



Compaq Presario CQ41 Notebook PC

Maintenance and Service Guide

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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



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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Product description

Category	Description	Discrete graphics subsystem memory	UMA graphics subsystem memory
Product Name	Compaq Presario CQ41 Notebook PC	✓	✓
Processors	Intel Arrandale™ CPU-uPGA Socket Single-Core i5-520M (2.4 GHz, 3 MB L3 cache, 1066 MHz SC Turbo)	✓	✓
	Intel Arrandale CPU-uPGA Socket Single-Core i5-540M (2.53 GHz, 3 MB L3 cache, 1066 MHz SC Turbo)	✓	✓
Chipset	Intel™ HM55	✓	✓
Graphics	ATI Discrete Mobility Radeon™ HD4350 with 512 MB dedicated video memory	✓	
	Mobile Intel GMA Media Accelerator HD unified memory architecture (UMA, integrated) with shared video memory: <ul style="list-style-type: none"> ■ Up to 285 MB of video memory on computer models equipped with 1 GB of main system memory. ■ Up to 797 MB of video memory on computer models equipped with 2 GB of main system memory. ■ Up to 1309 MB of video memory on computer models equipped with 3 GB of main system memory. ■ Up to 1295 MB of video memory on computer models equipped with 4 GB of main system memory (32-bit OS). ■ Up to 1695 MB of video memory on computer models equipped with 4 GB of main system memory (64-bit OS). 		✓
Panel	14.1-in WXGA BrightView (1280 × 800) display panel 16:10 wide aspect ratio	✓	✓

(Continued)

Category	Description	Discrete graphics subsystem memory	UMA graphics subsystem memory
Memory	2 customer-accessible/upgradable memory module slots Supports dual-channel memory Supports up to 4 GB of system RAM, 1600 MHz, DDR3 Supports the following configurations: <ul style="list-style-type: none"> ■ 4096 MB total system memory (2048 × 2, dual-channel) ■ 3072 MB total system memory (2048 + 1024) ■ 2048 MB total system memory (1024 × 2, dual-channel) ■ 2048 MB total system memory (2048 × 1) ■ 1024 MB total system memory (1024 × 1) 	✓	✓
Hard drive	Supports a 9.50-mm, 6.35-cm (2.50 in) hard drive Customer-accessible Serial ATA Supports the following hard drives: <ul style="list-style-type: none"> 500 GB, 7200 rpm 320 GB, 7200 rpm 250 GB, 7200 rpm 160 GB, 7200 rpm 	✓	✓
Optical drive	12.7 mm tray load Serial ATA (SATA) Fixed (removal of 1 screw required) Customer-accessible Parallel ATA Supports no-optical-drive option Supports the following drives: <ul style="list-style-type: none"> ■ DVD±R/RW SuperMulti DL Drive with LightScribe ■ Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe 	✓	✓
Microphone	Single analog microphone	✓	✓
Audio	High-definition audio Supports Microsoft® premium requirements Presario-branded Altec Lansing speakers	✓	✓
Modem (select models only)	56K MDC V.92 data/fax modem (select models only)	✓	✓
Webcam (select models only)	VGA webcam Fixed (no tilt) Activity LED 640 × 480, 24 frames per second	✓	✓
Ethernet	Integrated 10/100 network interface card (NIC)	✓	✓

(Continued)

Category	Description	Discrete graphics subsystem memory	UMA graphics subsystem memory
Wireless	Integrated WLAN options by way of wireless module 2 wireless antennas built into display assembly Supports no-WLAN option Support for the following WLAN formats: Broadcom BCM4312 802.11b/g WLAN module Atheros AR5009 802.11a/b/g/n WLAN module Atheros AR9285 802.11b/g/n WLAN module	✓	✓
External media cards	Digital Media Slot supporting Memory Stick (MS), Memory Stick Pro (MSP), MultiMediaCard (MMC), Secure Digital (SD) Memory Card, and xD-Picture Card (XD). Adapter (purchased separately) provides support for mini versions of SD, MMC, and MS Duo	✓	✓
Ports	Audio-in (stereo microphone) Audio-out (stereo headphone) RJ-11 modem (select models only) HDMI v. 1.3b supporting 1080p with HDCP key HP Smart Adapter power RJ-45 network (Ethernet, includes link and activity lights) USB 2.0 VGA (Dsub 15-pin) supports the following resolutions: 1920 × 1200 external resolution at 60 GHz 1600 × 1200 external resolution at 75 GHz Hot plug/unplug with auto-detect	✓ ✓ ✓	 ✓ ✓
Keyboard/pointing devices	14.1-in keyboard TouchPad with twoTouchPad buttons Supports two-way scroll Taps enabled as default	✓	✓
Power requirements	90 W HP Smart Adapter with localized cable plug support (three-wire plug with ground pin, supports three-pin DC connector) 65 W HP Smart Adapter with localized cable plug support (three-wire plug with ground pin, supports three-pin DC connector) Battery option: 6-cell, 2.20 Ah (47 Wh) Li-ion battery	✓ ✓ ✓	 ✓ ✓

(Continued)

Category	Description	Discrete graphics subsystem memory	UMA graphics subsystem memory
Security	Kensington Security Lock	✓	✓
Operating system	Preinstalled: Windows® 7 Professional (64-bit or 32-bit OS) Windows 7 Premium (64-bit or 32-bit OS) Windows 7 Basic (32-bit OS) FreeDOS	✓	✓
Serviceability	End-user replaceable parts: AC adapter Battery (system) Hard drive Memory modules MiniCard components Optical drive WLAN module	✓	✓

External component identification

Top components

TouchPad



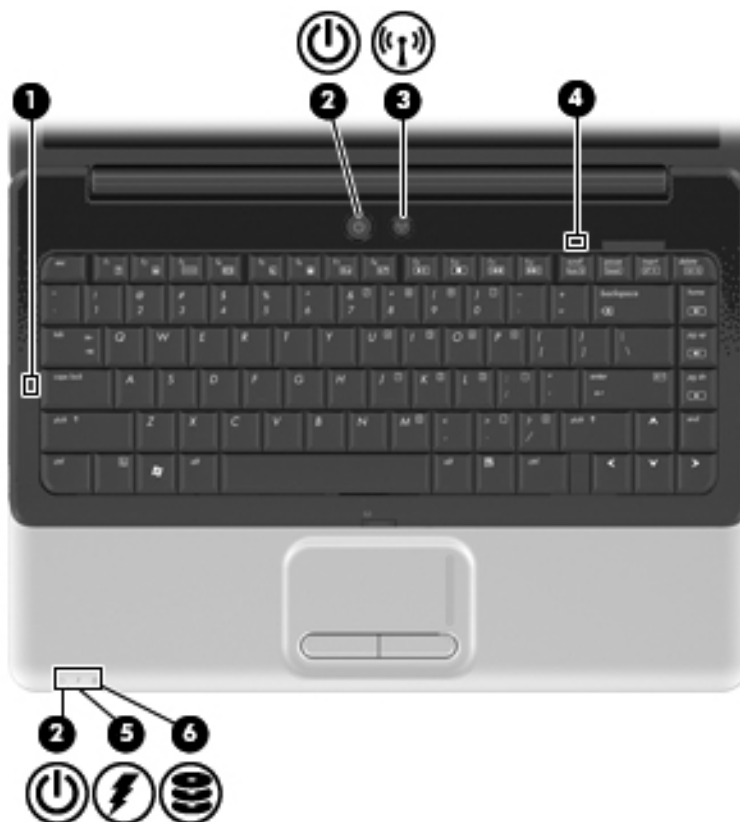
Item	Component	Description
1	TouchPad light	White—TouchPad is enabled. Amber—TouchPad is disabled.
2	TouchPad*	Moves the pointer and selects or activates items on the screen.
3	Left TouchPad button*	Functions like the left button on an external mouse.
4	TouchPad on/off button	Enables/disables the TouchPad.
5	TouchPad scroll zone	Scrolls up or down.
6	Right TouchPad button*	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 your computer.
3. Select **Mouse settings**.

Lights




Item	Component	Description
1	Caps lock light	On—Caps lock is on.
2	Power lights (2)*	On—The computer is on. Flashing—The computer is in the Sleep. Off—The computer is off or in Hibernation.
3	Wireless light	Blue—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.
4	Num lock light	On—The num lock is on or the embedded numeric keypad is enabled.
5	Battery light	On—The battery is charging. Flashing—The battery reaches a low battery level or a critical battery level. Off—If the computer is connected to an external power source, the light is off when all batteries in the computer are fully charged. If the computer is not connected to an external power source, the light is off until the battery reaches a low battery level.
6	Drive light	Flashing—The hard drive or optical drive is being accessed.

*The two power lights display the same information. The light on the power button is visible only when the computer is open. The power light on the front of the computer is visible whether the computer is open or closed.

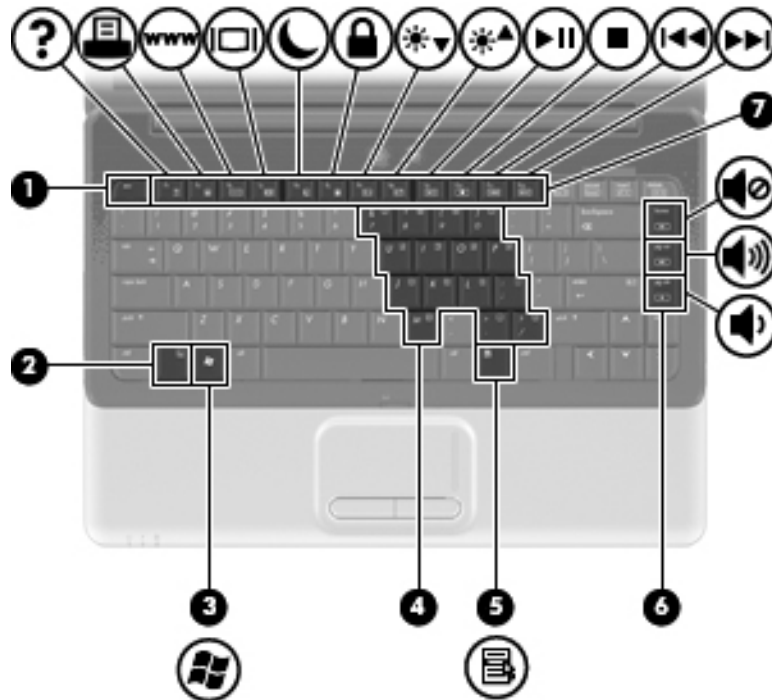
Buttons and speakers



Item	Component	Description
1	Speakers (2)	Produce sound.
2	Power button*	<p>When the computer is off, press the button to turn on the computer.</p> <p>When the computer is on, press the button to initiate Sleep.</p> <p>When the computer is in Sleep, press the button to exit Sleep.</p> <p>When the computer is in Hibernation, press the button to exit Hibernation.</p> <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 shut down the computer.</p> <p>To learn more about power settings, select Start > Control Panel > System and Security > Power Options.</p>
3	Wireless button	<p>Turns the wireless feature on or off but does not create a wireless connection.</p> <p> A wireless network must be set up in order to establish a wireless connection.</p>

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

Keys



Item	Component	Description
1	esc key	Displays system information when pressed in combination with the fn key.
2	fn key	Executes frequently used system functions when pressed at the same time as a function key or the esc key.
3	Windows logo key	Displays the Windows Start menu.
4	Embedded numeric keypad keys	Used like the keys on an external numeric keypad.
5	Windows applications key	Displays a shortcut menu for items beneath the pointer.
6	Navigation keys (home, pg up, pg down)	Execute volume mute, volume up, or volume down when pressed at the same time as the fn key.
7	Function keys	Execute frequently used system functions when pressed at the same time as the fn key.

Display



Item	Component	Description
1	Internal display switch	Turns off the display if the display is closed while the computer is turned on.
2	Internal microphone	Records sound.
3	Webcam light (select models only)	On—The webcam is in use.
4	Webcam (select models only)	Records video and captures still photographs.


Front components



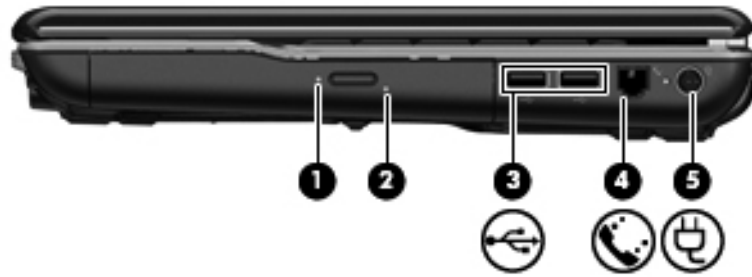
Item	Component	Description
1	Power light	On—The computer is on. Flashing—The computer is in Sleep. Off—The computer is off or in Hibernation.
2	Battery light	On—The battery is charging. Flashing—The battery reaches a low battery level or a critical battery level. Off—If the computer is connected to an external power source, the light is off when all batteries in the computer are fully charged. If the computer is not connected to an external power source, the light is off until the battery reaches a low battery level.
3	Drive light	Flashing—The hard drive or the optical drive is being accessed.
4	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
5	Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.

Rear component



Component	Description
Vent	<p data-bbox="703 491 1170 520">Enables airflow to cool internal components.</p> <p data-bbox="703 533 1507 617"> 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.</p>


Right-side components



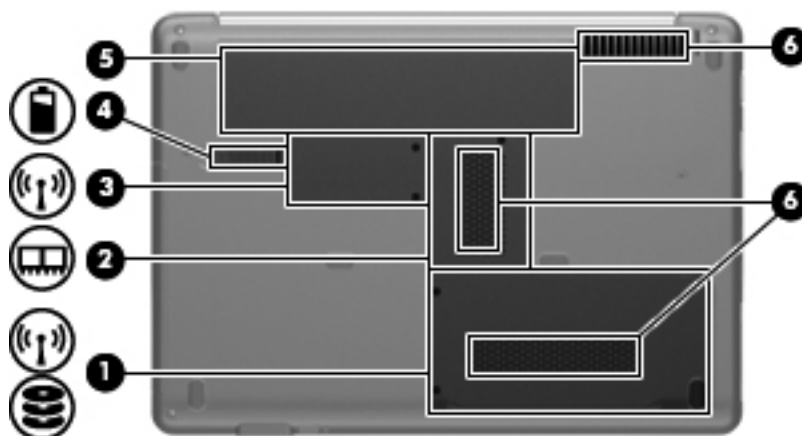
Item	Component	Description
1	Optical drive light	Flashing—The optical drive is being accessed.
2	Optical drive	Reads and writes to optical discs.
3	USB ports (2)	Connect optional USB devices.
4	RJ-11 (modem) jack (select models only)	Connects a modem cable.
5	Power connector	Connects an AC adapter.




Left-side components



Item	Component	Description
1	Security cable slot	Attaches an optional security cable to the computer.  The security cable is designed to act as a deterrent, but it might not prevent the computer from being mishandled or stolen.
2	External monitor port	Connects an external VGA monitor or projector.
3	RJ-45 (network) jack	Connects a network cable.
4	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
5	USB port	Connects an optional USB device.
6	Digital Media Slot light	On—Accessing a digital card.
7	Digital Media Slot	Supports the following optional digital card formats: Memory Stick (MS) Memory Stick Pro (MSP) MultiMediaCard (MMC) Secure Digital (SD) Memory Card xD-Picture Card (XD)

Bottom components



Item	Component	Description
1	Hard Drive bay	<p>Holds the hard drive and, on select models, the wireless LAN (WLAN) device.</p> <p> 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.</p>
2	Memory Module compartment	Contains the two memory module slots.
3	Mini Card compartment	<p>Holds the real-time clock (RTC) battery and, on select models, the WLAN device.</p> <p> 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.</p>
4	Battery Release latch	Releases the battery from the battery bay.
5	Battery bay	Holds the battery.
6	Vents (3)	<p>Enable airflow to cool internal components.</p> <p> 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.</p>

Wireless antennas

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



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

To see wireless regulatory notices, see the section of *Regulatory, Safety and Environmental Notices* that applies to your country or region. These notices are located in Help and Support.

Additional hardware components



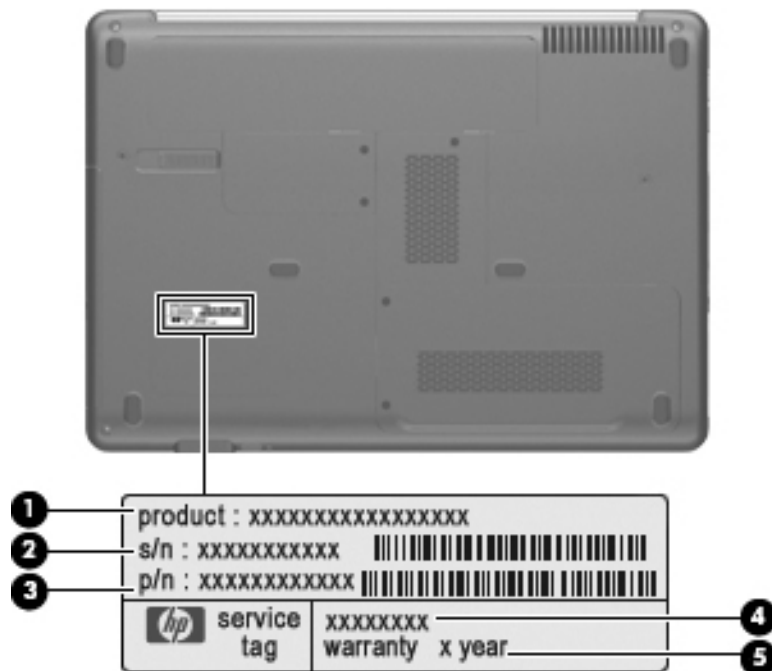
Item	Component	Description
1	Power cord*	Connects an AC adapter to an AC outlet.
2	AC adapter	Converts AC power to DC power.
3	Battery*	Powers the computer when the computer is not plugged into external power.

*Batteries and power cords vary in appearance by country or region.

