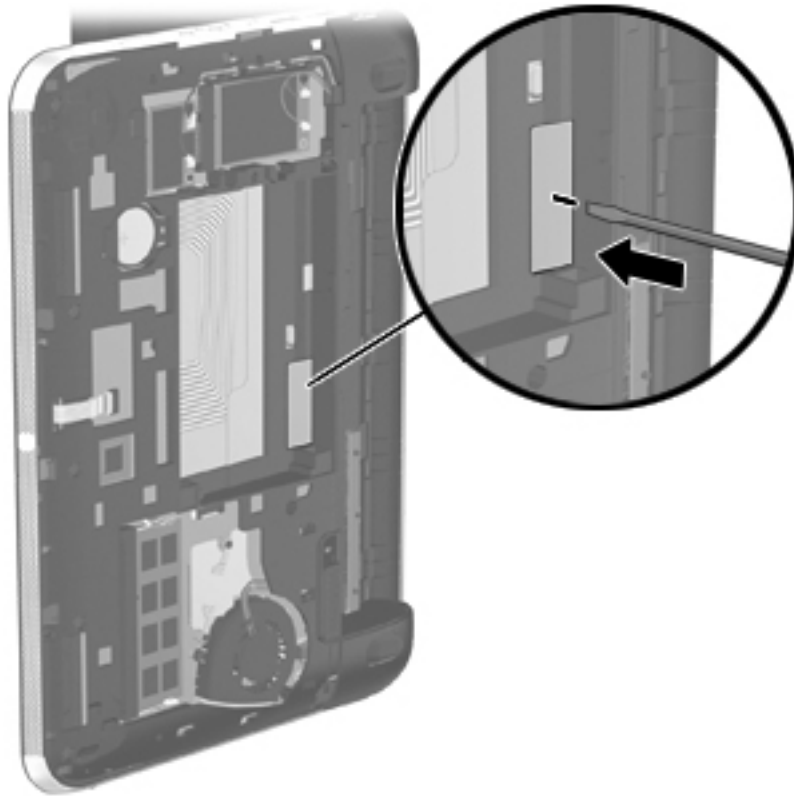
Remove the keyboard:

1. Remove the two Phillips PM2.0x5.0 screws that secure the keyboard to the computer.



2. Rest and secure the computer on its left side.
3. Partially open the computer.

4. Insert a screw driver or similar thin tool into the keyboard release area, and then press on the back of the keyboard until the keyboard disengages from the computer.

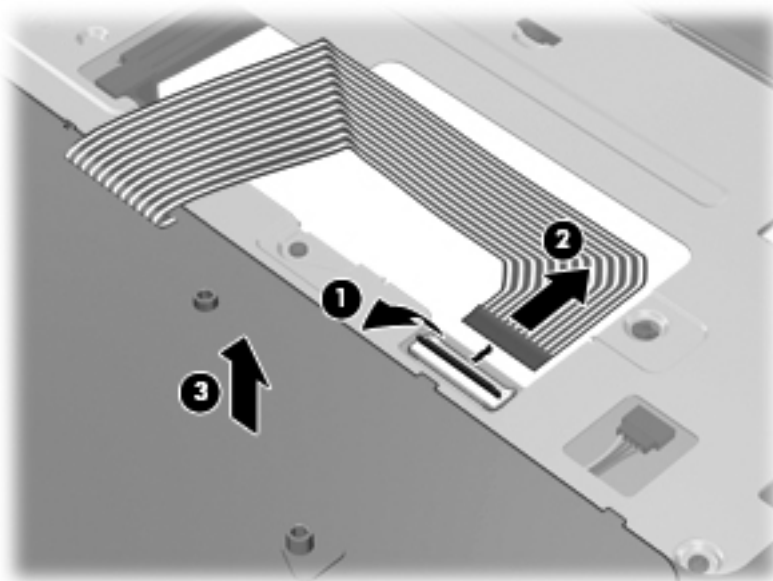


5. Turn the computer right-side up with the front toward you.
6. Open the computer as far as it will open.

7. Lift the rear edge of the keyboard **(1)**, and then swing the keyboard **(2)** up and forward until it rests upside down on the palm rest.



8. Release the zero insertion force (ZIF) connector **(1)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(2)** from the system board.
9. Remove the keyboard **(3)**.



Reverse this procedure to install the keyboard.

Top cover



NOTE:

Description	Spare part number
Top cover (includes TouchPad board and bracket)	663677-001

Before removing the top cover, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)).
5. Remove the service cover (see [WLAN module on page 32](#)).
6. Remove the keyboard (see [Keyboard on page 41](#)).




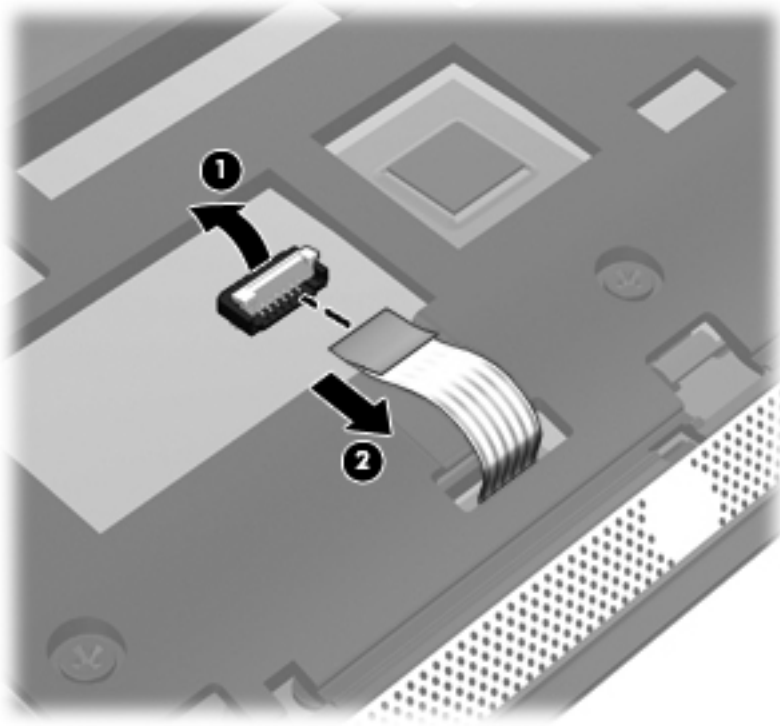
NOTE: When replacing the top cover, be sure to remove the speakers from the defective top cover and install them on the replacement top cover. See [Speakers on page 50](#) for speaker removal and replacement instructions.

Remove the top cover:

1. Close the computer.
2. Turn the computer upside down, with the front toward you.

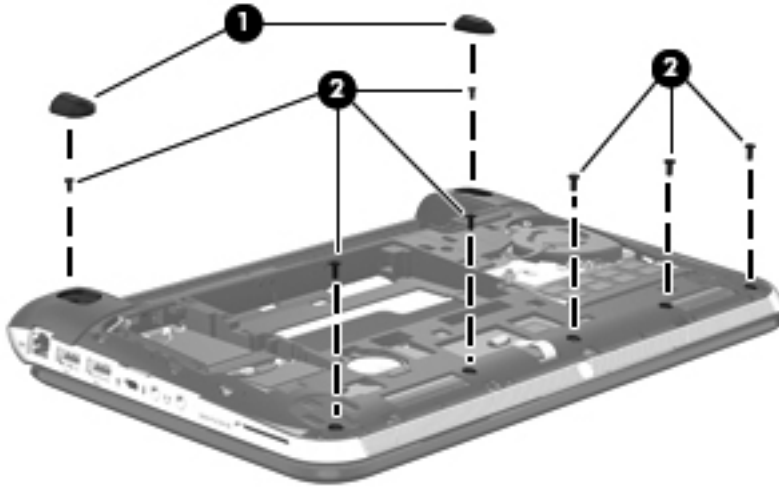
3. Release the ZIF connector **(1)** to which the TouchPad cable is connected, and then disconnect the TouchPad cable **(2)** from the system board.


 **NOTE:** Additional slight force may be needed when releasing the TouchPad cable from the top cover. Double-sided adhesive is used to attach the TouchPad cable to the top cover surface.

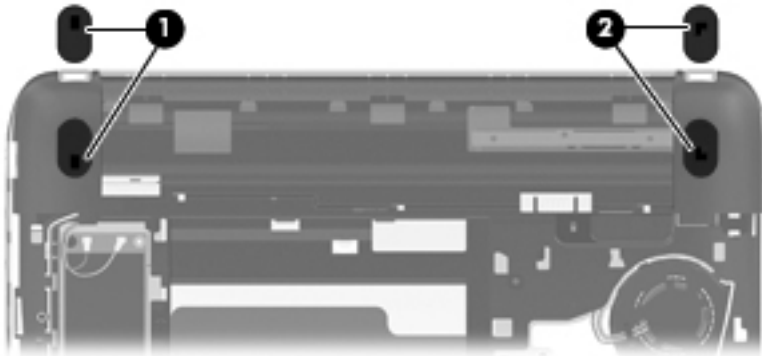


4. Remove the two rubber feet **(1)** on the rear corners of the base enclosure. The rubber feet are available in the Rubber Kit, spare part number 650734-001.

