



HP G72 Notebook PC

Maintenance and Service Guide

SUMMARY

This guide is a troubleshooting reference used for maintaining and servicing the computer. It provides comprehensive information on identifying computer features, components, and spare parts; troubleshooting computer problems; and performing computer disassembly procedures.

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Safety warning notice

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- ⚠ **WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer 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 computer 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).
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1 Product description

Category	Description	HP G72	HP G72	HP G72
		Discrete	Discrete	UMA
Product Name	HP G72 Notebook PC	√	√	√
Processors	Intel® Arrandale™ i5–540M Processor (2.53 GHz, 3 MB total L3 cache, 1066 MHz)—Dual core 35 W	√	√	√
	Intel Arrandale i5–520M Processor (2.4 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W	√	√	√
	Intel Arrandale i5–450M Processor (2.4 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W	√	√	√
	Intel Arrandale i5–430 Processor (2.26 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W	√	√	√
	Intel Arrandale i3–370 Processor (2.4 GHz, 3 MB L3 cache, 1066 MHz)—Dual Core 35 W	√	√	√
	Intel Arrandale i3–350 Processor (2.26 GHz, 3 MB L3 cache, 1066 MHz)—Dual Core 35 W	√	√	√
	Pentium® Arrandale P6000 Processor (1.86 GHz, 3 MB, L3 cache 100 MHz)	√	√	√
	Chipset	Intel® HM55 Express Chipset	√	√
Graphics	ATI Mobility Radeon™ HD5470 with 512 MB dedicated video memory	√	√	
	ATI Mobility Radeon HD5470 with 1 G dedicated video memory	√	√	
	UMA (integrated) with shared video memory			√
	Support for BD or HD-DVD playback with HD decoder and DX10 support	√	√	√
Panel	43.9-cm (17.3-in) HD LED BrightView (1600 x 900)	√	√	√
	16:9 wide aspect ratio	√	√	√
Memory	2 customer-accessible/upgradable SODIMM slots	√	√	√

Category	Description	HP G72	HP G72	HP G72
		Discrete	Discrete	UMA
	Supports dual-channel memory DDR3, 1333 MHz	√	√	√
	Supports up to 8 GB of system memory	√	√	√
	Supports the following configurations:			
	• 4096 MB (2048 MB × 2)	√	√	√
	• 3072 MB (1024 MB × 1 + 2048 MB × 1)	√	√	√
	• 2048 MB (2048 MB × 1)	√	√	√
	• 2048 MB (1024 MB × 2)	√	√	√
	• 1024 MB (1024 MB × 1)	√	√	√
Hard drives	Supports 9.5-mm, 6.35-cm (2.5-in) SATA hard drive	√	√	√
	Customer accessible	√	√	√
	Supports the following drives:			
	• 640 GB, 5400 rpm	√	√	√
	• 500 GB, 7200 rpm	√	√	√
	• 320 GB, 7200 rpm	√	√	√
	• 250 GB, 7200 rpm	√	√	√
	• 160 GB, 7200 rpm	√	√	√
Optical drives	12.7-mm (0.50-in) fixed SATA tray load	√	√	√
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	√	√	√
	Blu-ray ROM with LightScribe DVD±R/RW SuperMulti Double-Layer Drive	√	√	√
Webcam (select models only)	VGA camera, fixed angle with activity light and single analog microphone	√	√	√
Microphone	Integrated single analog microphone (for models with no webcam)	√	√	√
Audio	High-definition audio supports Microsoft® premium requirements with Presario/HP Altec Lansing speakers	√	√	√
Modem (select models only)	56K V.92 data/fax MDC modem (computer models not equipped with a modem have a cover over the RJ-11 jack opening)	√	√	√
	Supports all worldwide certification requirements	√	√	√
Ethernet	Integrated 10/100 network interface card (NIC)	√	√	√
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module:			
	2 wireless antennas built into display assembly	√	√	√

Category	Description	HP G72	HP G72	HP G72
		Discrete	Discrete	UMA
	Support for no-WLAN option	√	√	√
	Support for the following WLAN formats:			
	Atheros AR9285 802.11 a/b/g/n 2x2 WiFi adapter	√	√	√
	Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter	√	√	√
	Broadcom 4313 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready)	√	√	√
	Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready)	√	√	√
External media card (select models only)	Digital Media Slot supporting SD, MMC, MS, MSPro, xD cards. Supports mini versions of SD, MMC, MS Duo with adapter, not included	√	√	√
Ports	Audio-in (stereo microphone)	√	√	√
	Audio-out (stereo headphone)	√	√	√
	High-Definition Multimedia Interface (HDMI) version 1.3 supporting 1080p with High-bandwidth Digital Content Protection (HDCP) key (select models only)	√	√	√
	Hot plug/unplug with auto-detect	√	√	√
	RJ-11 (modem, select models only)	√	√	√
	RJ-45 (Ethernet)	√	√	√
	USB (3; one is an eSATA/USB port)	√	√	√
	VGA (Dsub 15-pin) supporting 1600 × 1200 external resolution at 75 Hz	√	√	√
	Multi-pin AC power	√	√	√
Keyboard/pointing devices	Full-size keyboard with numeric keypad, 43.9-cm (17.3-in)	√	√	√
	TouchPad with 2 buttons and 2-way scroll (taps enabled as default)	√	√	√
Power requirements	6-cell, 2.20 Ah, 47 Wh battery	√	√	√
	6-cell, 2.55 Ah, 55 Wh battery	√	√	√
	6-cell, 2.8 Ah, 62 Wh battery	√	√	√
	65-W AC adapter with localized cable plug support			√
	90-W AC adapter with localized cable plug support	√	√	
Security	Kensington Security Lock	√	√	√
Operating system	Preinstalled:			

Category	Description	HP G72	HP G72	HP G72
		Discrete	Discrete	UMA
	Windows® 7 Home Premium (32 & 64 bit)	√	√	√
	Windows 7 Home Basic (32 & 64 bit)	√	√	√
	Free DOS	√	√	√
Serviceability	End-user replaceable parts:			
	AC adapter	√	√	√
	Battery (system)	√	√	√
	Hard drive	√	√	√
	Memory module	√	√	√
	Optical drive	√	√	√
	Mini-card devices	√	√	√

2 External component identification

Identifying the hardware

Components included with the computer might vary by region and model. The illustrations in this chapter identify the standard features on most computer models.

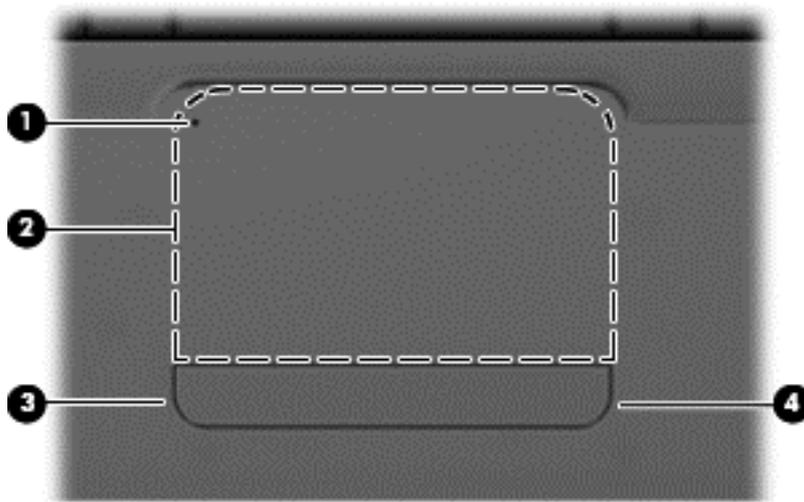
To see a list of hardware installed in the computer:

1. Select **Start > My Computer**.
2. In the left pane of the System Tasks window, select **View system information**.
3. Select **Hardware tab > Device Manager**.

Add hardware or modify computer configurations using Device Manager.

Top components

TouchPad



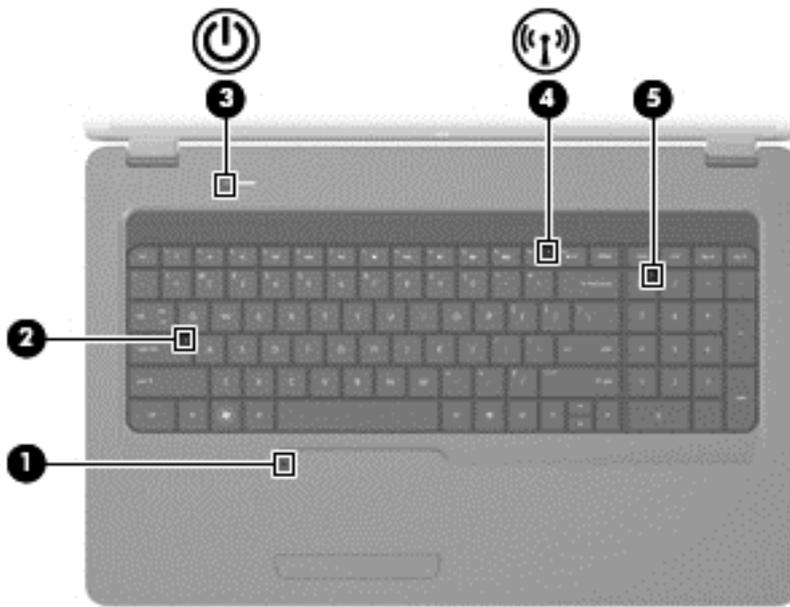
Component	Description
(1) TouchPad light	Off—Touchpad is on. Amber—Touchpad is off.
(2) TouchPad zone	Moves the pointer and selects or activates items on the screen.
(3) Left TouchPad button	Press the left side of the TouchPad button to execute functions like the left button on an external mouse.
(4) Right TouchPad button	Press the right side of the TouchPad button to execute functions like the right button on an external mouse.

*This table describes factory settings.

To view or change the pointing device preferences:

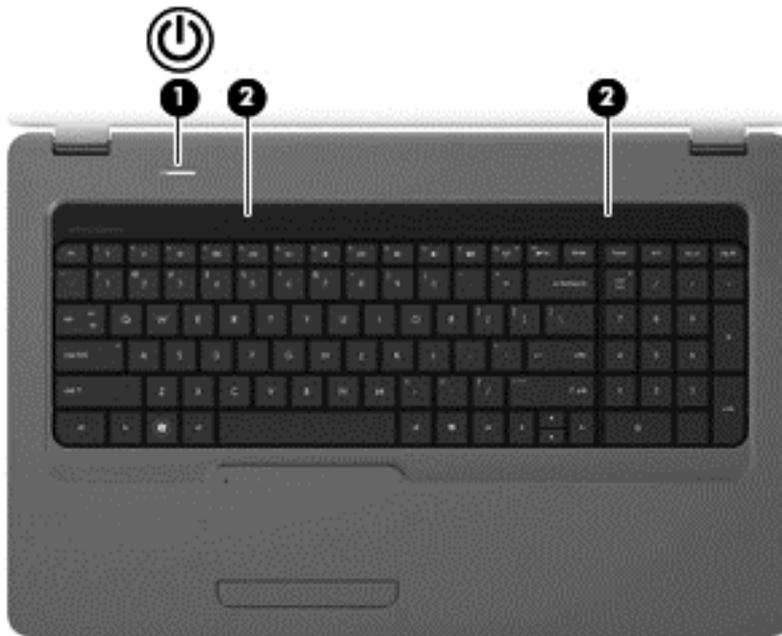
1. Select **Start > Devices and Printers**.
2. Right-click the device representing the computer.
3. Select **Mouse settings**.

Lights



Component	Description
(1) TouchPad light	<ul style="list-style-type: none"> • Off—TouchPad is enabled. • Amber—TouchPad is disabled.
(2) Caps lock light	On—Caps lock is on
(3) Power light	<ul style="list-style-type: none"> • On—The computer is on. • Flashing—The computer is in Sleep. • Off—The computer is off or in Hibernation.
(4) Wireless light	<ul style="list-style-type: none"> • White—An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. • Amber—No wireless devices are detected.
(5) num lk light	<ul style="list-style-type: none"> • On—The numeric function of the keypad is enabled. • Off—The navigation function of the keypad is enabled.

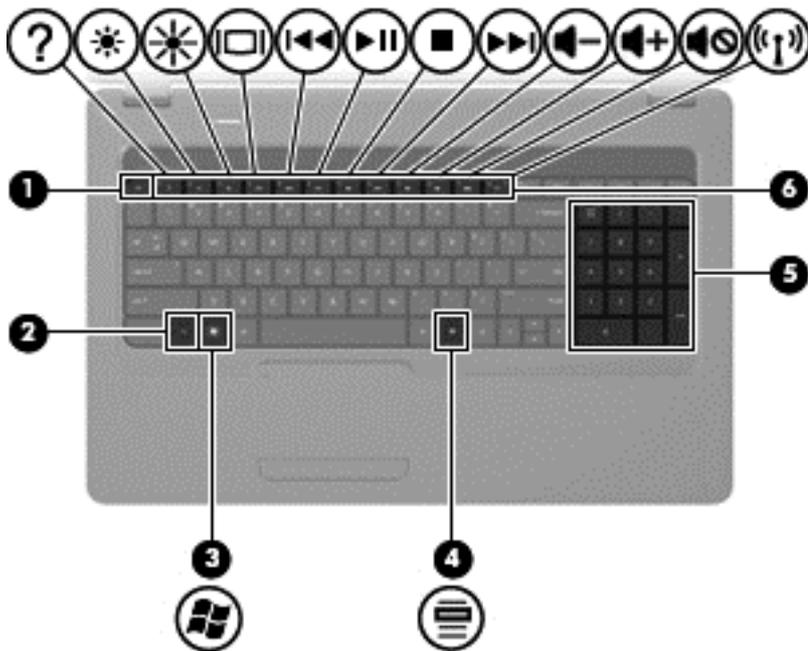
Button and speakers



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 to initiate Sleep.• When the computer is in Sleep, press the button to exit Sleep.• When the computer is in Hibernation, press the button 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 five seconds to turn off the computer.</p> <p>To learn more about your power settings, select Start > Control Panel > System and Security > Power Options.</p>
(2) Speakers grill	Two integrated speakers produce sound.

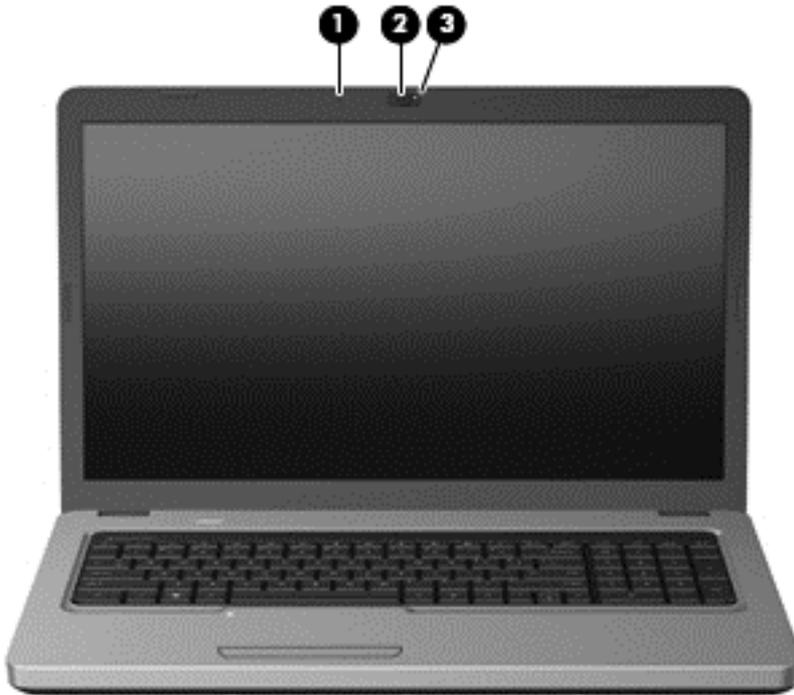
*This table describes factory settings. For information about changing factory settings, see the user guides located in Help and Support.

Keys



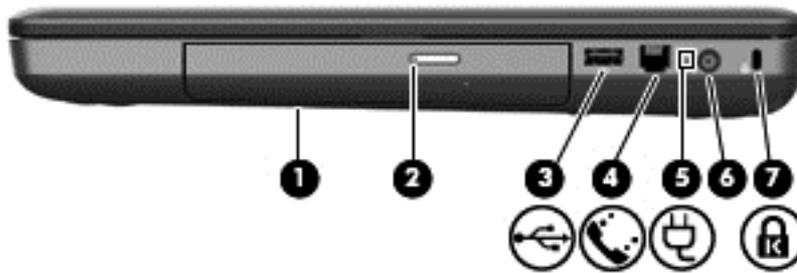
Component	Description
(1) <code>esc</code> key	Displays system information when pressed in combination with the <code>fn</code> key.
(2) <code>fn</code> key	Displays system information when pressed in conjunction with the <code>esc</code> key.
(3) Windows logo key	Displays the Windows Start menu.
(4) Windows applications key	Displays a shortcut menu for items where the cursor is positioned
(5) Integrated numeric keypad keys	Used like the keys on an external numeric keypad.
(6) Action keys	Executes frequently-used system actions.

Display



Component	Description
(1) Internal microphone	Records sound.
(2) Integrated webcam (select models only)	Records audio and video and captures still photographs.
(3) Webcam light (select models only)	On—The webcam is in use.

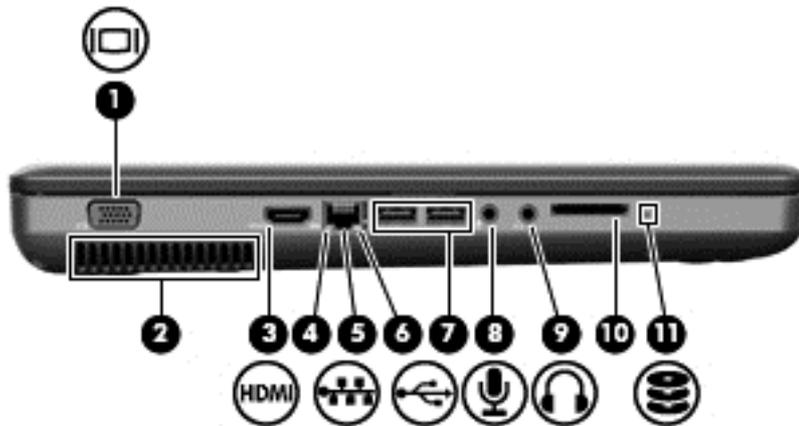
Right-side components



Component	Description
(1) Optical drive	Reads and writes to optical discs.
(2) Optical drive light on release button	Flashing—The optical drive light is being accessed.
(3) USB port	Connects an optional USB device.
(4) RJ-11 (modem) jack (select models only)	Connects a modem cable.
(5) AC adapter light	<ul style="list-style-type: none"> Flashing white—The computer is in Sleep. On white—The computer is connected to external power. Flashing amber—The computer is charged. Off—The computer is not connected to external power.
(6) Power connector	Connects an AC adapter.
(7) Security cable slot	Attaches an optional security cable to the computer.

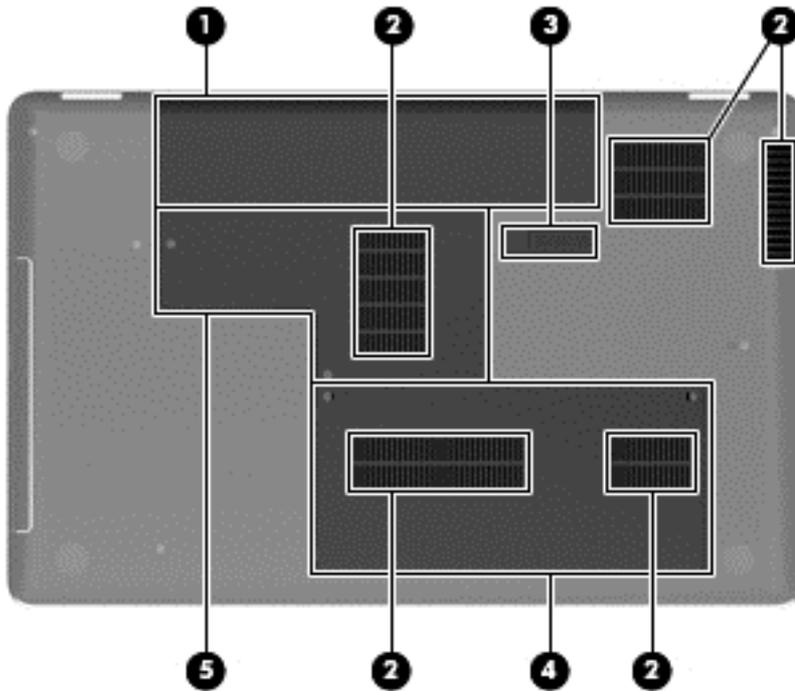
NOTE: The security cable is designed to act as a deterrent, but it might not prevent the computer from being mishandled or stolen.

Left-side components



Component	Description
(1) External monitor port	Connects an external VGA monitor or projector.
(2) Vent	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.
(3) HDMI port (select models only)	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component. NOTE: Depending on the computer model, the computer might include an HDMI port or a USB port at this location.
(4) Network connection light	White—The computer is connected to the network.
(5) RJ-45 (network) jack	Connects a network cable.
(6) Network activity light	Amber—Data is being transmitted over the network.
(7) USB ports (2)	Connects an optional USB devices.
(8) Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(9) Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio.
(10) Digital Media Slot (select models only)	Supports the following optional digital card formats: <ul style="list-style-type: none"> • Memory Stick (MS) • Memory Stick Pro (MSP) • MultiMediaCard (MMC) • Secure Digital (SD) Memory Card • xD-Picture Card (XD)
(11) Drive light	On—The hard drive is in use.

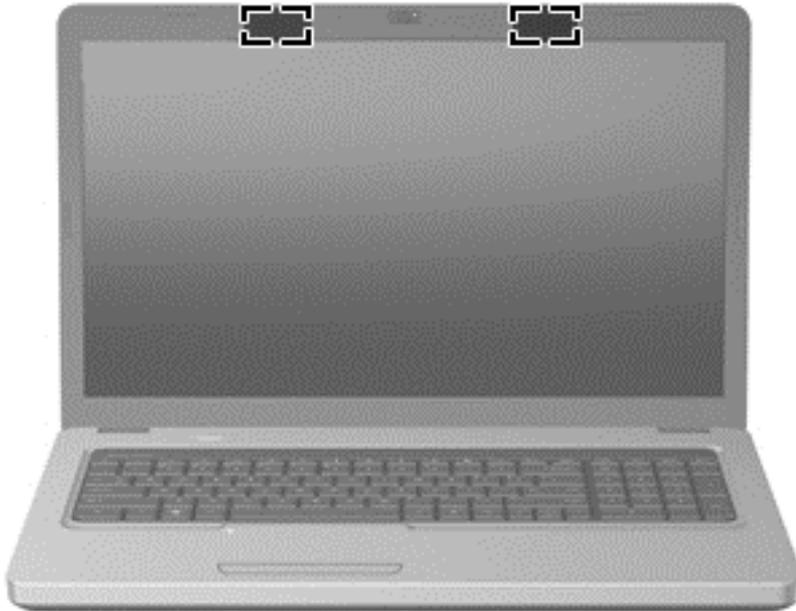
Bottom components



Component	Description
(1) Battery bay	Holds the battery.
(2) Vents (5)	Enable 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.
(3) Battery release latch	Releases the battery from the battery bay.
(4) Hard drive bay	Holds the hard drive.
(5) Memory module compartment	Contains two memory module slots and, on select models, the wireless LAN (WLAN) device. 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 computer functionality, and then contact technical support through Help and Support.

