



HP Pavilion dv7 Entertainment PC

Maintenance and Service Guide

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September 2009

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
Product Name	HP Pavilion dv7 Entertainment PC
Processors	Intel® Core™2 Quad processors: Intel Core i7-820QM processor with 1.73-GHz, SC turbo up to 3.06-GHz with 8-MB L2 cache and 1333-MHz front side bus (FSB) Intel Core i7-720QM processor with 1.60-GHz, SC turbo up to 2.80-GHz with 8-MB L2 cache and 1333-MHz FSB
Chipset	Intel 5 Series Express
Graphics	Discrete graphics subsystem memory: ■ NVidia GeForce GT 230M (N10P-GE) with 1024 MB ■ NVidia GeForce G 105M (N10M-GE) with 512 MB
Panels	17.3-inch, HD+ (1600 × 900) LED flush glass 17.3-inch, HD+ (1600 × 900) LED BrightView Flush glass panel cover support Support for lighted logo on top bezel Typical brightness 200 nits
Webcam	Low-light VGA camera Fixed (no tilt) Activity LED 640 × 480 by 24 frames per second
Memory	2 customer-accessible/upgradable memory module slots Supports dual-channel memory DDR3, 1066-MHz Supports up to 8 GB of system RAM in the following configurations: ■ 8192-MB total system memory (4096 MB × 2, dual-channel) ■ 6144-MB total system memory (2048 MB × 1 + 4096 MB × 1) ■ 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 drives	Supports all Serial ATA (SATA) 9.5-mm, 6.35-cm (2.50-inch) hard drives Supports up to 2 hard drives Support for HP ProtectSmart Drive Protection

(Continued)

Category	Description
	Dual hard drive configurations: <ul style="list-style-type: none"> ■ 1-TB (500-GB, 7200-, 5400-rpm × 2) ■ 640-GB (320-GB, 7200-rpm × 2) ■ 640-GB (320-GB, 5400-rpm × 2) ■ 500-GB (250-GB, 7200-rpm × 2) ■ 500-GB (250-GB, 5400-rpm × 2)
	Single hard drive configurations: <ul style="list-style-type: none"> ■ 500-GB, 7200-rpm ■ 500-GB, 5400-rpm ■ 320-GB, 7200-rpm ■ 320-GB, 5400-rpm ■ 250-GB, 7200-rpm ■ 250-GB, 5400-rpm
	Solid-state drive (SSD)/hard drive configurations: <ul style="list-style-type: none"> ■ 128-GB SSD + 500-GB, 7200-rpm ■ 128-GB SSD + 320-GB, 7200-rpm
Optical drives	Fixed (removal of 1 screw required) 12.7-mm tray load Serial ATA Supports the following drives: <ul style="list-style-type: none"> ■ DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe ■ Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe
Microphone	2 omnidirectional microphones, dual-array with appropriate software (supports beam forming, echo cancellation, and noise suppression)
Audio	HD Audio (IDT) Integrated subwoofer Supports Microsoft® Premium Requirements Pavilion-branded Altec Lansing speakers
Modem	56K V.92 data/fax modem Supports all worldwide certification requirements
Ethernet	Integrated 10/100/1000 network interface card (NIC)
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module: <ul style="list-style-type: none"> ■ Intel 5100 802.11a/b/g Half-Mini Card WLAN module ■ Broadcom 4322 802.11a/b/g/n WLAN module ■ Broadcom 802.11a/b/g WLAN module
TV Tuner	Integrated ATSC/NTSC/QAM hybrid TV tuner module Integrated worldwide analog DVB-T TV tuner module Integrated worldwide DVB-T/ANG TV tuner module Support for TV tuner antennas for both DVB-T and ATSC/NTSC
External media card	One ExpressCard 54 slot Digital Media Slot supports Secure Digital (SD) Memory Card, Secure Digital High Capacity (SDHC), MultiMediaCard (MMC), Memory Stick (MS), Memory Stick Pro (MSP), xD Picture Card (XD)

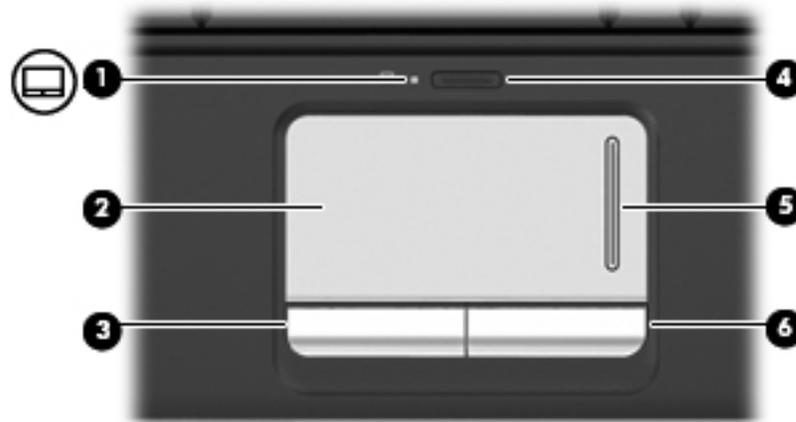
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Category	Description
Ports	Audio-in (stereo microphone)
	Two audio-out (stereo headphones)
	High-Definition Multimedia Interface (HDMI) v1.3 supporting 1080p with HDCP key
	eSATA
	IEEE 1394a
	RJ-11 (modem; select models only)
	RJ-45 (Ethernet, includes link and activity lights)
	USB 2.0
	VGA (Dsub 15-pin)
	2-pin AC power for 90-W AC adapter
Docking	Expansion port 3 supports the HP Notebook Expansion Base and HP Notebook QuickDock
Keyboard/pointing devices	17-inch full-size keyboard with numeric keypad
	TouchPad supports 2-way scrolling
	Taps enabled as default
Power requirements	120-W AC adapter with localized cable plug support (2-wire plug with ground pin, supports 2-pin DC connector)
	8-cell, 73-Wh, 2.55-Ah Li-ion battery (3.5-hour target battery life)
Security	Kensington Security Lock
	Fingerprint reader with Digital Persona software support
Operating system	Preinstalled: Windows® 7
Serviceability	End-user replaceable parts:
	AC adapter
	Battery (system)
	Hard drives (2)
	Memory module
	Optical drive

External component identification

Top components

TouchPad



Item	Component	Function
①	TouchPad light	<ul style="list-style-type: none"> ■ 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 device preferences, select **Start > Devices and Printers**. Then, right-click the device representing your computer, and select **Mouse settings**.

Lights



Item	Component	Description
❶	Caps lock light	On: Caps lock is on.
❷	Power lights (2)*	<ul style="list-style-type: none"> ■ On: The computer is on. ■ Blinking: The computer is in the Sleep state. ■ Off: The computer is off or in Hibernation.
❸	Volume mute light	<ul style="list-style-type: none"> ■ White: Computer sound is on. ■ Amber: Computer sound is off.
❹	Volume down light	On: The volume scroll zone is being used to decrease speaker volume.
❺	Volume up light	On: The volume scroll zone is being used to increase speaker volume.
❻	Wireless light	<ul style="list-style-type: none"> ■ On: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. ■ Off: All wireless devices are off.
❼	Num lock light	The integrated numeric keypad is enabled, or num lock is enabled on a connected optional numeric keypad.

Item	Component	Description
⑥	Battery light	<ul style="list-style-type: none"> ■ On: A battery is charging. ■ Blinking: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly. ■ Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
⑨	Drive light	<ul style="list-style-type: none"> ■ Blinking: The hard drive or optical drive is being accessed. ■ Amber: HP ProtectSmart Hard Drive Protection has temporarily parked the hard drive.

*The 2 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 fingerprint reader (select models only)

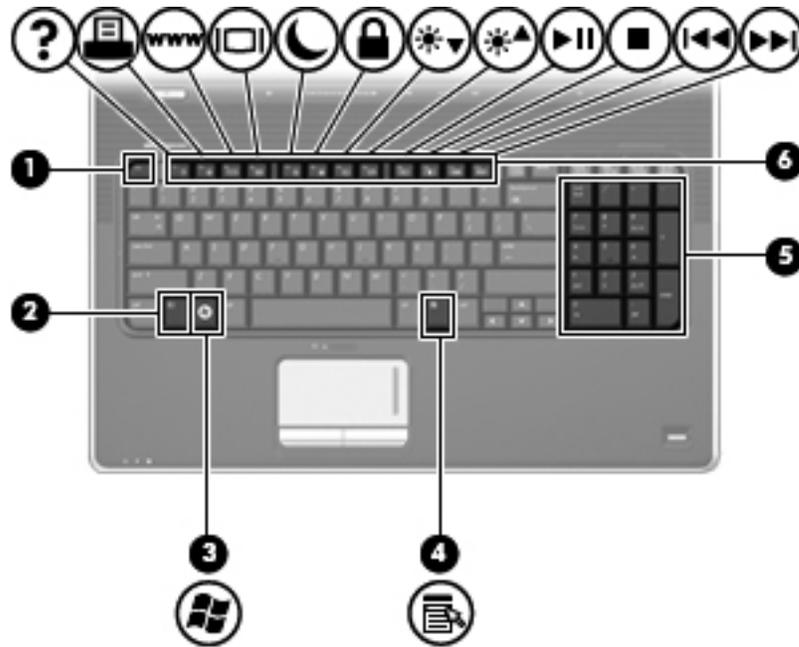


Item	Component	Description
①	Power button*	<ul style="list-style-type: none"> ■ When the computer is off, press the button to turn on the computer. ■ When the computer is on, press the button briefly to initiate Sleep. ■ When the computer is in the Sleep state, press the button briefly to exit Sleep. ■ When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.</p> <p>To learn more about power settings, Select Start > Control Panel > System and Security > Power Options.</p>
②	Speakers (2)	Produce sound.

Item	Component	Description
③	Volume mute button	Mutes and restores speaker sound.
④	Volume scroll zone	Adjusts speaker volume. Slide your finger to the left to decrease volume and to the right to increase volume. You can also tap the minus (-) sign on the scroll zone to decrease volume, or tap the plus (+) sign on the scroll zone to increase volume.
⑤	Previous/rewind button	<ul style="list-style-type: none"> ■ Plays the previous track or chapter when the button is pressed once. ■ Rewinds media when the button is pressed in combination with the fn key.
⑥	Play/pause button	Plays or pauses media.
⑦	Next/fast forward button	<ul style="list-style-type: none"> ■ Plays the next track or chapter when the button is pressed once. ■ Fast forwards media when pressed in combination with the fn key.
⑧	Stop button	Stops playback.
⑨	Wireless button	<p>Turns the wireless feature on or off, but does not establish a wireless connection.</p> <p> To establish a wireless connection, a wireless network must already be set up.</p>
⑩	Fingerprint reader (select models only)	Allows a fingerprint logon to Windows, instead of a password logon.

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

Keys



Item	Component	Function
❶	esc key	Displays system information when pressed in combination with the fn key.
❷	fn key	Executes frequently used system functions when pressed in combination with a function key or the esc key.
❸	Windows logo key	Displays the Windows Start menu.
❹	Windows applications key	Displays a shortcut menu for items beneath the pointer.
❺	Integrated numeric keypad keys	Can be used like the keys on an external numeric keypad.
❻	Function keys	Execute frequently used system functions when pressed in combination with the fn key.

Front components



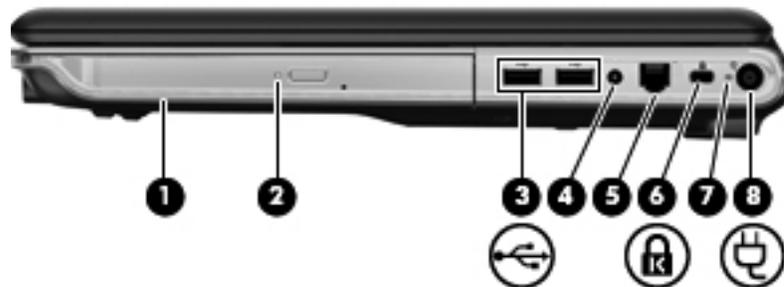
Item	Component	Description
1	Power light	<ul style="list-style-type: none"> ■ On: The computer is on. ■ Blinking: The computer is in the Sleep state. ■ Off: The computer is off or in Hibernation.
2	Battery light	<ul style="list-style-type: none"> ■ On: A battery is charging. ■ Blinking: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly. ■ Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
3	Drive light	<ul style="list-style-type: none"> ■ Blinking: The hard drive or optical drive is being accessed. ■ Amber: HP ProtectSmart Hard Drive Protection has temporarily parked the hard drive.
4	Consumer infrared lens	Receives a signal from the remote control.
5	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
6	Audio-out (headphone) jacks (2)	Produce sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.
	This table describes factory settings. For information about changing factory settings, refer to the user guides located in Help and Support.	

Rear component



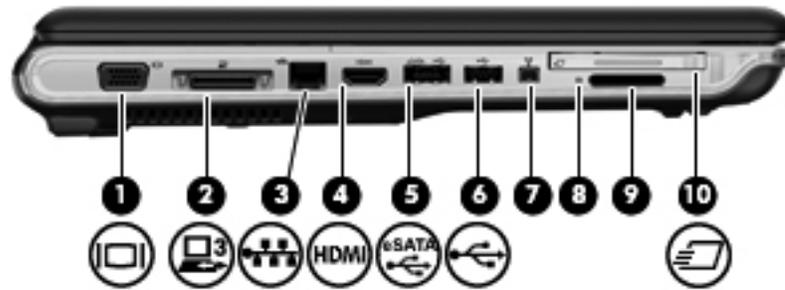
Component	Function
Vent	<p>Enables airflow to cool internal components.</p> <p> The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>

Right-side components



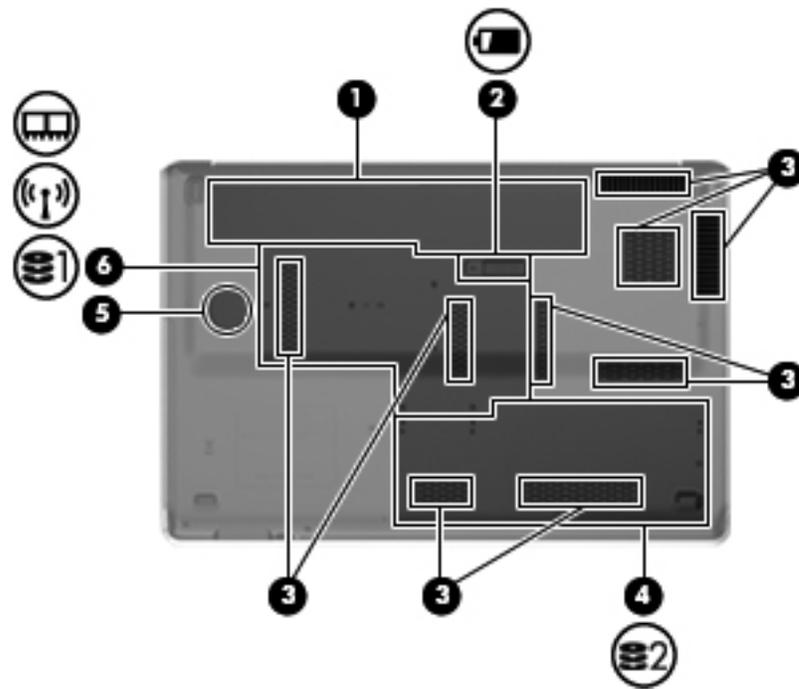
Item	Component	Function
❶	Optical drive	Reads optical discs and, on select models, also writes to optical discs.
❷	Optical drive light	Blinking: The optical drive is being accessed.
❸	USB ports (2)	Connect optional USB devices.
❹	TV antenna/cable jack (select models only)	Connects a TV antenna, a digital cable device, or a satellite device that receives standard or high-definition TV broadcasts.
❺	RJ-11 (modem) jack (select models only)	Connects a modem cable.
❻	Security cable slot	<p>Attaches an optional security cable to the computer.</p> <p> The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p>
❼	AC adapter light	<p>■ On: The computer is connected to external power.</p> <p>■ Off: The computer is not connected to external power.</p>
❽	Power connector	Connects an AC adapter.

Left-side components



Item	Component	Function
①	External monitor port	Connects an external VGA monitor or projector.
②	Expansion port 3	Connects the computer to an optional docking device or an optional expansion product.  The computer has only one expansion port. The term <i>expansion port 3</i> describes the type of expansion port.
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	eSATA/USB port (select models only)	Connects an optional high-performance eSATA component, such as an eSATA external hard drive, or connects an optional USB device.  Depending on your computer model, the computer may include a USB port only.
⑥	USB port	Connects an optional USB device.
⑦	1394 port (select models only)	Connects an optional IEEE 1394 or 1394a device, such as a camcorder.
⑧	Digital Media Slot light	On: A digital card is being accessed.
⑨	Digital Media Slot	Supports the following optional digital card formats: <ul style="list-style-type: none"> ■ Memory Stick (MS) ■ Memory Stick Pro (MSP) ■ MultiMedia Card (MMC) ■ Secure Digital (SD) Memory Card ■ Secure Digital High Capacity (SDHC) Memory Card ■ xD-Picture Card (XD) ■ xD-Picture Card (XD) Type H ■ xD-Picture Card (XD) Type M
⑩	ExpressCard slot	Supports optional ExpressCard/54 cards.

Bottom components



Item	Component	Function
❶	Battery bay	Holds the battery.
❷	Battery release latch	Releases the battery from the battery bay.
❸	Vents (9)	Enables airflow to cool internal components.  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.
❹	Secondary hard drive bay	Holds an optional secondary hard drive.
❺	Integrated subwoofer	Contains the subwoofer speaker.
❻	Primary hard drive bay	Holds the primary hard drive, the memory module slots, and the WLAN module (select models only).  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.

Display components



Item	Component	Description
❶	Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on.
❷	Internal microphones (2)	Record sound.
❸	Webcam light	On: The webcam is in use.
❹	Webcam	Records audio and video and captures still photographs.

Wireless antennas (select models only)

On select computer models, at least 2 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, refer to the section of the *Regulatory, Safety and Environmental Notices* that applies to your country or region. These notices are located in Help and Support.

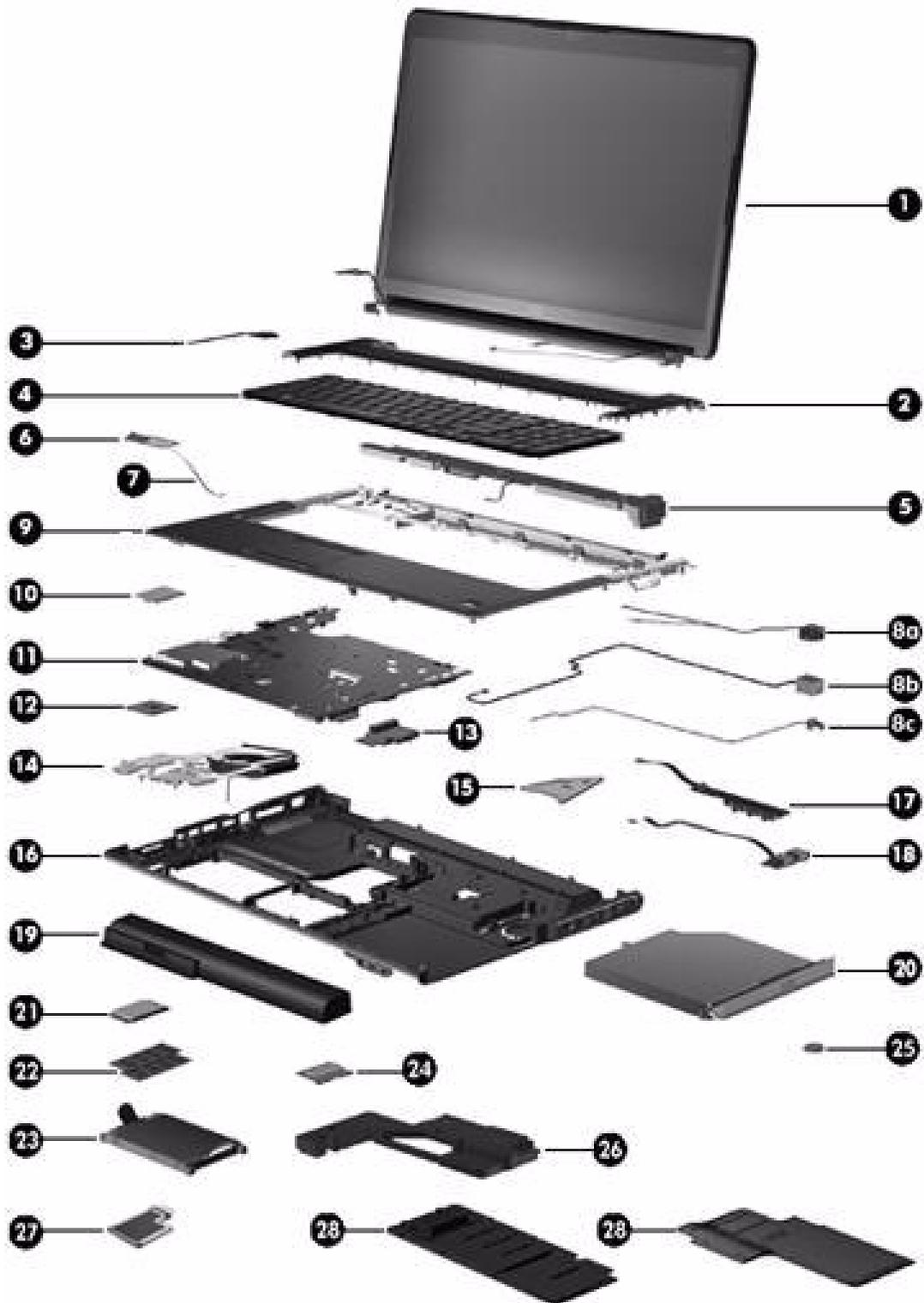
Service tag

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



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

Computer major components



Item	Description	Spare Part Number
(1)	17.3-inch display assembly (includes wireless antenna transceivers and cables)  See “Display assembly components” on page 3-7 for more information on display assembly spare part numbers.	
	HD+ flush glass AntiGlare display assembly with webcam and 2 microphones for use in white computers	516296-001
	HD+ BrightView display assembly with webcam and 2 microphones for use in white computers	516295-001
	HD+ flush glass AntiGlare display assembly with webcam and 2 microphones for use in black computers	519260-001
	HD+ BrightView display assembly with webcam and 2 microphones for use in black computers	519259-001
(2)	Switch cover (includes LED board and cable)	
	For use in white computers	516300-001
	For use in black computers	519269-001
(3)	Power button board (includes cable)	516329-001
(4)	Keyboard (includes keyboard cable)  For a detailed list of available keyboards, see “Sequential part number listing” on page 3-11 .	
	White molded keyboard	516356-xxx
	White painted keyboard	516357-xxx
	Black molded keyboard	519265-xxx
	Black painted keyboard	519266-xxx
(5)	Speaker assembly	516323-001
(6)	Bluetooth module (does not include cable)	537921-001
(7)	Bluetooth cable	583501-001
	Cable Kit , includes:	516328-001
(8a)	Power connector cable (also spared separately)	538085-001
(8b)	Modem module cable	
(8c)	TV tuner module antenna cable	
(9)	Top cover (includes TouchPad and cable, LED board and cable, and switch cover)	
	For use only with white computer models equipped with a fingerprint reader; includes fingerprint reader board	516299-001
	For use only with white computer models not equipped with a fingerprint reader	516360-001
	For use only with black computer models equipped with a fingerprint reader; includes fingerprint reader board	519267-001
	For use only with black computer models not equipped with a fingerprint reader	519268-001
(10)	Modem module  The modem module spare part kit does not include a modem module cable. The modem module cable is included in the Cable Kit, spare part number 516328-001.	
	For use in all countries and regions except Australia and New Zealand	510100-001
	For use only in Australia and New Zealand	510100-011
(11)	System board (includes replacement thermal material)	575477-001

(Continued)

Item	Description	Spare Part Number
(12)	Processor (includes replacement thermal material)	
	Intel Core2 Quad processors (8-MB L2 cache, 1333-MHz FSB):	
	i7-820QM processor (1.73-GHz, SC turbo up to 3.06-GHz)	583053-001
	i7-720QM processor (1.60-GHz, SC turbo up to 2.80-GHz)	586170-001
(13)	Optical drive board	519481-001
(14)	Fan/heat sink assembly (includes replacement thermal material)	587244-001
(15)	System board support bracket	516334-001
(16)	Base enclosure (includes rubber feet)	516298-001
(17)	Audio/infrared board (includes cable)	516330-001
(18)	USB board (includes cable)	516332-001
(19)	Battery , 6-cell, 47-Wh, 2.2Ah, Li-ion	486766-001
(20)	Optical drive (includes bezel and bracket)	
	■ Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	516352-001
	■ DVD±RW and CD-RW SuperMulti Double-Layer Drive with LightScribe	516353-001
(21)	TV tuner module	
	 The TV tuner module spare part kit does not include a TV tuner module cable. The TV tuner module cable is included in the Cable Kit, spare part number 516328-001.	
	DVB-T TV tuner module	482899-003
	DVB-T/ANG TV tuner module	482899-002
	ATSC/NTSC/QAM hybrid TV tuner module	482899-001
	TV tuner external antenna cable (not illustrated)	
	With F-PAL jack	482900-001
	With PAL jack	482900-002
(22)	Memory modules (DDR3, 1066-MHz)	
	■ 4096-MB	575480-001
	■ 2048-MB	575479-001
	■ 1024-MB	575478-001
(23)	Hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)	
	■ 500-GB, 7200-rpm	573328-001
	■ 500-GB, 5400-rpm	516350-001
	■ 320-GB, 7200-rpm	516349-001
	■ 320-GB, 5400-rpm	516346-001
	■ 250-GB, 7200-rpm	516348-001
	■ 250-GB, 5400-rpm	516345-001
	■ 128-GB solid-state drive	577098-001
	Hard Drive Hardware Kit (not illustrated, includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)	517639-001

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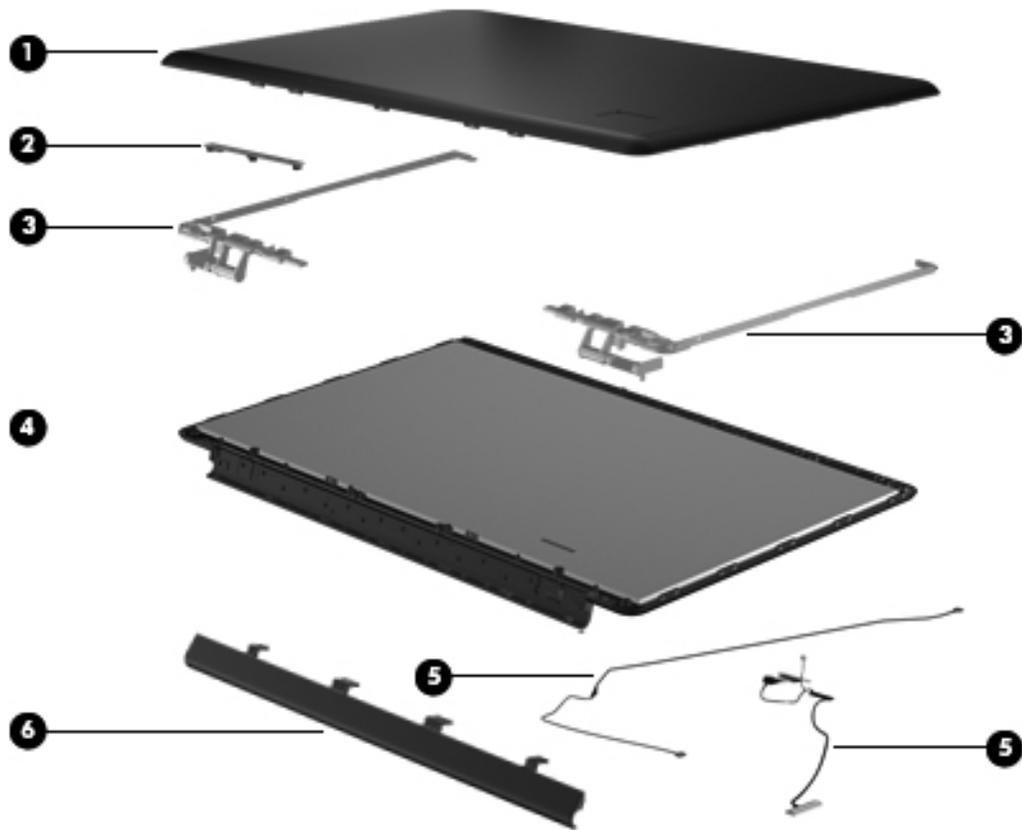
Item	Description	Spare Part Number
(24)	WLAN module	
	Broadcom BCM4312 802.11b/g WLAN modules:	
	■ For use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	504593-003
	■ For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, 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, Taiwan, Tajikistan, Tanzania, 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	504593-004
	Broadcom 4322 AGN 802.11b/g WLAN modules:	
	■ For use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	518434-001

