



Compaq Presario CQ45 Notebook PC Maintenance and Service Guide

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Safety warning notice

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

Category	Description	Intel models with discrete graphics	Intel models with UMA graphics	AMD models
Product Name	Compaq Presario CQ45 Notebook PC	√	√	√
Processors	Intel® Core™2 Duo processors			
	T9600 2.80-GHz, 6-MB L2 cache, 1066-MHz FSB	√	√	
	T9550 2.66-GHz, 6-MB L2 cache, 1066-MHz FSB	√	√	
	T9400 2.53-GHz, 6-MB L2 cache, 1066-MHz FSB	√	√	
	P8700 2.53-GHz, 3-MB L2 cache, 1066-MHz FSB	√	√	
	P8600 2.40-GHz, 3-MB L2 cache, 1066-MHz FSB	√	√	
	P8400 2.26-GHz, 3-MB L2 cache, 1066-MHz FSB	√	√	
	T7450, 2.13-GHz, 3-MB L2 cache, 1066-MHz FSB	√	√	
	T7350, 2.00-GHz, 3-MB L2 cache, 1066-MHz FSB	√	√	
	T6600, 2.20-GHz, 3-MB L2 cache, 667-MHz FSB			
	T6400, 2.06-GHz, 3-MB L2 cache, 667-MHz FSB			
	T5900, 2.20-GHz, 2-MB L2 cache 667-MHz FSB	√	√	
	T5800, 2.10-GHz, 2-MB L2 cache 667-MHz FSB	√	√	
	Intel Pentium® Dual-Core processors			
	T3400, 2.16-GHz, 1-MB L2 cache, 667-MHz FSB	√	√	
	T3200, 2.16-GHz, 1-MB L2 cache, 667-MHz FSB	√	√	
	Intel Single Core processor			

Category	Description	Intel models with discrete graphics	Intel models with UMA graphics	AMD models
	T1600, 2.16-GHz, 2-MB L2 cache, 667-MHz FSB	√	√	
	Intel Celeron® processor			
	575, (2.00-GHz, 1-MB L2 cache, 667-MHz FSB	√	√	
	AMD processors			
	Turion™ Ultra ZM-86 2.4-GHz, 2 × 1-MB L2 cache, 3600-MHz FSB			√
	Turion Ultra ZM-84 2.3-GHz, 2 × 1-MB L2 cache, 3600-MHz FSB			√
	Turion Ultra ZM-82 2.2-GHz, 2 × 1-MB L2 cache, 3600-MHz FSB			√
	Turion Ultra ZM-80 2.1-GHz, 2 × 1-MB L2 cache, 3600-MHz FSB			√
	Turion RM-72 2.10-GHz, 2 × 512-KB L2 cache, 3600-MHz FSB			√
	Turion RM-70 2.00-GHz, 2 × 512-KB L2 cache, 3600-MHz FSB			√
	Athlon™ QL-62 2.1-GHz, 2 × 512-KB L2 cache, 3600-MHz FSB			√
	Athlon QL-60 1.9-GHz, 2 × 512-KB L2 cache, 3600-MHz FSB			√
	Sempron™ SI-40 2.0-GHz, 512-KB L2 cache, 3600-MHz FSB			√
Chipset	Northbridge: Intel PM45	√		
	Northbridge: Intel GM45		√	
	Southbridge: Intel ICH9m	√	√	
	Northbridge: AMD M780G			√
	Southbridge: SB700			√
Graphics	nVidia Discrete PCI Express × 16 Graphics	√		
	nVidia NB9M GE-S with 256 MB of dedicated video memory (32M × 16 DDR2 × 4 PCs)			
	System design supports up to 12-W GPU requirement.			

Category	Description	Intel models with discrete graphics	Intel models with UMA graphics	AMD models
	<p>Intel Graphics, Mobile Intel GMA 4500MHD</p> <p>UMA (integrated) with shared video memory:</p> <ul style="list-style-type: none"> Up to 251 MB on computers with 1024 MB of system memory Up to 358 MB on computers with more than 2048 MB of system memory <p>Memory size is a dynamic change.</p>		√	
	<p>AMD internal Graphics, with Layout "Sideport" memory</p> <p>Unified Memory Architecture (UMA) with shared video memory (ATI Radeon HD 3200 Graphics):</p> <ul style="list-style-type: none"> Up to 251 MB on computers with 1024 MB of system memory Up to 358 MB on computers with more than 2048 MB of system memory <p>Memory size is a dynamic change.</p>			√
Panel	<p>14.1-inch, WXGA with BrightView</p> <p>14.1-inch, WXGA LED BrightView</p> <p>14.1-inch, WXGA Anti-Glare with flushed glass</p>	√	√	√
Memory	2 SODIMM slots	√	√	√
	Customer-accessible/upgradable	√	√	√
	Supports up to 8 GB of system RAM	√	√	√
	DDRII PC2-6400 (800-MHz)	√	√	√
	Supports the following configuration: 4096 (2048 × 2)			√
	Supports the following configurations:	√	√	√
	<ul style="list-style-type: none"> 8192 (4096 × 2) 4096 (2048 × 2) 3072 (2048 + 1024) 2048 (2048 × 2) 2048 (1024 + 1024) 1024 (1024 × 1) 			
Hard drives	Supports 9.5-mm, 2.5-inch hard drives	√	√	√

Category	Description	Intel models with discrete graphics	Intel models with UMA graphics	AMD models
	Serial ATA	√	√	√
	Supports the following drives:	√	√	√
	<ul style="list-style-type: none"> • 500 GB, 5400 rpm • 400 GB, 5400 rpm • 320 GB, 5400 rpm • 250 GB, 5400 rpm • 160 GB, 5400 rpm • 120 GB, 5400 rpm 			
Optical drives	Fixed (removal of one screw required)	√	√	√
	Parallel ATA	√	√	√
	12.7-mm tray load	√	√	√
	Supports the following drives:	√	√	√
	<ul style="list-style-type: none"> • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive • Blu-ray ROM DVD±R/RW SuperMulti DL Drive 			
Diskette drive	Supports external USB drive only	√	√	√
Camera	Low-light, VGA camera	√	√	√
	Fixed (no tilt)	√	√	√
	640 × 480 by 24 frames per second	√	√	√
Microphone	Dual array microphones with software	√	√	√
Audio	HD audio	√	√	√
	Supports Windows Vista® Premium Logo requirements	√	√	√
	Presario-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)	√		
	Integrated 10/100 network interface card (NIC)		√	√

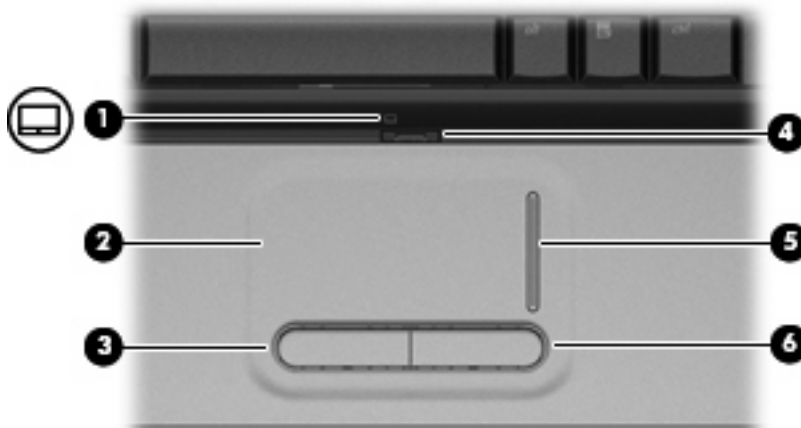
Category	Description	Intel models with discrete graphics	Intel models with UMA graphics	AMD models
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module:			
	Intel WiFi Link 5100 802.11a/b/g/n WLAN module	√	√	
	Intel WiFi Link 5100 802.11a/b/g WLAN module	√	√	
	Broadcom 4322 802.11a/b/g/n WLAN module	√	√	√
	Broadcom BCM4312 WLAN b/g module	√	√	√
External media card	One ExpressCard54 slot	√	√	√
	Digital Media Slot, supports SD, MMC, MS, MSpro, xD	√	√	√
	Two full-size Mini Card slots	√	√	√
Ports	Audio-in (mono microphone)	√	√	√
	Audio-out (stereo headphone)	√	√	√
	Consumer infrared	√	√	√
	RJ-45 (Ethernet, includes link and activity lights)	√	√	√
	USB (2)	√	√	√
	VGA (Dsub 15-pin)	√	√	√
	Smart-pin AC adapter plug	√	√	√
	Hot plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video	√	√	√
	HDMI v1.3 supporting 1080p with HDCP key	√	√	√
	eSATA/USB port combo	√	√	√
Docking	Expansion port 3 supports HP xb3000 Notebook Expansion Base and HP Notebook QuickDock	√	√	√
Keyboard/pointing devices	14.1-inch keyboard	√	√	√
	TouchPad (supports 2-way scroll with legend)	√	√	√
Power requirements	12-cell 8.80-Ah Li-ion battery	√	√	√
	6-cell 2.55-Ah Li-ion battery	√	√	√
	6-cell 2.20-Ah Li-ion battery	√	√	√

Category	Description	Intel models with discrete graphics	Intel models with UMA graphics	AMD models
	65-W AC adapter with Smart-Pin DC connector	√		√
	90-W AC adapter with Smart-Pin DC connector	√		√
Security	Security cable slot	√	√	√
Operating system	Preinstalled:			
	Free DOS	√	√	√
	Windows Vista Business (32-bit)	√	√	√
	Windows Vista Home Basic (32-bit)	√	√	√
	Windows Vista Premium (32- and 64-bit)	√	√	√
	Windows Vista Ultimate (64-bit)	√	√	√
Serviceability	End-user replaceable parts:			
	AC adapter	√	√	√
	Battery (system)	√	√	√
	Hard drive	√	√	√
	Memory module	√	√	√
	Optical drive	√	√	√
	Mini Card	√	√	√

2 External component identification

Top components

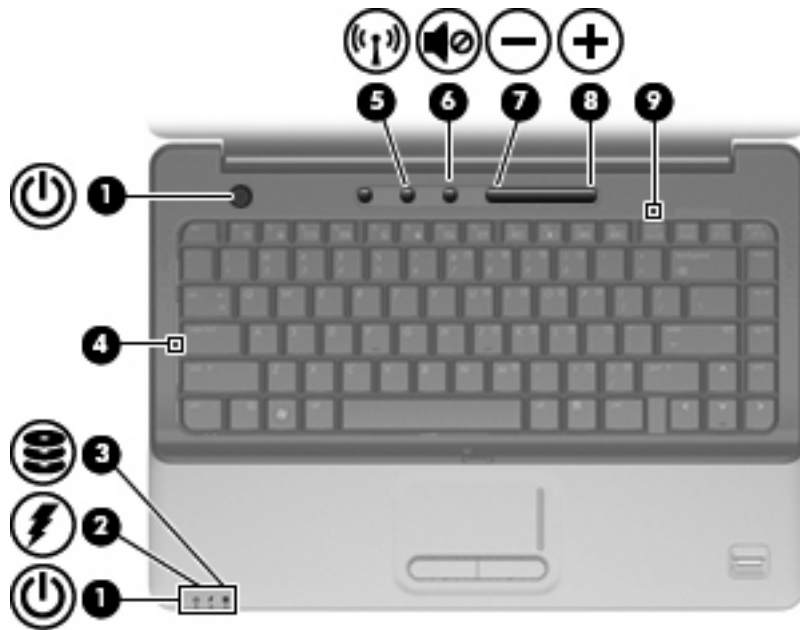
TouchPad



Component	Description
(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 pointing device preferences, select **Start > Control Panel > Hardware and Sound > Mouse**.

Lights

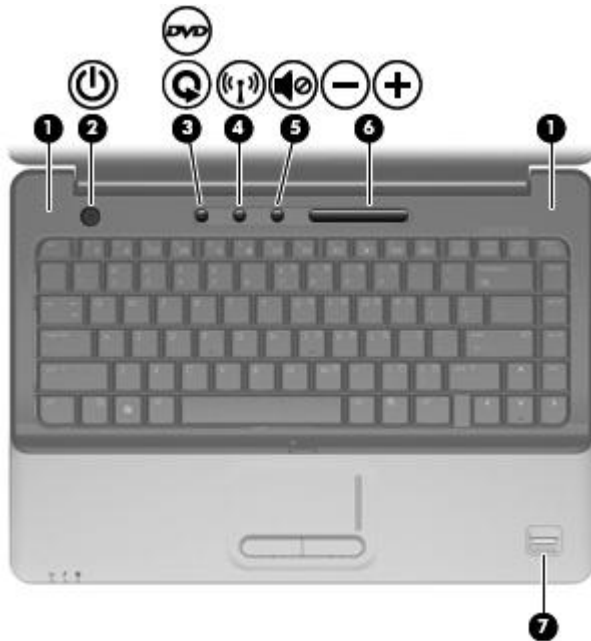


Component	Description
(1) Power lights (2)*	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. Off: The computer is off or in Hibernation.
(2) Battery light	<ul style="list-style-type: none"> On: A battery is charging. Blinking: A battery that is the only available power source has reached a low battery level or a critical battery level. 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. On: HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive.
(4) Caps lock light	On: Caps lock is on.
(5) Wireless light	<ul style="list-style-type: none"> Blue: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. Amber: All wireless devices are off.
(6) Volume mute light	<ul style="list-style-type: none"> White: Computer sound is turned on. Amber: Computer sound is turned off.
(7) Volume down light	On: The volume scroll zone is being used to decrease speaker volume.

Component	Description
(8) Volume up light	On: The volume scroll zone is being used to increase speaker volume.
(9) Num lock light	On: Num lock is on or the embedded numeric keypad is enabled.

*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, speakers, and fingerprint reader (select models only)




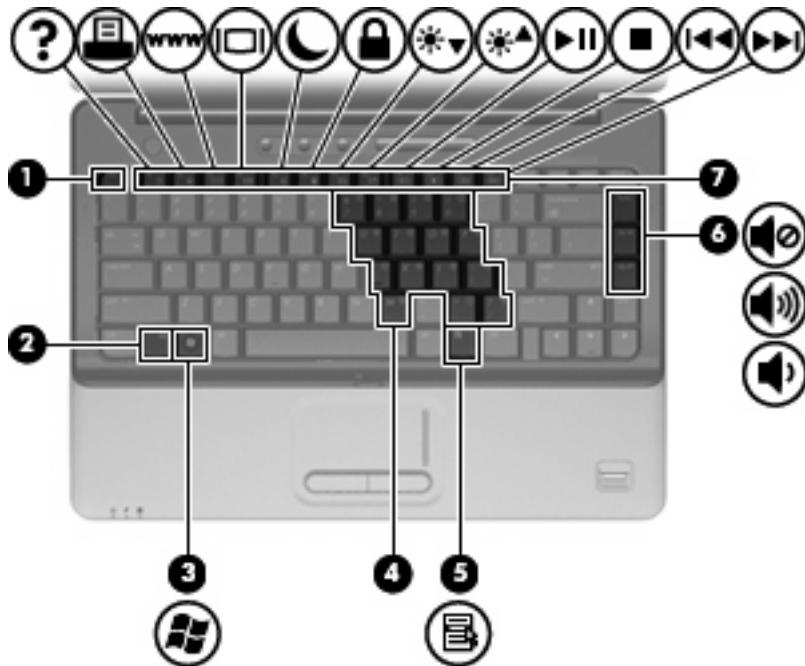
Component	Description
(1) Speakers (2)	Produce sound.
(2) Power button*	<ul style="list-style-type: none"> When the computer is off, press the button to turn on the computer. When the computer is on, briefly press the button to initiate Sleep. When the computer is in the Sleep state, briefly press the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

Component	Description
(3) DVD Button (select models only) or Media button	<p>Media button or DVD button (select models only):</p> <ul style="list-style-type: none"> • Launches the QuickPlay program (for models with QuickPlay preinstalled). • Launches the DVDPlay program (for models with DVDPlay preinstalled). <p>NOTE: If the computer has been set up to require a logon password, you may be asked to log on to Windows. QuickPlay or DVDPlay launches after you log on. Refer to the QuickPlay or DVDPlay software Help for more information.</p>
(4) Wireless button	<p>Turns the wireless feature on or off but does not establish a wireless connection.</p> <p>NOTE: A wireless network must be set up in order to establish a wireless connection.</p>
(5) Volume mute button	Mutes and restores speaker sound.
(6) 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.
(7) 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

 **NOTE:** Your computer may look slightly different from the illustration in this section.



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

Display

 **NOTE:** Your computer may look slightly different from the illustration in this section.




Component	Description
(1) Internal display switch	Turns off the display if the display is closed while the computer is turned on.
(2) Internal microphones (2)	Record sound. NOTE: If there is a microphone icon next to each microphone opening, your computer has internal microphones. Depending on your computer model, the computer may have 1 or 2 internal microphones.
(3) Integrated webcam light	On: The integrated webcam is in use.
(4) Integrated webcam	Records video and captures still photographs.

Wireless antennae (select models only)


On select computer models, at least 2 antennae send and receive signals from one or more wireless devices. These antennae are not visible from the outside of the computer.



 **NOTE:** For optimal transmission, keep the areas immediately around the antennae 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.


Front components

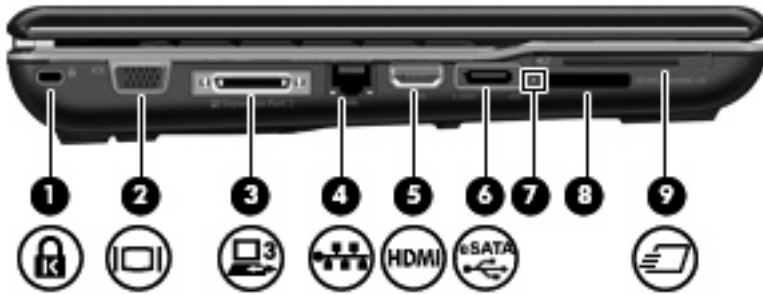
 **NOTE:** Your computer may look slightly different from the illustration in this section.



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 or a critical battery level.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.On: HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive.
(4) Consumer infrared lens (select models only)	Receives a signal from the HP Remote Control (select models only).
(5) Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(6) Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.

Left-side components

 **NOTE:** Your computer may look slightly different from the illustration in this section.




Component	Description
(1) Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2) External monitor port	Connects an external VGA monitor or projector.
(3) Expansion port 3 (select models only)	Connects the computer to an optional docking device or optional expansion product. NOTE: The computer has only one expansion port. The term <i>expansion port 3</i> describes the type of expansion port.
(4) RJ-45 (network) jack	Connects a network cable.
(5) HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
(6) eSATA/USB port (select models only)	Connects high-performance eSATA components, such as an eSATA external hard drive, or connects an optional USB device. NOTE: Depending on your computer model, the computer may include a USB port only.
(7) Digital Media Slot light	On: A digital card is being accessed.
(8) Digital Media Slot	Supports the following optional digital card formats: <ul style="list-style-type: none">• Memory Stick (MS)• Memory Stick Pro (MSP)• MultiMediaCard (MMC)• Secure Digital (SD) Memory Card• xD-Picture Card (XD)
(9) ExpressCard slot (select models only)	Supports optional ExpressCards.

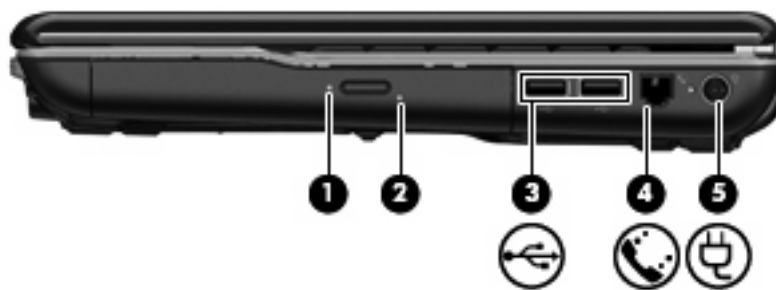
Rear component



Component	Description
Vent	Enables airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

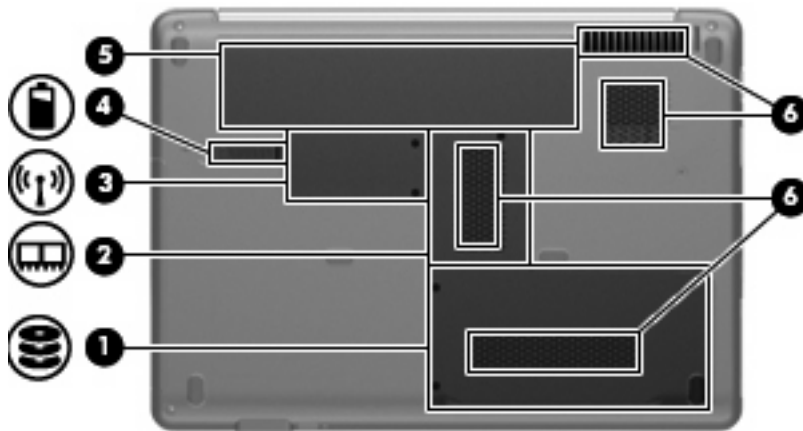
Right-side components

 **NOTE:** Your computer may look slightly different from the illustration in this section.



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

Bottom components



Component	Description
(1) Hard drive and WLAN module compartment	<p>Holds the hard drive and, for select models only, the wireless LAN (WLAN) device.</p> <p>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.</p>
(2) Memory module compartment	Contains the 2 memory module slots.
(3) Mini Card compartment	<p>Holds a WLAN device (select models only).</p> <p>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.</p>
(4) Battery release latch	Releases the battery from the battery bay.
(5) Battery bay	Holds the battery.
(6) Vents (4)	<p>Enable airflow to cool internal components.</p> <p>NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>

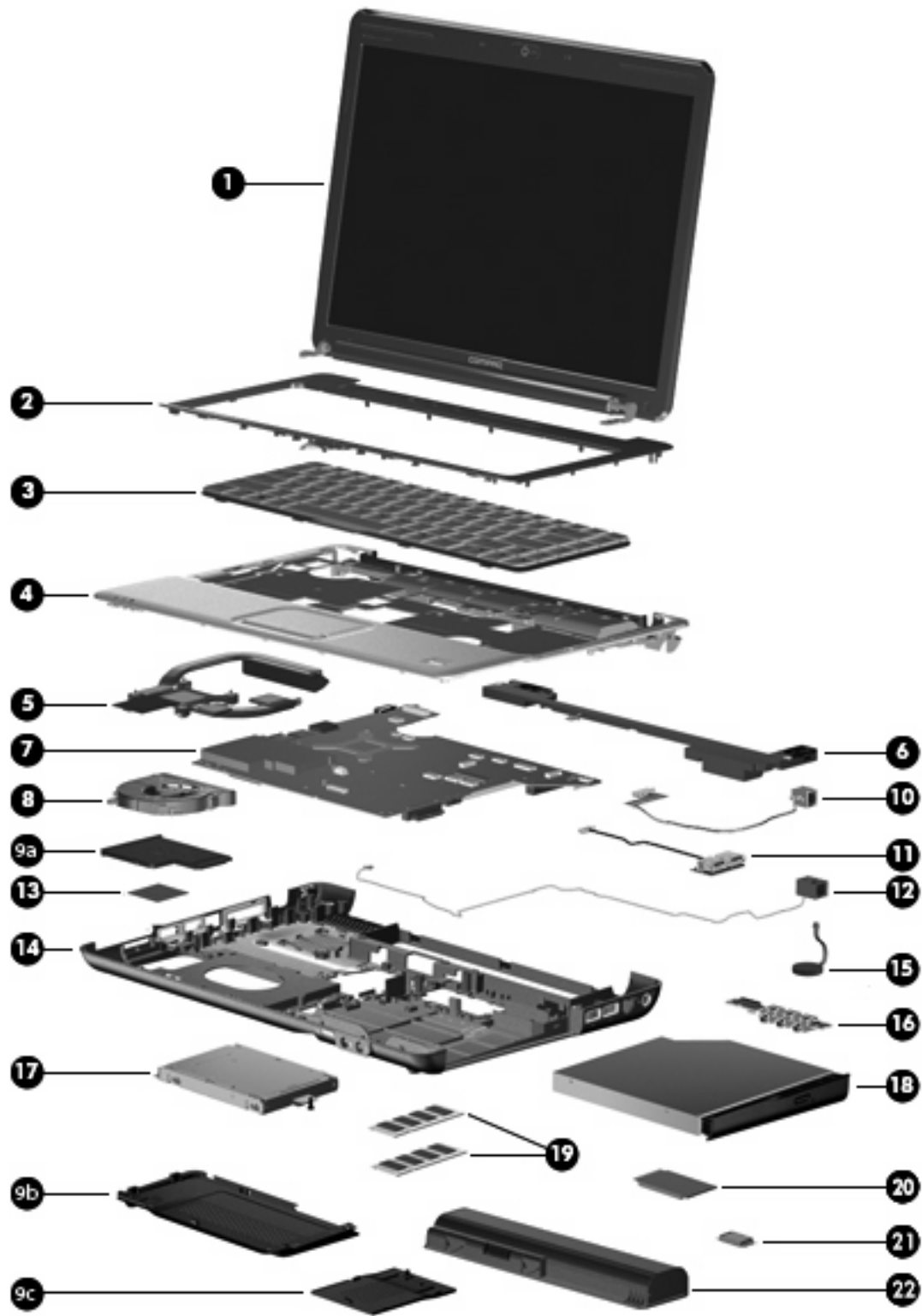
3 Illustrated parts catalog

Serial number location

When ordering parts or requesting information, provide the computer serial number and model number located on the bottom of the computer.