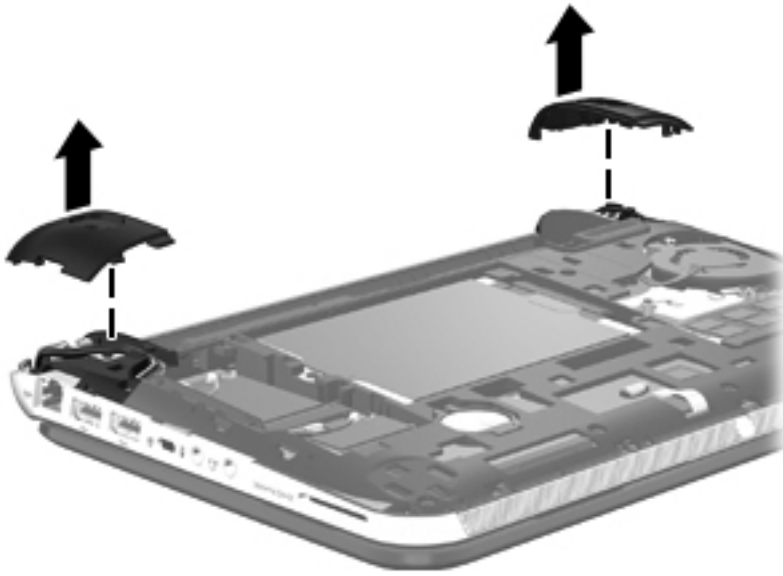
5. Remove the seven Phillips PM2.0×5.0 screws **(2)** that secure the top cover and the corner covers to the base enclosure.



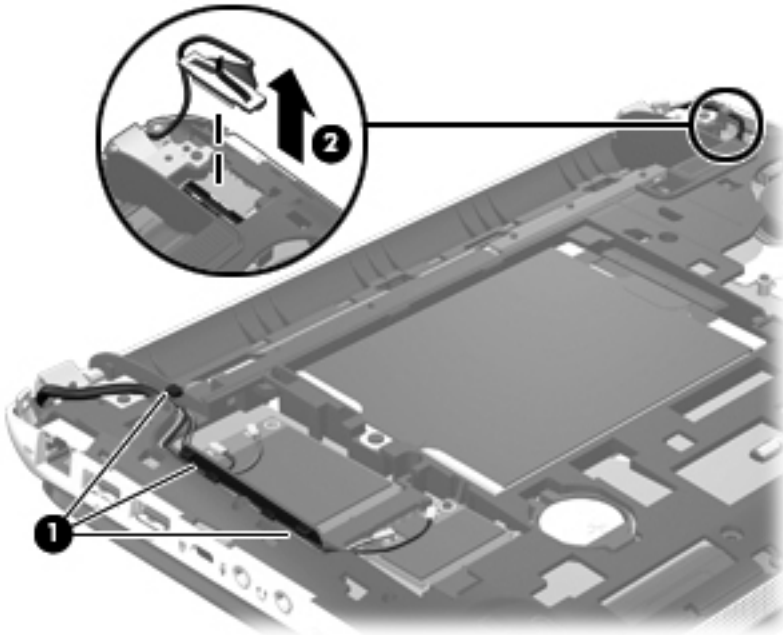
 **NOTE:** The rubber feet are notched differently. The rubber foot **(1)** that fits on the left side has a rectangular alignment notch. The rubber foot **(2)** that fits on the right side has an “L”-shaped alignment notch. When installing the rubber feet, align them according to the side of the computer on which they should be installed.



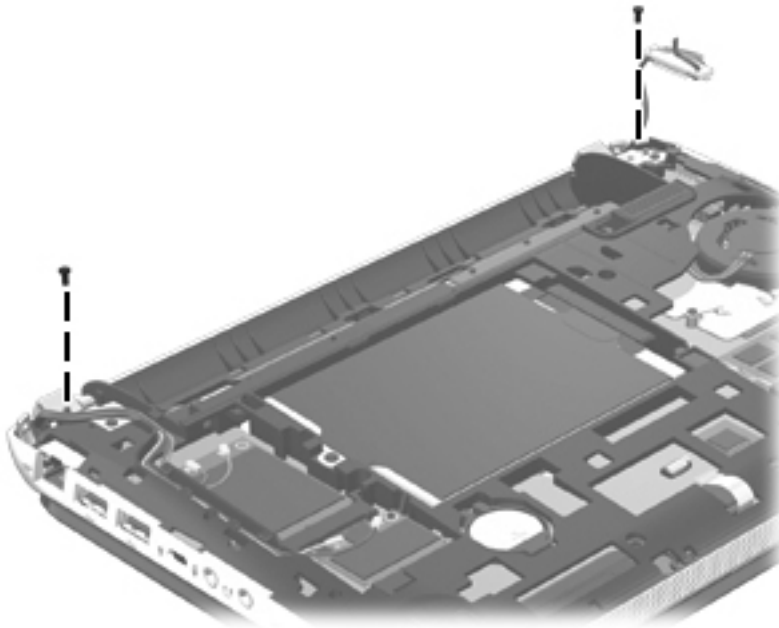
6. Remove the corner covers. The corner covers are available using spare part number 652308-001.



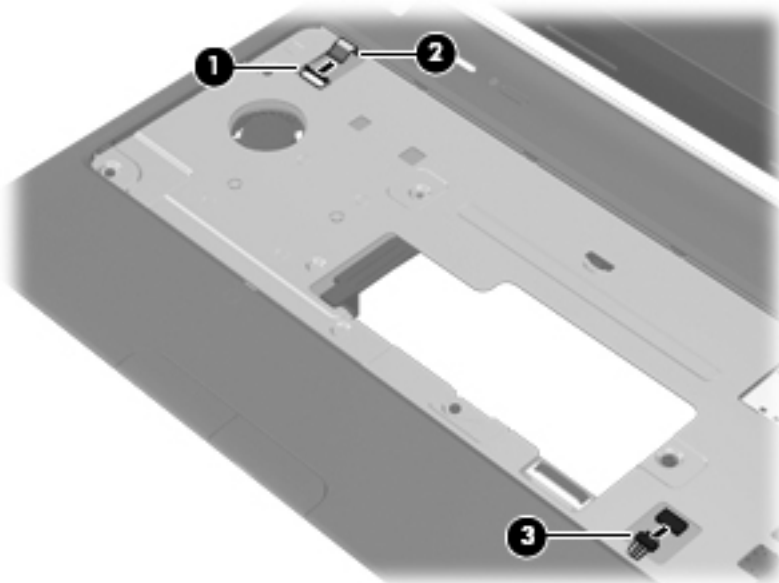
7. Release the wireless antenna cables from the clips **(1)** and routing channel built into the base enclosure.
8. Disconnect the display panel cable **(2)** from the system board.



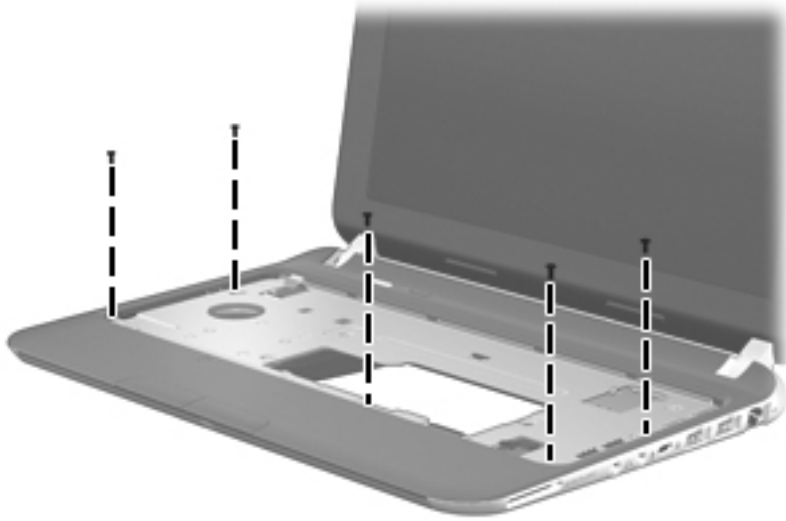
9. Remove the two Phillips PM2.0x5.0 screws that secure the top cover to the base enclosure.