(Continued)

Item	Description	Spare Part Number
■	For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, 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, Taiwan, Tajikistan, Tanzania, 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	518434-002
Intel 5100 802.11a/b/g Half-Mini Card WLAN modules:		
■	For use in Andorra, Antigua and Barbuda, Argentina, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Bermuda, Bolivia, Bosnia and Herzegovina, Brazil, Brunei, Bulgaria, Canada, Cayman Islands, Chile, Colombia, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, the Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Finland, France, French Guiana, Georgia, Germany, Ghana, Greece, Guadeloupe, Guam, Guatemala, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lebanon, Martinique, Puerto Rico, Nether Antilles, Liechtenstein, Lithuania, Luxembourg, Malawi, Malaysia, Malta, Mauritius, Mexico, Monaco, Montenegro, Morocco, the Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, Romania, San Marino, Saudi Arabia, Senegal, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Trinidad and Tobago, Turkey, the United Arab Emirates, the United Kingdom, Uruguay, U.S. Virgin Islands, the United States, Venezuela, Vietnam	572507-001
■	For use in Russia and Ukraine	572508-001
(25)	RTC battery	449729-001
(26)	Subwoofer	516333-001
(27)	ExpressCard module	516324-001
(28)	Hard Drive Cover Kit (contains primary and secondary hard drive covers)	518164-001
	Rubber Feet Kit (not illustrated, includes 4 base enclosure rubber feet)	516326-001

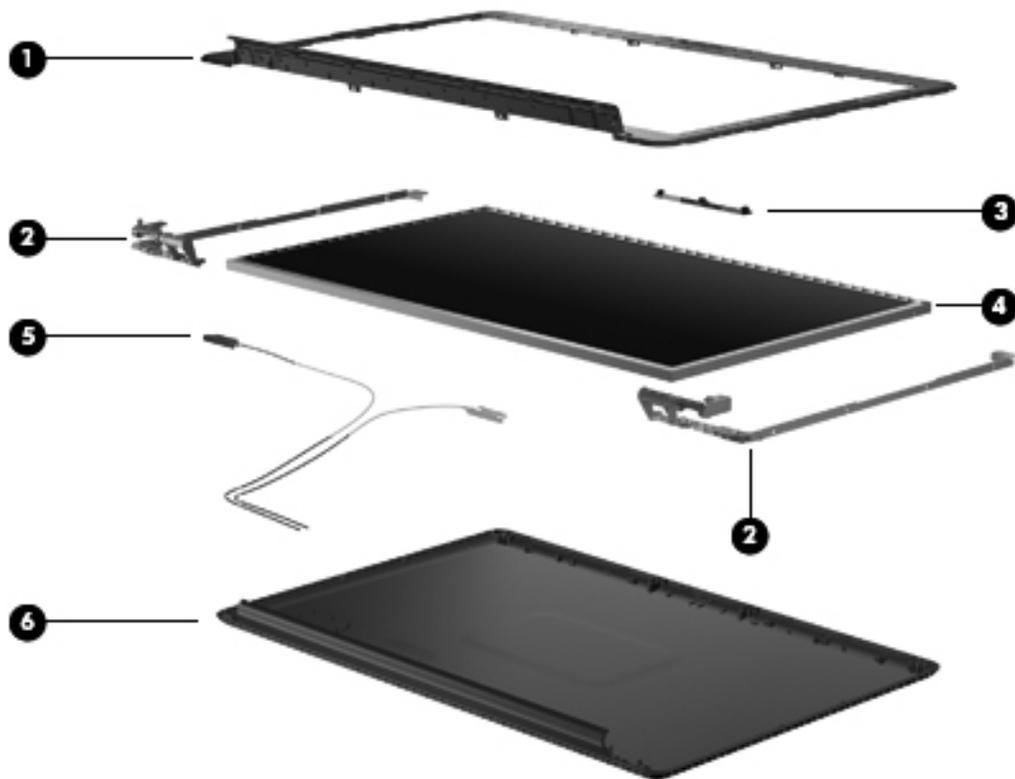
Display assembly components

Flush glass display assembly



Item	Description	Spare part number
①	Display enclosure (includes wireless antenna transceivers and cables and logo LED board and cable)	
	For use in white computers	516443-001
	For use in black computers	519262-001
②	Webcam/microphone module	516312-001
③	Display Hinge Kit (includes right and left hinges)	516444-001
④	Flush glass display panel (includes display panel cable)	
	For use in white computers	516443-001
	For use in black computers	519262-001
⑤	Display Cable Kit (includes display panel cable, and microphone receiver and cable)	516307-001
⑥	Display hinge cover	537844-001
	Display Screw Kit (not illustrated)	531764-001
	Display Rubber Kit (not illustrated, includes display bezel rubber screw covers)	516308-001

BrightView panel



Item	Description	Spare part number
①	Display bezel	516305-001
②	Display Hinge Kit (includes right and left hinges)	516306-001
③	Webcam/microphone module	516312-001
④	Display panel (includes display panel cable)	516303-001
⑤	Display Cable Kit (includes display panel cable, and microphone receiver and cable)	516307-001
⑥	Display enclosure (includes wireless antenna transceivers and cables and logo LED board and cable)	
	For use in white computers	516304-001
	For use in black computers	519261-001
	Display Rubber Kit (not illustrated, includes display bezel rubber screw covers)	516308-001
	Display Screw Kit (not illustrated)	531764-001

Mass storage devices



Item	Description	Spare part number
①	Hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators):	
	500-GB, 7200-rpm	573328-001
	500-GB, 5400-rpm	516350-001
	320-GB, 7200-rpm	516349-001
	320-GB, 5400-rpm	516346-001
	250-GB, 7200-rpm	516348-001
	250-GB, 5400-rpm	516345-001
	128-GB solid-state drive	577098-001
	Hard Drive Hardware Kit (not illustrated, includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)	517639-001
②	Optical drive (includes bezel and bracket)	
	Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	516352-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	516353-001

Miscellaneous parts

Description	Spare part number
AC adapters:	
120-W AC adapter	463953-001
90-W AC adapter	463955-001
Wired headset with volume control	371693-001
Wireless laser mouse (includes infrared transceiver)	430958-001
Power cords:	
For use in Australia and New Zealand	490371-011
For use in Belgium, Bulgaria, the Czech Republic, Finland, France, Germany, Greece, Hungary, Iceland, the Netherlands, northwest Africa, Norway, Poland, Portugal, Russia, Slovakia, Spain, Sweden, and Turkey	490371-021
For use in the Asia/Pacific region, French Canada, Latin America, Thailand, and the United States	490371-001
For use in Brazil	490371-201
For use in India	490371-D61
For use in Israel	490371-BB1
For use in Italy	490371-061
For use in Japan	490371-291
For use in the People's Republic of China	490371-AA1
For use in South Africa	490371-AR1
For use in South Korea	490371-AD1
For use in Switzerland	490371-111
For use in Taiwan	490371-AB1
For use in the United Kingdom and Hong Kong	490371-031
Remote controls:	
Full-function remote control	465540-001
Full-function remote control with teletext	465541-001
Screw Kit	516327-001
■ Phillips PM2.5×3.0 screws	
■ Phillips PM3.0×4.0 screws	
■ Phillips PM2.5×6.0 screws	
■ Phillips PM2.0×4.0 screws	
■ Phillips PM2.5×4.0 screws	
■ Phillips PM2.5×4.0 broadhead screws	
■ Phillips PM2.5×5.0 screws	
■ Phillips PM2.5×5.0 broadhead screws	
■ Phillips PM2.5×6.5 screws	
■ Phillips PM2.5×14.0 captive screws	

Sequential part number listing

Spare part number	Description
371693-001	Wired headset
430958-001	Wireless laser mouse (includes infrared transceiver)
449729-001	RTC battery
463953-001	120-W AC adapter
463955-001	90-W AC adapter
465540-001	Full-function remote control
465541-001	Full-function remote control with teletext
482899-001	ATSC/NTSC/QAM hybrid TV tuner module  The TV tuner module spare part kit does not include a TV tuner module cable. The TV tuner module cable is included in the Cable Kit, spare part number 516328-001.
482899-002	DVB-T/ANG TV tuner module  The TV tuner module spare part kit does not include a TV tuner module cable. The TV tuner module cable is included in the Cable Kit, spare part number 516328-001.
482899-003	DVB-T TV tuner module  The TV tuner module spare part kit does not include a TV tuner module cable. The TV tuner module cable is included in the Cable Kit, spare part number 516328-001.
482900-001	TV tuner external antenna cable with F-PAL jack
482900-002	TV tuner external antenna cable with PAL jack
486766-001	Battery, 6-cell, 47-Wh, 2.2Ah, Li-ion
490371-001	Power cord for use in the Asia/Pacific region, French Canada, Latin America, Thailand, and the United States
490371-011	Power cord for use in Australia and New Zealand
490371-021	Power cord for use in Belgium, Bulgaria, the Czech Republic, Finland, France, Germany, Greece, Hungary, Iceland, the Netherlands, northwest Africa, Norway, Poland, Portugal, Russia, Slovakia, Spain, Sweden, and Turkey
490371-031	Power cord for use in the United Kingdom and Hong Kong
490371-061	Power cord for use in Italy
490371-111	Power cord for use in Switzerland
490371-201	Power cord for use in Brazil
490371-291	Power cord for use in Japan
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-AR1	Power cord for use in South Africa
490371-BB1	Power cord for use in Israel
490371-D61	Power cord for use in India
504593-003	Broadcom BCM4312 802.11b/g WLAN module for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States

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Spare part number	Description
504593-004	Broadcom BCM4312 802.11b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, 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, Taiwan, Tajikistan, Tanzania, 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
510100-001	Modem module for use in all countries and regions except Australia and New Zealand  The modem module spare part kit does not include a modem module cable. The modem module cable is included in the Cable Kit, spare part number 516328-001.
510100-011	Modem module for use only in Australia and New Zealand  The modem module spare part kit does not include a modem module cable. The modem module cable is included in the Cable Kit, spare part number 516328-001.
516295-001	17.3-inch HD+ BrightView display assembly with webcam and 2 microphones for use in white computers (includes wireless antenna transceivers and cables)
516296-001	17.3-inch HD+ flush glass AntiGlare display assembly with webcam and 2 microphones for use in white computers (includes wireless antenna transceivers and cables)
516298-001	Base enclosure (includes rubber feet)
516299-001	Top cover for use only with white computer models equipped with a fingerprint reader (includes fingerprint reader board, TouchPad and cable, LED board and cable and switch)
516300-001	Switch cover for use in white computers (includes LED board and cable)
516303-001	Flush glass display panel (includes display panel cable)
516304-001	Display enclosure for use in white computers with BrightView displays (includes wireless antenna transceivers and cables and logo LED board and cable)
516305-001	Display bezel for use in computers with BrightView displays
516306-001	Display Hinge Kit for use in computers with BrightView displays (includes left and right hinges)
516307-001	Display Cable Kit for use in computers with BrightView displays (includes display panel cable, and microphone receiver and cable)
516308-001	Display Rubber Kit (includes display bezel rubber screw covers)
516309-001	Display Screw Kit for use in computers with BrightView displays
516312-001	Webcam/microphone module for use in computers with BrightView displays
516323-001	Speaker assembly
516324-001	ExpressCard module

(Continued)

Spare part number	Description
516326-001	Rubber Feet Kit (includes 4 base enclosure rubber feet)
516327-001	Screw Kit
516328-001	Cable Kit
516329-001	Power button board (includes cable)
516330-001	Audio/infrared board (includes cable)
516332-001	USB board (includes cable)
516333-001	Subwoofer
516334-001	System board support bracket
516345-001	250-GB, 5400-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
516346-001	320-GB, 5400-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
516348-001	250-GB, 7200-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
516349-001	320-GB, 7200-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
516350-001	500-GB, 5400-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
516352-001	Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe
516353-001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe
516356-001	White molded keyboard for use in the United States
516356-031	White molded keyboard for use in the United Kingdom
516356-041	White molded keyboard for use in Germany
516356-051	White molded keyboard for use in France
516356-061	White molded keyboard for use in Italy
516356-071	White molded keyboard for use in Spain
516356-131	White molded keyboard for use in Portugal
516356-141	White molded keyboard for use in Turkey
516356-211	White molded keyboard for use in Hungary
516356-221	White molded keyboard for use in the Czech Republic
516356-251	White molded keyboard for use in Russia
516356-A41	White molded keyboard for use in Belgium
516356-AB1	White molded keyboard for use in Taiwan
516356-B31	White molded keyboard for use internationally
516356-BB1	White molded keyboard for use in Israel
516356-BG1	White molded keyboard for use in Switzerland
516356-DH1	White molded keyboard for use in the Netherlands
516356-DJ1	White molded keyboard for use in Greece
516357-121	White painted keyboard for use in French Canada

(Continued)

Spare part number	Description
516360-001	Top cover for use only with white computer models not equipped with a fingerprint reader (includes TouchPad and cable, LED board and cable, and switch cover)
516443-001	Display enclosure for use in white computers with flush glass displays (includes wireless antenna transceivers and cables and logo LED board and cable)
516444-001	Display Hinge Kit for use in computers with flush glass displays
517639-001	Hard Drive Hardware Kit (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
518164-001	Hard Drive Cover Kit (contains primary and secondary hard drive covers)
518434-001	Broadcom 4322 AGN 802.11a/b/g WLAN module for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States
518434-002	Broadcom 4322 AGN 802.11a/b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, 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, Taiwan, Tajikistan, Tanzania, 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
519259-001	17.3-inch HD+ BrightView display assembly with webcam and 2 microphones for use in black computers (includes wireless antenna transceivers and cables)
519260-001	17.3-inch HD+ flush glass AntiGlaRe display assembly with webcam and 2 microphones for use in black computers (includes wireless antenna transceivers and cables)
519261-001	Display enclosure for use in black computers with BrightView displays (includes wireless antenna transceivers and cables and logo LED board and cable)
519262-001	Display enclosure for use in black computers with flush glass displays (includes wireless antenna transceivers and cables and logo LED board and cable)
519265-001	Black molded keyboard for use in the United States
519265-031	Black molded keyboard for use in the United Kingdom
519265-041	Black molded keyboard for use in Germany
519265-051	Black molded keyboard for use in France
519265-061	Black molded keyboard for use in Italy
519265-071	Black molded keyboard for use in Spain
519265-111	Black molded keyboard for use in Switzerland
519265-131	Black molded keyboard for use in Portugal

(Continued)

Spare part number	Description
519265-141	Black molded keyboard for use in Turkey
519265-171	Black molded keyboard for use in Saudi Arabia
519265-211	Black molded keyboard for use in Hungary
519265-221	Black molded keyboard for use in the Czech Republic
519265-251	Black molded keyboard for use in Russia
519265-281	Black molded keyboard for use in Thailand
519265-291	Black molded keyboard for use in Japan
519265-A41	Black molded keyboard for use in Belgium
519265-AB1	Black molded keyboard for use in Taiwan
519265-AD1	Black molded keyboard for use in South Korea
519265-B31	Black molded keyboard for use internationally
519265-BB1	Black molded keyboard for use in Israel
519265-DH1	Black molded keyboard for use in the Netherlands
519265-DJ1	Black molded keyboard for use in Greece
519266-121	Black painted keyboard for use in French Canada
519267-001	Top cover for use only with black computer models equipped with a fingerprint reader (includes fingerprint reader board, TouchPad and cable, LED board and cable, and switch cover)
519268-001	Top cover for use only with black computer models not equipped with a fingerprint reader (includes TouchPad and cable, LED board and cable, and switch cover)
519269-001	Switch cover for use in black computers (includes LED board and cable)
519481-001	Optical drive board
531764-001	Display Screw Kit for use in computers with a flush glass display
537844-001	Display hinge cover for use in computers with a flush glass display
537921-001	Bluetooth module (does not include a Bluetooth module cable)  The Bluetooth module cable is available using spare part number 583501-001.
538085-001	Power connector cable
572507-001	Intel 5100 802.11a/b/g Half-Mini Card WLAN module for use in Andorra, Antigua and Barbuda, Argentina, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Bermuda, Bolivia, Bosnia and Herzegovina, Brazil, Brunei, Bulgaria, Canada, Cayman Islands, Chile, Colombia, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, the Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Finland, France, French Guiana, Georgia, Germany, Ghana, Greece, Guadeloupe, Guam, Guatemala, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lebanon, Martinique, Puerto Rico, Nether Antilles, Liechtenstein, Lithuania, Luxembourg, Malawi, Malaysia, Malta, Mauritius, Mexico, Monaco, Montenegro, Morocco, the Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, Romania, San Marino, Saudi Arabia, Senegal, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Trinidad and Tobago, Turkey, the United Arab Emirates, the United Kingdom, Uruguay, U.S. Virgin Islands, the United States, Venezuela, Vietnam
572508-001	Intel 5100 802.11a/b/g Hal-Mini Card WLAN module for use in Russia and Ukraine
573328-001	500-GB, 7200-rpm hard drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
575477-001	System board (includes replacement thermal material)

(Continued)

Spare part number	Description
575478-001	1-GB memory module (DDR3, 1066-MHz)
575479-001	2-GB memory module (DDR3, 1066-MHz)
575480-001	4-GB memory module (DDR3, 1066-MHz)
577098-001	128-GB solid-state drive (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
583053-001	Intel Core2 Quad i7-820QM processor (1.73-GHz, SC turbo up to 3.06-GHz)
583501-001	Bluetooth cable
586170-001	Intel Core2 Quad i7-720QM processor (1.60-GHz, SC turbo up to 2.80-GHz)
587244-001	Fan/heat sink assembly (includes replacement thermal material)

Removal and replacement procedures

Preliminary replacement requirements

Tools required

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

- Flat-bladed screwdriver
- Phillips P0 and P1 screwdrivers
- Torx T8 screwdriver

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 can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

Cables and connectors



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

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

Drive handling



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

- Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
 - Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.
 - Before removing a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.
 - Handle drives on surfaces covered with at least one inch of shock-proof foam.
 - Avoid dropping drives from any height onto any surface.
 - After removing a hard drive, an optical drive, or a diskette drive, place it in a static-proof bag.
 - Avoid exposing a hard drive to products that have magnetic fields, such as monitors or speakers.
 - Avoid exposing a drive to temperature extremes or liquids.
 - If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package "FRAGILE."
-

Grounding guidelines

Electrostatic discharge damage

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

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

An electronic device exposed to ESD may not be affected at all and may work perfectly throughout a normal cycle. Or the device may 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, observe these precautions:

- Keep components in their electrostatic-safe containers until you are ready to install them.
 - Use nonmagnetic tools.
 - Before touching an electronic component, discharge static electricity by using the guidelines described in this section.
 - Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.
 - If you remove a component, place it in an electrostatic-safe container.
-

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



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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

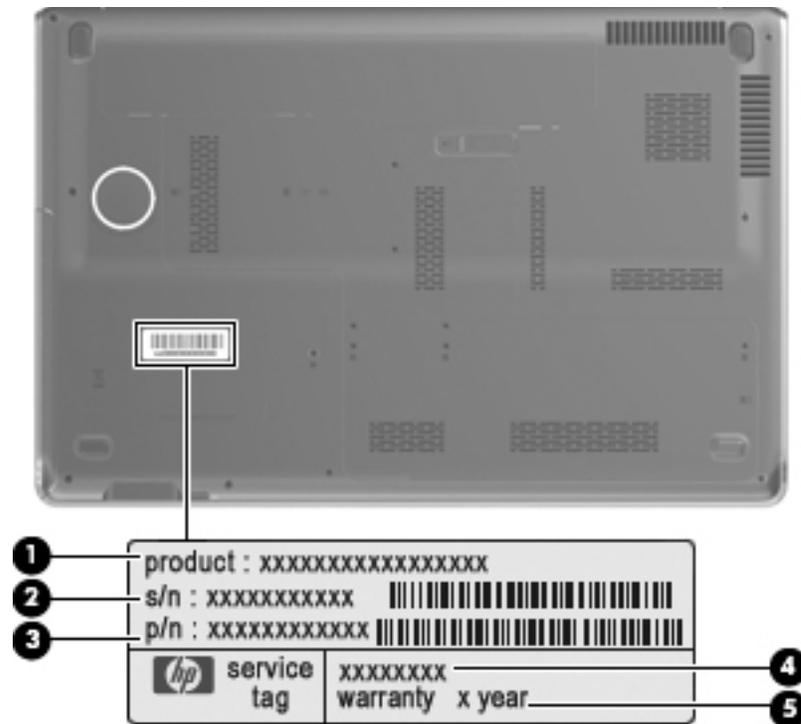
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 71 screws, in 14 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

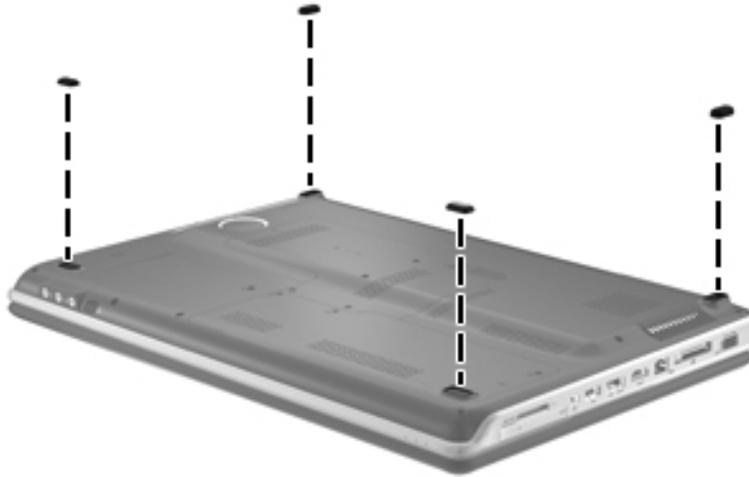
When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag.



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

Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Feet Kit, spare part number 516326-001. There are 4 rubber feet that attach to the base enclosure in the locations illustrated below.



Battery

Description	Spare part number
6-cell, 47-Wh, 2.2-Ah Li-ion battery	486766-001

Before disassembling the computer, follow these steps:

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

Remove the battery:

1. Turn the computer upside down on a flat surface, with the battery bay toward you.
2. Slide the battery release latch ❶ to release the battery.
3. Pivot the battery ❷ upward and remove it from the computer.



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

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	516352-001
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	516353-001



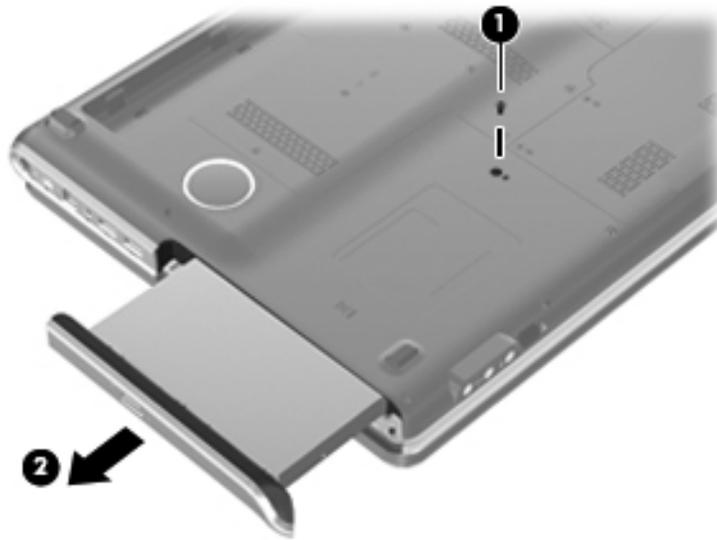
If it is necessary to remove the optical drive board, see [“System board” on page 4-37](#).

Before removing the optical drive, follow these steps:

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

Remove the optical drive:

1. Position the computer with the front toward you.
2. Remove the Phillips PM2.5×7.0 screw ❶ that secures the optical drive to the computer.
3. Remove the optical drive ❷ from the computer.



4. If it is necessary to replace the optical drive bracket, follow these steps:
- a. Position the optical drive with the rear toward you.
 - b. Remove the two Phillips PM1.5×3.0 screws that secure the optical drive bracket to the optical drive.
 - c. Remove the optical drive bracket.



Reverse this procedure to reassemble and install the optical drive.

Primary hard drive cover

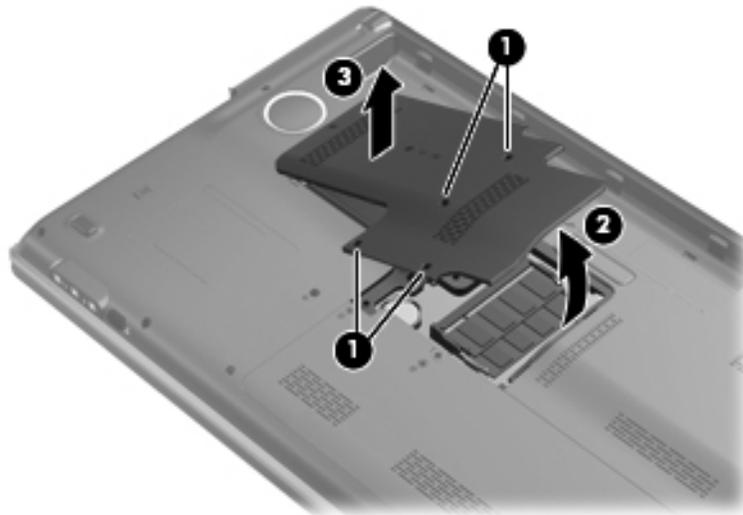
Description	Spare part number
Hard Drive Cover Kit (contains primary and secondary hard drive covers)	518164-001

Before removing the primary hard drive cover, follow these steps:

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

Remove the primary hard drive cover:

1. Loosen the four Phillips PM2.5×6.0 captive screws ❶ that secure the primary hard drive cover to the computer.
2. Lift the right side ❷ of the primary hard drive cover, and then remove the cover ❸.



Reverse this procedure to install the primary hard drive cover.