Computer major components



Item	Description	Spare part number
(1)	14.1-inch, WXGA, BrightView display assembly	
	NOTE: See Display assembly components on page 25 for more display assembly internal component spare part information.	
	For use only in computer models with a camera module	486728-001
	For use only in computer models without a camera module	486729-001
(2)	Switch cover (includes power button board and cable, volume/LED board, and strip cover)	486871-001
(3)	Keyboards	
	Canadian French	486904-121
	Latin America	486904-161
	South Korea	486904-AD1
	Taiwan	486904-AB1
	Thailand	486904-281
	The United States	486904-001
(4)	Top cover (includes TouchPad and cable)	
	For use only in computer models with a fingerprint reader	486860-001
	For use only in computer models without a fingerprint reader	486861-001
(5)	Fan/heat sink assembly (includes thermal material)	
	For use in computer models with Intel processors with UMA graphics subsystems	486838-001
	For use in computer models with Intel processors with discrete graphics subsystems	486839-001
	For use in computer models with AMD processors	492260-001
(6)	Speaker assembly	486865-001
(7)	System boards (include thermal material)	
	For use only in computer models with Intel processors:	
	<ul style="list-style-type: none"> Equipped with discrete graphics subsystems 	486725-001
	<ul style="list-style-type: none"> Equipped with UMA graphics subsystems 	486726-001
	For use only in computer models with AMD processors	492256-001
(8)	System fan for use in computers with Intel or AMD processors and UMA graphics subsystems	486844-001
	Plastics Kit (see Plastics Kit on page 26 for more Plastics Kit information)	486862-001
(9a)	ExpressCard slot bezel	
(9b)	Hard drive cover	
(9c)	Memory module compartment cover	
(10)	Power connector cable (includes power connector and cable)	486864-001
(11)	USB board (includes USB board cable)	486842-001

Item	Description	Spare part number
	USB board cable	486843-001
(12)	Modem module (includes modem module cable and RJ-11 connector)	
	For use in all countries and regions except for Australia and New Zealand	461749-001
	For use in Australia and New Zealand	461749-011
	Modem module cable (includes RJ-11 connector)	494981-001
(13)	WLAN modules	
	Intel WiFi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions	480985-001
	Intel WiFi Link 5100 802.11a/b/g WLAN module for use in all countries and regions	482957-001
	Broadcom 4321 Wi-Fi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bermuda, Bolivia, Bosnia & Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, the Ivory Coast, Jamaica, Jordan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, 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, Puerto Rico, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	453730-002
	Broadcom 4322 802.11a/b/g/n WLAN modules:	
	<ul style="list-style-type: none"> 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 	487330-001

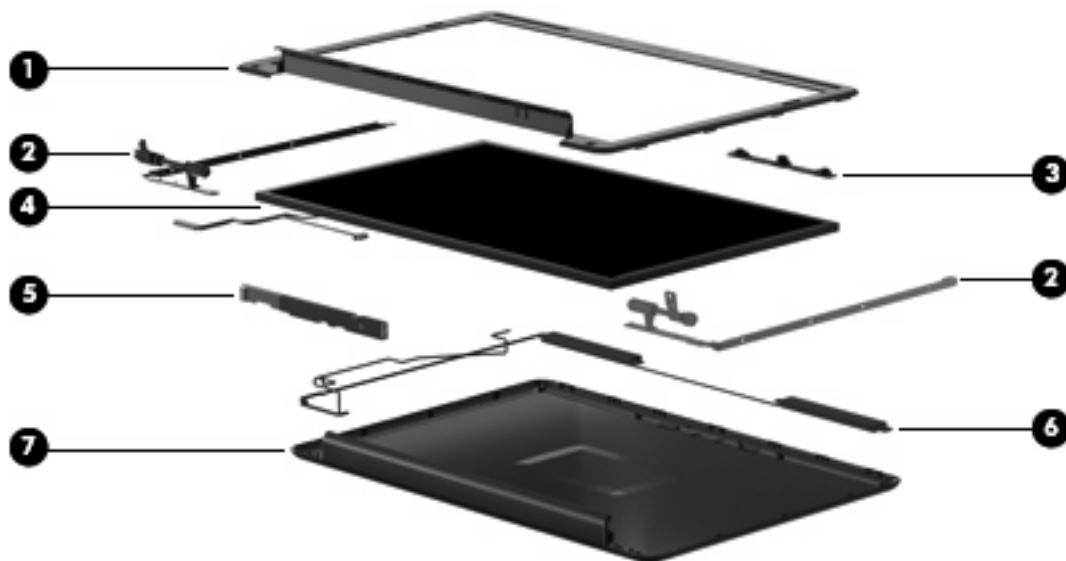
Item	Description	Spare part number
	<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, 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-Bissa, 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, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	487330-002
Broadcom BCM4312 WLAN b/g modules:		
	<ul style="list-style-type: none"> For use in Canada, Cayman Islands, Guam, Puerto Rico, the United States, and the Virgin Islands 	459263-001
	<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia & Herzegovina, Botswana, Brazil, Brunei, Bulgaria, Burkina, Faso Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Zaire, Chile, China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Martinique, British Virgin Islands, French Guiana, Guadeloupe, Nether Antilles, Aruba, Bermuda, Syria, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, East Timor, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe 	459263-002
(14)	Base enclosure	
	For use only in computer models with a modem module	488104-001

Item	Description	Spare part number
	For use only in computer models without a modem module	486870-001
(15)	RTC battery (includes 2-sided tape)	486835-001
(16)	Audio board (includes audio connectors, infrared lens, and audio board cable)	486866-001
	Audio board cable kit (not illustrated)	486841-001
(17)	Hard drives (include hard drive bracket)	
	For use only in computer models with Intel processors:	
	• 500-GB, 5400-rpm	497775-001
	• 400-GB, 5400-rpm	497774-001
	• 320-GB, 5400-rpm	459611-005
	• 250-GB, 5400-rpm	454605-003
	• 160-GB, 5400-rpm	454925-003
	• 120-GB, 5400-rpm	454924-003
	For use in computer models with AMD processors:	
	• 500-GB, 5400-rpm	497184-001
	• 400-GB, 5400-rpm	499993-001
	• 320-GB, 5400-rpm	459611-004
	• 250-GB, 5400-rpm	454605-002
	• 160-GB, 5400-rpm	454925-002
	• 120-GB, 5400-rpm	454924-002
	Hard drive hardware kit (contains screws and hard drive bracket; not illustrated)	482158-001
(18)	Optical drives (include bezel)	
	For use in computer models with Intel processors:	
	• DVD±RW and CD-RW Super Multi, Double-Layer Combo Drive with LightScribe	482178-001
	• DVD±RW and CD-RW Super Multi, Double-Layer Combo Drive	482176-001
	• Blu-ray ROM DVD±R/RW SuperMulti DL Drive	482182-001
	For use in computer models with AMD processors:	
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	482178-002
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	482176-002
	• Blu-ray ROM DVD±R/RW SuperMulti DL Drive	482182-002
(19)	Memory modules (800-MHz, PC2-6400, 1-DIMM)	
	For use in computer models with Intel processors:	
	• 2048-MB	482169-001
	• 1024-MB	482168-001
	• 512-MB	482167-001

Item	Description	Spare part number
	For use in computer models with AMD processors:	
	• 2048-MB	482169-002
	• 1024-MB	482168-002
	• 512-MB	482167-002
(20)	Processors (include thermal material)	
	Intel Core 2 Duo processors:	
	• T9600 (2.80-GHz, 6-MB L2 cache)	486727-001
	• T9550 (2.66-GHz, 6-MB L2 cache)	507953-001
	• T9400 (2.53-GHz, 6-MB L2 cache)	483260-001
	• P8700 (2.53-GHz, 3-MB L2 cache)	507960-001
	• P8600 (2.40-GHz, 3-MB L2 cache)	483259-001
	• P8400 (2.26-GHz, 3-MB L2 cache)	483258-001
	• T7450 (2.13-GHz, 3-MB L2 cache)	495640-001
	• T7350 (2.00-GHz, 3-MB L2 cache)	491856-001
	• Core 2 Duo T6600 (2.2 GHz, 3-MB L2 cache)	513593-001
	• Core 2 Duo T6400 (2.06 GHz, 3-MB L2 cache)	513592-001
	• T5900 (2.20-GHz, 2-MB L2 cache)	495639-001
	• T5800 (2.10-GHz, 2-MB L2 cache)	495638-001
	Intel Pentium Dual-Core processors:	
	• Pentium Dual-Core T4200 (2.0-MHz, 4-MB L2 cache)	513599-001
	• T3400 (2.16-GHz, 1-MB L2 cache)	504784-001
	• T3200 (2.00-GHz, 1-MB L2 cache)	504783-001
	Intel Core Solo processor:	
	• T1600 (2.16-GHz, 2-MB L2 cache)	497773-001
	Intel Celeron processor:	
	• 575 (2.00-GHz, 1-MB L2 cache)	502838-001
	AMD processors:	
	• Turion Ultra ZM-86 (2.4-GHz, 2x1-MB L2 cache)	487345-005
	• Turion Ultra ZM-84 (2.3-GHz, 2x1-MB L2 cache)	497177-001
	• Turion Ultra ZM-82 (2.2-GHz, 2x1-MB L2 cache)	487346-005
	• Turion Ultra ZM-80 (2.1-GHz, 2x1-MB L2 cache)	487347-005
	• Turion RM-72 2.1-GHz processor (2x512-KB L2 cache)	497178-001
	• Turion RM-70 2.0-GHz processor (2x512-KB L2 cache)	487348-006
	• Athlon QL-62 2.0-GHz processor (2x512-KB L2 cache)	497179-001

Item	Description	Spare part number
	<ul style="list-style-type: none"> Athlon QL-60 1.9-GHz processor (2x512-KB L2 cache) 	487349-006
	<ul style="list-style-type: none"> Sempron SI-40 2.00-GHz processor (512-KB L2 cache) 	487350-004
(21)	Bluetooth module	483113-001
	Bluetooth module cable (not illustrated)	
	For use only in computer models with Intel or AMD processors with UMA graphics subsystems	486868-001
	For use only in computer models with Intel processors with discrete graphics subsystems	488130-001
(22)	Batteries	
	<ul style="list-style-type: none"> 12-cell, 8.80-Ah, Li-ion 	484172-001
	<ul style="list-style-type: none"> 6-cell, 2.55-Ah, Li-ion 	484171-001
	<ul style="list-style-type: none"> 6-cell, 2.20-Ah, Li-ion 	482186-003
	Rubber Feet Kit (not illustrated)	486863-001

Display assembly components



Item	Description	Spare part number
(1)	Display bezels	
	For use only in computer models with a camera module	486733-001
	For use only in computer models without a camera module	486739-001
(2)	Display Hinge Kit	486737-001
(3)	Camera/microphone module	486734-001
(4)	14.1-inch, WXGA, TFT BrightView display panel (includes display panel cable)	
	For use only with computer models with Intel processors	483261-001

Item	Description	Spare part number
	For use only with computer models with AMD processors	497182-001
(5)	Display inverter (includes Mylar shield)	486736-001
(6)	Antenna Kit	489066-001
(7)	Display enclosure	486732-001
	Microphone cable (not illustrated)	495631-001
	Display cable (not illustrated)	486735-001
	Display screw kit (not illustrated; includes screws and rubber screw covers)	486730-001
	Rubber display kit (not illustrated)	486731-001

Plastics Kit



Item	Description	Spare part number
	Plastics Kit	486862-001
(1)	ExpressCard slot bezel	
(2)	Hard drive cover (includes 2 screws)	
(3)	Memory module compartment cover (includes 1 screw)	

Mass storage devices



Item	Description	Spare part number
(1)	Hard drives (include hard drive bracket)	
	For use only in computer models with Intel processors:	
	• 500-GB, 5400-rpm	497775-001
	• 400-GB, 5400-rpm	497774-001
	• 320-GB, 5400-rpm	459611-005
	• 250-GB, 5400-rpm	454605-003
	• 160-GB, 5400-rpm	454925-003
	• 120-GB, 5400-rpm	454924-003
	For use in computer models with AMD processors:	
	• 500-GB, 5400-rpm	497184-001
	• 400-GB, 5400-rpm	499993-001
	• 320-GB, 5400-rpm	459611-004
	• 250-GB, 5400-rpm	454605-002
	• 160-GB, 5400-rpm	454925-002
	• 120-GB, 5400-rpm	454924-002
	Hard drive hardware kit (contains screws and hard drive bracket; not illustrated)	482158-001
(2)	Optical drives (include bezel)	
	For use only in computer models with Intel processors:	
	• DVD±RW and CD-RW Super Multi, Double-Layer Combo Drive with LightScribe	482178-001
	• Bezel for DVD±RW and CD-RW Super Multi, Double-Layer Combo Drive with LightScribe	488212-001

Item	Description	Spare part number
	<ul style="list-style-type: none"> DVD±RW and CD-RW Super Multi, Double-Layer Combo Drive 	482176-001
	<ul style="list-style-type: none"> Bezel for DVD±RW and CD-RW Super Multi, Double-Layer Combo Drive 	488211-001
	<ul style="list-style-type: none"> Blu-ray ROM DVD±R/RW SuperMulti DL Drive 	482182-001
	<ul style="list-style-type: none"> Bezel for Blu-ray ROM DVD±R/RW SuperMulti DL Drive 	488213-001
	For use in computer models with AMD processors:	
	<ul style="list-style-type: none"> DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe 	482178-002
	<ul style="list-style-type: none"> DVD±RW and CD-RW Super Multi Double-Layer Combo Drive 	482176-002
	<ul style="list-style-type: none"> Blu-ray ROM DVD±R/RW SuperMulti DL Drive 	482182-002

Miscellaneous parts

Description	Spare part number
AC adapters	
90-W PFC AC adapter	463955-001
65-W PFC AC adapter	463958-001
Earbud headset	371693-001
HP carrying case	418162-001
HP slim case	418163-001
Optical wired mouse	436238-001
Wireless laser mouse (includes cable adapter)	430958-001
Fingerprint reader	486828-001
Remote control, ExpressCard	464793-001
System fan for use with computer models with Intel or AMD processors and UMA graphics subsystems	486844-001
Display lid switch module for use only in computer models with Intel processors	489862-001
Display lid switch module for use only in computer models with AMD processors	486846-001
Keyboard cover	513120-001
Power cords:	
Argentina	490371-D01
Australia and New Zealand	490371-011
Brazil	490371-201
India	490371-D61
The People's Republic of China	490371-AA1
South Korea	490371-AD1
Taiwan	490371-AB1

Description	Spare part number
The United Kingdom and Hong Kong	490371-031
The United States	490371-001

Sequential part number listing

Spare part number	Description
371693-001	Earbud headset
418162-001	HP carrying case
418163-001	HP slim case
430958-001	Wireless laser mouse (includes cable adapter)
436238-001	Optical wired mouse
453730-002	Broadcom 4321 Wi-Fi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bermuda, Bolivia, Bosnia & Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, the Ivory Coast, Jamaica, Jordan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, 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, Puerto Rico, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
454605-002	250-GB, 5400-rpm hard drive for use only in computer models with AMD processors (includes hard drive bracket)
454605-003	250-GB, 5400-rpm hard drive for use only in computer models with AMD processors (includes hard drive bracket)
454924-002	120-GB, 5400-rpm hard drive for use only in computer models with AMD processors (includes hard drive bracket)
454924-003	120-GB, 5400-rpm hard drive for use only in computer models with Intel processors (includes hard drive bracket)
454925-002	160-GB, 5400-rpm hard drive for use only in computer models with AMD processors (includes hard drive bracket)
454925-003	160-GB, 5400-rpm hard drive for use only in computer models with Intel processors (includes hard drive bracket)
459263-001	Broadcom BCM4312 WLAN b/g module for use in Canada, Cayman Islands, Guam, Puerto Rico, the United States, and the Virgin Islands

Spare part number	Description
459263-002	Broadcom BCM4312 WLAN b/g modules for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia & Herzegovina, Botswana, Brazil, Brunei, Bulgaria, Burkina, Faso Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Zaire, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Martinique, British Virgin Islands, French Guiana, Guadeloupe, Nether Antilles, Aruba, Bermuda, Syria, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, East Timor, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe
459611-004	320-GB, 5400-rpm hard drive for use in computer models with AMD processors (includes hard drive bracket)
459611-005	320-GB, 5400-rpm hard drive for use in computer models with Intel processors (includes hard drive bracket)
461749-001	Modem module for use in all countries and regions except for Australia and New Zealand (includes modem module cable)
461749-011	Modem module for use only in Australia and New Zealand (includes modem module cable)
463955-001	90-W PFC AC adapter
463958-001	65-W PFC AC adapter
464793-001	Remote control, ExpressCard
480985-001	Intel WiFi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions
482158-001	Hard drive hardware kit (contains screws and hard drive bracket)
482167-001	512-MB memory module for use only in computer models with Intel processors (800-MHz, PC2-6400, 1-DIMM)
482167-002	512-MB memory module for use only in computer models with AMD processors (800-MHz, PC2-6400, 1-DIMM)
482168-001	1024-MB memory module for use only in computer models with Intel processors (800-MHz, PC2-6400, 1-DIMM)
482168-002	1024-MB memory module for use only in computer models with AMD processors (800-MHz, PC2-6400, 1-DIMM)
482169-001	2048-MB memory module for use only in computer models with Intel processors (800-MHz, PC2-6400, 1-DIMM)
482169-002	2048-MB memory module for use only in computer models with AMD processors (800-MHz, PC2-6400, 1-DIMM)
482176-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive for use only in computer models with Intel processors (includes bezel)
482176-002	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive for use only in computer models with AMD processors (includes bezel)

Spare part number	Description
482178-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe for use only in computer models with Intel processors (includes bezel)
482178-002	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe for use only in computer models with AMD processors (includes bezel)
482182-001	Blu-ray ROM DVD±R/RW SuperMulti DL Drive for use only in computer models with Intel processors (includes bezel)
482182-002	Blu-ray ROM DVD±R/RW SuperMulti DL Drive for use only in computer models with AMD processors (includes bezel)
482186-003	6-cell, 2.20-Ah battery
482957-001	Intel WiFi Link 5100 802.11a/b/g WLAN module for use in all countries and regions
483113-001	Bluetooth module
483258-001	Intel Core Duo P8400 2.26-GHz processor, 3-MB L2 cache; includes thermal material
483259-001	Intel Core Duo P8600 2.40-GHz processor, 3-MB L2 cache; includes thermal material
483260-001	Intel Core Duo T9400 2.53-GHz processor, 6-MB L2 cache; includes thermal material
483261-001	14.1-inch, WXGA, SVA, TFT BrightView display panel for use only in computer models with Intel processors (includes display panel cable)
484171-001	6-cell, 2.55-Ah battery
484172-001	12-cell, 8.80-Ah battery
486725-001	System board for use only in computer models with Intel processors that are equipped with discrete graphic subsystems (includes thermal material)
486726-001	System board for use only with computer models with Intel processors that are equipped with UMA graphics subsystems (includes thermal material)
486727-001	Intel Core Duo T9600 2.80-GHz processor, 6-MB L2 cache; includes thermal material
486728-001	14.1-inch, WXGA, SVA, TFT BrightView display assembly for use only in computer models with a camera module (includes display panel cable)
486729-001	14.1-inch, WXGA, SVA, TFT BrightView display assembly for use only computer models without a camera module (includes display panel cable)
486730-001	Display Screw Kit (includes screws and rubber screw covers)
486731-001	Rubber display kit
486732-001	Display enclosure
486733-001	Display bezel for use only in computer models with a camera module
486734-001	Camera/microphone module
486735-001	Display cable
486736-001	Display inverter (includes Mylar shield and bracket)
486737-001	Display Hinge Kit (includes left and right display hinges and display switch module)
486739-001	Display bezel for use only in computer models without a camera module
486828-001	Fingerprint reader
486835-001	RTC battery (includes 2-sided tape)

Spare part number	Description
486838-001	Fan/heat sink assembly for use in computer models with Intel processors with UMA graphics subsystems (includes thermal material)
486839-001	Fan/heat sink assembly for use in computer models with Intel processors with discrete graphics subsystems (includes thermal material)
486841-001	Audio board cable kit
486842-001	USB board
486843-001	USB board cable
486844-001	System fan for use in computer models with Intel or AMD processors and UMA graphics subsystems
486846-001	Display lid switch module for use in computer models with AMD processors
486860-001	Top cover for use only in computer models with a fingerprint reader (includes TouchPad and cable)
486861-001	Top cover for use only in computer models without a fingerprint reader (includes TouchPad and cable)
486862-001	Plastics Kit (see Plastics Kit on page 26) for more information)
486863-001	Rubber Feet Kit
486864-001	Power connector cable (includes power connector)
486865-001	Speaker assembly
486866-001	Audio board (includes audio connectors, infrared lens, and audio board cable)
486868-001	Bluetooth module cable for use only in computer models with Intel or AMD processors with UMA graphics subsystems
486870-001	Base enclosure for use only in computer models without a modem module (includes infrared lens and wireless on/off switch)
486871-001	Switch cover (includes power button board and cable, volume/LED board, and LED cover)
486904-001	Keyboard for use in the United States
486904-121	Keyboard for use in French Canada
486904-161	Keyboard for use in Latin America
486904-281	Keyboard for use in Thailand
486904-AB1	Keyboard for use in Taiwan
486904-AD1	Keyboard for use in South Korea
487330-001	Broadcom 4322 802.11a/b/g/n 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

Spare part number	Description
487330-002	Broadcom 4322 802.11a/b/g/n 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, the People's Republic of China, 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, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland,
487345-005	AMD Turion Ultra ZM-86 2.4-GHz processor, 2x1-MB L2 cache; includes thermal material
487346-005	AMD Turion Ultra ZM-82 2.2-GHz processor, 2x1-MB L2 cache; includes thermal material
487347-005	AMD Turion Ultra ZM-80 2.1-GHz processor, 2x1-MB L2 cache; includes thermal material
487348-006	AMD Turion RM-70 2.0-GHz processor, 2x512-KB L2 cache; includes thermal material
487349-006	AMD Athlon QL-60 1.9-GHz processor, 2x512-KB L2 cache; includes thermal material
487350-004	AMD Sempron 3800 2.2-GHz processor, 256-KB L2 cache; includes thermal material
488104-001	Base enclosure for use only in computer models with a modem module
488130-001	Bluetooth module cable for use only in computer models with Intel processors with discrete graphics subsystems
488211-001	Bezel for DVD±RW and CD-RW Super Multi Double-Layer Combo Drive (includes mounting hardware)
488212-001	Bezel for DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe (includes mounting hardware)
488213-001	Bezel for BD/DVD Combo Drive (includes mounting hardware)
489066-001	Antenna, microphone cable kit
489862-001	Display lid switch module for use in computer models with Intel processors
490371-001	Power cord for use in the United States
490371-011	Power cord for use in Australia
490371-031	Power cord for use in the United Kingdom
490371-201	Power cord for use in Brazil
490371-AA1	Power cord for use in the People's Republic of China
490371-AB1	Power cord for use in Taiwan
490371-AD1	Power cord for use in South Korea
490371-D01	Power cord for use in Argentina
490371-D61	Power cord for use in India

Spare part number	Description
491856-001	Intel Core Duo T7350 2.00-GHz processor, 3-MB L2 cache; includes thermal material
492256-001	System board for use only with computer models with AMD processors
492260-001	Fan/heat sink assembly for use in computer models with AMD processors (includes thermal material)
494960-001	TouchPad board
494962-001	TouchPad bracket
494965-001	TouchPad button board
494981-001	Modem module cable (includes RJ-11 connector)
495631-001	Microphone cable kit
495638-001	Intel Core Duo T5800 2.10-GHz processor, 2-MB L2 cache; includes thermal material
495639-001	Intel Core Duo T5900 2.20-GHz processor, 2-MB L2 cache; includes thermal material
495640-001	Intel Core Duo T7450 2.13-GHz processor, 3-MB L2 cache; includes thermal material
497177-001	AMD Turion Ultra ZM-84 2.3-GHz processor, 2x1-MB L2 cache; includes thermal material
497178-001	AMD Turion RM-72 2.1-GHz processor, 2x512-KB L2 cache; includes thermal material
497179-001	AMD Athlon QL-62 2.1-GHz processor, 2x512-KB L2 cache; includes thermal material
497182-001	14.1-inch, WXGA, BrightView display panel for use in computer models with AMD processors (includes display panel cable)
497184-001	500-GB, 5400-rpm hard drive for use in computer models with AMD processors (includes hard drive bracket)
497773-001	Intel Core Solo T1600 2.16-GHz processor, 2-MB L2 cache; includes thermal material
497774-001	400-GB, 5400-rpm hard drive for use in computer models with Intel processors (includes hard drive bracket)
497775-001	500-GB, 5400-rpm hard drive for use in computer models with Intel processors (includes hard drive bracket)
499993-001	400-GB, 5400-rpm hard drive for use in computer models with AMD processors (includes hard drive bracket)
502838-001	Intel Celeron 575 2.00-GHz processor, 1-MB L2 cache; includes thermal material
504783-001	Intel Pentium Dual-Core T3200 2.00-GHz processor, 1-MB L2 cache; includes thermal material
504784-001	Intel Pentium Dual-Core T3400 2.16-GHz processor, 1-MB L2 cache; includes thermal material
507953-001	Intel Core Duo T9550 2.66-GHz processor, 6-MB L2 cache; includes thermal material
507960-001	Intel Core Duo P8700 2.53-GHz processor, 3-MB L2 cache; includes thermal material
513120-001	Keyboard cover
513592-001	Core 2 Duo T6400 (2.06 GHz, 3-MB L2 cache)
513593-001	Core 2 Duo T6600 (2.2 GHz, 3-MB L2 cache)
513599-001	Pentium Dual-Core T4200 processor, 2.0-MHz, 4-MB L2 cache; includes thermal material

4 Removal and replacement procedures

Preliminary replacement requirements


Tools required

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


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

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

Avoid exposing 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 can work perfectly throughout a normal cycle. Or the device may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

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

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

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

Unknown user password

If the computer you are servicing has an unknown user password, follow these steps to clear the password.