10. Turn the computer right side up, with the front toward you.
11. Open the computer as far as it will open.
12. Release the ZIF connector **(1)** to which the power button board cable is connected, and then disconnect the power button board cable **(2)** from the system board.
13. Disconnect the speaker cable **(3)** from the system board.

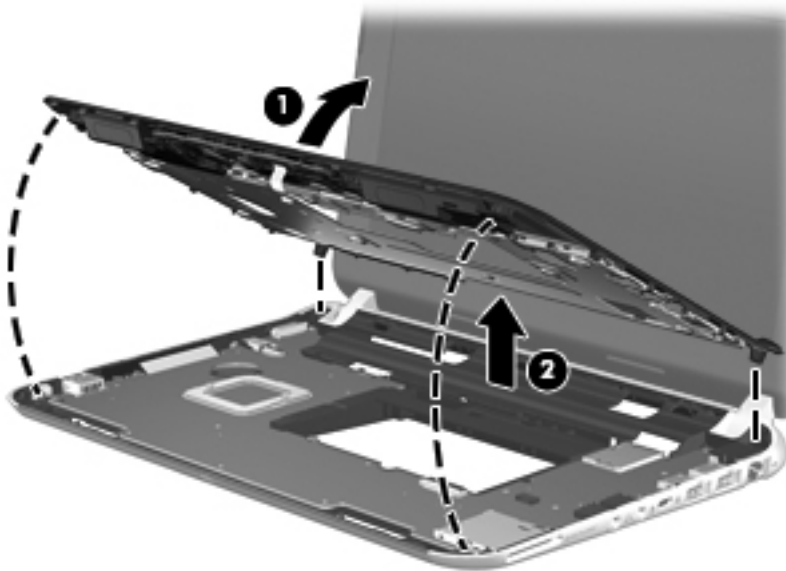


- 14.** Remove the five Phillips PM2.0×5.0 screws that secure the top cover to the base enclosure.



- 15.** Lift the front edge of the top cover **(1)** until the left and right sides disengage from the base enclosure.

- 16.** Remove the top cover **(2)**.



Reverse this procedure to install the top cover.

Speakers

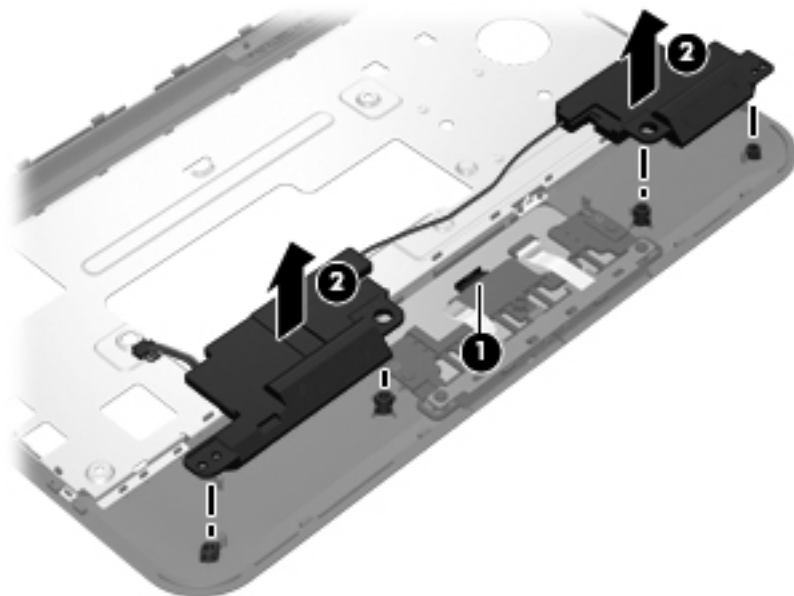
Description	Spare part number
Speakers (include cable)	650736-001

Before removing the speakers, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)), and then remove the following components:
 - Service cover (see [WLAN module on page 32](#))
 - Keyboard (see [Keyboard on page 41](#))
 - Top cover (see [Top cover on page 44](#))

Remove the speakers:

1. Release the speaker cable from the clip **(1)** built into the top cover.
2. Remove the speakers **(2)** from the top cover.



Reverse this procedure to install the speakers.

System board



NOTE: The system board spare part kit includes replacement thermal material.

Description	Spare part number
For use only on computer models equipped with an Intel Atom N2600 1.60-GHz processor and WWAN capability (1.0-MB L2 cache, dual core, 3.5 W; includes processor)	665231-001
For use only on computer models equipped with an Intel Atom N2600 1.60-GHz processor, but not WWAN capability (1.0-MB L2 cache, dual core, 3.5 W; includes processor)	665230-001

Before removing the system board, follow these steps:

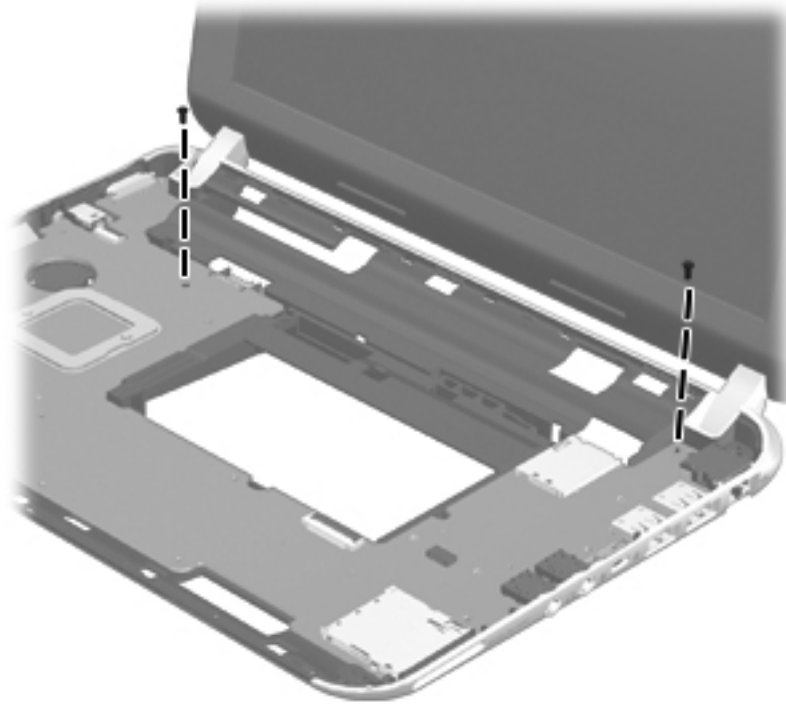
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)), and then remove the following components:
 - Service cover (see [WLAN module on page 32](#))
 - Hard drive (see [Hard drive on page 39](#))
 - Keyboard (see [Keyboard on page 41](#))
 - Top cover (see [Top cover on page 44](#))

When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- SIM (see [SIM \(select models only\) on page 31](#))
- WLAN module (see [WLAN module on page 32](#))
- WWAN module (see [WWAN module on page 35](#))
- RTC battery (see [RTC battery on page 38](#))
- Memory module (see [Memory module on page 37](#))
- Power connector cable (see [System board on page 51](#))
- Fan (see [Fan on page 54](#))
- Heat sink (see [Heat sink on page 55](#))

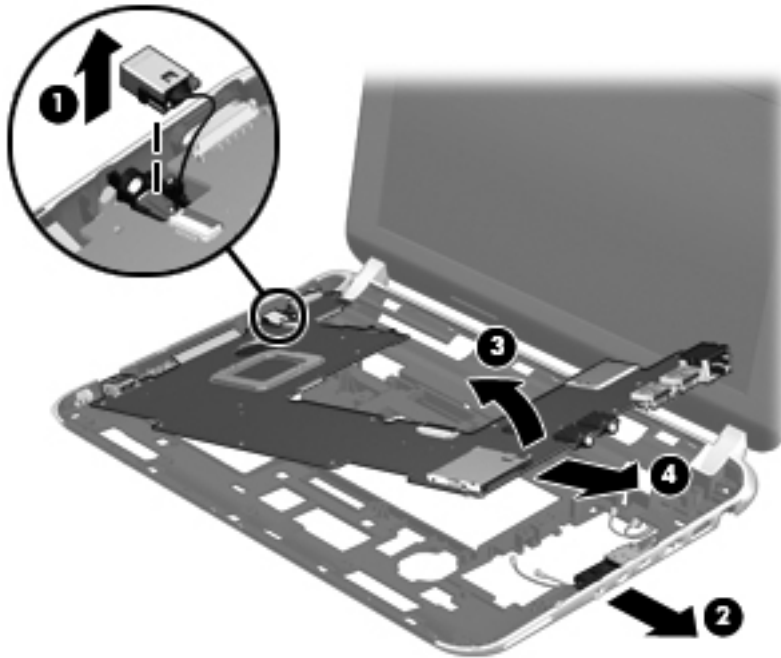
Remove the system board:

1. Remove the two Phillips PM2.0×5.7 screws that secure the system board to the base enclosure.

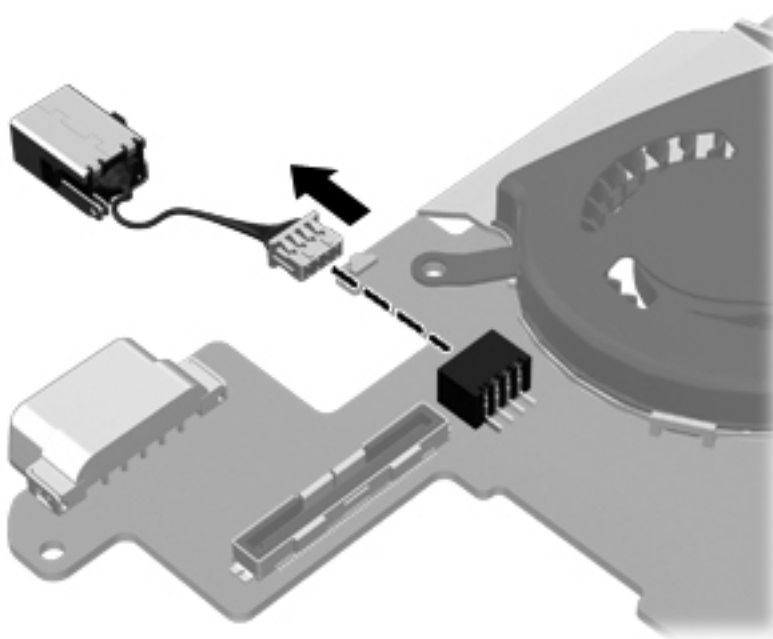


2. Release the power connector **(1)** from the clip built into the base enclosure.
3. Flex the right side of the base enclosure **(2)** until the jacks and ports on the right side of the system board are clear of the openings in the base enclosure.
4. Lift the right side of the system board **(3)** until it rests at an angle.

5. Remove the system board (4) by sliding it up and to the right at an angle.




NOTE: If it is necessary to replace the power connector cable, turn the system board upside down with the rear toward you, and then disconnect the power connector cable from the system board. The power connector cable is available using spare part number 656095-001.



Reverse this procedure to install the system board and the power connector cable.

Fan

Description	Spare part number
Fan	651897-001

 **NOTE:** To properly ventilate the computer, allow at least 7.6 cm (3 in) of clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

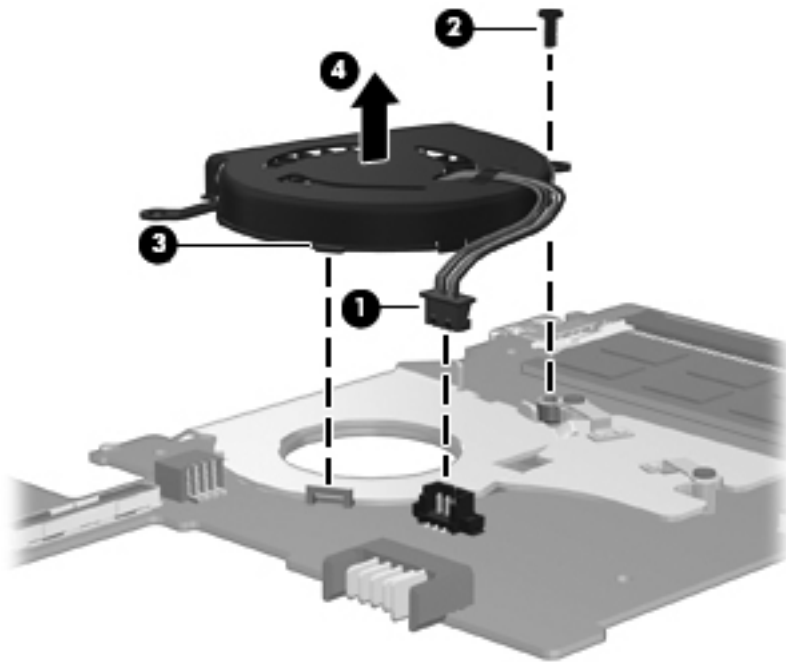
Before removing the fan, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)), and then remove the following components:
 - Service cover (see [WLAN module on page 32](#))
 - Keyboard (see [Keyboard on page 41](#))
 - Top cover (see [Top cover on page 44](#))
 - System board (see [System board on page 51](#))

Remove the fan:

1. Turn the system board upside down, with the rear toward you.
2. Disconnect the fan cable **(1)** from the system board.
3. Remove the Phillips PM2.0×4.6 screw **(2)** that secures the fan to the system board.
4. Disengage the tab **(3)** on the fan from the slot on the system board.

5. Remove the fan (4).



Heat sink


Description	Spare part number
Heat sink (includes replacement thermal material)	651898-001

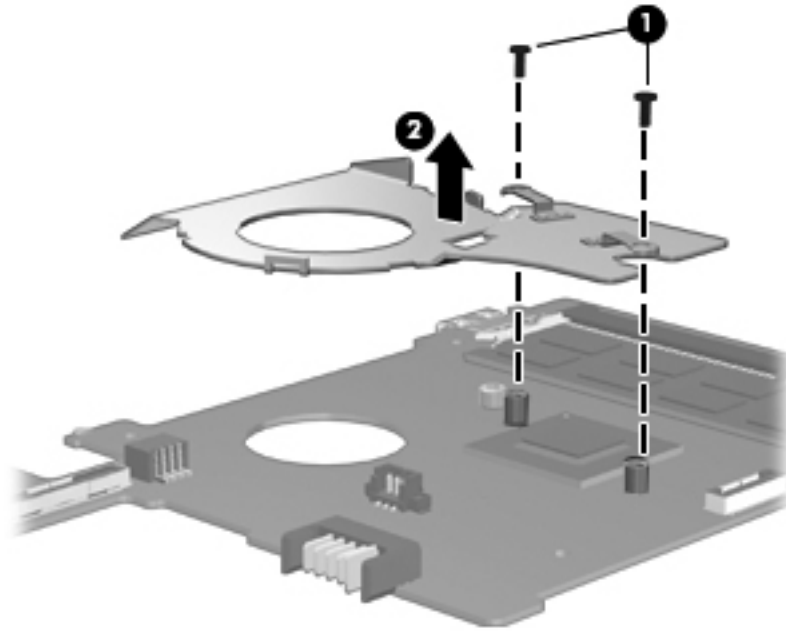
Before removing the heat sink, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)), and then remove the following components:
 - Service cover (see [WLAN module on page 32](#))
 - Keyboard (see [Keyboard on page 41](#))
 - Top cover (see [Top cover on page 44](#))
 - System board (see [System board on page 51](#))
 - Fan (see [Fan on page 54](#))


Remove the heat sink:

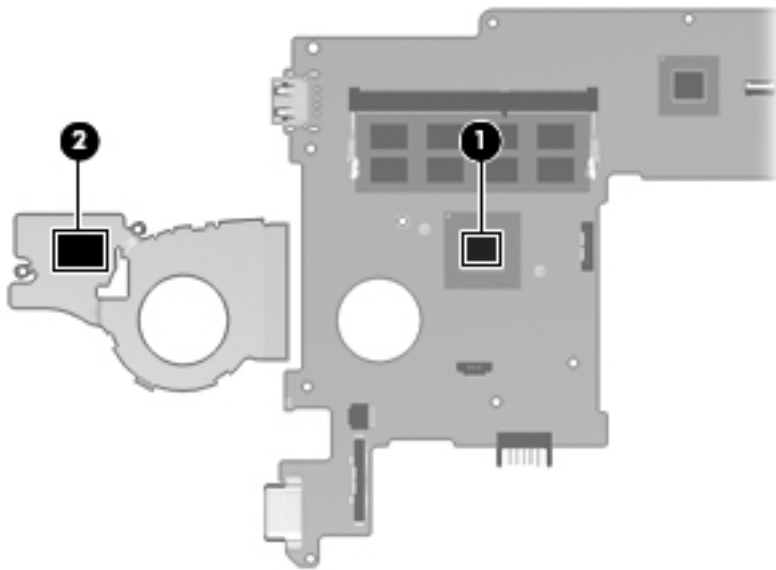
1. Remove the two Phillips PM2.0×4.6 screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink **(2)**.

 **NOTE:** Due to the adhesive quality of the thermal material located between the heat sink and system board components, it may be necessary to move the heat sink from side to side to detach it.



The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink and system board spare part kits.

 **NOTE:** The following illustration shows the replacement thermal material locations. Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it.



Reverse this procedure to install the heat sink.