Wireless antennas

At least two antennas send and receive signals from one or more wireless devices. These antennas are not visible from the outside of the computer.



 **NOTE:** For optimal transmission, keep the areas immediately around the antennas free from obstructions.

To review the wireless regulatory notices, see 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.

Additional hardware components



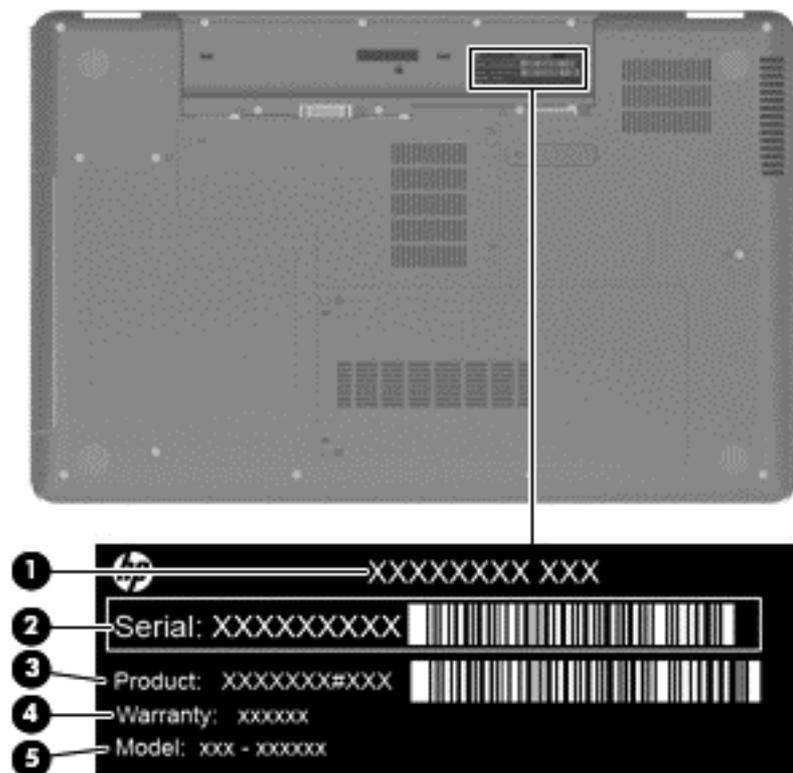
Component	Description
(1) Power cord*	Connects an AC adapter to an AC outlet.
(2) AC adapter	Converts AC power to DC power.
(3) Battery*	Powers the computer when the computer is not plugged into external power.

*Power cords vary in appearance by country or region.

3 Illustrated parts catalog

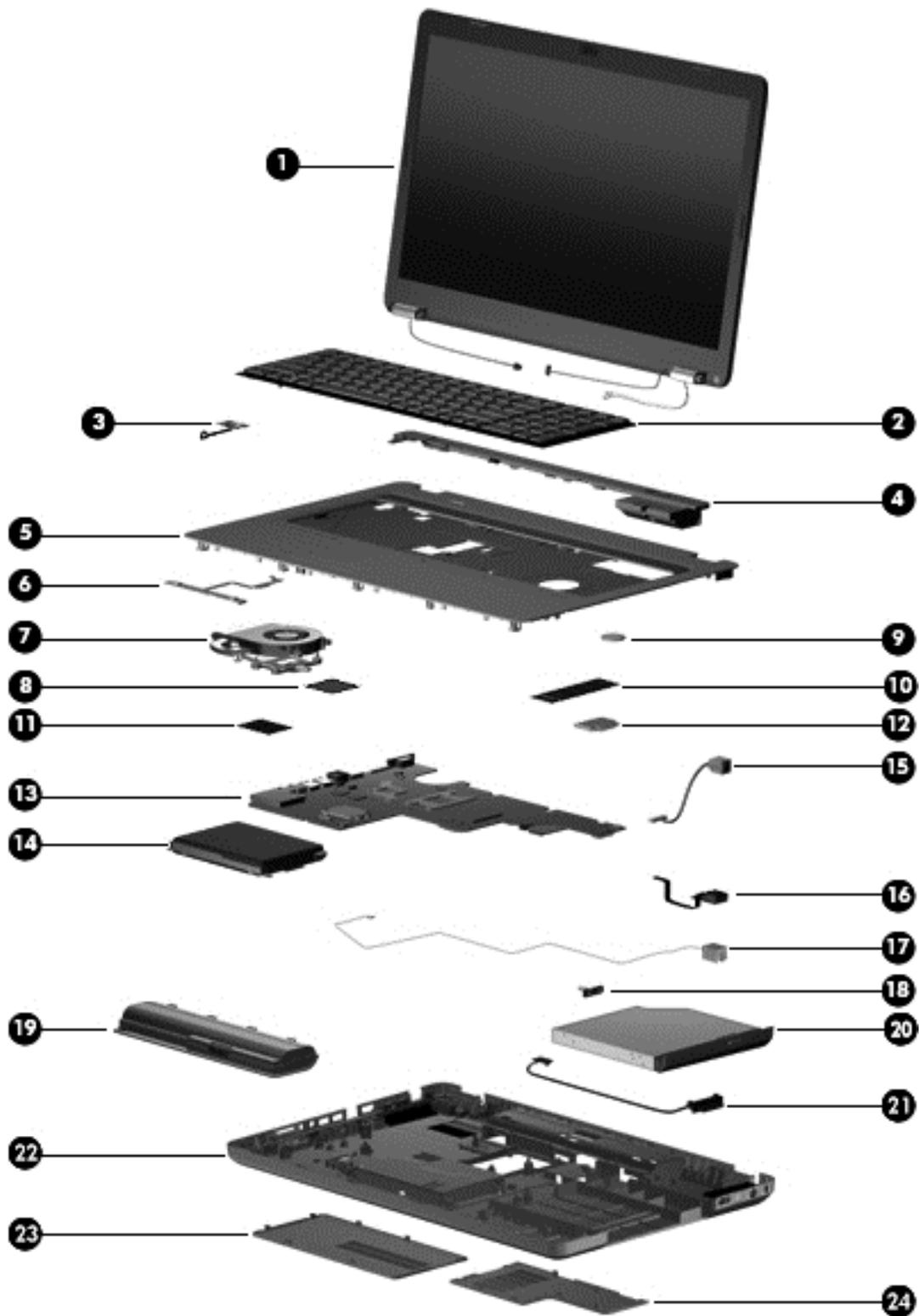
Serial number location

When ordering parts or requesting information, provide the computer serial number and model number located in the battery bay of the computer.



Component	Description
(1) Product name	The name affixed to the front of the computer.
(2) Serial number (s/n)	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 to determine what components and parts are needed.
(4) Warranty period	The duration of the warranty period for the computer.
(5) Model description	An alphanumeric identifier used to locate documents, drivers, and support for the computer.

Computer major components



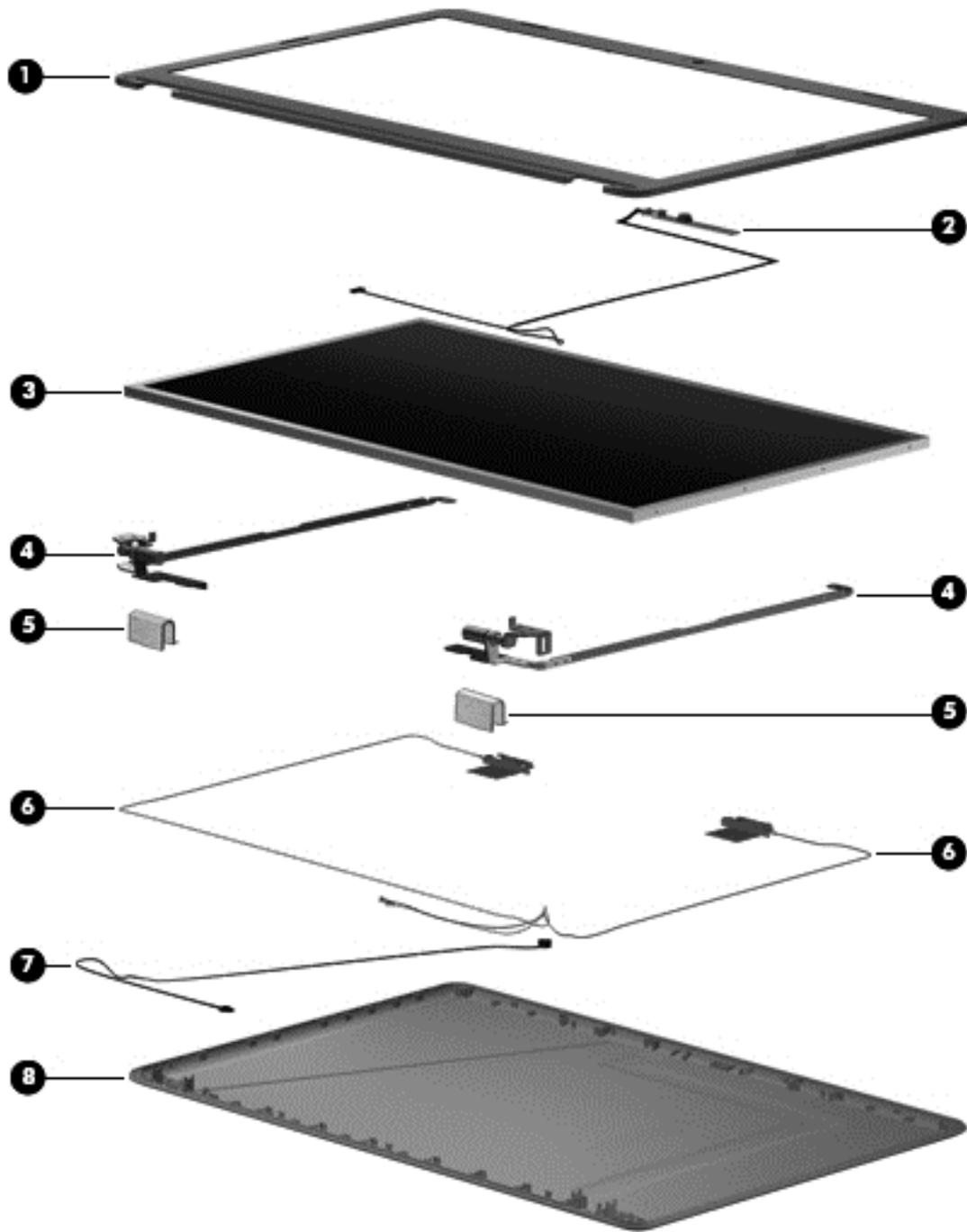
Item	Description	Spare part number
(1)	43.9-cm (17.3-in) High Definition (HD), light-emitting diode (LED) display assembly for use in:	
	NOTE: For more display assembly internal component spare part information, see Display assembly components on page 22 .	
	<ul style="list-style-type: none"> Biscotti computer models 	612094-001
	<ul style="list-style-type: none"> Matte black computer models 	612095-001
(2)	Keyboard (includes keyboard cable) for use in:	
	<ul style="list-style-type: none"> Adriatics 	615850-BA1
	<ul style="list-style-type: none"> Belgium 	615850-A41
	<ul style="list-style-type: none"> Czech Republic 	615850-221
	<ul style="list-style-type: none"> France 	615850-051
	<ul style="list-style-type: none"> Germany 	615850-041
	<ul style="list-style-type: none"> Greece 	615850-DJ1
	<ul style="list-style-type: none"> Hungry 	615850-211
	<ul style="list-style-type: none"> for International use 	615850-B31
	<ul style="list-style-type: none"> Israel 	615850-BB1
	<ul style="list-style-type: none"> Italy 	615850-061
	<ul style="list-style-type: none"> Norway 	615850-DH1
	<ul style="list-style-type: none"> Portugal 	615850-131
	<ul style="list-style-type: none"> Russia 	615850-251
	<ul style="list-style-type: none"> Saudi Arabia 	615850-171
	<ul style="list-style-type: none"> Spain 	615850-071
	<ul style="list-style-type: none"> Switzerland 	615850-BG1
	<ul style="list-style-type: none"> Turkey 	615850-141
	<ul style="list-style-type: none"> United Kingdom 	615850-031
(3)	Power button board	616495-001
(4)	Speaker assembly (includes cable)	616498-001
(5)	Top cover (includes TouchPad board) for use in:	
	<ul style="list-style-type: none"> Biscotti computer models 	616490-001
	<ul style="list-style-type: none"> Matte black computer models 	616492-001
(6)	Touchpad button board (includes bracket and cable)	616493-001
(7)	Fan/heat sink assembly (includes replacement thermal material) for use with:	
	<ul style="list-style-type: none"> UMA systems 	606013-001
	<ul style="list-style-type: none"> Discrete systems 	606014-001
(8)	Processor (includes replacement thermal material)	

Item	Description	Spare part number
	<ul style="list-style-type: none"> Intel Arrandale i7–620M Processor (2.66 GHz, 4 MB total L3 cache, 1066 MHz)—Dual Core 35 W 	587259-001
	<ul style="list-style-type: none"> Intel Arrandale i5–520M Processor (2.4 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W 	594187-001
	<ul style="list-style-type: none"> Intel Arrandale i5–540M Processor (2.53 GHz, 3 MB total L3 cache, 1066 MHz)—Dual core 35 W 	594188-001
	<ul style="list-style-type: none"> Intel Arrandale i3–350 Processor (2.26 GHz, 3 MB L3 cache, 1066 MHz)—Dual Core 35 W 	597623-001
	<ul style="list-style-type: none"> Intel Arrandale i5–430 Processor (2.26 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W 	597624-001
	<ul style="list-style-type: none"> Intel Arrandale i3–370 Processor (2.4 GHz, 3 MB L3 cache, 1066 MHz)—Dual Core 35 W 	613584-001
	<ul style="list-style-type: none"> Intel Arrandale i5–450M Processor (2.4 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W 	613585-001
	<ul style="list-style-type: none"> Pentium Arrandale P6000 Processor (1.86 GHz, 3 MB, L3 cache 100 MHz) 	613586-001
(9)	RTC battery (includes mounting adhesive)	616501-001
(10)	Memory module (1066 MHz, DDR3)	
	<ul style="list-style-type: none"> 1 GB 	598859-002
	<ul style="list-style-type: none"> 2 GB 	598856-002
(11)	Wireless (WLAN) module	
	<ul style="list-style-type: none"> Atheros AR9285 802.11b/g/n 1x1 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Zaire, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Martinique, Nether Antilles, French Guiana, Aruba, British Virgin Islands, Bermuda, Syria, Guadeloupe, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Timor (East), Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, United Arab Emirates, United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe 	518436-001

Item	Description	Spare part number
	<ul style="list-style-type: none"> Intel Centrino Wireless-N 1000 802.11b/g/n 1x2 WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Canada, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guam, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, the U.S. Virgin Islands, the United States, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	593530-001
	<ul style="list-style-type: none"> Realtek RTL8191SE 802.11b/g/n 1x1 WiFi Adapter 	593533-001
	<ul style="list-style-type: none"> Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter 	593836-001
(12)	Modem module (select models only)	510100-001
(13)	System board (includes replacement thermal material) for use in:	
	<ul style="list-style-type: none"> HD 5430/512 MB discrete system board with card reader 	605902-001
	<ul style="list-style-type: none"> HD UMA system board with card reader 	605903-001
	<ul style="list-style-type: none"> HD 5430/1 GB discrete system board with card reader 	608340-001
(14)	Hard drive	
	<ul style="list-style-type: none"> 640 GB, 5400 rpm 	621343-001
	<ul style="list-style-type: none"> 500 GB, 7200 rpm 	615085-001
	<ul style="list-style-type: none"> 320 GB, 7200 rpm 	615084-001
	<ul style="list-style-type: none"> 250 GB, 7200 rpm 	615083-001
	<ul style="list-style-type: none"> 160 GB, 7200 rpm 	615082-001
	<ul style="list-style-type: none"> Hard Drive Hardware Kit (not illustrated, includes bracket and screws) 	615086-001
(15)	Power connector (includes cable)	616496-001
(16)	USB board	616494-001
(17)	RJ-11 connector included in Cable Kit	616502-001
(18)	Optical drive bracket included with optical drive	

Item	Description	Spare part number
(19)	Battery	
	<ul style="list-style-type: none"> 6-cell Li-Ion, 2.20 Ah, 47 Wh 	593553-001
	<ul style="list-style-type: none"> 6-cell Li-Ion, 2.55 Ah, 55 Wh 	593554-001
(20)	Optical drive (includes optical drive bezel and bracket)	
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe for use with:	
	<ul style="list-style-type: none"> Biscotti computer models 	614549-001
	<ul style="list-style-type: none"> Matte black computer models 	616482-001
	Blu-ray ROM with LightScribe DVD±R/RW SuperMulti Double-Layer Drive for use with:	
	<ul style="list-style-type: none"> Biscotti computer models 	614548-001
	<ul style="list-style-type: none"> Matte black computer models 	616480-001
(21)	Optical drive cable included in Cable Kit	616502-001
	Bluetooth module (not shown)	537921-001
	Bluetooth module cable (not shown)	605904-001
(22)	Base enclosure for use with:	
	<ul style="list-style-type: none"> Biscotti computer models with HDMI card reader, without modem 	616485-001
	<ul style="list-style-type: none"> Matte black models with HDMI card reader, without modem 	616489-001
	Rubber Kit (not illustrated, includes four rubber feet)	616499-001
	Plastics Kit	616497-001
(23)	<ul style="list-style-type: none"> Hard drive cover 	
(24)	<ul style="list-style-type: none"> Memory module cover 	

Display assembly components



Item	Description	Spare part number
(1)	Display bezel:	612102-001
(2)	Webcam module	612109-001
(3)	43.9-cm (17.3-in) high definition, Brightview, display panel (includes display panel cable)	612097-001
(4)	Display bracket (with hinges)	612104-001

Item	Description	Spare part number
(5)	Display hinge covers	612105-001
(6)	Wireless antenna (includes wireless antenna transceivers and cable)	612108-001
(7)	Microphone (includes cable)	612110-001
(8)	Display back cover (includes logo) for use with:	
	<ul style="list-style-type: none"> • Biscotti computer models 	612098-001
	<ul style="list-style-type: none"> • Matte black computer models 	612099-001
	LCD cable (not illustrated; includes webcam module cable)	612103-001
	Display screw kit (not illustrated)	612107-001
	Display rubber display kit (not illustrated, includes display bezel rubber screw covers)	612106-001

Plastics Kit



Item	Description	Spare part number
	Plastics kit	616497-001
(1)	Hard drive bay cover (includes captive screws)	
(2)	Wireless/memory module mini-card compartment cover (includes captive screw)	

Mass storage devices



Item	Description	Spare part number
(1)	Optical drive (12.7 mm, SATA, fixed, includes bezel and bracket)	
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe for use with:	
	<ul style="list-style-type: none"> Biscotti computer models 	614549-001
	<ul style="list-style-type: none"> Matte black computer models 	616482-001
	Blu-ray ROM with LightScribe DVD±R/RW SuperMulti Double-Layer Drive for use with:	
	<ul style="list-style-type: none"> Biscotti computer models 	614548-001
	<ul style="list-style-type: none"> Matte black computer models 	616480-001
(2)	Hard drive	
	<ul style="list-style-type: none"> 640 GB, 5400 rpm 	621343-001
	<ul style="list-style-type: none"> 500 GB, 7200 rpm 	615085-001
	<ul style="list-style-type: none"> 320 GB, 7200 rpm 	615084-001
	<ul style="list-style-type: none"> 250 GB, 7200 rpm 	615083-001
	<ul style="list-style-type: none"> 160 GB, 7200 rpm 	615082-001
	Hard drive hardware kit (not illustrated, includes bracket and screws)	615086-001

Miscellaneous parts

Description	Spare part number
AC adapters	
<ul style="list-style-type: none">65-W AC adapter	609939-001
<ul style="list-style-type: none">90-W AC adapter	609940-001
Power cord, AC, 3 wire, black, 1.83-m (for use with both HP G62 and Presario CQ 62 computer models) for use in:	
<ul style="list-style-type: none">Denmark	490371-081
<ul style="list-style-type: none">Europe	490371-021
<ul style="list-style-type: none">Israel	490371-BB1
<ul style="list-style-type: none">Italy	490371-061
<ul style="list-style-type: none">North America	430971-001
<ul style="list-style-type: none">Switzerland	490371-111
<ul style="list-style-type: none">the United Kingdom and Singapore	490371-031
Cable Kit	616502-001
<ul style="list-style-type: none">Hard drive connector cable	
<ul style="list-style-type: none">Optical drive connector cable	
<ul style="list-style-type: none">Power button cable	
<ul style="list-style-type: none">RJ-11 cable	
<ul style="list-style-type: none">TouchPad cable	
<ul style="list-style-type: none">USB cable	
Screw kit	616500-001
<ul style="list-style-type: none">Phillips M2.0x3.0 screw	
<ul style="list-style-type: none">Phillips M2.5x3.0 screw	
<ul style="list-style-type: none">Phillips M2.5x4.0 screw	
<ul style="list-style-type: none">Phillips M2.5x5.0 screw	
<ul style="list-style-type: none">Phillips M2.5x6.5 screw	

Sequential part number listing

Spare part number	Description
490371-001	Power cord for use in North America
490371-021	Power cord for use in Europe
490371-031	Power cord for use in the United Kingdom and Singapore
490371-061	Power cord for use in Italy
490371-081	Power cord for use in Denmark
490371-111	Power cord for use in Switzerland
490371-BB1	Power cord for use in Israel
510100-001	56K V.92 data/fax modem (select models only)
518436-001	Atheros AR9285 802.11b/g/n 1x1 for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Zaire, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Martinique, Nether Antilles, French Guiana, Aruba, British Virgin Islands, Bermuda, Syria, Guadeloupe, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Timor (East), Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, United Arab Emirates, United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe
537921-001	Bluetooth module
582562-001	Broadcom 4312G 802.11b/g WiFi Adapter for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States
587259-001	Intel Core i7-620M Processor (4M cache, 2.66 GHz, SC turbo up to 3.33 GHz)