 **NOTE:** These steps also clear CMOS.

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.
4. Remove the battery (see [Battery on page 43](#)).
5. Remove the RTC battery (see [RTC battery on page 52](#)).
6. Wait approximately 5 minutes.
7. Replace the RTC battery and reassemble the computer.
8. Connect AC power to the computer. Do not reinsert any batteries at this time.
9. Turn on the computer.

All passwords and all CMOS settings have been cleared.

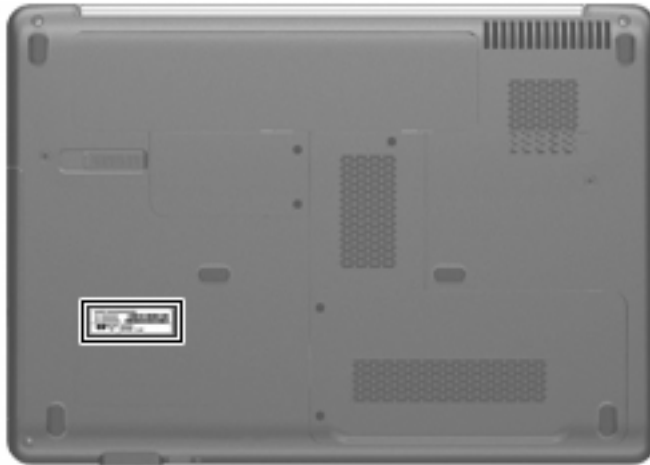
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 77 screws, in 13 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Serial number

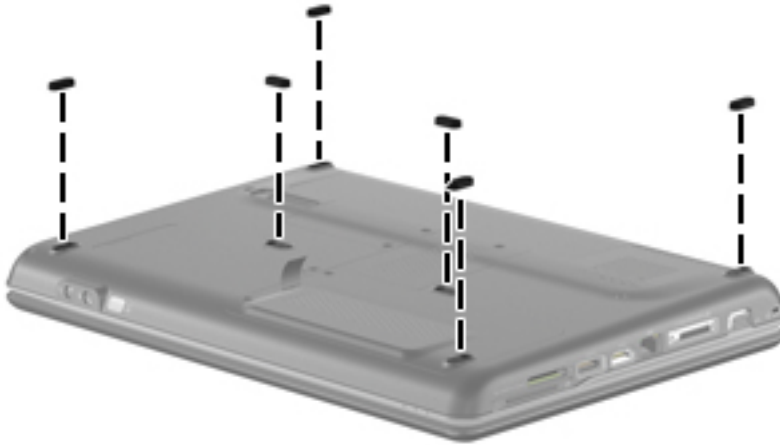
Report the computer serial number to HP when requesting information or ordering spare parts. The serial number is located on the bottom of the computer.



Computer feet

Description	Spare part number
Rubber Feet Kit	486863-001

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



Battery

Description	Spare part number
12-cell, 8.80-Ah Li-ion battery	484172-001
6-cell, 2.55-Ah Li-ion battery	484171-001
6-cell, 2.20-Ah Li-ion battery	482186-003

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.
2. Slide the battery release latch (1) to release the battery.
3. Pivot the battery (2) upward and lift it out of the computer (3).



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

Optical drive



NOTE: All optical drive spare part kits include an optical drive bezel.

Description	Spare part number
For use in computer models with Intel processors:	
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	482178-001
Bezel for DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe (includes mounting hardware)	488212-001
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	482176-001
Bezel for DVD±RW and CD-RW Super Multi Double-Layer Combo Drive (includes mounting hardware)	488211-001
Blu-ray ROM DVD±R/RW SuperMulti DL Drive	482182-001
Bezel for Blu-ray ROM DVD±R/RW SuperMulti DL Drive (includes mounting hardware)	488213-001
For use in computer models with AMD processors:	
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	482178-002
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	482176-002
Blu-ray ROM DVD±R/RW SuperMulti DL Drive	482182-002

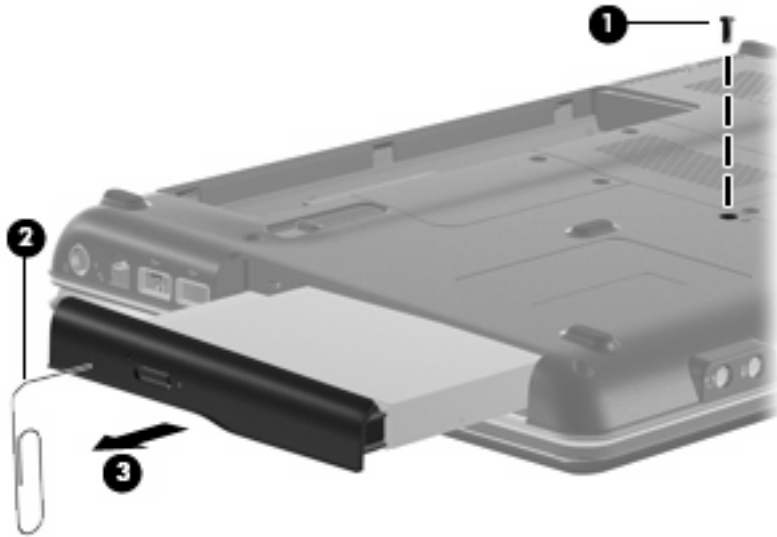
Before removing the optical drive, follow these steps:

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 43](#)).

Remove the optical drive:

1. Position the computer with the right side toward you.
2. Remove the Phillips PM2.5×6.0 screw **(1)** that secures the optical drive to the computer.
3. Insert a thin tool, such as a paper clip **(2)**, into the release access. (The optical drive media tray is partially ejected from the optical drive.)

4. Use the media tray frame to remove the optical drive (3).




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



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

Hard drive

 **NOTE:** All hard drive spare part kits include a hard drive bracket.

Description	Spare part number
For use in computer models with Intel processors:	
500-GB, 5400-rpm	497775-001
400-GB, 5400-rpm	497774-001
320-GB, 5400-rpm	459611-005
250-GB, 5400-rpm	454605-003
160-GB, 5400-rpm	454925-003
120-GB, 5400-rpm	454924-003
For use in computer models with AMD processors:	
500-GB, 5400-rpm	497184-001
400-GB, 5400-rpm	499993-001
320-GB, 5400-rpm	459611-004
250-GB, 5400-rpm	454605-002
160-GB, 5400-rpm	454925-002
120-GB, 5400-rpm	454924-002
Hard drive hardware kit (contains screws and hard drive bracket; not illustrated)	482158-001

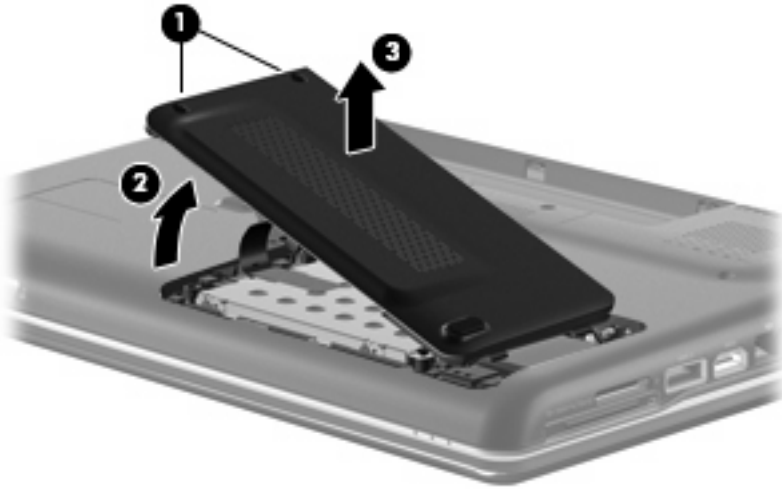
Before removing the hard drive, follow these steps:

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 43](#)).

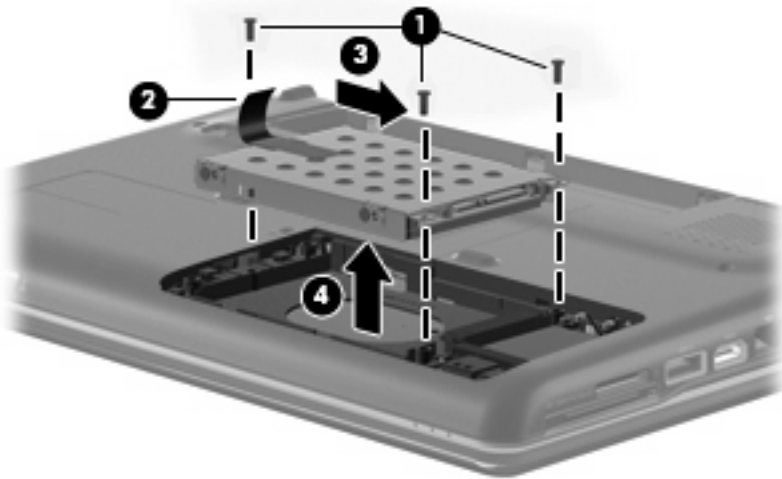
Remove the hard drive:

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

3. Lift the left side of the hard drive cover (2), swing it to right, and remove the cover (3). The hard drive cover is included in the Plastics Kit, spare part number 486862-001.

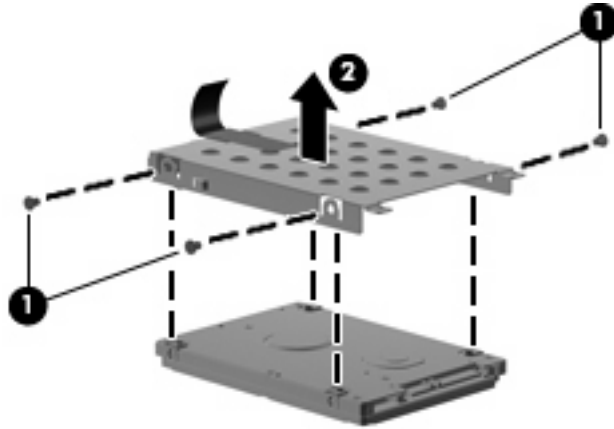


4. Remove the three Phillips PM2.0×4.0 screws (1) that secure the hard drive to the computer.
5. Use the Mylar tab (2) to slide the hard drive (3) until it disconnects from the connector, and then lift the hard drive up and out of the computer (4).



6. If it is necessary to replace the hard drive bracket, remove the four Phillips PM3.0×4.0 screws (1) that secure the hard drive bracket to the hard drive.

7. Lift the bracket (2) straight up to remove it from the hard drive.



Reverse this procedure to reassemble and install the hard drive.

WLAN module

Description	Spare part number
WLAN modules:	
Intel WiFi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions	480985-001
Intel WiFi Link 5100 802.11a/b/g WLAN module for use in all countries and regions	482957-001
Broadcom 4321 Wi-Fi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bermuda, Bolivia, Bosnia & Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, the Ivory Coast, Jamaica, Jordan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, 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, Puerto Rico, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	453730-002
Broadcom 4322 802.11a/b/g/n 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	487330-001
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, the People's Republic of China, 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-Bissa, 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, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	487330-002
Broadcom BCM4312 WLAN b/g modules:	

Description	Spare part number
For use in Canada, Cayman Islands, Guam, Puerto Rico, the United States, and the Virgin Islands	459263-001
For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia & Herzegovina, Botswana, Brazil, Brunei, Bulgaria, Burkina, Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Zaire, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Martinique, British Virgin Islands, French Guiana, Guadeloupe, Nether Antilles, Aruba, Bermuda, Syria, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, East Timor, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe	459263-002

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 43](#)).
5. Remove the hard drive cover (see [Hard drive on page 46](#)).

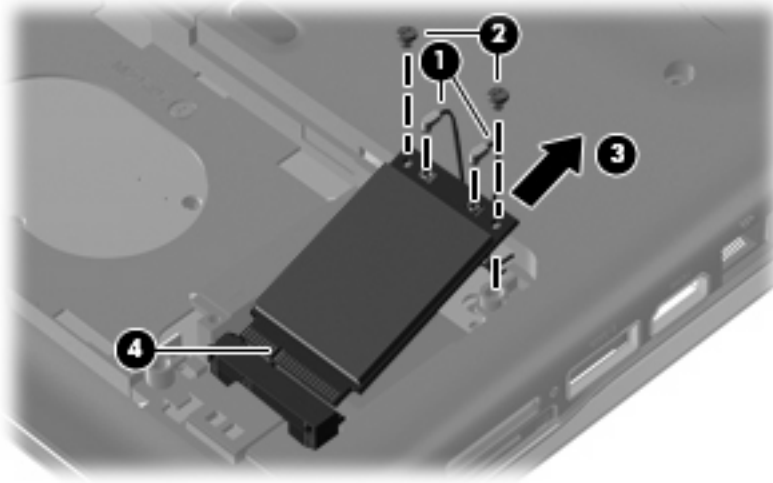
Remove the WLAN module:

1. Position the computer with the front toward you.
2. Disconnect the two WLAN antenna cables **(1)** from the WLAN module.
3. Remove the two Phillips PM2.0×3.0 screws **(2)** that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)

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


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

📄 **NOTE:** WLAN modules are designed with a notch (4) to prevent incorrect insertion into the WLAN module slot.



Reverse this procedure to install a WLAN module.

RTC battery

 **NOTE:** Removing the RTC battery and leaving it uninstalled for 5 or more minutes causes all passwords and CMOS settings to be cleared.

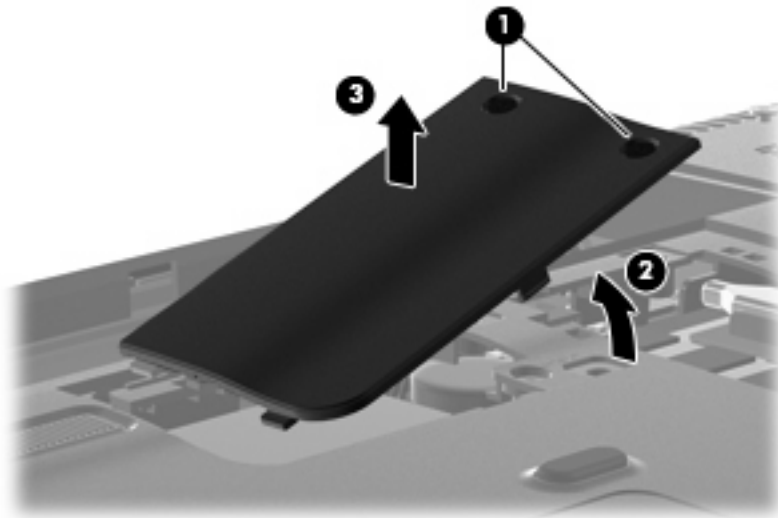
Description	Spare part number
RTC battery (includes 2-sided tape)	486835-001

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 43](#)).

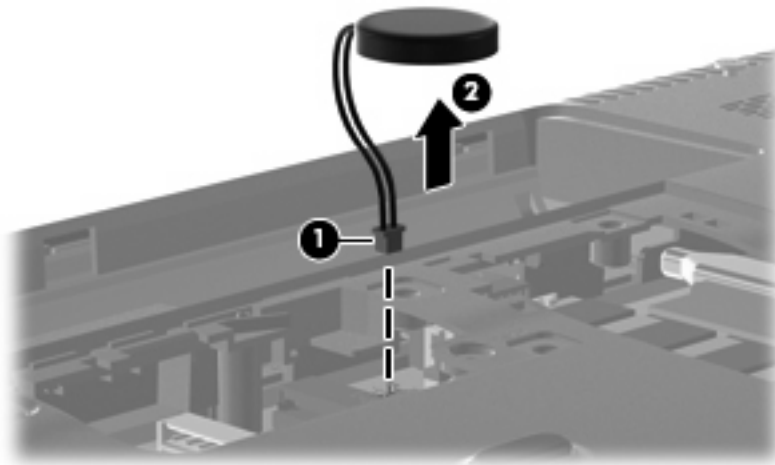
Remove the RTC battery:

1. Remove the two Phillips PM2.5×6.0 screws (1) that secure the RTC battery compartment cover to the computer.
2. Lift the right side of the cover (2), swing it to left, and remove the cover (3). The RTC battery compartment cover is included in the Plastics Kit, spare part number 486862-001.



3. Disconnect the RTC battery cable (1) from the system board.

4. Remove the RTC battery (2).



Reverse this procedure to install the RTC battery.

Memory module

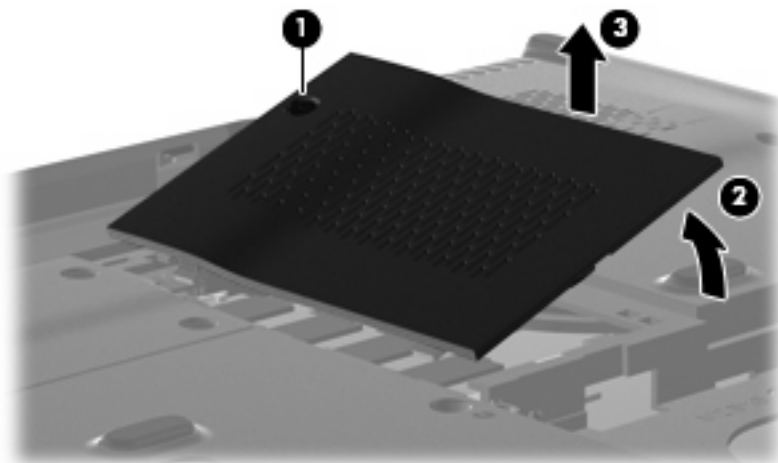
Description	Spare part number
For use in computer models with Intel processors:	
2048-MB (800-MHz, PC2-6400, 1-DIMM)	482169-001
1024-MB (800-MHz, PC2-6400, 1-DIMM)	482168-001
512-MB (800-MHz, PC2-6400, 1-DIMM)	482167-001
For use in computer models with AMD processors:	
2048-MB (800-MHz, PC2-6400, 1-DIMM)	482169-002
1024-MB (800-MHz, PC2-6400, 1-DIMM)	482168-002
512-MB (800-MHz, PC2-6400, 1-DIMM)	482167-002

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 43](#)).

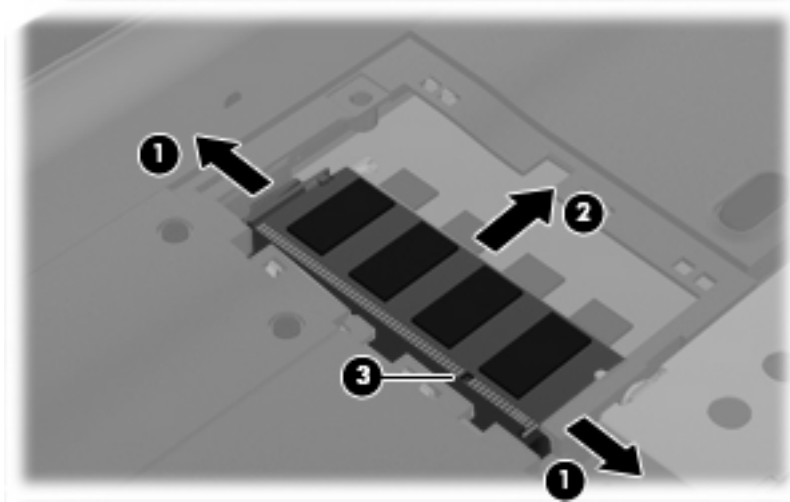
Remove the memory module:

1. Position the computer with the front toward you.
2. Loosen the Phillips PM2.5×6.0 captive screw (1) that secures the memory module compartment cover to the computer.
3. Lift the right side of the cover (2), swing it to the left, and lift the cover off the computer (3). The memory module compartment cover is included in the Plastics Kit, spare part number 486862-001.



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

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



Reverse this procedure to install a memory module.

Keyboard

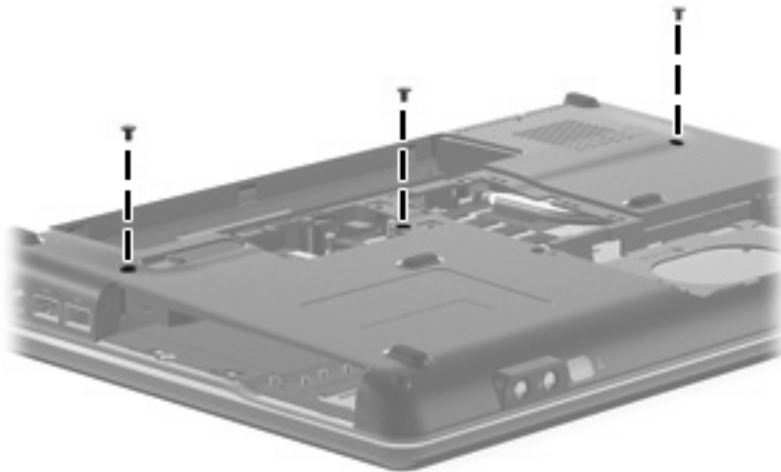
For use in:	Spare part number	For use in:	Spare part number
Canadian French	486904-121	Taiwan	486904-AB1
Latin America	486904-161	Thailand	486904-281
South Korea	486904-AD1	The United States	486904-001

Before removing the keyboard, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 43](#)).
5. Remove the RTC battery compartment cover (see [RTC battery on page 52](#)).

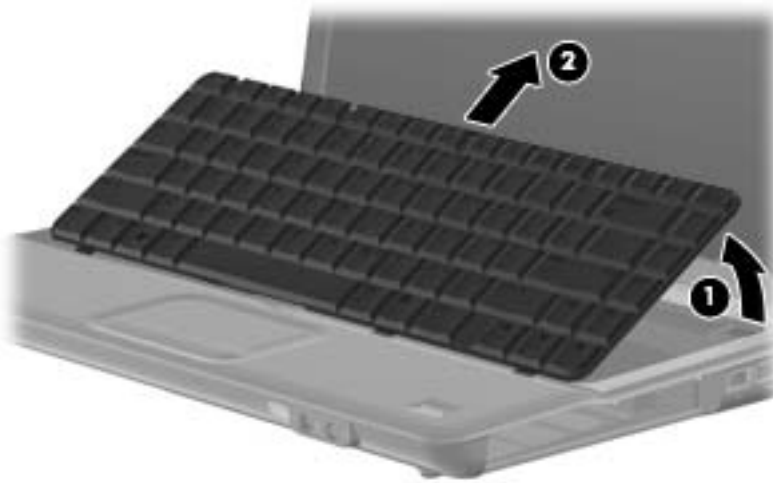
Remove the keyboard:

1. Turn the computer upside down, with the front toward you.
2. Remove the three Phillips PM2.5×17.0 screws that secure the keyboard to the computer.

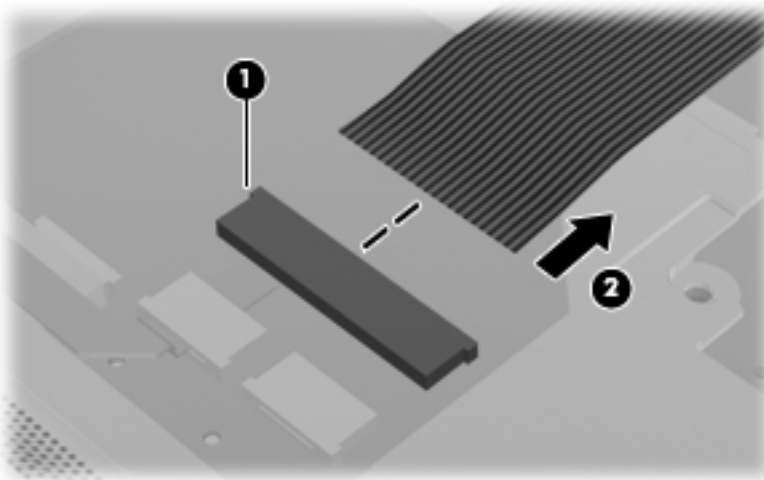


3. Turn the computer display-side up, with the front toward you.
4. Open the computer as far as possible.
5. Release the top edge of the keyboard by lifting it up to disengage the keyboard from the tabs on the switch cover.
6. Lift the top edge of the keyboard until it rests at an angle **(1)**.

7. Lift the keyboard **(2)** up until the tabs on the bottom of the keyboard are clear of the switch cover.



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



9. Remove the keyboard.

Reverse this procedure to install the keyboard.