Secondary hard drive cover

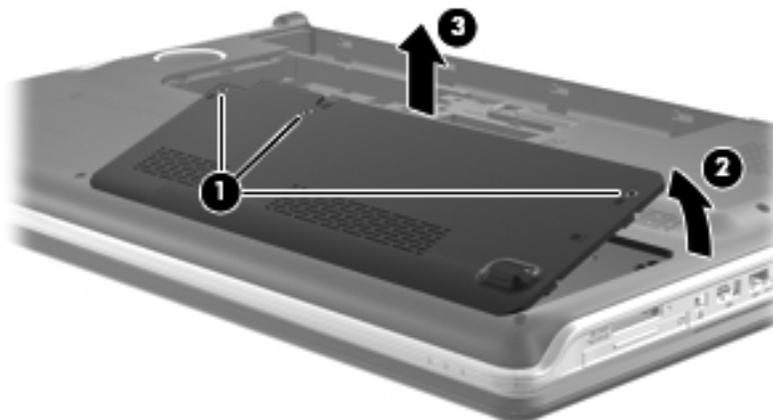
Description	Spare part number
Hard Drive Cover Kit (contains primary and secondary hard drive covers)	518164-001

Before removing the secondary hard drive cover, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the primary hard drive cover (see [“Primary hard drive cover” on page 4-9](#)).

Remove the secondary hard drive cover:

1. Loosen the three Phillips PM2.5×6.0 captive screws ❶ that secure the secondary hard drive cover to the computer.
2. Lift the rear edge ❷, and then remove the cover ❸.



Reverse this procedure to install the secondary hard drive cover.

Hard drive



The hard drive spare part kit includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators.

Description	Spare part number
500-GB, 7200-rpm hard drive	573328-001
500-GB, 5400-rpm hard drive	516350-001
320-GB, 7200-rpm hard drive	516349-001
320-GB, 5400-rpm hard drive	516346-001
250-GB, 7200-rpm hard drive	516348-001
250-GB, 5400-rpm hard drive	516345-001
128-GB solid-state drive	577098-001
Hard Drive Hardware Kit (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)	517639-001

Before removing the hard drive, follow these steps:

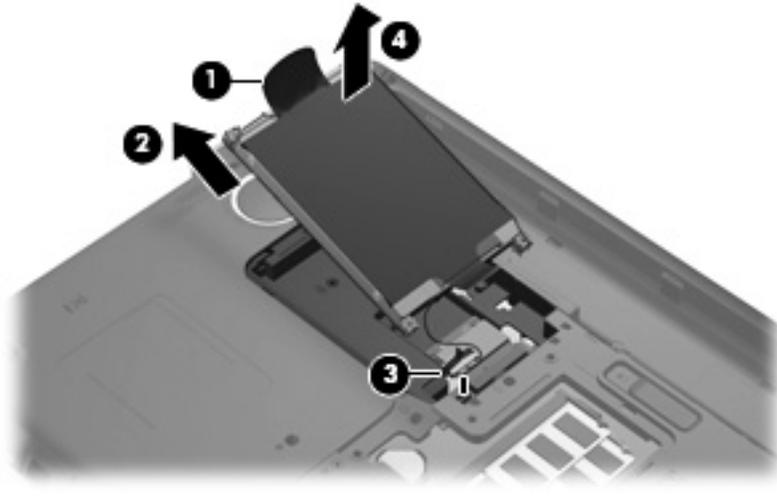
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. If you are removing the primary hard drive, remove the primary hard drive cover (see [“Primary hard drive cover” on page 4-9](#)).
or
If you are removing the secondary hard drive, remove the secondary hard drive cover (see [“Secondary hard drive cover” on page 4-10](#)).

Remove the hard drive:

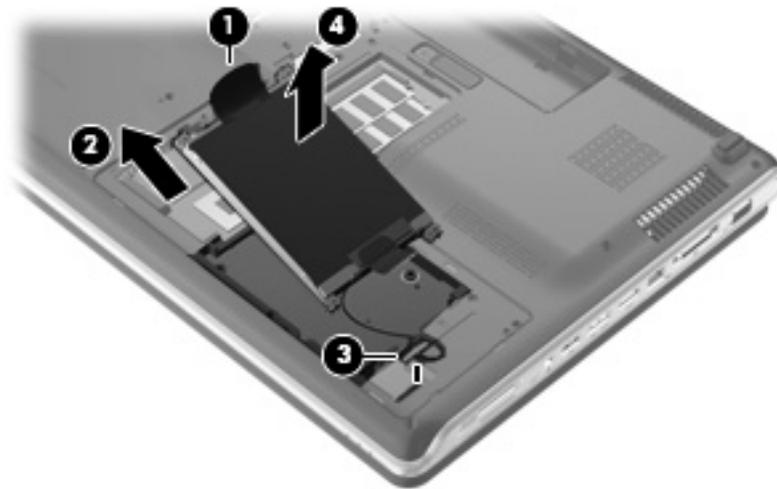
1. Use the Mylar tab **1** to slide the hard drive to the left **2**, and then lift it to release it from the hard drive bay.
2. Disconnect the hard drive cable **3** from the system board.
3. Remove the hard drive **4**.



If you are removing the primary hard drive, see the first image below. If you are removing the secondary hard drive, see the second image below.

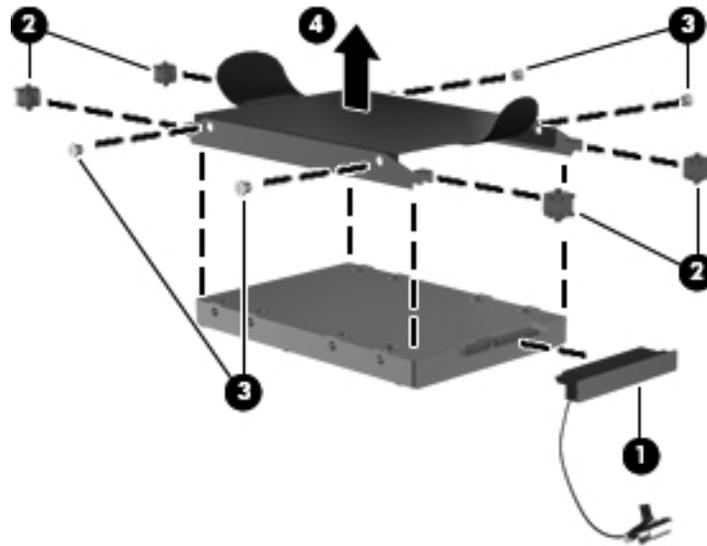


or



4. If it is necessary to replace the hard drive bracket or any of the hard drive bracket components, remove the following:
- ❶ Hard drive adapter cable
 - ❷ Four rubber isolators
 - ❸ Four Phillips PM3.0x3.5 screws that secure the hard drive bracket rails and Mylar cover to the hard drive

④ Left and right hard drive bracket rails with Mylar cover



Reverse this procedure to reassemble and install the hard drive.

WLAN module

Description	Spare part number
Broadcom BCM4312 802.11b/g WLAN module:	
■ For use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	504593-003
■ for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, 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, Taiwan, Tajikistan, Tanzania, 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	504593-004
Broadcom 4322 AGN 802.11a/b/g WLAN modules:	
■ For use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	518434-001
■ For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, 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, Taiwan, Tajikistan, Tanzania, 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	518434-002

Description	Spare part number
Intel 5100 802.11a/b/g Half-Mini Card WLAN modules:	
<ul style="list-style-type: none"> ■ For use in Andorra, Antigua and Barbuda, Argentina, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belgium, Bermuda, Bolivia, Bosnia and Herzegovina, Brazil, Brunei, Bulgaria, Canada, Cayman Islands, Chile, Colombia, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, the Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Finland, France, French Guiana, Georgia, Germany, Ghana, Greece, Guadeloupe, Guam, Guatemala, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lebanon, Martinique, Puerto Rico, Nether Antilles, Liechtenstein, Lithuania, Luxembourg, Malawi, Malaysia, Malta, Mauritius, Mexico, Monaco, Montenegro, Morocco, the Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, Romania, San Marino, Saudi Arabia, Senegal, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Trinidad and Tobago, Turkey, the United Arab Emirates, the United Kingdom, Uruguay, U.S. Virgin Islands, the United States, Venezuela, Vietnam 	572507-001
<ul style="list-style-type: none"> ■ For use in Russia and Ukraine 	572508-001

Before removing the WLAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the primary hard drive cover (see [“Primary hard drive cover” on page 4-9](#)).

Remove the WLAN module:



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. Disconnect the WLAN antenna cables ❶ from the WLAN module.

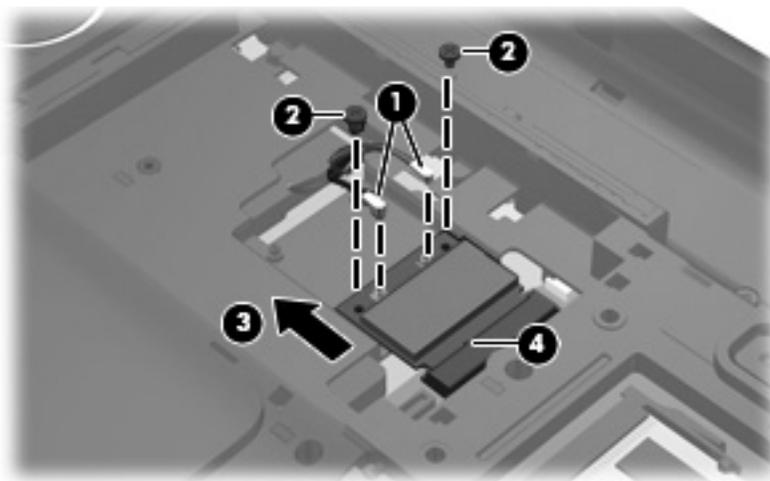


The black WLAN antenna cable is connected to the WLAN module “Main” terminal. The white WLAN antenna cable is connected to the WLAN module “Aux” terminal.

2. 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.)

3. Remove the WLAN module ❸ by pulling it away from the slot at an angle.

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



Reverse this procedure to install the WLAN module.

RTC battery

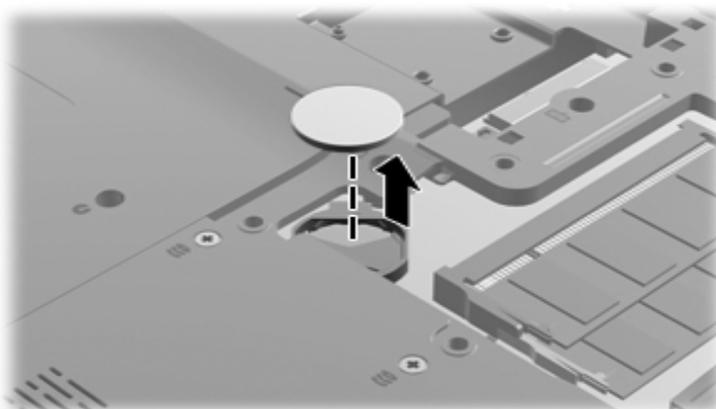
Description	Spare part number
RTC battery	449729-001

Before removing the RTC battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the primary hard drive cover (see [“Primary hard drive cover” on page 4-9](#)).

Remove the RTC battery:

- » Remove the RTC battery from the socket on the system board.



Reverse this procedure to install the RTC battery. Be sure the RTC battery is installed with the “+” sign facing up.

Memory module

Description	Spare part number
4096-MB (DDR3, 1066-MHz)	575480-001
2048-MB (DDR3, 1066-MHz)	575479-001
1024-MB (DDR3, 1066-MHz)	575478-001

Before removing the memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the primary hard drive cover (see [“Primary hard drive cover” on page 4-9](#)).

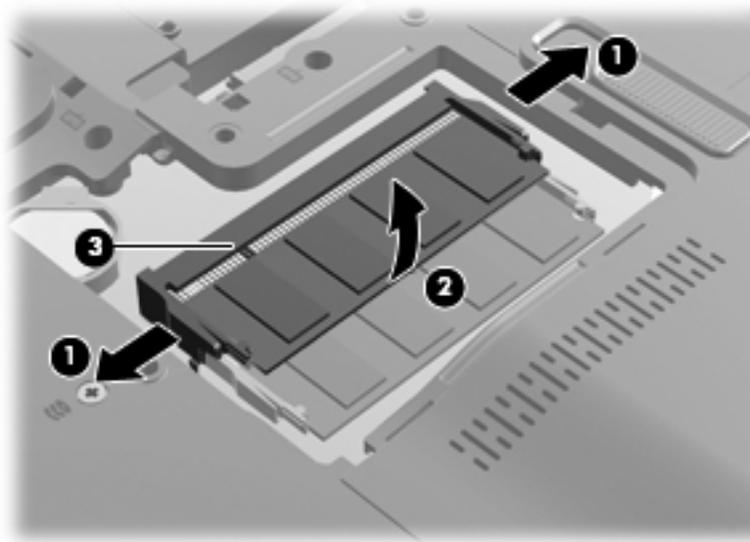
Remove the memory module:



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

1. 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.)
2. 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.

TV tuner module

 The TV tuner module spare part kit does not include a TV tuner module cable. The TV tuner module cable is included in the Cable Kit, spare part number 516328-001.

 The TV tuner external antenna cables are available using spare part numbers 482900-001 (with F-PAL jack) and 482900-002 (with PAL jack).

Description	Spare part number
DVB-T TV tuner module	482899-003
DVB-T/ANG TV tuner module	482899-002
ATSC/NTSC/QAM hybrid TV tuner module	482899-001

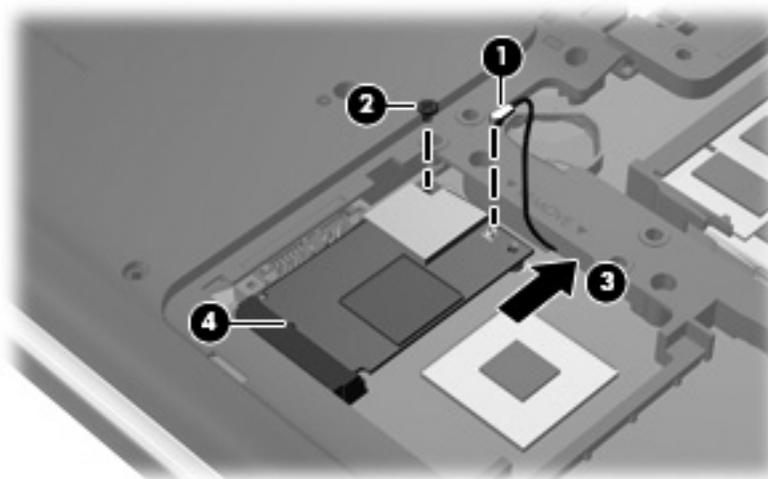
Before removing the TV tuner module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the secondary hard drive cover (see [“Secondary hard drive cover” on page 4-10](#)).

Remove the TV tuner module:

1. Disconnect the TV tuner module antenna cable **1** from the terminal on the TV tuner module.
2. Remove the Phillips PM2.0×4.0 screw **2** that secures the TV tuner module to the computer. (The edge of the module opposite the slot rises away from the computer.)
3. Remove the TV tuner module **3**.

 The TV tuner module is designed with a notch **4** to prevent incorrect insertion into the TV tuner module slot.



Reverse this procedure to install the TV tuner module.

Switch cover and keyboard

Description:	Spare part number
Switch cover for use in white computers (includes LED board and cable)	516300-001
Switch cover for use in black computers (includes LED board and cable)	519269-001
White molded keyboard	516356-xxx
White painted keyboard	516357-xxx
Black molded keyboard	519265-xxx
Black painted keyboard	519266-xxx

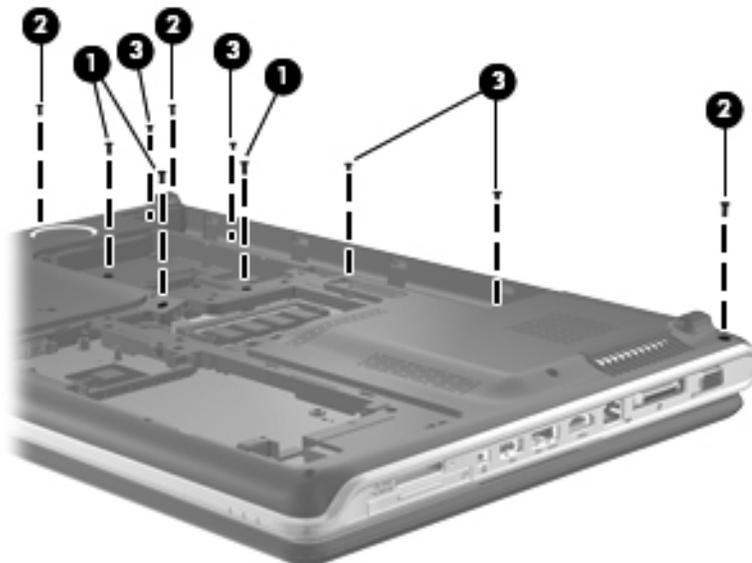
 For a detailed list of available keyboards, see [“Sequential part number listing” on page 3-11](#).

Before removing the switch cover and keyboard, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the primary hard drive cover (see [“Primary hard drive cover” on page 4-9](#)).

Remove the switch cover and keyboard:

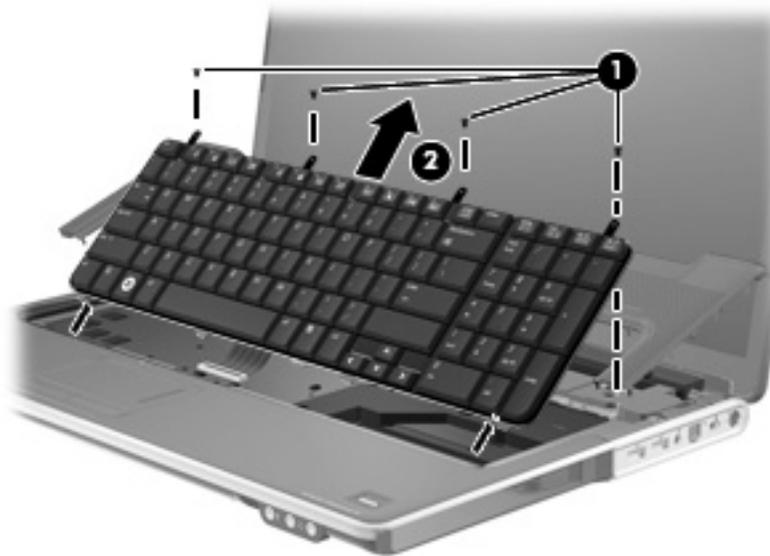
1. Turn the computer upside down, with the front toward you.
2. Remove the following screws:
 - ❶ Three Phillips PM2.5×7.0 screws that secure the keyboard to the computer
 - ❷ Three Phillips PM2.5×7.0 screws that secure the switch cover to the computer
 - ❸ Four Phillips PM2.5×4.5 screws that secure the switch cover to the computer



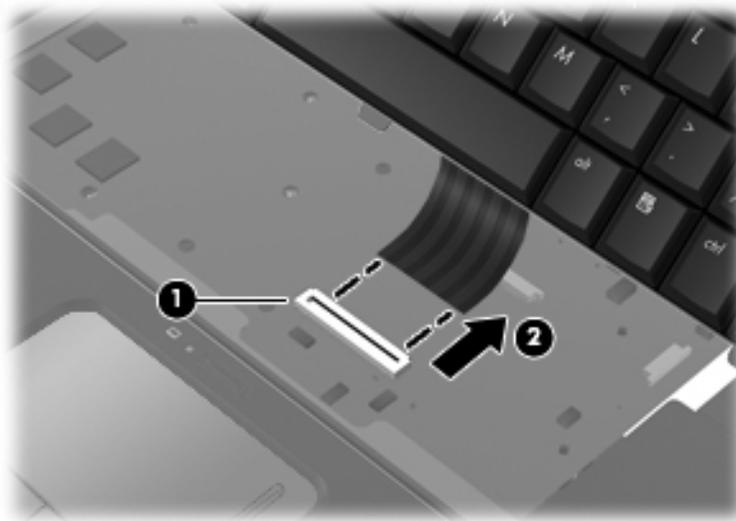
3. Turn the computer display-side up, with the front toward you, and open the computer as far as possible.
4. Lift the rear edge of the switch cover until it detaches from the computer.



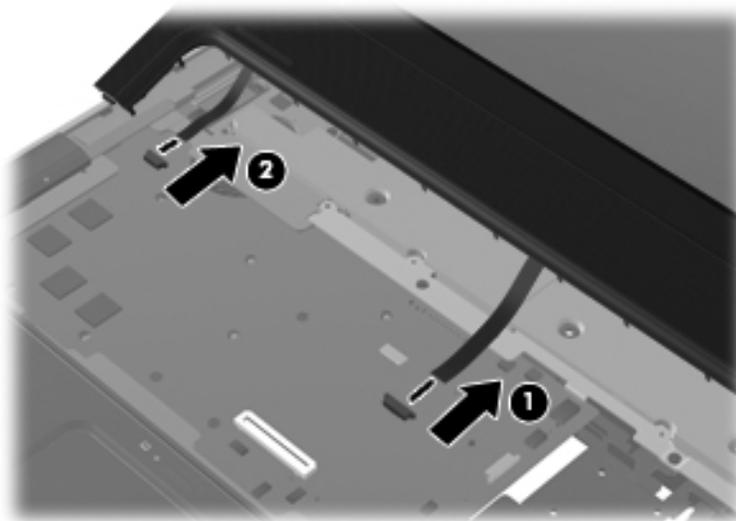
5. Remove the four Phillips PM2.0×4.0 screws ❶ that secure the keyboard to the computer.
6. Lift the keyboard ❷ until the keyboard connector on the system board is accessible.



7. Release the zero insertion force (ZIF) connector ❶ to which the keyboard cable is connected and disconnect the cable ❷ from the system board.



8. Remove the keyboard.
9. Disconnect the power button board cable ❶ from the low insertion force (LIF) connector on the system board.
10. Disconnect the LED board cable ❷ from the LIF connector on the system board.



11. Remove the switch cover.
- Reverse this procedure to install the switch cover and keyboard.

Power button board

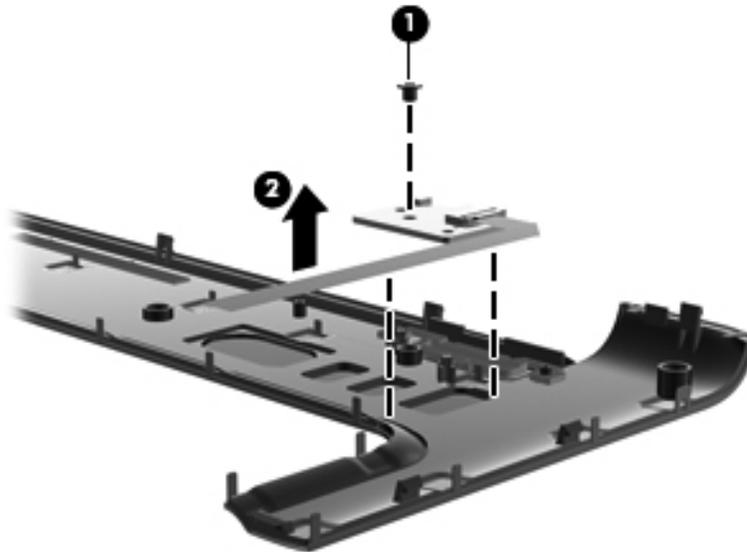
Description	Spare part number
Power button board (includes cable)	516329-001

Before removing the power button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#)).

Remove the power button board:

1. Turn the switch cover upside down with the front toward you.
2. Remove the Phillips PM2.0×4.0 screw ❶ that secures the power button board to the switch cover.
3. Remove the power button board ❷ and cable.



Reverse this procedure to install the power button board.

Speaker assembly

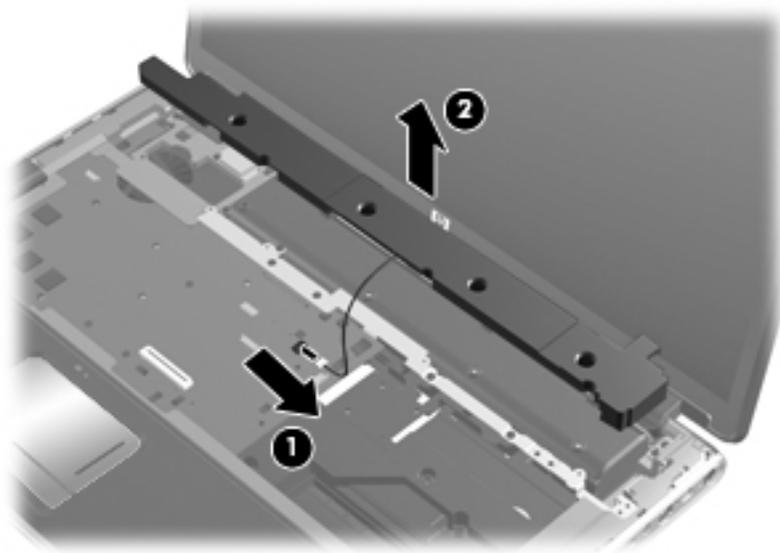
Description	Spare part number
Speaker assembly	516323-001

Before removing the speaker assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#)).

Remove the speaker assembly:

1. Disconnect the speaker assembly cable ❶ from the system board.
2. Remove the speaker assembly ❷.



Reverse this procedure to install the speaker assembly.

Bluetooth module

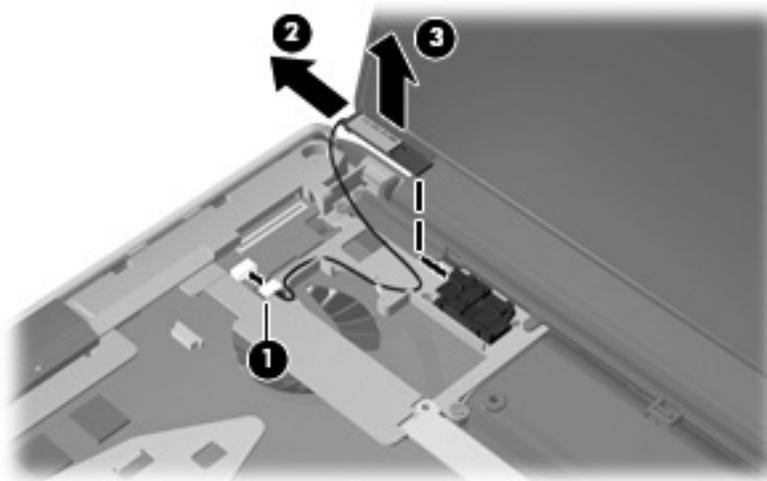
Description	Spare part number
Bluetooth module (does not include cable)	537921-001
Bluetooth module cable	583501-001

Before removing the Bluetooth module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#)).

Remove the Bluetooth module:

1. Disconnect the Bluetooth module cable ❶ from the system board.
2. Slide the Bluetooth module out of the slot ❷.
3. Remove the module from the computer ❸.



Reverse this procedure to install the Bluetooth module.

Display assembly



The display assembly kit includes webcam and 2 microphones, and wireless antenna transceivers and cables.

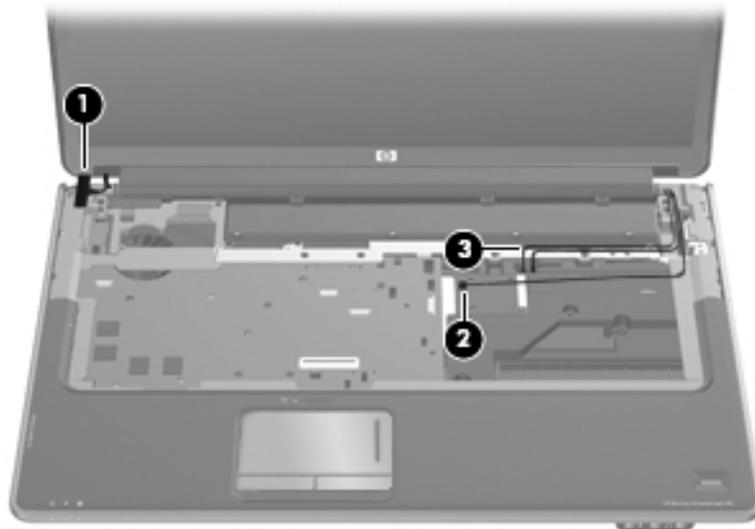
Description	Spare part number
17.3-inch HD+ flush glass AntiGlare display assembly for use in white computers	516296-001
17.3-inch HD+ BrightView display assembly for use in white computers	516295-001
17.3-inch HD+ flush glass AntiGlare display assembly for use in black computers	519260-001
17.3-inch HD+ BrightView display assembly for use in black computers	519259-001

Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the following components:
 - a. Disconnect the wireless antenna cables from the WLAN module (see [“WLAN module” on page 4-14](#)).
 - b. Remove the switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#)).
 - c. Remove the speaker assembly (see [“Speaker assembly” on page 4-23](#)).