Illustrated parts catalog

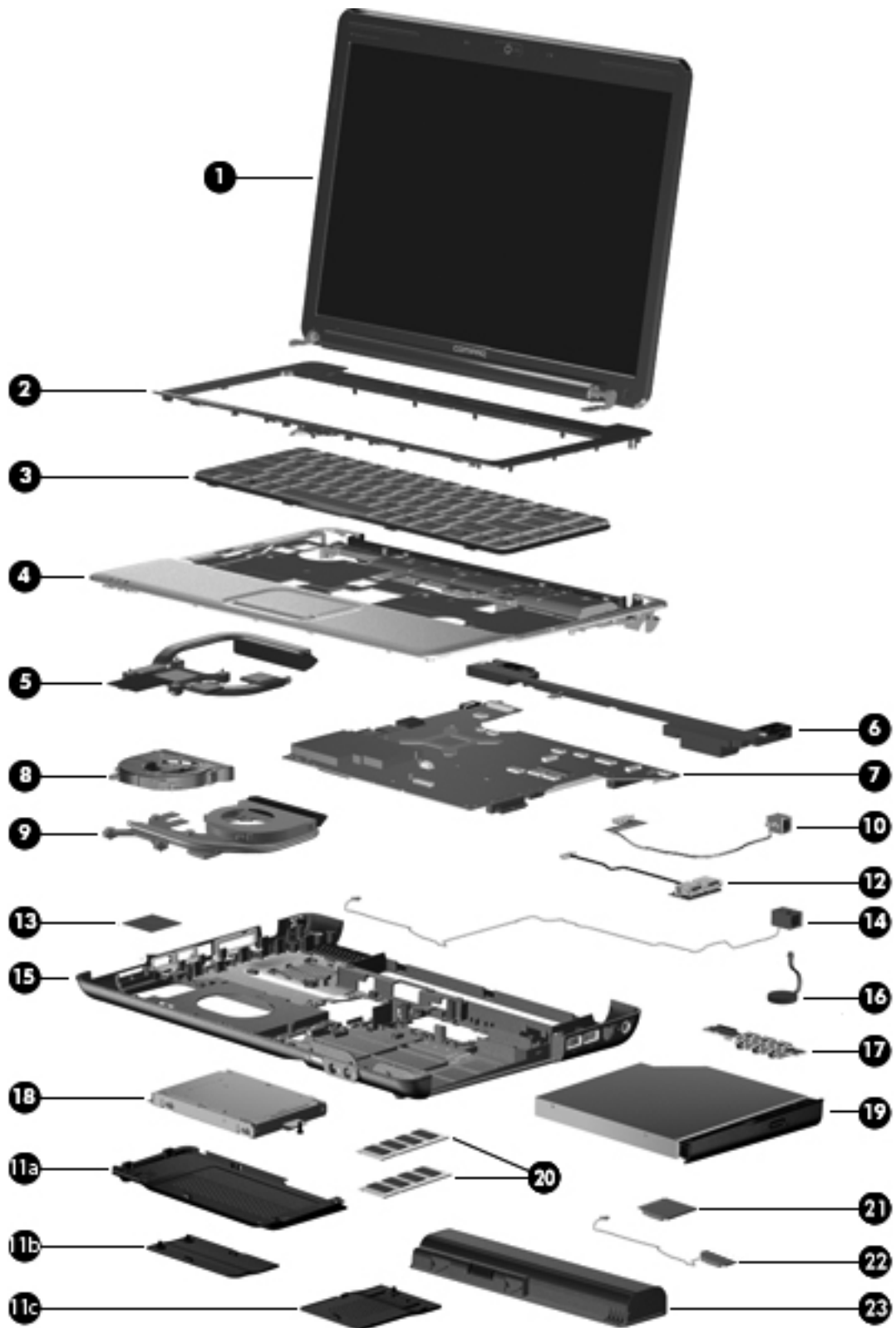
Service tag

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



Item	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 which components and parts are needed.
4	Model description	An alphanumeric identifier used to locate documents, drivers, and support for the computer.
5	Warranty period	The duration of the warranty period for the computer.

Computer major components



Item	Description	Spare Part Number
1	Display assembly (See “Display assembly,” for more display assembly internal component spare part information.)	
	14.1-in WXGA BrightView display with a microphone for models with discrete and UMA graphics subsystems	487280-001
	14.1-in WXGA BrightView display with a webcam/microphone for models with discrete and UMA graphics subsystems	487281-001
2	Keyboard cover	487299-001
	Power button board (includes cable)	492249-001
3	Keyboard (includes keyboard cable) for use with computer models in:	
	Brazil	486904-201
	Latin America	486904-161
	South Korea	486904-AD1
	Taiwan	486904-AB1
	Thailand	486904-281
	the United States	486904-001
4	Top cover	487300-001
	TouchPad (includes cable)	494960-001
	TouchPad bracket	494962-001
	TouchPad button board (includes cable)	494965-001
5	Heat sink assembly with UMA graphics subsystems (includes thermal material)	591957-001
6	Speaker assembly (includes speaker cable)	
	All countries and regions except India	486865-001
	India	486865-D61
7	System board (includes replacement thermal material):	
	Discrete graphics subsystems	590329-001
	UMA graphics subsystems	590330-001
8	Fan for models with UMA graphics subsystems	486844-001
9	Heat sink/fan with discrete graphics subsystems (includes thermal material)	591956-001
10	Modem module (select models only)	
	For use in all countries and regions except Australia and New Zealand	461749-001
	For use in Australia and New Zealand	461749-011
	Modem module cable (includes RJ-11 connector)	494981-001
	Plastics Kit (see “Plastics Kit” on page 3-8 for Plastics Kit spare part information)	486862-001
11a	Hard drive cover	
11b	Memory module compartment cover	
11c	Mini Card compartment cover	
12	USB board	486842-001
	USB board cable	486843-001
13	WLAN module	

(Continued)

Item	Description	Spare Part Number
	<p>Atheros AR5009 802.11a/b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, 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, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, 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, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, 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, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe</p>	518437-002
	<p>Broadcom BCM4312 802.11b/g 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, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, 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, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, 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, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, 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, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe</p>	504593-004

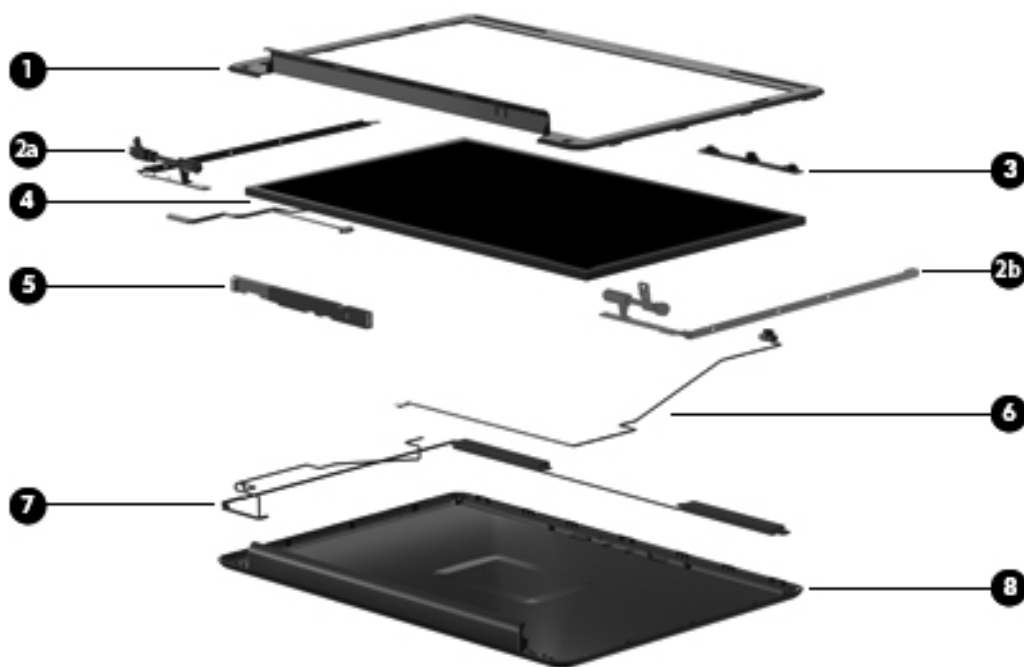
(Continued)

Item	Description	Spare Part Number
	Atheros AR9285 802.11b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, 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, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, 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, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, 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, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	518436-002
	Mini Card bracket (not illustrated)	577509-001
14	Power connector and cable	486864-001

(Continued)

Item	Description	Spare Part Number
15	Base enclosure	
	Computer models with a modem module	492248-001
	Computer models without a modem module	487359-001
	Rubber Feet Kit (not illustrated, includes six rubber feet)	486863-001
16	RTC battery (includes cable and double-sided tape)	486835-001
17	Audio board	487344-001
	Audio board cable	486841-001
18	Hard drive (includes hard drive bracket):	
	500 GB, 7200 rpm	575569-001
	320 GB, 7200 rpm	575568-001
	250 GB, 7200 rpm	575567-001
	160 GB, 7200 rpm	580846-001
	Hard Drive Hardware Kit (contains screws and hard drive bracket; not illustrated)	482158-001
19	Optical drive (includes bezel and bracket):	
	DVD±R/RW SuperMulti DL Drive with LightScribe	482178-003
	Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	578406-001
20	Memory module (PC3 1333, 1066 MHz, DDR3):	
	1024 MB	590351-001
	2048 MB	590352-001
21	Processor (includes replacement thermal material):	
	Intel Arrandale CPU-uPGA Socket Single-Core i5-520M (2.4 GHz, 3 MB L3 cache, 1066 MHz SC Turbo)	594187-001
	Intel Arrandale CPU-uPGA Socket Single-Core i5-540M (2.53 GHz, 3 MB L3 cache, 1066 MHz SC Turbo)	594188-001
22	Bluetooth module (select models only)	537921-001
	Bluetooth module cable for discrete models	488130-001
	Bluetooth module cable for UMA models	486868-001
23	Battery	484170-001
	6-cell Li-Ion (2.2 Ah, 47 Wh)	

Display assembly



Item	Description	Spare part number
1	Display bezel	
	Models with a microphone module	487285-001
	Models with a webcam/microphone module	487286-001
	Display Hinge Kit	486737-001
2a	Left hinge and bracket	
2b	Right hinge and bracket	
3	Webcam/microphone module (select models only)	487287-001
4	14.1-in WXGA TFT BrightView display panel (includes display panel cable)	487279-001
5	Display inverter	486736-001
6	Microphone module and cable	517629-001
7	Wireless antenna transceivers and cable	
	Discrete graphics subsystems	502979-001
	UMA graphics subsystems	489066-001
8	Display enclosure	487284-001
	Display cable*	486735-001
	Display Screw Kit*	486730-001
	Display Rubber Kit* (includes rubber screw covers and LCD rubber pads)	487283-001
	Internal display switch*	489862-001
	* not illustrated	

Plastics Kit



Item	Description	Spare part number
	Plastics Kit:	486862-001
1	Hard Drive cover (includes two captive screws)	
2	Memory Module compartment cover	
3	Mini Card compartment cover	

Mass storage devices



Item	Description	Spare part number
1	Hard drive (includes hard drive bracket)	
	500 GB, 7200 rpm	575569-001
	320 GB, 7200 rpm	575568-001
	250 GB, 7200 rpm	575567-001
	160 GB, 7200 rpm	580846-001
	Hard Drive Hardware Kit* (contains screws and hard drive bracket)	482158-001
2	Optical drive (includes bezel and bracket):	
	DVD±R/RW SuperMulti DL Drive with LightScribe	482178-003
	Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	578406-001
	* not illustrated	

Miscellaneous parts

Description	Spare part number
AC adapters	
90-W PFC AC Adapter	463955-001
65-W PFC AC Adapter	463958-001
Power cords	
Argentina	490371-D01
Australia	490371-011
Brazil	490371-202
India	490371-D61
Italy	490371-061
People's Republic of China	490371-AA1
South Korea	490371-AD1
Taiwan	490371-AB1
United Kingdom and Singapore	490371-031
the United States	490371-001
Screw Kit	
Phillips PM3.0 × 3.0 screws	487298-001
Phillips PM2.5 × 18.0 screws	
Phillips PM2.5 × 10.0 screws	
Phillips PM2.5 × 7.0 captive screws	
Phillips PM2.5 × 6.0 screws	
Phillips PM2.5 × 5.0 captive screws	
Phillips PM2.5 × 5.0 screws	
Phillips PM2.5 × 4.0 screws	
Phillips PM2.5 × 3.0 screws	
Phillips PM2.0 × 10.0 captive screws	
Phillips PM2.0 × 4.0 screws	
Phillips PM2.0 × 3.0 screws	
Phillips PM2.0 × 2.0 screws	

Sequential part number listing

Spare part number	Description
461749-001	Modem module for use in all countries and regions except Australia and New Zealand
461749-011	Modem module for use in Australia and New Zealand
463955-001	90-W PFC AC Adapter
463958-001	65-W PFC AC Adapter
482158-001	Hard Drive Hardware Kit (contains screws and hard drive bracket)
482178-003	DVD±R/RW SuperMulti DL Drive with LightScribe
484170-001	6-cell Li-Ion battery (2.2 Ah, 47 Wh)
486730-001	Display Screw Kit
486735-001	Display cable
486736-001	Display inverter
486737-001	Display Hinge Kit
486835-001	RTC battery (includes cable and double-sided tape)
486841-001	Audio board cable
486842-001	USB board
486843-001	USB board cable
486844-001	Fan for models with UMA graphics subsystems
486862-001	Plastics kit
486863-001	Rubber kit (includes six rubber computer feet)
486864-001	Power connector and cable
486865-001	Speaker assembly for use in all countries and regions except India
486865-D61	Speaker assembly for use in India
486868-001	Bluetooth module cable for UMA models
486904-001	Keyboard for use in the United States
486904-161	Keyboard for use in Latin America
486904-201	Keyboard for use in Brazil
486904-281	Keyboard for use in Thailand
486904-AB1	Keyboard for use in Taiwan
486904-AD1	Keyboard for use in South Korea
487279-001	14.1-in WXGA TFT BrightView display panel (includes display panel cable)
487280-001	14.1-in WXGA BrightView display with a microphone for models with discrete and UMA graphics subsystems
487281-001	14.1-in WXGA BrightView display with a webcam/microphone for models with discrete and UMA graphics subsystems
487283-001	Display Rubber Kit (includes rubber screw covers and LCD rubber pads)
487284-001	Display enclosure
487285-001	Display bezel for models with a microphone module

(Continued)

Spare part number	Description
487286-001	Display bezel for models with a webcam/microphone module
487287-001	Webcam/microphone module (select models only)
487298-001	Screw Kit
487299-001	Keyboard cover (includes power button board and cable)
487300-001	Top cover (includes TouchPad and cable)
487344-001	Audio board
487359-001	Base enclosure for use in computer models without a modem module
488130-001	Bluetooth module cable for discrete models
489862-001	Internal display switch
490371-001	Power cord for use in the United States
490371-011	Power cord for use in Australia
490371-031	Power cord for use in the United Kingdom and Singapore
490371-061	Power cord for use in Italy
490371-202	Power cord for use in Brazil
490371-AA1	Power cord for use in the People's Republic of China
490371-AB1	Power cord for use in Taiwan
490371-AD1	Power cord for use in South Korea
490371-D01	Power cord for use in Argentina
490371-D61	Power cord for use in India
492248-001	Base enclosure for models with a modem module (select models only)
492249-001	Power button board (includes cable)
494960-001	TouchPad (includes cable)
494962-001	TouchPad bracket
494965-001	TouchPad button board (includes cable)
494981-001	Modem module cable (includes RJ-11 connector)

(Continued)

Spare part number	Description
504593-004	Broadcom BCM4312 802.11b/g 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, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, 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, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, 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, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, 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, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
517629-001	Microphone module and cable
518436-002	Atheros AR9285 802.11b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, 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, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, 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, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, 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, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe

(Continued)

Spare part number	Description
518437-002	Atheros AR5009 802.11a/b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, 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, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, 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, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, 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, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
537921-001	Bluetooth module (select models only)
575567-001	250 GB, 7200 rpm hard drive (includes bracket)
575568-001	320 GB, 7200 rpm hard drive (includes bracket)
575569-001	500 GB, 7200 rpm hard drive (includes bracket)
577509-001	Mini Card bracket
578406-001	Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe
580846-001	160 GB, 7200 rpm hard drive (includes bracket)
590329-001	System board for models equipped with discrete graphics subsystems
590330-001	System board for models equipped with UMA graphics subsystems
590351-001	1024 MB memory module (PC3-1333, 1066 MHz, DDR3)
590352-001	2048 MB memory module (PC3-1333, 1066 MHz, DDR3)
591956-001	Heat sink/fan for models with discrete graphics subsystems (includes thermal material)
591957-001	Heat sink assembly for models with UMA graphics subsystems (includes thermal material)
594187-001	Intel Arrandale CPU-uPGA Socket Single-Core i5-520M (2.4 GHz, 3 MB L3 cache, 1066 MHz SC Turbo)
594188-001	Intel Arrandale CPU-uPGA Socket Single-Core i5-540M (2.53 GHz, 3 MB L3 cache, 1066 MHz SC Turbo)

Removal and replacement procedures

Preliminary replacement requirements

Tools required

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

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

Service considerations

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



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

Plastic parts



CAUTION: Using excessive force during disassembly and reassembly damages 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 damages 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:

- 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 might work perfectly throughout a normal cycle. Or the device might function normally for a while, and then degrade in the internal layers, reducing its life expectancy.

 **CAUTION:** To prevent damage to the computer when you are removing or installing internal components:

- 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.

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.
- Shut down 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

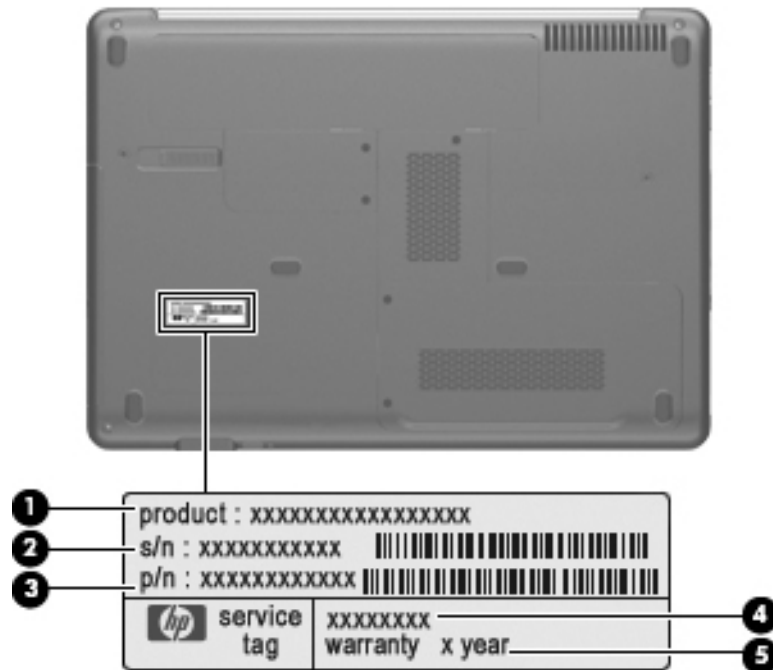
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 90 screws, in 13 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.

Service tag

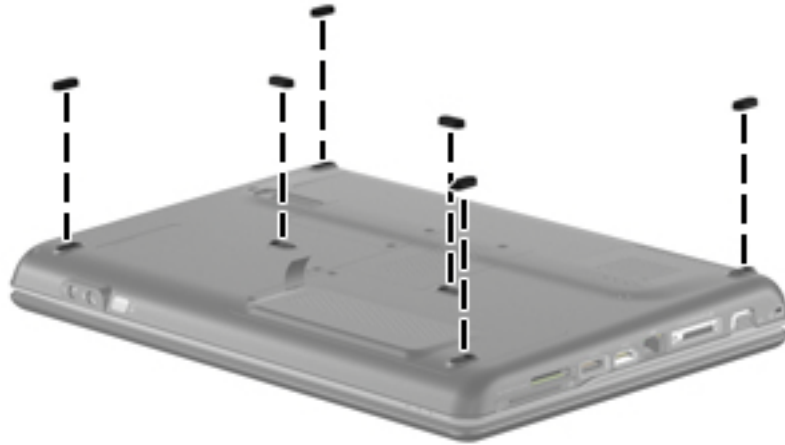
When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag.