Switch cover

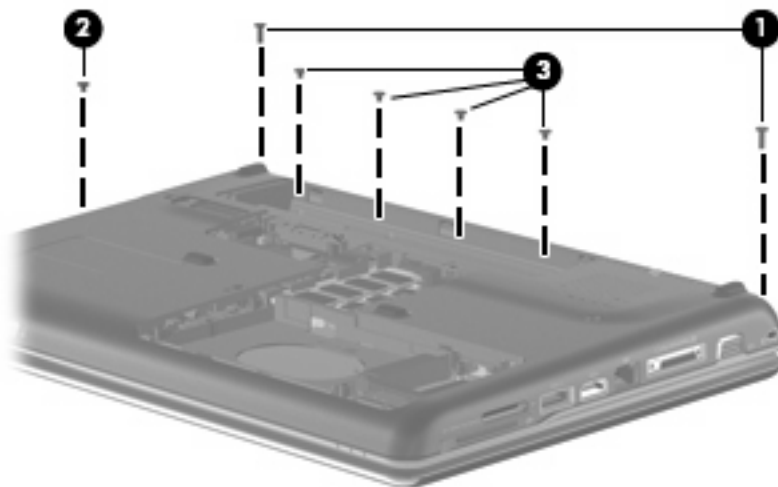
Description	Spare part number
Switch cover (includes power button board and cable, volume/LED board, and LED cover)	486871-001

Before removing the switch 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 following components:
 - a. Battery (see [Battery on page 43](#)).
 - b. Optical drive (see [Optical drive on page 44](#)).
 - c. Keyboard (see [Keyboard on page 56](#)).

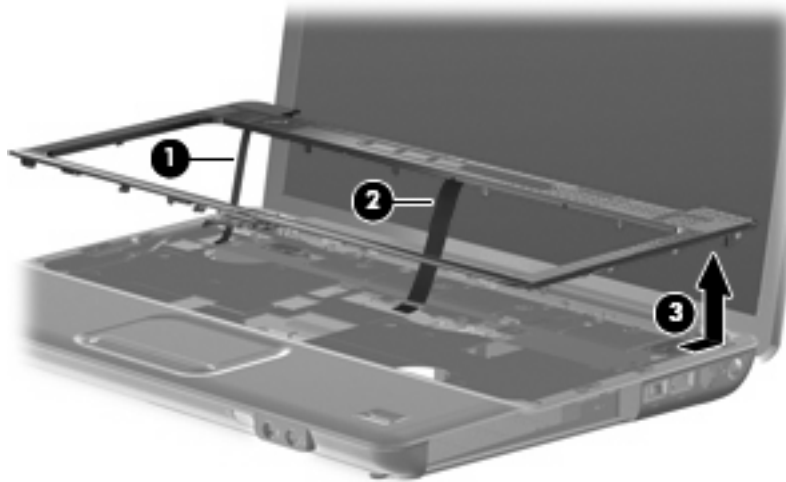
Remove the switch cover:

1. Turn the computer upside down, with the rear toward you.
2. Remove the two Phillips PM2.5×10.0 screws (1), the Phillips PM2.0x2.0 broad head screw (2) from the optical drive bay, and the four Phillips PM2.0x4.0 screws (3) from the battery bay that secure the switch cover to the computer.



3. Turn the computer display-side up, with the front toward you.
4. Open the computer as far as possible.
5. Release the ZIF connector to which the power button board cable (1) is connected and disconnect the cable from the system board.

6. Release the ZIF connector to which the volume board cable (2) is connected and disconnect the cable from the system board.
7. Lift the front edge of the switch cover to disengage it from the computer, pull the switch cover toward the display until the light pipe on the front of the switch cover clears the top cover, and then lift the cover up and out of the computer (3).



Reverse this procedure to install the switch cover.

Speaker assembly

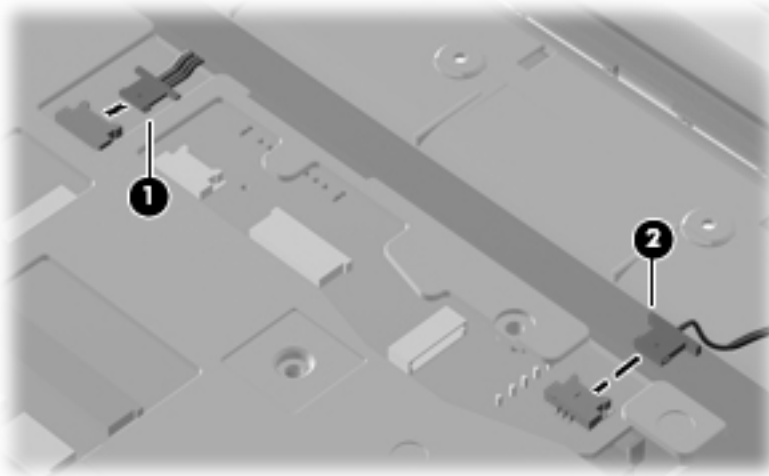
Description	Spare part number
Speaker assembly	486865-001

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 43](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 44](#))
 - b. Keyboard (see [Keyboard on page 56](#))
 - c. Switch cover (see [Switch cover on page 58](#))

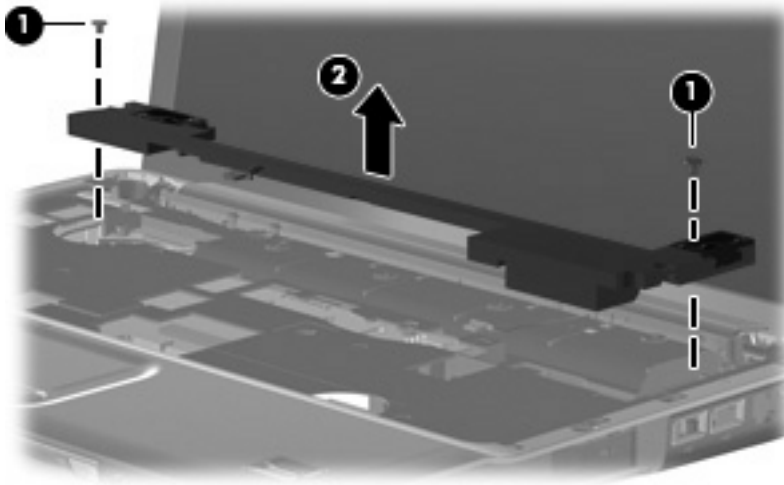
Remove the speaker assembly:

1. Disconnect the speaker cable **(1)** from the system board.
2. Disconnect the num lock cable **(2)** from the system board.



3. Remove the two Phillips PM2.5×4.0 screws **(1)** that secure the speaker assembly to the computer.

4. Lift the speaker assembly (2) straight up to remove it from the computer.



Reverse this procedure to install the speaker assembly.

Display assembly

Description	Spare part number
14.1-inch, WXGA, BrightView display assembly for use only in computer models with a camera module (includes microphones)	486728-001
14.1-inch, WXGA, BrightView display assembly for use only in computer models without a camera module (includes microphones)	486729-001

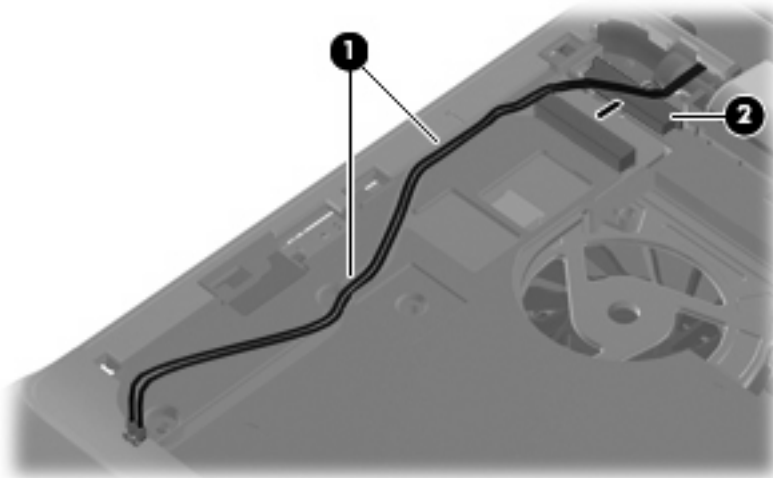
Before removing the display assembly, follow these steps:

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 43](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [WLAN module on page 49](#)).
6. Remove the following components:
 - a. Keyboard (see [Keyboard on page 56](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Switch cover (see [Switch cover on page 58](#))

Remove the display assembly:

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

4. Disconnect the display panel cable (2).



△ **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.

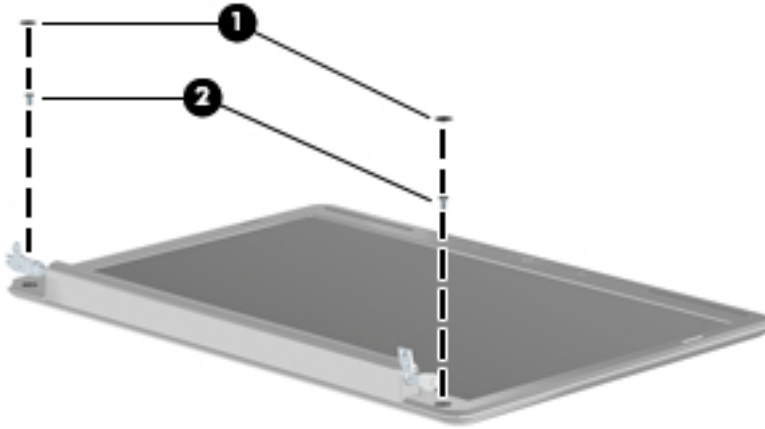
5. Remove the four black Phillips PM2.5×6.0 screws (1) that secure the display assembly to the computer.
6. Remove the display assembly (2).



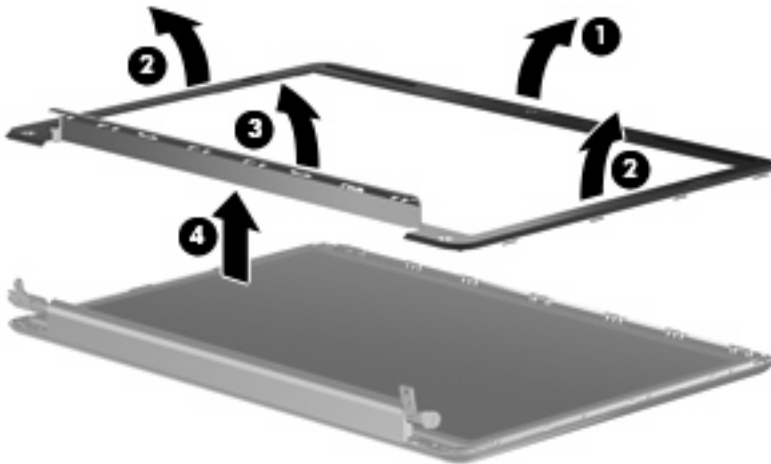
7. If it is necessary to replace any of the display assembly internal components, remove the following screw covers and screws. The display rubber screw covers are included in the Rubber Display Kit, spare part number 486731-001.

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

(2) Two Phillips PM2.5×6.0 screws

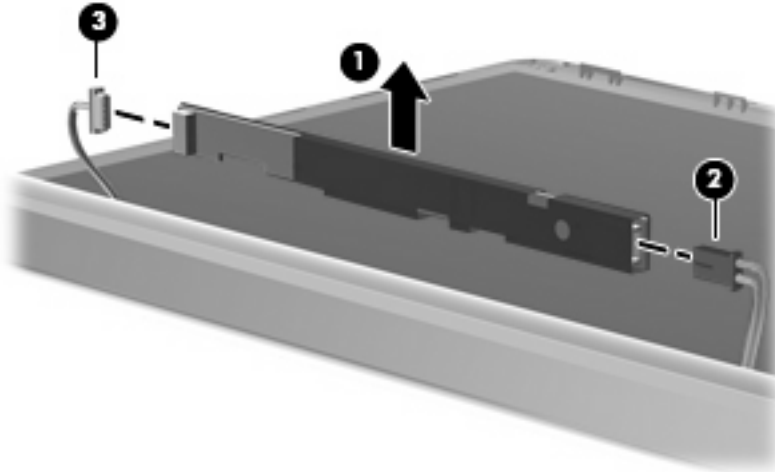


8. Flex the top side (1), the left and right sides (2), and the bottom (3) of the display bezel until the bezel disengages from the display enclosure.
9. Remove the display bezel (4). The display bezel is available using spare part number 486733-001 for computers with a camera module, 486739-001 for computers without camera module.

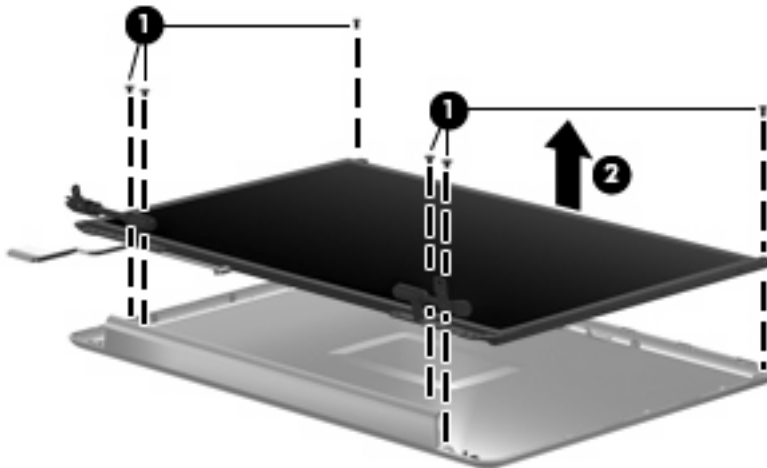


10. If it is necessary to replace the inverter, release the inverter (1) from the clips in the display enclosure as far as the display panel cable and the backlight cable will allow.

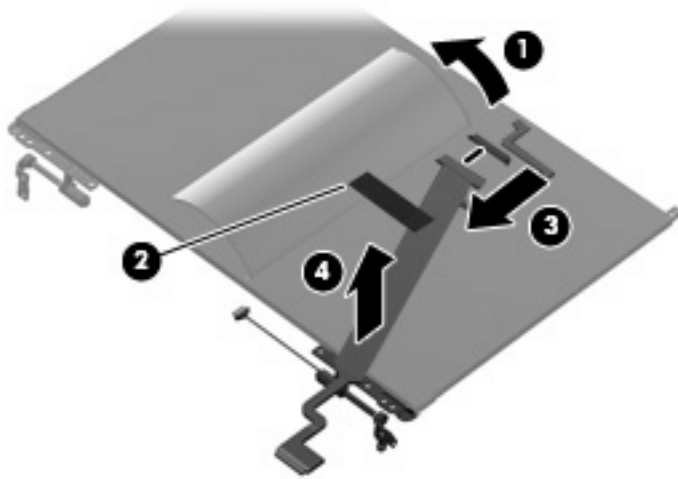
11. Disconnect the display panel cable (2) and the backlight cable (3) from the display inverter. The display inverter is available using spare part number 486736-001.



12. Remove the inverter.
13. If it is necessary to replace the display panel, remove the six black Phillips PM2.5×5.0 screws (1) that secure the display panel to the display enclosure, and then lift the panel from the enclosure (2). The display panel is available using the spare part number 483261-001 for computers with Intel processors, 497182-001 for computers with AMD processors.

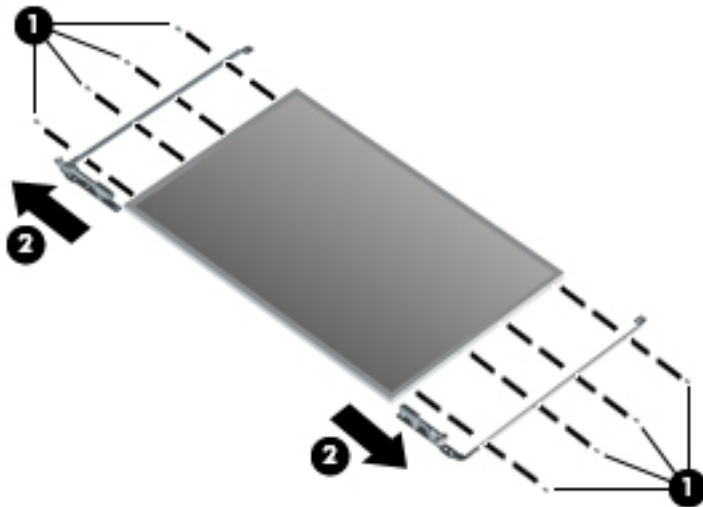


14. If it is necessary to replace the display cable, follow these steps:
 - a. Peel back the plastic that covers the cable (1).
 - b. Remove the tape that secures the cable to the display (2).
 - c. Unplug the cable from the display (3).
 - d. Remove the cable from the display (4).



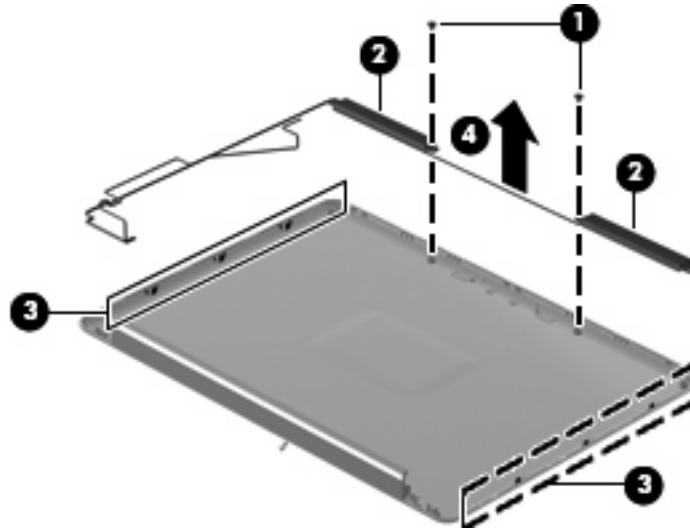
The display cable is available using spare part number 486735-001.

15. If it is necessary to replace the display hinges, remove the four silver Phillips PM2.0×3.0 screws (1) that secure each hinge to the display.
16. Remove the display hinges (2) from the display. The display hinges are available using spare part number 486737-001.



17. If it is necessary to replace the wireless antenna transceivers and cables, remove the Phillips PM2.5×4.0 screw (1) that secures each transceiver to the display enclosure.
18. Detach the wireless antenna transceivers (2) from the display enclosure.
19. Remove the wireless antenna cables from the clips (3) built into the display enclosure.

20. Remove the wireless antenna transceivers and cables (4) from the display enclosure. The wireless antenna transceivers and cables are included in the Wireless Antenna Kit, spare part number 489066-001.



Reverse this procedure to reassemble and install the display assembly.

Camera/microphone module

If it has been determined that the camera/microphone module is the component that must be replaced to complete the computer repair, the display assembly does not have to be removed. Follow the procedures in this section to replace the camera module. For information on replacing the display assembly and other display assembly internal components, see [Display assembly on page 62](#).

Description	Spare part number
Camera/microphone module	486734-001

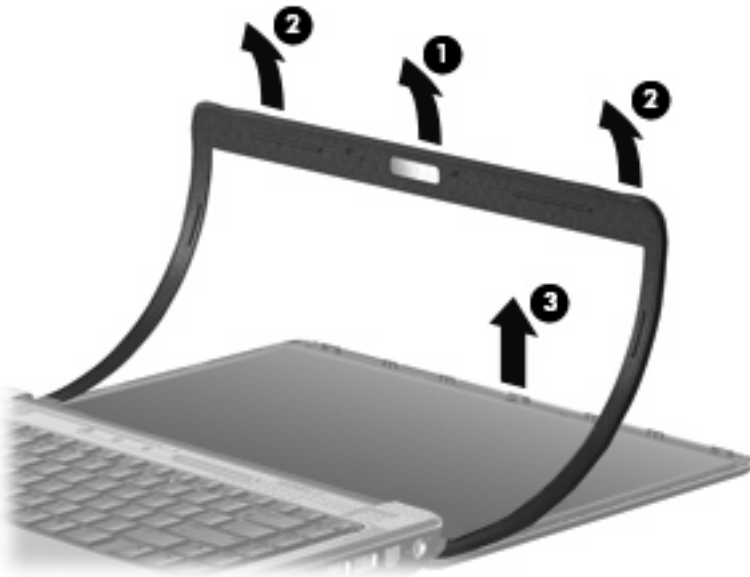
Before removing the camera/microphone module, follow these steps:

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 43](#)).

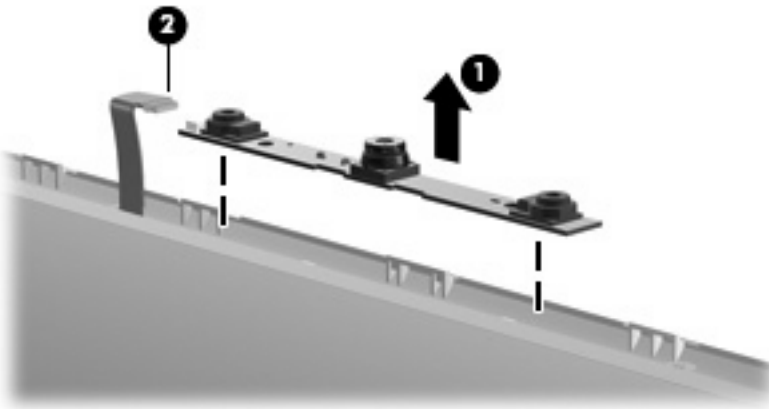
Remove the camera/microphone module:

1. Turn the computer display-side up, with the front toward you.
2. Open the computer as far as it will open.
3. Flex the inside edges of the left and right sides, and then pull outward on the middle of the top edge (1) of the display bezel until the top middle of the bezel disengages from the display enclosure.

4. Pull outward on the left and right of the top edge (2) of the display bezel until the bezel disengages from the display enclosure.
5. Release the display bezel top edge (3).



6. Release the camera module assembly (1) from the display enclosure as far as the camera/microphone module cable allows.
7. Disconnect the camera module cable (2) from the camera/microphone module.



8. Remove the camera/microphone module from the computer.
Reverse this procedure to install the camera/microphone module.

Top cover

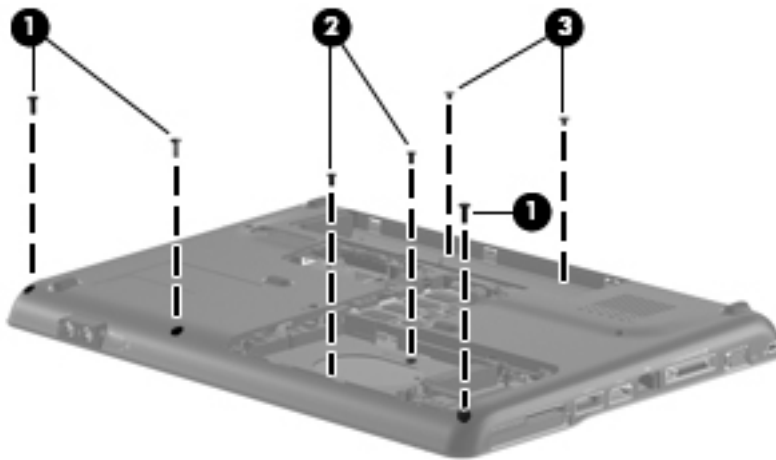
Description	Spare part number
Top cover (includes TouchPad and cable)	
For use only in computer models with a fingerprint reader	486860-001
For use only in computer models without a fingerprint reader	486861-001

Before removing the top cover, follow these steps:

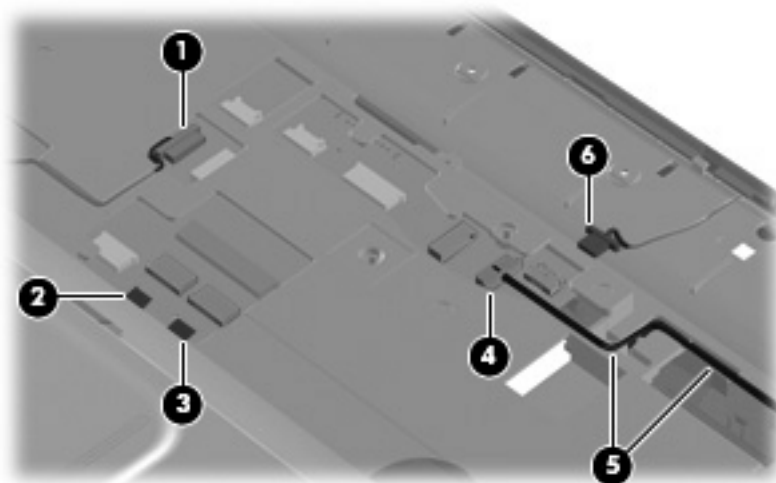
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))

Remove the top cover:

1. Turn the computer upside down, with the front toward you.
2. Remove the seven screws that secure the top cover to the computer.
 - (1) Three Phillips PM2.5×10.0 screws
 - (2) Two Phillips PM2.5×5.0 screws
 - (3) Two Phillips PM2.0×3.0 screws

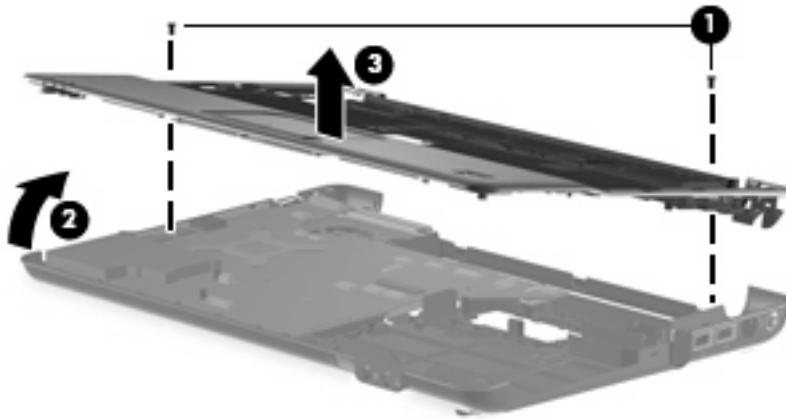


3. Turn the computer right-side up, with the front toward you.
4. Disconnect the following cables from the system board:
 - Bluetooth module cable (1)
 - TouchPad cable (2)
 - Fingerprint reader board cable (if equipped) (3)
 - USB board cable (4) and release from top cover clips (5)
 - Num lock light cable (6)



5. Remove the two Phillips PM2.5×7.0 screws (1) that secure the top cover to the computer.
6. Lift up the rear edge of the top cover until it releases from the base (2).