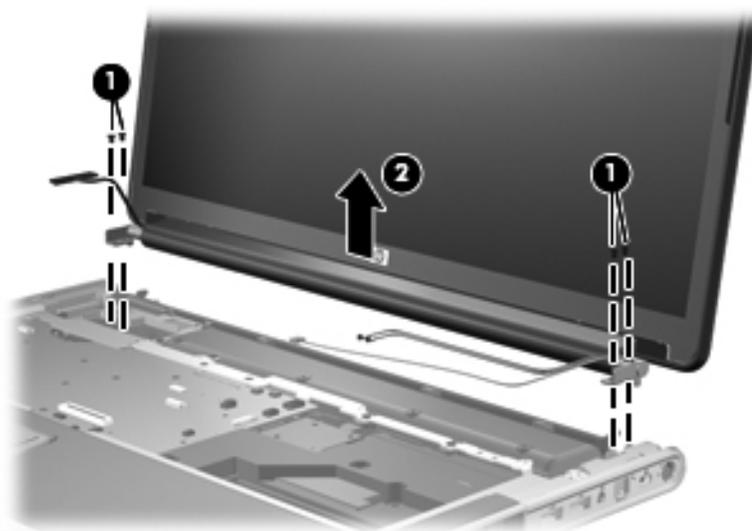
Remove the display assembly:

1. Disconnect the display panel cable **1** and the webcam/microphone cable **2** from the system board.
2. Remove the WLAN antenna cables and the microphone cable from the clips **3** built into the top cover.



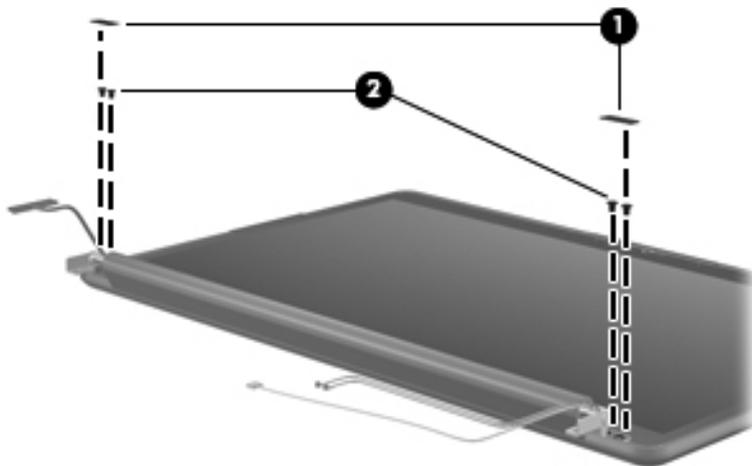
CAUTION: Support the display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

3. Remove the four Phillips PM2.5×7.0 screws ❶ that secure the display assembly to the computer.
4. Lift the display assembly ❷ straight up and remove it.



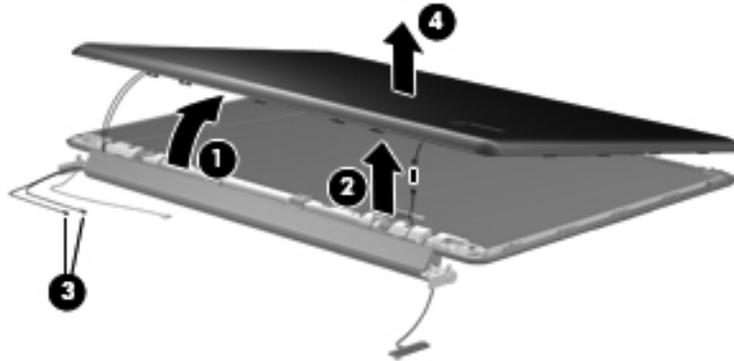
 Steps 5 through 18 provide display assembly internal component removal information for computer models equipped with flush glass display assemblies. See steps 19 through 30 for display assembly internal component removal information for computer models equipped with BrightView display assemblies.

5. If it is necessary to replace the display enclosure or any of the display assembly internal components, remove the following screw covers and screws:
 - ❶ Two rubber screw covers on the display bezel bottom edge. The display rubber screw covers are included in the Display Rubber Kit, spare part number 516308-001.
 - ❷ Four Phillips PM2.5×6.0 screws.

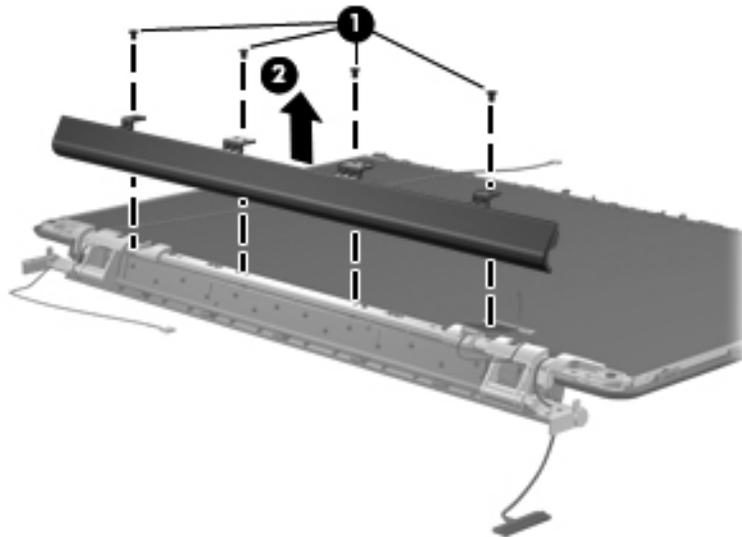


6. Turn the display assembly upside down, with the bottom toward you.
7. Lift and release the bottom of the display enclosure ❶.
8. Disconnect the display logo cable ❷ from the display panel cable.
9. Route the webcam cable and antenna cables ❸ through the hinge channel.

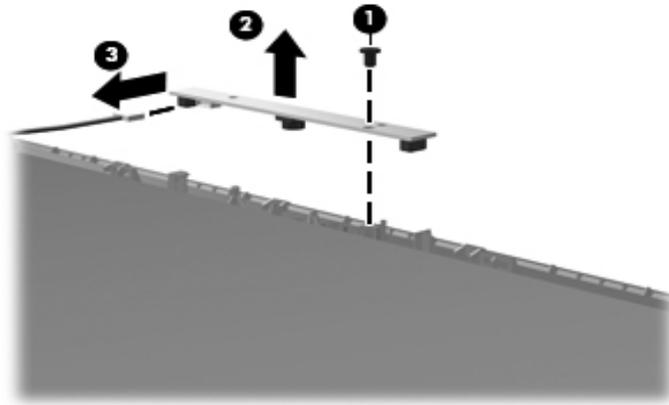
10. Remove the display enclosure ④. The display enclosure is available using spare part number 516443-001 for use in white computers and 519262-001 for use in black computers, and includes the display logo LED board and cable, and the wireless antenna transceivers and cables.



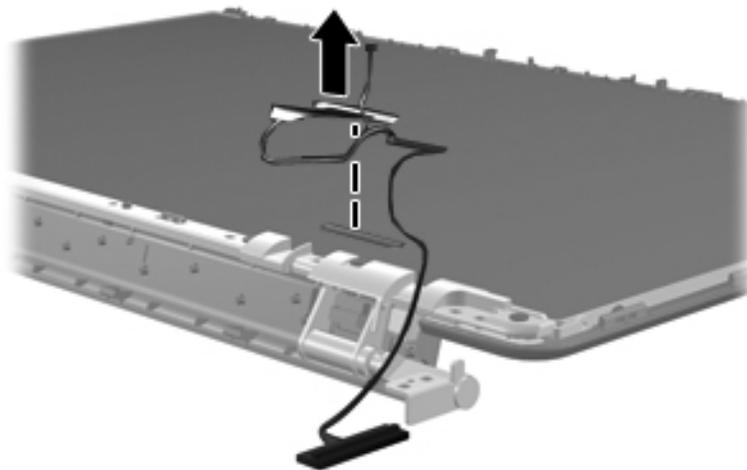
11. If it is necessary to remove the hinge cover, remove the four Phillips PM2.5×5.0 screws ① that secure the hinge cover to the display assembly, and then remove the cover ②. The hinge cover is available using spare part number 537844-001.



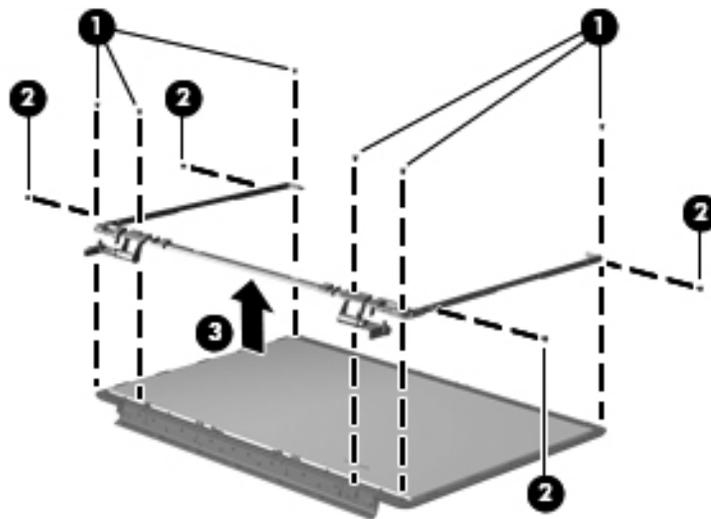
12. If it is necessary to replace the webcam/microphone module, remove the Phillips PM2.0×4.0 screw ① that secures the module to the display bezel.
13. Release the webcam/microphone module ② as far as the webcam/microphone module cable allows.
14. Disconnect the webcam/microphone module cable ③ and remove the webcam/microphone module. The webcam/microphone module is available using spare part number 516312-001.



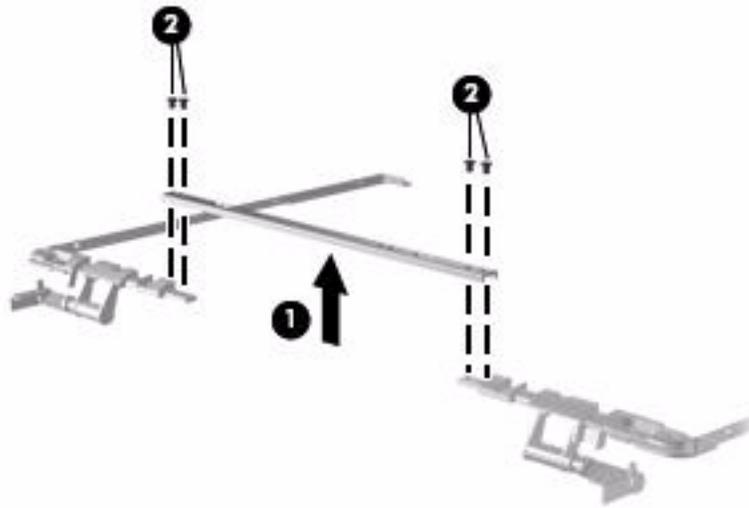
15. Disconnect the display panel cable from the display panel. The display panel cable is available using spare part number 516307-001.



16. If it is necessary to replace the display hinges, remove the six Phillips PM2.5×4.0 screws ❶ that secure the display hinges to the top of the display panel.
17. Remove the four Phillips PM2.0×3.0 screws ❷ that secure the hinges to the sides of the display panel.
18. Remove the display hinge assembly ❸ by lifting it straight up. The display hinges are available using spare part number 516444-001. The display screw kit is available using spare part kit 531764-001.



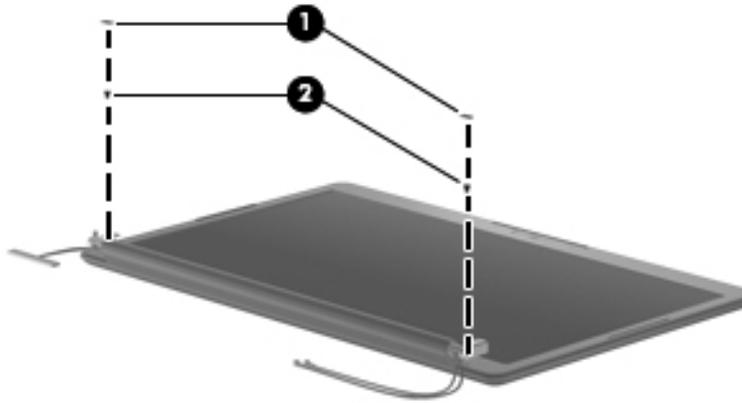
The left and right sides of the display hinge assembly are secured to a bracket ❶ using four PM2.5×4.0 screws ❷ as shown in the following image.



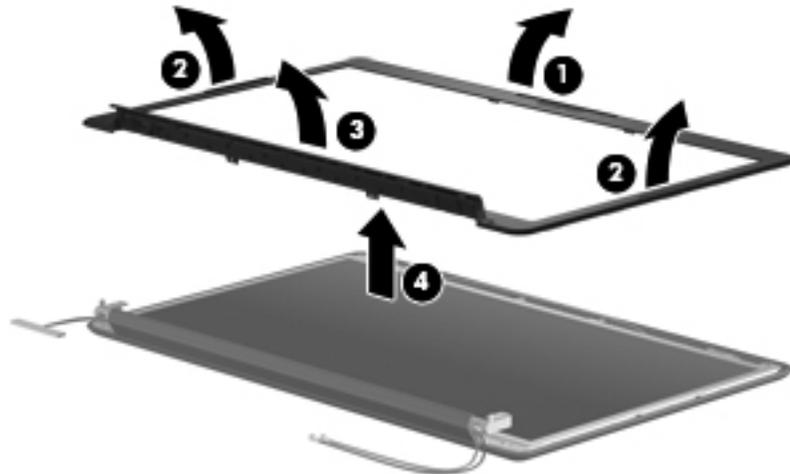
Steps 19 through 30 provide display assembly internal component removal information for computer models equipped with BrightView display assemblies. See steps 5 through 18 for display assembly internal component removal information for computer models equipped with flush glass display assemblies.

19. If it is necessary to replace the display bezel or any of the display assembly internal components, remove the following screw covers and screws:

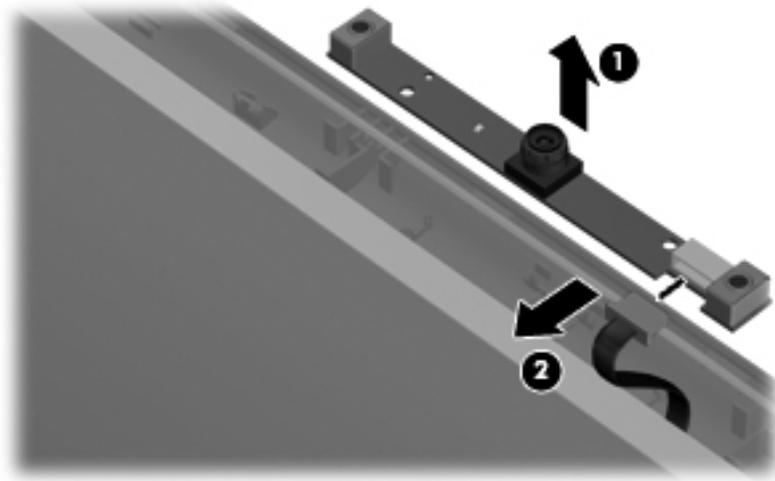
- ❶ Two rubber screw covers on the display bezel bottom edge. The display rubber screw covers are included in the Display Rubber Kit, spare part number 516308-001.
- ❷ Two Phillips PM2.5×6.5 screws



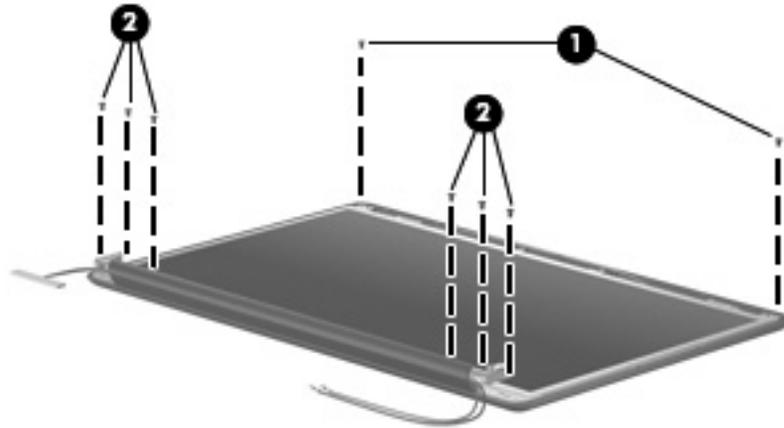
20. Flex the inside edges of the top edge ❶, the left and right sides ❷, and the bottom edge ❸ of the display bezel until the bezel disengages from the display enclosure.
21. Remove the display bezel ❹. The display bezel is available using the spare part number 516305-001.



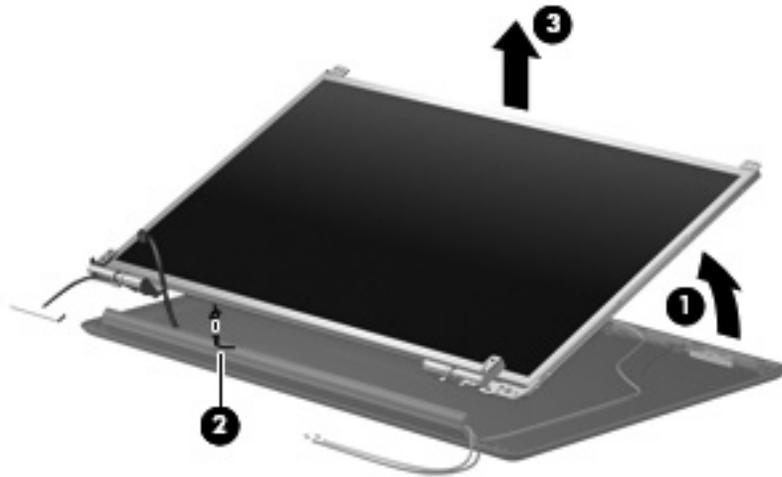
22. If it is necessary to replace the webcam/microphone module, release the module from the display bezel ❶ as far as the webcam/microphone module cable allows.
23. Disconnect the webcam/microphone module cable ❷ and remove the webcam/microphone module. The webcam/microphone module is available using spare part number 516312-001.



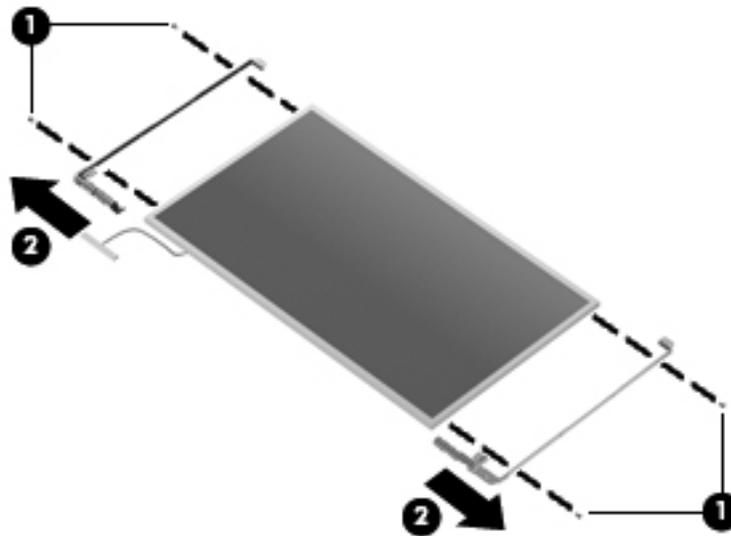
24. If it is necessary to replace the display panel, remove the two Phillips PM2.5×6.0 screws ❶ from the top corners and the six Phillips PM2.5×6.0 screws ❷ from the display hinges. The display panel is available using spare part number 516303-001.



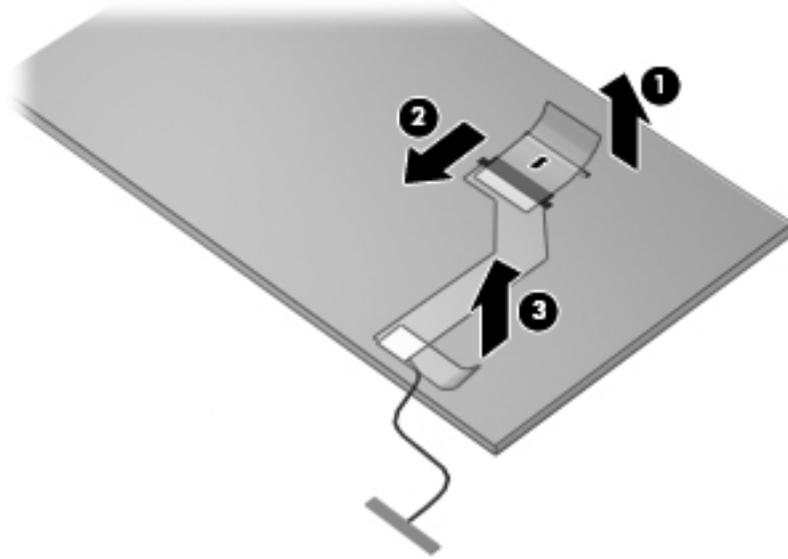
25. Lift the top of the display panel ❶ upward and release the display hinges.
26. Unplug the display enclosure logo LED cable pass-thru connector from the display panel cable ❷.
27. Remove the display panel ❸.



28. If it is necessary to replace the display hinges, remove the four Phillips PM2.0×3.0 screws ❶ that secure each display hinge to the display panel.
29. Remove the display hinges ❷. The display hinges are available in the Display Hinge Kit, spare part number 516306-001. The display hinge screws are available in the Display Screw Kit, spare part number 531764-001.



30. If it is necessary to remove the display panel cable, remove the adhesive plastic strip ❶ from the display panel cable, and remove the display panel cable ❷. Remove the tape ❸ that secures the cable to the display panel. The display panel cable is available using spare part number 516307-001.



Reverse this procedure to reassemble and install the display assembly.

Top cover



The top cover kit includes TouchPad and cable, LED board and cable, and switch cover.

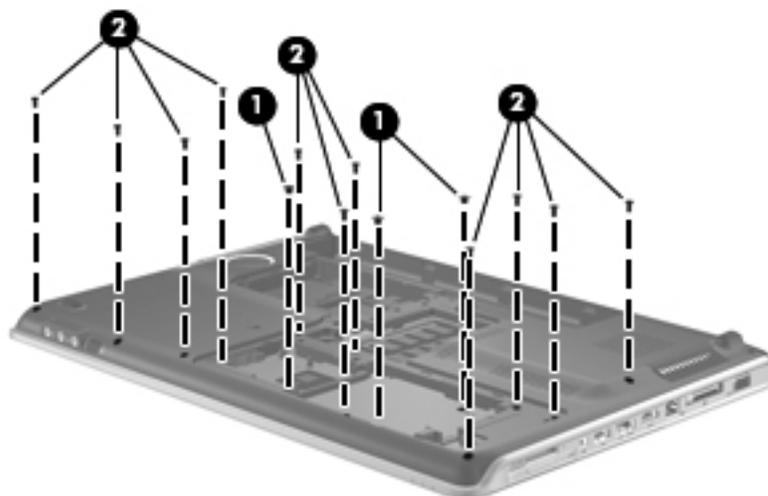
Description	Spare part number
For use only with white computer models equipped with a fingerprint reader; includes fingerprint reader board	516299-001
For use only with white computer models not equipped with a fingerprint reader	516360-001
For use only with black computer models equipped with a fingerprint reader; includes fingerprint reader board	519267-001
For use only with black computer models not equipped with a fingerprint reader	519268-001

Before removing the top cover, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the following components:
 - a. Optical drive (see [“Optical drive” on page 4-7](#))
 - b. Hard drive (see [“Hard drive” on page 4-11](#))
 - c. TV tuner module (see [“TV tuner module” on page 4-18](#))
 - d. Switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#))
 - e. Speaker assembly (see [“Speaker assembly” on page 4-23](#))
 - f. Display assembly (see [“Display assembly” on page 4-25](#))

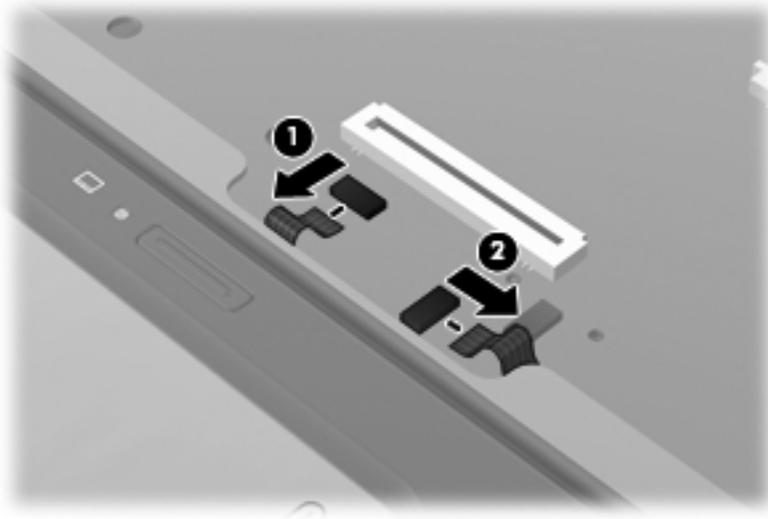
Remove the top cover:

1. Turn the computer upside down, with the front toward you.
2. Remove the 3 Phillips 2.5×4.0 silver broadhead screws **1** and 11 Phillips PM2.5×7.0 screws **2** that secure the top cover to the bottom of the computer.



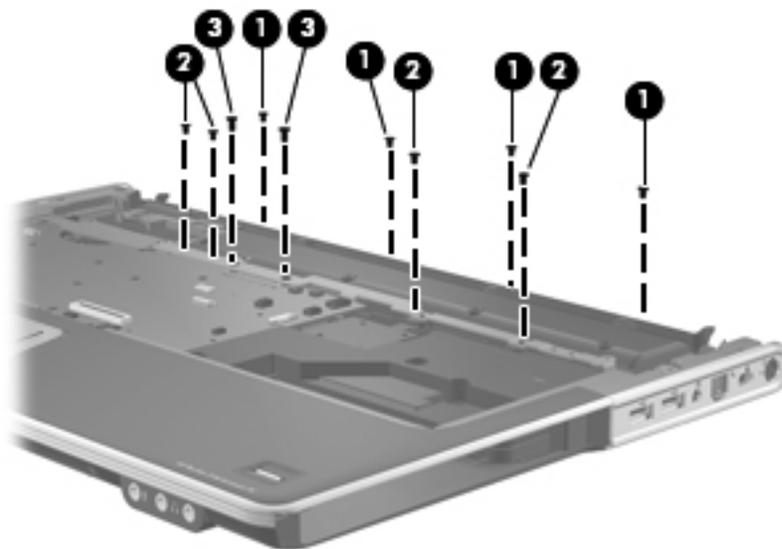
3. Disconnect the following cables from the system board:

- ❶ TouchPad board cable
- ❷ Fingerprint reader board cable



4. Remove the following screws that secure the top cover to the computer:

- ❶ 4 black PM2.5×5.0 screws
- ❷ 4 silver PM2.0×4.0 screws
- ❸ 2 black PM2.5×7.0 screws



5. Remove the top cover by lifting it straight up.
Reverse this procedure to install the top cover.

Modem module



The modem module spare part kit does not include a modem module cable. The modem module cable is included in the Cable Kit, spare part number 516328-001.