Item	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 which components and parts are needed.
4	Model description	An alphanumeric identifier used to locate documents, drivers, and support for your computer.
5	Warranty period	The duration of the warranty period for the computer.

Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Kit, spare part number 486863-001. There are six rubber feet that attach to the base enclosure in the locations illustrated below.



Battery

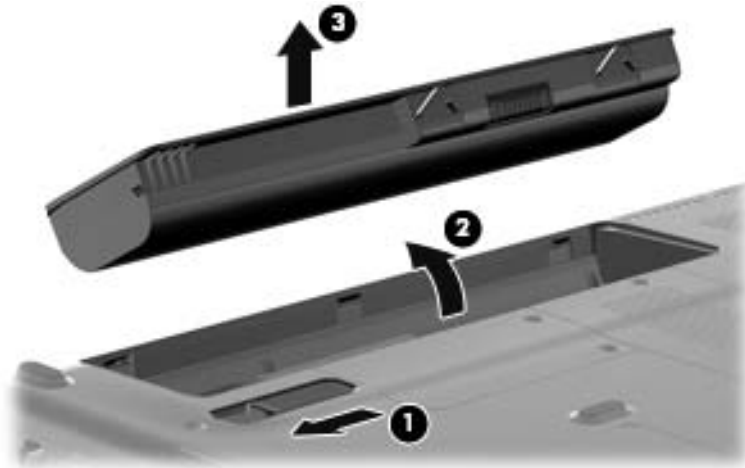
Description	Spare part number
6-cell Li-Ion battery (2.2 Ah, 47 Wh)	484170-001

Before disassembling the computer:

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.

Remove the battery:

1. Turn the computer upside down on a flat surface, with the battery bay toward you.
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

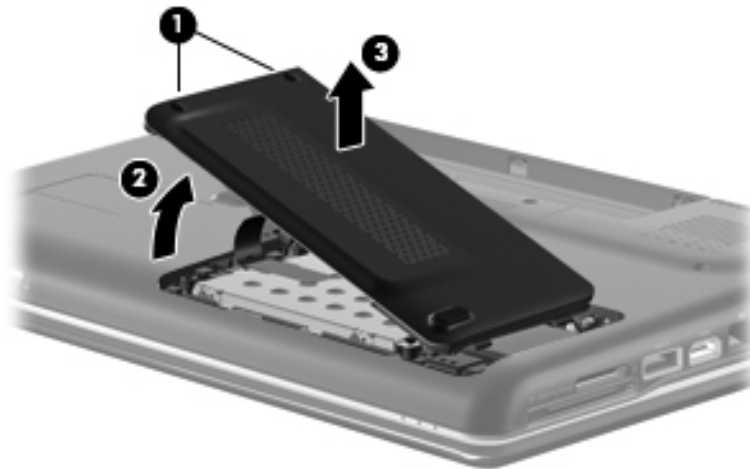
Description	Spare part number
500 GB, 7200 rpm hard drive	575569-001
320 GB, 7200 rpm hard drive	575568-001
250 GB, 7200 rpm hard drive	575567-001
160 GB, 7200 rpm hard drive	580846-001
Hard Drive Hardware Kit (includes hard drive connector, hard drive bracket, and screws)	482158-001

Before removing the hard drive:

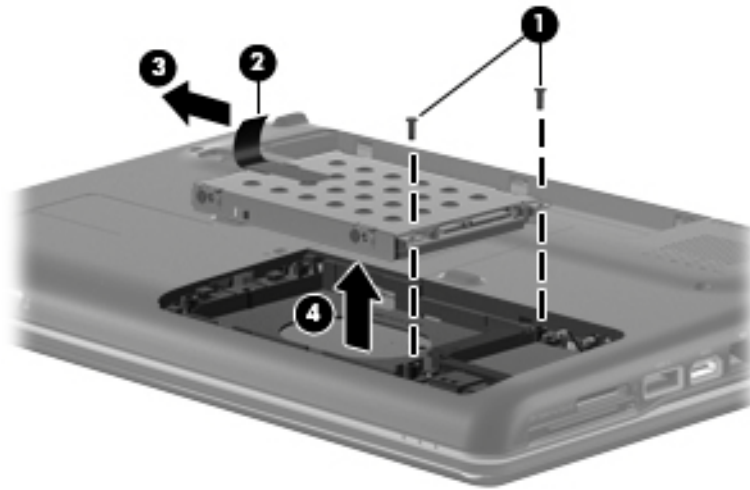
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).

Remove the hard drive:

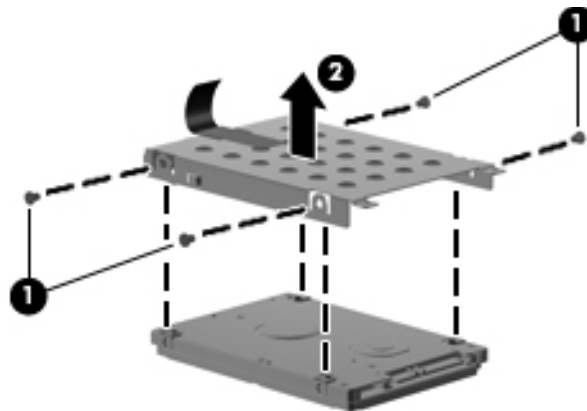
1. Position the computer with the front toward you.
2. Remove the two Phillips PM2.5×5.0 captive screws ❶ that secure the hard drive cover to the computer.
3. Lift the left side ❷ of the hard drive cover, swing it to the right, and remove the cover ❸. The hard drive cover is included in the Plastics Kit, spare part number 486862-001.



4. Remove the two Phillips PM2.0×4.0 screws ❶ that secure the hard drive to the computer.
5. Use the Mylar tab ❷ on the hard drive to slide the hard drive ❸ to the left.
6. Remove the hard drive ❹ from the hard drive bay.



7. If it is necessary to replace the hard drive bracket
 - a. Remove the two Phillips PM3.0×3.0 screws ❶ from each side of the hard drive.
 - b. Lift the bracket ❷ straight up to remove it from the hard drive.



Reverse this procedure to reassemble and install the hard drive.

Memory module

Description	Spare part number
1024 MB (PC3-1333, 1066 MHz, DDR3)	590351-001
2048 MB (PC3-1333, 1066 MHz, DDR3)	590352-001

Before removing the memory module:

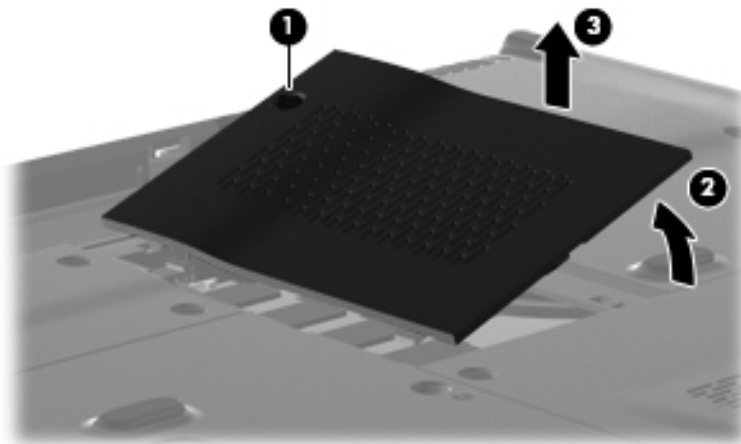
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see “[Battery](#)” on page 4-7).
5. Remove the hard drive cover (see “[Hard drive](#)” on page 4-8).

Remove the memory module:




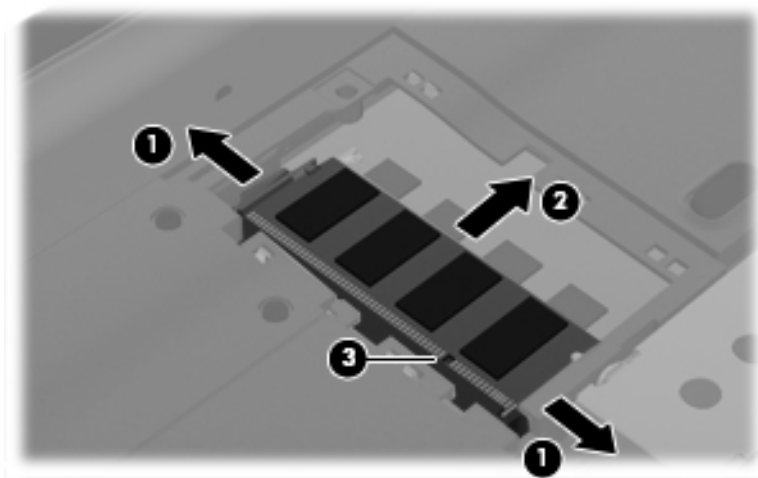
The top memory module slot is for expansion memory and the bottom slot is for primary memory.

1. Position the computer with the front toward you.
2. Remove the Phillips PM2.5×7.0 captive screw ❶ that secures the memory module compartment cover to the computer.
3. Lift the right side of the cover ❷, swing it to the left, and lift the cover off the computer ❸. The memory module compartment cover is included in the Plastics Kit, spare part number 486862-001.



4. Spread the retaining tabs **1** on each side of the memory module to release the memory module. (The edge of the module opposite the slot rises away from the computer.)
5. Remove the memory module **2** by pulling the module away from the slot at an angle.

 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

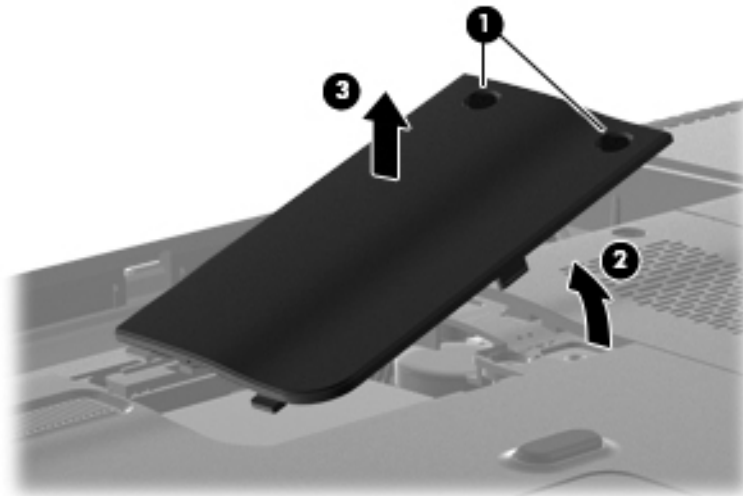
Description	Spare part number
RTC battery (includes cable and double-sided tape)	486835-001

Before removing the RTC battery:

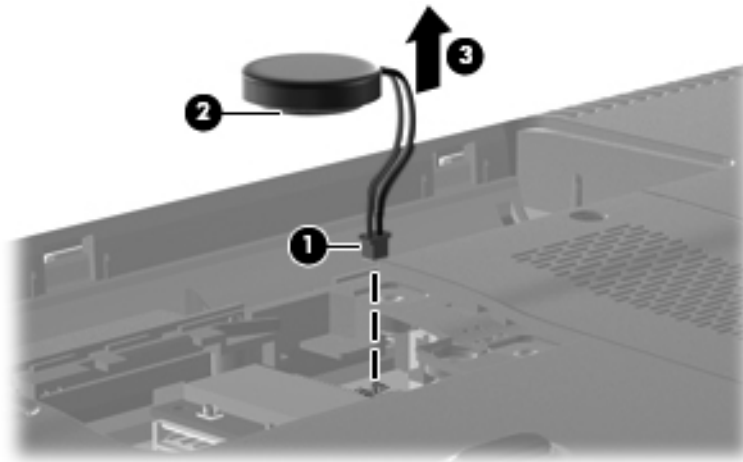
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see “[Battery](#)” on page 4-7).

Remove the RTC battery:

1. Remove the two Phillips PM2.5×5.0 captive screws ❶ that secure the Mini Card compartment cover to the computer.
2. Lift the right side of the Mini Card compartment cover ❷, swing it to the left, and remove the cover ❸. The Mini Card compartment cover is included in the Plastics Kit, spare part number 486862-001.



3. Disconnect the RTC battery cable ❶ from the system board.
4. Release the two-sided tape ❷ that holds the RTC battery.
5. Remove the RTC battery ❸.



Reverse this procedure to install the RTC battery.

WLAN module

Description	Spare part number
<p>Atheros AR5009 802.11a/b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, 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, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, 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, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, 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, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe</p>	518437-002
<p>Broadcom BCM4312 802.11b/g 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, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, 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, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, 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, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, 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, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe</p>	504593-004

(Continued)

Description	Spare part number
<p>Atheros AR9285 802.11b/g/n for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, 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, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, 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, the Republic of Moldova, Romania, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, 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, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe</p>	518436-002
Mini Card bracket	577509-001


Before removing the WLAN module:

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 4-7).


Remove the WLAN module (for models with discrete graphics subsystems):

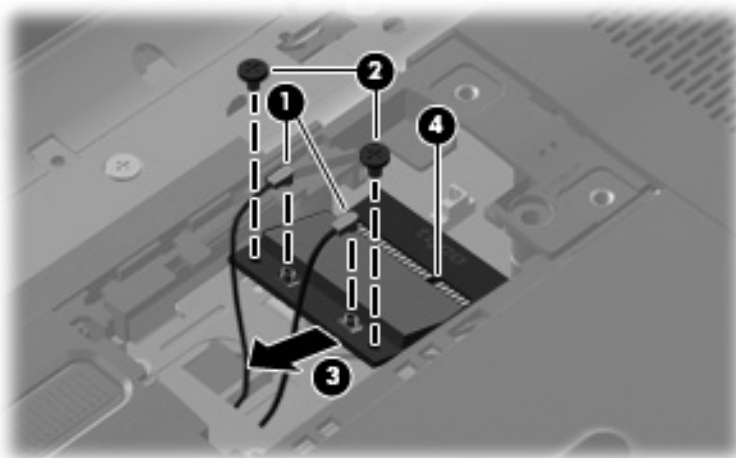
CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module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

1. Remove the RTC battery (see “[RTC battery](#)” on page 4-12).
2. Position the computer with the front toward you.
3. Disconnect the WLAN antenna cables ❶ from the terminals on the WLAN module.

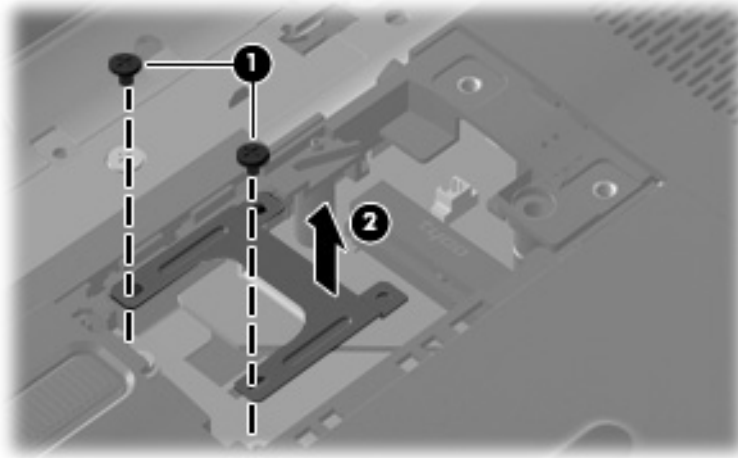
 The black WLAN antenna cable is connected to the WLAN module “Main” terminal. The white WLAN antenna cable is connected to the WLAN module “Aux” terminal.

4. Remove the two Phillips PM2.0×4.0 screws ❷ that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)
5. Remove the WLAN module ❸ by pulling the module away from the slot at an angle.

 WLAN modules are designed with a notch ❹ to prevent incorrect insertion of the WLAN module into the WLAN module slot.



6. If it is necessary to replace the Mini Card bracket, remove the two Phillips PM2.5×4.0 screws ① that secure it to the base enclosure.
7. Lift the bracket ② straight up to remove it.




Reverse this procedure to install the WLAN module.


Remove the WLAN module (for models with UMA graphics subsystems):

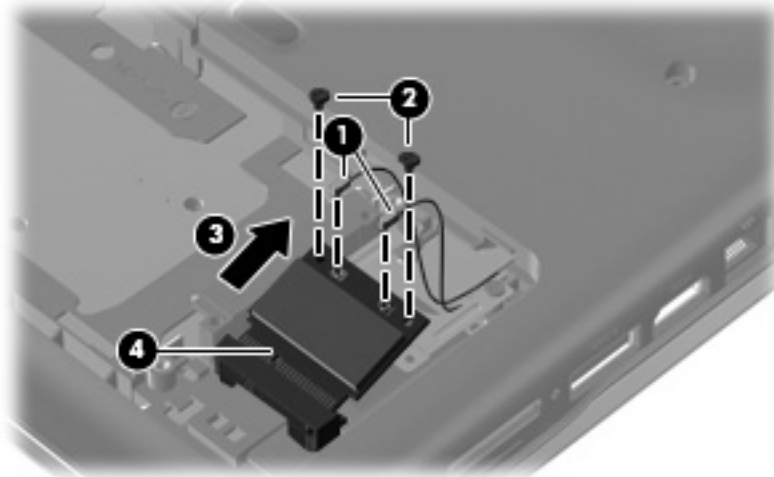
CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module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

1. Remove the hard drive cover (see [“Hard drive” on page 4-8](#)).
2. Position the computer with the front toward you.
3. Disconnect the WLAN antenna cables ❶ from the terminals on the WLAN module.

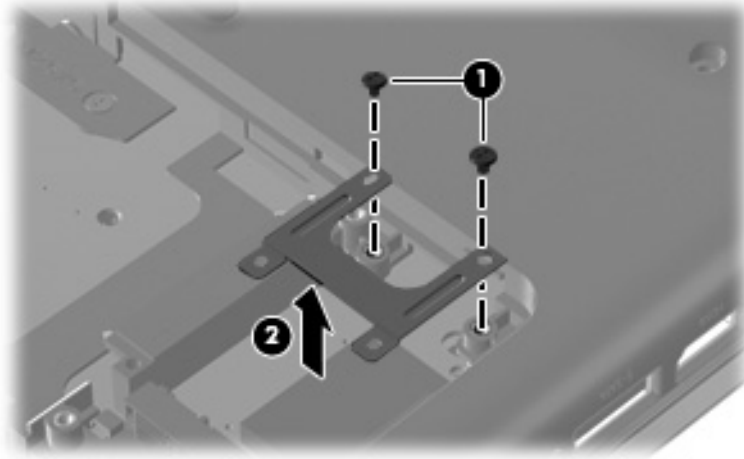
 The black WLAN antenna cable is connected to the WLAN module “Main” terminal. The white WLAN antenna cable is connected to the WLAN module “Aux” terminal.

4. Remove the two Phillips PM2.0x4.0 screws ❷ that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)
5. Remove the WLAN module ❸ by pulling the module away from the slot at an angle.

 WLAN modules are designed with a notch ❹ to prevent incorrect insertion of the WLAN module into the WLAN module slot.



6. To replace the Mini Card bracket, remove the two Phillips PM2.5×4.0 screws **1** that secure it to the base enclosure.
7. Lift the bracket **2** straight up to remove it.



Reverse this procedure to install the WLAN module.