Display assembly

Description	Spare part number
Display assembly, 10.1-in, LED, WSVGA, AntiGlare (includes display panel cable, 2 WLAN antenna transceivers and cables, and webcam/microphone module and cable):	
For use only on computer models equipped with WWAN capability (includes WWAN antenna cables and transceivers)	665226-001
For use only on computer models not equipped with WWAN capability	665225-001

Before removing the display assembly, follow these steps:

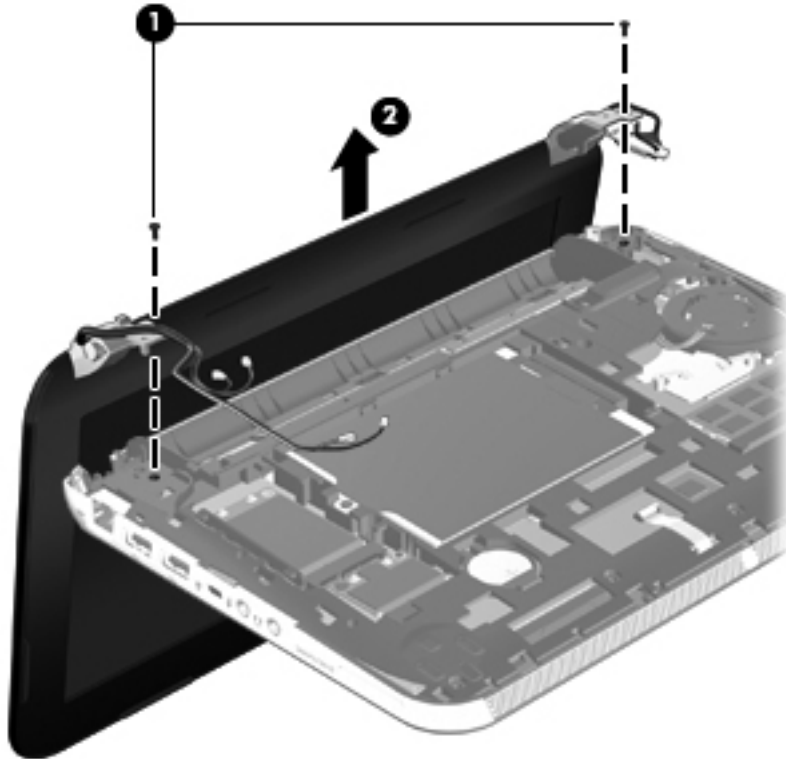
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 30](#)), and then remove the following components:
 - Service cover (see [WLAN module on page 32](#))
 - Keyboard (see [Keyboard on page 41](#))
 - Top cover (see [Top cover on page 44](#))

Remove the display assembly:

1. Position the computer upside down, with the front toward you.

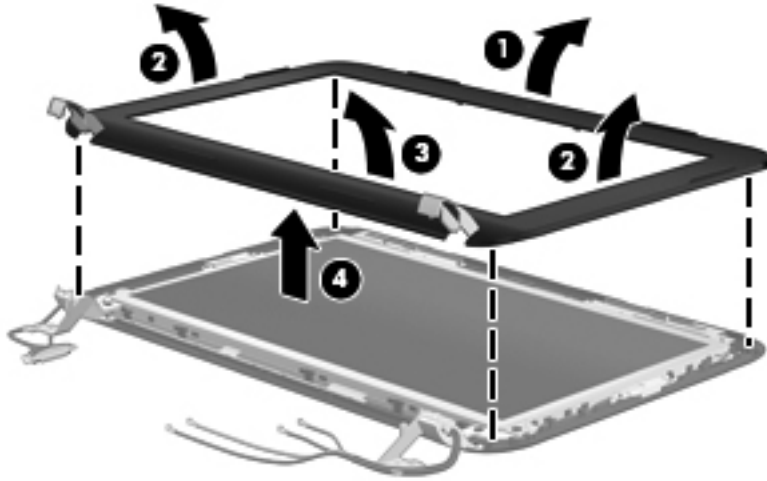
⚠ CAUTION: Support the open display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

2. Remove the two Phillips PM2.0×5.7 screws **(1)** that secure the display assembly to the computer.
3. Remove the display assembly **(2)**.

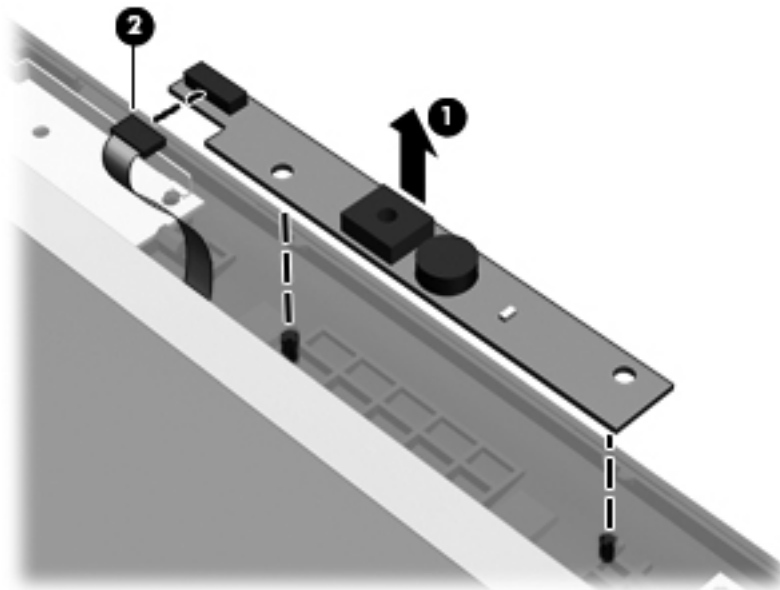


4. If it is necessary to replace the display bezel or any of the display assembly subcomponents:
 - a. Flex the inside edges of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge **(3)** of the display bezel until the bezel disengages from the display enclosure.

- b. Remove the display bezel **(4)**. The display bezel is available using spare part number 666424-001.

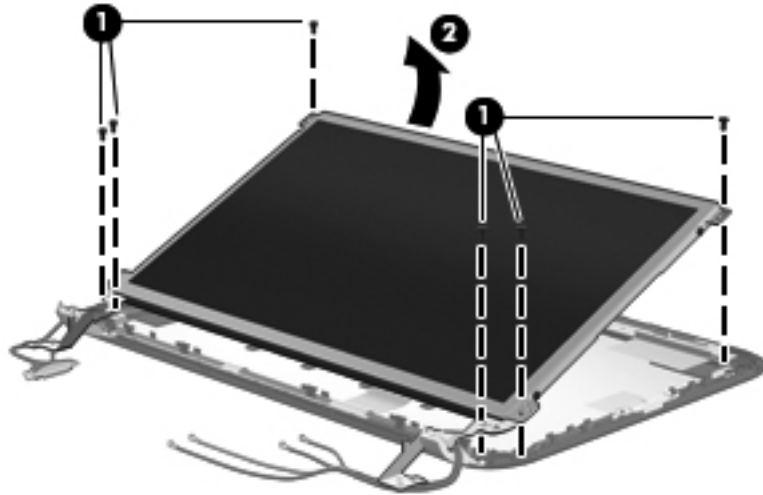


- 5. If it is necessary to replace the webcam/microphone module:
 - a. Detach and release the module **(1)** as far as the module cable allows. (The module is attached to the display enclosure with double-sided tape.)
 - b. Disconnect the module cable **(2)** from the module.



- c. Remove the webcam/microphone module. The webcam/microphone module is available using spare part number 658516-001.
- 6. If it is necessary to replace the display panel:
 - a. Remove the six Phillips PM2.0×4.6 screws **(1)** that secure the display panel to the display enclosure.

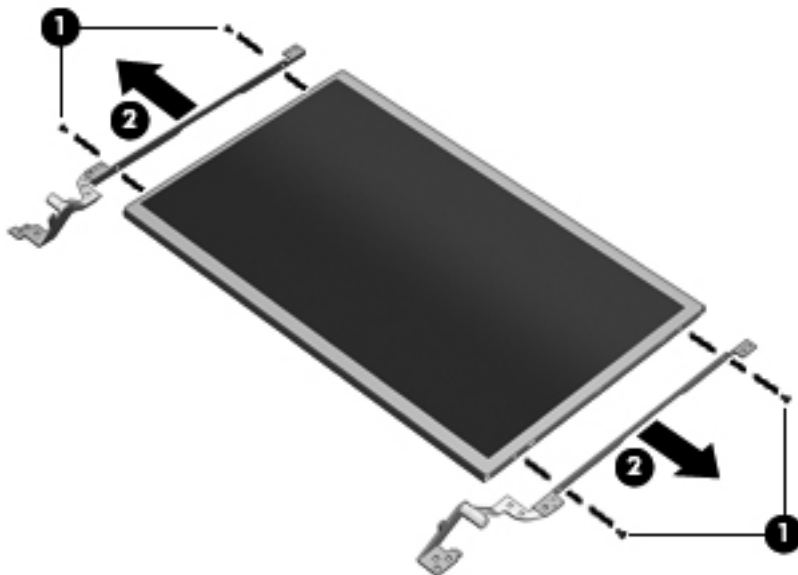
- b.** Lift the top edge of the display panel **(2)** and swing it up and forward until it rests at an angle.