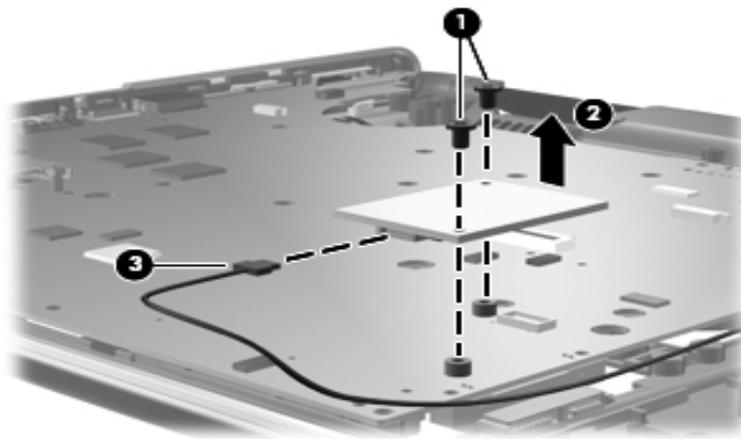
Description	Spare part number
Modem module for use in all countries and regions except Australia and New Zealand	510100-001
Modem module for use only in Australia and New Zealand	510100-011

Before removing the modem module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the following components:
 - a. Optical drive (see [“Optical drive” on page 4-7](#))
 - b. Hard drive (see [“Hard drive” on page 4-11](#))
 - c. TV tuner module (see [“TV tuner module” on page 4-18](#))
 - d. Switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#))
 - e. Speaker assembly (see [“Speaker assembly” on page 4-23](#))
 - f. Display assembly (see [“Display assembly” on page 4-25](#))
 - g. Top cover (see [“Top cover” on page 4-34](#))

Remove the modem module:

1. Remove the two Phillips PM2.5×3.0 screws ❶ that secure the modem module to the system board.
2. Lift the modem module ❷.
3. Disconnect the modem module cable ❸ and remove the modem module from the system board.



Reverse this procedure to install the modem module.

System board



The system board spare kit includes replacement thermal material.

Description	Spare part number
System board	575477-001
System board bracket	516334-001

Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the following components:
 - a. Optical drive (see [“Optical drive” on page 4-7](#))
 - b. Hard drive (see [“Hard drive” on page 4-11](#))
 - c. WLAN module (see [“WLAN module” on page 4-14](#))
 - d. TV tuner module (see [“TV tuner module” on page 4-18](#))
 - e. Switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#))
 - f. Speaker assembly (see [“Speaker assembly” on page 4-23](#))
 - g. Display assembly (see [“Display assembly” on page 4-25](#))
 - h. Top cover (see [“Top cover” on page 4-34](#))
 - i. Modem module (see [“Modem module” on page 4-36](#))

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:

- WLAN module (see [“WLAN module” on page 4-14](#))
- RTC battery (see [“RTC battery” on page 4-16](#))
- Memory module (see [“Memory module” on page 4-17](#))
- TV tuner module (see [“TV tuner module” on page 4-18](#))
- Modem module (see [“Modem module” on page 4-36](#))
- Fan/heat sink assembly (see [“Fan/heat sink” on page 4-46](#))
- Processor (see [“Processor” on page 4-48](#))

Remove the system board:

1. Disconnect the following cables from the system board:

❶ Audio/infrared board cable

 The audio/infrared board cable connects to a LIF connector on the system board.

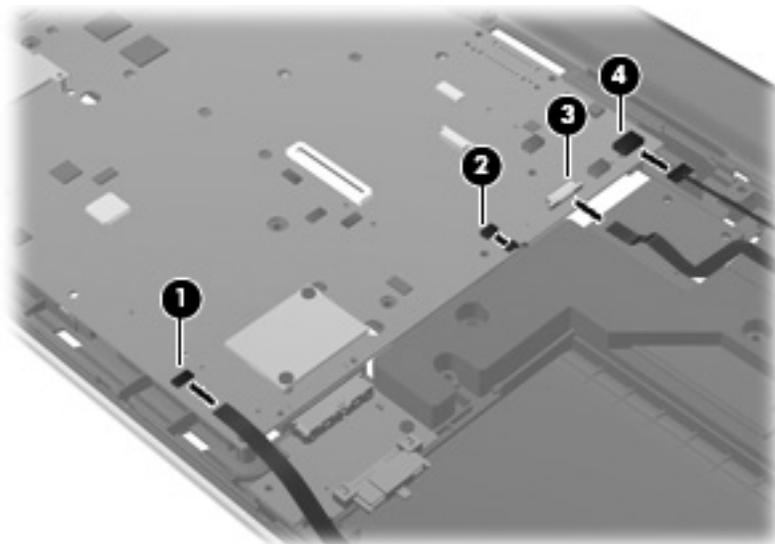
❷ Subwoofer cable

❸ USB board cable

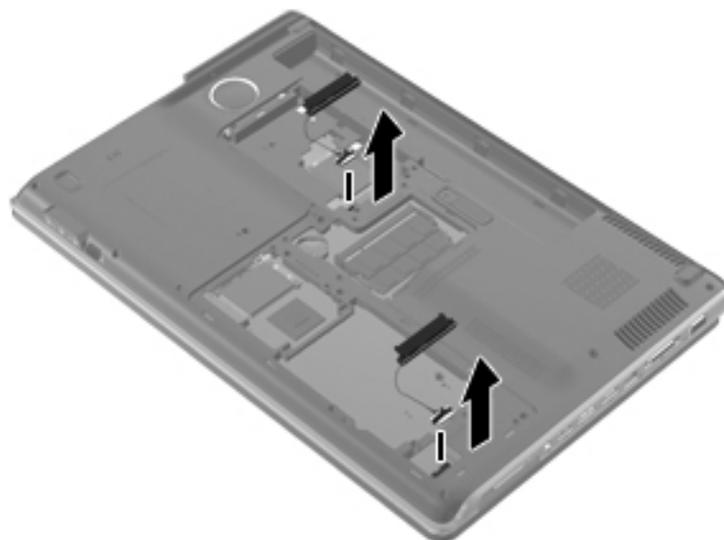
 The USB board cable connects to a LIF connector on the system board.

❹ Power connector cable

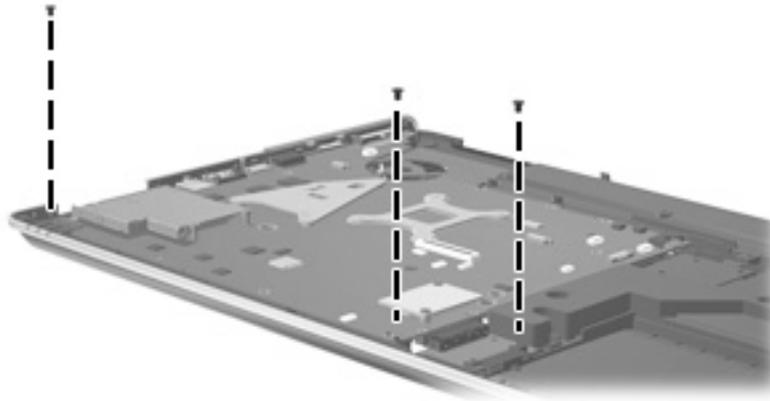
 The power connector cable splits into two cables near the system board. One cable plugs into a connector on the top of the system board as shown in the following image. The other cable plugs into a connector on the bottom of the system board. HP recommends that you lift the system board as indicated in step 4 before you disconnect the cable from the connector on the bottom of the system board.



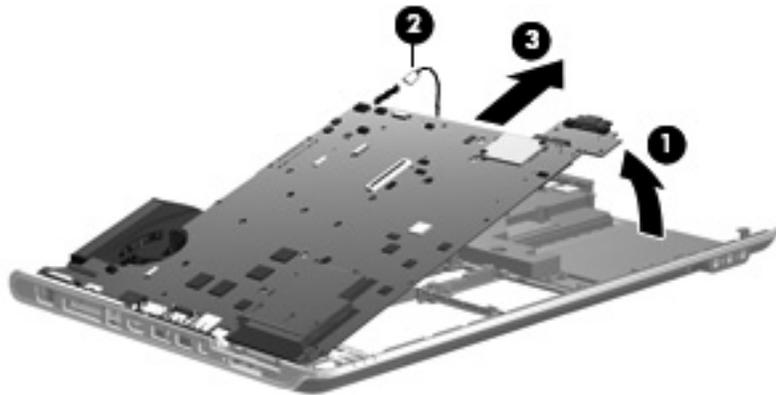
2. If necessary, disconnect the hard drive connector cables from the system board.



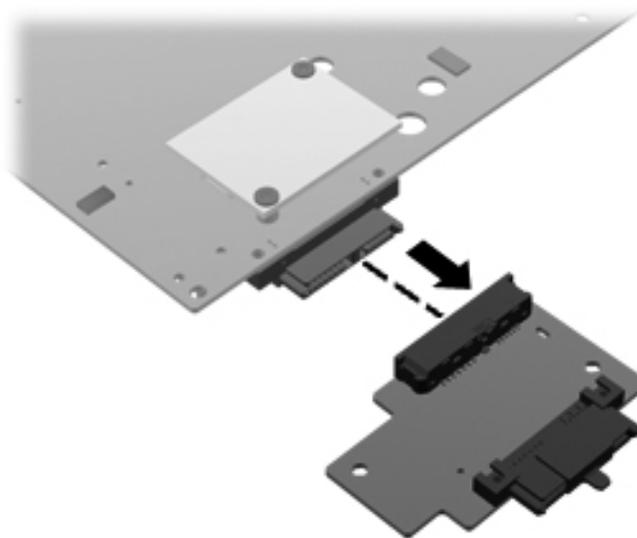
3. Remove the three Phillips PM2.5×5.0 screws that secure the system board to the base enclosure.



4. Lift up on the right side ❶ of the system board slightly, and then unplug the bottom power connector cable from the connector on the bottom of the system board ❷.
5. Lift the system board to the right and up and out of the base enclosure ❸.



6. If it is necessary to remove the optical drive board from the system board, pull the optical drive board straight off the system board. The optical drive board is available using spare part number 519481-001.



Reverse this procedure to install the system board.

Audio/infrared board

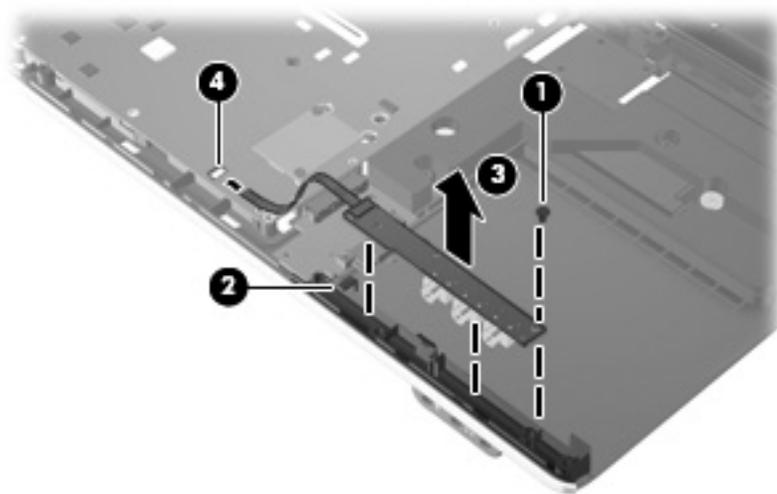
Description	Spare part number
Audio/infrared board (includes cable)	516330-001

Before removing the audio/infrared board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the following components:
 - a. Optical drive (see [“Optical drive” on page 4-7](#))
 - b. Hard drive (see [“Hard drive” on page 4-11](#))
 - c. TV tuner module (see [“TV tuner module” on page 4-18](#))
 - d. Switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#))
 - e. Speaker assembly (see [“Speaker assembly” on page 4-23](#))
 - f. Display assembly (see [“Display assembly” on page 4-25](#))
 - g. Top cover (see [“Top cover” on page 4-34](#))

Remove the audio/infrared board:

1. Remove the Phillips PM2.5×5.0 screw ❶ that secures the audio/infrared board to the base enclosure.
2. Release the audio/infrared board cable from the clip ❷ built into the base enclosure.
3. Lift the audio/infrared board ❸ straight up.
4. Disconnect the audio/infrared board cable from the system board ❹, and then remove the audio/infrared board from the base enclosure.



Reverse this procedure to install the audio/infrared board.

USB board

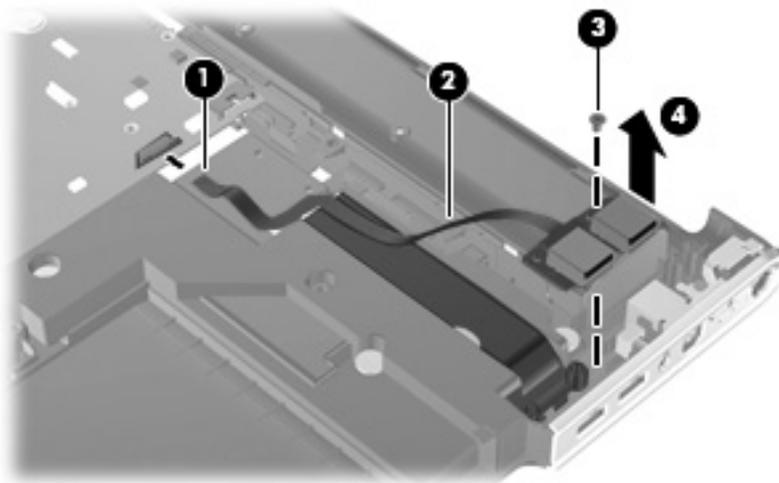
Description	Spare part number
USB board (includes cable)	516332-001

Before removing the USB board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the following components:
 - a. Optical drive (see [“Optical drive” on page 4-7](#))
 - b. Hard drive (see [“Hard drive” on page 4-11](#))
 - c. TV tuner module (see [“TV tuner module” on page 4-18](#))
 - d. Switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#))
 - e. Speaker assembly (see [“Speaker assembly” on page 4-23](#))
 - f. Display assembly (see [“Display assembly” on page 4-25](#))
 - g. Top cover (see [“Top cover” on page 4-34](#))

Remove the USB board:

1. Disconnect the USB board cable ❶ from the LIF connector on the system board.
2. Disconnect the cable ❷ from the subwoofer.
3. Remove the Phillips PM2.5×5.0 screw ❸ that secures the USB board to the base enclosure.
4. Remove the USB board ❹ from the base enclosure.



Reverse this procedure to install the USB board.

Subwoofer

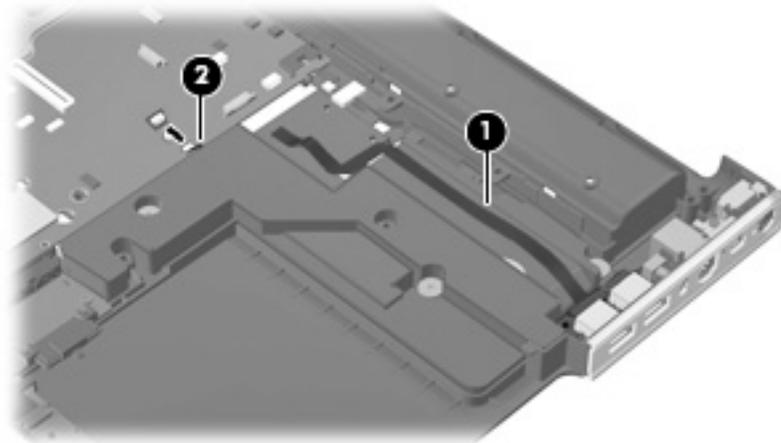
Description	Spare part number
Subwoofer	516333-001

Before removing the subwoofer, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the following components:
 - a. Optical drive (see [“Optical drive” on page 4-7](#))
 - b. Hard drive (see [“Hard drive” on page 4-11](#))
 - c. TV tuner module (see [“TV tuner module” on page 4-18](#))
 - d. Switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#))
 - e. Speaker assembly (see [“Speaker assembly” on page 4-23](#))
 - f. Display assembly (see [“Display assembly” on page 4-25](#))
 - g. Top cover (see [“Top cover” on page 4-34](#))
 - h. USB board (see [“USB board” on page 4-41](#))

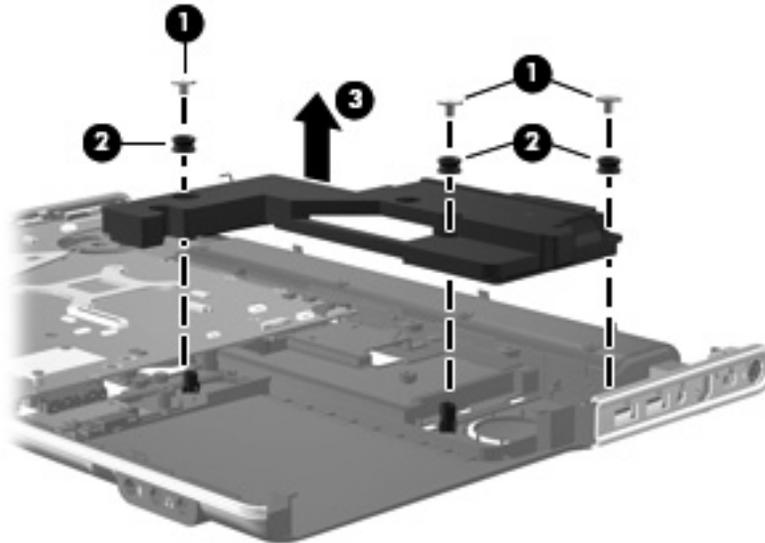
Remove the subwoofer:

1. Remove the USB board cable from atop the subwoofer ❶.
2. Disconnect the subwoofer cable from the system board ❷.



3. Remove the three Phillips PM2.5×5.0 broadhead screws ❶ that secure the subwoofer to the base enclosure.
4. Be sure that the rubber grommets ❷ that contained the broadhead screws are still in place.

- Remove the subwoofer ③.



Reverse this procedure to install the subwoofer.

TV tuner module cable



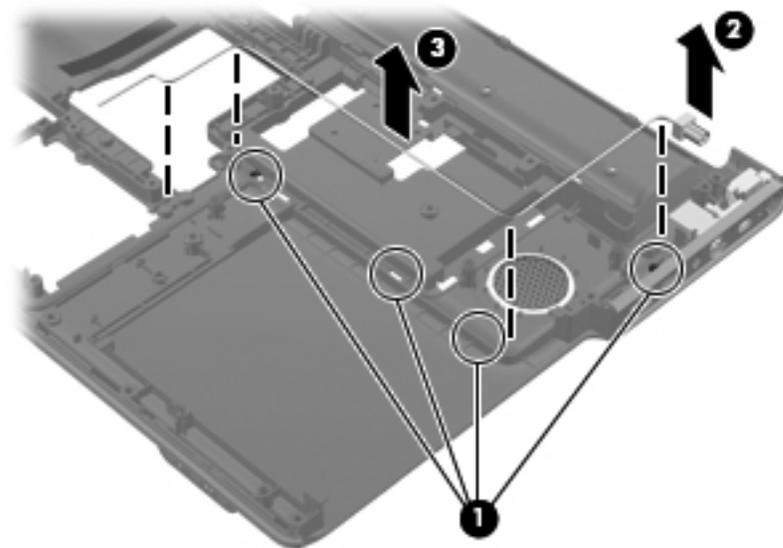
The TV tuner module cable is available in the Cable Kit, spare part number 516328-001.

Before removing the TV tuner module cable, follow these steps:

- 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.
- Disconnect all external devices connected to the computer.
- Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
- Remove the battery (see [“Battery” on page 4-6](#)).
- Remove the following components:
 - Optical drive (see [“Optical drive” on page 4-7](#))
 - Hard drive (see [“Hard drive” on page 4-11](#))
 - TV tuner module (see [“TV tuner module” on page 4-18](#))
 - Switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#))
 - Speaker assembly (see [“Speaker assembly” on page 4-23](#))
 - Display assembly (see [“Display assembly” on page 4-25](#))
 - Top cover (see [“Top cover” on page 4-34](#))
 - System board (see [“System board” on page 4-37](#))
 - USB board (see [“USB board” on page 4-41](#))

Remove the TV tuner module cable:

- Remove the TV tuner module cable from the clips ① built into the base enclosure.
- Remove the TV tuner module connector ② from the clip built into the side of the base enclosure.
- Remove the assembly from the enclosure ③.



Reverse this procedure to install the TV tuner module cable.

Modem module cable



The modem module cable is available in the Cable Kit, spare part number 516328-001. The modem module cable includes the RJ-11 jack.

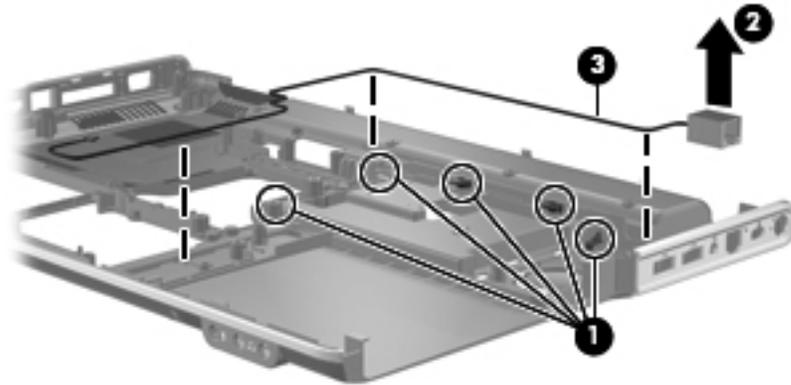
Before removing the modem module cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see “[Battery](#)” on page 4-6).
5. Remove the following components:
 - a. Optical drive (see “[Optical drive](#)” on page 4-7)
 - b. Hard drive (see “[Hard drive](#)” on page 4-11)
 - c. TV tuner module (see “[TV tuner module](#)” on page 4-18)
 - d. Switch cover and keyboard (see “[Switch cover and keyboard](#)” on page 4-19)
 - e. Speaker assembly (see “[Speaker assembly](#)” on page 4-23)
 - f. Display assembly (see “[Display assembly](#)” on page 4-25)
 - g. Top cover (see “[Top cover](#)” on page 4-34)
 - h. System board (see “[System board](#)” on page 4-37)
 - i. USB board (see “[USB board](#)” on page 4-41)

Remove the modem module cable:

1. Release the cable from the clips ❶ built into the base enclosure.
2. Remove the RJ-11 jack ❷ from the clip built into the base enclosure.

3. Remove the assembly ③ from the base enclosure.



Reverse this procedure to install the modem module cable.

Power connector cable

Description	Spare part number
Power connector cable	538085-001



The power connector cable is also available in the Cable Kit, spare part number 516328-001.

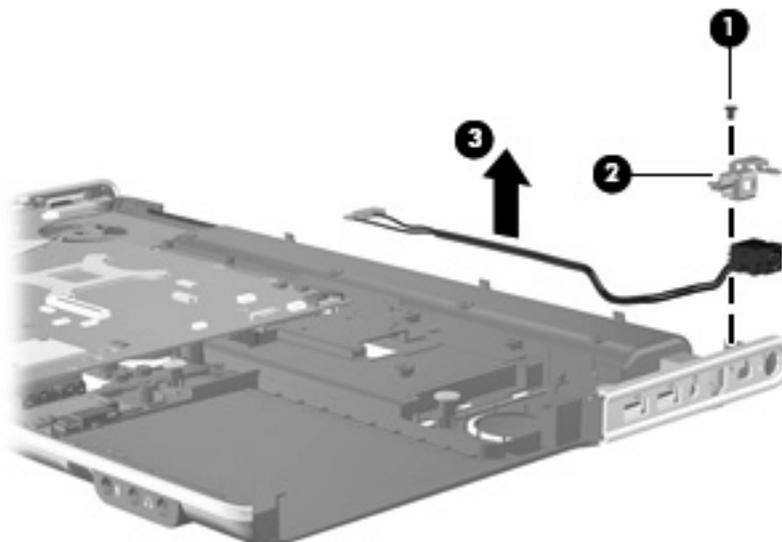
Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery”](#) on page 4-6).
5. Remove the following components:
 - a. Optical drive (see [“Optical drive”](#) on page 4-7)
 - b. Hard drive (see [“Hard drive”](#) on page 4-11)
 - c. TV tuner module (see [“TV tuner module”](#) on page 4-18)
 - d. Switch cover and keyboard (see [“Switch cover and keyboard”](#) on page 4-19)
 - e. Speaker assembly (see [“Speaker assembly”](#) on page 4-23)
 - f. Display assembly (see [“Display assembly”](#) on page 4-25)
 - g. Top cover (see [“Top cover”](#) on page 4-34)
 - h. System board (see [“System board”](#) on page 4-37)
 - i. USB board (see [“USB board”](#) on page 4-41)

Remove the power connector cable:

1. Remove the Phillips PM2.5×7.0 screw ① that secures the power connector and bracket ② to the base enclosure.

- Remove the power connector cable ③.



Reverse this procedure to install the power connector cable.

Fan/heat sink



The fan/heat sink assembly spare kit includes replacement thermal material.

Description	Spare part number
Fan/heat sink assembly	587244-001



To properly ventilate the computer, allow at least a 7.6-cm (3-in) clearance on the right side and rear panel 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, follow these steps:

- 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.
- Disconnect all external devices connected to the computer.
- Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
- Remove the battery (see [“Battery” on page 4-6](#)).
- Remove the following components:
 - Optical drive (see [“Optical drive” on page 4-7](#))
 - Hard drive (see [“Hard drive” on page 4-11](#))
 - TV tuner module (see [“TV tuner module” on page 4-18](#))
 - Switch cover and keyboard (see [“Switch cover and keyboard” on page 4-19](#))

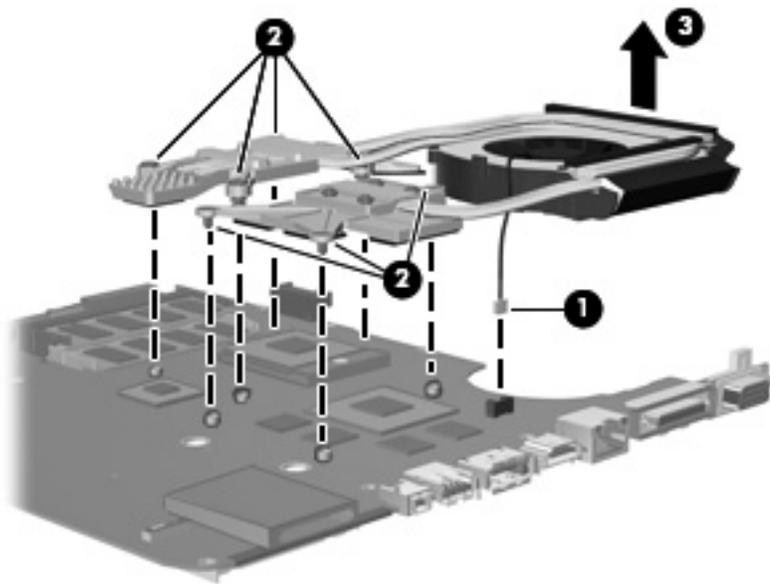
- e. Speaker assembly (see “Speaker assembly” on page 4-23)
- f. Display assembly (see “Display assembly” on page 4-25)
- g. Top cover (see “Top cover” on page 4-34)
- h. System board (see “System board” on page 4-37)
- i. USB board (see “USB board” on page 4-41)

Remove the fan/heat sink:

1. Turn the system board upside down, with the expansion port and external monitor port toward you.
2. Disconnect the fan cable ❶ from the system board.
3. In the order indicated on the fan/heat sink, loosen the seven Phillips captive screws ❷ that secure the fan/heat sink assembly to the system board.
4. Remove the fan/heat sink assembly ❸.