7. Remove the top cover (3).



Reverse this procedure to install the top cover.

Fingerprint reader board

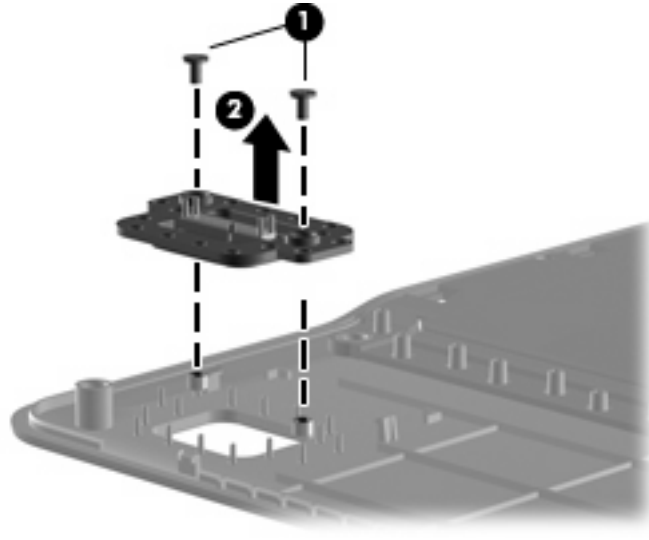
Description	Spare part number
Fingerprint reader board	486828-001

Before removing the fingerprint reader 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 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))

Remove the fingerprint reader board:

1. Position the top cover upside down with the front toward you.
2. Remove the two black Phillips PM2.5×4.0 screws (1) that secure the fingerprint reader board to the computer.
3. Lift the fingerprint reader board from the top cover (2).



Reverse this procedure to install a fingerprint reader board.

TouchPad button board

Description	Spare part number
TouchPad bracket	494962-001
TouchPad button board	494965-001

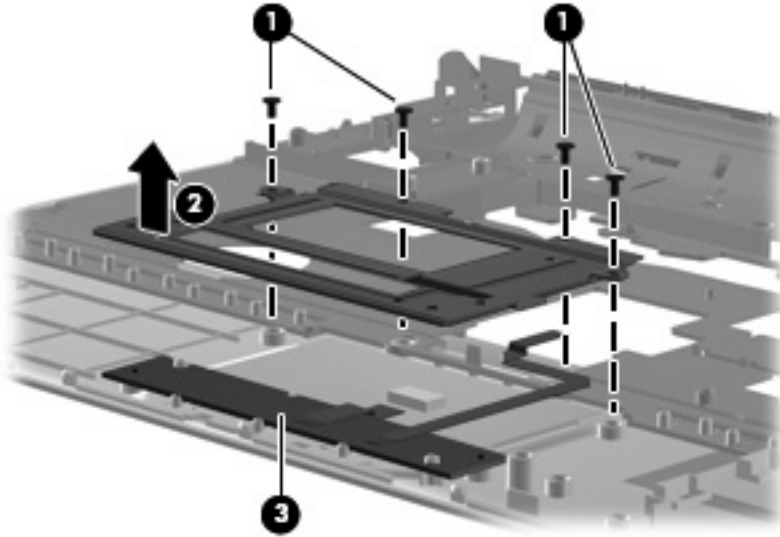
Before removing the TouchPad button board, follow these steps:

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 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))

Remove the TouchPad button board:

1. Turn the top cover upside down with the front toward you.
2. Remove the four Phillips PM2.5×3.0 screws **(1)** that secure the TouchPad assembly to the top cover.
3. Remove the TouchPad bracket **(2)** from the top cover.

4. Remove the TouchPad button board (3) from the TouchPad bracket.



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

Bluetooth module

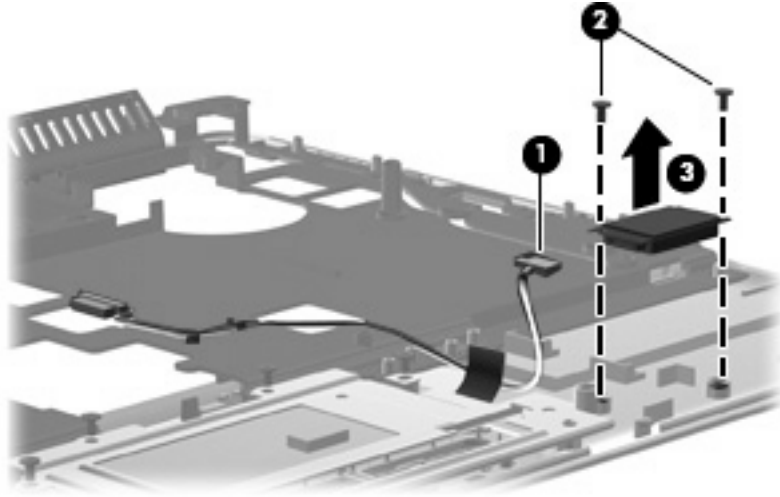
Description	Spare part number
Bluetooth module	483113-001

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 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))

Remove the Bluetooth module:

1. Turn the top cover upside down with the front toward you.
2. Disconnect the Bluetooth module cable (1) from the system board.
3. Remove the two silver PM2.0x3.0 screws (2) that secure the Bluetooth module to the top cover.
4. Remove the Bluetooth module (3) from the top cover.



Reverse the above procedure to install the Bluetooth module.

Modem module

Description	Spare part number
Modem module for use in all countries and regions except for Australia and New Zealand (includes modem module cable)	461749-001
Modem module for use only in Australia and New Zealand (includes modem module cable)	461749-011
Modem module cable (includes RJ-11 connector)	494981-001

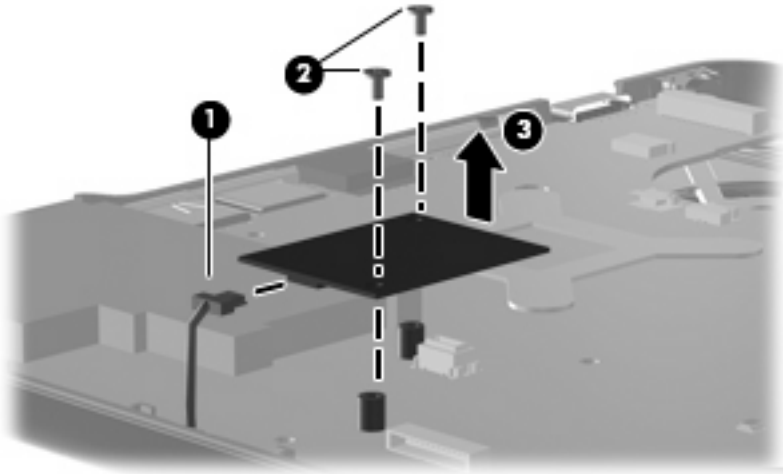
Before removing the modem module, follow these steps:

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 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))

Remove the modem module:

1. Turn the computer upright with the front toward you.
2. Disconnect the modem module cable **(1)** from the modem module.
3. Remove the two Phillips PM2.0×3.0 screws **(2)** that secure the modem module to the system board.

4. Lift up on the front of the modem module (3) to disconnect it from the system board.



5. Remove the modem module.

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

Audio board

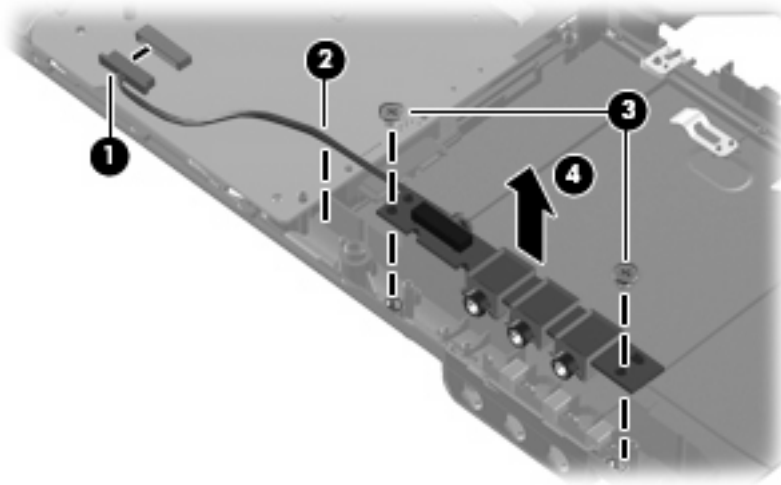
Description	Spare part number
Audio board (includes audio connectors, infrared lens, and audio board cable)	486866-001

Before removing the audio 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 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))

Remove the audio board:

1. Turn the computer upright with the front toward you.
2. Disconnect the audio board cable **(1)** from the system board.
3. Remove the cable from between the components that secure it in the base **(2)**.
4. Remove the two Phillips PM2.5×3.0 screws **(3)** that secure the audio board to the computer.
5. Lift the rear edge of the audio board and swing it forward until the audio connectors disengage from the base enclosure.
6. Remove the audio board **(4)**.



Reverse the above procedure to install the audio board.

USB board

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

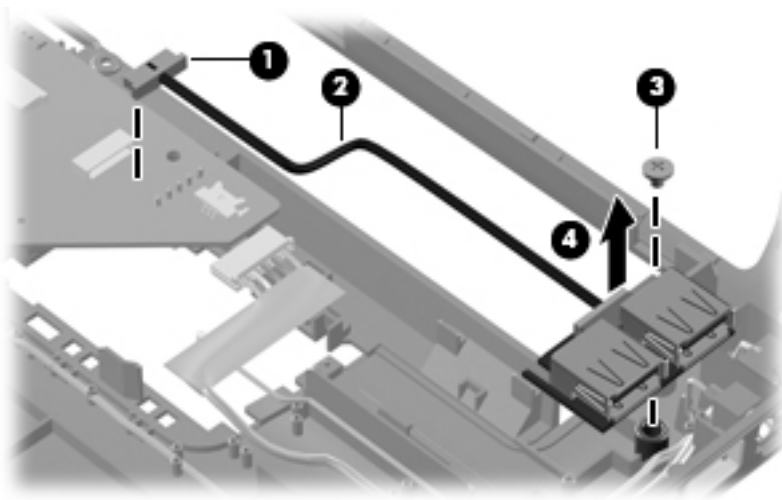
Before removing the USB board, follow these steps:

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 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))

Remove the USB board:

1. Turn the computer upright with the right side toward you.
2. Disconnect the USB board cable (1) from the system board. The USB board cable is available as spare part number 486842-001.
3. Remove the cable from the base enclosure clips (2).
4. Remove the Phillips PM2.5×4.0 screw (3) that secures the USB board to the computer.
5. Lift the USB board (4) straight up to remove it from the computer.



Reverse this procedure to install the USB board.

Power connector cable

Description	Spare part number
Power connector cable (includes power connector)	486864-001

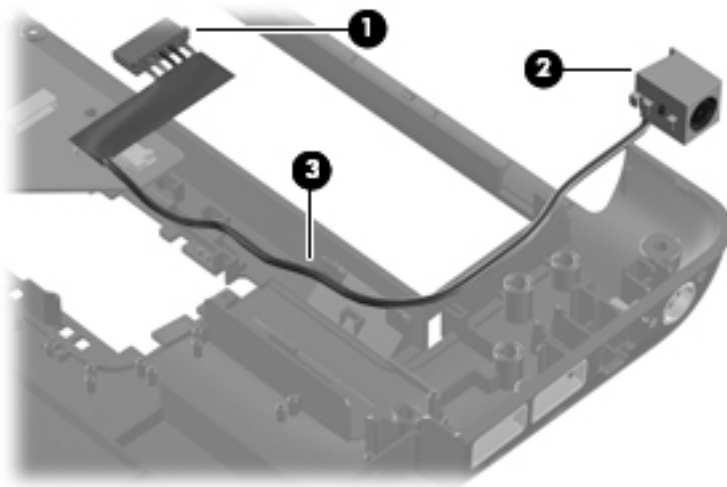
Before removing the power connector cable, follow these steps:

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 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))

Remove the power connector cable:

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

4. Remove the cable from the base enclosure clips (3).



Reverse this procedure to install the power connector cable.

System board

Description	Spare part number
System board for use in computer models equipped with discrete graphics subsystems (includes thermal material)	486725-001
System board for use in computer models equipped with UMA graphics subsystems (includes thermal material)	486726-001
System board for use only in computer models with AMD processors (includes thermal material)	492256-001

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

- RTC battery (see [RTC battery on page 52](#))
- Memory modules (see [Memory module on page 54](#))
- WLAN module (see [WLAN module on page 49](#))
- Modem module (see [Modem module on page 76](#))

Before removing the system board, follow these steps:

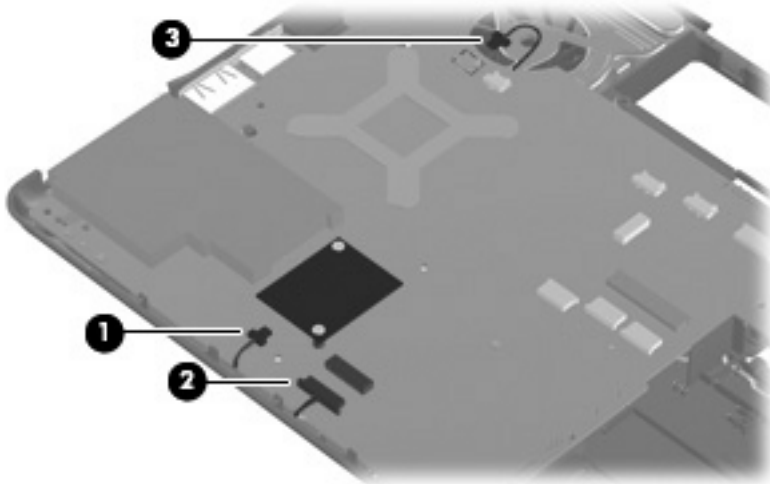
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))

Remove the system board:

1. Turn the computer upright with the right side toward you.

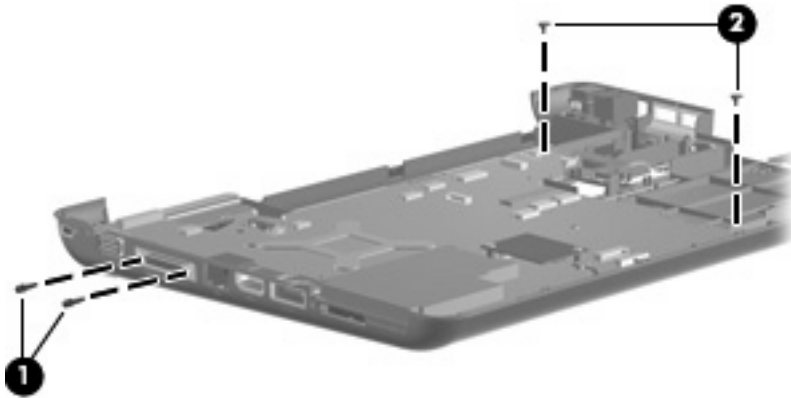
2. Disconnect the following cables from the system board (if still connected):

- (1) Modem cable
- (2) Audio board cable
- (3) Fan cable



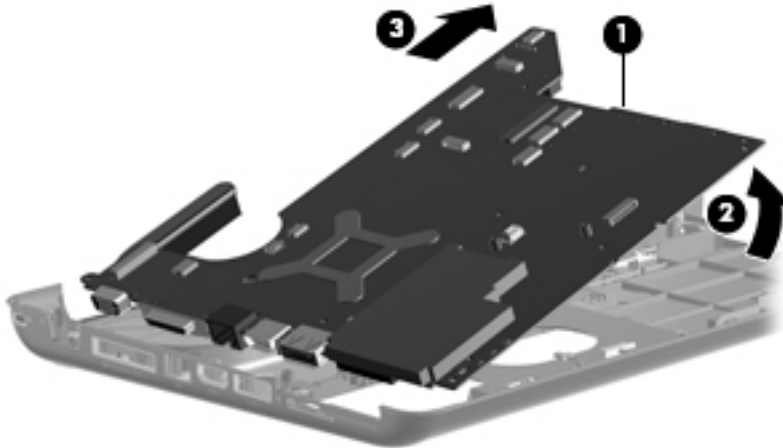
3. Remove the two silver captive Phillips PM1.5×9.0 screws on the expansion connector (1).

4. Remove the two black Phillips PM2.5×6.0 screws that secure the system board to the computer (2).

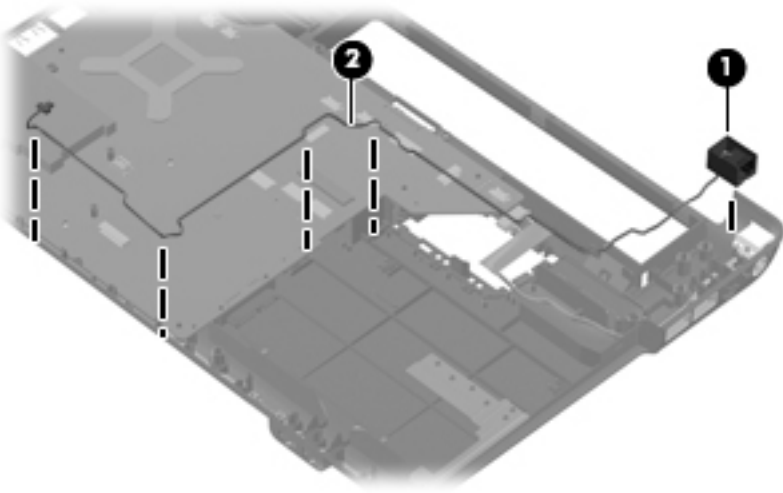


5. Lift the right side of the system board (1) until it rests at an angle (2).

6. Release the system board by sliding it to the right at an angle (3) until the connectors on the left side of the system board disengage from the base enclosure, and then remove the system board.



7. If it is necessary to replace the modem module cable, remove the RJ-11 connector (1) from the clip built into the base enclosure.
8. Remove the modem module cable (2) from the routing channel built into the base enclosure. The modem module cable is available using spare part number 494981-001.




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

- Fan/heat sink assembly (see [Fan/heat sink assembly on page 85](#))
- Processor (see [Processor on page 88](#))

Reverse the preceding procedure to install the system board.

Fan/heat sink assembly

Description	Spare part number
Fan/heat sink assembly for use in computer models with Intel processors with UMA graphics subsystems (includes thermal material)	486838-001
Fan/heat sink assembly for use in computer models with Intel processors with discrete graphics subsystems (includes thermal material)	486839-001
Fan/heat sink assembly for use in computer models with AMD processors (includes thermal material)	492260-001


 **NOTE:** To properly ventilate the computer, allow at least a 7.6-cm (3-inch) 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 fan/heat sink assembly, follow these steps:

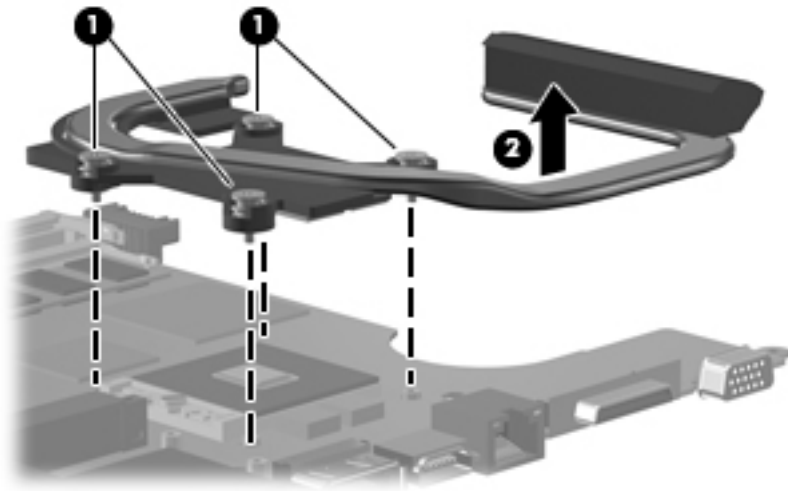
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))
 - h. System board (see [System board on page 82](#))

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

1. Turn the system board upside down with the external monitor port toward you.
2. Loosen the four Phillips PM2.0×10.0 captive screws **(1)** that secure the fan/heat sink assembly to the system board.

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


3. Remove the fan/heat sink assembly (2).

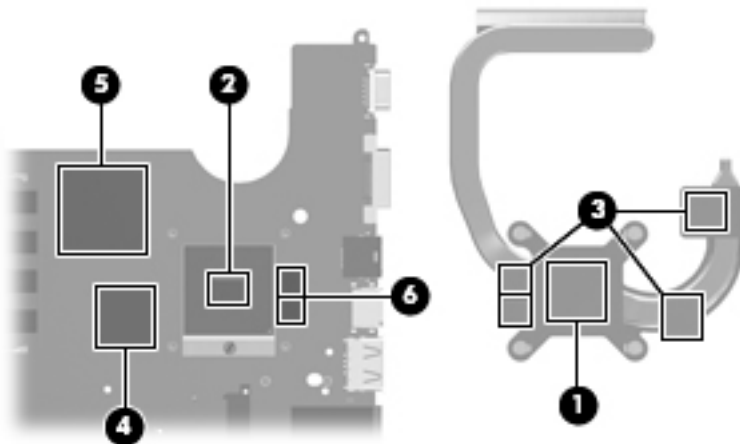


The thermal material must be thoroughly cleaned from the surface of the fan/heat sink assembly (1) and the processor (2) each time the fan/heat sink assembly is removed. Thermal pads and thermal paste must be installed on all surfaces before the fan/heat sink assembly is reinstalled.

The following locations require thermal pads on systems with discrete graphics subsystems:

- (3) Four locations on heat sink
- (4) Northbridge chip
- (5) nVidia video chip
- (6) Capacitors

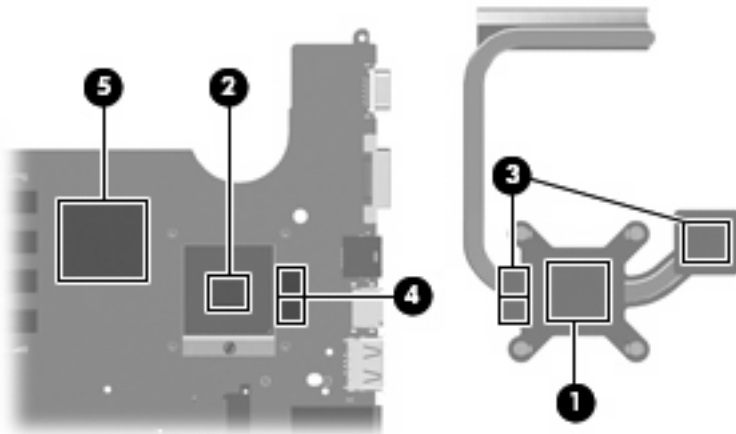
 **NOTE:** Thermal pads and thermal paste are included with all fan/heat sink assembly, system board, and processor spare part kits.



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


The following locations require thermal pads on systems with UMA graphics subsystems:

- (3) Four locations on heat sink
- (4) Capacitors
- (5) Northbridge chip



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

Processor

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


Description	Spare part number
Intel Core Duo processors:	
T9600 (2.80-GHz, 6-MB L2 cache)	486727-001
T9550 (2.66-GHz, 6-MB L2 cache)	507953-001
T9400 (2.53-GHz, 6-MB L2 cache)	483260-001
P8700 (2.53-GHz, 3-MB L2 cache)	507960-001
P8600 (2.40-GHz, 3-MB L2 cache)	483259-001
P8400 (2.26-GHz, 3-MB L2 cache)	483258-001
T7350 (2.00-GHz, 3-MB L2 cache)	491856-001
T7450 (2.13-GHz processor, 3-MB L2 cache)	495640-001
T6400 (2.06 GHz, 3-MB L2 cache)	513592-001
T6600 (2.2 GHz, 3-MB L2 cache)	513593-001
T5900 (2.20-GHz processor, 2-MB L2 cache)	495639-001
T5800 (2.10-GHz, 2-MB L2 cache)	495638-001
Intel Pentium Dual-Core processor:	
Pentium Dual-Core T4200 (2.0-MHz, 4-MB L2 cache)	513599-001
T3400 (2.16-GHz, 1-MB L2 cache)	504784-001
T3200 (2.00-GHz, 1-MB L2 cache)	504783-001
Intel Core Solo processor:	
T1600 (2.17-GHz, 2-MB L2 cache)	497773-001
Intel Celeron processor:	
575 (2.00-GHz, 1-MB L2 cache)	502838-001
AMD processors:	
Turion Ultra ZM-86 2.4-GHz processor (2x1-MB L2 cache)	487345-005
Turion Ultra ZM-84 2.3-GHz processor (2x1-MB L2 cache)	497177-001
Turion Ultra ZM-82 2.2-GHz processor (2x1-MB L2 cache)	487346-005
Turion Ultra ZM-80 2.1-GHz processor (2x1-MB L2 cache)	487347-005
Turion RM-72 2.1-GHz processor (2x512-KB L2 cache)	497178-001
Turion RM-70 2.0-GHz processor (2x512-KB L2 cache)	487348-006
Athlon QL-62 2.0-GHz processor (2x512-KB L2 cache)	497179-001
Athlon QL-60 1.9-GHz processor (2x512-KB L2 cache)	487349-006
Sempron SI-40 2.00-GHz processor (512-KB L2 cache)	487350-004

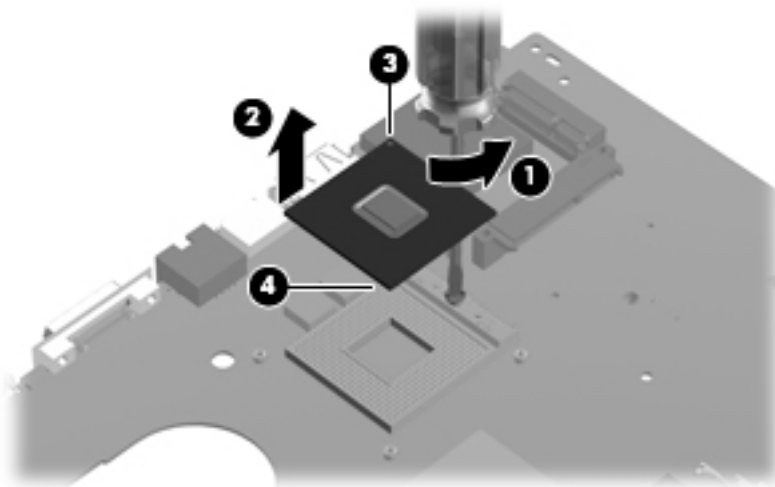
Before removing the processor, follow these steps:

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 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))
 - h. System board (see [System board on page 82](#))
 - i. Fan/heat sink assembly (see [Fan/heat sink assembly on page 85](#))

Remove the processor:

1. Turn the processor locking screw **(1)** one-half turn counterclockwise until you hear a click.
2. Lift the processor **(2)** straight up and remove it.