Optical drive



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

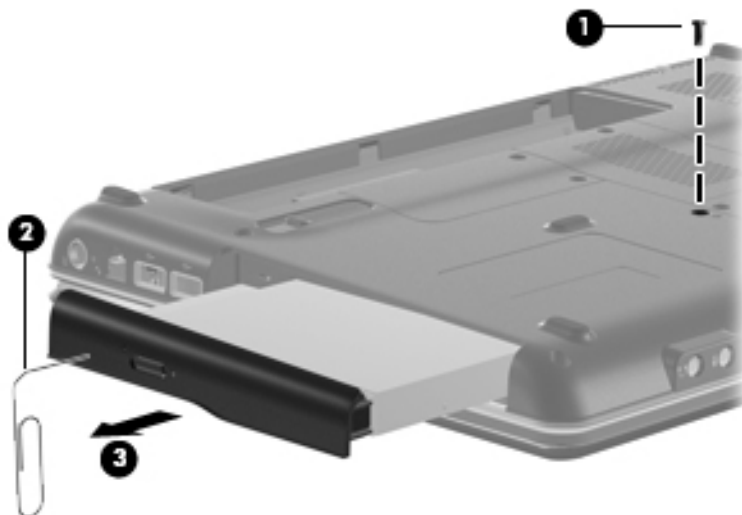
Description	Spare part number
Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	578406-001
DVD±R/RW SuperMulti DL Drive with LightScribe	482178-001

Before removing the optical drive:

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 4-7).

Remove the optical drive:

1. Position the computer with the right side toward you.
2. Remove the Phillips PM2.5×5.0 screw ❶ that secures the optical drive to the computer.
3. Insert a thin tool, such as a paper clip ❷, into the release access and press to release the drive. (The optical drive disc tray is partially ejected from the optical drive.)
4. Use the disc tray frame to slide the optical drive ❸ out of the computer.



Reverse this procedure to reassemble and install an optical drive.

Keyboard

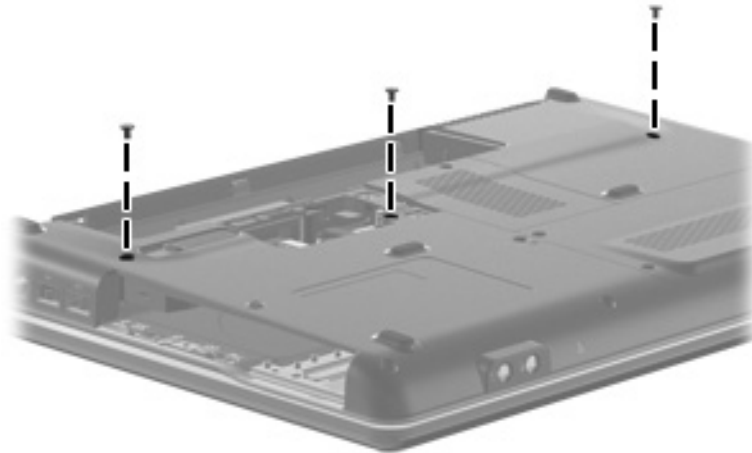
Description	Spare part number
Brazil	486904-201
Latin America	486904-161
South Korea	486904-AD1
Taiwan	486904-AB1
Thailand	486904-281
the United States	486904-001

Before removing the keyboard:


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 4-7](#)).
5. Remove the hard drive cover (see [“Hard drive” on page 4-8](#)).
6. Remove the Mini Card compartment cover (see [“RTC battery” on page 4-12](#)).
7. Remove the optical drive (see [“Optical drive” on page 4-20](#)).

Remove the keyboard:

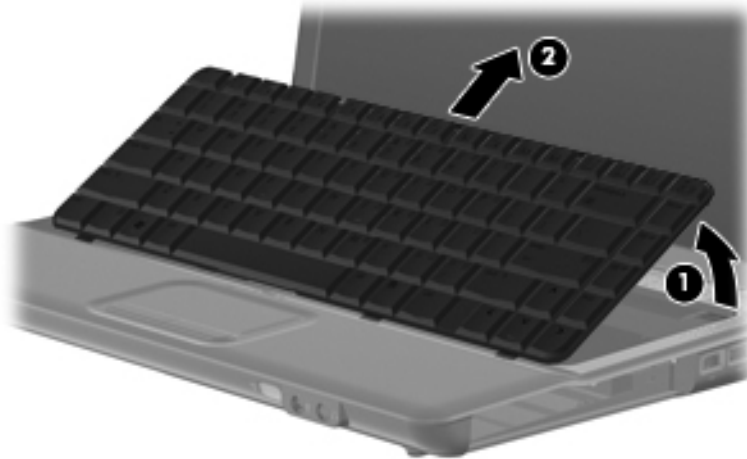
1. Remove the three Phillips PM2.5×17.0 screws that secure the keyboard to the computer.



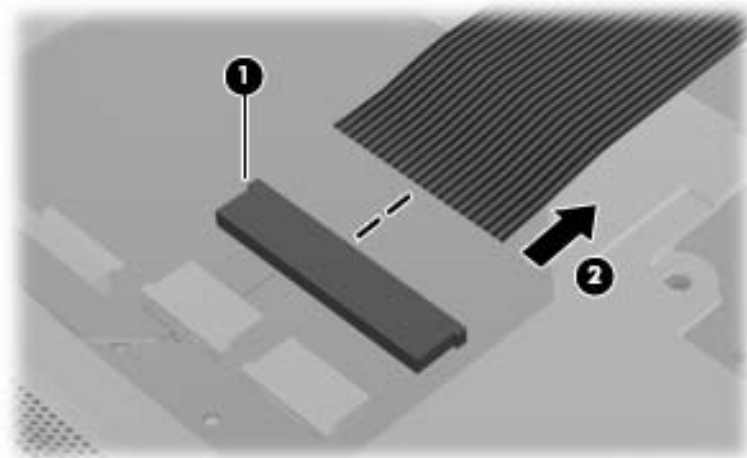
2. Turn the computer display-side up with the front toward you.
3. Open the computer as far as possible.
4. Lift the rear edge ❶ of the keyboard until it rests at an angle.

 The keyboard is held by two-sided tape.

5. Slide the keyboard ❷ back until the tabs on the bottom of the keyboard are clear of the keyboard cover.



6. Release the zero insertion force (ZIF) connector ❶ to which the keyboard cable is attached, and then disconnect the keyboard cable ❷ from the system board.



7. Remove the keyboard.

Reverse this procedure to install the keyboard.

Keyboard cover

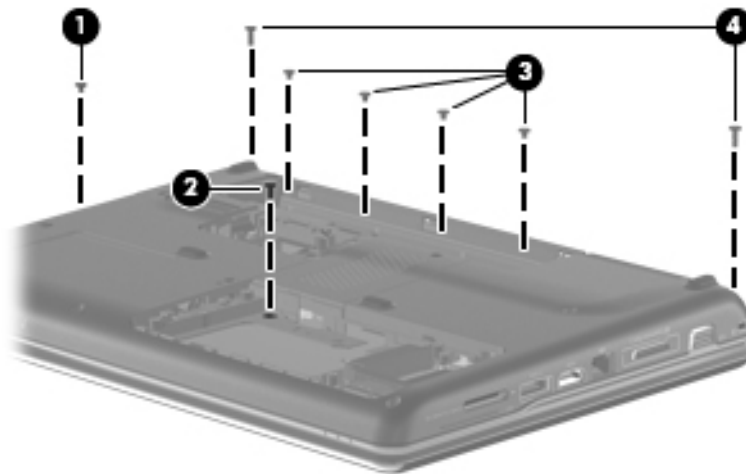
Description	Spare part number
Keyboard cover (includes power button board and cable)	487299-001

Before removing the keyboard cover:

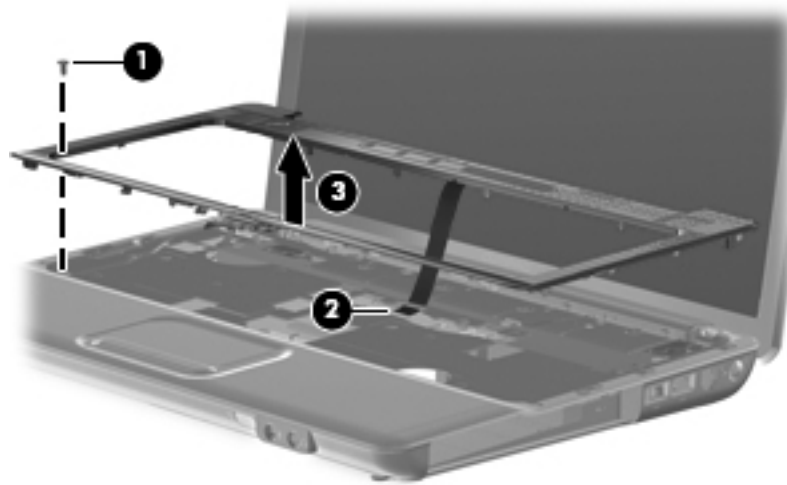
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
 - a. Hard drive cover (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Optical drive (see [“Optical drive” on page 4-20](#))
 - d. Keyboard (see [“Keyboard” on page 4-21](#))

Remove the keyboard cover:

1. Remove the Phillips PM2.0×3.0 broadhead screw **1** from the optical drive bay, the Phillips PM2.5×5.0 screw **2** from the hard drive bay, and four Phillips PM2.0×3.0 screws **3** from the battery bay.
2. From the base enclosure rear corners, remove the two Phillips PM2.5×10.0 screws **4** that secure the keyboard cover to the computer.



3. Turn the computer display-side up, with the front toward you.
4. Open the computer as far as possible.
5. Remove the Phillips PM2.5×6.0 screw ❶ from the front left corner of the keyboard cover.
6. Release the ZIF connector to which the power button board cable ❷ is connected and disconnect the cable from the system board.
7. Lift and remove the keyboard cover ❸ from the computer.



Reverse this procedure to install the keyboard cover.

Speaker assembly

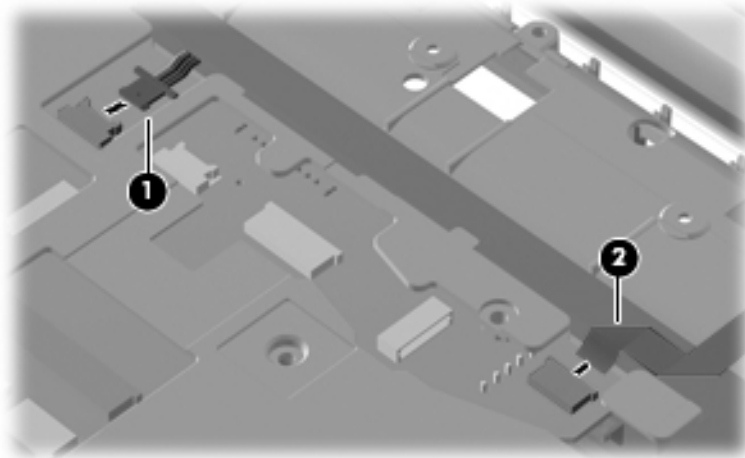
Description	Spare part number
All countries and regions except India	486865-001
India	486865-D61

Before removing the speaker assembly:

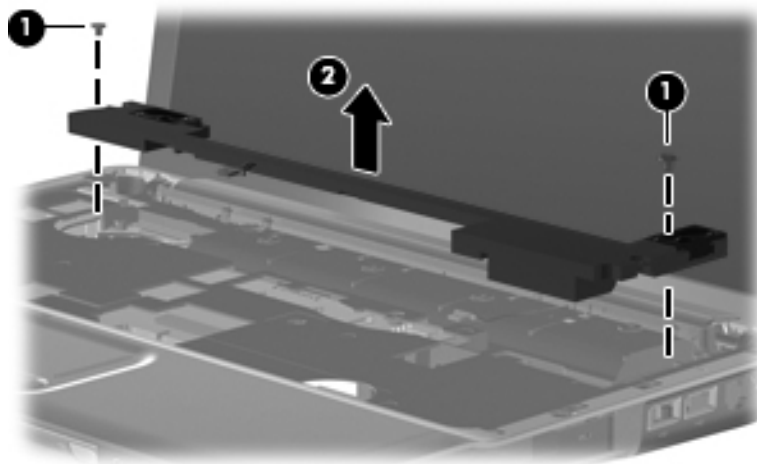
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
 - a. Hard drive cover (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Optical drive cover (see [“Optical drive” on page 4-20](#))
 - d. Keyboard (see [“Keyboard” on page 4-21](#))
 - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))

Remove the speaker assembly:

1. Disconnect the speaker cable **1** from the system board.
2. Release the zero insertion force (ZIF) connector for the num lock cable **2** from the system board.



3. Remove the two Phillips PM2.5×3.0 screws ❶ that secure the speaker assembly to the computer.
4. Lift the speaker assembly ❷ straight up to remove it from the computer.



Reverse this procedure to install the speaker assembly.

Display assembly



The display assembly spare part kit includes two WLAN antenna transceivers and cables, webcam (select models only), microphone, nameplate, and logo.


Description	Spare part number
14.1-in WXGA BrightView display with a microphone for models with discrete and UMA graphics subsystems	580763-001
14.1-in WXGA BrightView display with a webcam/microphone for models with discrete and UMA graphics subsystems	580766-001

Before removing the display assembly:

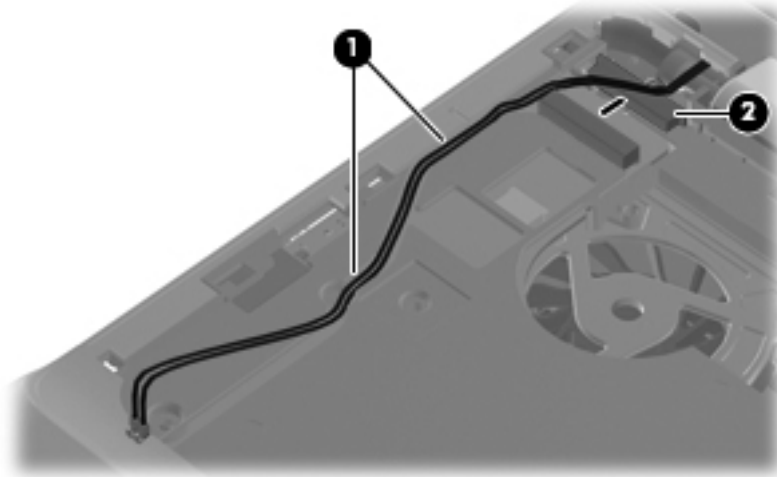
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [“WLAN module” on page 4-14](#)).
6. Remove the following components:
 - a. Hard drive cover (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Optical drive (see [“Optical drive” on page 4-20](#))
 - d. Keyboard (see [“Keyboard” on page 4-21](#))
 - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - f. Speaker assembly (see [“Speaker assembly” on page 4-25](#))

Remove the display assembly:

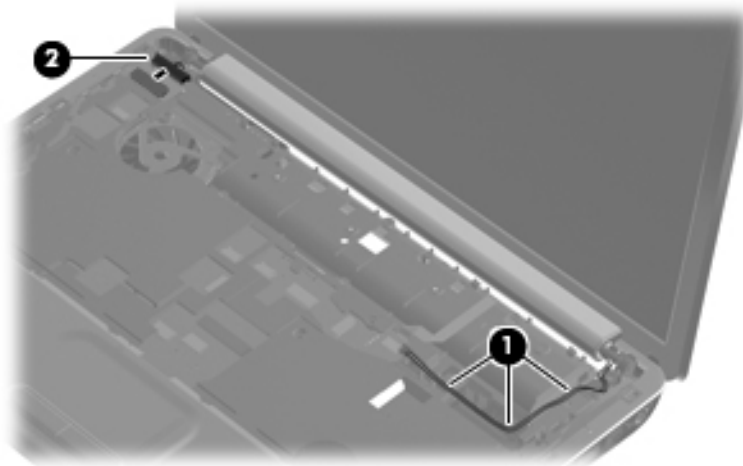
1. Turn the computer display-side up, with the front toward you.
2. Open the computer as far as possible.
3. Remove the wireless antenna cable ❶ from the hole in the system board and the routing channels and clips built into the top cover.

 For models with UMA graphics subsystems, the antenna cable routes to the hard drive bay. For models with discrete graphics subsystems, the antenna cable routes to the Mini Card compartment.

4. Disconnect the display panel cable ❷ from the system board.

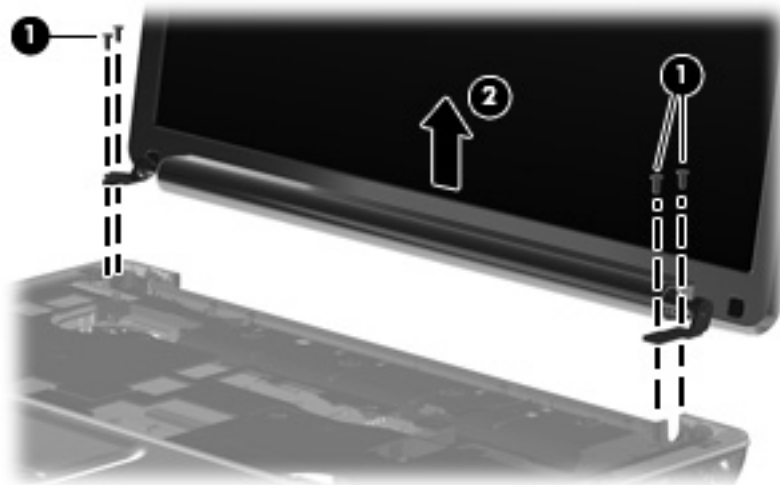


5. Remove the microphone cable ❶ from the hole in the system board and the routing channels and clips built into the top cover.
6. Disconnect the microphone cable from the system board ❷.

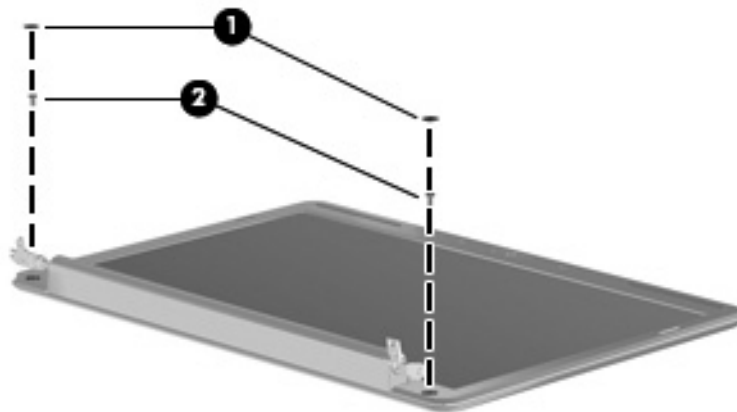


CAUTION: Support the display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

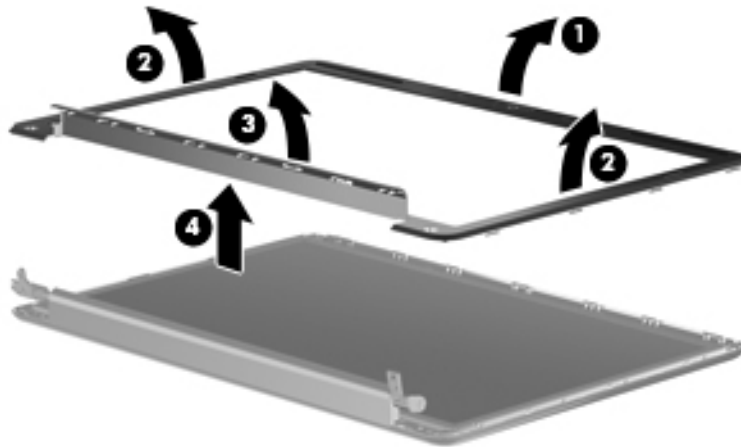
7. Remove the four Phillips PM2.5×6.0 screws ❶ that secure the display assembly to the computer.
8. Remove the display assembly ❷.