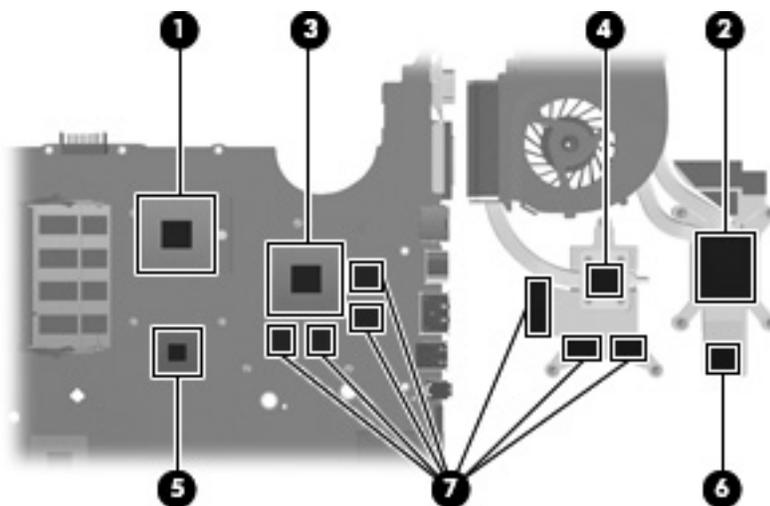


Due to the adhesive quality of the thermal material located between the fan/heat sink assembly and system board components, it may be necessary to move the fan/heat sink assembly from side to side to detach the assembly.



The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly and the system board each time the fan/heat sink assembly is removed. Thermal paste is used on the processor ❶ and the heat sink section ❷ that services it. Thermal pads are used on the Northbridge chip ❸ and Northbridge contact ❹, the graphics subsystem chip ❺ and graphics/heat sink contact ❻ and various capacitors and their contacts ❼.

Replacement thermal material is included with all fan/heat sink assembly, system board, and processor spare part kits.



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

Processor



The processor spare part kit includes replacement thermal material.

Description	Spare part number
Intel Core2 Quad processors (8-MB L2 cache, 1333-MHz FSB):	
■ i7-820QM processor (1.73-GHz, SC turbo up to 3.06-GHz)	583053-001
■ i7-720QM processor (1.60-GHz, SC turbo up to 2.80-GHz)	586170-001

Before removing the processor, follow these steps:

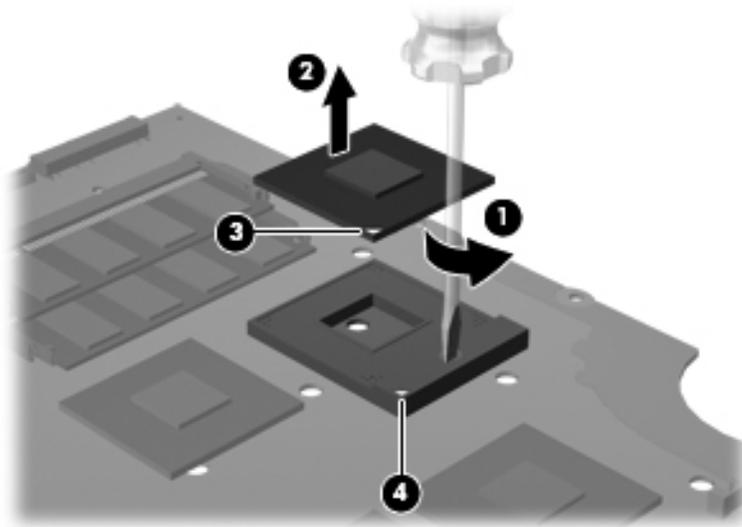
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery”](#) on page 4-6)
5. Remove the following components:
 - a. Optical drive (see [“Optical drive”](#) on page 4-7)
 - b. Hard drive (see [“Hard drive”](#) on page 4-11)
 - c. Switch cover and keyboard (see [“Switch cover and keyboard”](#) on page 4-19)
 - d. Speaker assembly (see [“Speaker assembly”](#) on page 4-23)
 - e. Display assembly (see [“Display assembly”](#) on page 4-25)
 - f. Top cover (see [“Top cover”](#) on page 4-34)
 - g. USB board (see [“USB board”](#) on page 4-41)
 - h. System board (see [“System board”](#) on page 4-37)
 - i. Fan/heat sink (see [“Fan/heat sink”](#) on page 4-46)

Remove the processor:

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



When you install the processor, the gold triangle ❸ on the processor must be aligned with the triangle icon ❹ embossed on the processor socket.



Reverse this procedure to install the processor.



WARNING: Only authorized technicians trained by HP must repair this equipment. All troubleshooting and repair procedures are detailed to allow repair at only the subassembly or module level. Because of the complexity of the individual boards and subassemblies, do not attempt to make repairs at the component level or modify any printed wiring board. Improper repairs can create a safety hazard. Any indication of component replacement or printed wiring board modification may void any warranty or exchange allowances.

Starting the Setup Utility

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



The fingerprint reader (select models only) cannot be used to access the Setup Utility.

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

To start the Setup Utility:

» Open the Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **f10**.

– or –

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

Using the Setup Utility

Changing the language of the Setup Utility

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

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

– or –

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

2. Use the arrow keys to select **System Configuration > Language**, and then press **enter**.
3. Use the arrow keys to select a language, and then press **enter**.
4. When a confirmation prompt with your language selected is displayed, press **enter**.

5. To save your change and exit the Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

Your change goes into effect immediately.

Navigating and selecting in the Setup Utility

Because the 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 **f5** or **f6**.
- To select an item, press **enter**.
- To close a text box or return to the menu display, press **esc**.
- To display additional navigation and selection information while the Setup Utility is open, press **f1**.

Displaying system information

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

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

– or –

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

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

Restoring default settings in the Setup Utility

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

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

– or –

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

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

The 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 the Setup Utility

You can exit the Setup Utility with or without saving changes.

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

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

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

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

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 the Setup Utility menu items listed in this chapter may not be supported by your computer.

Main menu

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

Security menu

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

System Configuration menu

Select	To do this
Language Support	Change the 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"> ■ f9 and f10 Delay (sec.)—Set the delay for the f9 and f10 functions of the 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"> <input type="checkbox"/> USB Floppy <input type="checkbox"/> Internal CD/DVD ROM Drive <input type="checkbox"/> USB CD/DVD ROM drive <input type="checkbox"/> Hard drive <input type="checkbox"/> USB Diskette on Key <input type="checkbox"/> USB Hard drive <input type="checkbox"/> 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		
Width	46.60 cm	18.35 in
Depth	30.90 cm	12.16 in
Height (front to back)	3.9 to 4.7 cm	1.53 to 1.85 in
Weight		
Equipped with optical drive, hard drive, and battery	3.75 kg	8.26 lbs
Second hard drive adds	0.13 kg	0.28 lbs
Camera adds	0.009 kg	0.02 lbs
Input power		
Operating voltage	18.5 V dc @ 3.5 A - 65 W	
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.		

17.3-inch, HD+ flush glass AntiGlare display specifications

	Metric	U.S.
Dimensions		
Height	20.7 cm	12.15 in
Width	43.1 cm	17.03 in
Diagonal	43.9 cm	17.29 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	0.197 × 0.197 mm	
Format	1600 × 900	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	2.0 W	
Viewing angle	+/-65° horizontal, +/-50° vertical (typical)	

17.3-inch, HD+ BrightView display specifications

	Metric	U.S.
Dimensions		
Height	20.7 cm	12.15 in
Width	43.1 cm	17.03 in
Diagonal	43.9 cm	17.29 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	150 nits (typical)	
Pixel resolution		
Pitch	0.259 × 0.259 mm	
Format	1600 × 900	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	2.0 W	
Viewing angle	+/-65° horizontal, +/-50° vertical (typical)	

Hard drive specifications

	500-GB*	320-GB*	250-GB*
Dimensions			
Height	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm
Weight	101 g	101 g	101 g
Interface type			
	SATA	SATA	SATA
Transfer rate			
	100 MB/sec	100 MB/sec	100 MB/sec
Security			
	ATA security	ATA security	ATA security
Seek times (typical read, including setting)			
Single track	3 ms	3 ms	3 ms
Average	13 ms	13 ms	13 ms
Maximum	24 ms	24 ms	24 ms
Logical blocks			
	1,048,576,000	625,142,448	488,397,168
Disc rotational speed			
	5400 rpm	5400 rpm	5400 rpm
Operating temperature			
	5°C to 55°C (41°F to 131°F)		
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.			
 Certain restrictions and exclusions apply. Contact technical support for details.			

Blu-ray ROM DVD±R/RW SuperMulti DL Drive specification

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

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

Applicable disc	Read:	Write:
	CD-DA, CD+(E)G, CD-MIDI, CDTEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo- CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CDR, 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 and CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM
Access time	CD	DVD
Random	< 175 ms	< 230 ms
Full stroke	< 285 ms	< 335 ms
Cache buffer	2 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
8X DVD+R	10,800 KB/sec	
4X DVD+RW	5,400 KB/sec	
8X DVD-R	10,800 KB/sec	
4X DVD-RW	5,400 KB/sec	
2.4X DVD+R(9)	2,700 KB/sec	
5X DVD-RAM	6,750 KB/sec	
Transfer mode	Multiword DMA Mode	

System DMA specifications

Hardware	DMA System function
DMA4	Direct memory access controller

System interrupt specifications

Hardware IRQ	System function
ISA00	System timer
ISA01	Standard 101-/102-Key or Microsoft Natural Keyboard with HP QLB
ISA04	ENE CIR Receiver
ISA08	System CMOS/real time clock
ISA12	Synaptics PS/2 Port TouchPad
ISA13	Numeric data processor
ISA23	HP Mobile Data Protection Sensor
PCI11	Intel 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
PCI11	Intel 5 Series/3400 Series Chipset Family SMBus Controller - 3B32
PCI16	1394 OHCI Compliant Host Controller
PCI16	High Definition Audio Controller
PCI16	Intel 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B3C
PCI16	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 2 - 3B44
PCI16	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B50
PCI16	Intel processor PCI Express Root Port 1 - D138
PCI16	JMB38X MS Host Controller
PCI16	JMB38X SD Host Controller
PCI16	JMB38X SD/MMC Host Controller
PCI16	JMB38X xD Host Controller
PCI16	NVIDIA GeForce GT 230M
PCI17	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 1 - 3B42
PCI17	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 5 - 3B4A
PCI19	HP ATSC/Analog TV Tuner
PCI19	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 4 - 3B34
PCI19	Intel PCHM SATA AHCI Controller 6 Port
PCI21	Intel 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B34
PCI22	High Definition Audio Controller

System I/O address specifications

I/O address (hex)	System function (shipping configuration)
000-01F	Direct memory access controller
000-CF7	PCI bus
020 - 021	Program interrupt controller
024 - 025	Program interrupt controller
028 - 029	Program interrupt controller
02C - 02D	Program interrupt controller
02E - 02F	Motherboard resources
030 - 031	Program interrupt controller
034 - 035	Program interrupt controller
038 - 039	Program interrupt controller
03C- 03D	Program interrupt controller
040 - 043	System timer
04E-04F	Motherboard resources
050-053	System timer
060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard with HP QLB
061	Motherboard resources
062	Microsoft ACPI-Compliant Embedded Controller
063	Motherboard resources
064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard with HP QLB
065	Motherboard resources
066	Microsoft ACPI-Compliant Embedded Controller
067	Motherboard resources
070	Motherboard resources
070-077	System CMOS/real time clock
080	Motherboard resources
081-091	Direct memory access controller
092	Motherboard resources
0A0-0A1	Program interrupt controller
0A4-0A5	Program interrupt controller
0A8-0A9	Program interrupt controller
0AC-0AD	Program interrupt controller
0B0-0B1	Program interrupt controller
0B2-0B3	Motherboard resources
0B4- 0B5	Program interrupt controller
0B8-0B9	Program interrupt controller
0BC- 0BD	Program interrupt controller

(Continued)

I/O address (hex)	System function (shipping configuration)
0C0-0DF	Direct memory access controller
F0	Numeric data processor
380-38E	ENE CIR Receiver
380-38E	Motherboard resources
3B0-3BB	Intel processor PCI Express Root Port 1 - D138
3B0-3BB	nVIDIA GeForce GT 230M
3C0-3DF	Intel processor PCI Express Root Port 1 - D138
3C0-3DF	nVIDIA GeForce GT 230M
400-47F	Motherboard resources
4D0-4D1	Programmable interrupt controller
500-57F	Motherboard resources
680-69F	Motherboard resources
800-80F	Motherboard resources
D00-FFFF	PCI bus
164E-164F	Motherboard resources
2000-20FF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B50
3000-3FFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B4A
4000-4FFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B48
5000-50FF	Realtek RTL8168C/8111D PCI-E GBE NIC
5000-5FFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B44
6000-6FFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B42
7000-707F	nVIDIA GeForce GT 230M
7000-7FFF	Intel processor PCI Express Root Port 1 - 3B30
8000-801F	Intel 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
8020-803F	Intel PCHM SATA AHCI Controller 6 Port
8050-857F	Intel PCHM SATA AHCI Controller 6 Port
8058-805F	Intel PCHM SATA AHCI Controller 6 Port
8078-807B	Intel PCHM SATA AHCI Controller 6 Port
807C-807F	Intel PCHM SATA AHCI Controller 6 Port
FFFF	Motherboard resources

System memory map specifications

Memory address	System function
000A0000-000BFFFF	Intel processor PCI Express Root Port 1 - D138
000A0000-000BFFFF	nVIDIA GeForce GT 230M
000A0000-000BFFFF	PCI bus
A0000000-AFFFFFFF	nVIDIA GeForce GT 230M
A0000000-B1FFFFFF	Intel processor PCI Express Root Port 1 - D138
A0000000-FEBFFFFFF	PCI bus
B0000000-B1FFFFFF	nVIDIA GeForce GT 230M
B2000000-B2FFFFFF	nVIDIA GeForce GT 230M
B2000000-B30FFFFFF	Intel processor PCI Express Root Port 1 - D138
B3000000-B3003FFF	High Definition Audio Controller
B3100000-B40FFFFFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 1 - 3B42
B4100000-B4103FFF	Realtek RTL8168D/8111D Family PCI-E GBE NIC
B4100000-B50FFFFFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 2 - 3B44
B4104000-B4104FFF	Realtek RTL8168D/8111D Family PCI-E GBE NIC
B5100000-B60FFFFFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 4 - 3B48
B6100000-B10FFFFFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 5 - 3B4A
B7100000-B80FFFFFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B50
B8100000-B90FFFFFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B50
B9100000-B91007FF	1394 OHCI Compliant Host Controller
B9100000-BA0FFFFFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 5 - 3B4A
B9100800-B91008FF	JMB38X xD Host Controller
B9100900-B91009FF	JMB38X MS Host Controller
B9100A00-B9100AFF	JMB38X SD Host Controller
B9100B00-B9100BFF	JMB38X SD/MMC Host Controller
B9100C00-B9100C7F	1394 OHCI Compliant Host Controller
B9100C80-B9100CFF	1394 OHCI Compliant Host Controller
B9100D00-B9100D7F	1394 OHCI Compliant Host Controller
BA100000-BA1FFFFFF	HP ATSC/Analog TV Tuner
BA100000-BB0FFFFFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 4 - 3B48
BB100000-BC0FFFFFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 2 - 3B44
BC100000-BC101FFF	Intel WiFi Link 5300 AGN
BC100000-BD0FFFFFF	Intel 5 Series/3400 Series Chipset Family PCI Express Root Port 1 - 3B42
BD100000-BD103FFF	High Definition Audio Controller
BD104000-BD104FFF	Intel 5 Series/3400 Series Chipset Family Thermal Subsystem - 3B32
BD106000-BD1067FF	Intel PCHM SATA AHCI Controller 6 Port

(Continued)

Memory address	System function
BD106800-BD106BFF	Intel 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B34
BD106C00-BD106FFF	Intel 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B3C
BD107000-BD1070FF	Intel 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
E0000000-EFFFFFFF	Motherboard resources
FED00000-FED003FF	High Precision Event Timer
FED1B000-FED1BFFF	Motherboard resources
FED1C000-FED1FFFF	Motherboard resources
FED20000-FED3FFFF	Motherboard resources
FED45000-FED8FFFF	Motherboard resources
FEE00000-FFFFFFF	Motherboard resources
FF000000-FFFFFFF	Intel 82802 Firmware Hub Device
BD107000-BD1070FF	Motherboard resources

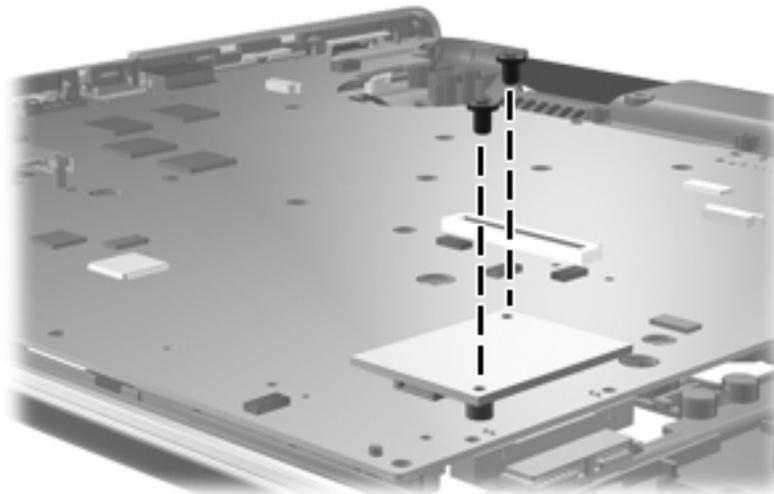
Screw listing

This section provides specification and reference information for the screws used in the computer. Some screws listed in this section are available in the Screw Kit, spare part number 516327-001.

Phillips PM2.5×3.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	2	3.0 mm	2.5 mm	5.0 mm

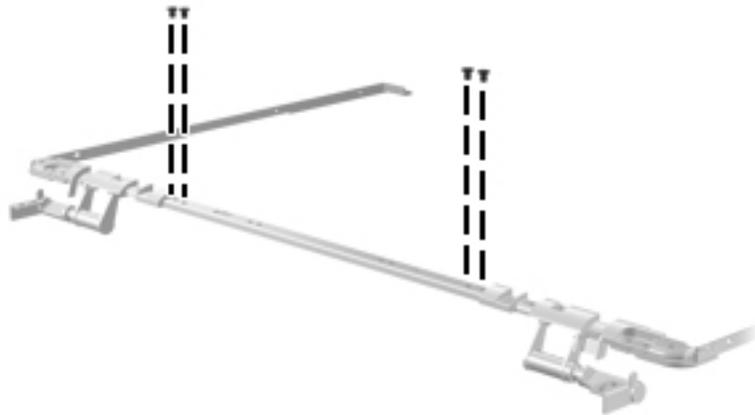


Where used: 2 screws that secure the modem to the system board

Phillips PM2.5×3.0 screw



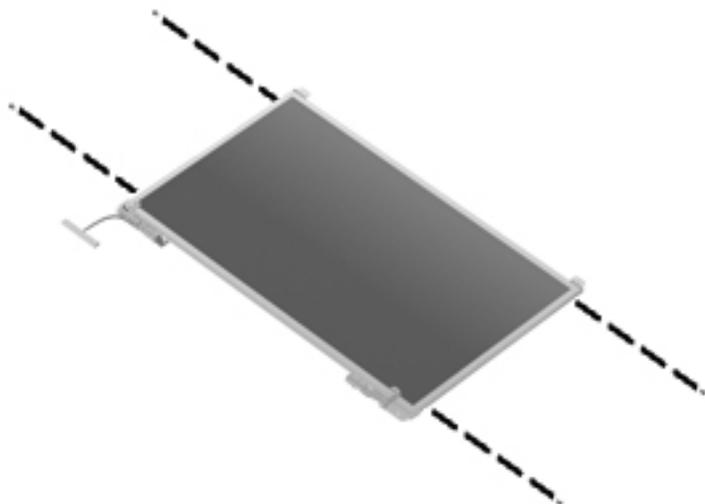
Color	Quantity	Length	Thread	Head diameter
Silver	12	3.0 mm	2.5 mm	5.0 mm



Where used: 4 screws that secure the display hinges to the hinge bracket on computer models equipped with flush glass display assemblies

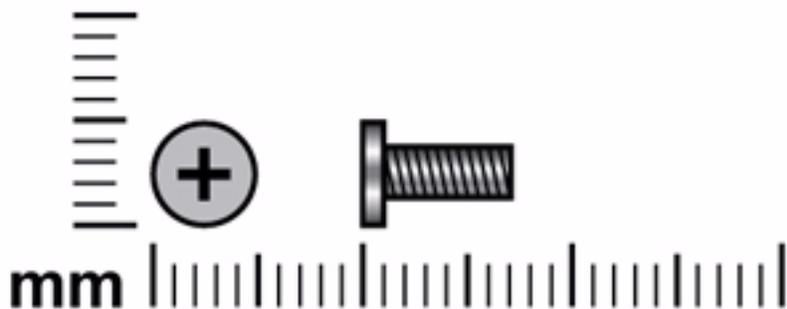


Where used: 4 screws that secure the display hinges to the display panel on computer models equipped with flush glass display assemblies



Where used: 4 screws that secure the display panel to the display enclosure on computer models equipped with BrightView display assemblies

Phillips PM2.5×7.0 screw



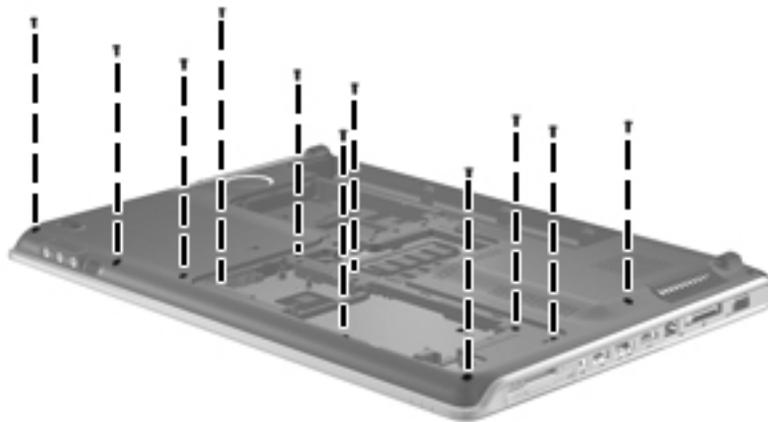
Color	Quantity	Length	Thread	Head diameter
Silver	24	7.0 mm	2.5 mm	5.0 mm



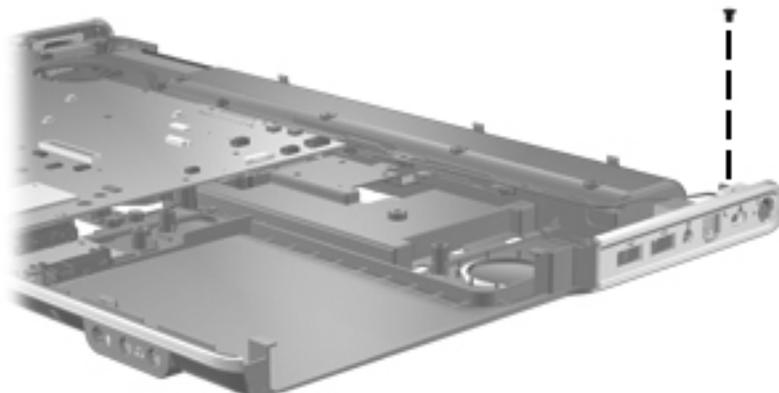
Where used: One screw that secures the optical drive to the computer



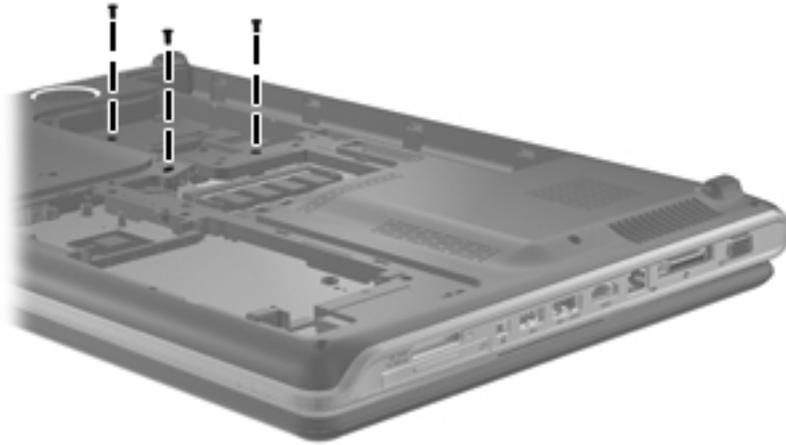
Where used: 4 screws that secure the display bezel to the display enclosure on computer models equipped with flush glass display assemblies



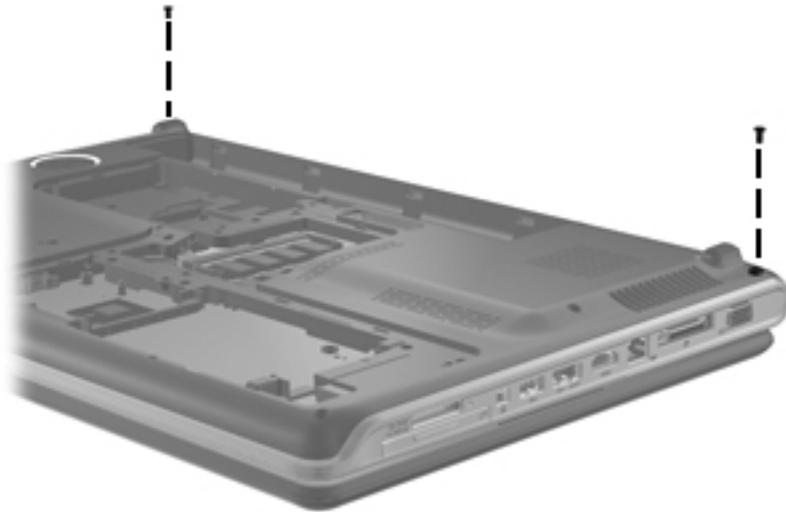
Where used: 11 screws that secure the top cover to the base enclosure