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



Reverse this procedure to install the processor.

System fan

Description	Spare part number
System fan for use in computer models with Intel or AMD processors and UMA graphics subsystems	486844-001

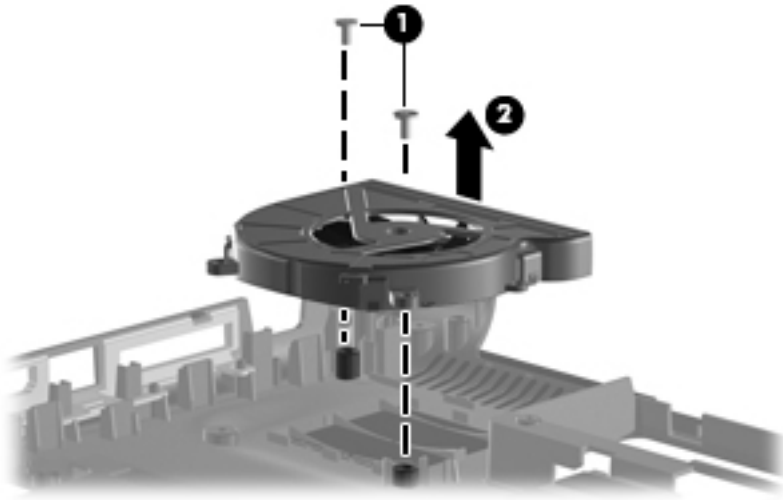
Before removing the system fan, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 43](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 46](#))
 - b. Optical drive (see [Optical drive on page 44](#))
 - c. Keyboard (see [Keyboard on page 56](#))
 - d. Switch cover (see [Switch cover on page 58](#))
 - e. Speaker assembly (see [Speaker assembly on page 60](#))
 - f. Display assembly (see [Display assembly on page 62](#))
 - g. Top cover (see [Top cover on page 69](#))
 - h. System board (see [System board on page 82](#))

Remove the system fan:


1. Position the base enclosure with the front toward you.
2. Remove the two black Phillips PM2.5×6.0 screws (**1**) that secure the system fan to the computer.

3. Lift the system fan from the base enclosure (2).




Reverse this procedure to install a system fan.

5 Setup Utility

 **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.

 **NOTE:** 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**.

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.

 **NOTE:** 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.

 **NOTE:** 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	Enabled/disable Fan Always On. When enabled, the computer fan will always be on.
Boot Options	Set the following boot options: <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:

Select	To do this
	<ul style="list-style-type: none"> ◦ USB Floppy ◦ Internal CD/DVD ROM drive ◦ USB CD/DVD ROM drive ◦ Hard drive ◦ USB Diskette on Key ◦ USB Hard drive ◦ Network adapter

Diagnostics menu

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

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Height (front to back)	3.33 to 3.97 cm	1.31 to 1.56 in
Width	33.40 cm	13.15 in
Depth	23.70 cm	9.33 in
Weight (with optical drive, hard drive, and battery)	2.09 g	4.60 lbs
Input power		
Operating voltage	18.5 V dc —19.0 V dc	
Operating current	3.5 A or 4.74 A	
Temperature		
Operating (not writing to optical disc)	0°C to 35°C	32°F to 95°F
Operating (writing to optical disc)	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft

NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.

14.1-inch, WXGA, BrightView display specifications

	Metric	U.S.
Dimensions		
Height	27.94 cm	11.0 in
Width	20.83 cm	8.2 in
Diagonal	35.56 cm	14.1 in
Number of colors	Up to 16.8 million	
Contrast ratio	250:1 (typical)	
Brightness	180 nits (typical)	
Pixel resolution		
Pitch	0.279 × 0.279 mm	
Format	1280 × 800	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Total power consumption	4 W	
Viewing angle	+/-40° horizontal, +20/-40° vertical (typical)	

Hard drive specifications

	320-GB*	250-GB*	160-GB*	120-GB*	80-GB*
Dimensions					
Height			9.5 mm		
Width			70 mm		
Weight	101 g	102 g	102 g	102 g	102 g
Interface type					
SATA					
Transfer rate					
Synchronous (maximum)	300 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security				
Seek times (typical read, including setting)					
Single track	1.5 ms	3 ms	3 ms	3 ms	3 ms
Average	12 ms	13 ms	13 ms	13 ms	13 ms
Maximum	22 ms	24 ms	24 ms	24 ms	24 ms
Logical blocks	625,142,448	495,702,655	317,249,699	237,937,274	158,624,849
Disk rotational speed	5400 rpm				
Operating temperature	5°C to 55°C (41°F to 131°F)				

NOTE: Certain restrictions and exclusions apply. Consult technical support for details.

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Accessible capacity is less. Actual drive specifications may differ slightly.

	500-GB*	400-GB*
Dimensions		
Height	9.5 mm	9.5 mm
Width	70 mm	70 mm
Weight	102 g	102 g
Interface Type		
SATA		
Synchronous (maximum)	100 MB/sec	100 MB/sec
Security	ATA security	ATA security
Seek times (typical read, including setting)		
Single track	1 ms	1 ms
Average	11 ms	11 ms
Maximum	22 ms	25 ms
Logical blocks	976,773,168	781,422,768
Disk rotational speed	5400 rpm	

Operating temperature5°C to 55°C (41°F to 131°F)

NOTE: Certain restrictions and exclusions apply. Consult technical support for details.

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Accessible capacity is less. Actual drive specifications may differ slightly.

DVD±RW and CD-RW Super Multi Double-Layer Combo Drive specifications

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

Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer (DL) support specifications

Applicable disc	Read:	Write:	
	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM, BD-ROM, BD-RE, BD-R	CD-R and CD-RW DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM	
Access time	CD	DVD	Blu-ray
Random	150 ms	180 ms	300 ms
Cache buffer	8 MB		
Data transfer rate			
24× CD-ROM	3,600 KB/sec		
8× DVD	10,800 KB/sec		
24× CD-R	3,600 KB/sec		
16× CD-RW	2,400 KB/sec		
8× DVD+R	10,800 KB/sec		
4× DVD+RW	5,400 KB/sec		
8× DVD-R	10,800 KB/sec		
4× DVD-RW	5,400 KB/sec		
2.4× DVD+R(9)	2,700 KB/sec		
5× DVD-RAM	6,750 KB/sec		
1× BD-ROM	4,500 KB/sec		
1× BD-R read	4,500 KB/sec		
1× BD-RE read	4,500 KB/sec		
Transfer mode	Multiword DMA Mode		

System DMA specifications

Hardware DMA	System function
DMA0	Not applicable
DMA1*	Not applicable
DMA2*	Not applicable
DMA3	Not applicable
DMA4	Direct memory access controller
DMA5*	Available for PC Card†
DMA6	Not assigned
DMA7	Not assigned

*PC Card controller can use DMA 1, 2, or 5.

†Not assigned for computer models with AMD processors.

System interrupt specifications—Intel processors

Hardware IRQ	System function
IRQ0	System timer
IRQ1	Standard 101-/102-Key or Microsoft® Natural Keyboard
IRQ2	Cascaded
IRQ3	Intel 82801DB/DBM USB2 Enhanced Host Controller—24CD
IRQ4	COM1
IRQ5*	Conexant AC—Link Audio Intel 82801DB/DBM SMBus Controller—24C3 Data Fax Modem with SmartCP
IRQ6	Diskette drive
IRQ7*	Parallel port
IRQ8	System CMOS/real-time clock
IRQ9*	Microsoft ACPI-compliant system
IRQ10*	Intel USB UHCI controller—24C2 Intel 82852/82855 GM/GME Graphic Controller Realtek RTL8139 Family PCI Fast Ethernet Controller
IRQ11	Intel USB EHCI controller—24CD Intel USB UHCI controller—24C4 Intel USB UHCI controller—24C7 Intel Pro/Wireless 2200BG TI OHCI 1394 host controller TI PCI1410 CardBus controller
IRQ12	Synaptics PS/2 TouchPad
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE channel

*Default configuration; audio possible configurations are IRQ5, IRQ7, IRQ9, IRQ10, or none.

NOTE: PC Cards may assert IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, or IRQ15. Either the infrared or the serial port may assert IRQ3 or IRQ4.

System interrupt specifications—AMD processors

Hardware IRQ	System function
ISA0	High precision event timer
ISA1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
ISA8	High precision event timer
ISA12	Alps Pointing-device (2 way)
ISA13	Numeric data processor
ISA14	ATA Channel 0
ISA15	ATA Channel 1
PCI5	Ricoh OHCI Compliant IEEE 1394 Host Controller
PCI7	Ricoh Memory Stick Controller
PCI7	Ricoh SD/MMC Host Controller
PCI7	Ricoh xD-Picture Card Controller
PCI7	SDA Standard Compliant SD Host Controller
PC10	nVidia nForce PCI System Management
PC16	Standard Enhanced PCI to USB Host Controller
PC16	Standard OpenHCD USB Host Controller
PC17	Standard Enhanced PCI to USB Host Controller
PC17	Standard OpenHCD USB Host Controller
PC18	nVidia nForce PCI System Management
PC19	Broadcom 802.11b/g WLAN
PCI-2	PCI standard PCI-to-PCI bridge
PC21	High Definition Audio Controller
PC22	Standard Dual Channel PCI IDE Controller
PC23	nVidia MCP67M
PC-3	PCI standard PCI-to-PCI bridge
PC-4	nVidia nForce Networking Controller

System I/O address specifications—Intel processors

I/O address (hex)	System function (shipping configuration)
000 - 00F	DMA controller no. 1
010 - 01F	Unused
020 - 021	Interrupt controller no. 1
022 - 024	Opti chipset configuration registers
025 - 03F	Unused
02E - 02F	87334 "Super I/O" configuration for CPU
040 - 05F	Counter/timer registers
044 - 05F	Unused
060	Keyboard controller
061	Port B
062 - 063	Unused
064	Keyboard controller
065 - 06F	Unused
070 - 071	NMI enable/RTC
072 - 07F	Unused
080 - 08F	DMA page registers
090 - 091	Unused
092	Port A
093 - 09F	Unused
0A0 - 0A1	Interrupt controller no. 2
I/O Address (hex)	System Function (shipping configuration)
0A2 - 0BF	Unused
0C0 - 0DF	DMA controller no. 2
0E0 - 0EF	Unused
0F0 - 0F1	Coprocessor busy clear/reset
0F2 - 0FF	Unused
100 - 16F	Unused
170 - 177	Secondary fixed disk controller
178 - 1EF	Unused
1F0 - 1F7	Primary fixed disk controller
1F8 - 200	Unused
201	JoyStick (decoded in ESS1688)
202 - 21F	Unused

I/O address (hex)	System function (shipping configuration)
220 - 22F	Entertainment audio
230 - 26D	Unused
26E - 26	Unused
278 - 27F	Unused
280 - 2AB	Unused
2A0 - 2A7	Unused
2A8 - 2E7	Unused
2E8 - 2EF	Reserved serial port
2F0 - 2F7	Unused
2F8 - 2FF	Infrared port
300 - 31F	Unused
320 - 36F	Unused
370 - 377	Secondary diskette drive controller
378 - 37F	Parallel port (LPT1/default)
380 - 387	Unused
388 - 38B	FM synthesizer—OPL3
38C - 3AF	Unused
3B0 - 3BB	VGA
3BC - 3BF	Reserved (parallel port/no EPP support)
3C0 - 3DF	VGA
3E0 - 3E1	PC Card controller in CPU
3E2 - 3E3	Unused
3E8 - 3EF	Internal modem
3F0 - 3F7	“A” diskette controller
3F8 - 3FF	Serial port (COM1/default)
CF8 - CFB	PCI configuration index register (PCIDIVO-1)
CFC - CFF	PCI configuration data register (PCIDIVO-1)

System I/O address specifications—AMD processors

I/O address (hex)	System function (shipping configuration)
000 - 008	Direct memory access controller
000 - CF7	PCI Bus
00A - 00F	Direct memory access controller
010 - 01F	Motherboard resources
020 - 021	Programmable interrupt controller
022 - 03F	Motherboard resources
040 - 043	System timer
044 - 05F	Motherboard resources
060 - 060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
061 - 061	System speaker
062 - 062	Microsoft ACPI-Compliant Embedded Controller
063 - 063	Motherboard resources
064 - 064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
065 - 065	Motherboard resources
066 - 066	Microsoft ACPI-Compliant Embedded Controller
067 - 06F	Motherboard resources
070 - 071	System CMOS/real time clock
072 - 073	Motherboard resources
074 - 07f	Motherboard resources
080 - 080	Motherboard resources
081 - 083	Direct memory access controller
087 - 087	Direct memory access controller
089 - 08B	Direct memory access controller
08F - 08F	Direct memory access controller
091 - 093	Motherboard resources
097 - 09F	Motherboard resources
0A0 - 0A1	Programmable interrupt controller
0A2 - 0BF	Motherboard resources
0C0 - 0D1	Direct memory access controller
0D4 - 0DF	Direct memory access controller
0E0 - 0EF	Motherboard resources
0F0 - 0F1	Numeric data processor
1F0 - 1F7	ATA Channel 0

I/O address (hex)	System function (shipping configuration)
360 - 361	Motherboard resources
376 - 376	ATA Channel 1
3B0 - 3BB	nVidia MCP67M
3C0 - 3DF	nVidia MCP67M
3F6 - 3F6	ATA Channel 0
4D0 - 4D1	Motherboard resources
0D00 - FFFF	PCI bus
1000 - 107F	Motherboard resources
1080 - 10FF	Motherboard resources
1400 - 147F	Motherboard resources
1480 - 14FF	Motherboard resources
1800 - 187F	Motherboard resources
1880 - 18FF	Motherboard resources
3000 - 303F	nVidia nForce PCI System Management
3040 - 307F	nVidia nForce PCI System Management
3080 - 30BF	nVidia nForce PCI System Management
30C0 - 30CF	Standard Dual Channel PCI IDE Controller
30D0 - 30DF	Standard Dual Channel PCI IDE Controller
30E0 - 30E3	Standard Dual Channel PCI IDE Controller
30E4 - 30E7	Standard Dual Channel PCI IDE Controller
30E8 - 30EF	Standard Dual Channel PCI IDE Controller
30F0 - 30F7	Standard Dual Channel PCI IDE Controller
400 - 4FFF	PCI standard PCI-to-PCI bridge

System memory map specifications—Intel processors

Size	Memory address	System function
640 KB	00000000-0009FFFF	Base memory
128 KB	000A0000-000BFFFF	Video memory
48 KB	000C0000-000CBFFF	Video BIOS
160 KB	000C8000-000E7FFF	Unused
64 KB	000E8000-000FFFFFF	System BIOS
15 MB	00100000-00FFFFFF	Extended memory
58 MB	04800000-07FFFFFF	Super extended memory
58 MB	04800000-07FFFFFF	Unused
2 MB	08000000-080FFFFFF	Video memory (direct access)
4 GB	08200000-FFFEFFFF	Unused
64 KB	FFFF0000-FFFFFFFF	System BIOS

System memory map specifications—AMD processors

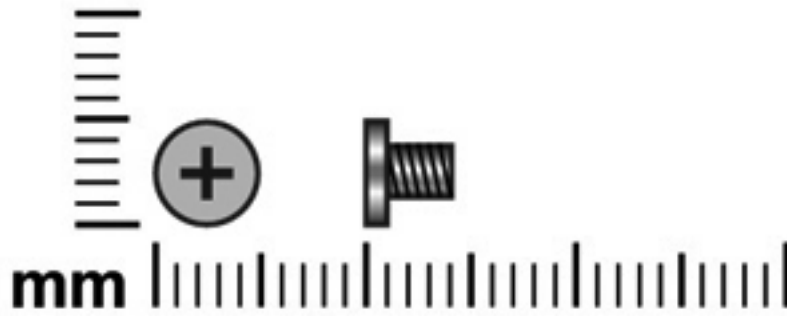
Memory address	System function
000A0000 - 000BFFFF	nVidia MCP67M
000A0000 - 000BFFFF	PCI bus
000C0000 - 000C3FFF	PCI bus
000C4000 - 000C7FFF	PCI bus
000C8000 - 00CBFFF	PCI bus
000CC000 - 000CFFFF	PCI bus
000D0000 - 00D3FFF	PCI bus
000D4000 - 000D7FFF	PCI bus
000D8000 - 00DBFFF	PCI bus
000DC000 - 00DFFFF	PCI bus
000E0000 - 00E3FFF	PCI bus
000E4000 - 000E7FFF	PCI bus
000E8000 - 000EBFFF	PCI bus
000EC000 - 000EFFFF	PCI bus
000F0000 - 000FFFFFF	PCI bus
40000000 - FEBFFFFF	PCI bus
D0000000 - DFFFFFFF	nVidia MCP67M
E0000000 - EFFFFFFF	Motherboard resources

Memory address	System function
F00000 - F3FFFFFF	PCI standard PCI-to-PCI bridge
F4000000 - F4FFFFFF	nVidia MCP67M
F5000000 - F5FFFFFF	nVidia MCP67M
F6000000 - F6003FFF	Broadcom 802.11b/g WLAN
F6000000 - F60FFFFFF	PCI standard PCI-to-PCI bridge
F6100000 - F61007FF	RICOH OHCI Compliant IEEE 1394 Host Controller
F6100000 - F61FFFFFF	PCI standard PCI-to-PCI bridge
F6100800 - F61008FF	SDA Standard Compliant SD Host Controller
F6100C00 - F6100CFF	Ricoh SD/MMC Host Controller
F6101000 - F61010FF	Ricoh Memory Stick Controller
F6101400 - F61014FF	Ricoh xD-Picture Card Controller
F6200000 - F627FFFF	nVidia nForce System Management Controller
F6480000 - F6483FFF	High Definition Audio Controller
F6484000 - F6485FFF	Standard Dual Channel PCI IDE Controller
F6486000 - F6486FFF	Standard OpenHCD USB Host Controller
F6487000 - F6487FFF	Standard OpenHCD USB Host Controller
F6488000 - F6488FFF	nVidia nForce Networking Controller
F6489000 - F64890FF	Standard Enhanced PCI to USB Host Controller
FF6489400 - F64894FF	Standard Enhanced PCI to USB Host Controller
F6489800 - F648980F	nVidia nForce Networking Controller
F6489C00 - F6489CFF	nVidia nForce Networking Controller
FEC00000 - FEC00FFF	System board
FEC80000 - FEC80FFF	System board
FED00000 - FED003FF	High precision event timer
FEE00000 - FEEFFFFFF	System board
FEF00000 - FEF00FFF	System board
FFC00000 - FFFFFFFF	System board

7 Screw listing

This section provides specification and reference information for the screws and screw locks used in the computer. Display screws are available in the Display Screw Kit, spare part number 486730-001.

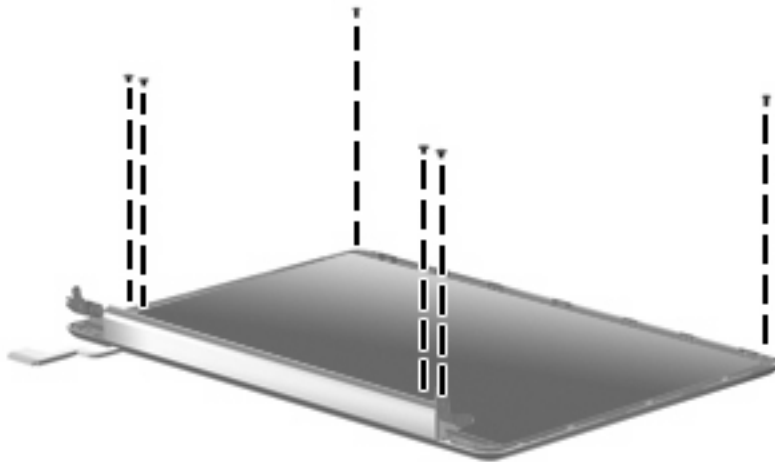
Black Phillips PM2.5×4.0 screw



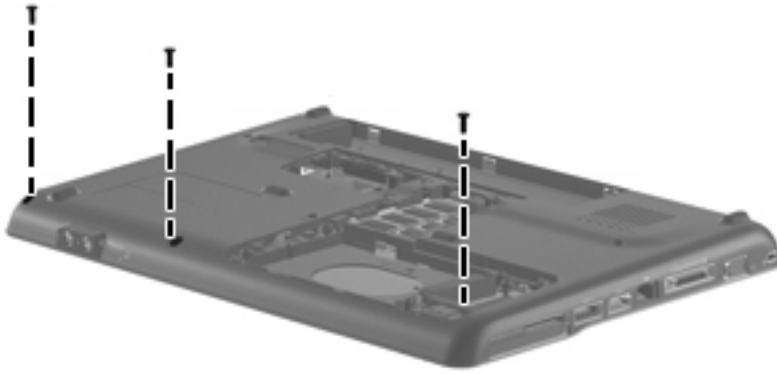
Color	Quantity	Length	Thread	Head diameter
Black	13	4.0 mm	2.5 mm	5.0 mm



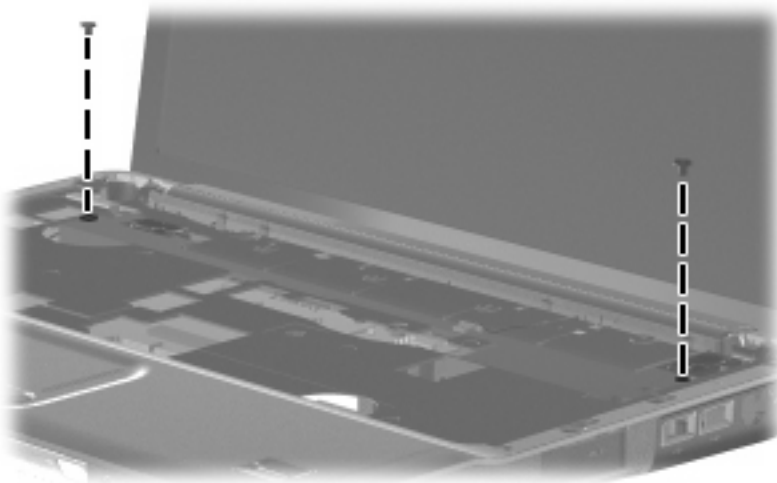
Where used: 2 screws that secure the wireless antenna transceivers to the display enclosure



Where used: 6 screws that secure the display panel to the display enclosure

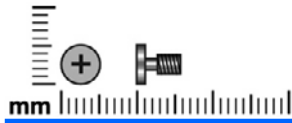


Where used: 3 screws that secure the top cover to the computer

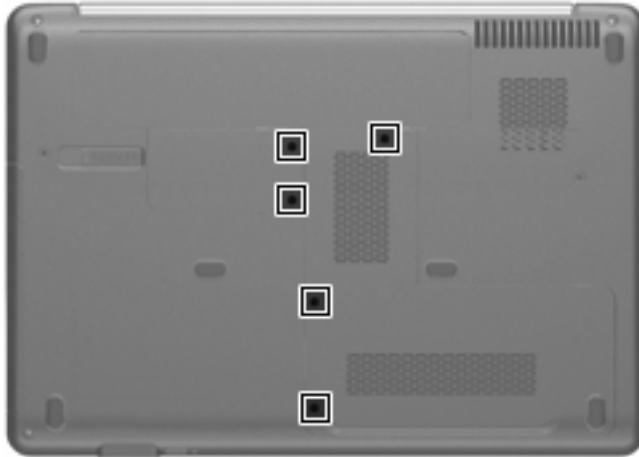


Where used: 2 screws that secure the speaker to the computer

Black Phillips PM2.5×6.0 captive screw

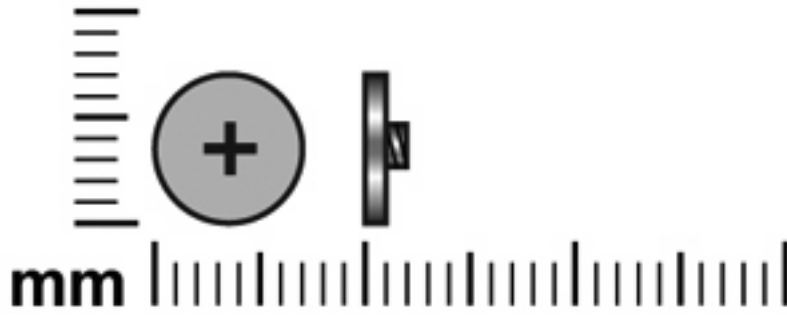


Color	Quantity	Length	Thread	Head diameter
Black	5	6.0 mm	2.5 mm	5.0 mm



Where used: 5 screws that secure the hard drive compartment cover, RTC battery compartment cover, and memory module cover to the computer