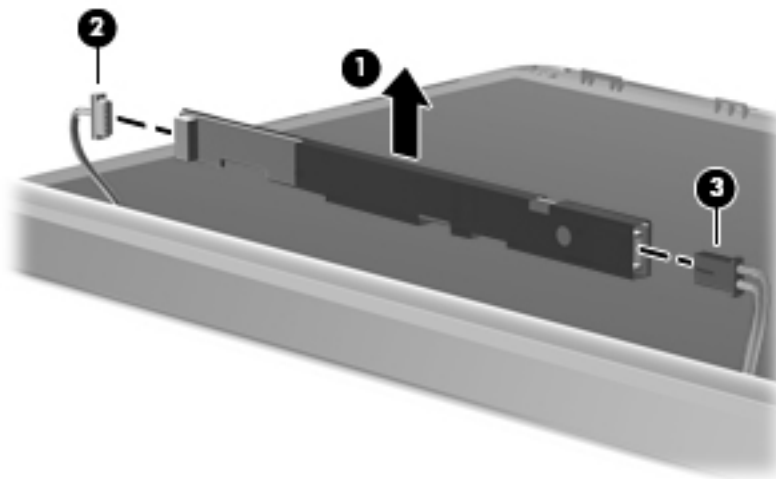
9. To replace the display bezel or any of the display assembly internal components, remove the Mylar screw covers ❶ and the two Phillips PM2.5×5.0 screws ❷ on the display bezel lower edge. The display rubber screw covers are included in the Display Rubber Kit, spare part number 487283-001.



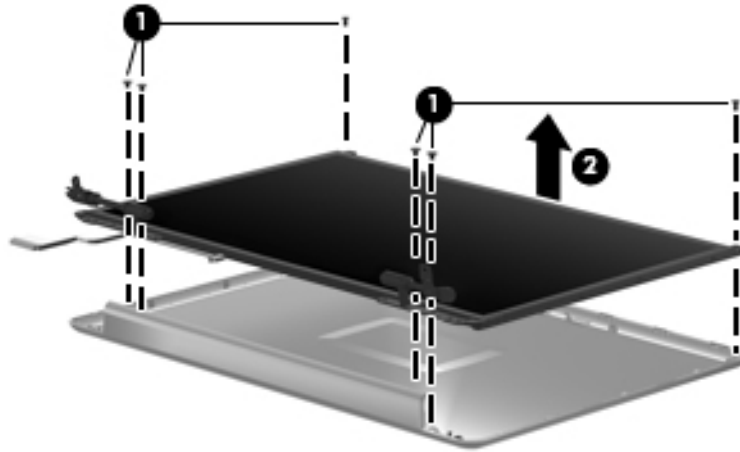
10. Flex the inside edges of the top edge ❶, the left and right sides ❷, and the bottom edge of the display bezel ❸ until the bezel disengages from the display enclosure.
11. Remove the display bezel ❹. The display bezel without a webcam module is available using spare part number 487285-001. The display bezel with a webcam module is available using 487286-001.



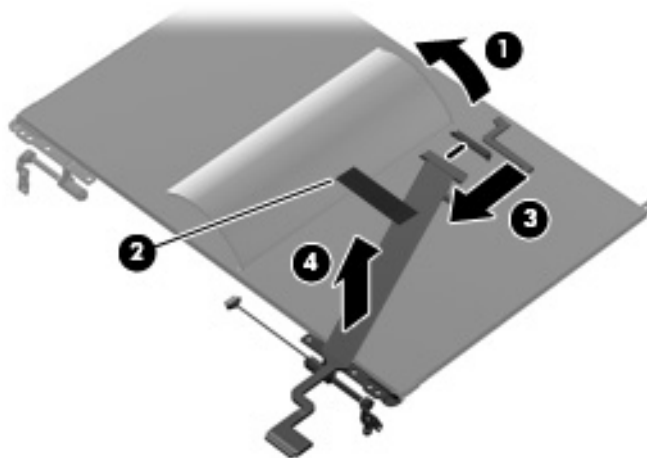
12. To replace the display inverter, lift the inverter ❶ from the clips in the display enclosure as far as the display panel cable and the backlight cable will allow.
13. Disconnect the display panel cable ❷ and the backlight cable ❸ from the display inverter. The display inverter is available using spare part number 486736-001.




14. To replace the display panel, remove the six Phillips PM2.5×5.0 screws **1** that secure the display panel to the display enclosure.
15. Remove the display panel **2**. The display panel is available using the spare part number 487279-001.



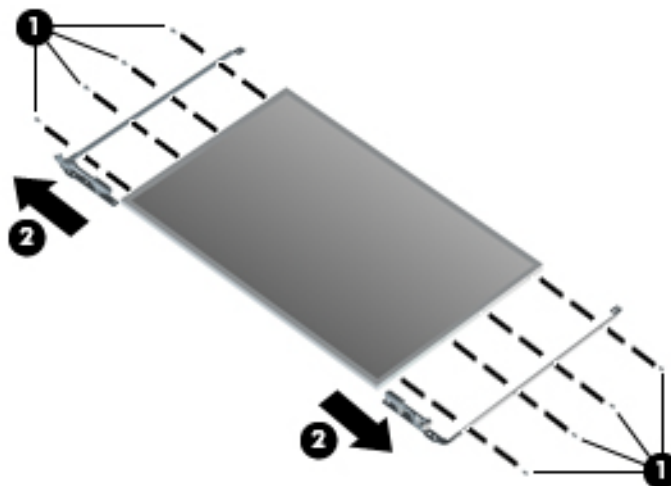
16. To replace the display cable:
 - a. Peel back the plastic **1** that covers the cable.
 - b. Remove the tape **2** that secures the cable to the display.
 - c. Unplug the cable **3** from the display.
 - d. Remove the cable from the display **4**. The display cable is available using spare part number 486735-001.



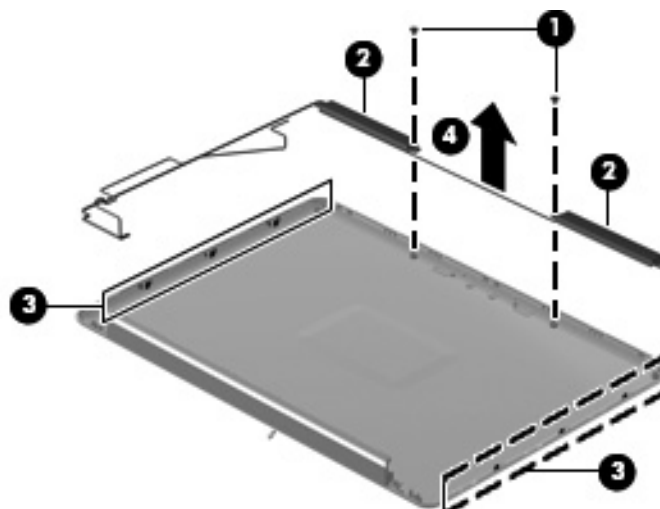
17. To replace the display hinges, remove the four Phillips PM2.0×3.0 screws ❶ that secure each hinge to the display panel.

 Remove and install the screws in the sequence indicated on the display hinge bracket.

18. Remove the display hinges ❷. The Display Hinge Kit is available using spare part number 486737-001.



19. To replace the wireless antenna transceivers and cables, remove the Phillips PM2.5×3.0 screw ❶ that secures each transceiver to the display enclosure.
20. Detach the wireless antenna transceivers ❷ from the display enclosure. The transceivers are secured by a foil wrapping.
21. Release the wireless antenna transceivers and cables from the clips ❸ built into the display enclosure.
22. Remove the wireless antenna transceivers and cables ❹ from the display enclosure. The wireless antenna transceivers and cables are available using spare part number 502979-001 for models with discrete graphics subsystems, and spare part number 489066-001 for models with UMA graphics subsystems.



Reverse this procedure to reassemble and install the display assembly.

Webcam/microphone module (select models only)

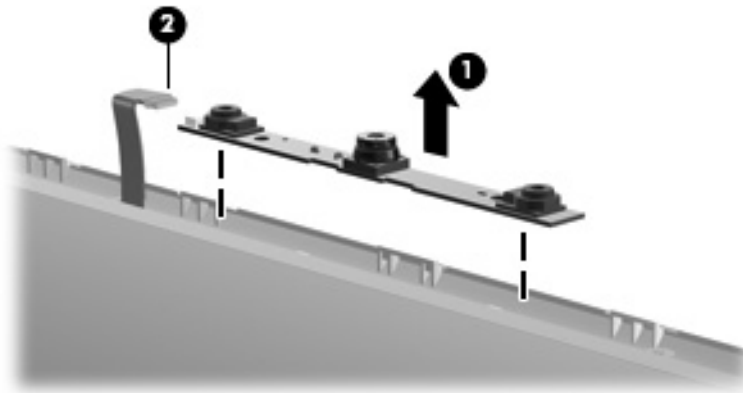
Description	Spare part number
Webcam/microphone module	487287-001

Before removing the display assembly:

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 4-7](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [“WLAN module” on page 4-14](#)).
6. Remove the following components:
 - a. Hard drive cover (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Optical drive (see [“Optical drive” on page 4-20](#))
 - d. Keyboard (see [“Keyboard” on page 4-21](#))
 - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - f. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - g. Display assembly (see [“Display assembly” on page 4-27](#))

Remove the webcam/microphone module:

1. Lift the webcam/microphone module ❶ as far from the display enclosure as the webcam/microphone module cable allows.
2. Disconnect the webcam/microphone module cable ❷ from the webcam/microphone module.



3. Remove the webcam/microphone module.

Reverse this procedure to install the webcam/microphone module.

Microphone module

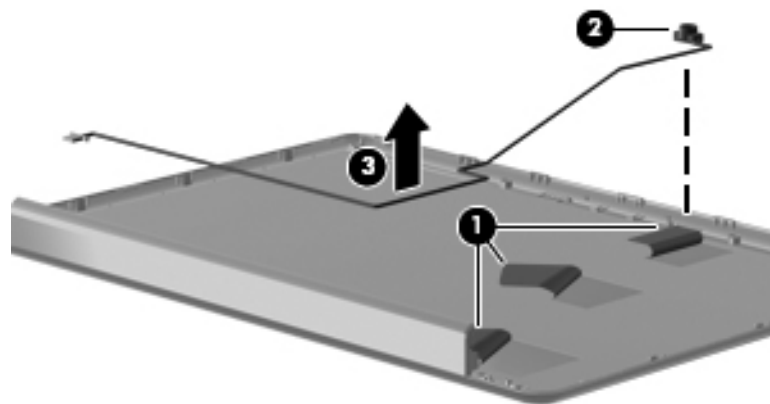
Description	Spare part number
Microphone module (includes cable)	517629-001

Before removing the display assembly:

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 4-7](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [“WLAN module” on page 4-14](#)).
6. Remove the following components:
 - a. Hard drive cover (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Optical drive (see [“Optical drive” on page 4-20](#))
 - d. Keyboard (see [“Keyboard” on page 4-21](#))
 - e. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - f. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - g. Display assembly (see [“Display assembly” on page 4-27](#))

Remove the microphone module:

1. Release the tabs ❶ built into the display enclosure.
2. Release the microphone receiver ❷ from the display enclosure. The microphone receiver is secured by two-sided tape.
3. Remove the microphone cable ❸ and receiver from the display enclosure.



Reverse this procedure to install the microphone module.

Top cover

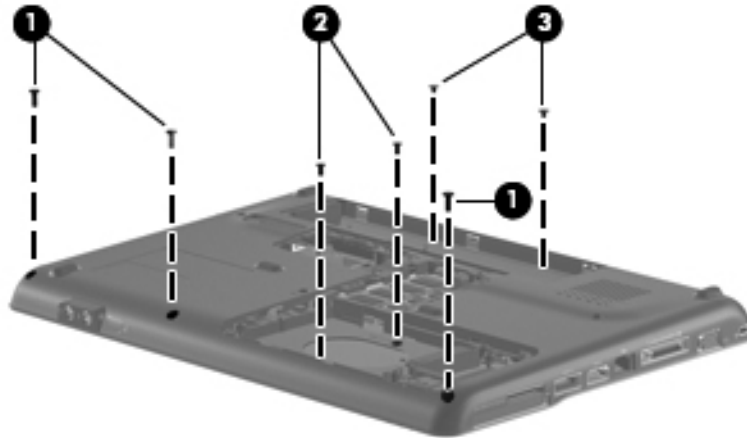
Description	Spare part number
Top cover	487300-001
TouchPad (includes cables)	494960-001
TouchPad bracket	494962-001
TouchPad button board (includes cables)	494965-001

Before removing the top cover:

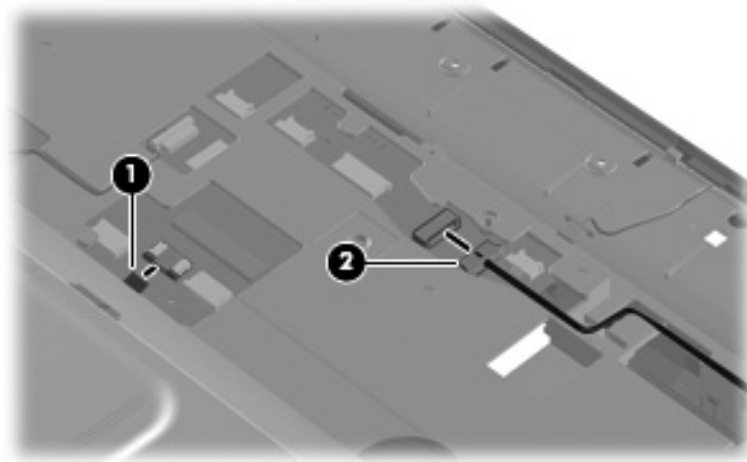
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Mini Card bracket (see [“WLAN module” on page 4-14](#))
 - d. Optical drive (see [“Optical drive” on page 4-20](#))
 - e. Keyboard (see [“Keyboard” on page 4-21](#))
 - f. Switch cover (see [“Keyboard cover” on page 4-23](#))
 - g. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - h. Display assembly (see [“Display assembly” on page 4-27](#))

Remove the top cover:

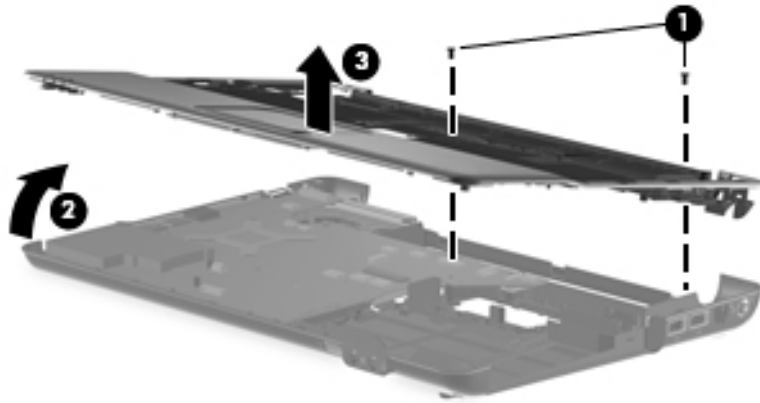
1. Turn the computer upside down with the front toward you.
2. Remove the following screws that secure the top cover to the base enclosure:
 - ❶ Three Phillips PM2.5×10.0 screws
 - ❷ Two Phillips PM2.5×5.0 screws
 - ❸ Two Phillips PM2.0×3.0 screws



3. Turn the computer right-side up, with the front toward you.
4. Disconnect the following cables from the system board:
 - ❶ TouchPad cable with zero insertion force (ZIF) connector
 - ❷ USB cable



5. Remove the two Phillips PM2.5×6.0 screws ❶ that secure the top cover to the base enclosure.
6. Lift up the front edge of the top cover until it releases from the base ❷.
7. Remove the top cover ❸.



Reverse this procedure to install the top cover.

Bluetooth module and cable (select models only)

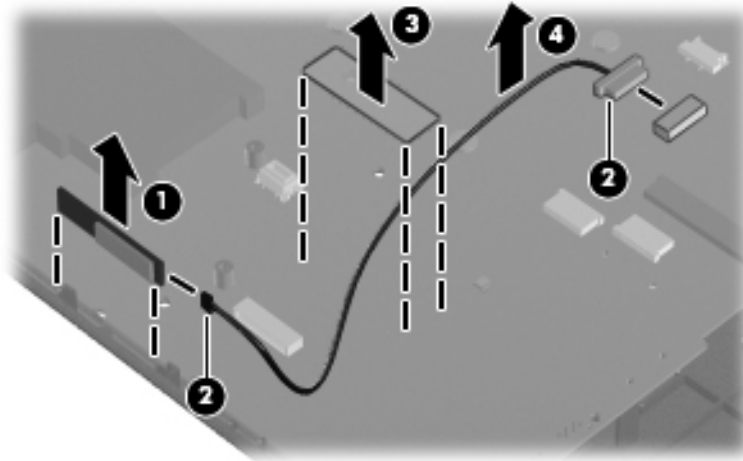
Description	Spare part number
Bluetooth module	537921-001
Bluetooth module cable for discrete models	488130-001
Bluetooth module cable for UMA models	486868-001

Before removing the Bluetooth module:

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 4-7](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Mini Card bracket (see [“WLAN module” on page 4-14](#))
 - d. Optical drive (see [“Optical drive” on page 4-20](#))
 - e. Keyboard (see [“Keyboard” on page 4-21](#))
 - f. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - g. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - h. Display assembly (see [“Display assembly” on page 4-27](#))
 - i. Top cover (see [“Top cover” on page 4-35](#))

Remove the Bluetooth module and cable:

1. Turn the top cover upside down with the front toward you.
2. Lift the Bluetooth module ❶ away from computer.
3. Disconnect the Bluetooth module cable ❷ from the system board and Bluetooth module.
4. Release the tape ❸ that secures cable.
5. Remove Bluetooth module and cable ❹.



Reverse this procedure to install the Bluetooth module and cable.