Spare part number	Description
593530-001	Intel Centrino Wireless-N 1000 802.11b/g/n 1x2 WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Canada, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guam, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, the U.S. Virgin Islands, the United States, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
593533-001	Realtek RTL8191SE 802.11b/g/n 1x1 WiFi Adapter
593553-001	Battery, 6-cell, 2.20 Ah, 47 Wh
593554-001	Battery, 6-cell, 2.55 Ah, 55 Wh
593836-001	Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter
594187-001	Intel Arrandale i5-520M Processor (2.4 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W
594188-001	Intel Arrandale i5-540M Processor (2.53 GHz, 3 MB total L3 cache, 1066 MHz)—Dual core 35 W
597623-001	Intel Arrandale i3-350 Processor (2.26 GHz, 3 MB L3 cache, 1066 MHz)—Dual Core 35 W
597624-001	Intel Arrandale i5-430 Processor (2.26 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W
598856-002	2 GB memory module (1066 MHz, DDR3)
598859-002	1 GB memory module (1066 MHz, DDR3)
602992-001	Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready)
605902-001	HD 5430/512 MB discrete system board with card reader
605903-001	HD UMA system board with card reader
605904-001	Bluetooth module cable
606013-001	Fan/heat sink assembly (includes replacement thermal material) for use with UMA systems
606014-001	Fan/heat sink assembly (includes replacement thermal material) for use with discrete systems
608340-001	HD 5430/1 GB discrete system board with card reader
609939-001	65-W AC adapter

Spare part number	Description
609940-001	90-W AC adapter
612094-001	43.9-cm (17.3-in) HD, light-emitting diode display assembly for biscotti computer models
612095-001	43.9-cm (17.3-in) HD, light-emitting diode display assembly for matte black computer models
612097-001	High Definition display panel (includes display panel and backlight cables)
612098-001	Display back cover for use with biscotti computer models
612099-001	Display back cover for use with matte black computer models
612102-001	Display Bezel
612103-001	LCD cable (includes webcam module cable)
612104-001	Display hinge kit (includes left and right display hinges)
612105-001	Display hinge covers
612106-001	Display rubber kit
612107-001	Display screw kit
612108-001	Wireless antenna kit (includes wireless antenna transceivers and cable)
612109-001	Webcam module
612110-001	Microphone (includes cable)
613584-001	Intel Arrandale i3-370 Processor (2.4 GHz, 3 MB L3 cache, 1066 MHz)—Dual Core 35 W
613585-001	Intel Arrandale i5-450 Processor (2.4 GHz, 3 MB L3 cache, 1066 MHz)—Dual Core 35 W
613586-001	Pentium Arrandale P6000 Processor (1.86 GHz, 3 MB, L3 cache 100 MHz)
614548-001	Blu-ray ROM with LightScribe DVD±R/RW SuperMulti Double-Layer Drive for use with biscotti computer models
614549-001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe for use with biscotti computer models
615082-001	160 GB, 7200 rpm hard drive
615083-001	250 GB, 7200 rpm hard drive
615084-001	320 GB, 7200 rpm hard drive
615085-001	500 GB, 7200 rpm hard drive
615086-001	Hard Drive Hardware Kit (includes bracket and screws)
615850-031	Keyboard for use in the United Kingdom (includes keyboard cable)
615850-041	Keyboard for use in Germany (includes keyboard cable)
615850-051	Keyboard for use in France (includes keyboard cable)
615850-061	Keyboard for use in Italy (includes keyboard cable)
615850-071	Keyboard for use in Spain (includes keyboard cable)
615850-131	Keyboard for use in Portugal (includes keyboard cable)
615850-141	Keyboard for use in Turkey (includes keyboard cable)
615850-171	Keyboard for use in Saudi Arabia (includes keyboard cable)

Spare part number	Description
615850–211	Keyboard for use in Hungary (includes keyboard cable)
615850–221	Keyboard for use in Czech Republic (includes keyboard cable)
615850–251	Keyboard for use in Russia (includes keyboard cable)
615850–A41	Keyboard for use in Belgium (includes keyboard cable)
615850–B31	Keyboard for use in international use (includes keyboard cable)
615850–BA1	Keyboard for use in Adriatics (includes keyboard cable)
615850–BB1	Keyboard for use in Israel (includes keyboard cable)
615850–BG1	Keyboard for use in Switzerland (includes keyboard cable)
615850–DH1	Keyboard for use in Norway (includes keyboard cable)
615850–DJ1	Keyboard for use in Greece (includes keyboard cable)
616480–001	Blu-ray ROM with LightScribe DVD±R/RW SuperMulti Double-Layer Drive for use with matte black computer models
616482–001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe for use with matte black computer models
616485–001	Base enclosure with HDMI card reader and without modem for biscotti computer models
616489–001	Base enclosure with HDMI card reader and without modem for matte black computer models
616490–001	Top cover (includes TouchPad board) for use in biscotti computer models
616492–001	Top cover (includes TouchPad board) for use in matte black computer models
616493–001	Touchpad button board (includes bracket and cable)
616494–001	USB board
616495–001	Power button board
616496–001	Power connector (includes cable)
616497–001	Plastics kit
616498–001	Speaker assembly (includes cable)
616499–001	Rubber kit (includes four rubber feet)
616500–001	Screw kit
616501–001	RTC battery
616502–001	Cable kit
621343–001	640 GB, 5400 rpm hard drive

4 Removal and replacement procedures

Preliminary replacement requirements

Tools required

The following tools are needed to complete the removal and replacement procedures:

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

Service considerations

Before disassembly or assembly procedures, review and adhere to all service considerations.

 **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

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 a 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 might have occurred.

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

△ **CAUTION:** To prevent damage to the computer when removing or installing internal components, observe these precautions:

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

Use nonmagnetic tools.

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 strips 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 plastic	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

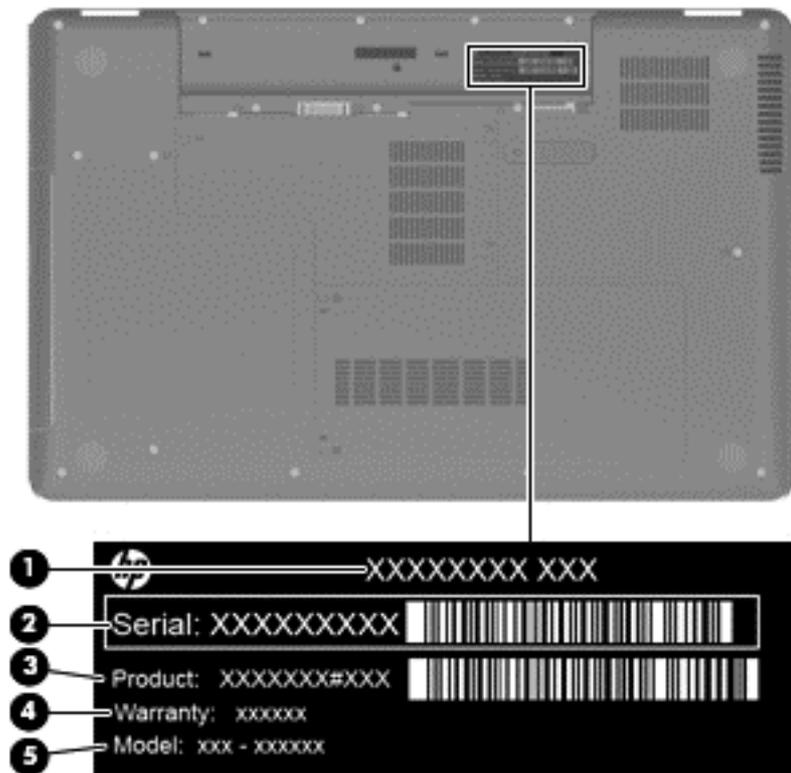
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 75 screws, in 12 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Serial number

The serial number label, located in the battery bay of the computer, provides important information that you may need when contacting technical support.

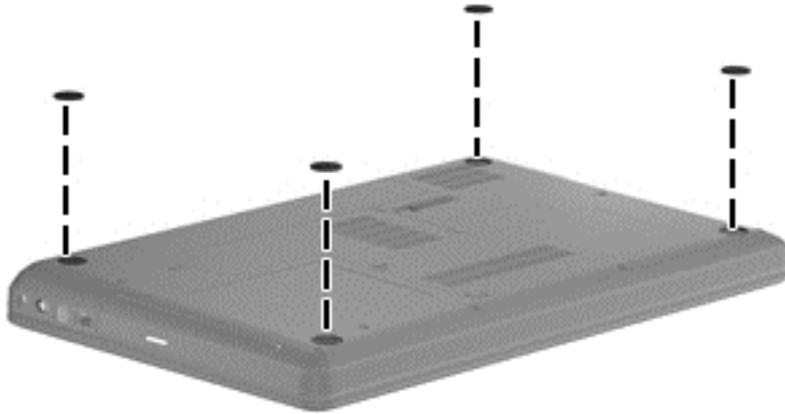


Component	Description
(1) Product name	The name affixed to the front of the computer.
(2) Serial number (s/n)	An alphanumeric identifier that is unique to each product.
(3) Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
(4) Warranty period	The duration of the warranty period for the computer.
(5) Model description	An alphanumeric identifier used to locate documents, drivers, and support for the computer.

Computer feet

Description	Spare part number
Rubber Feet Kit	616499-001

The computer feet are adhesive-backed rubber pads. The feet attach to the base enclosure in the locations illustrated below.



Battery

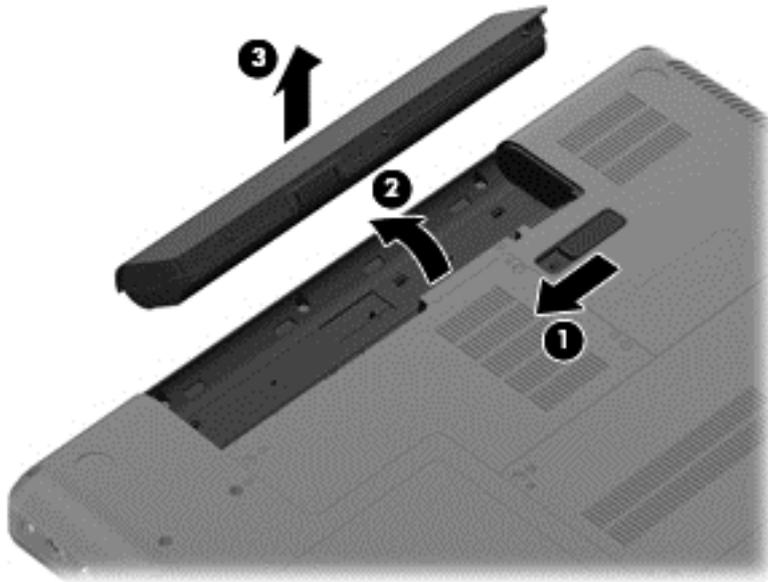
Description	Spare part number
6 cell, 2.20 Ah, 47 Wh	593553-001
6 cell, 2.55 Ah, 55 Wh	593554-001

Before disassembling the computer:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.

Remove the battery:

1. Turn the computer upside down on a flat surface.
2. Slide the battery release latch **(1)** to release the battery.
3. Pivot the battery **(2)** upward and lift it out of the computer **(3)**.



To insert the battery, insert the rear edge of the battery into the battery bay and pivot the front edge downward until the battery is seated. The battery release latch automatically locks the battery into place.

Hard drive

 **NOTE:** The hard drive spare part kit includes a hard drive bracket and hard drive connector. The hard drive bracket and hard drive connector, as well as the hard drive bracket screws, are also available in the Hard Drive Hardware Kit.

Description	Spare part number
640 GB, 5400 rpm	621343-001
500 GB, 7200 rpm	615085-001
320 GB, 7200 rpm	615084-001
250 GB, 7200 rpm	615083-001
160 GB, 7200 rpm	615082-001
Hard drive hardware kit (not illustrated, includes connector, bracket, and screws)	615086-001

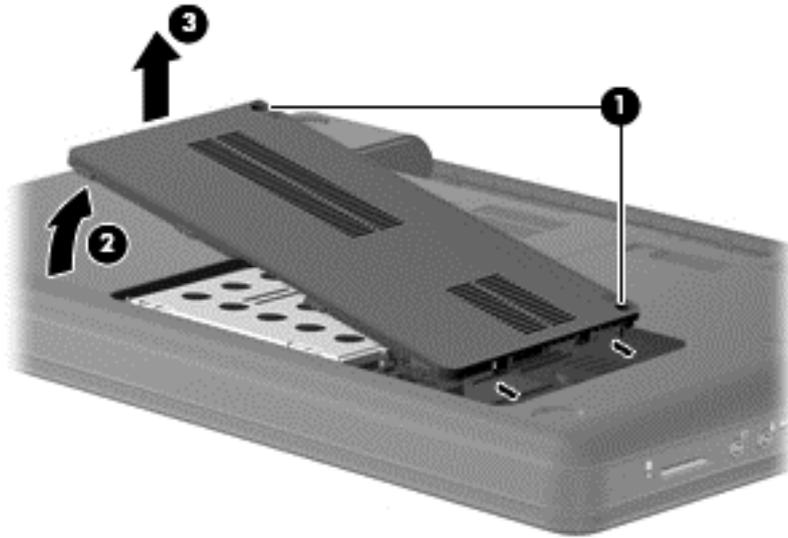
Before removing the hard drive:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).

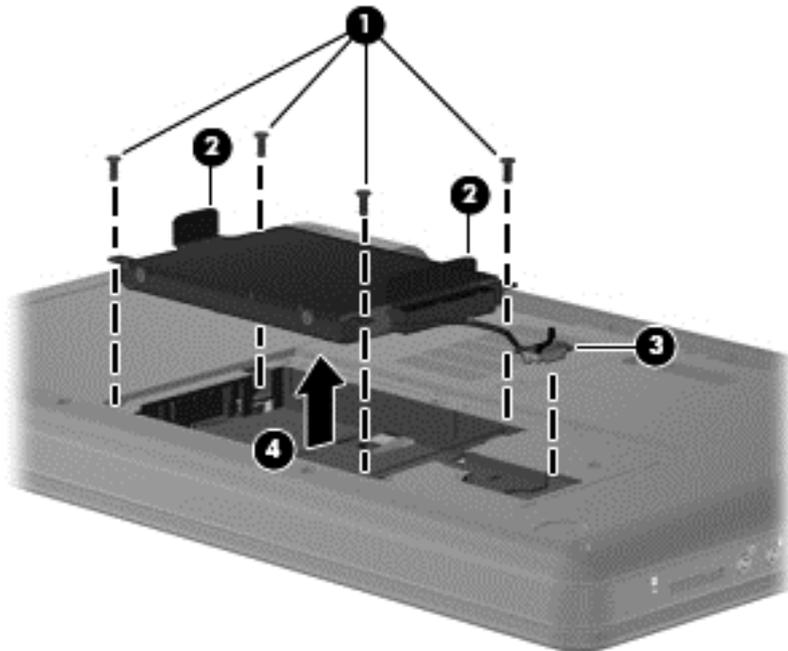
Remove the hard drive:

1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.5×6.0 captive screws **(1)** that secure the hard drive cover to the computer.

3. Lift the left side of the hard drive cover (2), swing it forward, and remove the cover (3). The hard drive cover is included in the plastics kit, spare part number 616497-001.

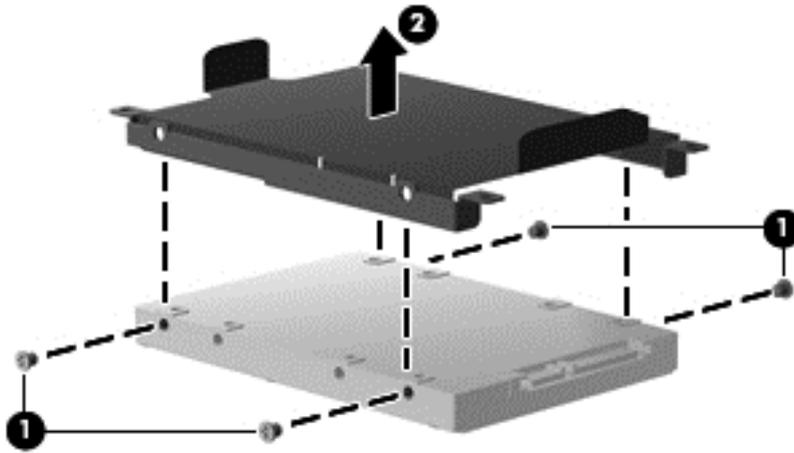


4. Remove the four Phillips PM2.5x5.0 screws (1) that secure the hard drive to the computer. Use the mylar tabs (2) to lift up the hard drive. Disconnect the hard drive cable from the system board (3) and lift the hard drive out (4) of the hard drive bay.



5. To replace the hard drive bracket, remove the four Phillips PM3.0x4.0 screws (1) that secure the hard drive bracket to the hard drive

6. Grasp the two attached Mylar tabs and pull the bracket straight up to remove it from the hard drive (2).



Reverse this procedure to install the hard drive.

Optical drive

 **NOTE:** The optical drive spare part kit includes an optical drive bezel and optical drive bracket.

Description	Spare part number
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe for use with:	
<ul style="list-style-type: none">Biscotti computer models	614549-001
<ul style="list-style-type: none">Matte black computer models	616482-001
Blu-ray ROM with LightScribe DVD±R/RW SuperMulti Double-Layer Drive for use with:	
<ul style="list-style-type: none">Biscotti computer models	614548-001
<ul style="list-style-type: none">Matte black computer models	616480-001

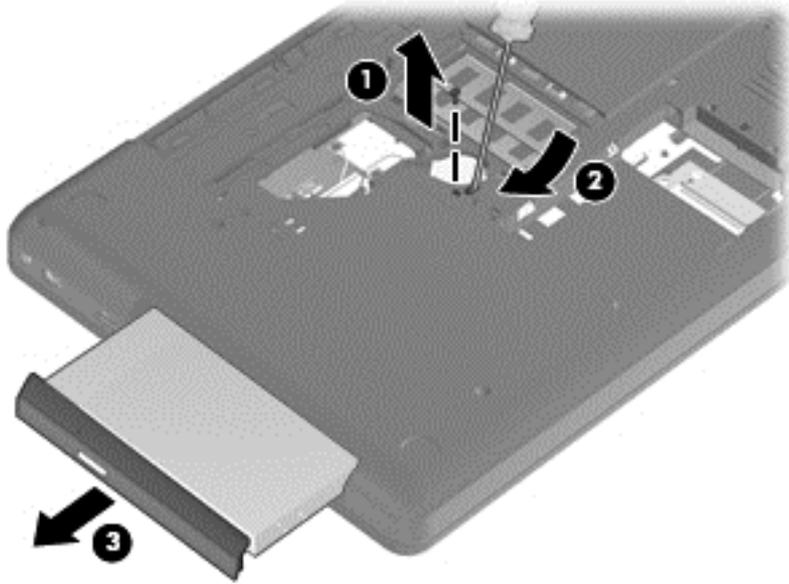
Before removing the optical drive:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the wireless/memory module compartment cover (see [Memory module on page 46](#)).

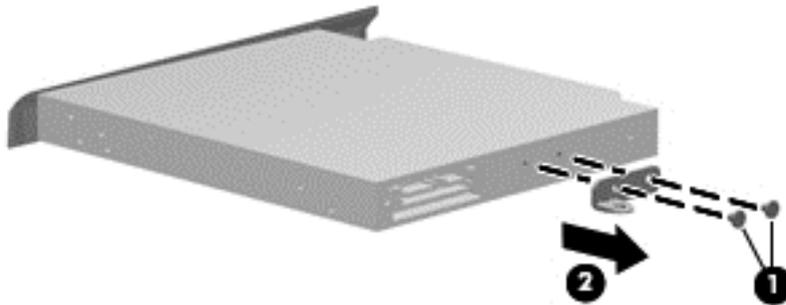
Remove the optical drive:

1. Position the computer upside down with the front toward you.
2. Remove the Phillips PM2.5x5.0 screw **(1)** that is identified by the optical disk icon.
3. Insert a thin tool, such as a screw driver **(2)**, into the release access slot in the hard drive bay.

4. Grasp the bezel and slide the optical drive out of the computer (3).



5. To replace the optical drive bracket, position the optical drive with the optical drive bracket toward you.
6. Remove the two Phillips PM2.0×3.0 screws (1) that secure the optical drive bracket to the optical drive.
7. Remove the optical drive bracket (2).



Reverse the above procedure to reassemble and install the optical drive.

WLAN module

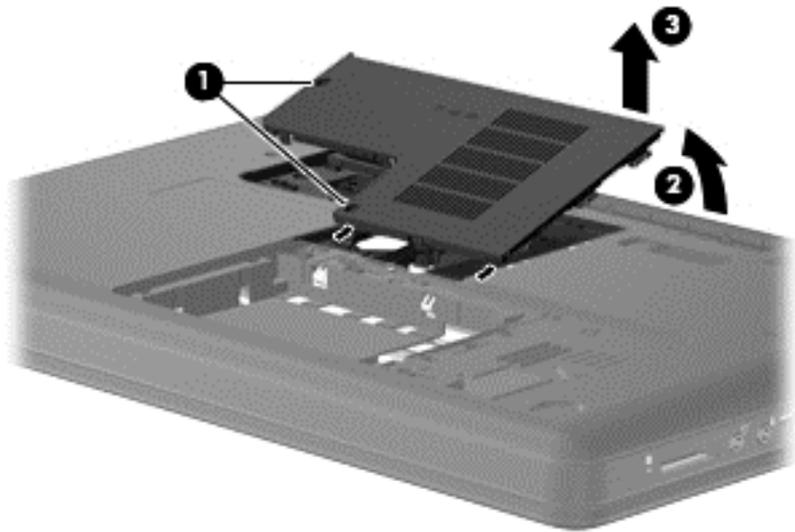
Description	Spare part number
Atheros AR9285 802.11b/g/n 1x1 WiFi Adapter	518436-001
Intel Centrino Wireless-N 1000 802.11b/g/n 1x2 WLAN module	593530-001
Realtek RTL8191SE 802.11b/g/n 1x1 WiFi Adapter	593533-001
Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter	593836-001

Before removing the WLAN module:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).

Remove the WLAN module:

1. Turn the computer upside down with the front toward you.
2. Loosen the two Phillips PM2.5×6.0 captive screws (1) that secure the wireless/memory module compartment cover.
3. Lift the back side of the memory module cover (2).
4. Lift the cover off the computer (3). The wireless/memory module compartment cover is included in the plastics kit, spare part number 616497-001.