Black Phillips PM2.0×2.0 broad head screw

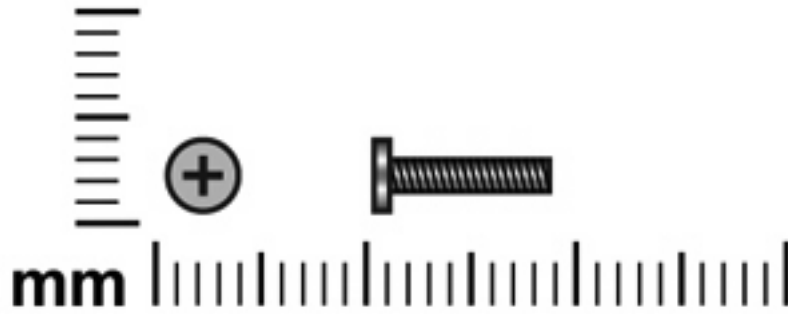


Color	Quantity	Length	Thread	Head diameter
Black	1	2.0 mm	2.0 mm	7.0 mm



Where used: One screw that secures the switch cover to the computer

Silver Phillips PM1.5×9.0 screw

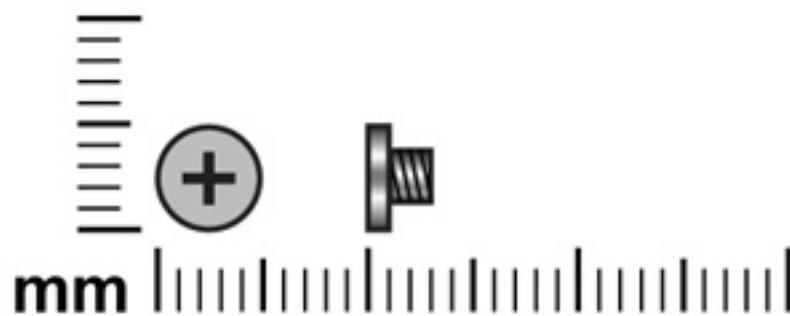


Color	Quantity	Length	Thread	Head diameter
Silver	2	9.0 mm	1.5 mm	4.0 mm

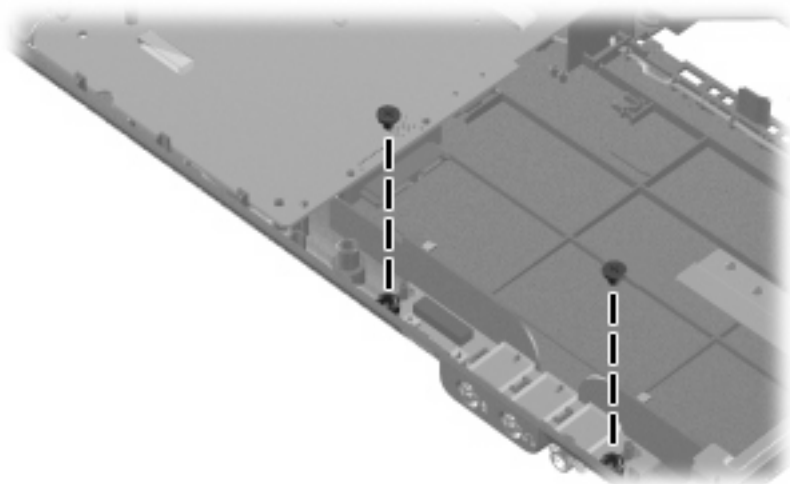


Where used: 2 screws that secure the expansion connector to the computer

Black Phillips PM2.5×3.0 screw

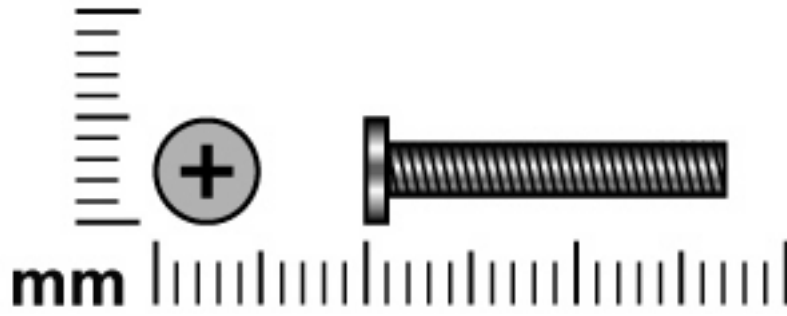


Color	Quantity	Length	Thread	Head diameter
Black	2	3.0 mm	2.5 mm	5.0 mm

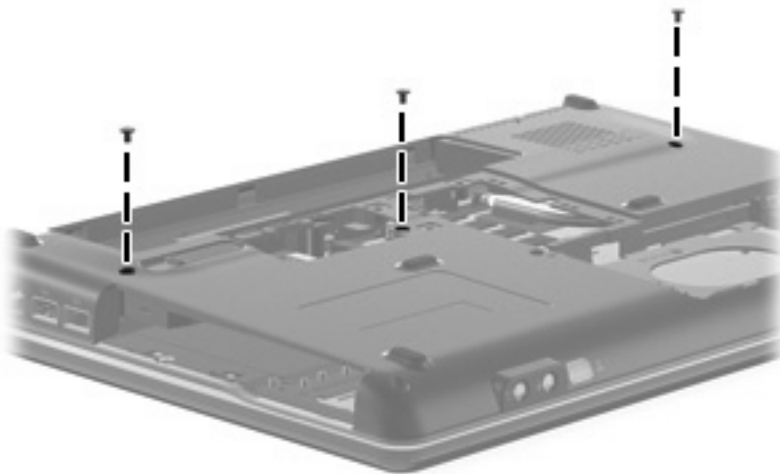


Where used: 2 screws that secure the audio board to the computer

Black Phillips PM2.5×17.0 screw

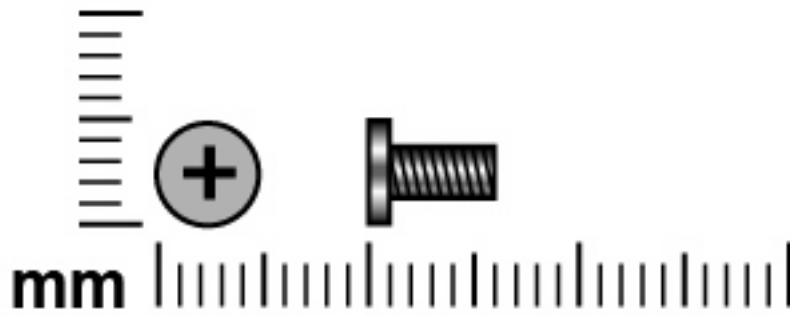


Color	Quantity	Length	Thread	Head diameter
Black	3	17.0 mm	2.5 mm	5.0 mm



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

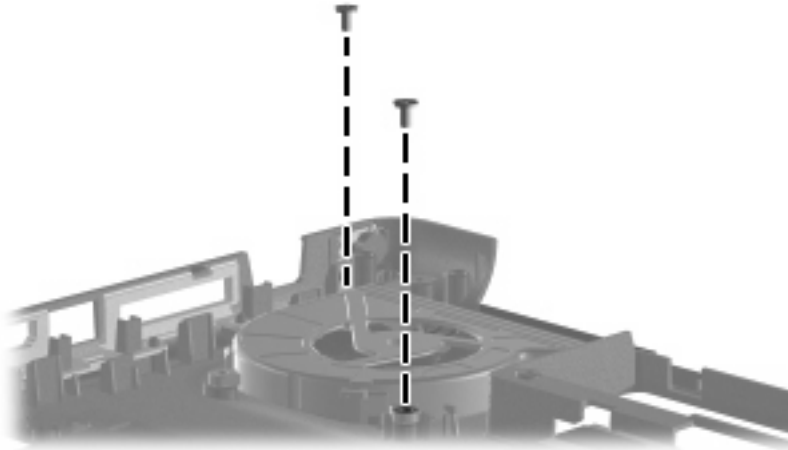
Black Phillips PM2.5×6.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	4	6.0 mm	2.5 mm	5.0 mm

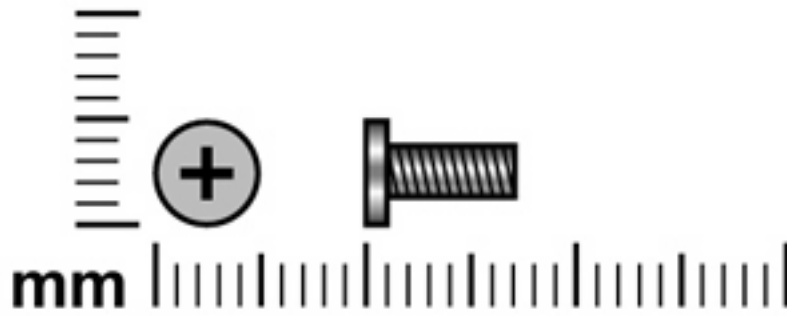


Where used: 2 screws that secure the top cover to the base enclosure

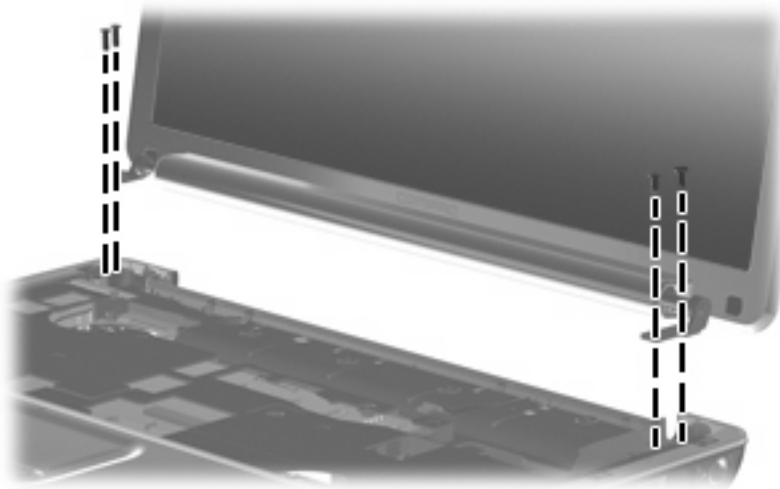


Where used: 2 screws that secure the system fan to the computer

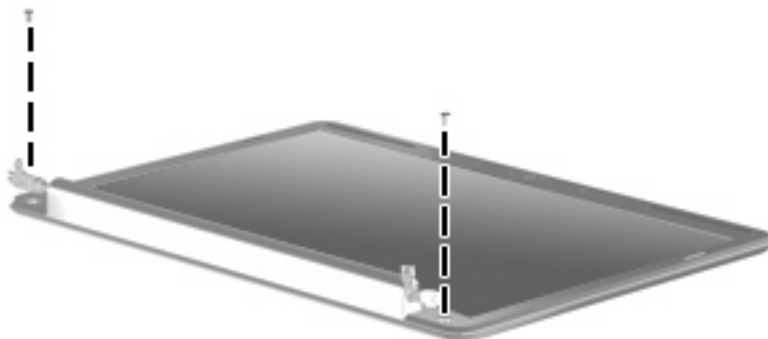
Black Phillips PM2.5×7.0 screw



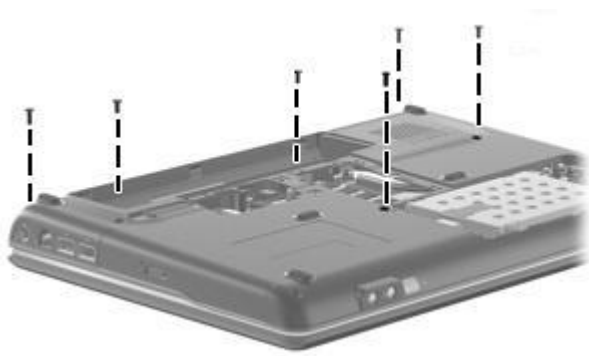
Color	Quantity	Length	Thread	Head diameter
Silver	17	7.0 mm	2.5 mm	5.0 mm



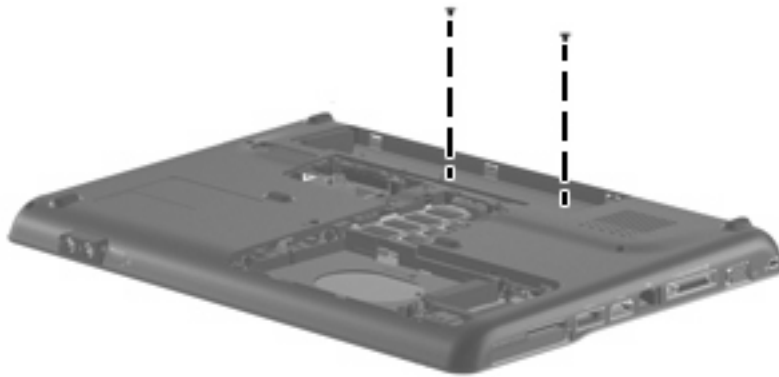
Where used: 4 screws that secure the display assembly to the computer



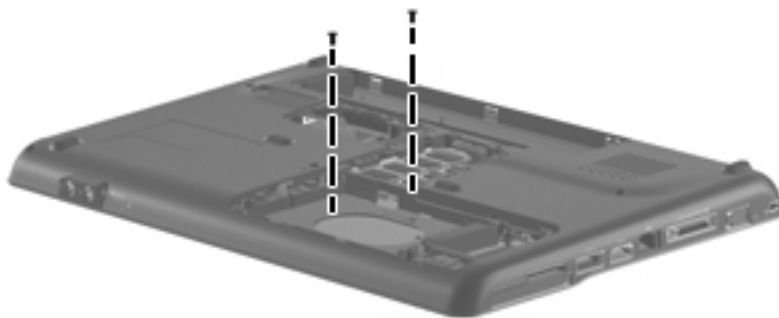
Where used: 2 screws that secure the display bezel to the display assembly



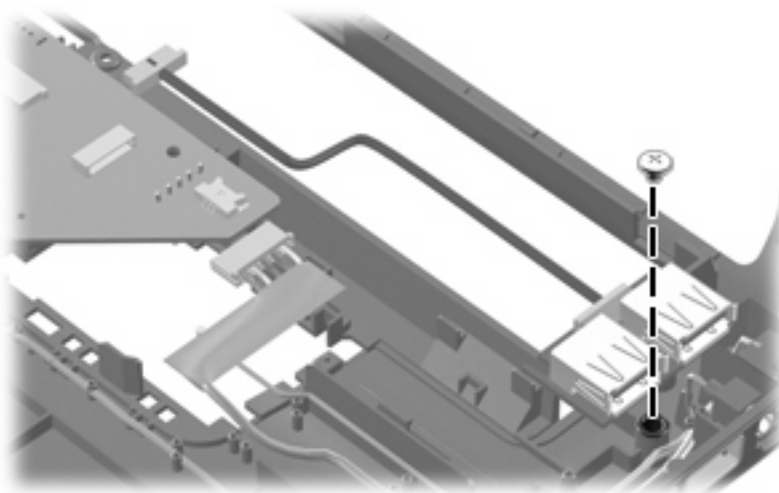
Where used: 6 screws that secure the optical drive, switch cover, and keyboard to the computer



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

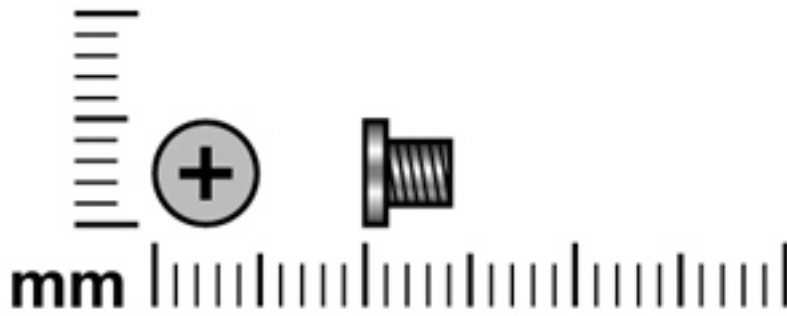


Where used: 2 screws that secure the top cover to the computer

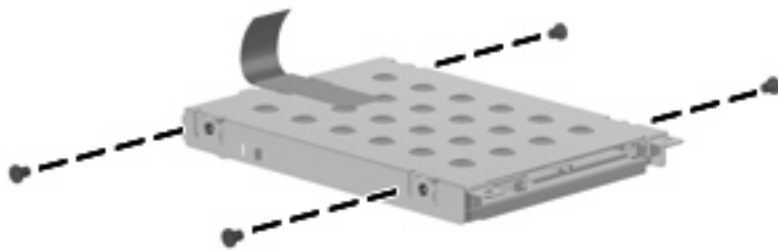


Where used: One screw that secures the USB board to the base enclosure

Silver Phillips PM3.0×4.0 screw

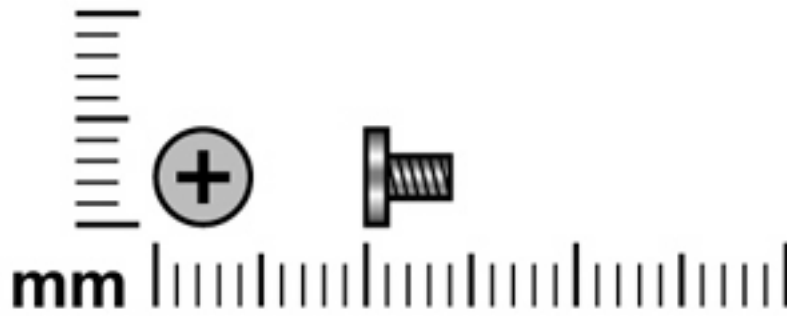


Color	Quantity	Length	Thread	Head diameter
Silver	4	4.0 mm	3.0 mm	5.0 mm

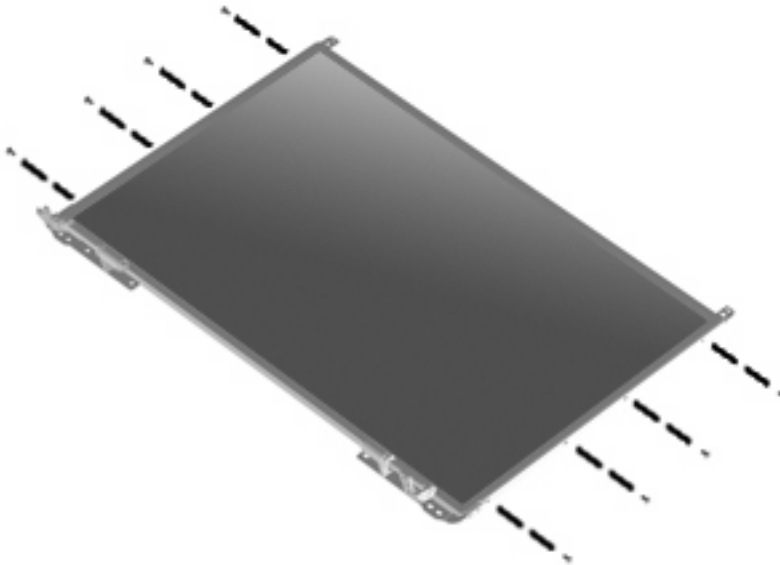


Where used: 4 screws that secure the hard drive bracket to the hard drive

Silver Phillips PM2.0×4.0 screw

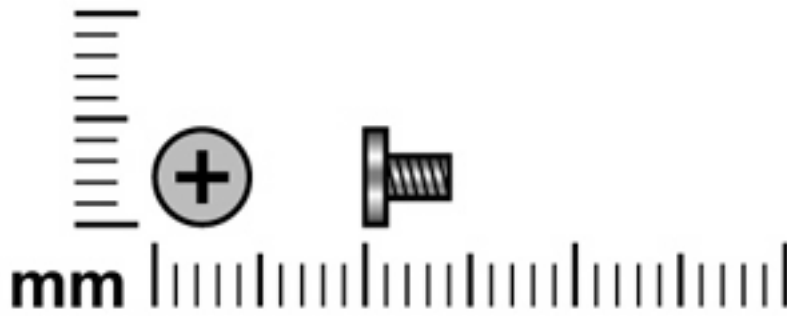


Color	Quantity	Length	Thread	Head diameter
Silver	8	4.0 mm	2.0 mm	5.0 mm



Where used: 8 screws that secure the display hinges to the display

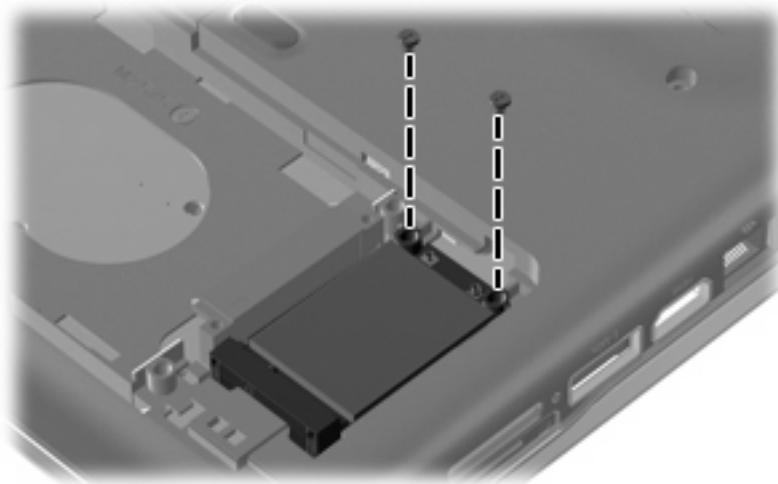
Black Phillips PM2.0×4.0 screw



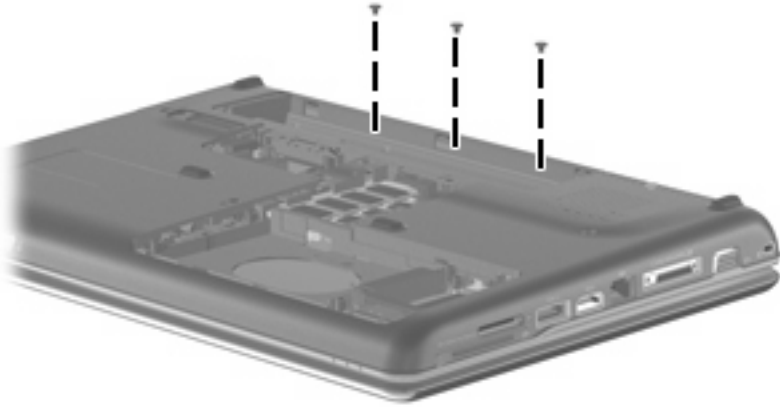
Color	Quantity	Length	Thread	Head diameter
Black	12	4.0 mm	2.0 mm	5.0 mm



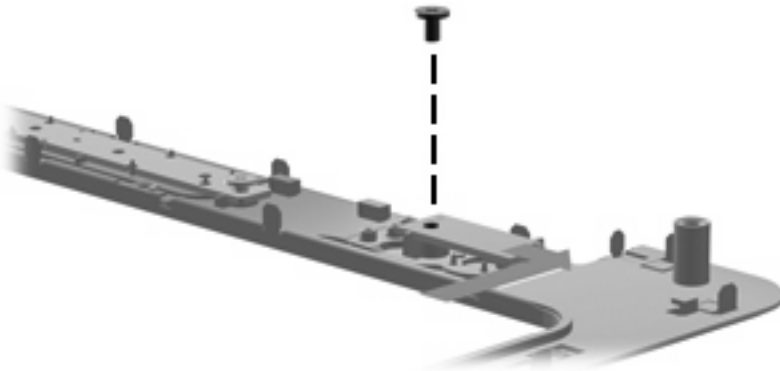
Where used: 2 screws that secure the optical drive bracket to the optical drive



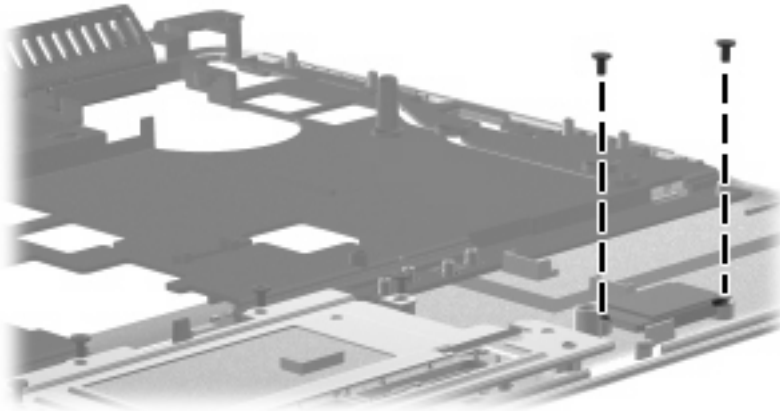
Where used: 2 screws that secure the WLAN module to the computer