Modem module

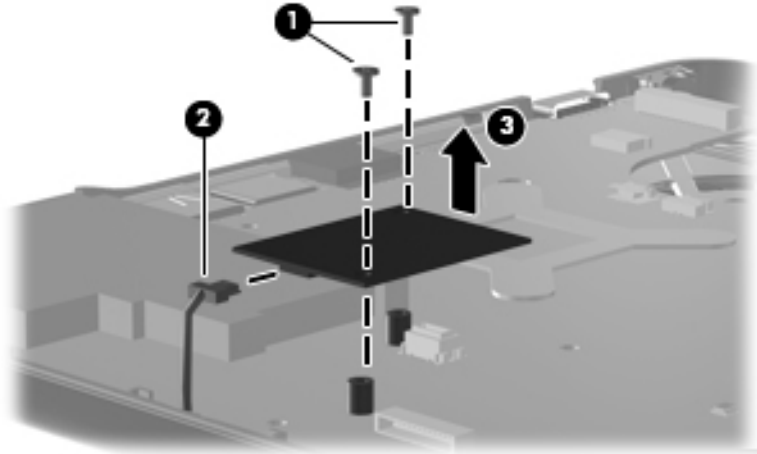
Description	Spare part number
All countries and regions except Australia and New Zealand	461749-001
Australia and New Zealand	461749-011

Before removing the modem module:

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 4-7](#)).
5. Remove the following components:
6.
 - a. Hard drive (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Mini Card bracket (see [“WLAN module” on page 4-14](#))
 - d. Optical drive (see [“Optical drive” on page 4-20](#))
 - e. Keyboard (see [“Keyboard” on page 4-21](#))
 - f. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - g. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - h. Display assembly (see [“Display assembly” on page 4-27](#))
 - i. Top cover (see [“Top cover” on page 4-35](#))

Remove the modem module:

1. Turn the computer right-side up, with the front toward you.
2. Remove the two Phillips PM2.0×4.0 screws ❶ that secure the modem module to the system board.
3. Disconnect the modem module cable ❷ from the modem module.
4. Lift up on the front of the modem module ❸ to disconnect it from the system board.



Reverse this procedure to install the modem module.



When replacing the modem module, be sure that the connector on the bottom of the modem module connects firmly to the system board.

Audio board

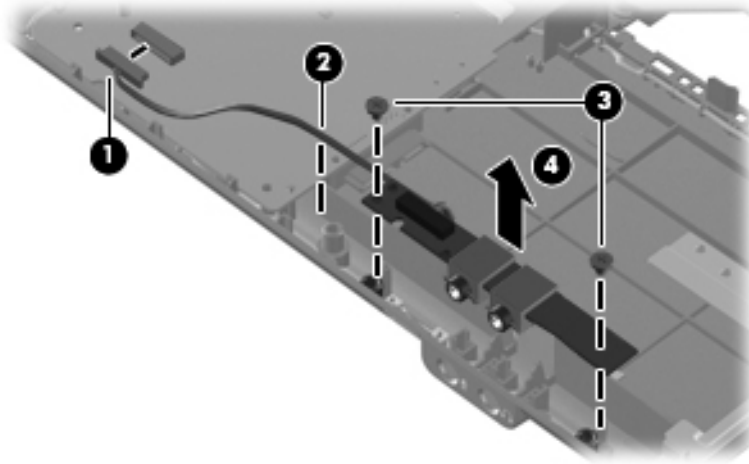
Description	Spare part number
Audio board	487344-001
Audio board cable	486841-001

Before removing the audio 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 4-7](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Mini Card bracket (see [“WLAN module” on page 4-14](#))
 - d. Optical drive (see [“Optical drive” on page 4-20](#))
 - e. Keyboard (see [“Keyboard” on page 4-21](#))
 - f. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - g. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - h. Display assembly (see [“Display assembly” on page 4-27](#))
 - i. Top cover (see [“Top cover” on page 4-35](#))

Remove the audio board and cable:

1. Disconnect the audio board cable ❶ from the system board.
2. Remove the cable from between the components that secure it in the base ❷.
3. Remove the two Phillips PM2.5×3.0 screws ❸ that secures the audio board to the system board.
4. Lift the rear edge of the audio board ❹ so that the audio connectors slide out of the openings in the base enclosure and remove the audio board and cable.



Reverse this procedure to install the audio board.

USB board

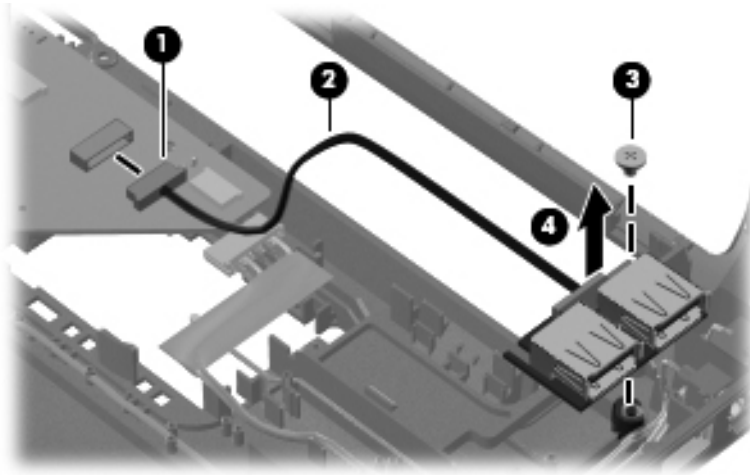
Description	Spare part number
USB board	486842-001
USB board cable	486843-001

Before removing the USB 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 4-7](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Mini Card bracket (see [“WLAN module” on page 4-14](#))
 - d. Optical drive (see [“Optical drive” on page 4-20](#))
 - e. Keyboard (see [“Keyboard” on page 4-21](#))
 - f. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - g. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - h. Display assembly (see [“Display assembly” on page 4-27](#))
 - i. Top cover (see [“Top cover” on page 4-35](#))

Remove the USB board and cable:

1. Turn the computer display-side up, with the right side toward you.
2. Disconnect the USB board cable ❶ from the system board.
3. Remove the cable ❷ from the base enclosure clips.
4. Remove the Phillips PM2.5×3.0 screw ❸ that secures the USB board to the computer.
5. Lift the USB board ❹ straight up to remove it from the computer.



Reverse this procedure to install the USB board.

Power connector and cable

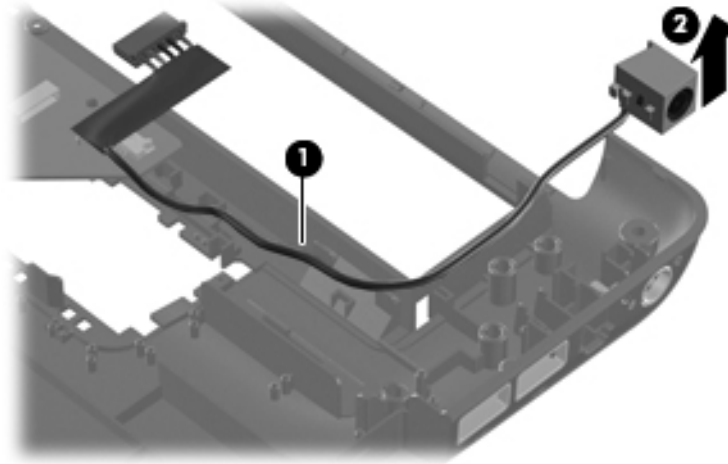
Description	Spare part number
Power connector and cable	486864-001

Before removing the power connector and cable:

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 4-7](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-8](#))
 - b. Mini Card compartment cover (see [“RTC battery” on page 4-12](#))
 - c. Mini Card bracket (see [“WLAN module” on page 4-14](#))
 - d. Optical drive (see [“Optical drive” on page 4-20](#))
 - e. Keyboard (see [“Keyboard” on page 4-21](#))
 - f. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - g. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - h. Display assembly (see [“Display assembly” on page 4-27](#))
 - i. Top cover (see [“Top cover” on page 4-35](#))

Remove the power connector and cable:

1. Turn the computer right-side up.
2. Position the computer with the right side toward you.
3. Disconnect the power connector cable ❶ from the bottom of the system board.
4. Remove the power connector ❷ from the clip built into the base enclosure. The power connector is secured by two-sided tape.



Reverse this procedure to install the power connector and cable.

System board



The system board spare part kit includes replacement thermal material.

Description	Spare part number
Discrete graphics subsystems	590329-001
UMA graphics subsystems	590330-001

Before removing the system board:

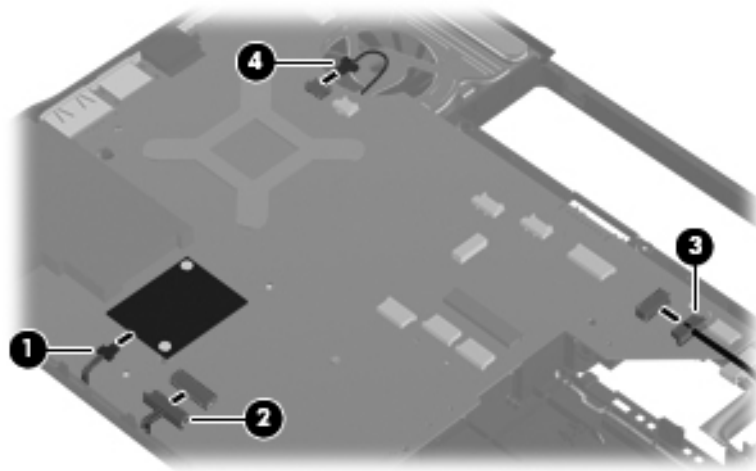
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first disconnecting the power cord from the AC outlet and then disconnecting the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-7](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-8](#))
 - b. Memory module (see [“Memory module” on page 4-10](#))
 - c. RTC battery (see [“RTC battery” on page 4-12](#))
 - d. WLAN module (see [“WLAN module” on page 4-14](#))
 - e. Optical drive (see [“Optical drive” on page 4-20](#))
 - f. Keyboard (see [“Keyboard” on page 4-21](#))
 - g. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - h. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - i. Display assembly (see [“Display assembly” on page 4-27](#))
 - j. Top cover (see [“Top cover” on page 4-35](#))

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

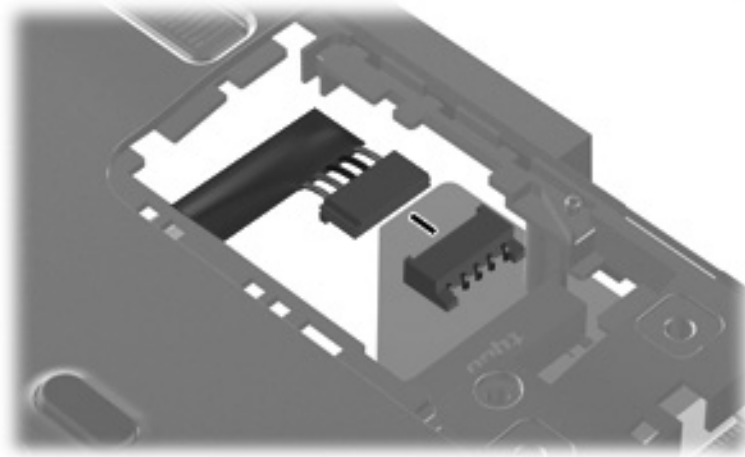
- Fan/heat sink assembly (see [“Heat sink/fan assembly or heat sink”](#) on page 4-52)
- Processor (see [“Processor”](#) on page 4-57)

Remove the system board:

1. Turn the computer display-side up.
2. Position the computer with the right side toward you.
3. Disconnect the following cables from the system board:
 - ① Modem cable
 - ② Audio board cable
 - ③ USB board cable
 - ④ Fan cable



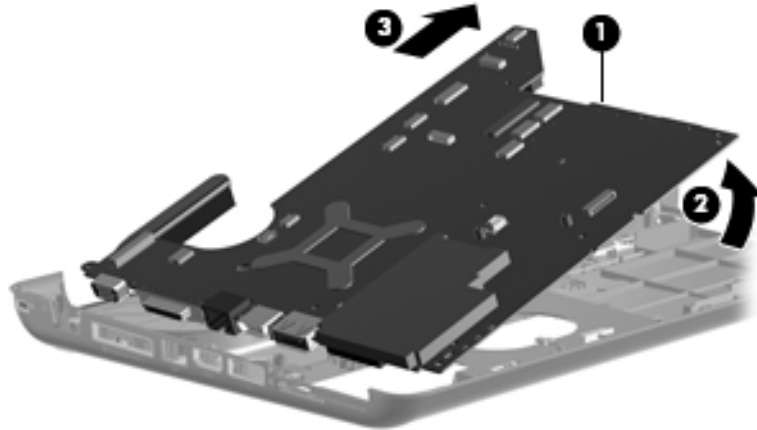
4. Disconnect the power connector cable.



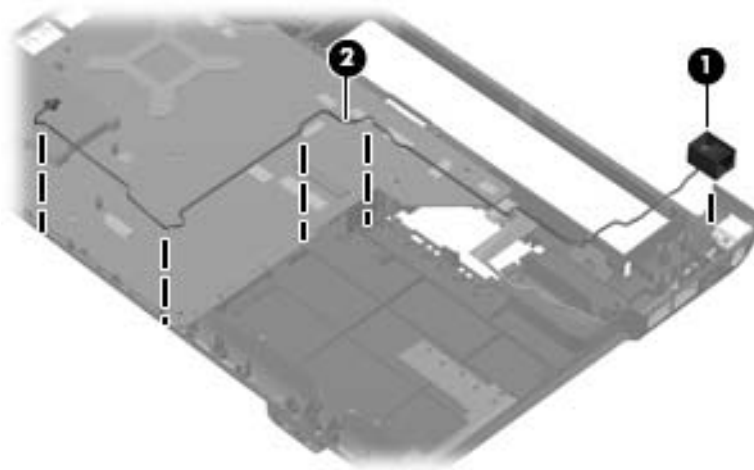
5. Remove the two Phillips PM2.5×5.0 screws that secure the system board to the base enclosure.



6. Lift the right side ❶ of the system board until it rests at an angle ❷.
7. Remove the system board by sliding it to the right at an angle ❸ until the connectors on the left side of the system board disengage from the base enclosure.



8. To replace the RJ-11 connector and cable, remove the RJ-11 connector ❶ from the clip built into the base enclosure.
9. Remove the cable ❷ from the routing channel built into the base enclosure. The RJ-II connector and cable are available using spare part number 494981-001.



Reverse this procedure to install the system board.

Heat sink/fan assembly or heat sink

Description	Spare part number
Heat sink/fan assembly for models with discrete graphics subsystems (includes thermal material)	591956-001
Heat sink for models with UMA graphics subsystems (includes thermal material)	591957-001




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

Before removing the heat sink (for models with UMA graphics subsystems) or the heat sink/fan assembly (for models with discrete graphics subsystems):


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 4-7](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-8](#))
 - b. Memory module (see [“Memory module” on page 4-10](#))
 - c. RTC battery (see [“RTC battery” on page 4-12](#))
 - d. WLAN module (see [“WLAN module” on page 4-14](#))
 - e. Optical drive (see [“Optical drive” on page 4-20](#))
 - f. Keyboard (see [“Keyboard” on page 4-21](#))
 - g. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - h. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - i. Display assembly (see [“Display assembly” on page 4-27](#))
 - j. Top cover (see [“Top cover” on page 4-35](#))
 - k. System board (see [“System board” on page 4-48](#))

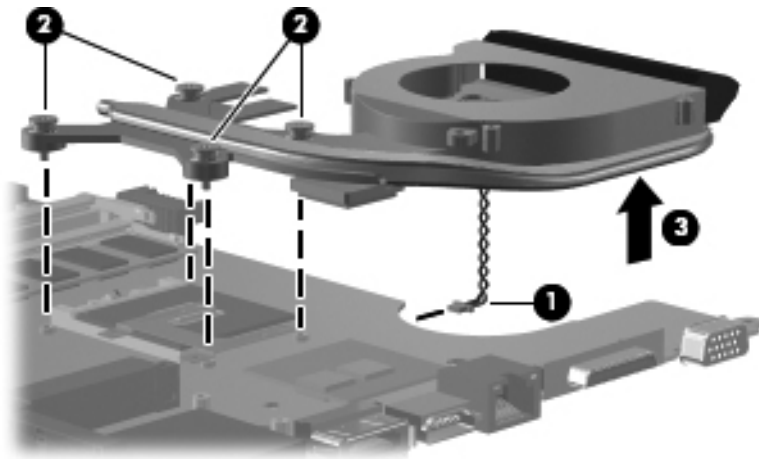
Remove the fan/heat sink:


1. Turn the system board upside down, with the front toward you.

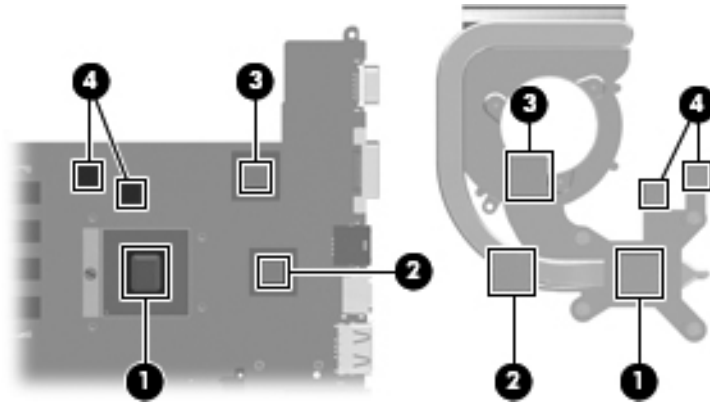
 Steps two through four apply to computer models equipped with graphics subsystems with discrete memory. Steps five and six apply to computer models equipped with graphics subsystems with UMA memory.


2. Disconnect the fan cable **❶**.
3. Loosen the four captive Phillips PM2.0×10.0 screws **❷** that secure the fan/heat sink assembly to the system board.
4. Remove the fan/heat sink assembly **❸**.

 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.




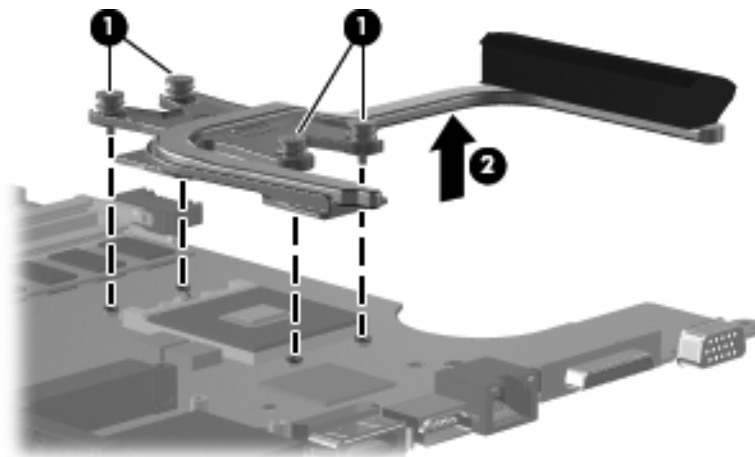
 The thermal material must be thoroughly cleaned from the surface of the fan/heat sink assembly and the system board each time the heat sink assembly is removed. Thermal material is applied to the discrete fan/heat sink to correspond with components on the system board as follows: the processor **1**, the Northbridge chip **2**, the ATI video chip **3**, and the capacitors **4**. Replacement thermal material is included with all system board, fan/heat sink assembly, and processor spare parts.



 Steps two through four apply to computer models equipped with graphics subsystems with discrete memory. Steps five and six apply to computer models equipped with graphics subsystems with UMA memory.