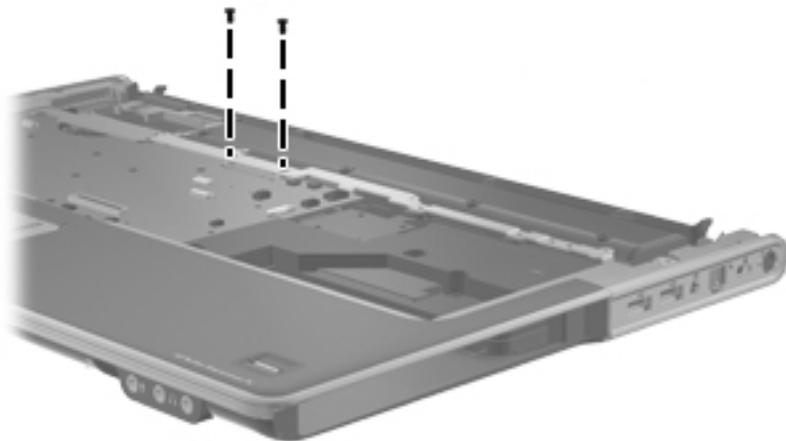
Where used: One screw that secures the power connector and bracket to the base enclosure



Where used: 3 screws that secure the keyboard to the base enclosure

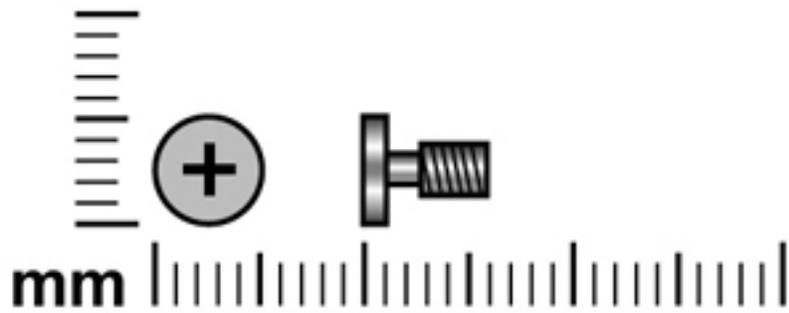


Where used: 2 screws that secure the switch cover to the computer

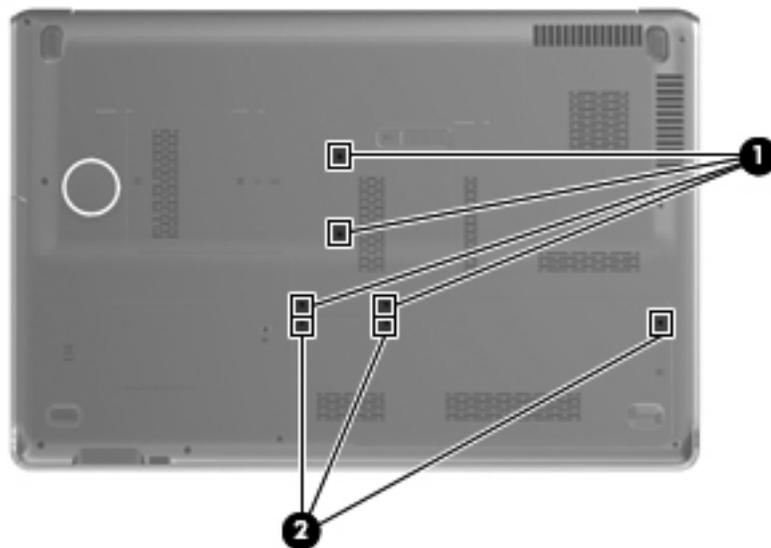


Where used: 2 screws that secure the top cover to the top of the computer

Phillips PM2.5×6.0 captive screw

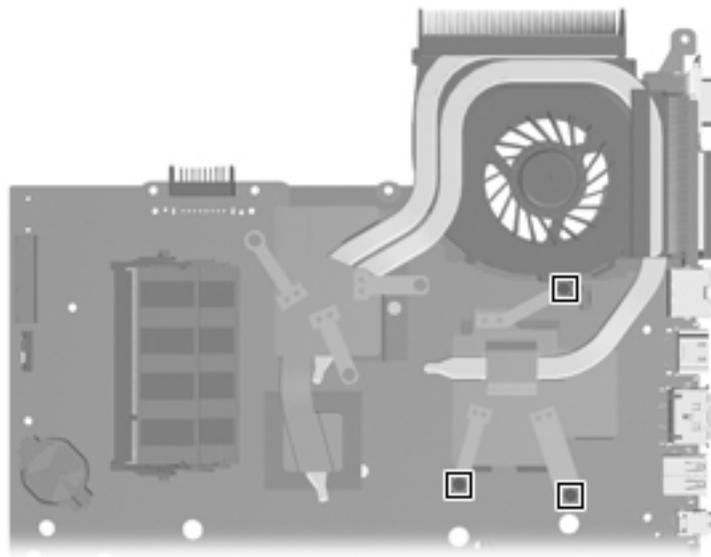


Color	Quantity	Length	Thread	Head diameter
Black	10	6.0 mm	2.5 mm	5.0 mm



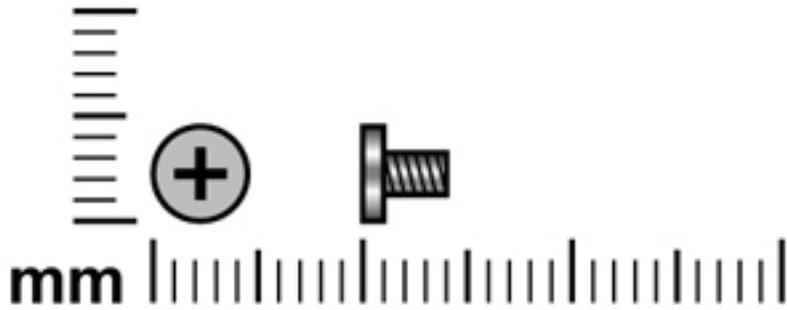
Where used:

- ❶ 4 captive screws that secure the primary hard drive cover to the computer (screws are secured by a C-clip)
- ❷ 3 captive screws that secure the secondary hard drive cover to the computer (screws are secured by a C-clip)

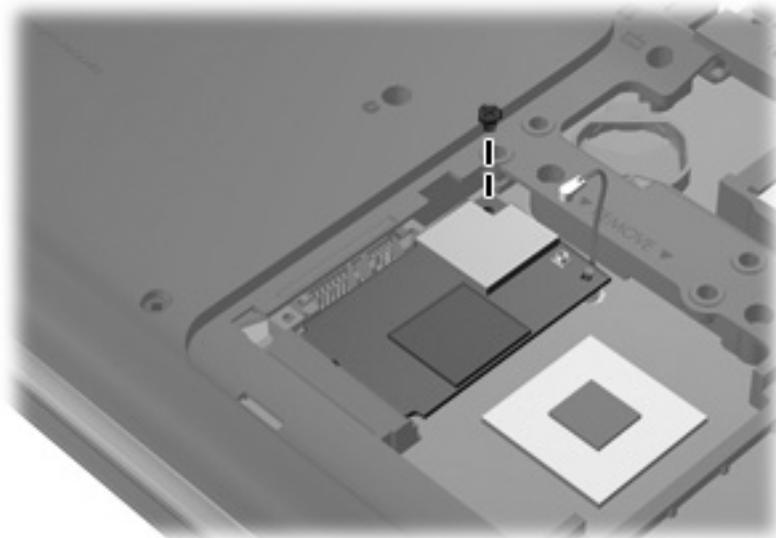


Where used: 3 screws that secure the fan/heat sink to the system board

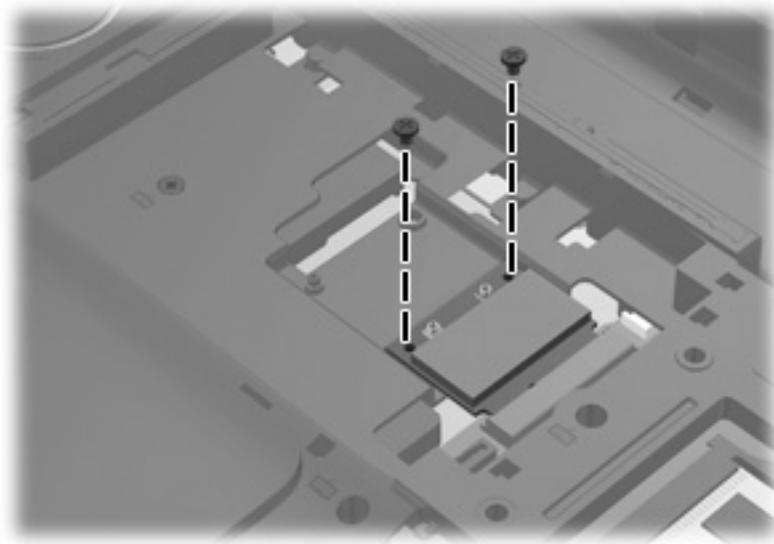
Phillips PM2.0×4.0 screw (black)



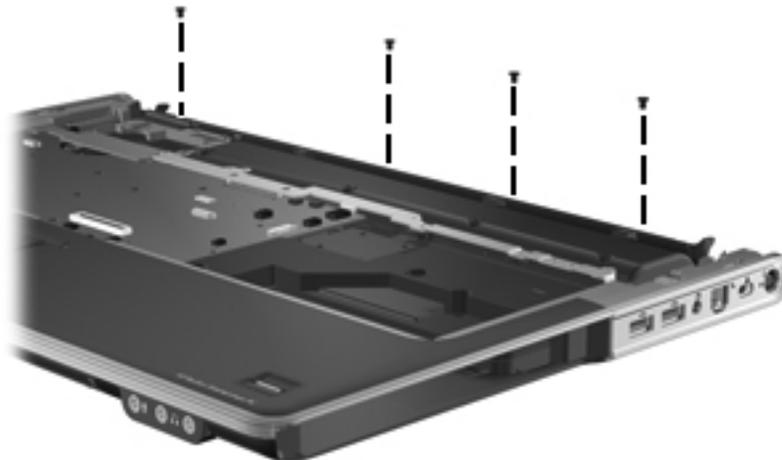
Color	Quantity	Length	Thread	Head diameter
Black	8	4.0 mm	2.0 mm	4.5 mm



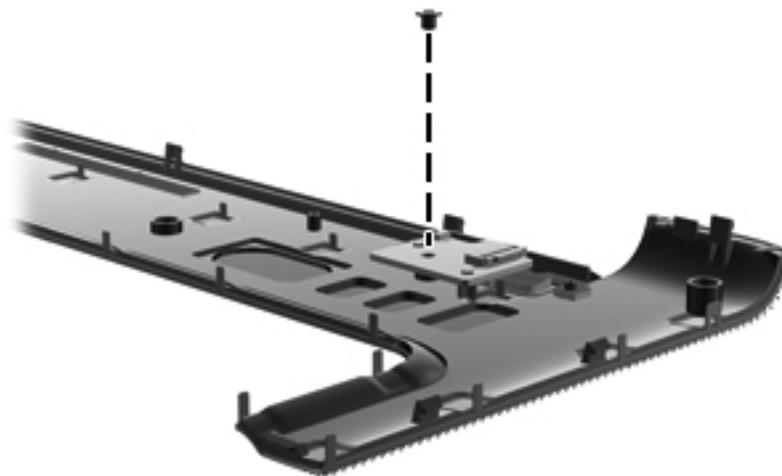
Where used: One screw that secures the TV tuner module to the system board



Where used: 2 screws that secure the WLAN module to the system board

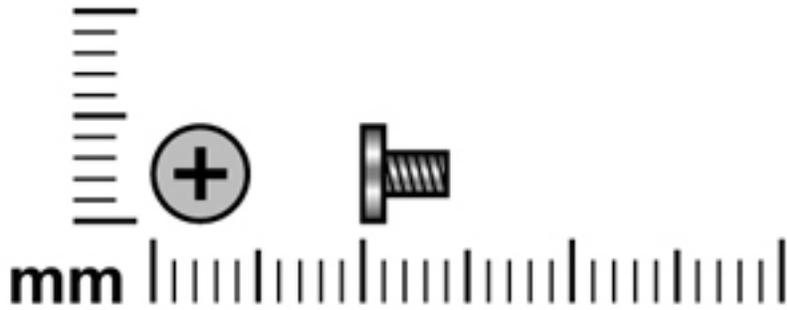


Where used: 4 screws that secure the top cover to the base enclosure (along top of base enclosure)



Where used: One screw that secures the power button board to the switch cover

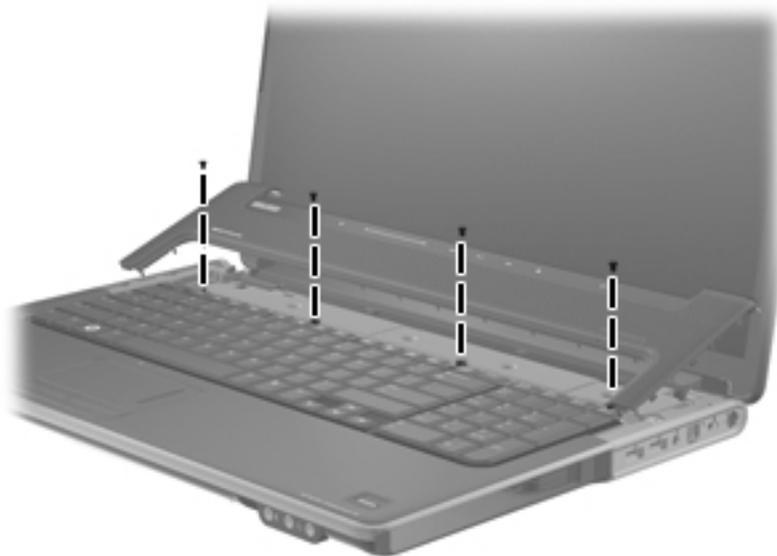
Phillips PM2.0×4.0 screw (silver)



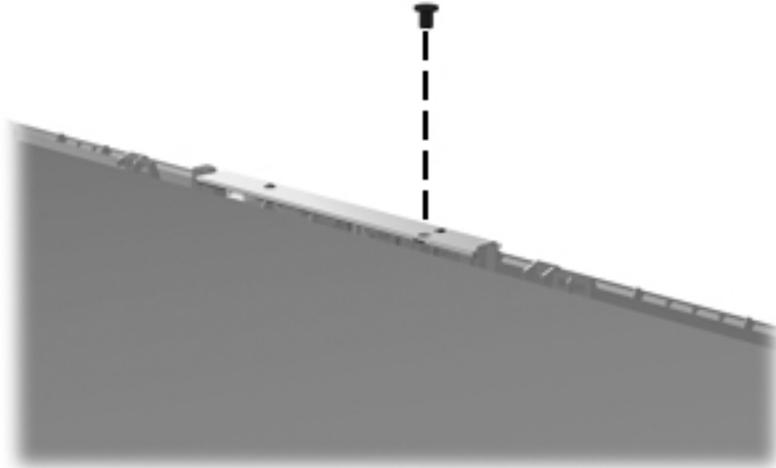
Color	Quantity	Length	Thread	Head diameter
Silver	11	4.0 mm	2.0 mm	5.0 mm



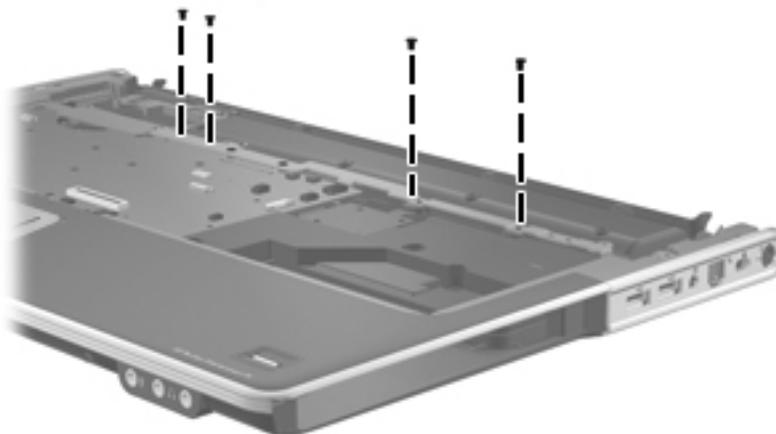
Where used: 2 screws that secure the optical drive bracket to the optical drive



Where used: 4 screws that secure the keyboard to the top of the computer

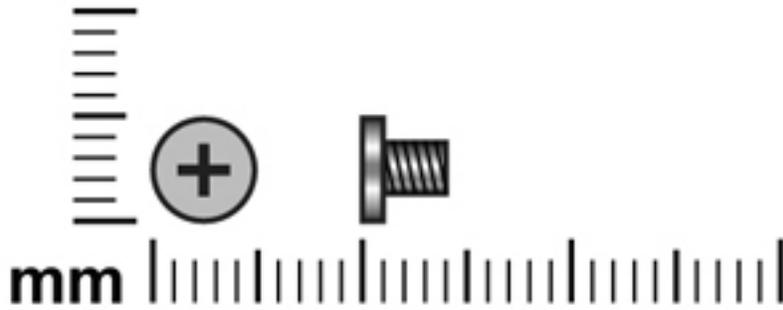


Where used: One screw that secures the webcam/microphone module to the display bezel on computer models equipped with flush glass display assemblies

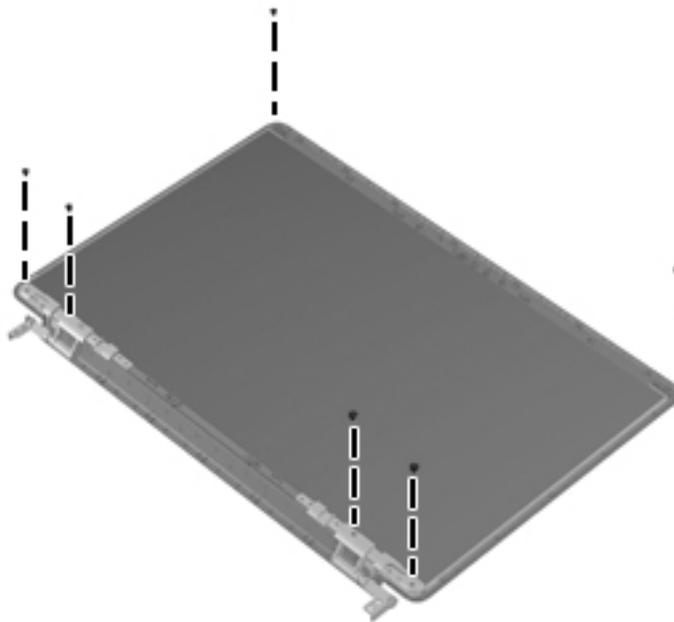


Where used: 4 screws that secure the top cover to the top of the computer

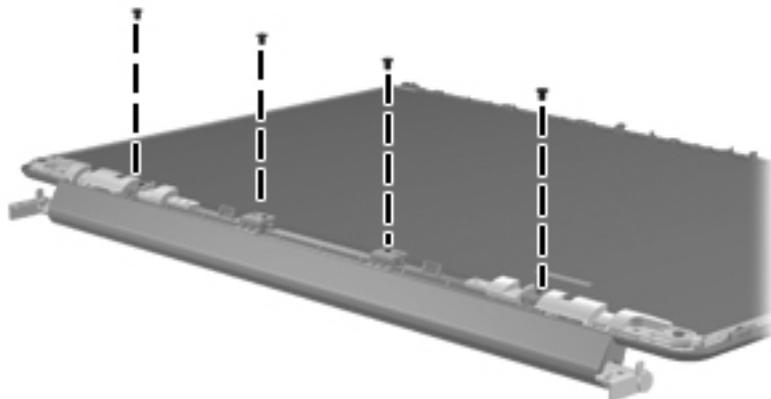
Phillips PM2.5×4.0 screw (silver)



Color	Quantity	Length	Thread	Head diameter
Silver	10	4.0 mm	2.5 mm	5.0 mm

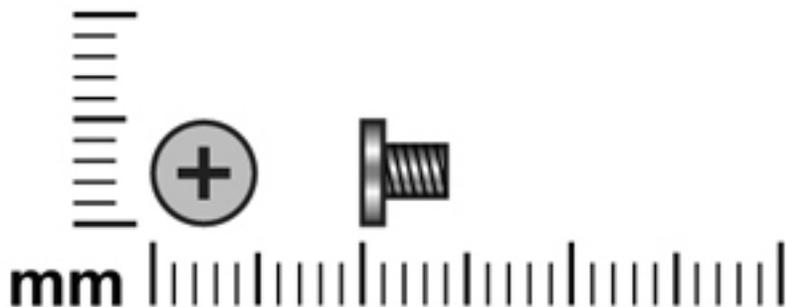


Where used: 6 screws that secure the display hinges to the display panel on computer models equipped with flush glass display assemblies

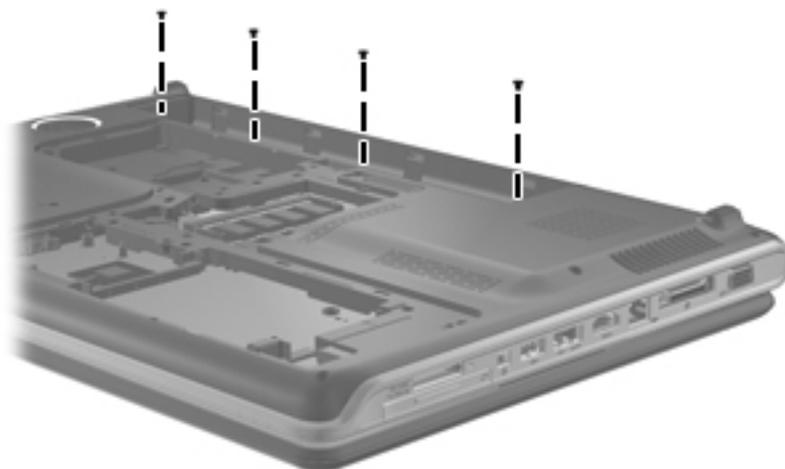


Where used: 4 screws that secure the hinge cover to the display enclosure on computer models equipped with flush glass display assemblies

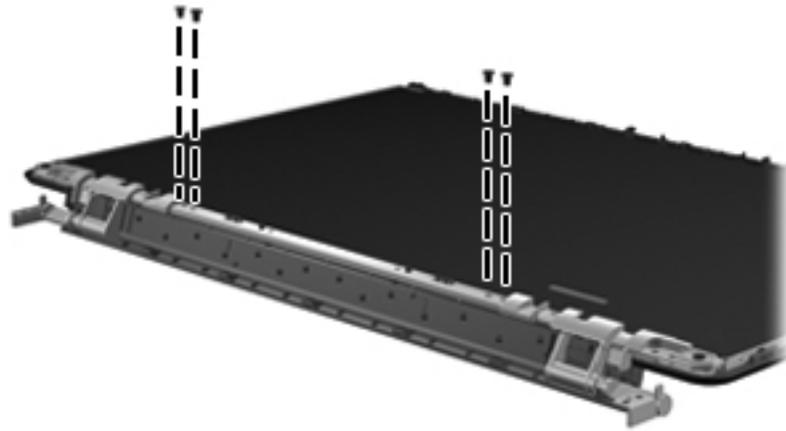
Phillips PM2.5×4.0 screw (black)



Color	Quantity	Length	Thread	Head diameter
Black	8	4.0 mm	2.5 mm	5.0 mm

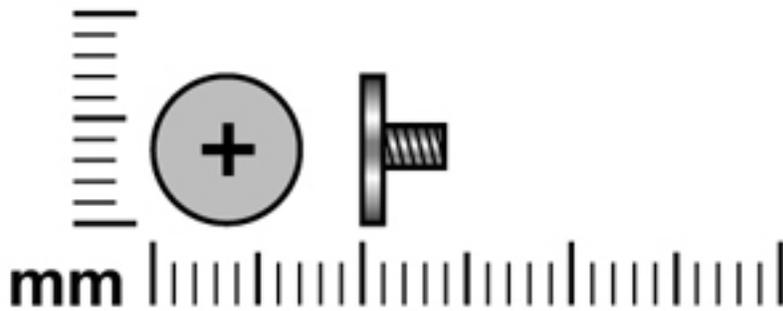


Where used: 4 screws, located inside the battery bay, that secure the switch cover to the computer



Where used: 4 screws that secure the display hinges to the display hinge bracket on computer models equipped with flush glass display assemblies

Phillips PM2.5×4.0 broadhead screw

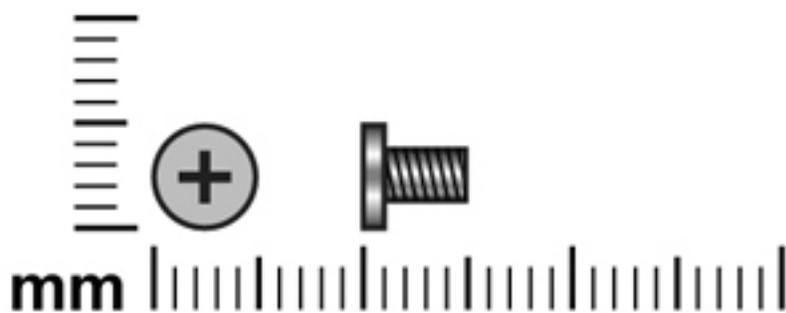


Color	Quantity	Length	Thread	Head diameter
Black	3	4.0 mm	2.5 mm	7.0 mm

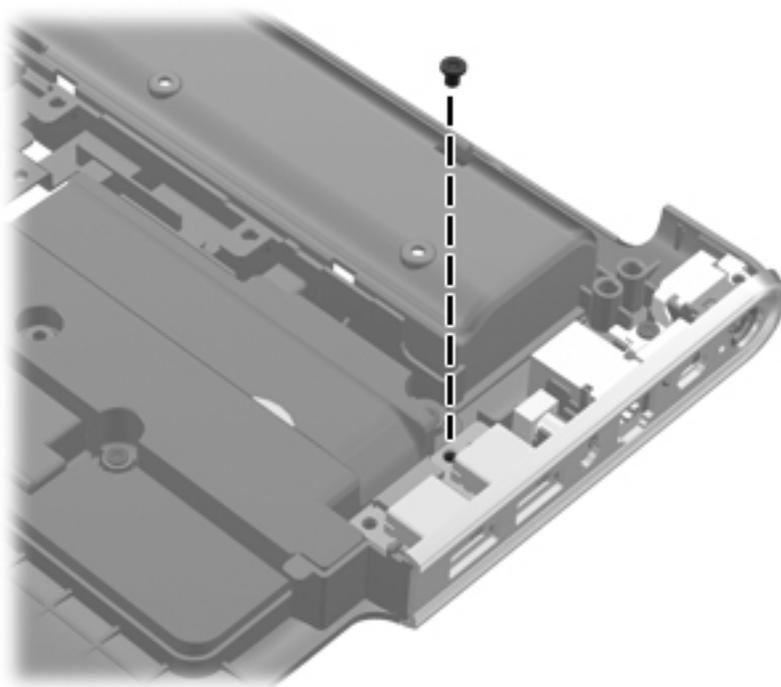


Where used: 3 screws, located inside the hard drive bay, that secure the top cover to the computer