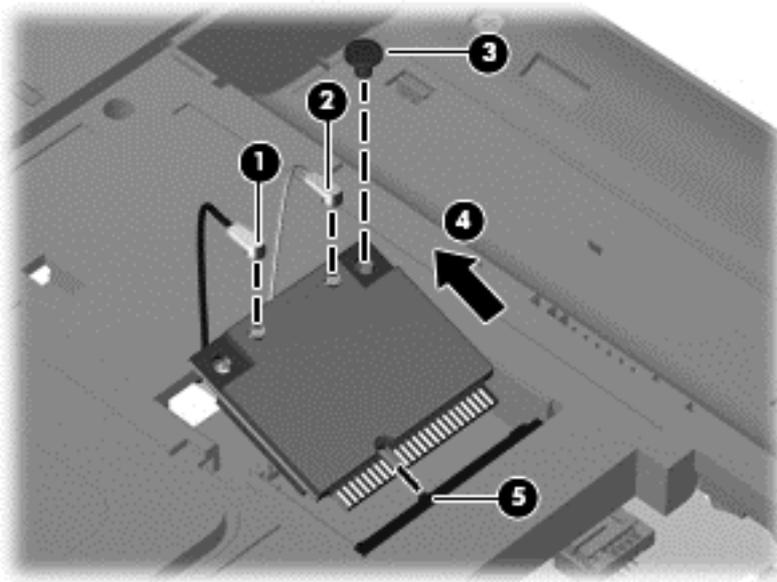


5. Disconnect the main antenna cable (1) and the auxiliary antenna cable (2) from the wireless module.

6. Remove the Phillips PM2.0×3.0 screw (3) that secures the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)
7. Remove the WLAN module (4) by pulling it away from the slot at an angle.

△ **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 computer functionality, and then contact technical support through Help and Support.

📝 **NOTE:** WLAN modules are designed with a notch (5) to prevent incorrect insertion into the WLAN module slot.



Reverse this procedure to install a WLAN module.

Memory module

Description	Spare part number
1 GB, 1066 MHz DDR3	598859-002
2 GB, 1066 MHz DDR3	598856-002

Before removing the memory module:

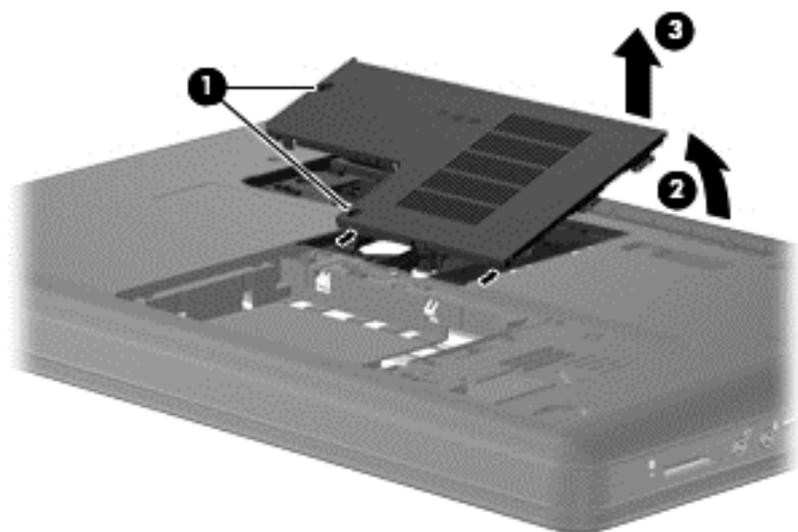
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).

Remove the memory module:

1. Turn the computer upside down with the front toward you.
2. Loosen the two Phillips PM2.5×6.0 captive screws **(1)** that secure the wireless/memory module compartment cover to the computer.
3. Lift the back side of the memory module cover **(2)**
4. Lift the cover off the computer **(3)**. The wireless/memory module compartment cover is included in the plastics kit, spare part number 616497-001.



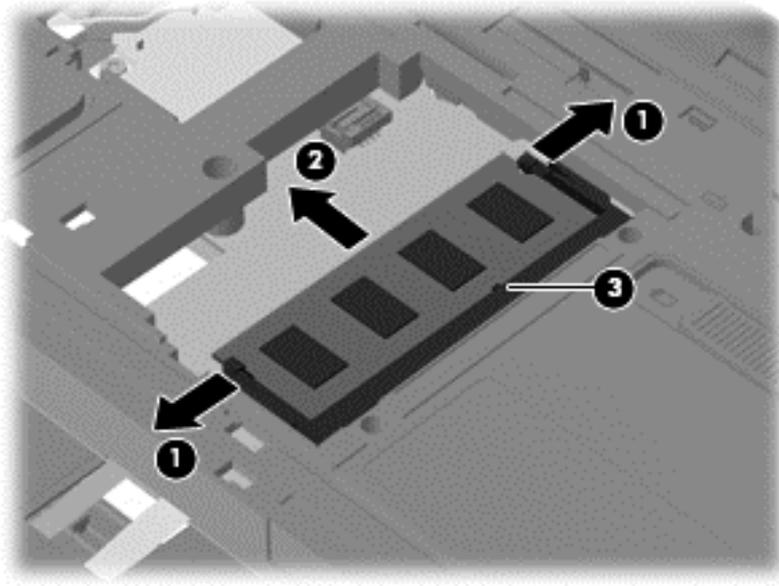
NOTE: Small tabs hold the cover in place. Firmly pull up on the cover to release the tabs.



5. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The edge of the module opposite the slot rises away from the computer.)

6. Remove the module **(2)** by pulling it away from the slot at an angle.

 **NOTE:** Memory modules are designed with a notch **(3)** to prevent incorrect insertion into the memory module slot.



Reverse this procedure to install a memory module.

RTC battery

Description	Spare part number
RTC battery	616501-001

Before removing the RTC battery:

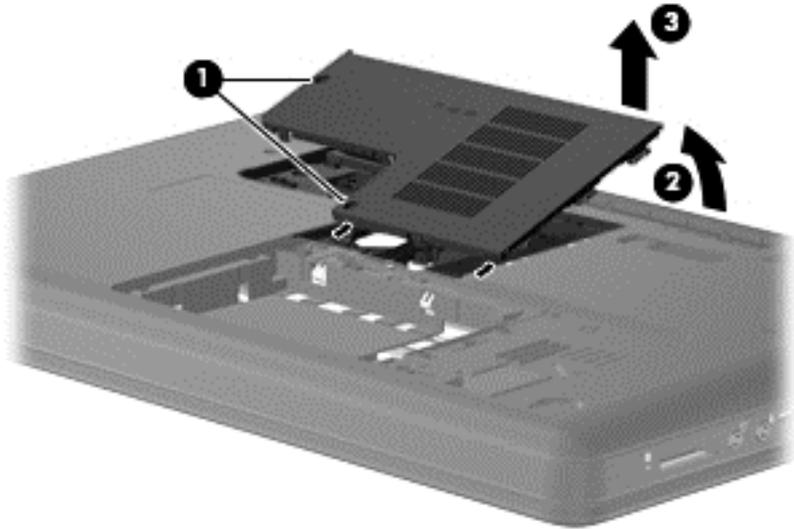
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).

Remove the RTC battery:

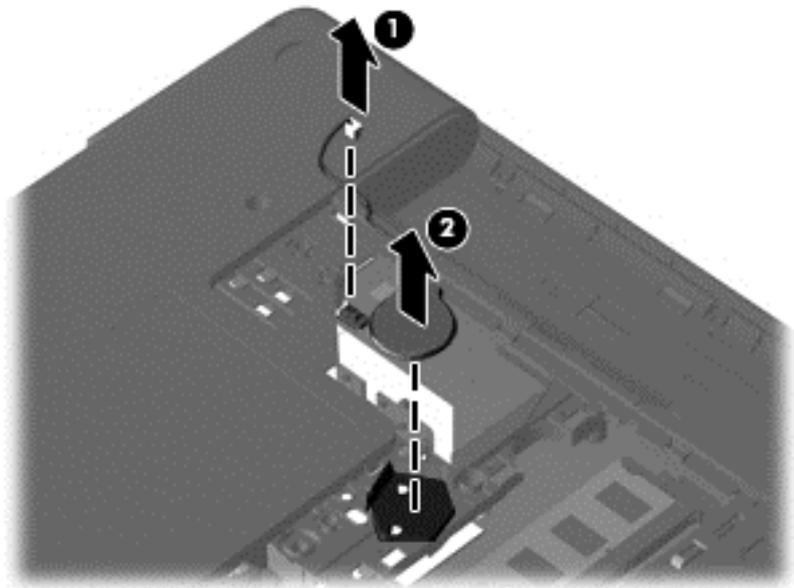
1. Turn the computer upside down with the front toward you.
2. Loosen the two Phillips PM2.5×6.0 captive screws **(1)** that secure the wireless/memory module compartment cover to the computer.
3. Lift the back side of the memory module cover **(2)**

4. Lift the cover off the computer (3). The wireless/memory module compartment cover is included in the plastics kit, spare part number 616497-001.

 **NOTE:** Small tabs hold the cover in place. Firmly pull up on the cover to release the tabs.



5. Unplug the RTC battery from the system board (1).
6. Use a sharp, non-conductive, tool to release the RTC battery from the adhesive material that secures the RTC battery to the system board..
7. Lift the battery (2) out of the computer.



Reverse this procedure to install the RTC battery.

Keyboard

Description	Spare part number
For use in Adriatics	615850-BA1
For use in Belgium	615850-A41
For use in the Czech Republic	615850-221
For use in France	615850-051
For use in Germany	615850-041
For use in Greece	615850-DJ1
For use in Hungary	615850-211
For International use	615850-B31
For use in Israel	615850-BB1
For use in Italy	615850-061
For use in Norway	615850-DH1
For use in Portugal	615850-131
For use in Russia	615850-251
For use in Saudi Arabia	615850-171
For use in Spain	615850-071
For use in Switzerland	615850-BG1
For use in Turkey	615850-141
For use in the United Kingdom	615850-031

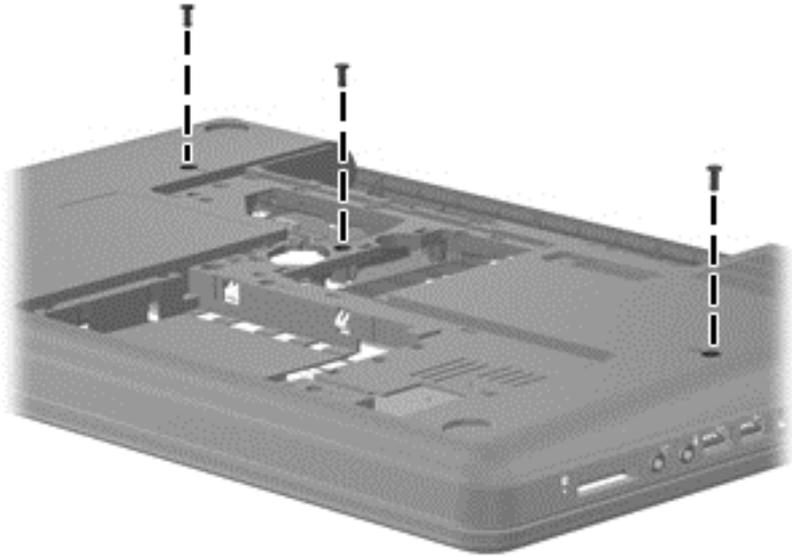
Before removing the keyboard:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the hard drive (see [Hard drive on page 39](#)).
6. Remove the wireless/memory module compartment cover (see [WLAN module on page 44](#)).

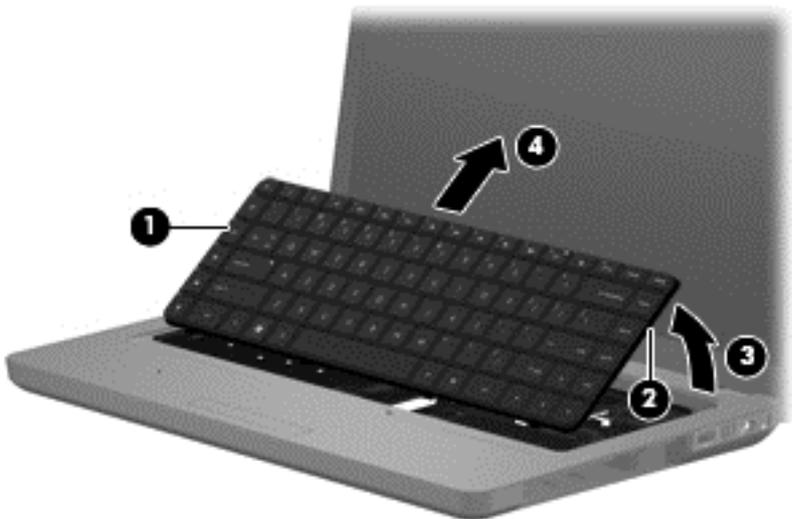
Remove the keyboard:

1. Turn the computer upside down with the front toward you.

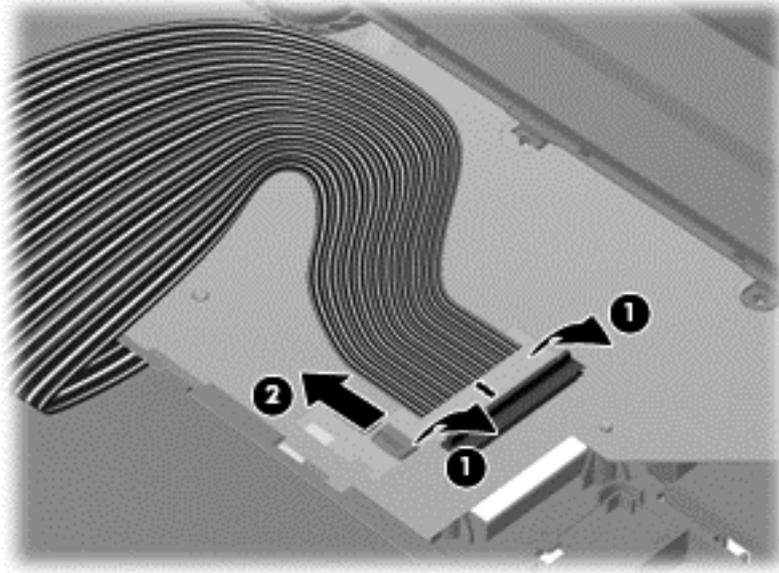
2. Remove the three Phillips PM2.5×5.0 screws that secure the keyboard to the computer.



3. Turn the computer display-side up with the front toward you.
4. Open the computer as far as possible.
5. Release the tabs along the left (1) and right (2) edges of the keyboard using a thin flat-bladed screwdriver.
6. Lift the rear edge of the keyboard (3), and set the keyboard back towards the display (4).



7. Release the zero insertion force (ZIF) connector (1) to which the keyboard cable is attached and disconnect the keyboard cable (2) from the system board.



8. Remove the keyboard.

Reverse this procedure to install the keyboard.

Top cover

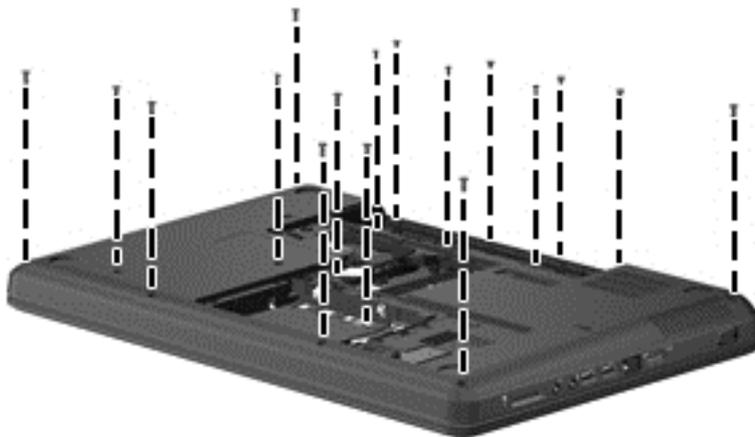
Description	Spare part number
For use with biscotti computer models	616490-001
For use with matte black computer models	616492-001

Before removing the switch cover:

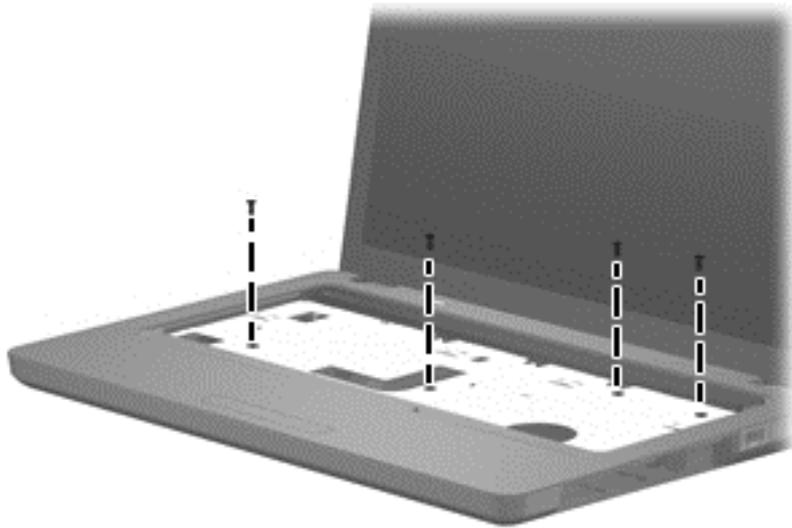
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting AC adapter from the computer.
4. Remove the following components:
 - a. Battery (see [Battery on page 38](#))
 - b. Hard drive (See [Hard drive on page 39](#))
 - c. Optical drive (see [Optical drive on page 42](#))
 - d. WLAN module (see [WLAN module on page 44](#))
 - e. Memory module (see [Memory module on page 46](#))
 - f. RTC battery (see [RTC battery on page 47](#))
 - g. Keyboard (see [Keyboard on page 49](#))

Remove the top cover:

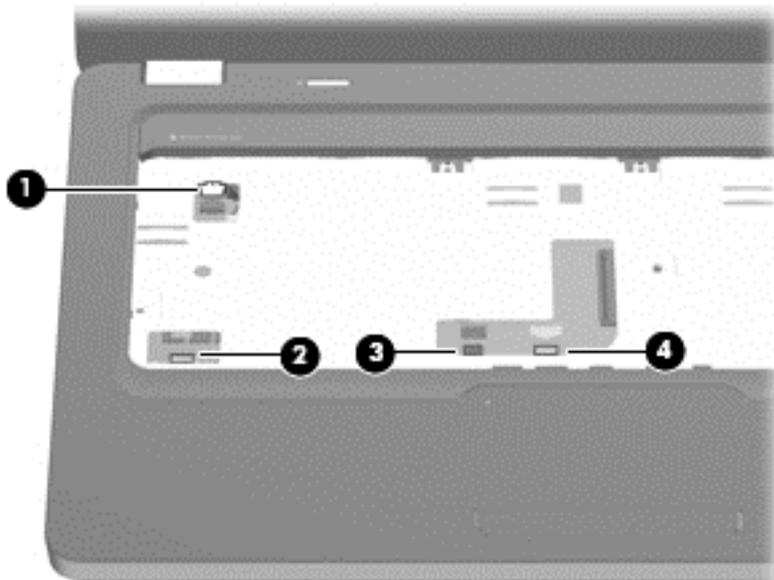
1. Turn the computer upside down with the front toward you.
2. Remove four Phillips PM2.5x3 and three Phillips PM2.5x6.5 screws in the battery bay, and remove ten Phillips PM2.5x6.5 screws on the base enclosure. The top cover screws are identified by a triangle icon embossed on the base enclosure.



3. Turn the computer display-side up with the front toward you.
4. Open the computer as far as possible.
5. Remove the four Phillips PM2.5×6.0 screw that secures the top cover to the computer.



6. Release the power button ZIF connector (1), speaker cable (2), touchpad ZIF connector (3), and touchpad button ZIF connector (4).



7. Lift the rear edge of the top cover (1) until the top cover disengages from the base enclosure. Remove the top cover (2).



 **NOTE:** The TouchPad is glued to the top cover and is included with the top cover spare part.

Reverse this procedure to install the switch cover.

Speaker assembly

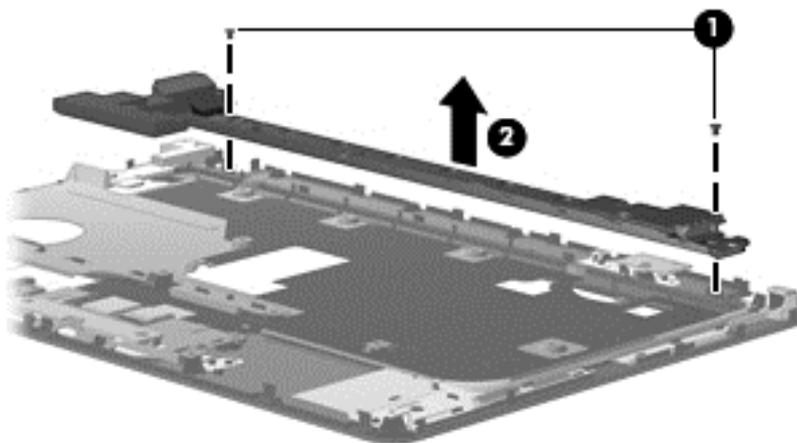
Description	Spare part number
Speaker assembly (includes cable)	616498-001

Before removing the speaker assembly:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. Keyboard (see [Keyboard on page 49](#))
 - d. Top cover (see [Top cover on page 52](#))

Remove the speaker assembly:

1. Turn the top cover upside down.
2. Remove the two Phillips PM2.5×3.0 screws (1) that secure the speaker assembly to the top cover.
3. Lift up and remove the speakers (2).



Reverse this procedure to install the speaker assembly.

Power button board

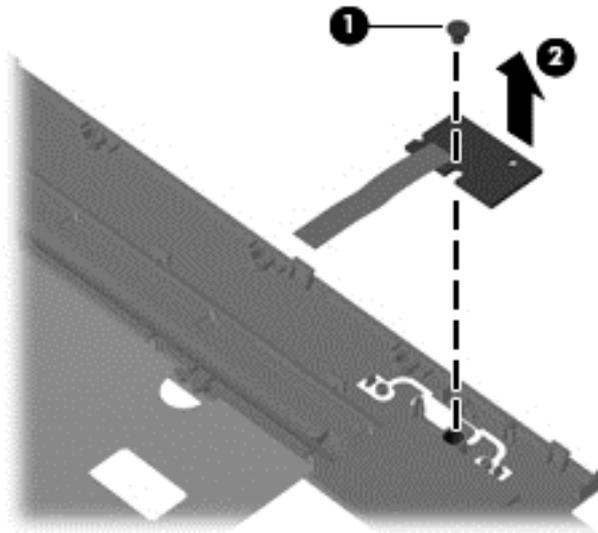
Description	Spare part number
Power button board	616495-001

Before removing the power button board:

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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. Keyboard (see [Keyboard on page 49](#))
 - d. Top cover (see [Top cover on page 52](#))

Remove the power button board:

1. Turn the top cover upside down with the rear edge toward you.
2. Remove the Phillips PM2.0×3.0 screw (1) that secures the power button board to the top cover.
3. Lift up and remove the power button board (2).



Reverse this procedure to install the power button board.