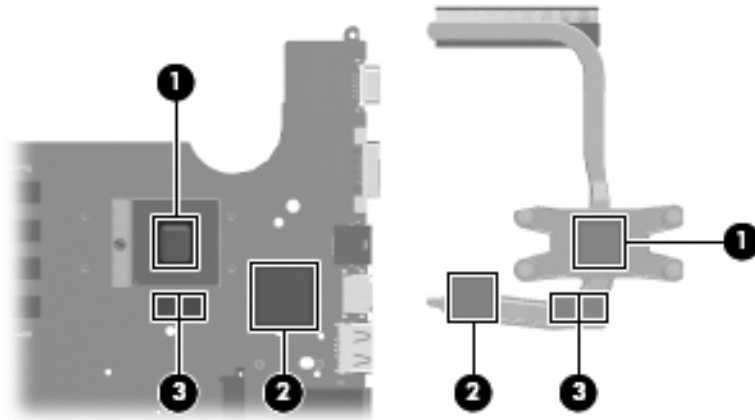
5. Loosen the four captive Phillips PM2.0×10.0 screws **1** that secure the heat sink assembly to the system board.
6. Remove the heat sink assembly **2**.

 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.





The thermal material must be thoroughly cleaned from the surface of the heat sink assembly and the system board each time the heat sink assembly is removed. Thermal material is applied to the heat sink to correspond with components on the system board as follows: the processor ❶, the Northbridge chip ❷, and the capacitors ❸. Replacement thermal material is included with all system board, fan/heat sink assembly, and processor spare parts.



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

Fan (for models with UMA graphics subsystems)

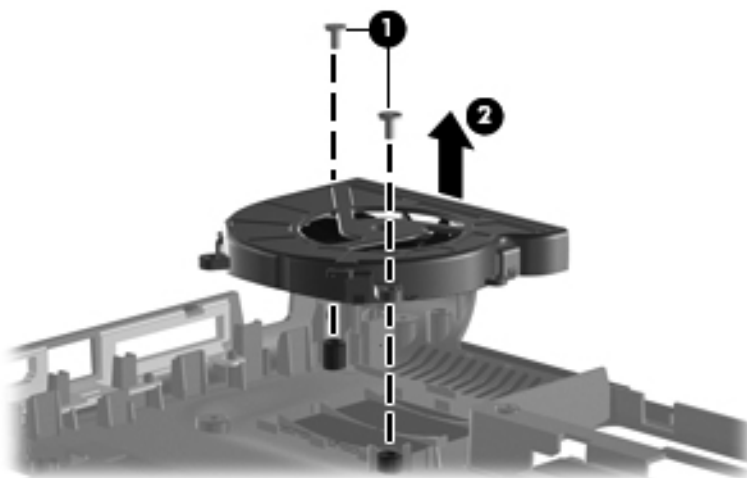
Description	Spare part number
Fan	486844-001

Before removing the fan:

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 4-7).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive”](#) on page 4-8)
 - b. Memory module (see [“Memory module”](#) on page 4-10)
 - c. RTC battery (see [“RTC battery”](#) on page 4-12)
 - d. WLAN module (see [“WLAN module”](#) on page 4-14)
 - e. Optical drive (see [“Optical drive”](#) on page 4-20)
 - f. Keyboard (see [“Keyboard”](#) on page 4-21)
 - g. Keyboard cover (see [“Keyboard cover”](#) on page 4-23)
 - h. Speaker assembly (see [“Speaker assembly”](#) on page 4-25)
 - i. Display assembly (see [“Display assembly”](#) on page 4-27)
 - j. Top cover (see [“Top cover”](#) on page 4-35)
 - k. System board (see [“System board”](#) on page 4-48)

Remove the fan:

1. Position the base enclosure with the front toward you.
2. Remove the two black Phillips PM2.5×5.0 screws ❶ that secure the fan to the computer.
3. Lift the fan from the base enclosure ❷.



Reverse this procedure to install the fan.

Processor



The processor spare part kit includes replacement thermal material.


Description	Spare part number
Intel Arrandale CPU-uPGA Socket Single-Core i5-520M (2.4 GHz, 3 MB L3 cache, 1066 MHz SC Turbo)	594187-001
Intel Arrandale CPU-uPGA Socket Single-Core i5-540M (2.53 GHz, 3 MB L3 cache, 1066 MHz SC Turbo)	594188-001

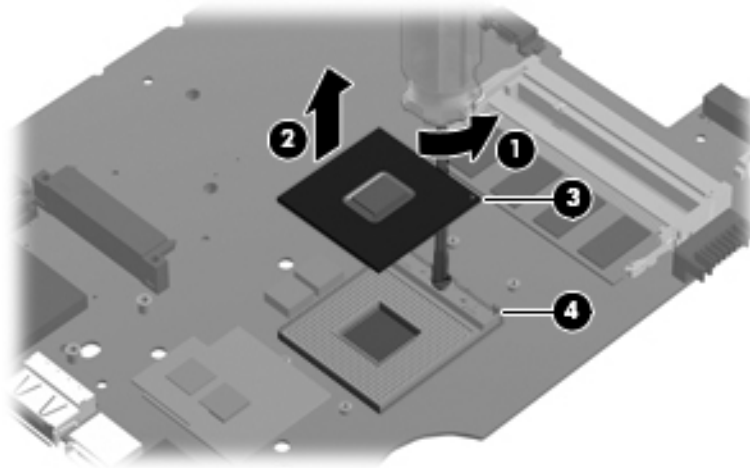
Before removing the processor:

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 4-7](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-8](#))
 - b. Memory module (see [“Memory module” on page 4-10](#))
 - c. RTC battery (see [“RTC battery” on page 4-12](#))
 - d. WLAN module (see [“WLAN module” on page 4-14](#))
 - e. Optical drive (see [“Optical drive” on page 4-20](#))
 - f. Keyboard (see [“Keyboard” on page 4-21](#))
 - g. Keyboard cover (see [“Keyboard cover” on page 4-23](#))
 - h. Speaker assembly (see [“Speaker assembly” on page 4-25](#))
 - i. Display assembly (see [“Display assembly” on page 4-27](#))
 - j. Top cover (see [“Top cover” on page 4-35](#))
 - k. System board (see [“System board” on page 4-48](#))
 - l. Fan/heat sink assembly (see [“Heat sink/fan assembly or heat sink” on page 4-52](#))

Remove the processor:

1. Use a flat-bladed screwdriver to turn the processor locking screw **1** one half-turn counterclockwise until you hear a click.
2. Lift the processor **2** straight up to remove it.

 When installing the processor, align the gold triangle **3** on the processor with the triangle **4** embossed on the processor socket.



Reverse this procedure to install the processor.

Starting Setup Utility

Setup Utility is a ROM-based information and customization utility that can be used even when your 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 appears 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 appears in the lower left corner of the screen, press the **esc** key.
 - 2. When the Startup Menu appears, 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 appears 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 appears in the lower left corner of the screen, press the **esc** key. When the Startup Menu appears, 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 the **enter** key.
4. When a confirmation prompt with your language selected is displayed, 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 go 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 press the **f5** or **f6** key.
- 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

Use Setup Utility to view such information as the system time and date and information that identifies the computer. The following procedure explains how to do this. 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 appears 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 appears in the lower left corner of the screen, press the **esc** key. When the Startup Menu is displayed, press the **f10** key.
2. Select the **Main** menu.
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 appears 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 appears in the lower left corner of the screen, press the **esc** key. When the Startup Menu appears, 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.



Your 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 your changes from the current session:

If the Setup Utility menus are not visible, 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 your changes from the current session:

If the Setup Utility menus are not visible, 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.



Some of 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 Setup Utility language.
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	Enable/disable Fan Always On. When enabled, the computer fan will always be on.
Boot Options	<p>Set the following boot options:</p> <ul style="list-style-type: none"> ■ f10 and f12 Delay (seconds)—Set the delay for the f10 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 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> 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.

Specifications


Computer specifications

	Metric	U.S.
Dimensions		
Length	23.7 cm	9.33 in
Width	33.4 cm	13.15 in
Height (front to rear)	3.33 to 3.97 cm	1.31 to 1.56 in
Weight		
	2.36 kg	5.2 lbs
Input power		
Operating voltage	18.5 V dc to 19.0 V dc	
Operating current	3.5 A or 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
 Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.		

14.1-in display specifications

	Metric	U.S.
Dimensions		
Height	30.37 cm	11.96 in
Width	18.98 cm	7.47 in
Diagonal	35.82 cm	14.10 in
Number of colors	More than 262,144	
Contrast ratio	More than 300:1	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	0.2373 × 0.2373 mm	
Format	1280 × 800	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Total power consumption	5.2 W	
Viewing angle	±40° horizontal, +15°/-35° vertical (typical)	

Hard drive specifications

	500-GB*	320-GB*	250-GB*	160-GB*
Dimensions				
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm
Weight 7200-rpm	115 g	115 g	115 g	115 g
Interface type	SATA	SATA	SATA	SATA
Transfer rate	100 MB/s	100 MB/s	100 MB/s	100 MB/s
Security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)				
Single track 7200-rpm	1.5 ms	1.5 ms	1.5 ms	1.5 ms
Average 7200-rpm	11.0 ms	11.0 ms	11.0 ms	11.0 ms
Maximum 7200-rpm	22.0 ms	22.0 ms	22.0 ms	22.0 ms
Logical blocks	976,773,168	625,142,448	488,397,168	312,581,808
Disc rotational speed	7200 rpm	7200 rpm	7200 rpm	7200 rpm
Operating temperature	0°C to 60°C (32°F to 140°F)			
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications might differ slightly.				
 Certain restrictions and exclusions apply. Contact technical support for details.				

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

Applicable disc	Read:	Write:	
	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, BD-ROM, BD-R, BD-RE	CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, LightScribe	
Interface	SATA		
Access time	CD	DVD	BD
Random	< 190 ms	< 190 ms	< 230 ms
Max data transfer rate			
24X CD-ROM	3,600 KB/sec		
8X DVD-ROM	10,800 KB/sec		
4X BD-ROM	18,000 KB/sec		
16X - CD-R	1,200 KB/sec		
10X - CD-RW	1,500 KB/sec		
8X DVD+R	10,800 KB/sec		
8X - DVD+RW	10,800 KB/sec		
8X - DVD-R	10,800 KB/sec		
6X - DVD-RW	8,100 KB/sec		
4X - DVD+R Dual Layer	5,400 KB/sec		
4X - DVD-R Dual Layer	5,400 KB/sec		
5X DVD-RAM	6,750 KB/sec		
Max media capacity (read)	50.0 GB		
Max media capacity (write)	8.5 GB		
Transport	Tray loading		

DVD±RW SuperMulti DL Drive with LightScribe specifications

Applicable disc	Read:	Write:
	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	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe
Interface	SATA	
Access time	CD	DVD
Random	< 150 ms	< 160 ms
Max 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	
8x DVD+RW	10,800 KB/sec	
8X DVD-R	10,800 KB/sec	
6X DVD-RW	8,100 KB/sec	
4X DVD-R Dual Layer	5,400 KB/sec	
4X DVD+R Dual Layer	5,400 KB/sec	
5X DVD-RAM	6,750 KB/sec	
Max media capacity (read)	8.5 GB	
Max media capacity (write)	8.5 GB	
Transport	Tray loading	

System DMA specifications

Hardware	DMA System function
DMA0	Reserve
DMA1	Reserve
DMA2	Reserve
DMA3	Reserve
DMA4	Direct memory access controller
DMA5	Reserve
DMA6	Reserve
DMA7	Reserve

System interrupt specifications (for models with discrete graphics subsystems)

Hardware IRQ	System function
IRQ1	Standard PS/2 Keyboard
IRQ12	PS/2 Compatible Mouse
IRQ13	Numeric data processor
IRQ16	High Definition Audio Controller
IRQ16	Standard OpenHCD USB Host Controller
IRQ16	Standard Opened USB Host Controller
IRQ17	PCI standard PCI-to-PCI bridge
IRQ17	Standard Enhanced PCI to USB Host Controller
IRQ18	Broadcom 802.11g Network Adapter
IRQ18	PCI standard PCI-to-PCI bridge
IRQ18	PCI standard PCI-to-PCI bridge
IRQ18	Standard OpenHCD USB Host Controller
IRQ18	Standard OpenHCD USB Host Controller
IRQ19	High Definition Audio Controller
IRQ19	PCI standard PCI-to-PCI bridge
IRQ19	Realtek RTL8102E/RTL8103E Family PCI-E Fast Ethernet NIC (NDIS 6.20)
IRQ19	Standard Enhanced PCI to USB Host Controller
IRQ22	Standard AHCI 1.0 Serial ATA Controller
IRQ(-2)	ATI Mobility Radeon HD 4330 Series
IRQ81-190	Microsoft ACPI-Compliant System

System interrupt specifications (for models with UMA graphics subsystems)

Hardware IRQ	System function
IRQ1	Standard 101/102-key keyboard or Microsoft Natural PS/2 Keyboard with HP
IRQ12	PS/2 Compatible Mouse
IRQ13	Numeric data processor
IRQ16	High Definition Audio Controller
IRQ16	Standard OpenHCD USB Host Controller
IRQ16	Standard OpenHCD USB Host Controller
IRQ17	PCI standard PCI-to-PCI bridge
IRQ17	Standard Enhanced PCI to USB Host Controller
IRQ18	Atheros AR5009 802.11a/g/n WiFi Adapter
IRQ18	PCI standard PCI-to-PCI bridge
IRQ18	Standard OpenHCD USB Host Controller
IRQ18	Standard OpenHCD USB Host Controller
IRQ19	High Definition Audio Controller
IRQ19	PCI standard PCI-to-PCI bridge
IRQ19	Realtek PCIe FE Family Controller
IRQ19	Standard Enhanced PCI to USB Host Controller
IRQ22	Standard AHCI 1.0 Serial ATA Controller
IRQ81-190	Microsoft ACPI-Compliant System

System I/O address specifications (for models with discrete graphics subsystems)

I/O address (hex)	System function (shipping configuration)
000 - 00F	Direct memory access controller
010 - 01F	Motherboard resources
020 - 021	Programmable interrupt controller
02E - 02F	Motherboard resources
040 - 043	System timer
060 - 060	Standard PS/2 Keyboard
061 - 061	System speaker
062 - 062	Microsoft ACPI-Compliant Embedded controller
064 - 064	Standard PS/2 Keyboard
066 - 066	Microsoft ACPI-Compliant Embedded controller
068 - 068	Standard PS/2 Keyboard
06C - 06C	Standard PS/2 Keyboard
070 - 071	System CMOS/real time clock
072 - 073	Motherboard resources
080 - 080	Motherboard resources
081 - 08F	Direct memory access controller
092 - 092	Motherboard resources
0A0 - 0A1	Programmable interrupt controller
0B0 - 0B1	Motherboard resources
0C0 - 0DF	Direct memory access controller
0F0 - 0FE	Numeric data processor
3B0 - 3BB	ATI Mobility Radeon HD 4330 Series
3B0 - 3BB	PCI standard PCI-to-PCI bridge
3C0 - 3DF	ATI Mobility Radeon HD 4330 Series
3C0 - 3DF	PCI standard PCI-to-PCI bridge
400 - 4CF	Motherboard resources
4D0 - 4D1	Motherboard resources
4D6 - 4D6	Motherboard resources
680 - 6FF	Motherboard resources
77A - 77A	Motherboard resources
C00 - C01	Motherboard resources
C14 - C14	Motherboard resources
C50 - C52	Motherboard resources
C6C - C6C	Motherboard resources

(Continued)

I/O address (hex)	System function (shipping configuration)
C6F - C6F	Motherboard resources
CD0 - CDB	Motherboard resources
2000 - 20FF	Realtek RTL8102E/RTL8103E Family PCI-E Fast Ethernet NIC (NDIS 6.20)
2000 - 2FFF	PCI standard PCI-to-PCI bridge
3000 - 30FF	ATI Mobility Radeon HD 4330 Series
3000 - 3FFF	PCI standard PCI-to-PCI bridge
4010 - 401F	Standard AHCI 1.0 Serial ATA Controller
4030 - 4037	Standard AHCI 1.0 Serial ATA Controller
4038 - 403F	Standard AHCI 1.0 Serial ATA Controller
4048 - 404B	Standard AHCI 1.0 Serial ATA Controller
404C - 404F	Standard AHCI 1.0 Serial ATA Controller

System I/O address specification (for models with UMA graphics subsystems)

I/O address (hex)	System function (shipping configuration)
000 - 00F	Direct memory access controller
010 - 01F	Motherboard resources
020 - 021	Programmable interrupt controller
02E - 02F	Motherboard resources
040 - 043	System timer
060 - 060	Standard 101/102-key keyboard or Microsoft Natural PS/2 Keyboard with HP
061 - 061	System speaker
062 - 062	Microsoft ACPI-Compliant Embedded controller
064 - 064	Standard 101/102-key keyboard or Microsoft Natural PS/2 Keyboard with HP
066 - 066	Microsoft ACPI-Compliant Embedded controller
068 - 068	Standard 101/102-key keyboard or Microsoft Natural PS/2 Keyboard with HP
06C - 06C	Standard 101/102-key keyboard or Microsoft Natural PS/2 Keyboard with HP
070 - 071	System CMOS/real time clock
072 - 073	Motherboard resources
080 - 080	Motherboard resources
081 - 08F	Direct memory access controller
092 - 092	Motherboard resources
0A0 - 0A1	Programmable interrupt controller
0B0 - 0B1	Motherboard resources
0C0 - 0DF	Direct memory access controller
0F0 - 0FE	Numeric data processor
3B0 - 3BB	PCI standard PCI-to-PCI bridge
3C0 - 3DF	PCI standard PCI-to-PCI bridge
400 - 4CF	Motherboard resources
4D0 - 4D1	Motherboard resources
4D6 - 4D6	Motherboard resources
680 - 6FF	Motherboard resources
77A - 77A	Motherboard resources
C00 - C01	Motherboard resources
C14 - C14	Motherboard resources
C50 - C52	Motherboard resources
C6C - C6C	Motherboard resources
C6F - C6F	Motherboard resources
CD0 - CDB	Motherboard resources
2000 - 20FF	Realtek PCIe Fe Family Controller

(Continued)

I/O address (hex)	System function (shipping configuration)
2000 - 2FFF	PCI standard PCI-to-PCI bridge
3000 - 3FFF	PCI standard PCI-to-PCI bridge
4010 - 401F	Standard AHCI 1.0 Serial ATA Controller
4030 - 4037	Standard AHCI 1.0 Serial ATA Controller
4038 - 403F	Standard AHCI 1.0 Serial ATA Controller
4048 - 404B	Standard AHCI 1.0 Serial ATA Controller
404C - 404F	Standard AHCI 1.0 Serial ATA Controller

Backup and recovery

Overview

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 the 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 your 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.



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

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.



If the computer does not include an internal optical drive, use an optional external optical drive (purchased separately) to create recovery discs, or purchase recovery discs for the computer from the HP website.

Note the following guidelines before creating recovery discs:


- 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 using CDs, up to 20 discs might be required, whereas only a few DVDs or BDs are required.
 -  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, are be prompted to continue the disc creation process.

To create a set of recovery discs:

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

Backing up your information


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

- At regularly scheduled times
 -  Set reminders to back up your information periodically.
- Before the computer is repaired or restored
- Before you add or modify hardware or software

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 is a time-saver if you have to reset your preferences.