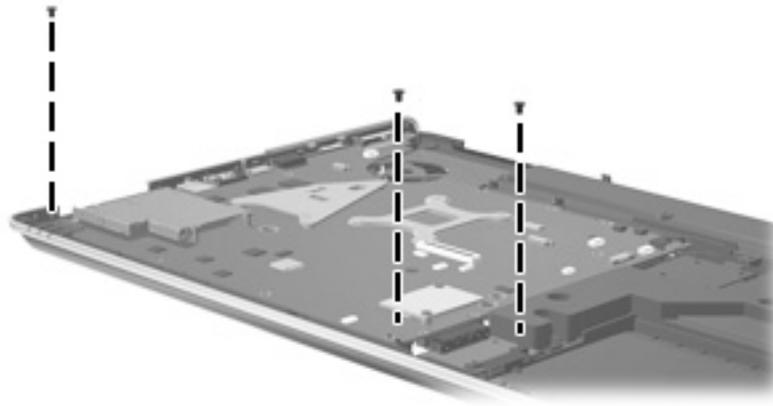
Phillips PM2.5×5.0 screw



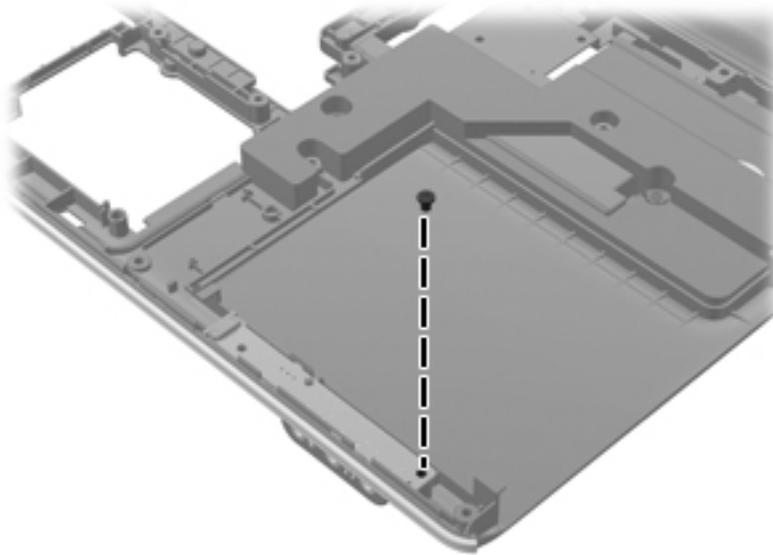
Color	Quantity	Length	Thread	Head diameter
Silver	13	5.0 mm	2.5 mm	5.0 mm



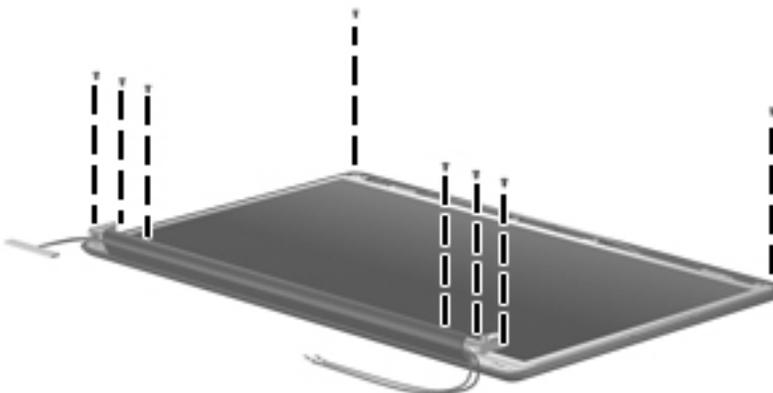
Where used: One screw that secures the USB board to the base enclosure



Where used: 3 screws that secure the system board to the base enclosure

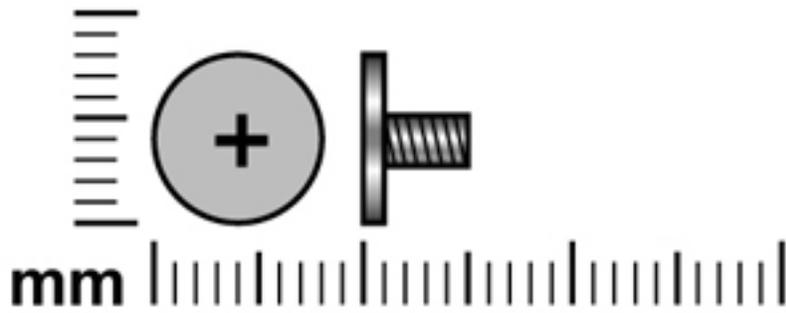


Where used: One screw that secures the audio/infrared board to the base enclosure

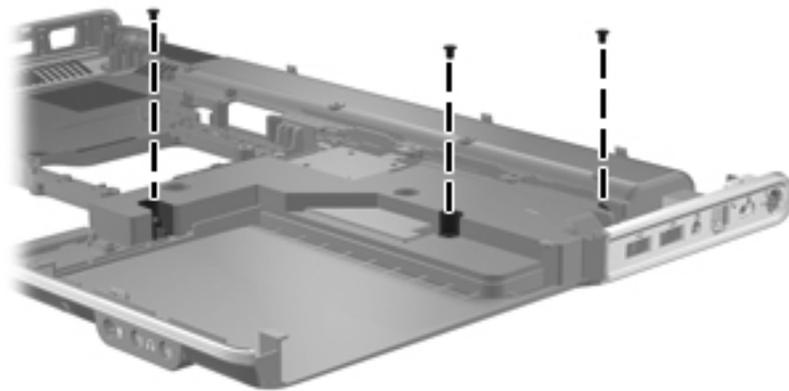


Where used: 8 screws that secure the display panel to the display enclosure on computer models equipped with BrightView display assemblies

Phillips PM2.5×5.0 broadhead screw

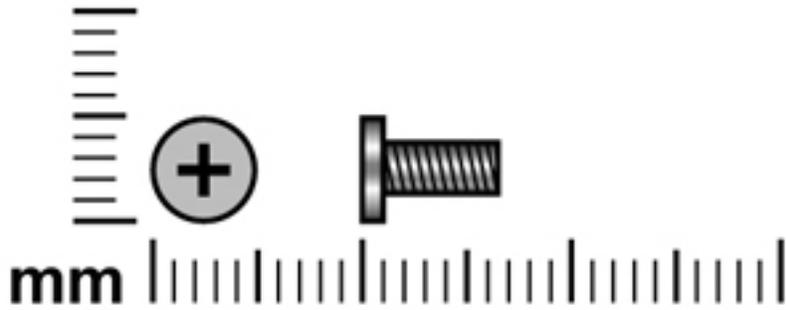


Color	Quantity	Length	Thread	Head diameter
Silver	3	5.0 mm	2.5 mm	8.0 mm



Where used: 3 screws that secure the subwoofer to the computer

Phillips PM2.5×6.5 screw

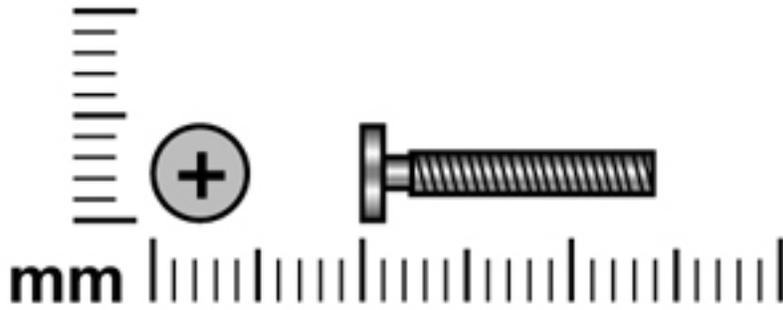


Color	Quantity	Length	Thread	Head diameter
Silver	2	6.5 mm	2.5 mm	5.0 mm

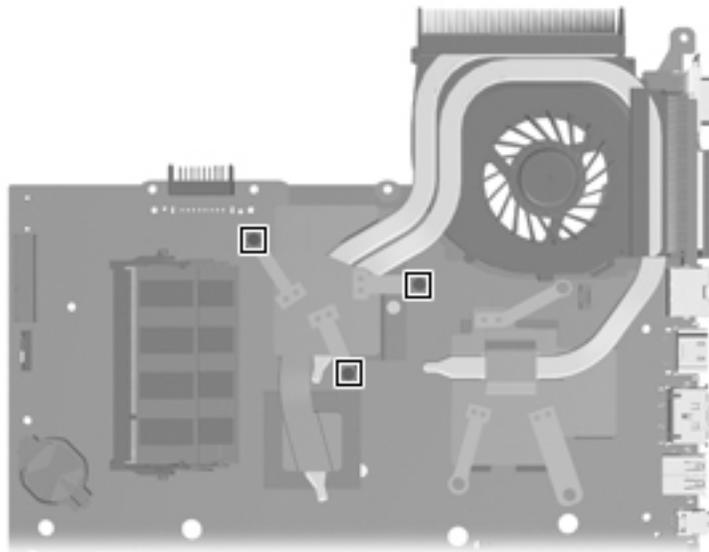


Where used: 2 screws that secure the display bezel to the display enclosure on computer models equipped with BrightView display assemblies

Phillips PM2.5×14.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Silver	3	14.0 mm	2.5 mm	5.0 mm



Where used: 3 screws (secured by C-clips) that secure the fan/heat sink to the system board

Backup and Recovery

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

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) your computer and restore the operating system and software programs to factory settings in case of system failure or instability.
- Backing up your information regularly to protect your important system files.
- Creating system restore points (operating system feature). System restore points allow you to reverse undesirable changes to your computer by restoring the computer to an earlier state.
- Recovering a program or driver (Recovery Manager software feature). This feature helps you reinstall a program or driver without performing a full system recovery.
- Performing a full system recovery (Recovery Manager software feature). With Recovery Manager, you can recover 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) may not have a recovery partition. Recovery discs have been 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, select **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 that you create 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 your computer does not include an internal optical drive, you can use an optional external optical drive (purchased separately) to create recovery discs, or you can purchase recovery discs for your computer from the HP Web site.

Note the following guidelines before creating recovery discs:

- You will need high-quality DVD-R, DVD+R, DVD±RW, BD-R (writable Blu-ray), or CD-R discs. All these discs are purchased separately. DVDs and BDs have a much higher capacity than CDs. If you use CDs, up to 20 discs may 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 computer optical drive.
- If necessary, you can exit the program before you have finished creating the recovery discs. The next time you open Recovery Manager, you will be prompted to continue the disc creation process.

To create a set of recovery discs:

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

Backing up your information

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

- At a 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

Note the following when backing up:

- Create system restore points using the Windows® System Restore feature and periodically copy them to disc.
- Store personal files in the Documents library and back up this folder periodically.
- Back up templates stored in their associated programs.
- Save the customized settings in a window, toolbar, or menu bar by taking a screen shot of the settings. The screen shot can be a time-saver if you have to reset your preferences.

To copy the screen and paste the image into a word-processing document, follow these steps:

- a. Display the screen.
 - b. Copy the screen:
 - To copy only the active window, press **alt+fn+prt sc**.
 - To copy the entire screen, press **fn+prt sc**.
 - c. Open a word-processing document, and then select **Edit > Paste**.
 - d. Save the document:
- You can 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 you use will depend on the type of optical drive installed in your 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

To create a backup using Windows Backup and Restore, follow these steps:



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



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

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



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

Using system restore points

When you back 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.

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

When to create restore points

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



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

Create a system restore point

1. Click **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, follow these steps:

1. Click **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



You can recover only files that you have previously backed up. HP recommends that you use Recovery Manager to create an a set of recovery discs (entire drive backup) as soon as you set up your 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 that you create or from a dedicated recovery partition (select models only) on the hard drive. However, computers that include a solid-state drive (SSD) may not have a recovery partition. If that is the case, recovery discs have been included with your computer. Use these discs to recover your 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 Web site or reinstalled from the disc provided by the manufacturer.

Recovering using 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 using the partition on the hard drive (select models only)



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

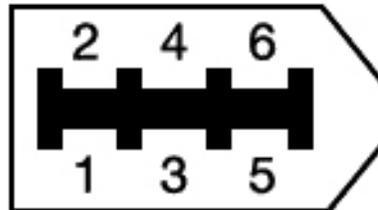
On some models, you can perform a recovery from the partition on the hard drive, accessed by pressing either the Start button or **f11**. This restores the computer to its factory condition.

To restore the system from the partition, follow these steps:

1. Access Recovery Manager in either of the following ways:
 - Select **Start > All Programs > Recovery Manager, > Recovery Manager**.
 - or –
 - a. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen. Then press **f11** while the “Press <F11> for recovery” message is displayed on the screen.
2. Click **System Recovery** in the **Recovery Manager** window,.
3. Follow the on-screen instructions.

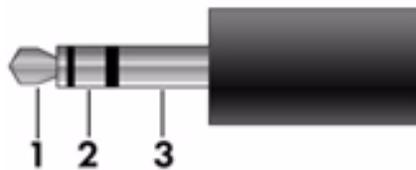
Connector pin assignments

1394



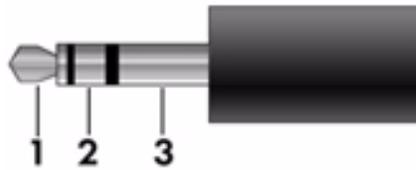
Pin	Signal
1	Power
2	Ground
3	TPB-
4	TPB+
5	TPA-
6	TPA+

Audio-in (microphone)



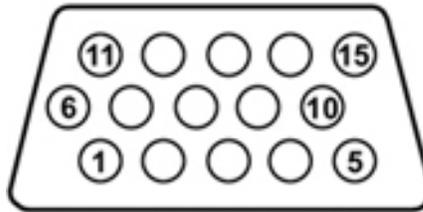
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



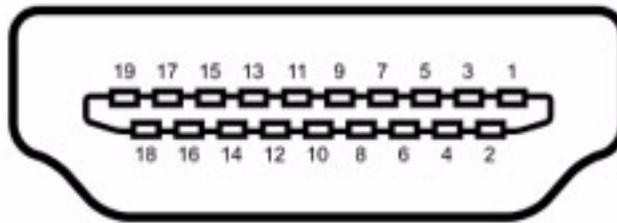
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



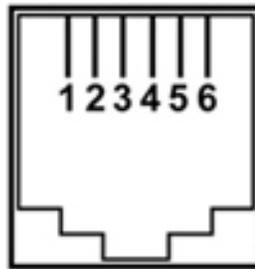
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

HDMI



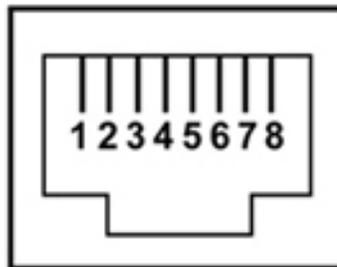
Pin	Signal
1	Transition minimized differential signal (TDMS) data 2+
2	Transition minimized differential signal (TDMS) data 2 shield
3	Transition minimized differential signal (TDMS) data 2-
4	Transition minimized differential signal (TDMS) data 1+
5	Transition minimized differential signal (TDMS) data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

RJ-11 (modem)



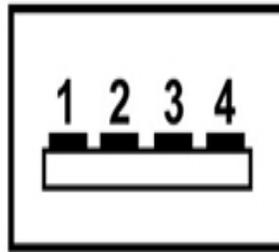
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

RJ-45 (network)



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

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

Display

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

 **CAUTION:** The procedures in this chapter can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. When you remove these components, handle them carefully.

 **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 may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) Web site at <http://www.eiae.org>.

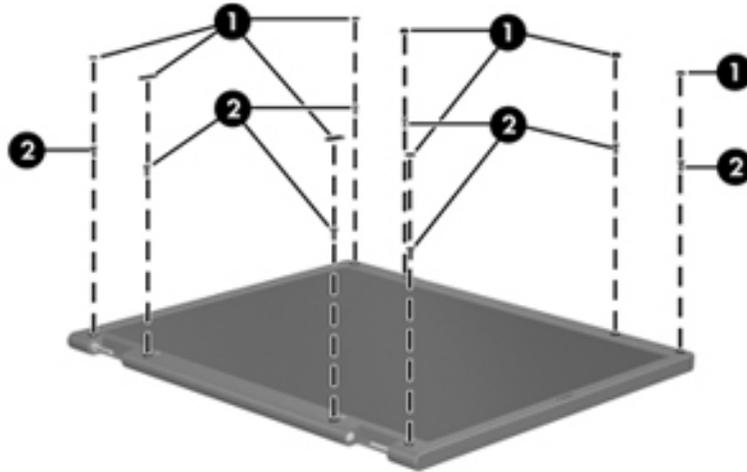
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight ❶ and the liquid crystal display (LCD) panel ❷.



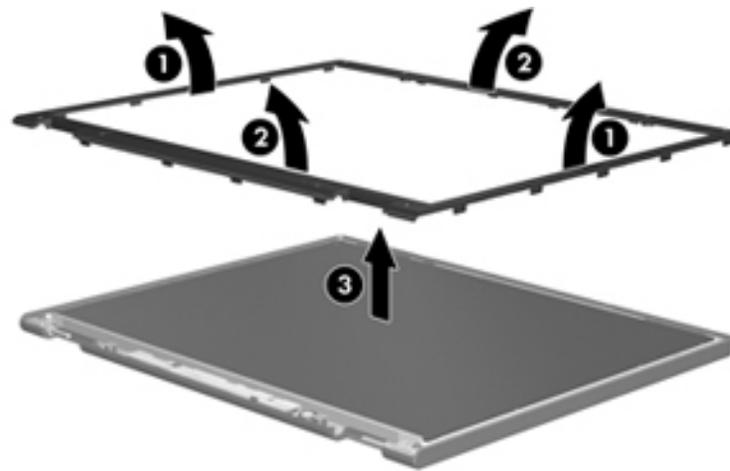
 The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

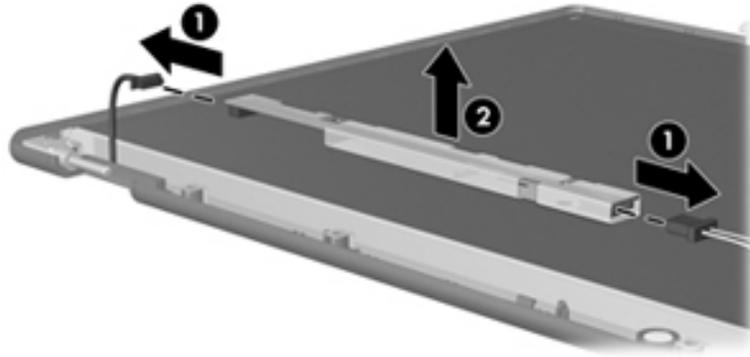
1. Remove all screw covers ❶ and screws ❷ that secure the display bezel to the display assembly.



2. Lift up and out on the left and right inside edges ❶ and the top and bottom inside edges ❷ of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel ❸.

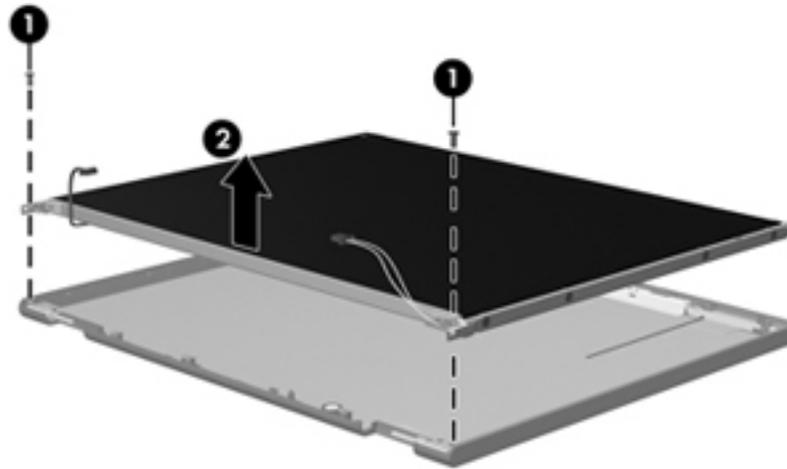


4. Disconnect all display panel cables ❶ from the display inverter and remove the inverter ❷.



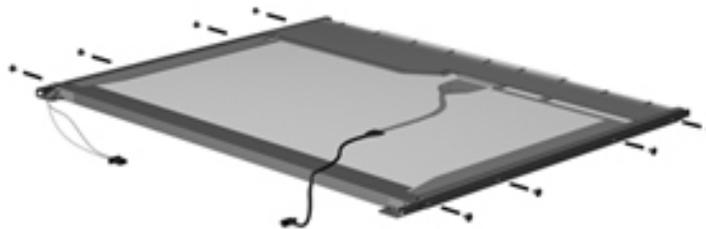
5. Remove all screws ❶ that secure the display panel assembly to the display enclosure.

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

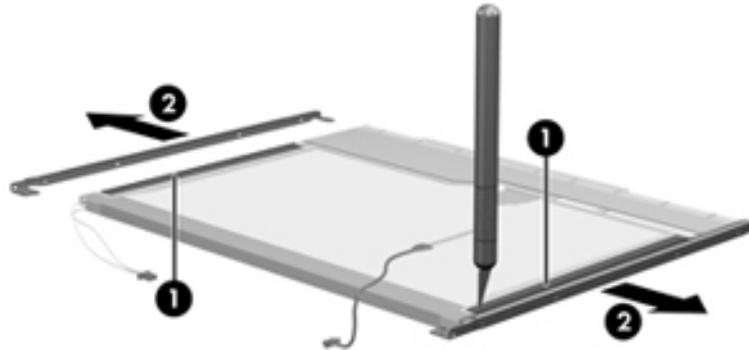


7. Turn the display panel assembly upside down.

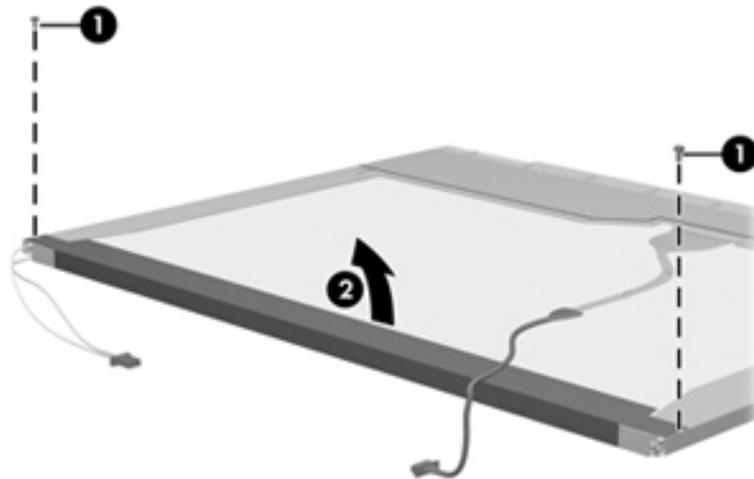
8. Remove all screws that secure the display panel frame to the display panel.



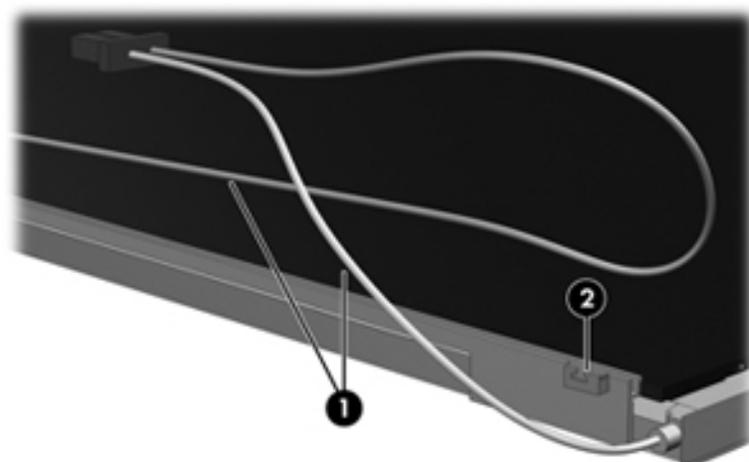
9. Use a sharp-edged tool to cut the tape ❶ that secures the sides of the display panel to the display panel frame.
10. Remove the display panel frame ❷ from the display panel.



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.



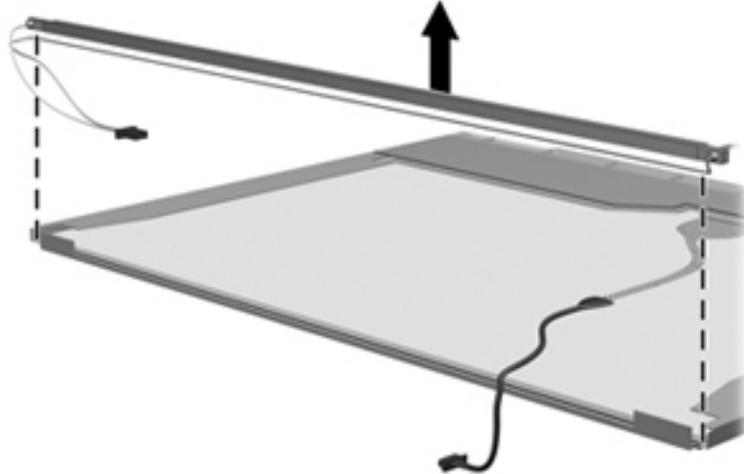
13. Remove the backlight cover.
14. Turn the display panel right-side up.
15. Remove the backlight cables ❶ from the clip ❷ in the display panel.



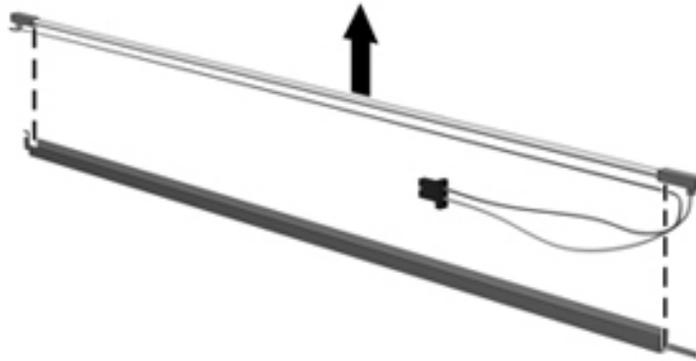
16. Turn the display panel upside down.
17. Remove the backlight frame from the display panel.



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

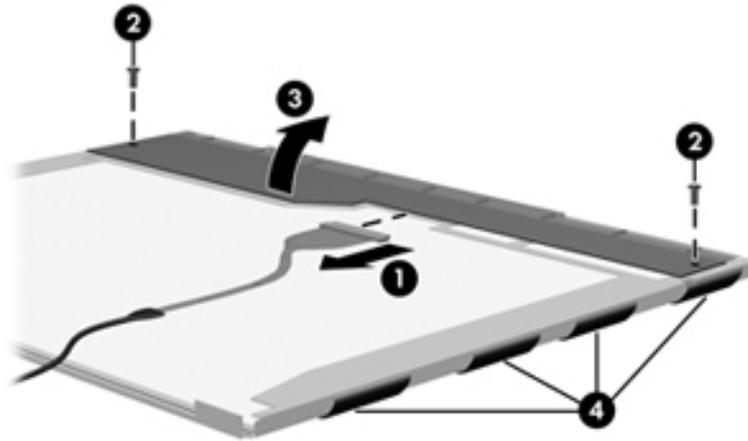


18. Remove the backlight from the backlight frame.

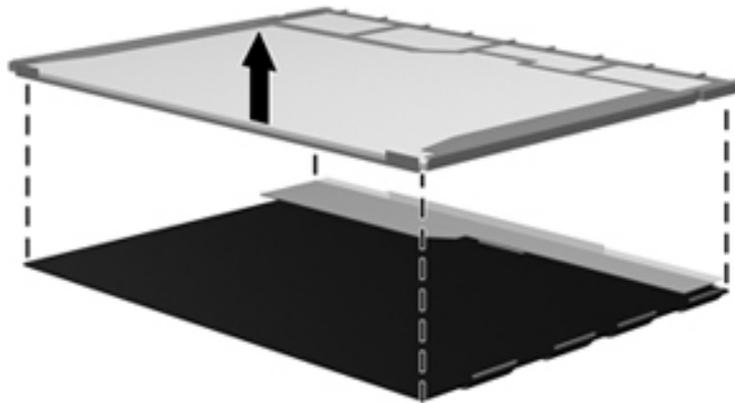


19. Disconnect the display panel cable ❶ from the LCD panel.
20. Remove the screws ❷ that secure the LCD panel to the display rear panel.
21. Release the LCD panel ❸ from the display rear panel.

22. Release the tape ④ 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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