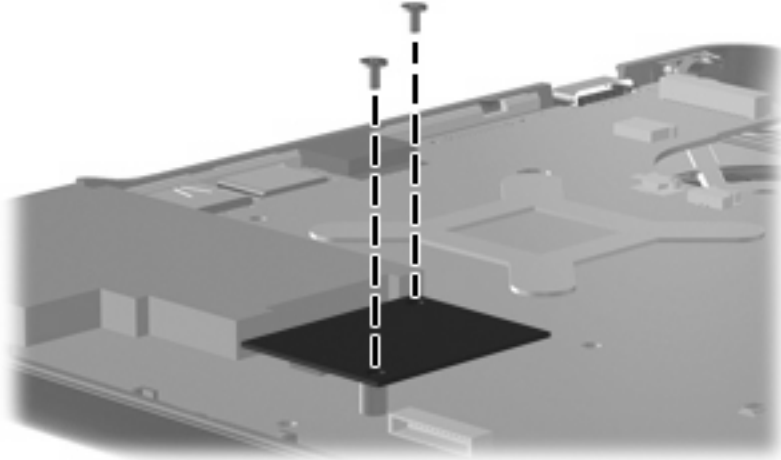
Where used: 3 screws that secure the switch cover to the computer



Where used: 1 screw that secures the power button board to the computer

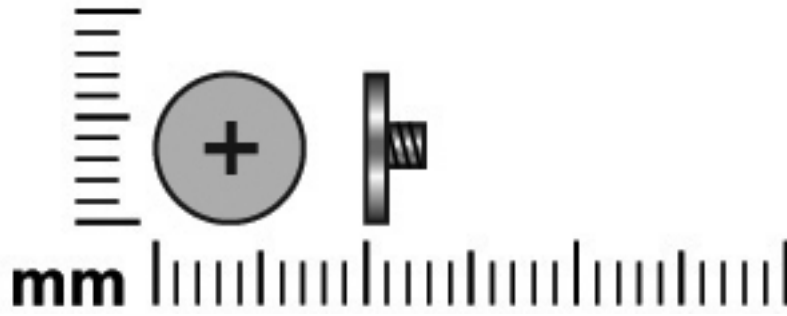


Where used: 2 screws that secure the Bluetooth module to the computer

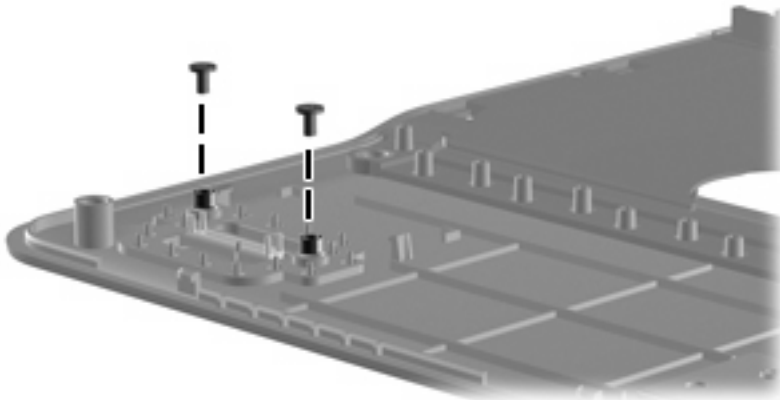


Where used: 2 screws that secure the modem module to the computer

Black Phillips PM2.0×3.0 broad head screw

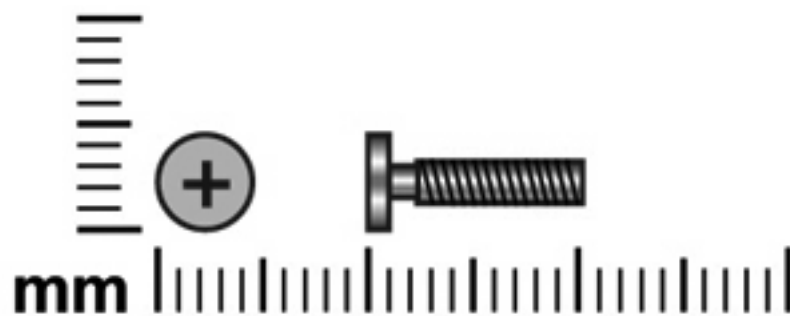


Color	Quantity	Length	Thread	Head diameter
Black	2	3.0 mm	2.0 mm	7.5 mm

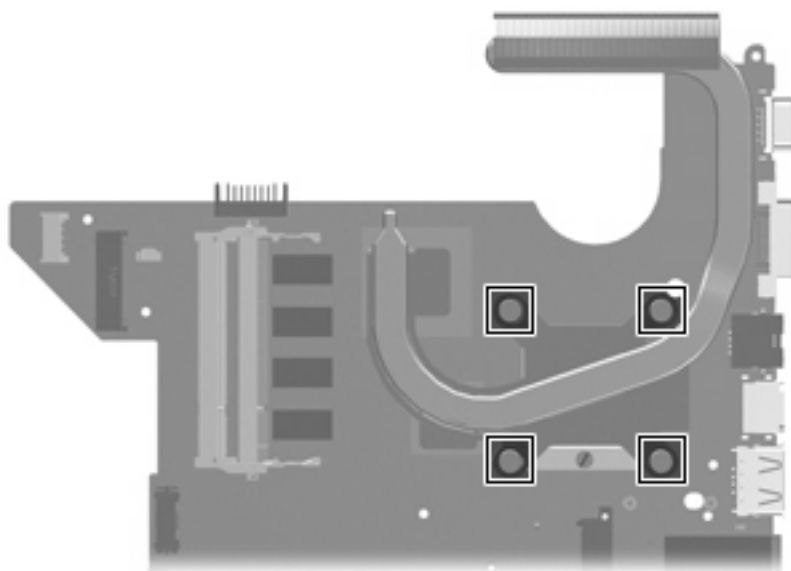


Where used: 2 screws that secure the fingerprint reader module to the computer

Silver Phillips PM2.0×10.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Silver	4	10.0 mm	2.0 mm	5.0 mm



Where used: 4 captive screws that secure the fan/heat sink assembly to the system board


8 Backup and recovery

Recovering system information

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.

 **NOTE:** If your computer includes a solid-state drive (SSD), you 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 > Computer**. If the partition is present, an HP Recovery drive is listed in the Hard Disk Drives section of the window.

Backing up your information

When to back up

- On a regularly scheduled basis
-  **NOTE:** Set reminders to back up your information periodically.
-
- Before the computer is repaired or restored
 - Before you add or modify hardware or software

Backup suggestions


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

To copy the screen and paste it into a word-processing document, 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**.

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.

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

You also can create additional restore points to provide increased protection for 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

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

Create a system restore point

1. Select **Start > Control Panel > System and Maintenance > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Under **Automatic restore points**, select the disk for which you want to create a restore point.
5. Click **Create**.

The System Protection window opens.

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. Select **Start > Control Panel > System and Maintenance > System**.
2. In the left pane, click **System protection**.
3. Click the **System Protection** tab.
4. Click the **System Restore** button, and then click **Next**.

The System Restore window opens.

5. Follow the on-screen instructions.


Creating recovery discs

 **NOTE:** 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.

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

Note the following guidelines before creating recovery discs:

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

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


- The computer must be connected to AC power during this process.
- Only one set of recovery discs can be created per computer.
- Number each disc before inserting it into the 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. Select **Start > All Programs > Recovery Manager > Recovery Manager**.


Recovery Manager opens.

2. Click **Advanced Options**.


 **NOTE:** If you are operating the computer on battery power, you will be prompted to connect to AC power before you can go to the next step.

3. Click **Recovery disc creation**, and then click **Next**.
4. Follow the on-screen instructions.

Performing a recovery

 **NOTE:** You can recover only files that you have previously backed up. HP recommends that you use Recovery Manager to create an 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, if your computer includes a solid-state drive (SSD), you 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.

 **NOTE:** Windows has its own built-in repair features, such as System Restore and driver roll-back capabilities. If you have not already tried these features, try them before using Recovery Manager.


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

Recovering from the recovery discs

To restore the system from the recovery discs:

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

Recovering from the dedicated recovery partition (select models only)

 **NOTE:** If your computer includes an SSD, you may 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 from 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–
 - Restart the computer and press **f11** while the “Press <F11> for recovery” message is displayed on the screen. Then select **Recovery Manager**.

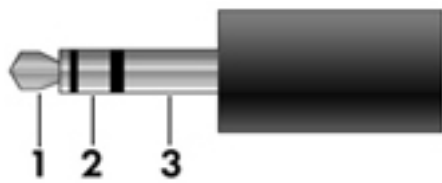
Recovery Manager opens.

2. Click **Advanced Options**.

3. Click **System recovery**, and then click **Next**.
4. Follow the on-screen instructions.

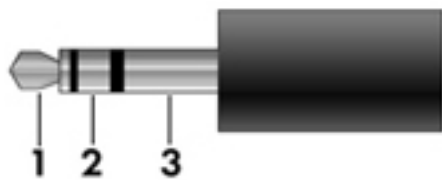
9 Connector pin assignments

Audio-out (headphone)



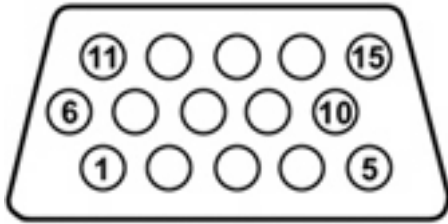
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

Audio-in (microphone)



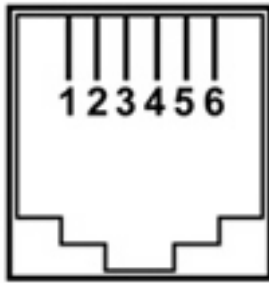
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

External monitor



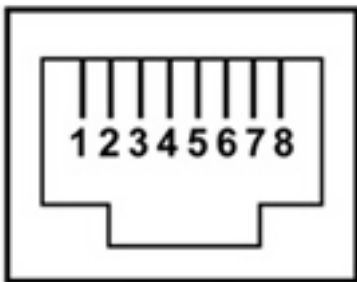
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

RJ-11 (modem)



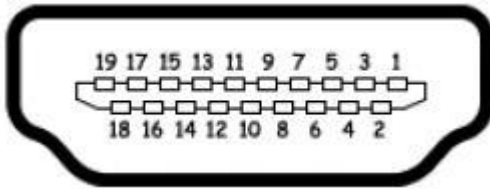
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

RJ-45 (network)



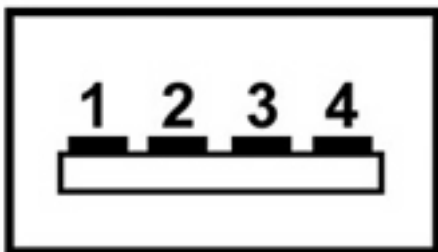
Pin	Signal
1	Transmit +
2	Transmit -
3	Receive +
4	Unused
5	Unused
6	Receive -
7	Unused
8	Unused

HDMI



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

Universal Serial Bus



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

10 Power cord set requirements

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

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

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

Requirements for all countries or regions

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

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

Requirements for specific countries or regions

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

1. The flexible cord must be Type HO5VV-F, 3-conductor, 1.0-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

11 Recycling

Battery

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

Display

- ⚠ **WARNING!** The backlight contains mercury. Caution must be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.
- ⚠ **CAUTION:** The procedures in this appendix can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. Careful handling must be exercised when removing these components.
- 📄 **NOTE: Materials Disposal.** This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury 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>.

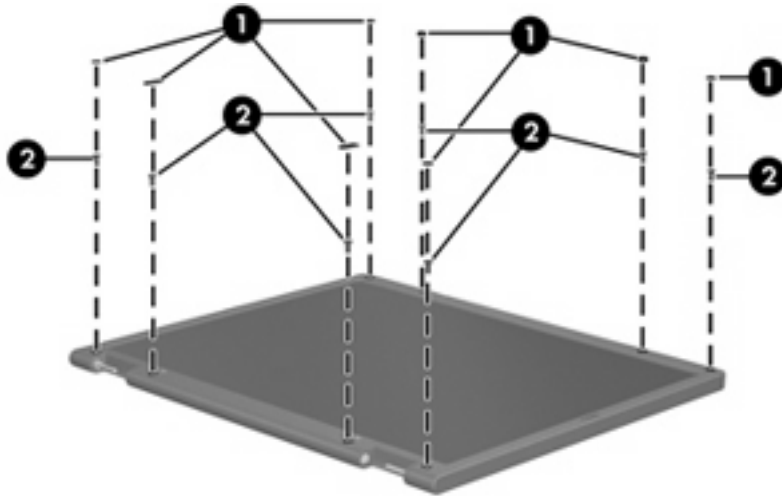
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



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

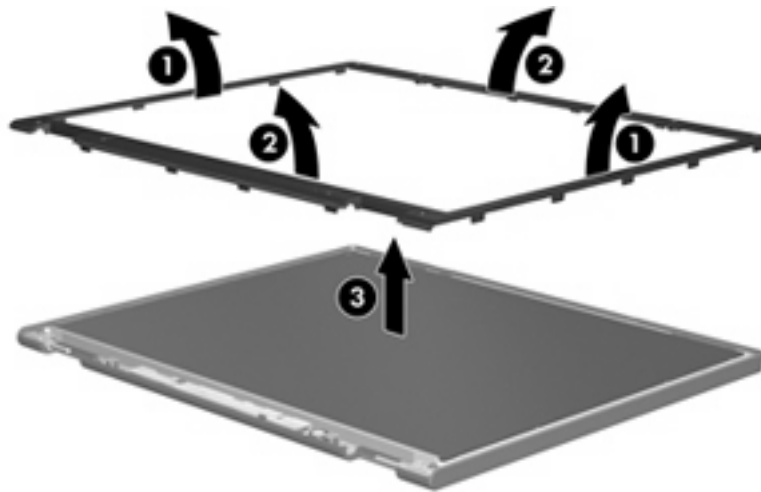
Perform the following steps to disassemble the display assembly:

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

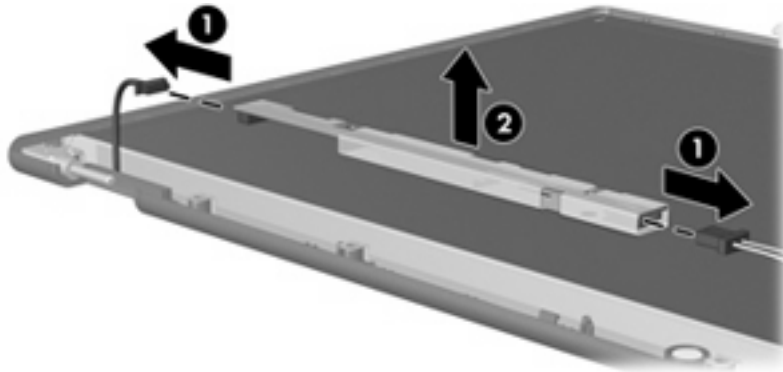


2. Lift up and out on the left and right inside edges (1) and the top and bottom inside edges (2) of the display bezel until the bezel disengages from the display assembly.

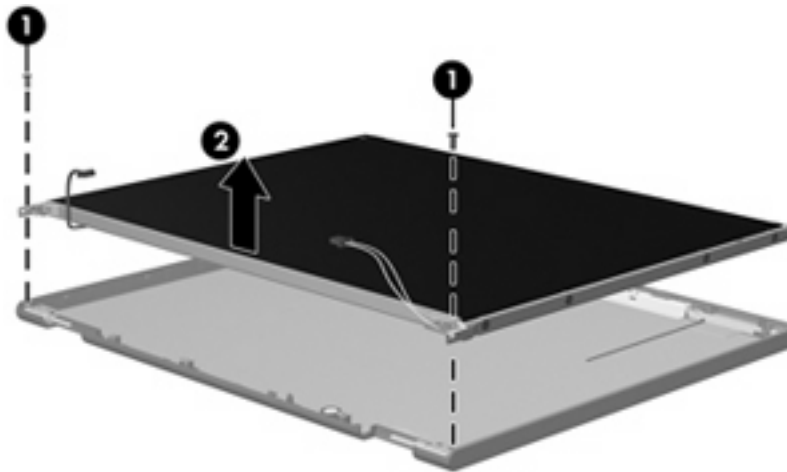
3. Remove the display bezel (3).



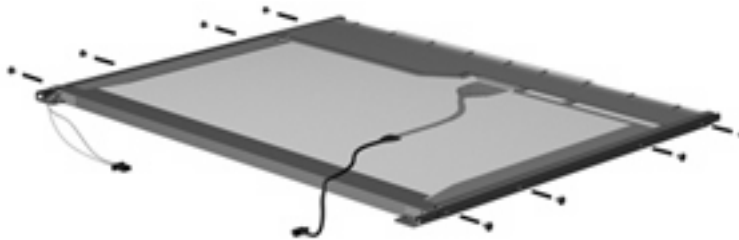
4. Disconnect all display panel cables (1) from the display inverter and remove the inverter (2).



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

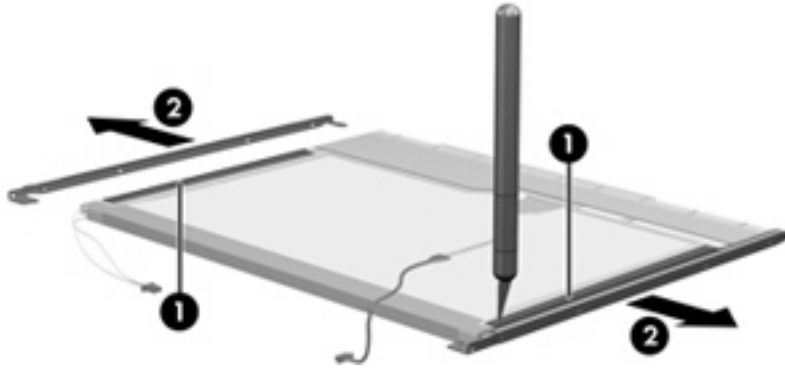


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.

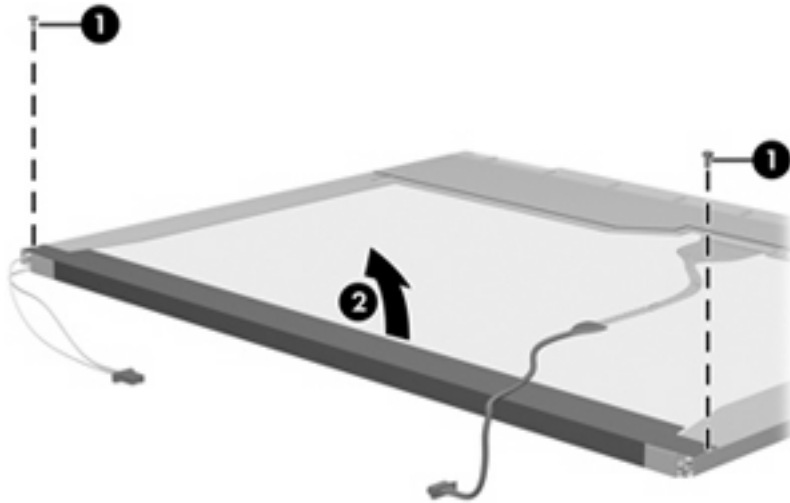


9. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.

10. Remove the display panel frame (2) from the display panel.

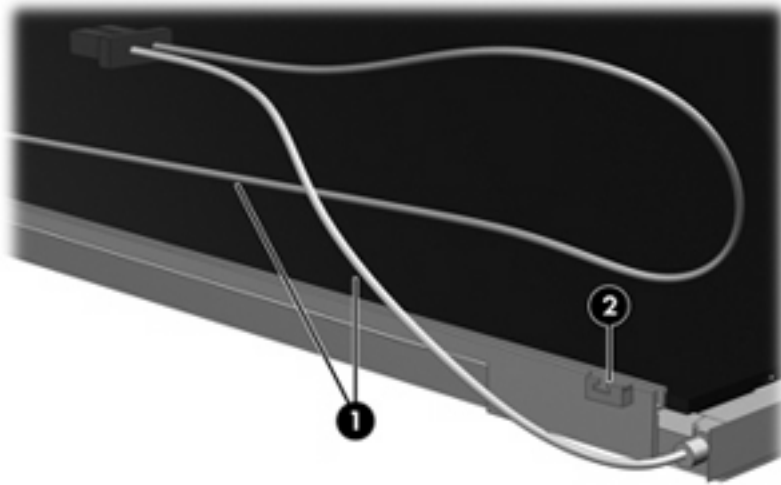


11. Remove the screws (1) that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover (2) and swing it outward.

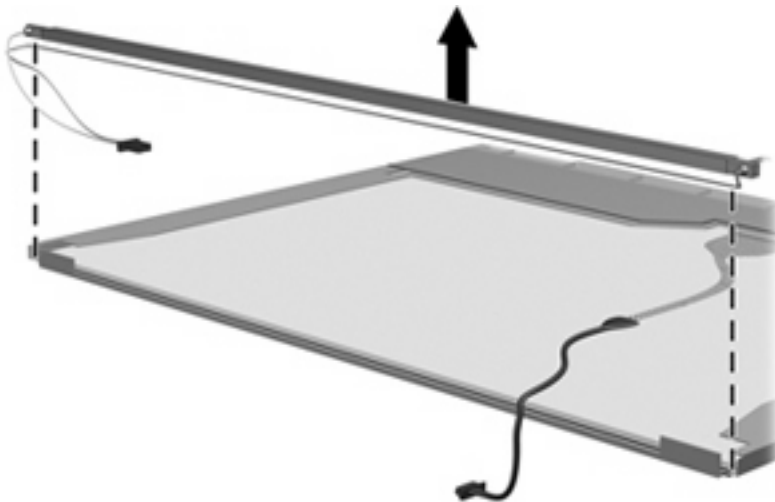


13. Remove the backlight cover.
14. Turn the display panel right-side up.

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

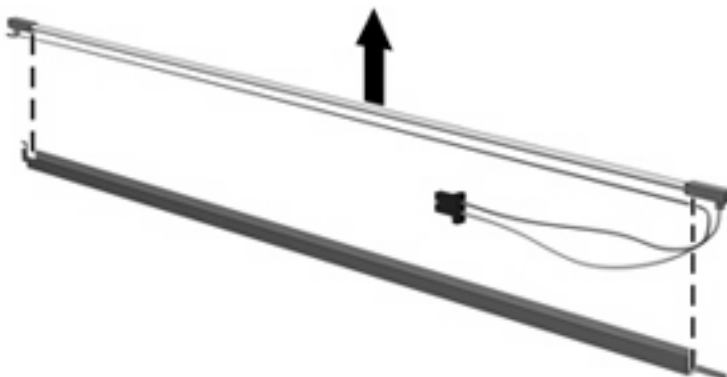


16. Turn the display panel upside down.
17. Remove the backlight frame from the display panel.

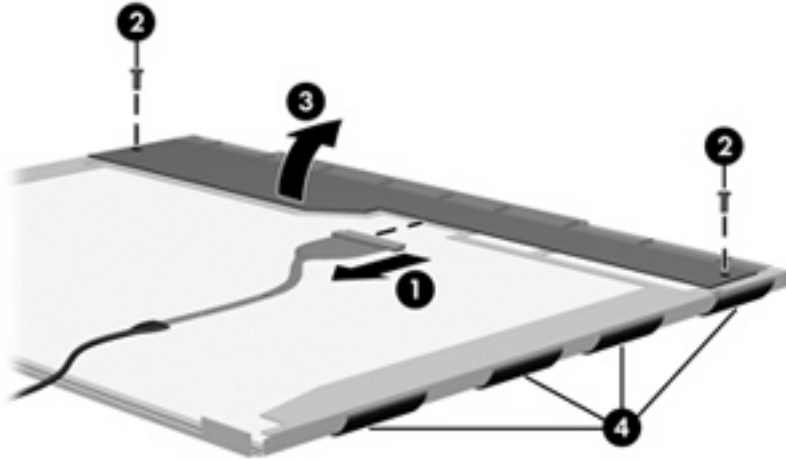


⚠ WARNING! The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

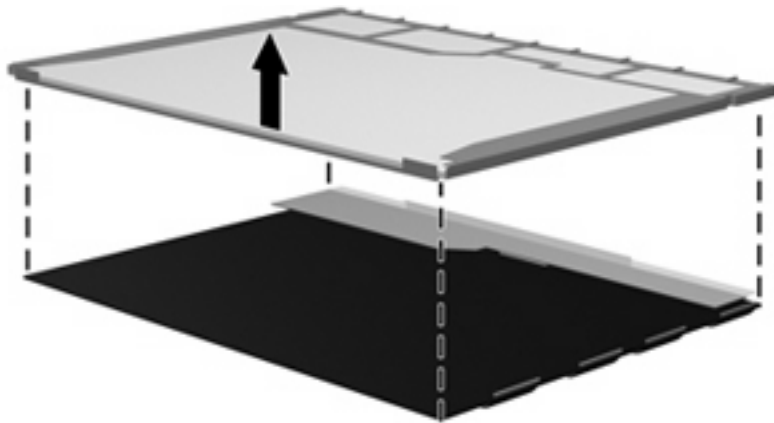
18. Remove the backlight from the backlight frame.



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