TouchPad button board

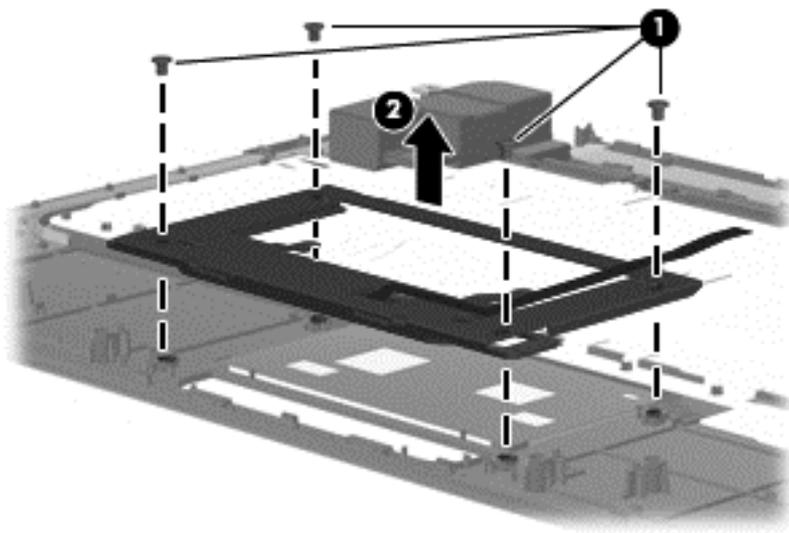
Description	Spare part number
Touchpad button board (includes bracket and cable)	616493-001

Before removing the TouchPad button board:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. Keyboard (see [Keyboard on page 49](#))
 - d. Top cover (see [Top cover on page 52](#))

Remove the TouchPad button board:

1. Turn the top cover upside down with the front toward you.
2. Remove the four Phillips PM2.0×3.0 screws (1) that secure the TouchPad bracket to the top cover.
3. Lift up and remove the TouchPad button board bracket (2). The TouchPad button is fused on the TouchPad button board bracket.



Reverse the above procedure to reassemble and install the TouchPad button board.

Modem module

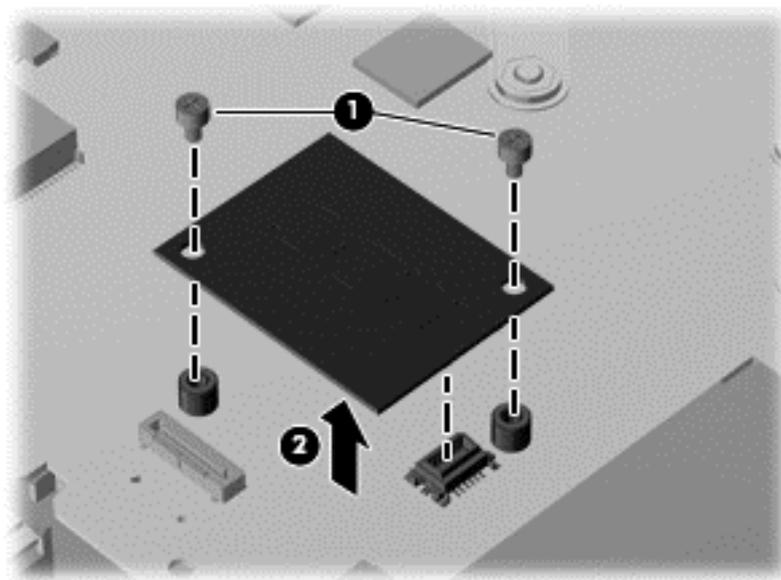
Description	Spare part number
56K V.92 data/fax modem (select models only)	510100-001

Before removing the modem module:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. Keyboard (see [Keyboard on page 49](#))
 - d. Top cover (see [Top cover on page 52](#))

Remove the modem module:

1. Turn the computer upright with the front toward you.
2. Remove the two Phillips PM2.0×3.0 screws (1) that secure the modem module to the system board.
3. Lift up on the front of the modem module (2) to disconnect it from the system board.



Reverse the above procedure to install the modem module, and be sure that the connector on the bottom of the modem module connects firmly into the system board.

USB board

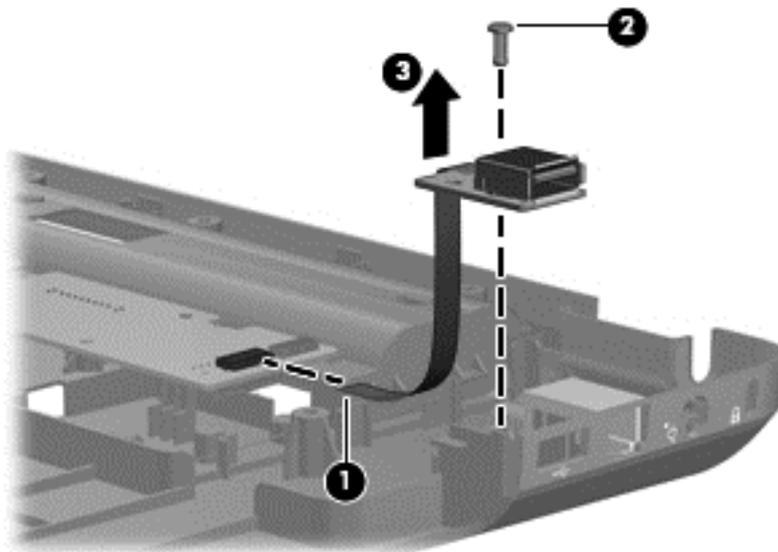
Description	Spare part number
USB board	616494-001

Before removing the USB board:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. Keyboard (see [Keyboard on page 49](#))
 - d. Top cover (see [Top cover on page 52](#))

Remove the USB board:

1. Position the computer upright with the right side toward you.
2. Disconnect the USB board cable (1) from the system board.
3. Remove the Phillips PM2.5×6.0 screw (2) that secures the USB board to the base enclosure.
4. Lift the USB board (3) straight up to remove it from the computer. The USB cable is available with the cable kit using spare part number 616502-001



Reverse this procedure to install the USB board.

Power connector

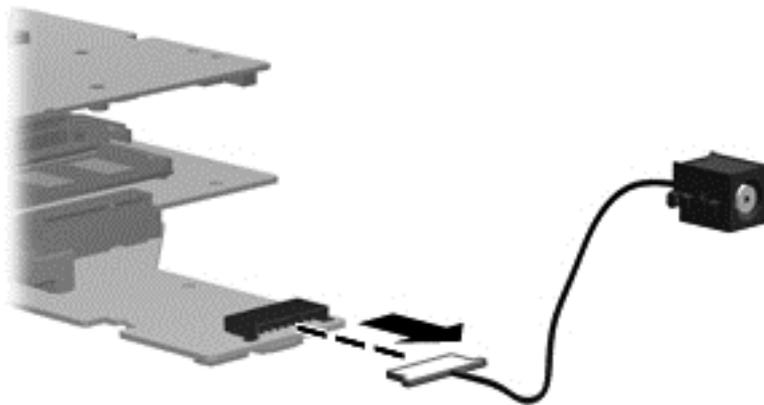
Description	Spare part number
Power connector (includes cable)	616496-001

Before removing the power connector cable:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. Keyboard (see [Keyboard on page 49](#))
 - d. Top cover (see [Top cover on page 52](#))

Remove the power connector cable:

1. Turn the computer upright with the right side toward you.
2. Disconnect the power connector cable **(1)** from the system board.
3. Lift the power connector **(2)** from the clips built into the base enclosure.



Reverse this procedure to install the power connector.

Bluetooth module

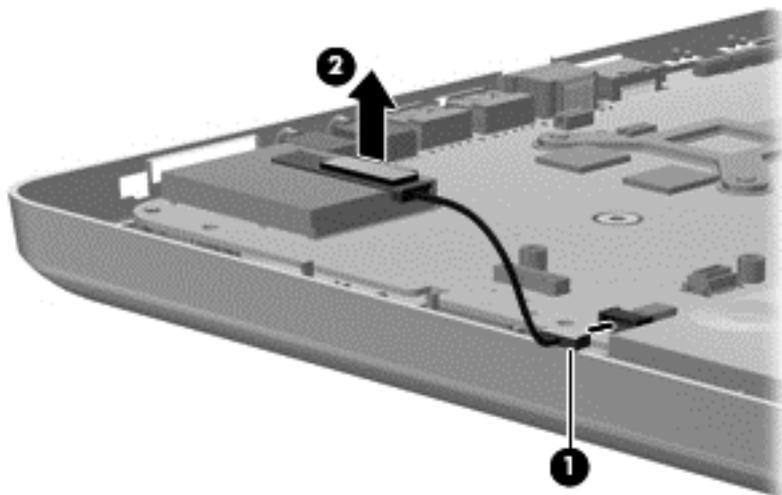
Description	Spare part number
Bluetooth module	537921-001
Bluetooth module cable	605904-001

Before removing the Bluetooth module:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, 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 disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. Keyboard (see [Keyboard on page 49](#))
 - d. Top cover (see [Top cover on page 52](#))

Remove the power connector cable:

1. Turn the computer upright with the right side toward you.
2. Disconnect the Bluetooth module cable (1) from the system board.
3. Remove the Bluetooth module (2).



Reverse this procedure to install the Bluetooth module.

Display assembly

Description	Spare part number
39.6-cm (15.6-in) High Definition (HD), light-emitting diode (LED) display assembly for use in:	
<ul style="list-style-type: none">Biscotti computer models	612094-001
<ul style="list-style-type: none">Matte black computer models	612095-001

Before removing the display assembly:

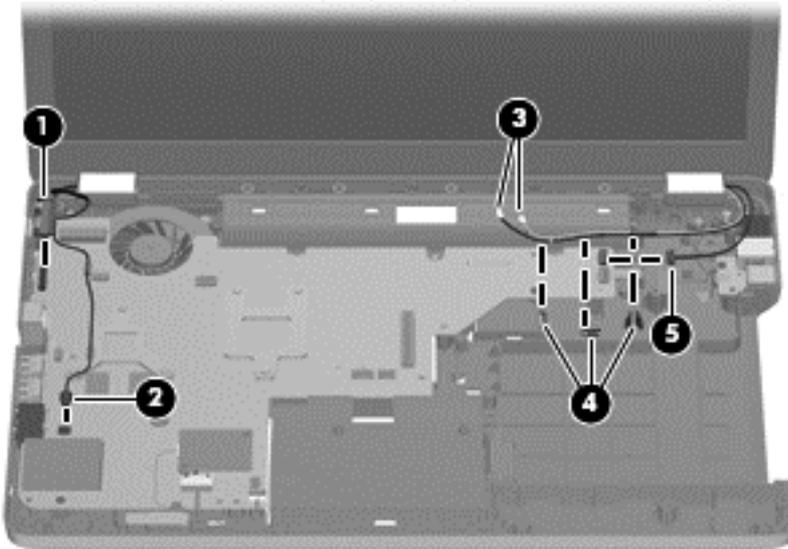
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [WLAN module on page 44](#)).
6. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. Keyboard (see [Keyboard on page 49](#))
 - d. Top cover (see [Top cover on page 52](#))

Remove the display assembly:

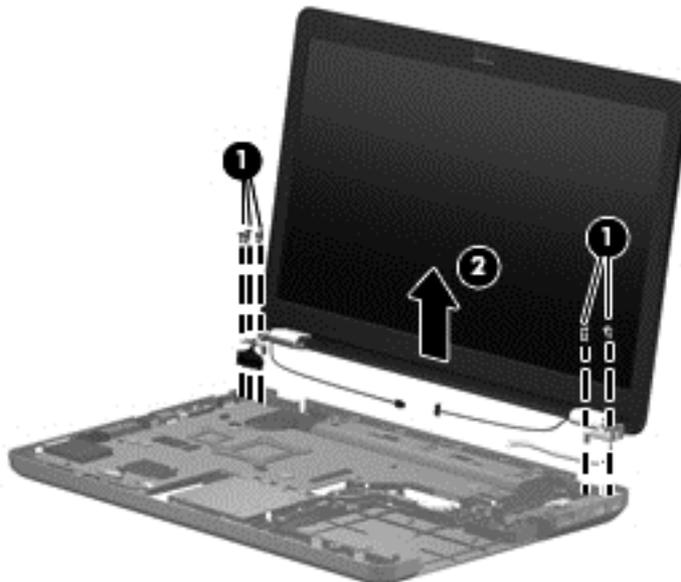
1. Turn the computer display-side up, with the front toward you.
2. Open the display as far as possible.
3. Disconnect the display panel cable **(1)** and the microphone cable **(2)** from the system board and remove it from its routing channel.
4. Pull the antenna cables through the opening in the top cover **(3)** and disengage the cables from the clip in the routing channel leading to the display hinge **(4)**.

5. Disconnect the webcam cable (5) from the system board and release it from the clips that attach it to the system board.

△ **CAUTION:** Support the display assembly when removing the display screws in the following steps. Failure to support the display assembly can result in damage to the assembly and other components.



6. Remove the five black Phillips PM2.5×7.0 screws (1) that secure the display assembly to the computer.
7. Lift the display panel (2) straight up to remove it.



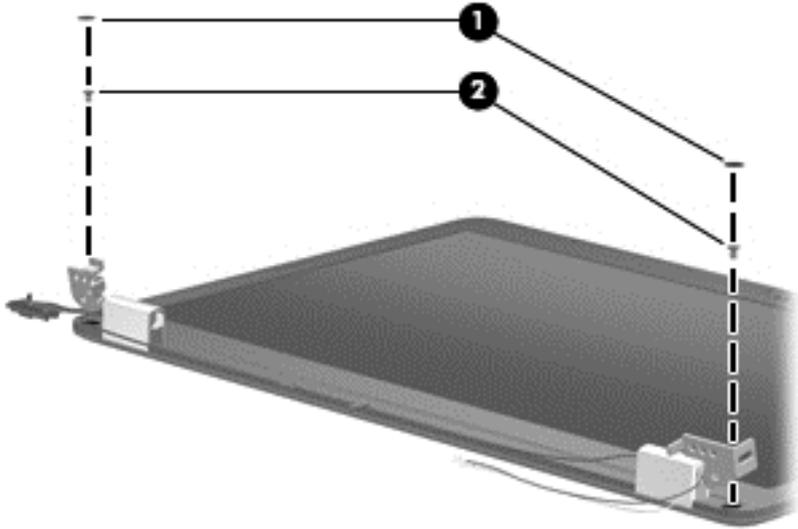
Reverse this procedure to install the display assembly.

8. To replace any of the display assembly internal components, remove the following screw covers and screws:

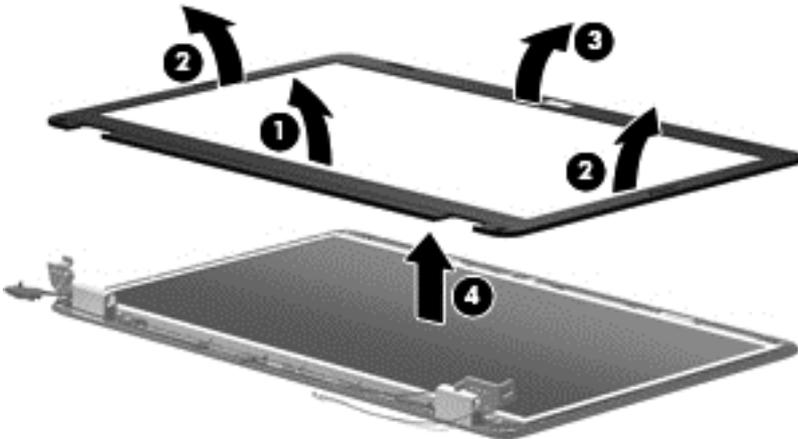
- (1) Two mylar screw covers on the display bezel bottom edge

- (2) Two Phillips PM2.5×4.0 screws

The display screw covers are included in the display rubber kit, spare part number 612106-001.



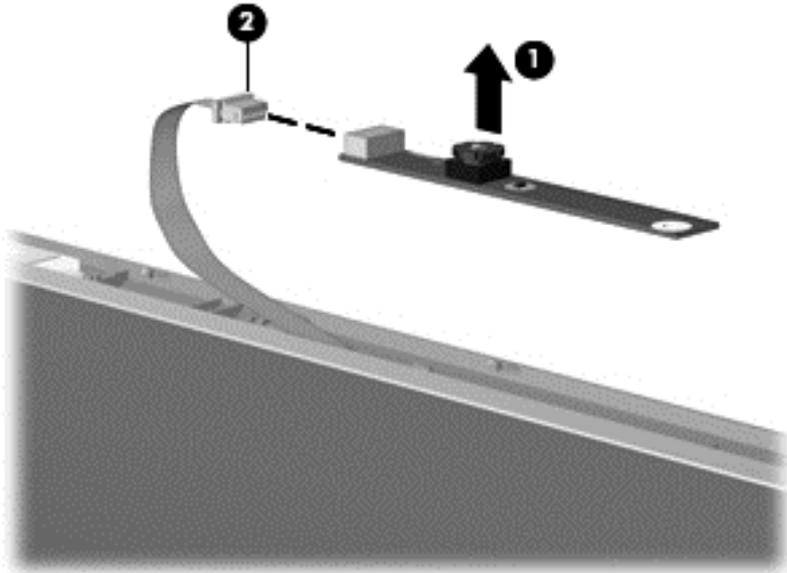
9. Flex the inside edge of the top (1), the left and right sides (2), and the bottom (3) of the display bezel until the bezel disengages from the display back cover.
10. Remove the display bezel (4).



Reverse this procedure to install the display bezel.

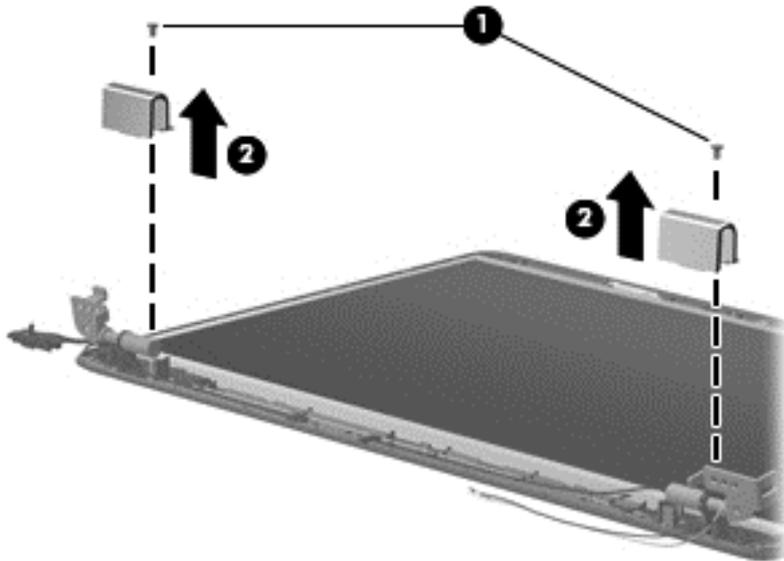
11. To replace the webcam module (select models only), lift the webcam module as far from the display enclosure as the webcam module cable allows.

12. Disconnect the webcam module cable (1) from the webcam module, and remove the webcam module (2). The webcam module is available using spare part number 612109-001.



Reverse this procedure to install the webcam module.

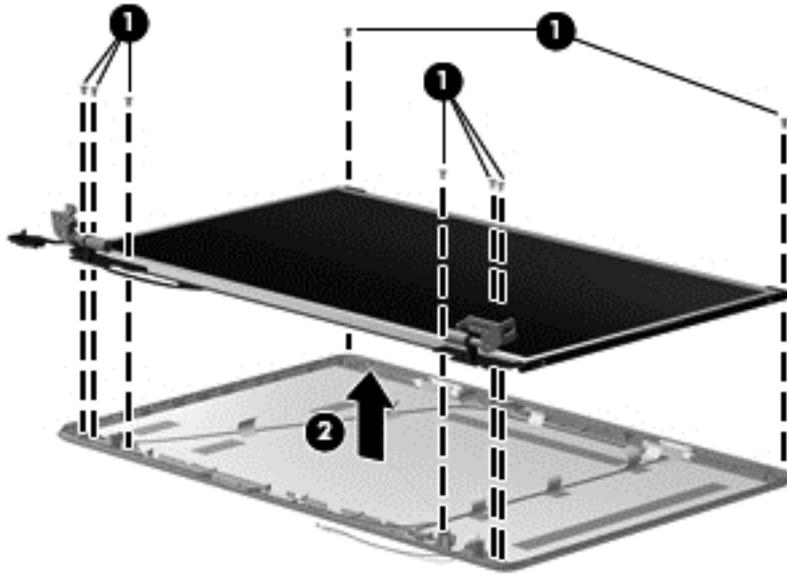
13. To replace the display hinge covers, remove the two Phillips PM2.5×6.0 screws (1) that secure each hinge to the display enclosure.
14. Remove the display hinge covers (2). The display hinge covers are available using spare part number 612105-001.



Reverse this procedure to install the display hinge covers.

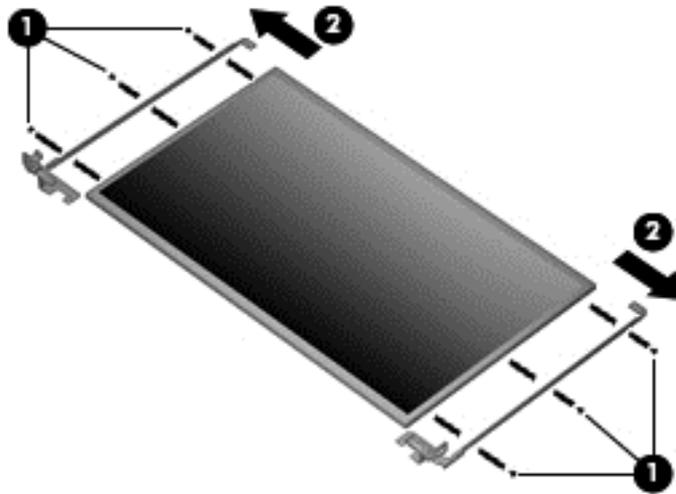
15. To replace the display panel, remove eight phillips PM2.5×6.0 screws (1) that secure the display panel to the display enclosure.

16. Remove the display panel (2) from the display enclosure. The display panel is available using the spare part number 612097-001.



Reverse this procedure to install the display panel.

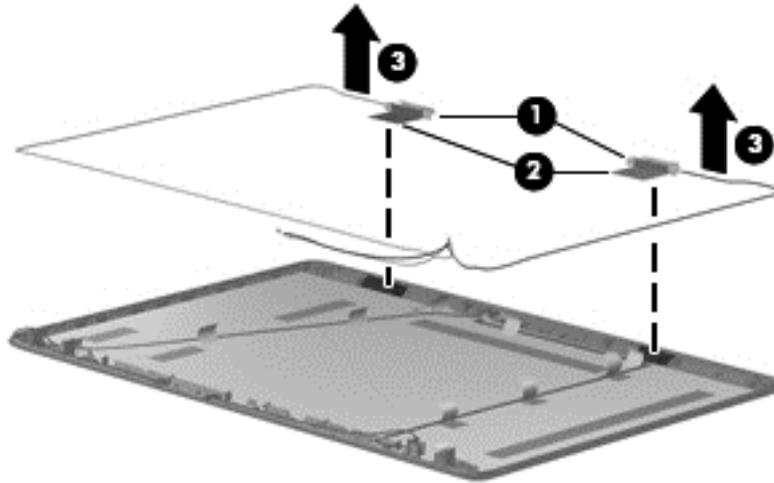
17. To replace the display panel brackets, remove the three Phillips PM2.0×3.0 screws (1) that secure each bracket to the display panel.
18. Remove the display panel brackets (2) from the display panel. The display panel brackets are available using spare part number 612104-001.