- c.** Remove the display panel. The display panel is available using spare part number 658511-001.

7. If it is necessary to replace the display hinges:

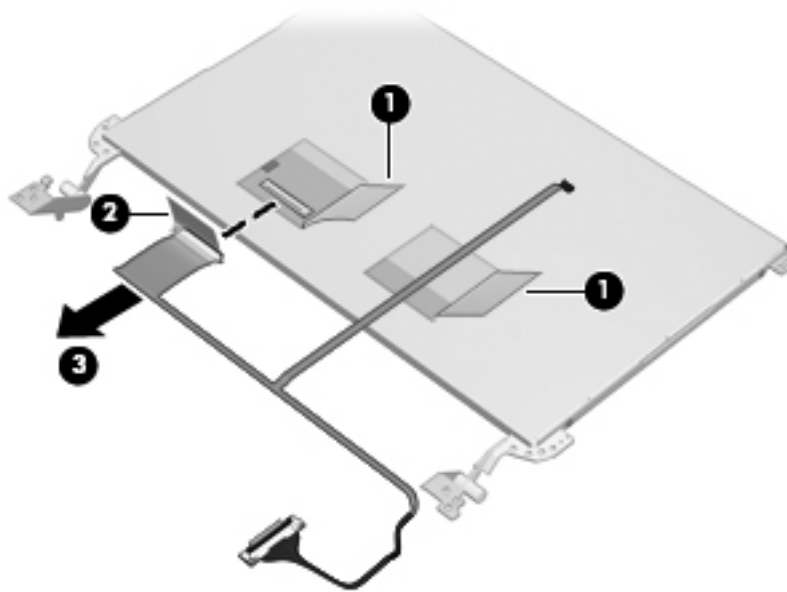
- a.** Remove the four Phillips PM2.0×3.7 screws **(1)** that secure the display hinges to the display panel.
- b.** Remove the display hinges **(2)**. The display hinges include the display hinges and brackets and are available using spare part number 650711-001.



8. If it is necessary to replace the display panel cable:

⚠ CAUTION: Make sure the work surface is free of any foreign objects before turning the display panel upside down. Failure to clear the work surface can result in scratches and damage to the display panel surface.

- a. Turn the display panel upside down with the bottom edge toward you.
- b. Release the tabs **(1)** built into the shielding on the back of the display panel that conceal the display panel connector and secure the display panel cable.
- c. Release the adhesive strip **(2)** that secures the display panel cable to the display panel, and then disconnect the display panel cable **(3)** from the display panel.

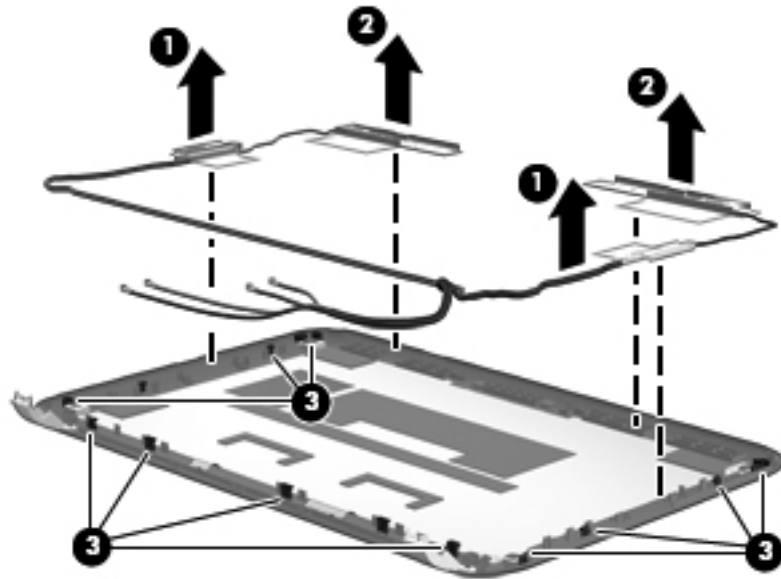


- d. Remove the display panel cable. The display panel cable includes the webcam/microphone module cable and is available in the Display Cable Kit, spare part number 658505-001.

9. If it is necessary to replace the wireless antenna cables and transceivers:

- a. Release the WLAN antenna transceivers **(1)** and the WWAN antenna transceivers **(2)** from the display enclosure. (The antenna transceivers are attached to the display enclosure with double-sided tape.)

- b.** Release the wireless antenna cables from the clips **(3)** built into the display enclosure.




- c.** Remove the wireless antenna cables and transceivers. The wireless antenna cables and transceivers are available in the Antenna Kit, spare part number 658498-001.

Reverse this procedure to reassemble and install the display assembly.


5 Setup Utility (BIOS) and System Diagnostics

Using Setup Utility

Setup Utility, or Basic Input/Output System (BIOS), controls communication between all the input and output devices on the system (such as disk drives, display, keyboard, mouse, and printer). Setup Utility includes settings for the types of peripherals installed, the startup sequence of the computer, and the amount of system and extended memory.

 **NOTE:** Use extreme care when making changes in Setup Utility. Errors can prevent the computer from operating properly.

Starting Setup Utility

 **NOTE:** An external keyboard or mouse connected to a USB port can be used with Setup Utility only if USB legacy support is enabled.

To start Setup Utility, follow these steps:

1. Turn on or restart the computer, and then press `esc` while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press `f10` to enter Setup Utility.

Changing the language of Setup Utility

1. Start Setup Utility.
2. Use the arrow keys to select **System Configuration > Language**, and then press `enter`.
3. Use the arrow keys to select a language, and then press `enter`.
4. When a confirmation prompt with your language selected is displayed, press `enter`.
5. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press `enter`.

Your change takes effect immediately.

Navigating and selecting in Setup Utility

To navigate and select in Setup Utility, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
 - To select a menu or a menu item, use the tab key and the keyboard arrow keys and then press **enter**, or use a pointing device to click the item.
 - To scroll up and down, click the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key.
 - To close open dialog boxes and return to the main Setup Utility screen, press **esc**, and then follow the on-screen instructions.
2. Press **f10** to enter Setup Utility.

To exit Setup Utility menus, choose one of the following methods:


- To exit Setup Utility menus without saving your changes, press the **esc** key, and then follow the on-screen instructions.
– or –
Use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.
- To save your changes and exit Setup Utility menus, press **f10**, and then follow the on-screen instructions.
– or –
Use the tab key and the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

Your changes go into effect when the computer restarts.

Displaying system information

1. Start Setup Utility.
2. Select the **Main menu**. System information such as the system time and date, and identification information about the computer is displayed.
3. To exit Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

Restoring factory settings in Setup Utility

 **NOTE:** Restoring defaults will not change the hard drive mode.


To return all settings in Setup Utility to the values that were set at the factory, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press **f10** to enter Setup Utility.
3. Use the arrow keys to select **Exit > Load Setup Defaults**.
4. Follow the on-screen instructions.
5. To save your changes and exit, press **f10**, and then follow the on-screen instructions.

– or –

Use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

Your changes go into effect when the computer restarts.

 **NOTE:** Your password settings and security settings are not changed when you restore the factory settings.

Exiting Setup Utility

- To exit Setup Utility and save your changes from the current session:

If the Setup Utility menus are not visible, press **esc** to return to the menu display. Then use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

- To exit Setup Utility without saving your changes from the current session:

If the Setup Utility menus are not visible, press **esc** to return to the menu display. Then use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

Updating the BIOS

Updated versions of the BIOS may be available on the HP Web site.

Most BIOS updates on the HP Web site are packaged in compressed files called *SoftPaqs*.

Some download packages contain a file named *Readme.txt*, which contains information regarding installing and troubleshooting the file.

Determining the BIOS version

To determine whether available BIOS updates contain later BIOS versions than those currently installed on the computer, you need to know the version of the system BIOS currently installed.

BIOS version information (also known as *ROM date* and *System BIOS*) can be displayed by pressing **fn +esc** (if you are already in Windows) or by using Setup Utility.

1. Start Setup Utility (BIOS).
2. Use the arrow keys to select **Main**.
3. To exit Setup Utility (BIOS) without saving your changes, use the tab key and the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

Downloading a BIOS update

CAUTION: To reduce the risk of damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a BIOS update while the computer is running on battery power, docked in an optional docking device, or connected to an optional power source. During the download and installation, follow these instructions:

Do not disconnect power from the computer by unplugging the power cord from the AC outlet.