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

1. Display the screen.
 2. Copy the screen:
 - To copy only the active window, press **alt+fn+prt sc**.
 - To copy the entire screen, press **fn+prt sc**.
 3. Open a word-processing document, and then select **Edit > Paste**.
 4. Save the document.
- Back up your 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 used will depend on the type of optical drive installed in the computer.
 -  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



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



The backup process might take over an hour, depending on file size and the speed of the computer.

To create a backup using Windows Backup and Restore:

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
 2. Follow the on-screen instructions to set up and create a backup.
-



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

Using system restore points

When backing up your 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 your system.



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

Create additional restore points to provide increased protection for your system files and settings.

Create restore points

- Before adding or extensively modifying software or hardware.
 - Periodically, whenever the system is performing optimally.
-



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

To Create a system restore point

To 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



Recover only files that you have previously backed up. HP recommends using HP Recovery Manager to create a set of recovery discs (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.



Windows has its own built-in repair features, such as System Restore. If you have not already tried these features, try them before using Recovery Manager.



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)



Computers with an SSD might not have a recovery partition. If the computer does not have a recovery partition, you are not able to recover using this procedure. Recovery discs are included for computers that do not have a partition. Use these discs to recover your operating system and software.

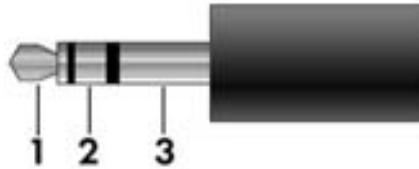
On some models, a recovery can be performed from the partition on the hard drive, accessed by pressing either the Start button or the **f11** key. This restores the computer to its factory condition.

To restore the system from the partition:

1. Access Recovery Manager by either:
 - ❑ Selecting **Start > All Programs > Recovery Manager > Recovery Manager**.
 - or –
 - ❑ Turning on or restarting the computer, and then pressing the **esc** key when the Press the ESC key for Startup Menu message appears at the bottom of the screen. Then, press the **f11** key when the Press <F11> for recovery message appears on the screen.
2. Click **System Recovery** in the **Recovery Manager** window.
3. Follow the on-screen instructions.

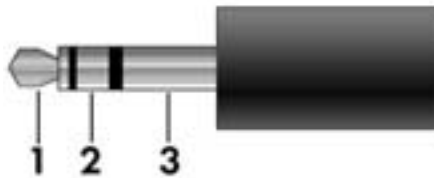
Connector pin assignments

Audio-in (microphone)



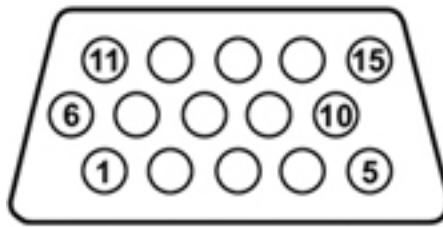
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



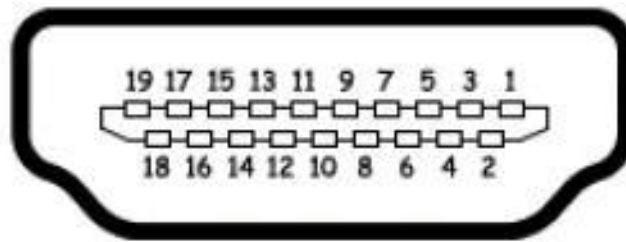
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



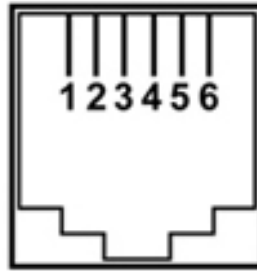
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

HDMI



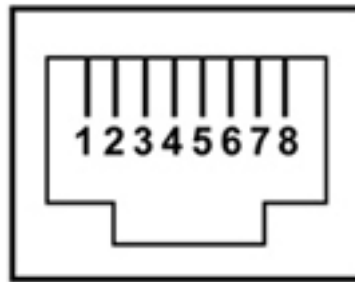
Pin	Signal
1	Transition minimized differential signal (TDMS) data 2+
2	TDMS data 2 shield
3	TDMS data 2-
4	TDMS data 1+
5	TDMS data 1 shield
6	TDMS data 1 shield
7	TDMS data 0+
8	TDMS data 0 shield
9	TDMS data 0-
10	TDMS clock +
11	TDMS data clock shield
12	TDMS data clock-
13	Consumer electronics control
14	Not connected
15	Display data channel (DDC) clock
16	DDC data
17	Ground
18	+5V Power
19	Hot plug detect

RJ-11 (modem) (select models only)



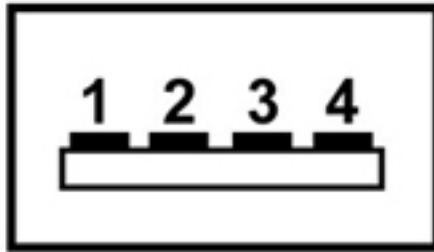
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

RJ-45 (network)



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

Universal Serial Bus



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

Power cord set requirements

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

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

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

Requirements for all countries and regions

The requirements listed below are applicable to all countries and regions:

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

Requirements for specific countries and regions


Country/region	Accredited agency	Applicable note number
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.


Battery

When the 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. Caution must be exercised 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 removing these components, handle them carefully.

 **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) website at <http://www.eiae.org>.

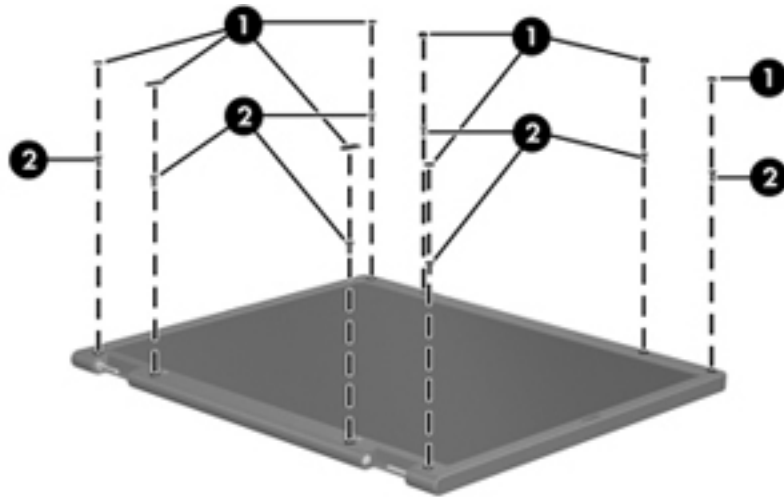
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight ❶ and the liquid crystal display (LCD) panel ❷.



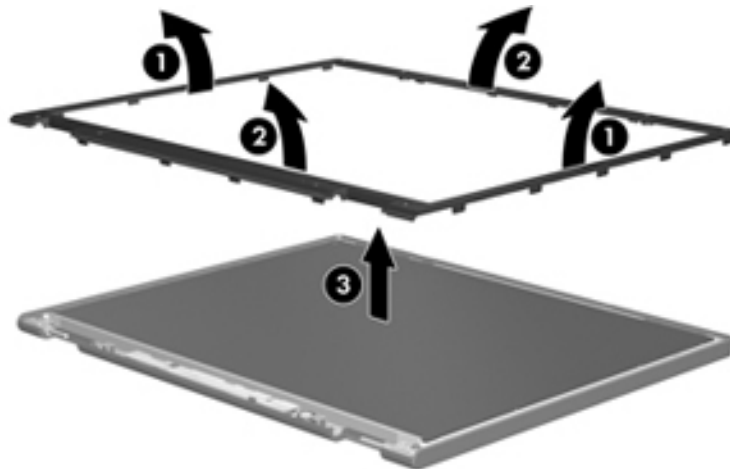
 The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

To disassemble the display assembly:

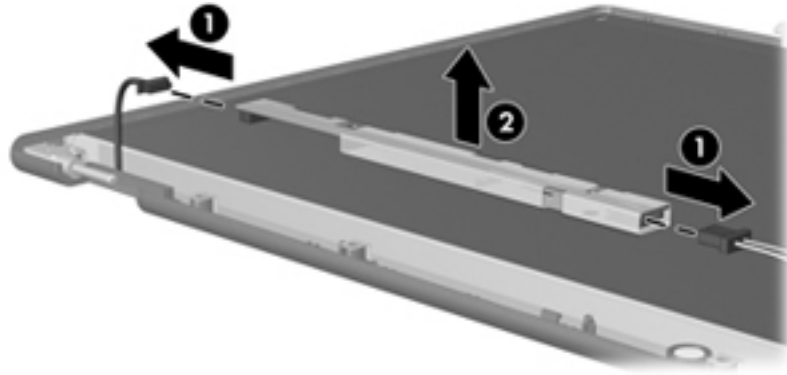
1. Remove all screw covers **1** and screws **2** that secure the display bezel to the display assembly.



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**.

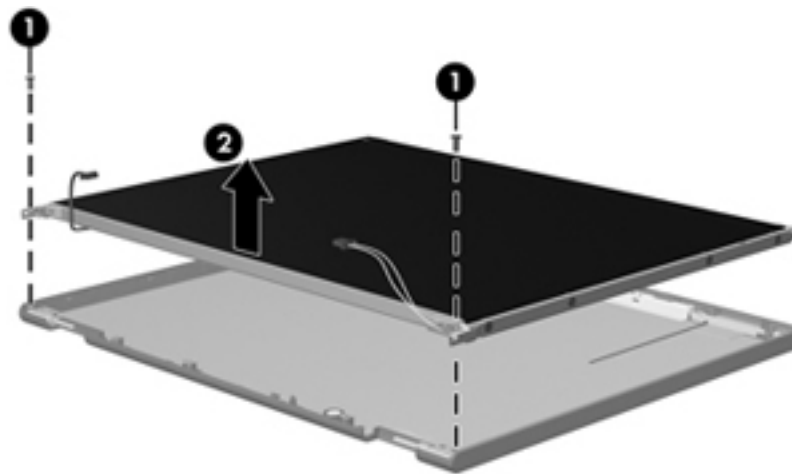


4. Disconnect all display panel cables ❶ from the display inverter and remove the inverter ❷.



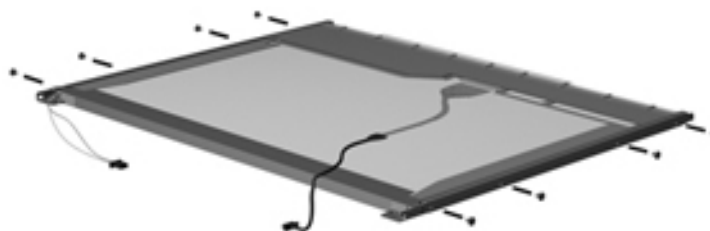
5. Remove all screws ❶ that secure the display panel assembly to the display enclosure.

6. Remove the display panel assembly ❷ from the display enclosure.

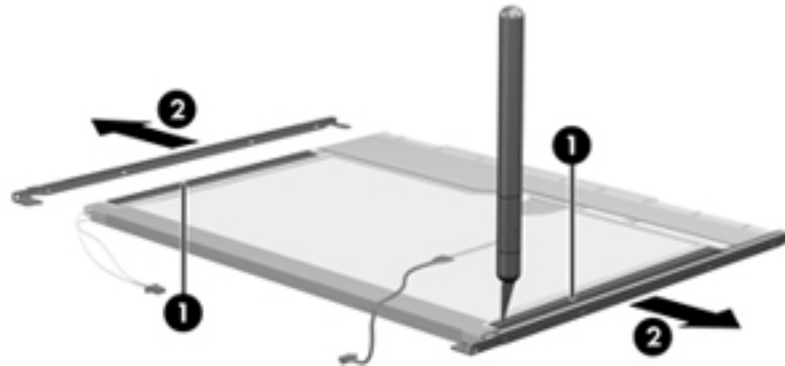


7. Turn the display panel assembly upside down.

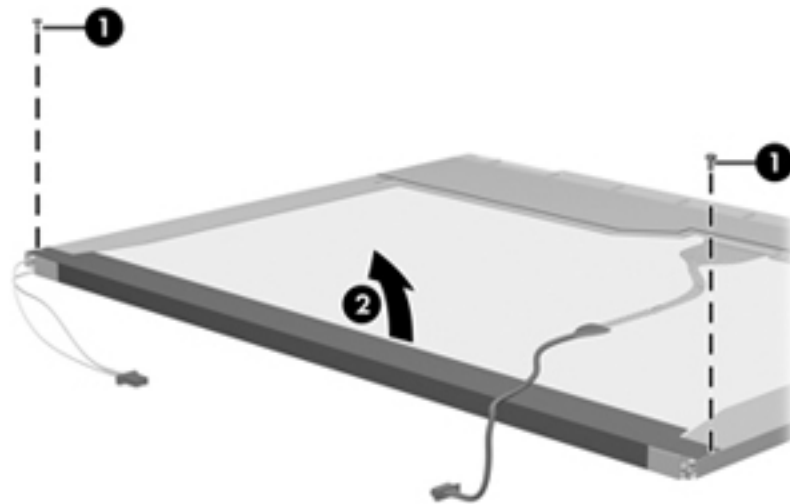
8. Remove all screws that secure the display panel frame to the display panel.



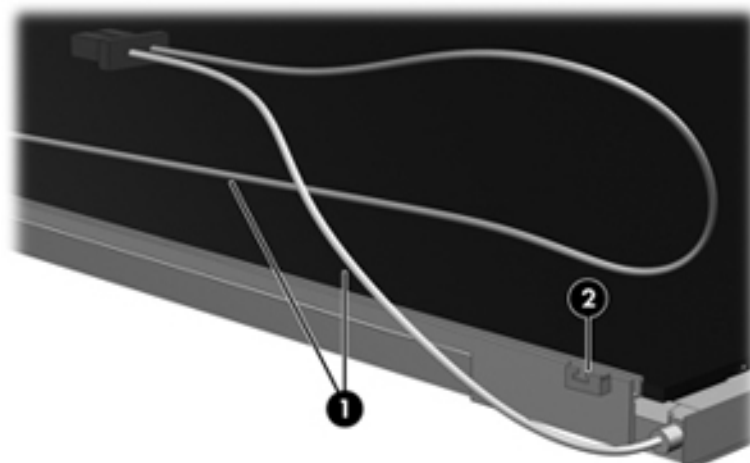
9. Use a sharp-edged tool to cut the tape ❶ that secures the sides of the display panel to the display panel frame.
10. Remove the display panel frame ❷ from the display panel.



11. Remove the screws ❶ that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover ❷ and swing it outward.



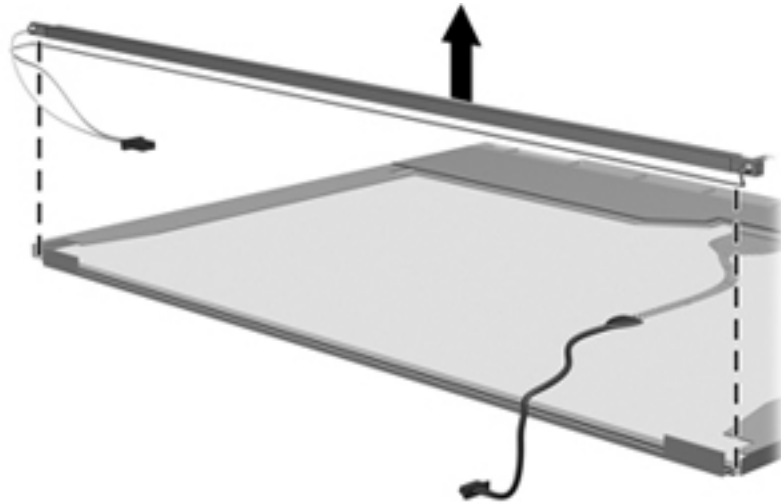
13. Remove the backlight cover.
14. Turn the display panel right-side up.
15. Remove the backlight cables ❶ from the clip ❷ in the display panel.



16. Turn the display panel upside down.

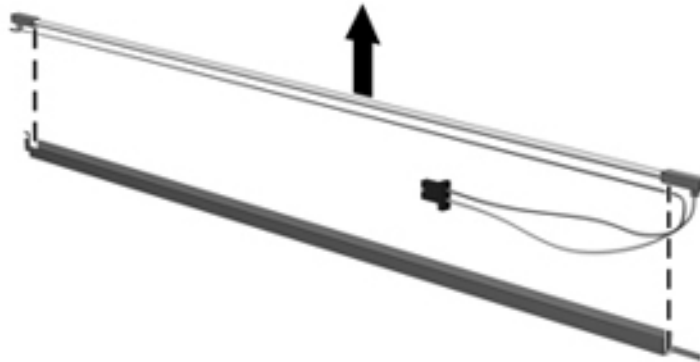


WARNING: The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

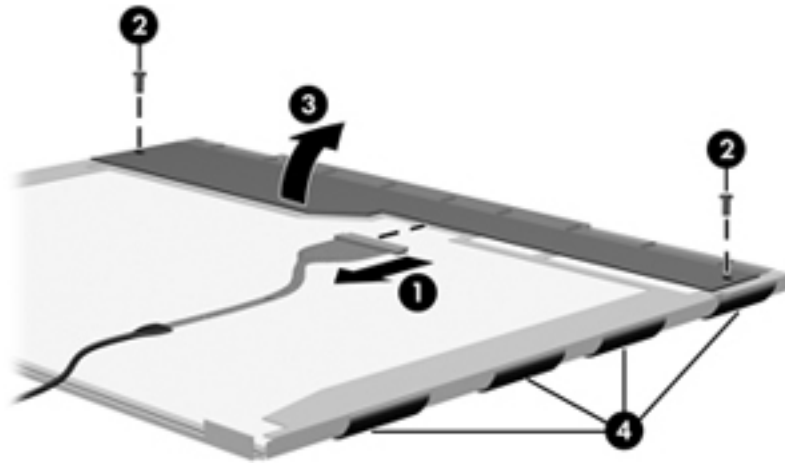


17. Remove the backlight frame from the display panel.

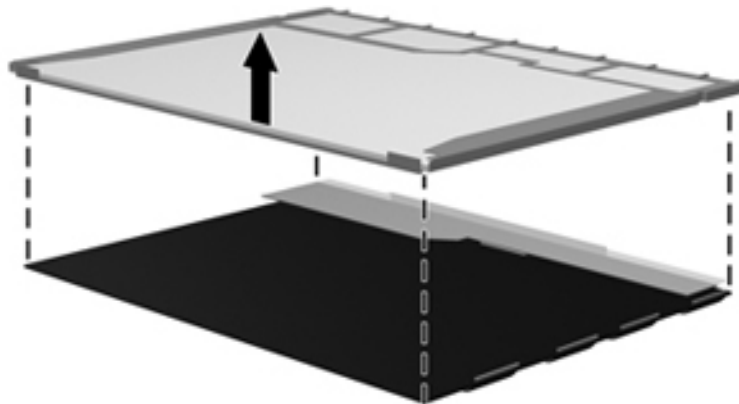
18. Remove the backlight from the backlight frame.



19. Disconnect the display cable ❶ from the LCD panel.
20. Remove the screws ❷ that secure the LCD panel to the display rear panel.
21. Release the LCD panel ❸ from the display rear panel.
22. Release the tape ❹ that secures the LCD panel to the display rear panel.



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

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