Reverse this procedure to install the display panel brackets.

19. To replace the wireless antenna transceivers, lift up on the silver transceiver (1) and release the adhesive material from the display cover (2).

20. Lift up to remove the antenna transceivers (3). The wireless antenna transceivers with cable is available using spare part number 612108-001.



Reverse this procedure to install the display wireless antenna transceivers.

System board

 **NOTE:** The system board spare part kit includes UMA or discrete graphics subsystem memory and replacement thermal material.

Description	Spare part number
HD 5430/512 MB discrete system board with card reader	605902-001
HD UMA system board with card reader	605903-001
HD 5430/1 GB discrete system board with card reader	608340-001

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:

- RTC battery (see [RTC battery on page 47](#))
- Memory modules (see [Memory module on page 46](#))
- WLAN module (see [WLAN module on page 44](#))
- Modem module (see [Modem module on page 58](#))

Before removing the system board:

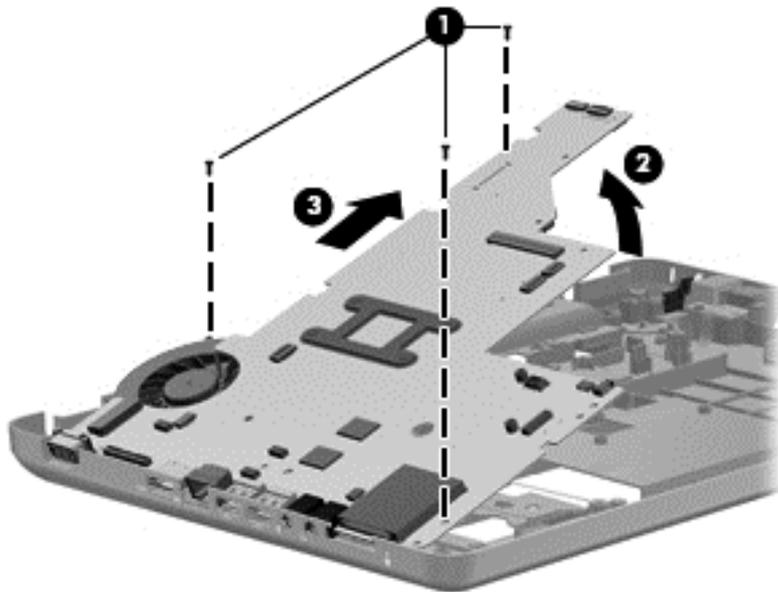
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. WLAN module (see [WLAN module on page 44](#))
 - d. Memory module (see [Memory module on page 46](#))
 - e. RTC battery (see [RTC battery on page 47](#))
 - f. Keyboard (see [Keyboard on page 49](#))
 - g. Top cover (see [Top cover on page 52](#))
 - h. Modem module (see [Modem module on page 58](#))
 - i. Display assembly (see [Display assembly on page 64](#))

Remove the following cables from the system board:

- Power connector cable (see [Power connector on page 62](#))
- USB board cable (see [USB board on page 60](#))
- Bluetooth module cable (see [Bluetooth module on page 63](#))

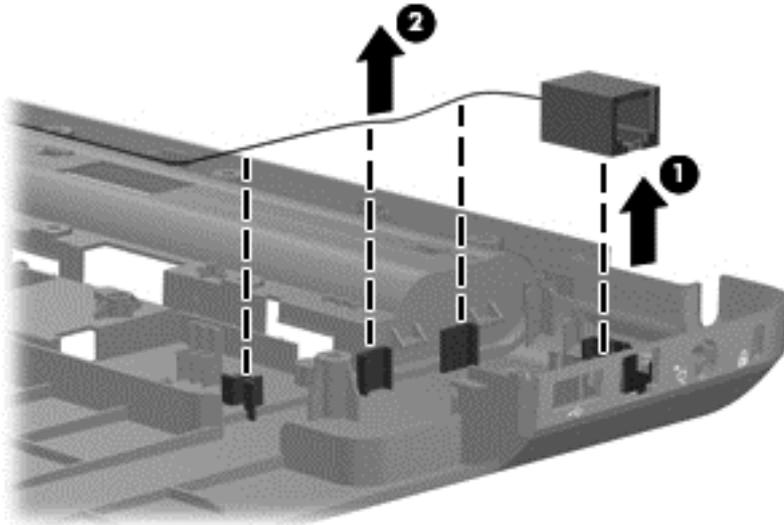
Remove the system board:

1. Turn the computer upright with the right side toward you.
2. Remove the three Phillips PM2.5×4.0 **(1)** screws that secure the system board to the computer.
3. Grasp the right edge **(2)** of the system board.
4. Lift the system board **(3)**, and pull it away from the base enclosure at an angle.



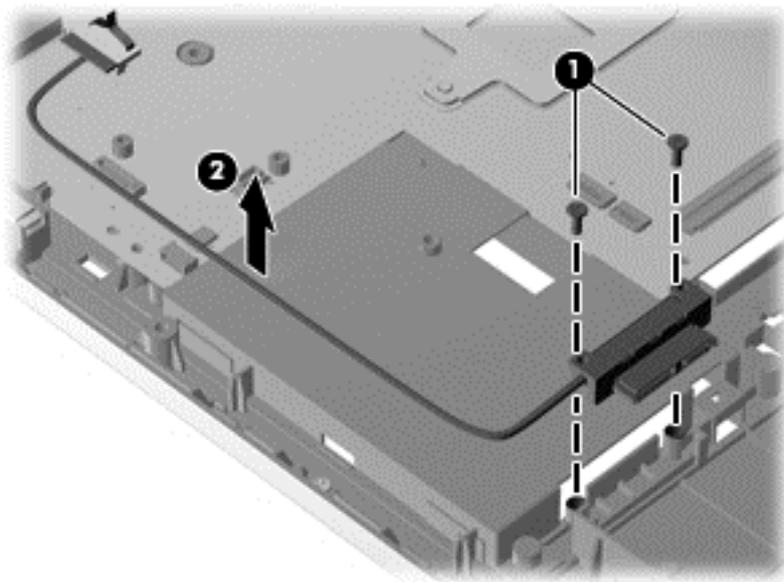
Reverse this procedure to install the system board.

5. To replace the modem module cable, remove the RJ-11 connector cable from the clips (1), and then lift the connector straight up (2) and out of the computer. The modem module cable is available with the cable kit using spare part number 616502-001.



Reverse this procedure to install the modem module cable.

6. To replace the optical drive cable, remove the two Phillips PM2.0x6.0 screws (1), and then lift the connector straight up (2) and out of the computer. The optical drive cable is available with the cable kit using spare part number 616502-001.



Reverse this procedure to install the optical drive cable.

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:

- Fan/heat sink assembly (see [Fan/heat sink assembly on page 74](#))
- Processor (see [Processor on page 78](#))

Reverse the preceding procedure to install the system board.

Fan/heat sink assembly

Description	Spare part number
Fan/heat sink assembly (includes replacement thermal material) for use only with computer models with UMA graphics subsystem memory	606013-001
Fan/heat sink assembly (includes replacement thermal material) for use only with computer models with discrete graphics subsystem memory	606014-001

Before removing the fan/heat sink assembly:

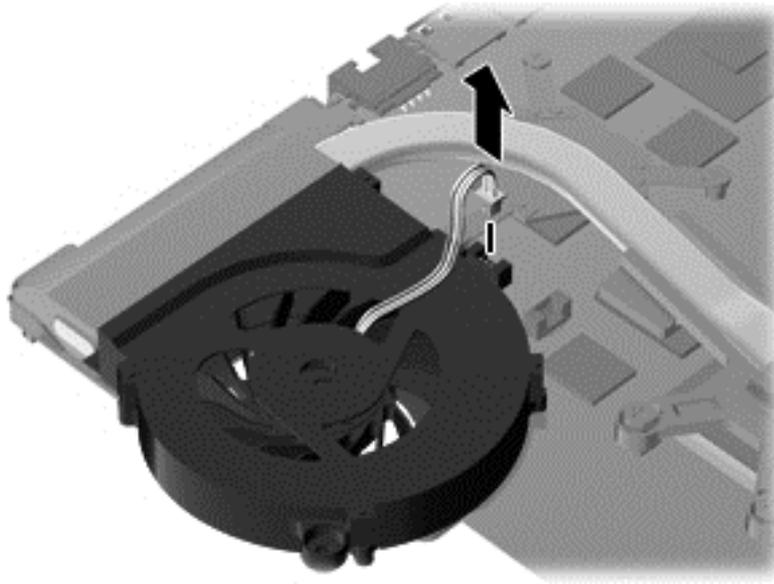
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. Keyboard (see [Keyboard on page 49](#))
 - d. Top cover (see [Top cover on page 52](#))
 - e. Speaker assembly (see [Speaker assembly on page 55](#))
 - f. Display assembly (see [Display assembly on page 64](#))
 - g. System board (see [System board on page 70](#))

Remove the fan/heat assembly (fan/heat sink appearance might vary):

 **NOTE:** Steps 1 through 4 apply only to computer models equipped with graphics subsystems having UMA memory.

1. Turn the system board right-side up, with the front toward you.

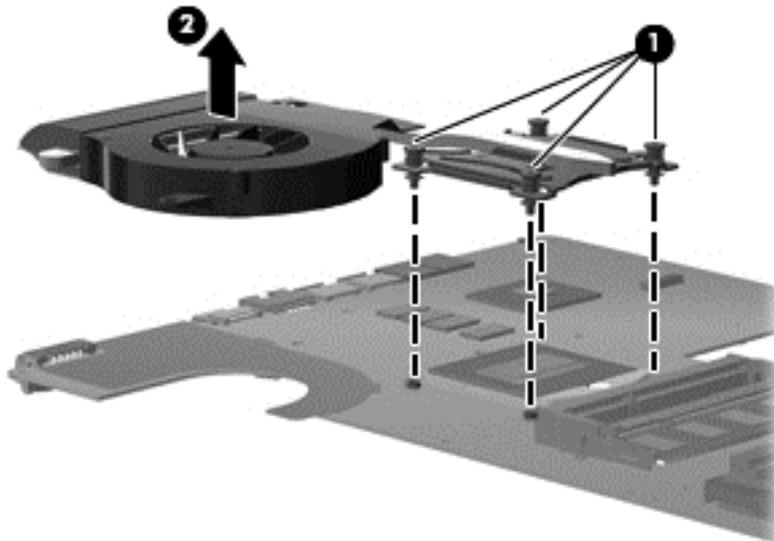
2. Disconnect the fan cable from the system board.



3. Follow the sequence embossed on heat sink to loosen the four Phillips PM2.5×7.0 captive screws (1) that secure the fan/heat sink assembly to the system board.

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

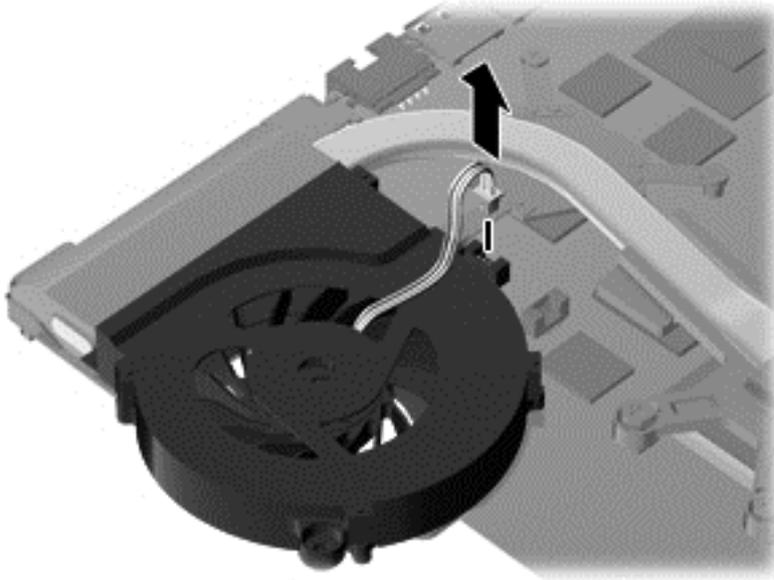
4. Remove the fan/heat sink assembly (2) by lifting straight up.



 **NOTE:** Steps 5 through 8 apply only to computer models equipped with graphics subsystems having discrete memory.

5. Turn the system board right-side up, with the front toward you.

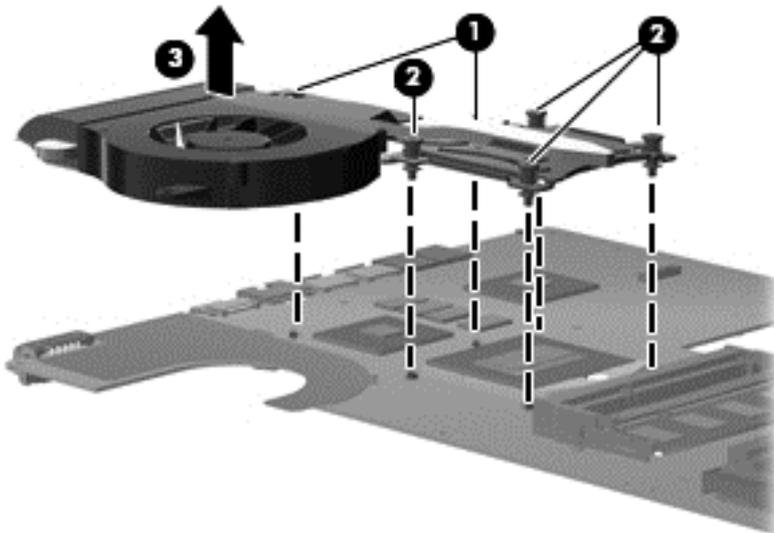
6. Disconnect the fan cable from the system board.



7. Loosen the two Phillips captive screws (1) and four Phillips spring-loaded captive screws (2) that secure the fan/heat sink assembly.

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

8. Remove the fan/heat sink assembly (3) by lifting straight up.

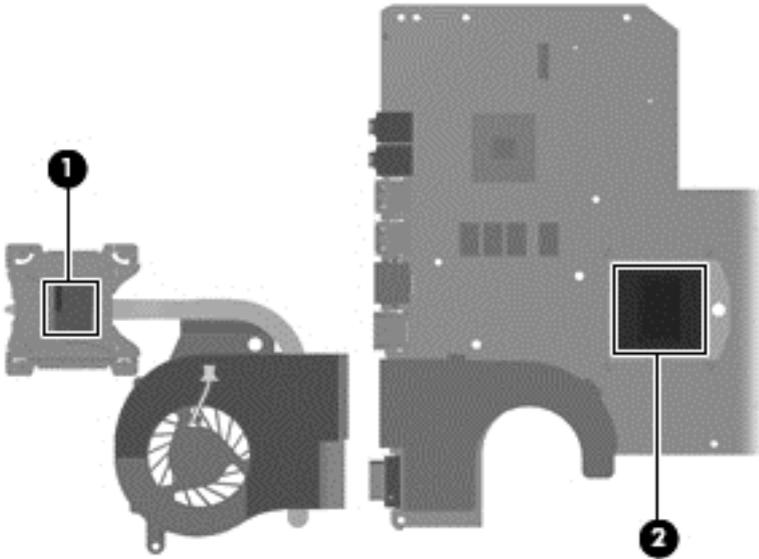


Reverse this procedure to install the fan/heat sink assembly.

The thermal material must be thoroughly cleaned from the surface of the fan/heat sink assembly (1), (3) and the processor (2) and video components (4) each time the fan/heat sink assembly is removed. Thermal pads and thermal paste must be installed on all surfaces before the fan/heat sink assembly is reinstalled.

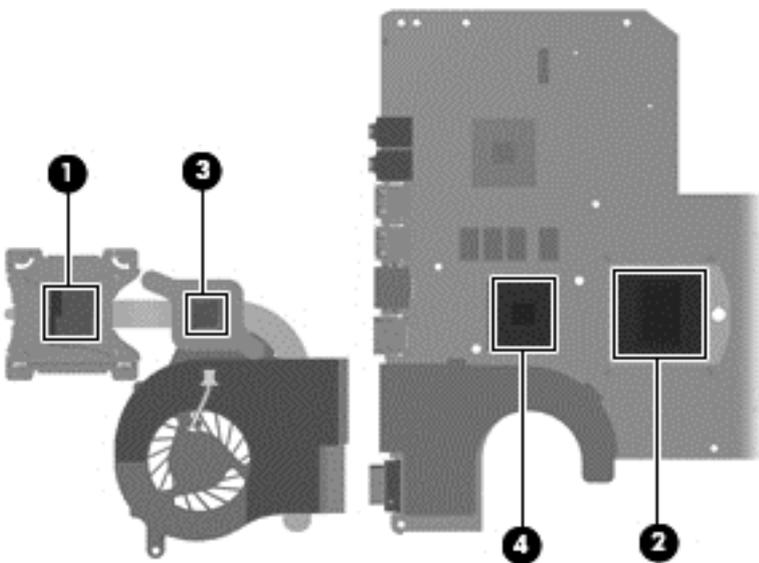
 **NOTE:** Thermal pads and thermal paste are included with all fan/heat sink assembly, system board, and processor spare part kits.

The following illustration shows the locations for thermal material on systems with UMA graphics subsystems.



The thermal material must be thoroughly cleaned from the surface of the fan/heat sink assembly **(1)** and **(3)**, and the processor component **(2)**, each time the fan/heat sink assembly is removed. Thermal pads and thermal paste must be installed on all surfaces before the fan/heat sink assembly is reinstalled.

The following illustration shows the locations for thermal material on systems with discrete graphics subsystems.



Processor

 **NOTE:** All processor spare part kits include thermal material.

Description	Spare part number
Intel Arrandale i7–620M Processor (2.66 GHz, 4 MB total L3 cache, 1066 MHz)—Dual Core 35 W	587259–001
Intel Arrandale i5–520M Processor (2.4 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W	594187–001
Intel Arrandale i5–540M Processor (2.53 GHz, 3 MB total L3 cache, 1066 MHz)—Dual core 35 W	594188–001
Intel Arrandale i3–350 Processor (2.26 GHz, 3 MB L3 cache, 1066 MHz)—Dual Core 35 W	597623–001
Intel Arrandale i5–430 Processor (2.26 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W	597624–001
Intel Arrandale i3–370 Processor (2.4 GHz, 3 MB L3 cache, 1066 MHz)—Dual Core 35 W	613584–001
Intel Arrandale i5–450M Processor (2.4 GHz, 3 MB total L3 cache, 1066 MHz)—Dual Core 35 W	613585–001
Pentium Arrandale P6000 Processor (1.86 GHz, 3 MB, L3 cache 100 MHz)	613586–001

Before removing the processor:

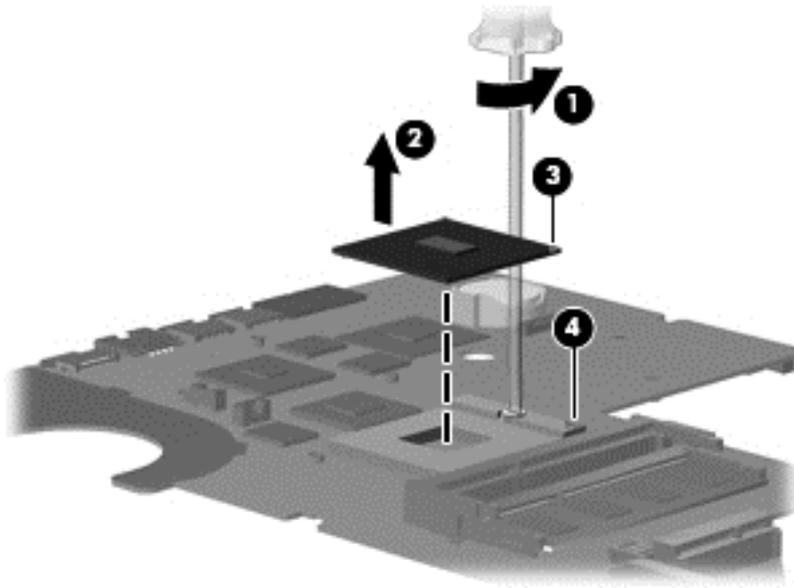
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn on the computer, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [Battery on page 38](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 39](#))
 - b. Optical drive (see [Optical drive on page 42](#))
 - c. Keyboard (see [Keyboard on page 49](#))
 - d. Top cover (see [Top cover on page 52](#))
 - e. Speaker assembly (see [Speaker assembly on page 55](#))
 - f. Display assembly (see [Display assembly on page 64](#))
 - g. System board (see [System board on page 70](#))
 - h. Fan/heat sink assembly (see [Fan/heat sink assembly on page 74](#))

Remove the processor:

1. Turn the processor locking screw (1) one-half turn counterclockwise until you hear a click.

2. Lift the processor (2) straight up and remove it.

 **NOTE:** The gold triangle (3) on the processor must be aligned with the triangle icon (4) embossed on the processor socket when you install the processor.



Reverse this procedure to install the processor.

5 Setup Utility

Computer Setup in Windows 7

To view the drives installed on the computer, select **Start > Computer**.

On models with a secondary hard drive (drive D), the optical drive becomes drive E. The next drive added to the system, such as a new USB drive, is assigned the next available drive letter.

Starting Setup Utility

Setup Utility is a ROM-based information and customization utility that can be used even when the Windows operating system is not working.

The utility reports information about the computer and provides settings for startup, security, and other preferences.

To start Setup Utility:

Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message displays in the lower-left corner of the screen, press the **f10** key.

– or –

1. Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message displays in the lower-left corner of the screen, press the **esc** key.
2. When the Startup Menu displays, press the **f10** key.

Using Setup Utility

Changing the language of Setup Utility

The following procedure explains how to change the language of Setup Utility. If Setup Utility is not already running, begin at step 1. If Setup Utility is already running, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message displays in the lower-left corner of the screen, press the **f10** key.

– or –

Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message displays in the lower-left corner of the screen, press the **esc** key. When the Startup Menu displays, press the **f10** key.

2. Use the arrow keys to select **System Configuration > Language**, and then press the **enter** key.

3. Use the arrow keys to select a language, and then press **enter** key.
4. When a confirmation prompt with your language selected displays, press the **enter** key.
5. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press the **enter** key.

Changes goes into effect immediately.

Navigating and selecting in Setup Utility

Because Setup Utility is not Windows based, it does not support the TouchPad. Navigation and selection are by keystroke.