Do not shut down the computer or initiate Sleep or Hibernation.

Do not insert, remove, connect, or disconnect any device, cable, or cord.

1. **Windows 7**—Select **Start > Help and Support > Maintain**.


Windows XP—Select **Start > Help and Support**, and then select the software and drivers update.

2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. At the download area, follow these steps:
 - a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
 - b. Follow the on-screen instructions to download your selection to the hard drive. Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

 **NOTE:** If you connect your computer to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

BIOS installation procedures vary. Follow any instructions that are displayed on the screen after the download is complete. If no instructions are displayed, follow these steps:

1. **Windows 7**—Open Windows Explorer by selecting **Start > Computer**.
Windows XP—Open Windows Explorer by selecting Start > **My Computer**.
2. Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.
4. Double-click the file that has an .exe extension (for example, *filename.exe*). The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.

 **NOTE:** After a message on the screen reports a successful installation, you can delete the downloaded file from your hard drive.

Using System Diagnostics


System Diagnostics allows you to run diagnostic tests to determine if the computer hardware is functioning properly. The following diagnostic tests are available in System Diagnostics:

- Start-up test—This test analyzes the main computer components that are required to start the computer.
- Run-in test—This test repeats the start-up test and checks for intermittent problems that the start-up test does not detect.
- Hard disk test—This test analyzes the physical condition of the hard drive, and then checks all data in every sector of the hard drive. If the test detects a damaged sector, it attempts to move the data to a good sector.
- Memory test—This test analyzes the physical condition of the memory modules. If it reports an error, replace the memory modules immediately.
- Battery test—This test analyzes the condition of the battery. If the battery fails the test, contact HP support to report the issue and purchase a replacement battery.

You can also view system information and error logs in the System Diagnostics window.

To start System Diagnostics:

1. Turn on or restart the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f2**.
2. Click the diagnostic test you want to run, and then follow the on-screen instructions.

 **NOTE:** If you need to stop a diagnostics test while it is running, press **esc**.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	26.8 cm	10.55 in
Depth	19.1 cm	7.52 in
Height (front to back)	2.3 to 3.3 cm	0.91 to 1.29 in
Weight	1.26 kg (with 3-cell battery), 1.40 kg (with 6-cell battery)	2.77 lb (with 3-cell battery), 3.09 lb (with 6-cell battery)
Input power		
Operating voltage and current	19.5 V dc @ 2.05 A - 40W	
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

10.1-inch, LED, WSVGA, AntiGlare display specifications

	Metric	U.S.
Dimensions		
Height	23.5 cm	9.3 in
Width	14.3 cm	5.6 in
Diagonal	25.7 cm	10.1 in
Number of colors	262,144	
Contrast ratio	500:1 (typical)	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	0.2175 × 0.2088 mm	
Format	1024 × 600	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	3.46 W	
Viewing angle	±45° horizontal, +15/−35° vertical (typical)	

Hard drive specifications


	320-GB*	250-GB*
Dimensions		
Height	9.5 and 7.0 mm	9.5 and 7.0 mm
Width	70 mm	70 mm
Weight	101 g	101 g
Interface type	SATA	SATA
Seek times (typical read, including setting)		
Single track	3 ms	3 ms
Average (read/write)	13 ms	13 ms
Maximum	24 ms	24 ms
Logical blocks	625,141,400	488,397,168
Disk rotational speed	5400 rpm	5400 rpm
Operating temperature	0°C to 60°C (32°F to 140°F)	
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.		
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.		

7 Backup and recovery


To protect your information, use Windows Backup and Restore to back up individual files and folders, back up your entire hard drive (select models only), create system repair discs (select models only) by using the installed optical drive (select models only) or an optional external optical drive, or create system restore points. In case of system failure, you can use the backup files to restore the contents of your computer.

Windows Backup and Restore provides the following options:

- Creating a system repair disc (select models only) by using the installed optical drive (select models only) or an optional external optical drive
- Backing up your information
- Creating a system image (select models only)
- Scheduling automatic backups (select models only)
- Creating system restore points
- Recovering individual files
- Restoring the computer to a previous state
- Recovering information using recovery tools

 **NOTE:** For detailed instructions, perform a search for these topics in Help and Support.

In case of system instability, HP recommends that you print the recovery procedures and save them for later use.

 **NOTE:** Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.


Backing up your information

Recovery after a system failure is as good as your most recent backup. You should create system repair discs (select models only) by using the installed optical drive (select models only) or an optional external optical drive, and your initial backup immediately after software setup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup. The system repair discs (select models only) are used to start up (boot) the computer and repair the operating system in case of system instability or failure. Your initial and subsequent backups allow you to restore your data and settings if a failure occurs.

You can back up your information to an optional external hard drive, a network drive, or discs.


Note the following when backing up:


- Store personal files in the Documents library, and back it up regularly.
- Back up templates that are stored in their associated programs.
- Save customized settings that appear in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.
- When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD+R DL, DVD-R, DVD-R DL, or DVD±RW. The discs you use will depend on the type of external optical drive you are using.

 **NOTE:** DVDs and DVDs with double-layer (DL) support store more information than CDs, so using them for backup reduces the number of recovery discs required.

- When backing up to discs, number each disc before inserting it into the external drive.

To create a backup using Backup and Restore:

 **NOTE:** Be sure that the computer is connected to AC power before you start the backup process.


 **NOTE:** The backup process may take over an hour, depending on file size and the speed of the computer.

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to set up your backup, create a system image (select models only), or create a system repair disc (select models only).

Performing a system recovery

In case of system failure or instability, the computer provides the following tools to recover your files:

- Windows recovery tools: You can use Windows Backup and Restore to recover information you have previously backed up. You can also use Windows Startup Repair to fix problems that might prevent Windows from starting correctly.
- f11 recovery tools: You can use the f11 recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.


 **NOTE:** If you are unable to boot (start up) your computer and you cannot use the system repair discs you previously created (select models only), you must purchase a Windows 7 operating system DVD to reboot the computer and repair the operating system. For additional information, refer to the “Using a Windows 7 operating system DVD (purchased separately)” section.

Using the Windows recovery tools

To recover information you previously backed up:

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to recover your system settings, your computer (select models only), or your files.


To recover your information using Startup Repair, follow these steps:

 **CAUTION:** Using Startup Repair completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process restores the operating system, as well as the drivers, software, and utilities from the backup used for recovery.


1. If possible, back up all personal files.
2. If possible, check for the presence of the Windows partition and the HP Recovery partition.

To check for the Windows partition, select **Start > Computer**.


To check for the HP Recovery partition, click **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**.

 **NOTE:** If the Windows partition and the HP Recovery partition are not listed, you must recover your operating system and programs using the Windows 7 operating system DVD and the Driver Recovery disc (both purchased separately). For additional information, refer to the “Using a Windows 7 operating system DVD (purchased separately)” section.

3. If the Windows partition and the HP Recovery partition are listed, restart the computer, and then press f8 before the Windows operating system loads.
4. Select **Startup Repair**.
5. Follow the on-screen instructions.


 **NOTE:** For additional information on recovering information using the Windows tools, perform a search for these topics in Help and Support.

Using f11 recovery tools

 **CAUTION:** Using f11 completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The f11 recovery tool reinstalls the operating system and HP programs and drivers that were installed at the factory. Software not installed at the factory must be reinstalled.

To recover the original hard drive image using f11:


1. If possible, back up all personal files.
2. If possible, check for the presence of the HP Recovery partition: click **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**.

 **NOTE:** If the HP Recovery partition is not listed, you must recover your operating system and programs using the Windows 7 operating system DVD and the Driver Recovery disc (both purchased separately). For additional information, refer to the “Using a Windows 7 operating system DVD (purchased separately)” section.


3. If the HP Recovery partition is listed, restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
4. Press **f11** while the <Press F11 for recovery> message is displayed.
5. Follow the on-screen instructions.

Using a Windows 7 operating system DVD (purchased separately)

To order a Windows 7 operating system DVD, go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions. You can also order the DVD by calling technical support. For contact information, refer to the Worldwide Telephone Numbers booklet included with the computer.

 **CAUTION:** Using a Windows 7 operating system DVD completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process helps you restore the operating system, as well as drivers, software, and utilities.

To initiate recovery using a Windows 7 operating system DVD:

 **NOTE:** This process takes several minutes.

1. If possible, back up all personal files.
2. Restart the computer, and then insert the Windows 7 operating system DVD into the optical drive before the Windows operating system loads.
3. When prompted, press any keyboard key.
4. Follow the on-screen instructions.