- To choose a menu or a menu item, use the arrow keys.
- To choose an item in a list or to toggle a field, for example an Enable/Disable field, use either the arrow keys or the **f5** or **f6** keys.
- To select an item, press the **enter** key.
- To close a text box or return to the menu display, press the **esc** key.
- To display additional navigation and selection information while Setup Utility is open, press the **f1** key.

Displaying system information

The following procedure explains how to display system information in Setup Utility. If Setup Utility is not open, begin at step 1. If Setup Utility is open, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message displays in the lower-left corner of the screen, press the **f10** key.

– or –

Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message displays in the lower-left corner of the screen, press the **esc** key. When the Startup Menu displays, press the **f10** key.
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 the **enter** key.

Restoring default settings in Setup Utility

The following procedure explains how to restore Setup Utility default settings. If Setup Utility is not already running, begin at step 1. If Setup Utility is already running, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message displays in the lower-left corner of the screen, press the **f10** key.

– or –

Open Setup Utility by turning on or restarting the computer. When the Press the ESC key for Startup Menu message displays in the lower-left corner of the screen, press the **esc** key. When the Startup Menu displays, press the **f10** key.

2. Use the arrow keys to select **Exit > Load Setup Defaults**, and then press the **enter** key.
3. When the Setup Confirmation appears, press the **enter** key.
4. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press the **enter** key.

Setup Utility default settings go into effect when the computer restarts.

 **NOTE:** Password, security, and language settings are not changed when you restore the factory default settings.

Exiting Setup Utility

You can exit Setup Utility with or without saving changes.

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

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

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

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

After either choice, the computer restarts in Windows.

Setup Utility menus

The menu tables in this section provide an overview of Setup Utility options.

 **NOTE:** Some of the Setup Utility menu items listed in this chapter might not be supported by the computer.

Main menu

Select	To do this
System information	<ul style="list-style-type: none">• View and change the system time and date.• View identification information about the computer.• View specification information about the processor, memory size, system BIOS, and keyboard controller version (select models only).

Security menu

Select	To do this
Administrator password	Enter, change, or delete an administrator password.
Power-On password	Enter, change, or delete a power-on password.

System Configuration menu

Select	To do this
Language Support	Change the language of Setup Utility.
Button Sound (select models only)	Enable/disable the capacitive button tapping sound.
Virtualization Technology (select models only)	Enable/disable the processor Virtualization Technology.
Processor C6 State (select models only)	Enable/disable the processor C6 sleep state.
LAN Power Saving (select models only)	Enable/disable LAN Power Saving. When enabled, saves power when the computer is in DC mode.
Card Reader/1394 Power Saving (select models only)	Enable/disable Card Reader/1394 Power Saving.
Fan Always On	Enabled/disable Fan Always On. When enabled, the computer fan will always be on.
Action Keys Mode	Enable/disable Action Keys Mode.
Boot Options	<p>Set the following boot options:</p> <ul style="list-style-type: none">• POST hotkey delay (sec.)—Set the delay for the f1, f2, f9, f10, f11, and f12 functions of Setup Utility in intervals of 5 seconds each (0, 5, 10, 15, 20).• CD-ROM Boot—Enable/disable boot from CD-ROM.• Floppy Boot—Enable/disable boot from diskette.• Internal Network Adapter Boot—Enable/disable boot from the internal network adapter.• Boot Order—Set the boot order for:<ul style="list-style-type: none">◦ Notebook Hard Drive◦ Internal CD/DVD ROM Drive◦ USB Diskette on Key/USB Hard Disk◦ USB CD/DVD ROM Drive◦ USB Floppy◦ Network Adapter

Diagnostics menu

Select	To do this
Hard Disk Self Test	<p>Run a comprehensive self-test on the hard drive.</p> <p>NOTE: On models with two hard drives, this menu option is called the Primary Hard Disk Self Test.</p>
Secondary Hard Disk Self Test (select models only)	Run a comprehensive self-test on a secondary hard drive.
Memory Test	Run a diagnostic test on the system memory.

Computer Setup in Linux

Starting Computer Setup

Computer Setup is a preinstalled, ROM-based utility that can be used even when the operating system is not working or will not load.

 **NOTE:** Some of the Computer Setup menu items listed in this guide might not be supported by the computer.

NOTE: Pointing devices are not supported in Computer Setup. Use the keyboard to navigate and make selections.

NOTE: An external keyboard connected by USB can be used with Computer Setup only if USB legacy support is enabled.

To start Computer Setup:

1. Turn on or restart the computer.
2. Before the operating system opens and when the F10=ROM Based Setup message displays in the lower-left corner of the screen, press the **f10** key.

Using Computer Setup

Navigating and selecting in Computer Setup

The information and settings in Computer Setup are accessed from the File, Security, Diagnostics, and System Configuration menus.

1. Open Computer Setup by turning on or restarting the computer, and then pressing the **f10** key when the F10 = ROM Based Setup message appears in the lower-left corner of the screen.

Because Computer Setup is not operating system based, it does not support the TouchPad. Navigation and selection are by keystroke:

- To choose a menu or a menu item, use the arrow keys.
 - To select an item, press the **enter** key.
 - To close open dialog boxes and return to the main Computer Setup screen, press the **esc** key.
 - To view navigation information, press the **f1** key.
 - To change the language, press the **f2** key.
2. Select the **File**, **Security**, **Diagnostics**, or **System Configuration** menu.
 3. To exit Computer Setup, choose one of the following methods:
 - To exit Computer Setup without saving your preferences, use the arrow keys to select **File > Ignore Changes And Exit**. Then follow the instructions on the screen.
 - To save your preferences and exit Computer Setup, use the arrow keys to select **File > Save Changes And Exit**. Then follow the instructions on the screen.

Your preferences go into effect when the computer restarts.

Restoring factory settings in Computer Setup

To return all settings in Computer Setup to the values that were set at the factory:

1. Open Computer Setup by turning on or restarting the computer, and then pressing the **f10** key when the F10 = ROM Based Setup message displays in the lower-left corner of the screen.
2. Use the arrow keys to select **File > Restore Defaults**, and then press the **enter** key.
3. When the confirmation dialog box opens, press the **f10** key.
4. To save your preferences and exit Computer Setup, use the arrow keys to select **File > Save Changes And Exit**. Then follow the instructions on the screen.

Your preferences go into effect when the computer restarts.

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

Computer Setup menus

The menu tables in this section provide an overview of Computer Setup options.



NOTE: Some of the Computer Setup menu items listed in this chapter might not be supported by the computer.

File menu

Select	To do this
System information	<ul style="list-style-type: none">• View identification information for the computer.• View specification information for the processor, cache and memory size, and system ROM.
Restore Defaults	Replace the configuration settings in Computer Setup with the original factory settings. (Password settings and security settings are not changed when you restore the factory settings.)
Ignore Changes And Exit	Cancel any changes entered during the current session, and then exit and restart the computer.
Save Changes And Exit	Save any changes entered during the current session, and then exit and restart the computer. Changes go into effect when the computer restarts.

Security menu

 **NOTE:** Some of the menu items listed in this section might not be supported by the computer.

Select	To do this
Setup Password	Enter, change, or delete a setup password.
Power-On Password	Enter, change, or delete a power-on password.
Password Options	<ul style="list-style-type: none">• Enable/disable stringent security.• Enable/disable the password requirement on computer restart.
DriveLock Passwords	<ul style="list-style-type: none">• Enable/disable DriveLock on any computer hard drive.• Enter, change, or disable DriveLock on an optional MultiBay hard drive. <p>NOTE: DriveLock settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer.</p>
System IDs	Enter a user-defined computer asset tracking number and ownership tag.
Disk Sanitizer	Run Disk Sanitizer to destroy all existing data on the primary hard drive. The following options are available: <ul style="list-style-type: none">• Fast: Runs the Disk Sanitizer erase cycle once.• Optimum: Runs the Disk Sanitizer erase cycle 3 times.• Custom: Allows you to select the desired number of Disk Sanitizer erase cycles from a list. <p>CAUTION: If you run Disk Sanitizer, the data on the primary hard drive is destroyed permanently.</p>

Diagnostics menu

Select	To do this
HDD Self-Test Options	Run a comprehensive self-test on any hard drive in the system or on any optional MultiBay hard drive.
Memory Check	Run a comprehensive check on system memory.

System Configuration menu



NOTE: Some of the listed System Configuration options might not be supported by the computer.

Select	To do this
Language	Change the Computer Setup language.
Boot options	<ul style="list-style-type: none">• Set an f9, f10, and f12 delay when starting up.• Enable/disable CD-ROM boot.• Enable/disable floppy boot.• Enable/disable internal network adapter boot.• Enable/disable MultiBoot, which sets a boot order that can include most boot devices in the system.• Set the Express Boot Popup delay in seconds.• Set the boot order.<ul style="list-style-type: none">◦ 1st boot device—USB CD-ROM◦ 2nd boot device—USB floppy◦ 3rd boot device—USB SuperDisk◦ 4th boot device—Notebook hard drive◦ 5th boot device—USB hard disk◦ 6th boot device—Network controller
Device Configurations	<ul style="list-style-type: none">• Swap the functions of the fn key and left ctrl key.• Enable/disable USB legacy support. When enabled, USB legacy support allows the following:<ul style="list-style-type: none">◦ Use of a USB keyboard in Computer Setup even when the operating system is not running.◦ Startup from bootable USB devices, including a hard drive, diskette drive, or optical drive connected by a USB port to the computer.• Enable/disable BIOS DMA data transfers.• Enable/disable fan always on while connected to an AC outlet.• Enable/disable data execution prevention.• Enable/disable LAN power saving mode.• Enable/disable SATA Native Mode.• Enable/disable Dual Core CPU.• Enable/disable HDD translation mode.

Select	To do this
Built-in device options	<ul style="list-style-type: none"><li data-bbox="855 226 1362 249">• Enable/disable embedded WLAN Device Radio.<li data-bbox="855 275 1390 298">• Enable/disable embedded Bluetooth Device Radio.<li data-bbox="855 323 1378 346">• Enable/disable Network Interface Controller (NIC)<li data-bbox="855 371 1267 394">• Enable/disable LAN/WLAN Switching.<li data-bbox="855 420 1190 443">• Enable/disable Wake on LAN.<li data-bbox="855 468 1362 491">• Enable/disable the integrated camera (webcam)
Port options	<ul style="list-style-type: none"><li data-bbox="855 527 1145 550">• Enable/disable USB port.<li data-bbox="855 575 1222 598">• Enable/disable ExpressCard slot.

6 Specifications

Computer specifications

Dimensions	
Depth	26.9 cm (10.59 in)
Width	41.2 cm (16.22 in)
Height (front to rear)	3.24 to 3.84 cm (1.28 to 1.51 in)
Weight (lowest weight configuration)	< 3.0 kg (6.61 lbs)
Input power	
Operating voltage	18.5 V dc @ 4.74 A – 90 W
Operating current	4.74 A
Temperature	
Operating (not writing to optical disc)	0°C to 35°C (32°F to 95°F)
Operating (writing to optical disc)	5°C to 35°C (41°F to 95°F)
Nonoperating	-20°C to 60°C (-4°F to 140°F)
Relative humidity	
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 computer operates well within this range of temperatures.	

43.9-cm (17.3-in) display specifications

Dimensions	
Height	23.3 cm (9.17 in)
Width	39.8 cm (15.6 in)
Diagonal	43.9 cm (17.3)
Number of colors	Up to 16.8 million
Contrast ratio	300:1 (typical)
Brightness	200 nits (typical)
Pixel resolution	
Pitch	0.259 × 0.259 mm
Format	1280 × 800; HD: 1600 × 900
Configuration	RGB vertical stripe
Backlight	LED
Character display	80 × 25
Total power consumption	4.0 W
Viewing angle	±40° horizontal, +120/-40° vertical (typical)

Hard drive specifications

	640 GB*	500 GB*	320 GB*	250 GB*	160 GB*
Dimensions					
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm	70 mm
Weight	101 g	101 g	101 g	101 g	101 g
Interface type	SATA	SATA	SATA	SATA	SATA
Transfer rate	106 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)					
Single track	1.0 ms	1.0 ms	1.5 ms	2.0 ms	1.5 ms
Average	14.0 ms	14.0 ms	12.0 ms	12.0 ms	11.0 ms
Maximum	24.0 ms	22.0 ms	22.0 ms	22.0 ms	22.0 ms
Logical blocks	1,250,263,728	976,773,168	625,142,448	488,397,168	312,581,808
Disc rotational speed	5400 rpm	7200 rpm	7200 rpm	7200 rpm	7200 rpm
Operating temperature	5°C to 55°C (41°F to 131°F)				
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.					
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.					

DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe specifications

Applicable disc	
Read	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM
Write	CD-R and CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM
Random access time	
DVD	< 230 ms
CD	< 175 ms
Cache buffer	
	2 MB
Data transfer rate	
24X CD-ROM	3,600 KB/sec
8X DVD-ROM	10,800 KB/sec
24X CD-R	3,600 KB/sec
16X CD-RW	2,400 KB/sec
8X DVD+R	10,800 KB/sec
4X DVD+RW	5,400 KB/sec
8X DVD-R	10,800 KB/sec
4X DVD-RW	5,400 KB/sec
2.4X DVD+R(9)	2,700 KB/sec
5X DVD-RAM	6,750 KB/sec
Transfer mode	
	Multiword DMA Mode

Blu-ray ROM with LightScribe DVD±R/RW SuperMulti Double-Layer Drive specifications

Applicable disc	
Read	BD-ROM, BD-ROM-DL, BD-R, BD-R-DL, BD-RE, BD-RE-DL, DVD-ROM, DVD+R, DVD+R-DL, DVD+RW, DVD-R, DVD-R-DL, DVD-RW, DVD-RAM (Ver.2), CD-DA, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 2, form 1 and form 2), Photo CD (single and multiple sessions), CD Extra, CD-R, CD-RW, and CD-TEXT
Write	DVD-RAM (Ver.2), DVD+R, DVD-R, CD-R, and CD-ROM
Random access time	
BD	< 230 ms
DVD	< 180 ms
CD	< 180 ms
Cache buffer	4.5 MB
Data transfer rate	
24X CD-ROM	3,600 KB/sec
8X DVD-ROM	10,800 KB/sec
4X BD	18,000 KB/sec
24X CD-R	3,600 KB/sec
16X CD-RW	2,400 KB/sec
8X DVD+R	10,800 KB/sec
4X DVD+RW	5,400 KB/sec
8X DVD-R	10,800 KB/sec
4X DVD-RW	5,400 KB/sec
2.4X DVD+R(9)	2,700 KB/sec
5X DVD-RAM	6,750 KB/sec
1X BD-ROM	4,500 KB/sec
1X BD-R read	4,500 KB/sec
1X BD-RE read	4,500 KB/sec
Transfer mode	Multyword DMA Mode

System resource specifications

Use Device Manager to get a graphical view of the system resources that control how the devices work on the computer. System resources accessible Device Manager are direct memory access (DMA) channels, input/output (I/O) ports, interrupt request (IRQ) lines, and memory addresses.

If two devices require the same resource and create a device conflict, manually change the resource settings in Device Manager to be sure each setting is unique.

△ **CAUTION:** Improperly changing resource settings can disable the hardware and cause the computer to malfunction or become inoperable. Only users who have expert knowledge of computer hardware and hardware configurations should change resource settings.

To view resource settings in Windows 7 and Windows Vista:

1. Select **Start > Computer**.
2. Click **System properties** near the top of the Computer folder.
3. On the left, click **Device Manager**.
4. On the **View** menu, click one of the following:
 - **Resources by type**
 - **Resources by connection**

To view resource settings in Windows XP:

1. Select **Start > My Computer**, or double-click **My Computer** on the desktop.
2. Under System Tasks, click **View system information**.
3. In the System Properties window, select the **Hardware** tab.
4. Click **Device Manager**.
5. On the **View** menu, click one of the following:
 - **Resources by type**
 - **Resources by connection**

7 Backup and recovery

Recovery after a system failure is as complete as your most current backup. HP recommends creating recovery discs immediately after software setup. As you add new software and data files, continue to back up your system on a regular basis to maintain a reasonably current backup.

Tools provided by the operating system and HP Recovery Manager software are designed to help you with the following tasks for safeguarding your information and restoring it in case of a system failure:

- Creating a set of recovery discs (Recovery Manager software feature). Recovery discs are used to start up (boot) the computer and restore the operating system and software programs to factory settings in case of system failure or instability.
- Backing up your information regularly to protect your important system files.
- Creating system restore points (operating system feature). System restore points allow you to reverse undesirable changes to your computer by restoring the computer to an earlier state.
- Recovering a program or driver (Recovery Manager software feature). This feature helps you reinstall a program or driver without performing a full system recovery.
- Performing a full system recovery (Recovery Manager software feature). With Recovery Manager, you can recover the full factory image if you experience system failure or instability. Recovery Manager works from a dedicated recovery partition (select models only) on the hard drive or from recovery discs you create.

 **NOTE:** Computers with a solid-state drive (SSD) might not have a recovery partition. Recovery discs have been included for computers that do not have a partition. Use these discs to recover the operating system and software. To check for the presence of a recovery partition, select **Start** >right-click **Computer** > click **Manage** > click **Disk Management**. If the partition is present, an HP Recovery drive is listed in the window.

Windows 7

To protect your information, back up your files and folders. In case of system failure, use the backup files to restore the computer.

- △ **CAUTION:** In the event of a hard drive failure, you cannot use the computer to access the Disaster Recovery utility. Therefore, HP recommends downloading the Disaster Recovery utility SoftPaq, and then extract it to a USB flash drive as soon as possible after software setup. For details, see “Downloading and extracting the Disaster Recovery utility” later in this section.
-

Depending on the computer model, you might have one of the following backup and recovery solutions:

- Roxio BackOnTrack
- HP Recovery Manager

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

Creating recovery discs

HP recommends creating recovery discs to be sure that you can restore your system to its original factory state if you experience serious system failure or instability. Create these discs after setting up the computer for the first time.

Handle these discs carefully and keep them in a safe place. The software allows the creation of only one set of recovery discs.

 **NOTE:** Use an optional external optical drive (purchased separately) to create recovery discs, or purchase recovery discs for the computer from the HP Web site.

Note the following guidelines before creating recovery discs:

 **NOTE:** The external hard drive must be connected to a USB port on the computer, not to a USB port on an external device such as a hub.

- Use high-quality DVD-R, DVD+R, BD-R (writable Blu-ray), or CD-R discs. All these discs are purchased separately. DVDs and BDs have a much higher capacity than CDs. If you use CDs, up to 20 discs might be required, whereas only a few DVDs or BDs are required.

 **NOTE:** Read-write discs, such as CD-RW, DVD±RW, double-layer DVD±RW, and BD-RE (rewritable Blu-ray) discs, are not compatible with the Recovery Manager software.

- The computer must be connected to AC power during this process.
- Only one set of recovery discs can be created per computer.
- Number each disc before inserting it into the optical drive.
- If necessary, exit the program before you have finished creating the recovery discs. The next time you open Recovery Manager, you are prompted to continue the disc creation process.

To create a set of recovery discs:

1. Select **Start > All Programs > Recovery Manager > Recovery Disk Creation**.
2. Follow the on-screen instructions.

Backing up your information

As you add new software and data files, back up the system on a regular basis to maintain a reasonably current backup. Back up your system at the following times:

- At regularly scheduled times

 **NOTE:** Set reminders to back up your information periodically.

- Before the computer is repaired or restored
- Before you add or modify hardware or software

Note the following when backing up:

- Create system restore points using the Windows System Restore feature, and periodically copy them to disc.
- Store personal files in the Documents library and back up this folder periodically.
- Back up templates stored in their associated programs.
- Save customized settings 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.

To copy the screen and paste it into a word-processing document steps:

1. Display the screen.
 2. Copy the screen:
 - To copy only the active window, press **alt+prt sc**.
 - To copy the entire screen, press **prt sc**.
 3. Open a word-processing document, and then select **Edit > Paste**.
 4. Save the document.
- Back up the information to an optional external hard drive, a network drive, or discs.
 - When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD-R, or DVD±RW. The discs you use will depend on the type of optical drive installed in the computer.
-
-  **NOTE:** DVDs 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 optical drive of the computer.

Using Windows Backup and Restore

To create a backup using Windows Backup and Restore:

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

NOTE: The backup process might 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 and create a backup.

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

Using system restore points

When backing up the system, you are creating a system restore point. A system restore point allows you to save and name a snapshot of your hard drive at a specific point in time. You can then recover back to that point if you want to reverse subsequent changes made to the system.

 **NOTE:** Recovering to an earlier restore point does not affect data files saved or e-mails created since the last restore point.

You also can create additional restore points to provide increased protection for the system files and settings.

When to create restore points

- Before you add or extensively modify software or hardware
- Periodically, whenever the system is performing optimally

 **NOTE:** If you revert to a restore point and then change your mind, you can reverse the restoration.

Create a system restore point

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Under **Protection Settings**, select the disk for which you want to create a restore point.
5. Click **Create**.
6. Follow the on-screen instructions.

Restore to a previous date and time

To revert to a restore point (created at a previous date and time), when the computer was functioning optimally:

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System protection**.
3. Click the **System Protection** tab.
4. Click **System Restore**.
5. Follow the on-screen instructions.

Performing a recovery

 **NOTE:** You can recover only files that you have previously backed up. HP recommends using Recovery Manager to create an entire drive backup as soon as you set up the computer.

Recovery Manager software allows you to repair or restore the system if you experience system failure or instability. Recovery Manager works from recovery discs or from a dedicated recovery partition (select models only) on the hard drive. However, if the computer includes a solid-state drive (SSD), you might not have a recovery partition. If that is the case, recovery discs are included with the computer. Use these discs to recover the operating system and software.

 **NOTE:** Windows has its own built-in repair features, such as System Restore and driver roll-back capabilities. Try these features before using Recovery Manager.

NOTE: Recovery Manager recovers only software that was preinstalled at the factory. Software not provided with this computer must be downloaded from the manufacturer's Website or reinstalled from the disc provided by the manufacturer.

Recovering from the recovery discs

To restore the system from the recovery discs:

1. Back up all personal files.
2. Insert the first recovery disc into the optical drive and restart the computer.
3. Follow the on-screen instructions.

Recovering from the dedicated recovery partition (select models only)

 **NOTE:** If the computer includes an SSD, you might not have a recovery partition. You cannot recover using this procedure. Recovery discs are included for computers that do not have a partition. Use these discs to recover the operating system and software.

On some models, you can perform a recovery from the partition on the hard drive, accessed by pressing either the Start button or **f11**. This restores the computer to its factory condition.

To restore the system from the partition:

1. Access Recovery Manager in either of the following ways:
 - Select **Start > All Programs > Recovery Manager > Recovery Manager**.
 - or –
 - 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. Then, press **f11** while the “Press <F11> for recovery” message appears
2. Click **System Recovery** in the **Recovery Manager** window.
3. Follow the on-screen instructions.