5. Click **Next**.
6. Select **Repair your computer**.
7. Follow the on-screen instructions.

After the repair is completed:

1. Eject the Windows 7 operating system DVD, and then insert the *Driver Recovery disc*.
2. Install the Hardware Enabling Drivers first, and then install Recommended Applications.

8 Power cord set requirements

The wide-range input feature of the computer permits it to operate from any line voltage from 100 to 120 volts AC, or from 220 to 240 volts AC.

The 3-conductor power cord set included with the computer meets the requirements for use in the country or region where the equipment is purchased.

Power cord sets for use in other countries and regions must meet the requirements of the country or region where the computer is used.

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least **1.5 m** (5.0 ft) and no more than **2.0 m** (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 A and a nominal voltage rating of 125 or 250 V ac, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Argentina	IRAM	1
Australia	SAA	1
Austria	OVE	1
Belgium	CEBEC	1
Brazil	ABNT	1
Canada	CSA	2
Chile	IMQ	1
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
India	ISI	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
The Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
The People's Republic of China	CCC	4
Saudi Arabia	SASO	7
Singapore	PSB	1
South Africa	SABS	1
South Korea	KTL	5
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	6
Thailand	TISI	1
The United Kingdom	ASTA	1

Country/region	Accredited agency	Applicable note number
The United States	UL	2
<ol style="list-style-type: none"> <li data-bbox="245 273 1439 367">1. The flexible cord must be Type HO5VV-F, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used. <li data-bbox="245 388 1439 483">2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element. <li data-bbox="245 504 1439 598">3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² or 1.25-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration. <li data-bbox="245 619 1439 693">4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark. <li data-bbox="245 714 1439 787">5. The flexible cord must be Type H05VV-F 3X0.75-mm² conductor size. KTL logo and individual approval number must be on each element. Corset approval number and logo must be printed on a flag label. <li data-bbox="245 808 1439 861">6. The flexible cord must be Type HVCTF 3x1.25-mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark. <li data-bbox="245 882 1439 955">7. For 127 V ac, the flexible cord must be Type SVT or SJT 3 x 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3x0.75-/1.00-mm² conductor size, with plug BS 1363/A with BSI or ASTA marks. 		

9 Recycling

When a non-rechargeable or rechargeable battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for battery disposal.

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries. For more information about recycling programs, see the HP Web site at <http://www.hp.com/recycle>.

Index

- A**
 - AC adapter, spare part number 19, 21
 - AC adapter/battery light 10
 - Action keys 5
 - antenna
 - locations 6
 - removal 61
 - spare part number 18, 22, 62
 - Antenna Kit, spare part number 18, 22, 62
 - audio, product description 2
 - audio-in jack 11
 - audio-out jack 11
- B**
 - base enclosure, spare part number 16
 - base enclosure, spare part numbers 21, 22
 - battery
 - removal 30
 - spare part numbers 16, 21, 30
 - battery bay 12
 - battery/service cover release latch 12
 - bottom components 12
 - button components 7
 - buttons
 - power 7
 - TouchPad 9
 - TouchPad on/off 9
 - Web browser 7
- C**
 - cables, service considerations 23
 - caps lock light 8
 - chipset, product description 1
 - components
 - bottom 12
 - buttons 7
 - display 6
 - front 10
 - keys 5
 - left-side 10
 - lights 8
 - right-side 11
 - TouchPad 9
 - computer feet, locations 29
 - computer major components 15
 - computer part number 28
 - computer specifications 68
 - connectors, service considerations 23
 - corner cover
 - spare part number 21
 - corner covers
 - spare part number 17, 47
- D**
 - Digital Media Slot 11
 - display
 - components 6
 - specifications 69
 - display assembly
 - removal 57
 - spare part numbers 16, 22, 57
 - subcomponents 18
 - display bezel
 - removal 58
 - spare part number 18, 22, 59
 - Display Cable Kit, spare part number 18, 61
 - display enclosure, spare part numbers 18, 22
 - Display Hinge Kit, spare part number 18, 60
 - display panel
 - product description 1
 - removal 59
 - spare part number 18, 22, 60
 - display panel cable
 - removal 61
 - spare part number 18, 22, 61
 - drives, preventing damage 24
 - DVD±RW DL SuperMulti Drive precautions 24
- E**
 - electrostatic discharge 24
 - equipment guidelines 27
 - Ethernet, product description 2
 - external monitor port 10
- F**
 - fan
 - removal 54
 - spare part number 16, 21, 54
 - feet, locations 29
 - fn key 5
 - front components 10
- G**
 - graphics, product description 1
 - grounding guidelines 24
 - guidelines
 - equipment 27
 - grounding 24
 - packaging 26
 - transporting 26
 - workstation 26

H

- hard drive
 - precautions 24
 - product description 1
 - removal 39
 - spare part numbers 17, 20, 21, 39
 - specifications 70
- hard drive bracket
 - illustrated 20
 - removal 40
- hard drive connector cable
 - illustrated 20
 - removal 40
- Hard Drive Hardware Kit, spare part number 17, 20, 22, 39
- hard drive light 10
- hard drive rubber isolator
 - illustrated 20
 - removal 40
- headphone jack 11
- heat sink
 - removal 55
 - spare part number 16, 21, 55
- hinge
 - removal 60
 - spare part number 18, 60

J

- jacks
 - audio-in 11
 - audio-out 11
 - headphone 11
 - microphone 11
 - network 11
 - RJ-45 11

K

- key components 5
- keyboard
 - product description 3
 - removal 41
 - spare part numbers 16, 22, 41
- keys
 - Action 5
 - fn 5
 - Windows applications 5
 - Windows logo 5

L

- left-side components 10
- light components 8
- lights
 - AC adapter/battery 10
 - caps lock 8
 - hard drive 10
 - mute 8
 - power 8
 - TouchPad 8, 9
 - webcam 6
 - wireless 8
- lock, spare part numbers 19, 21

M

- mass storage device
 - precautions 24
 - removal 39
 - spare part numbers 20, 39
- memory module
 - product description 1
 - removal 37
 - spare part number 16, 21, 37
- microphone
 - location 6
 - product description 2
- microphone jack 11
- model description 29
- model name 1
- monitor port 10
- mouse, spare part number 19, 21
- mute light 8

N

- network jack 11

O

- operating system, product description 4
- optical drive
 - precautions 24

P

- packaging guidelines 26
- plastic parts, service considerations 23
- pointing device, product description 3
- ports
 - external monitor 10
 - monitor port 10

- product description 3
 - USB 10, 11
- power button 7
- power connector 10
- power connector cable
 - removal 53
 - spare part number 16, 21, 53
- power cord
 - set requirements 76
 - spare part numbers 19, 21
- power light 8
- power requirements, product description 3
- processor, product description 1
- product description
 - audio 2
 - chipset 1
 - display panel 1
 - Ethernet 2
 - external media cards 2
 - graphics 1
 - hard drives 1
 - keyboard 3
 - memory module 1
 - microphone 2
 - operating system 4
 - pointing device 3
 - ports 3
 - power requirements 3
 - processor 1
 - product name 1
 - security 3
 - serviceability 4
 - video 2
 - wireless 2
- product name 1, 28
- product number 28

R

- removal/replacement
 - preliminaries 23
 - procedures 28
- right-side components 11
- RJ-45 jack 11
- RTC battery
 - removal 38
 - spare part number 16, 21, 38
- Rubber Kit, spare part number 17, 21

S

- Screw Kit, spare part number 19, 21
- security cable slot 11
- security, product description 3
- serial number 28
- service considerations
 - cables 23
 - connectors 23
 - plastic parts 23
- service cover
 - location 12
 - removal 32
 - spare part number 17, 22, 33
- service tag 13, 28
- serviceability, product description 4
- SIM, removal 31
- speakers
 - location 10
 - removal 50
 - spare part number 16, 21, 50
- specifications
 - computer 68
 - display 69
 - hard drive 70
- system board
 - removal 51
 - spare part numbers 16, 22, 51

T

- tools required 23
- top cover
 - removal 44
 - spare part number 44
 - spare part numbers 16, 22
- TouchPad button 9
- TouchPad components 9
- TouchPad light 8, 9
- TouchPad on/off button 9
- TouchPad zone 9
- transporting guidelines 26

U

- USB port 10, 11

V

- vents 10
- video, product description 2

W

- warranty period 29
- Web browser button 7
- webcam 6
- webcam light 6
- webcamera/microphone module
 - removal 59
 - spare part number 18, 22, 59
- Windows applications key 5
- Windows logo key 5
- wireless antenna
 - locations 6
 - removal 61
 - spare part number 18, 22, 62
- wireless light 8
- wireless, product description 2
- WLAN module
 - removal 32
 - spare part numbers 16, 21, 32
- workstation guidelines 26
- WWAN module
 - removal 35
 - spare part numbers 16, 21, 35