Linux backup and recovery

Use the instructions in this section if SUSE Linux SLED 11 is installed on the computer.

To protect your information, back up your files and folders. Then if the system fails, restore your important files from copies. Use the options listed in this section to restore the operating system and programs that were installed at the factory.

△ **CAUTION:** Using **f11** completely erases hard drive contents and reformats the hard drive. All files created and any software installed on the computer are permanently removed. The **f11** recovery tool reinstalls the original operating system and HP programs and drivers that were installed at the factory. Software, drivers, and updates not installed by HP must be manually reinstalled. Personal files must be restored from a backup.

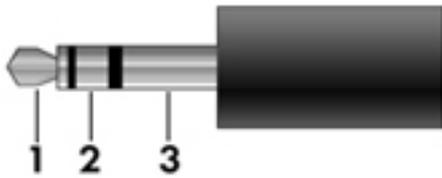
To recover the original hard drive image using **f11**:

1. If possible, back up all personal files.
2. Restart the computer, and then press **f11** while the “Press <F11> for recovery” message appears on the screen.
3. Follow the on-screen instructions.

 **NOTE:** If you are unable to boot (start up) the computer from the primary operating system or from the recovery **f11** method, purchase a *SUSE Linux Enterprise Desktop Operating System* DVD to repair the operating system. For additional information, see the *Worldwide Telephone Numbers* booklet, included with the computer.

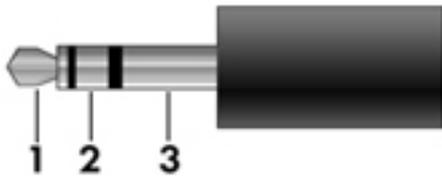
8 Connector pin assignments

Audio-out (headphone)



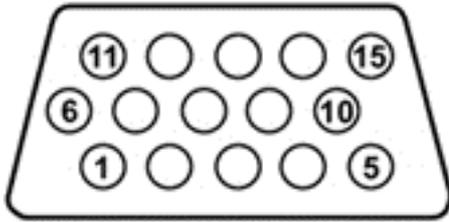
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

Audio-in (microphone)



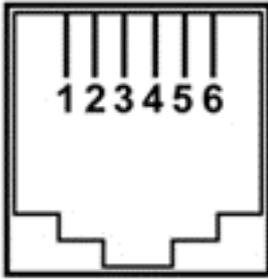
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

External monitor



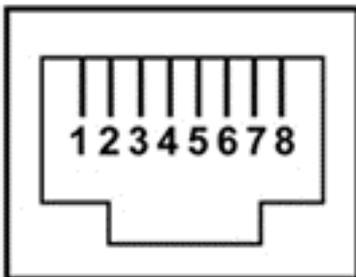
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

RJ-11 (modem)



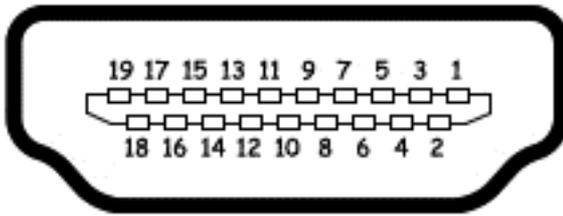
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

RJ-45 (network)



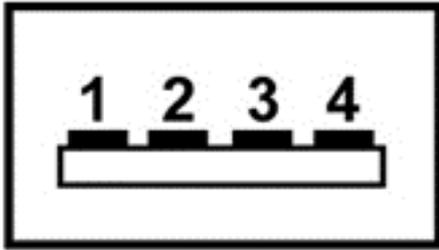
Pin	Signal
1	Transmit +
2	Transmit -
3	Receive +
4	Unused
5	Unused
6	Receive -
7	Unused
8	Unused

HDMI



Pin	Signal
1	TMDS data 2+
2	TMDS data 2 shield
3	TMDS data 2-
4	TMDS data 1+
5	TMDS data 1shield
6	TMDS data 1-
7	TMDS data 0+
8	TMDS data 0 shield
9	TMDS data 0-
10	TMDS clock+
11	TMDS clock shield
12	TMDS clock-
13	CEC
14	No connect
15	DDC clock
16	DDC data
17	Ground
18	+5V power
19	Hot plug detect
20	Shell

Universal Serial Bus



Pin	Signal
1	+5 VDC
2	Data -
3	Data +
4	Ground

9 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 or regions must meet the requirements of the country or region where the computer is used.

Requirements for all countries or regions

The requirements listed below are applicable to all countries or 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 amps and a nominal voltage rating of 125 or 250 V AC, as required by each country or region's power system.
- 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 or regions

Country/region	Accredited agency	Applicable note number
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	CCC	5
South Korea	EK	4
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
The United Kingdom	BSI	1
The United States	UL	2

1. The flexible cord must be Type HO5VV-F, 3-conductor, 1.0-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.
2. The flexible cord must be Type SPT-3 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) configuration.
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 VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
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 certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 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.

10 Recycling

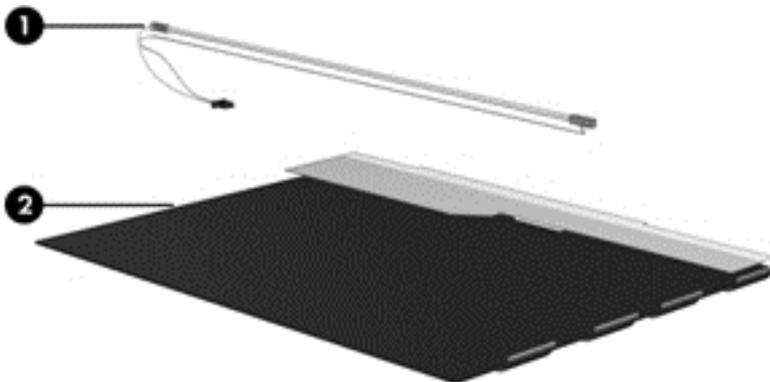
Battery

When a 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 computer battery disposal.

Display

-
- ⚠ **WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.
 - ⚠ **CAUTION:** The procedures in this chapter can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. When you remove these components, handle them carefully.
 - 📄 **NOTE: Materials Disposal.** This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury might be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) Web site at <http://www.eiae.org>.
-

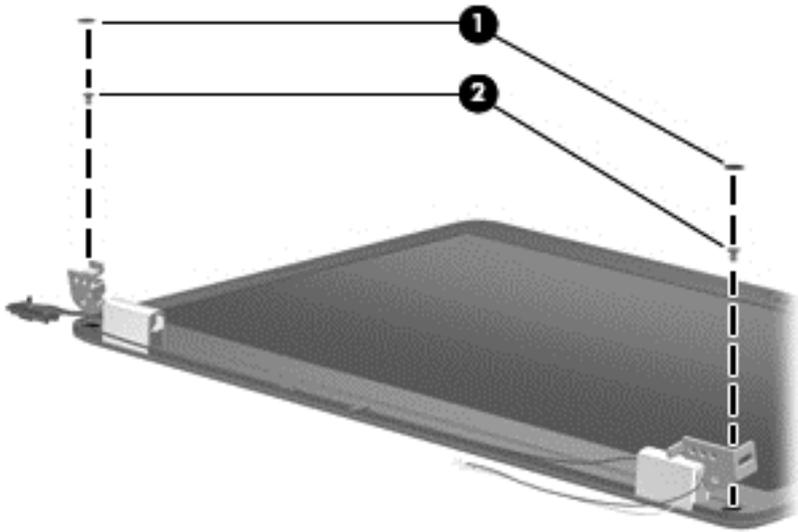
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



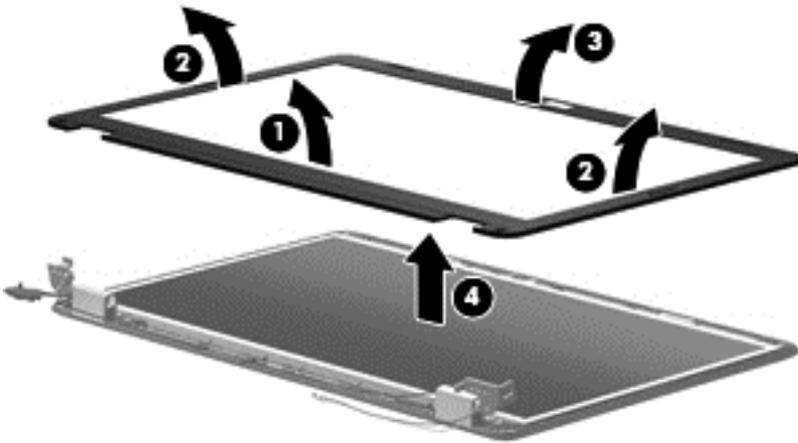
-
- 📄 **NOTE:** The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.
-

Perform the following steps to disassemble the display assembly:

1. Remove all screw covers (1) and screws (2) that secure the display bezel to the display assembly.

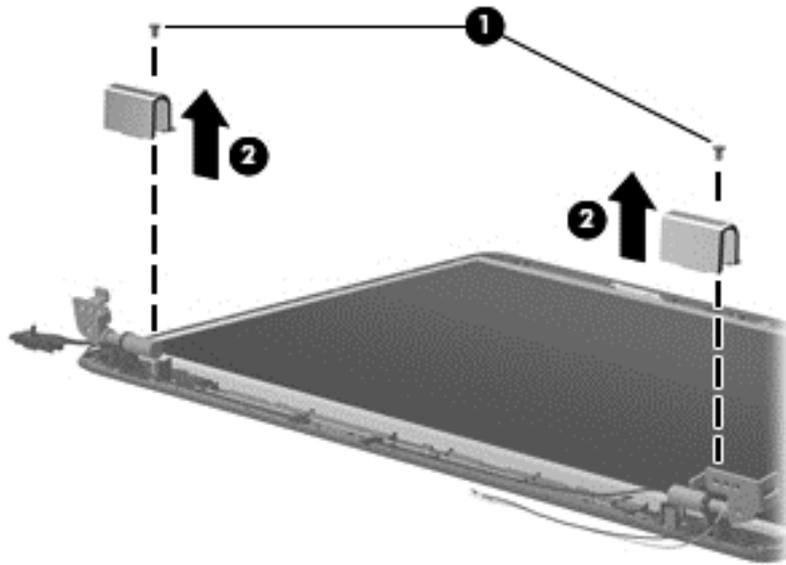


2. Lift up and out on the left and right inside edges (1) and the top and bottom inside edges (2) of the display bezel until the bezel disengages from the display assembly.

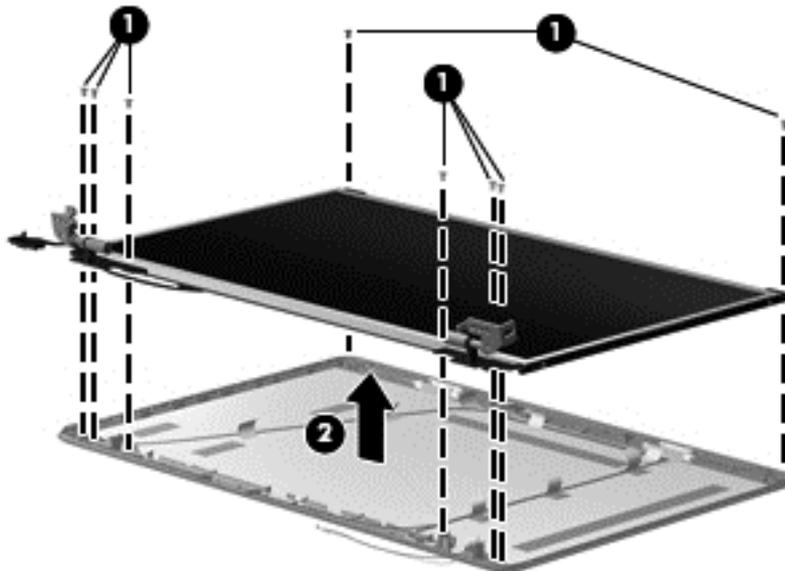


3. Remove the display bezel (3).

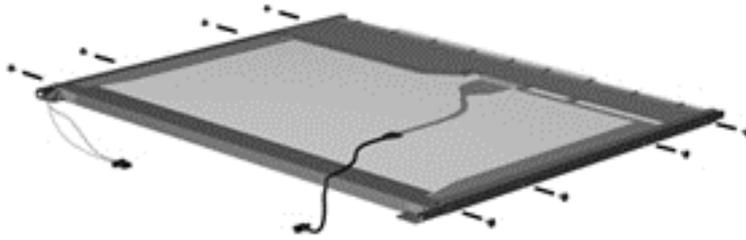
4. Remove the two screws (1) that secure each hinge to the display enclosure and lift up to remove the display hinge covers (2).



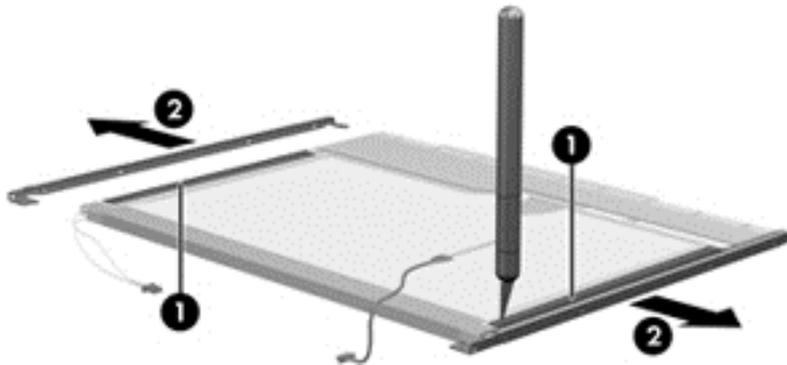
5. Remove all screws (1) that secure the display panel assembly to the display enclosure.
6. Remove the display panel assembly (2) from the display enclosure.



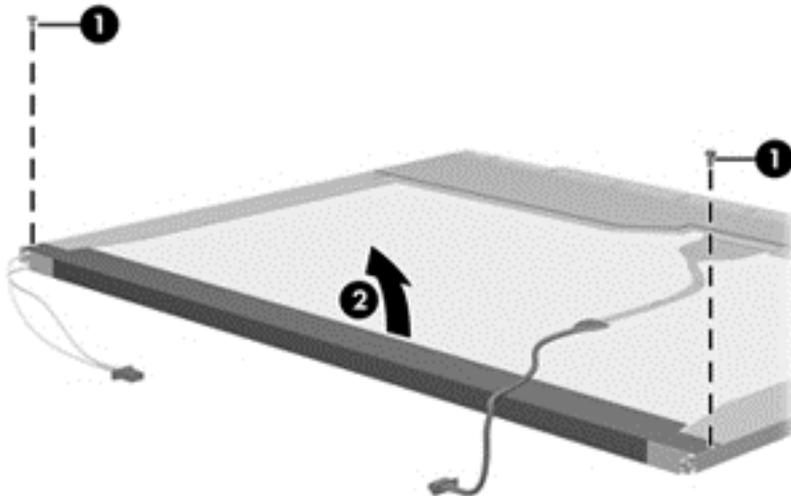
7. Turn the display panel assembly upside down and remove all screws that secure the display panel frame to the display panel.



8. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.
9. Remove the display panel frame (2) from the display panel.

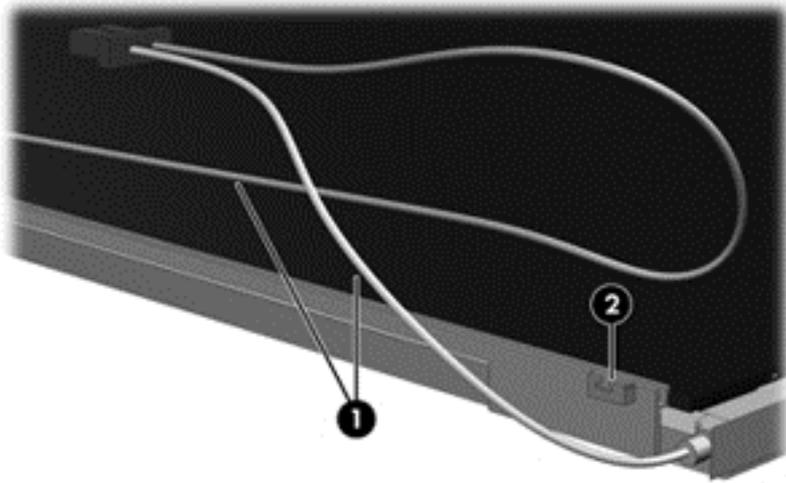


10. Remove the screws (1) that secure the backlight cover to the display panel.
11. Lift the top edge of the backlight cover (2) and swing it outward.



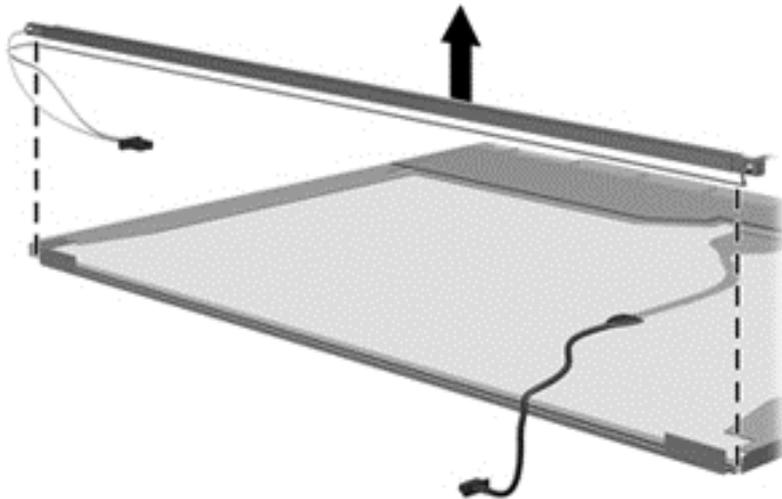
12. Remove the backlight cover.
13. Turn the display panel right-side up.

14. Remove the backlight cables (1) from the clip (2) in the display panel.

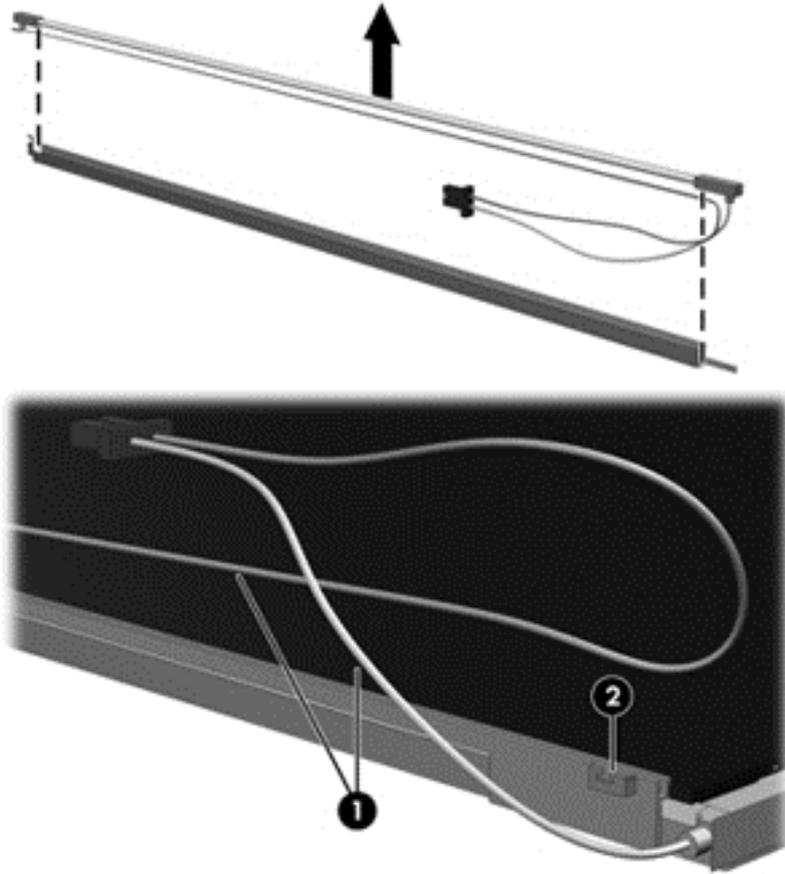


15. Turn the display panel upside down.
16. Remove the backlight frame from the display panel.

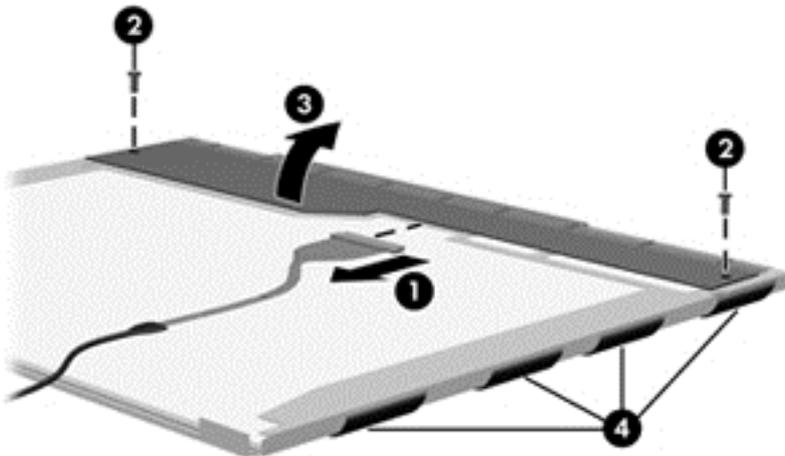
⚠ WARNING! The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.



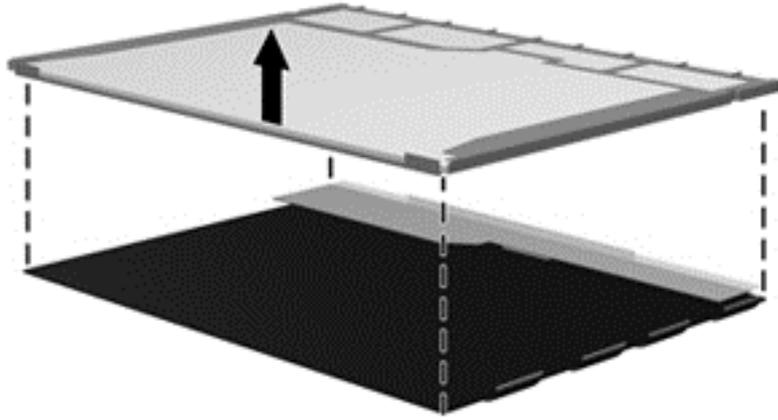
17. Remove the backlight from the backlight frame.



18. Disconnect the display cable (1) from the LCD panel.
19. Remove the screws (2) that secure the LCD panel to the display rear panel.
20. Release the LCD panel (3) from the display rear panel.
21. Release the tape (4) that secures the LCD panel to the display rear panel.



22. Remove the LCD panel.



23. Recycle the LCD panel and backlight.

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